Regional Biosolids Compost Facility 2019 Annual Report

Prepared for: BC Ministry of Environment
Prepared by: City of Kelowna
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Executive Summary

The Regional Biosolids Compost Facility (RBCF) is located at 551 Commonage Road (site reference #E307813) in Vernon, BC. The facility is jointly owned by the City of Kelowna (COK) and the City of Vernon (COV), but operated exclusively by COK staff. The facility receives stabilized sewage sludge (biosolids) from the Kelowna, Vernon, North Okanagan Regional District, Silver Hawk Utilities (Silver Star Ski Hill), and Lake Country Wastewater Treatment Facilities (WWTF). Biosolids are mixed with wood chips (hog fuel) and clean ground dimensional lumber collected and ground at the Glemore Landfill in Kelowna. The material mix is composted in an Extended Aerated Static Pile system to produce Class-A Compost as defined by the Organic Matter Recycling Regulation (OMRR).

The facility is operated under condition of compliance of Air Discharge Permit #108537 (the Permit), issued by the Ministry of Environment and Climate Change Strategy (ENV) under the provisions of the *Environmental Management Act*. This annual report covers the period between January 1 to December 31, 2019.

Received Biosolids

The total volume of biosolids received at the RBCF in 2019 was 31,628 wet metric tonnes, or 87 % of the maximum allowed by Permit (36,400 wet tonnes).

Finished Compost

Finished compost was continuously produced and tested throughout 2019, with off-site transportation and product sales peaking May through October. More than 50% of the finished product was removed from site in 2019 as required by Permit. Compost volumes produced, stored and transported off-site in 2019 are shown in Table 1 below.

Table 1. Compost volume produced and stored at the RBCF

Finished Compost	Volume (m^3)
Stored on-site as of Jan 1, 2019	8,133
Produced on-site between Jan 1-Dec 31, 2019	43,747
Transported off-site between Jan 1-Dec 31, 2019	43,303
Stored on-site as of Dec 31, 2019	8,577

Introduction

The RBCF operates under Permit 108537, which mandates under Section 5.5, that annual reports be submitted to ENV on or before March 31st of each year for the previous calendar year, and must include the following information at a minimum:

- The type and tonnage of compostable materials received for the preceding calendar year;
- The quantity of finished compost transported off-site, and the amount stored on site at the end of each calendar year;
- The results of monitoring programs as specified in the authorization. The Permittee must ensure that data interpretation and trend analysis, as well as an evaluation of the impacts of the discharges on the receiving environment in the previous calendar year must be carried out by a qualified professional;
- A summary and analysis of all complaints received in the previous calendar year; and
- Any improvements made to the facility or operations to reduce and control odour.

This report addresses the above-noted items and provides an overview of the facility, processing volumes, odour and air emissions management, residual management, leachate management, sampling procedures, analytical testing results, staffing, and operational maintenance.

This annual report applies to the 2019 calendar year from January 1st to December 31st.

Compost Facility Overview

The RBCF is situated in a rural area between Vernon and Kelowna and was officially opened in 2006 as a partnership between the two municipalities. The purpose of the facility is to process the biosolids produced at each of the respective wastewater treatment facilities, into a nutrient rich, high-quality Class-A Compost that is then sold under the OgoGrow™ brand.

The site underwent a significant upgrade in 2010 to increase the receiving capacity of biosolids, expand the processing area, and increase the on-site storage capacity of the finished product.

Site Plan

The site primarily consists of an administration building for staff, booster pump and drainage pump houses that manage water flows, enclosed mixing building, maintenance shop, leachate collection system, aeration fan system, and two E-nose odour sensors strategically placed on the perimeter (Figure 1).

Each of the buildings, monitors, and collection systems are designed to provide efficient management, measurement, and containment of each of the compost production stages. This consists of initial mixing of biosolids and woody biomass in the mixing building, primary and secondary aeration zones areas for processing and curing, and finished product storage area.

Figure 1. Regional Compost Facility Site Plan

Signage and Security

The compost facility has signage erected near the entrance that clearly identifies the site name, owner and operator, contact phone number for public, hours of operation, and prohibition of hazardous waste notification.

The operation runs seven days a week, and is secured by a perimeter fence and automated gate, which remains open during regular business hours on weekdays, closed on weekends (accessible by authorized staff and contractors), and is monitored 24-hours a day by a surveillance camera.

Contracted haulers have access to the site after hours through use of proximity tags that open and close the gate automatically. Communication on site is through radio system control that staff and haulers are equipped with.

Residual Management

Feedstocks are generally very clean and do not contain litter or plastic debris. Any litter found on-site is collected and disposed of throughout the year as noticed. In addition, a coordinated clean-up effort is made each spring that consists of staff walking the north perimeter berm and field north of the berm to pick up any plastic fragments or residuals, and disposing of them off-site. All retained residual on premise is limited to less than 15 m^3.

Vehicles that make deliveries on and off-site drive on a dedicated paved surface that is frequently maintained and cleaned when needed. Biosolids are tipped into the mixing building, where they are mixed as soon as possible with the woody feedstocks, after which the mix is transported to the primary composting area. Transport vehicles that come on site travel around the perimeter of the site and do not travel across areas where raw biosolids are stored or mixed. The roadways are cleared and kept as clean as possible to minimize tracking of compost by tires or undercarriages, which could be transported off-site.

Operations

The COK operates the RBCF in accordance with the current Commonage Biosolids Facility Operations Plan that was designed by MMM consulting group and approved by ENV in 2010. As a condition on permit, the COK retained the services of WSP engineering consultants to update the Operating and Design Plan. That plan contained the design, operations, acceptable materials, leachate management, monitoring program, reporting requirements and performance requirements for the RBCF. The plan and appendices were submitted to the ENV Director on May 31, 2019.

Compostable Material

Activated sewage sludge is extracted from wastewater through a series of clarifiers, bioreactors, fermenters, and settling basins to physically remove solids from the waste stream at the various wastewater treatment facilities. The thickened sludge is centrifuged and dewatered to a consistency of 15-20 % solids.

Bioxide®, a calcium nitrate solution, is also mixed into the solids to help control odours during transport to the RBCF, where they are processed into compost.

The amount of biosolids received at the RBCF in 2019 was 31,628 wet tonnes, which is 86.9 % of the allowable permit limit of 36,400 wet tonnes. Over the past five years, the amount of biosolids received at the facility has increased by 10.8 %, generally proportional to the increased volume contributed by Kelowna WWTF over the same time period (Figure 2).

Figure 2. Volume of biosolids processed at the RBCF, year over year relative to permit

Annual Biosolids Volumes Composted
All Sources (wet tonnes)

	Silver Star	RDNO	Lake Country	Vernon	Kelowna	Total	Permit Limit
2015		81	1560	8179	18727	28,547	
2016		55	1698	7981	19012	28,746	
2017		63	1703	8449	20153	30,368	36,400
2018	38.3	19	1770	8645	20767	31,239	36,400
2019	88	11	1847	8887	20883	31,628	36,400

Table 2. Weight of Biosolids Processed

Parameter dw mg/kg	Kelowna WWTF	Vernon Water Reclamation Centre	Lake Country WWTF	Silver Star Ski Hill WWTF	Schedule 4 OMRR
Arsenic	1.6	1.48	1.79	3.84	**75**
Cadmium	0.7	0.8	1.17	1.34	**20**
Chromium	8.9	8.5	13	13.7	**1 060**
Cobalt	1.1	1.8	1.52	4.1	**150**
Copper	405	249	404	341	**2 200**
Lead	16.9	5.43	10	7.03	**500**
Mercury	0.43	0.36	0.52	0.136	**15**
Molybdenum	5.05	4.7	10.5	5.87	**20**
Nickel	7.2	7.98	10.4	17.6	**180**
Selenium	2.2	3.99	3.9	14.8	**14**
Zinc	220	265	596	502	**1 850**

Table 3. Metal concentrations in biosolids accepted by RBCF in 2019

Hog fuel – m^3	57,120
Ground dimensional lumber – m^3	20,000
Ground Prunings - m^3	3800
Oversize compost from screening (recycle estimate) – m^3	25,000

Table 4. Wood Feedstocks processed 2019

Compost Blending Process

The raw materials used to blend with the biosolids include: wood chips (hog fuel), untreated and unprocessed ground dimensional lumber and oversized wood chips screened from previously composted material. The use of wood fly ash (carbon) was discontinued in 2019. Each of these materials are pre-mixed at a ratio of 3-parts hog fuel, 2-parts oversize screening, and 1-part ground dimensional lumber on-site. The pre-mix is then blended with the biosolids at a prescribed rate to optimize the nutrient balance of carbon to nitrogen to produce the OgoGrow mix (Table 5).

Table 5. Mixing ratio of material

Ogogrow mix
5000-5500 kg of pre-mix wood
3500 kg of biosolids

The RBCF uses an Extended Aerated Static Pile method to enhance the biodegradation of biosolids and feedstock materials into compost. Following mixing, the blended material is built into rows on a primary aeration cell area where air is blown from the atmosphere through each pile in a "positive" direction (up through the pile) or "negative" direction (down through the pile), to provide optimal aerobic and temperature conditions for biodegradation and reduction of pathogens and vectors.

The internal temperatures of each pile are monitored to determine whether Process to Further Reduce Pathogens (PFRP) and Vector Attraction Reduction (VAR) targets are met. These targets are typically met within 25-28 days, after which the material is torn down and re-built into a new pile in the secondary aeration cell area where the process is repeated. The material is then screened to 5/8-inch in size and arranged into windrows in the final curing area prior to testing and transportation.

The finished product is tested to ensure that it meets OMRR Class-A Compost criteria prior to approval for sale. In 2019 the City of Kelowna began participation in the Compost Council of Canada Compost Quality Alliance (CQA) Program and compost tests met CQA Class A results. A sample report is attached in Appendix D.

More than 50% of the compost produced by the RBCF was removed from site in 2019. This was mainly due to a successful bulk purchase opportunity offered by the City of Kelowna, which resulted in the sale of the total year's production.

Table 6. Ogogrow Analytical Results 2019

mg/kg	Result	OMRR
Arsenic (As)	2.8	13
Cadmium (Cd)	1.02	3
Chromium (Cr)	10.58	100
Cobalt (Co)	1.58	34
Copper (Cu)	179	400
Lead (Pb)	4.37	150
Mercury	0.16	2
Molybdenum (Mo)	4.2	5
Nickel (Ni)	6.17	62
Selenium (Se)	BDL	2
Zinc (Zn)	240	500
PCB's	Not detected	2
Conductivity (EC)	3.63	
Foreign Matter	<1	<1
Foreign Matter - Sharps	<0.10	<1
Moisture %	50.5	35-60%
pH	8.0	
Organic Matter %	84.6	
Total Nitrogen by LECO %	2.28	
Phosphorus (Available P_2O_5) %	1.5	
Potassium (Soluble K_2O) %	0.6	
Ammonia mg/kg	2076	
C:N Ratio	20:1	15-35

Fecal Coliform & Salmonella - Each 500 tonne (wet wt) batch of Ogogrow is individually tested for pathogens. Compost is only released for sale when it has met the OMMR requirements of <3 MPN/4g salmonella and <1000 MPN/g coliform. Averages are calculated based on the results of monthly composite tests. Results are reported on a dry weight basis.

Figure 3. Volume of OgoGrow removed from site and inventory at year end

Odour Management

The RBCF operates the facility in accordance with an Odour Management Plan (OMP), which lays out best management practices to mitigate on-site odour generation and monitor off-site impacts. The 2018 OMP was submitted to ENV on November 31, 2017.

The RBCF uses a customized odour monitoring system (OdoWatch™), which consists of two odour detecting sensors (E-Noses) calibrated for the site, and a weather station. Data from these are used to model atmospheric dispersion of odours, and odour intensity is reported in odour units (ou/m^3). Ten alert points, four at the property boundaries and six off-site have been established at key locations where odour impacts have been a concern over the years.

The system continuously calculates predicted odour intensity values at each alert point location, and compares these to predeteremined odour intensity thresholds to estimate how odour may be impacting each location at any given point in time. The software takes into account the estimated odour intensity, location, and duration, and can provide alerts to notify staff if odour thresholds have been exceeded (Figure 4).

Odour thresholds limits at the site boundary are set at 50 OU/m3 for a 2 hour average. There were no exceedances of this limit in 2019. The odour limit report is included in Appendix C.

Figure 4. Odowatch odour profile showing location of E-noses, alert points, and predicted odour intensity contours

Odour Control

To help control odours, an enclosed Coverall Building (mixing building) was erected in 2006 to receive and mix the biosolids and feedstocks. The structure allows heavy machinery to mix and transport the initial compost mix without direct wind exposure and helps reduce the migration of odours to surrounding areas. Front end loaders used at the site have pressurized cabins and Brofil™ cabin-air filtration systems to minimize equipment operators' exposure to dust and airborne material generated by the mixing process.

Once the compost is blended and transferred to the primary aeration cell area, odour is managed through the use of a 0.3-m thick biofiltration cover that consists of a mixture of oversized material from the screening process and finished (but unscreened) compost. This biocover absorbs much of the odour produced by the freshly-mixed piles, particularly when the system is set to positive aeration.

When the aeration fans are working in negative, air is pulled down through the piles and exhausted through one of seven biofilters (four filter air from primary composting and three filter air from secondary).

Results of the 2018 RBCF Air Emissions Study supports the effectiveness of biofiltering as an odour control method. As part of the condition on permit, WSP engineering consultants were retained to evaluate treatment methods for all primary compost piles to complement the existing biofilters.

The proposed treatment is a misting sytem that will surround the primary composting area and neutralize odours by means of a non toxic solution dispersed into the air. As of the date of issue of this annual report, the COK has not received a formal response from ENV regarding acceptance of this method however the city has funding in place to complete construction in 2020.

Odour Reports

The RBCF maintains records of odour reports from neighbours. The number of odour incidents reported against the facility peaked in 2014 with 130 reports, followed closely by 124 reports in 2009, 121 reports in 2011 and 119 reports in 2015. In 2016, 2017 and 2018, the total number of odour complaints were 71, 61 and 34 respectively.

The total number of odour reports received in 2019 were 16, the fewest number of reports on record since the facility opened. Figure 5 below shows the pronounced decrease in odour reports received over the past six years.

Despite the odour reports received, the RBCF has never exceeded any of the odour threshold levels requiring reporting to ENV, as defined in its Odour Management Plan.

Figure 5. Number of Odour Reports Received by RBCF per Year

Secondary Odour Treatment

Section 3.1.3 of the Permit requires the City to select and implement a secondary odour treatment method for all primary composting zones to complement existing biofilters, for the period of May to October each year. This section was amended to include the mix building, where biosolids are received and mixed.
The City retained WSP engineering consultants to conduct a cost-benefit ratio evaluation of several secondary odour control options, and an implementation plan was developed to trial some lower cost options prior to possibly having to implement a higher cost option, such as enclosing the entire composting site as suggested by proposed changes to OMRR.
The option with the lowest cost to benefit ratio was a perimeter misting system that emits a proprietary non-toxic reagent into the air to oxidize odorous compounds. The City submitted its intention to install the misting system as secondary odour treatment to the ENV Director on October 31st, 2019, for approval as required by Permit.
The proposed misting system will complement improvements to the aeration system, operating practices, and other infrastructure upgrades at the RBCF.

Leachate Management

The RBCF operates the facility in accordance with its 2018 Leachate Management Plan (LMP) that employs best management practices for the collection and treatment of all leachate collected on-site. The planned lining of the RBCF leachate drainage trench and pond, as required by Permit, were started in August 2019 by OK Excavating contractors, under supervision of WSP. The construction works to date are summarized in the 2019 Water Quality Monitoring Report enclosed in Appendix B.

Low-strength Leachate
All authorized works operate entirely on an impervious surface. Runoff is directed to a drainage trench along the site's southwestern boundary and into the Drainage Pond (Figure 1). Water entering the drainage trench and pond consists primarily of stormwater runoff that may contain leachate from the compost, and (to a lesser extent) some irrigation water runoff that is applied regularly to the compost piles in the summer months. As per the 2018 LMP and as required by Section 3.4 of the Permit, the drainage trench and pond were re-built in the summer and autumn of 2019 with a lined impermeable membrane to decrease the potential for leachate infiltration into the environment.

Analytical testing is carried out on the drainage pond water and surrounding water ponds to assess potential infiltration of leachate and impact to the surrounding area. As condition on permit, Golder Associates were contracted to review, report, and make recommendations on the water testing results from the 2019 calendar year (Appendix B).

High-strength Leachate
Higher-strength leachate (richer in organic content) from the primary and secondary aeration cells drains through the aeration channels and is directed to a holding tank. This was regularly hauled by truck off-site for treatment at the North Okanagan Regional District's (NORD) septage facility until August 2019. At that time the septage receiving facility was relocated to the Vernon Water Reclamation Facility where leachate continues to be taken. A summary of the leachate volume produced and hauled off-site is summarized in Figure 5.

Figure 5. High-Strength Leachate volume transported for treatment in 2019

Operational Maintenance

The COK regularly inspected all authorized works and equipment on-site and maintained them in good working order.
The biofilter media in all seven biofilters was topped up in May 2019 and they have continued to perform well.

All equipment was routinely serviced at the prescribed schedules or as needed at the on-site maintenance shop. All service records and activities are available upon request by ENV. An extensive asphalt replacement program was completed in 2019. The interior floor of the mixing building was redone, the west side road was repaved with a concrete gutter was placed in the centre to better direct water to the trench drainage system.

Staffing

The RBCF operates with experienced personnel that include; one Site Supervisor, one Equipment Level II Operator, five Equipment Level IV Operators, one Environmental Level I Technician, and one Environmental Level II Technician, for a total of nine staff. The RBCF staff is supported by a team of COK mechanics, millwrights and electricians and consultants and contractors as needed.

Monitoring and Testing

All sampling of compost, feedstock materials, water and air, conducted on-site is carried out in accordance with the British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples (2013).

Sample analysis is contracted to a third-party accredited laboratory that provides testing in accordance with OMRR and the BC Environmental Laboratory Manual (2015) analytical methods or equivalent. All reports are retained and available upon request by ENV.

Environmental Impact Study

An initial Environmental Impact Study was completed by Golder Associates prior to the initial construction of the facility in 2006, and was further amended in 2010 by MMM Group to coincide with the operational expansion at that time. These two combined documents identify and address environmental impacts of the compost operation to the aquatic environment, terrestrial environment, atmospheric environment, and to vegetative and wildlife species in the surrounding areas. They provide recommendations as to biosolids diversion planning, BMPs, design capacity, leachate collection and treatment, and odour management as to minimize environmental consequences.

The resulting recommendations were addressed in the design and operation plan, carried out through the planning and actions of management and staff, and works inspected on site periodically by ENV staff. Copies of the Environmental Impact Studies are kept on site and are available upon request by ENV. An updated Environmental Impact Study will be commissioned prior to the construction of any significant site upgrades such as a secondary odour control technology if warranted.

Closure

This Annual Report has been prepared to comply with reporting requirements outlined in Section 5.5 of Air Discharge Permit #08537 for the City of Kelowna's Regional Biosolids Composting Facility located at 551 Commonage Road, Vernon, BC.

The City of Kelowna is committed to continual improvement of its practices and policies at the RBCF, to ensure the facility meets all permitting requirements, minimizes its impact on the natural environment and the surrounding community, and provides a safe and sustainable work environment for its workers as it conducts an essential service for the Okanagan communities it serves.

For further details on the content of this report, please contact Kevin Van Vliet, Utility Services Manager by phone at (250) 469-8826 or by email at kvanvliet@kelowna.ca.

Appendix A

Air Discharge Permit

July 12, 2017

Tracking Number: 352392
Authorization Number: 108537

REGISTERED MAIL

CITY OF KELOWNA
1435 WATER STREET
KELOWNA, BC
V1Y 1J4

Dear Permittee:

Enclosed is Permit 108537 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the permit. An annual fee will be determined according to the Permit Fees Regulation.

This permit does not authorize entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorized by the owner of such lands or works. The responsibility for obtaining such authority rests with the permittee. This permit is issued pursuant to the provisions of the *Environmental Management Act* to ensure compliance with Section 120(3) of that statute, which makes it an offence to discharge waste, from a prescribed industry or activity, without proper authorization. It is also the responsibility of the permittee to ensure that all activities conducted under this authorization are carried out with regard to the rights of third parties, and comply with other applicable legislation that may be in force.

This decision may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

Environmental Protection Division
Ministry of Environment
1259 Dalhousie Dr.
Kamloops BC V2C 5Z5
Authorizations - South Region
Telephone: (250) 371-6200
Facsimile: (250) 828-4000

Administration of this permit will be carried out by staff from the Environmental Protection Division's Regional Operations Branch. Plans, data and reports pertinent to the permit are to be submitted by email or electronic transfer to the Director, designated Officer, or as further instructed.

Yours truly,

Luc Lachance, P.Eng
for Director, *Environmental Management Act*
Authorizations - South Region

Enclosure

cc: Environment Canada

MINISTRY OF ENVIRONMENT

PERMIT

108537

Under the Provisions of the Environmental Management Act

City of Kelowna
551 Commonage Road
Vernon, B.C. V1H 1G3

is authorized to discharge contaminants to the air from a composting facility located at 551 Commonage Vernon, British Columbia subject to the requirements listed below. Contravention of any of these requirements is a violation of the *Environmental Management Act* and may lead to prosecution.

Unless otherwise defined in this authorization, terms used in this authorization have the same meaning as those defined in the *Environmental Management Act* and Organic Matter Recycling Regulation.

1. AUTHORIZED DISCHARGES

1.1. Authorized Source

This section applies to the discharge of air contaminants from various areas of the composting facility. The site reference number for this discharge is E307813.

1.1.1. The rate of the discharge is variable.

1.1.2. The authorized discharge period is continuous.

1.1.3. The characteristics of the discharge are that of typical emissions of a biosolids composting facility.

1.1.4. The authorized works are all paved surfaces, the aeration pads, one (1) primary receiving building, one (1) water supply pump house including the pumps, chlorination and filtration apparatus, one (1) drainage pump house, one (1) ECS Aerated Static Pile System comprised of 18 zones for primary composting and 18 zones for secondary composting, four (4) biofilters for primary composting area and

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three (3) biofilters for secondary composting area, related sumps, pipes, holding tanks and related appurtenances.

1.1.5. The Permittee must not operate under this authorization unless the authorized works are complete and fully operational.

1.1.6. The location of the authorized works approximately located as shown on Site Plan attached.

2. GENERAL REQUIREMENTS

2.1. Maintenance of Works and Emergency Procedures

The Permittee must regularly inspect the authorized works and maintain them in good working order. The Permittee must maintain all asphalt surfaces and must repair cracks and significant damages to prevent and avoid leachate infiltration. Records of inspection and maintenance activities must be kept and made available upon request.
In the event of an emergency or condition beyond the control of the Permittee including, but not limited to, unauthorized fires arising from spontaneous combustion or other causes, or the detection of leachate migration outside of onsite confinement, the Permittee must take remedial action to prevent any unauthorized discharges. The Permittee must immediately report the emergency or condition and the remedial action that has and will be taken to the RAPP line (1-877-952-7277, #7272 from mobile phone) or electronically at this link: http://www.env.gov.bc.ca/cos/rapp/form.htm.
The Director may require the Permittee to reduce or suspend operations until corrective steps have been taken to prevent unauthorized discharges.

2.2. Bypasses

The Permittee must not allow any discharge authorized by this authorization to bypass the authorized works, except with the prior written approval of the Director.

2.3. Signage

The Permittee must erect a sign at the main entrance to the site which identifies the following: site name, owner and operator, contact phone number and address, hours of operation, tipping fees (if applicable) and prohibition of hazardous wastes. The lettering on the sign must be such that it is clearly readable from a distance of 3 meters by the public when they approach the entrance of the site.

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2.4. Access Security

The Permittee must provide adequate security for the facility and restrict access to authorized personnel.

2.5. Qualified Professionals

The Permittee must cause a qualified professional to certify that all new works are constructed in accordance with submitted plans and specifications. All documents submitted to the Director by a qualified professional must be signed by the author(s).

2.6. Litter Control

The Permittee must use the best practical means available to prevent the scatter of litter at the site. The Permittee must clean up any litter that may have escaped the site and scattered into the neighbouring property, along access roads, in drainage ditches, along fences, into surrounding trees or elsewhere on the site. The Director may require the Permittee to implement a specified frequency of clean-up and other additional requirements for litter control.

2.7. Vehicle Leaving Site

The Permittee must ensure, before any vehicle transporting compostable materials leaves the site, that the wheels of the vehicle do not contain compostable materials. If tracking of compostable material outside of the facility becomes a problem the Director may require that a wheel rinsing station be installed at the facility.

2.8. Air Quality

The Permittee must suppress odours created within the compost area to the satisfaction of the Director. If air quality becomes a concern, the Director may require the Permittee to implement additional control measures on emission sources.

3. OPERATIONAL REQUIREMENTS

3.1. Compostable Materials

3.1.1. The Permittee is only authorized to process the stabilized municipal sewage sludge, unprocessed and untreated wood residuals and yard waste.

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3.1.2. The Permittee must not receive or process more than 36, 400 wet tonnes of stabilized sewage sludge per year.

3.1.3. Primary Composting Area

The Permittee must select and implement a secondary odour treatment for all primary composting piles to complement the biofilters for the period of May to October of each year. The Permittee must select a secondary odour treatment by October 31, 2018 and submit to the Director for approval. If the selected and approved secondary odour treatment is not implemented by June 30th, 2019, the Permittee will have to use a cover for all primary composting piles from May to October each year.

3.2. Biofiltration Cover

The Permittee must maintain at all times, for the purpose of odour control, a biofiltration cover for all compost piles located in the primary and secondary compost areas, consisting of:

- 0.3 m secondary teardown, or
- 0.3 m oversized material (overs), or
- A blend of secondary teardown and overs, or
- Another covering layer of a type and thickness that is acceptable to the Director.

The Permittee must account for the biofiltration cover when calculating the carbon to nitrogen ratio to ensure that optimal composting conditions are maintained throughout the process. In order for the biofiltration cover to be effective, the Permittee must maintain optimal moisture content in the biofileration material.

3.3. Design and Operating Plan

The Permittee must submit an updated design and operating plan by May 31, 2019. The plan must be prepared by a qualified professional. The plan must describe, but not be limited to, the design, operations, acceptable materials, leachate management, monitoring programs, reporting requirements and performance requirements. In addition, the operating plan must:

3.3.1. Demonstrate that the biofilters are of adequate size and capacity for the facility's design;

3.3.2. Establish a schedule of site-specific maintenance activities for the biofilters;

3.3.3. Describe how records are kept for all maintenance activities performed on site;

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3.3.4. Explain how the biofiltration cover is integrated in the C:N ratio;

3.3.5. Include contingency plans in case of supply shortage (hog, ash) ; and,

3.3.6. Include an asphalt maintenance program, which describes inspection protocols and maintenance activities.

The Permittee must operate the facility in accordance with the design and operating plan. The Director may request additional information with respect to the design and operating plan and specifications that he or she considers necessary for the protection of human health and the environment, and may specify particular concerns or questions that the plans and specifications must address.

3.4. Leachate Management

The Permittee must ensure that all leachate generated from the composting operation, buildings, paved open surface areas, outdoor curing areas, finished compost storage areas, and truck marshalling area is collected and directed to the leachate collection system. The Permittee must maintain all collection channels and catch basins to ensure proper drainage.

The Permittee must select an impermeable containment system to store leachate, or the contact water from the curing areas or other water that may have come in contact with the organic waste or compost. The Permittee must submit the new Leachate Management System Plan to the Director for approval before November 30, 2017. The Permittee must cease to use the drainage trench or the drainage pond after October 31, 2018 to store leachate, or the contact water from the curing areas or other water that may have come in contact with the organic waste unless the drainage trench and the drainage pond are lined with an impermeable liner.

3.5. Odour Management

The Permittee must submit to the Director for approval an updated odour management plan by November 30, 2017. The plan must be prepared by a qualified professional and must do the following:

3.5.1. Identify all odour generating areas including, but not limited to: receiving, mixing, primary composting, curing or secondary composting, screening, leachate collection system, aeration systems, biofilters, grinding and storage.

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3.5.2. Identify appropriate mitigating strategies employed for each area and provide a summary table in the plan.

3.5.3. Identify all parameters and optimal ranges in the compost process needed to limit odour generation. Compost process parameters to be identified include, but are not limited to, feedstock type, bulking materials, bulk density, particle size, carbon to nitrogen ratios, moisture, temperature, oxygen, peak odour times (i.e. Day 3 or 7), pile turning schedules.

3.5.4. Outline all best management practices and emission control technologies aimed at reducing odour generation being employed at the facility.

3.5.5. Identify other best management practices and emission control technologies that could potentially be used on site to further reduce and control odour.

3.5.6. Include an odour monitoring program. The program must describe how odours are monitored on-site and off-site.

3.5.7. Include a complaint management process which includes a complaint form, any investigative actions to be taken and any mitigation actions to be taken.

The Permittee must operate the facility in accordance with the approved odour management plan, and any requirements which the Director may attach to the odour management plan as a condition of approval.

3.6. Change to Plans

The Permittee must keep the design and operating plan up to date and must notify the Director of any changes to the plan within 30 days of the change.

3.7. Closure of the Facility

Before closure of the facility, the Permittee must apply or distribute all compost in accordance with the Organic Matter Recycling Regulation, and all unprocessed organic matter must be removed from the facility and dealt with in accordance with the *Environmental Management Act*.
A final closure plan must be submitted 90 days prior to deactivation of the site to the Director for review and approval. The final closure plan and associated engineered closure works must be compatible with the planned end-use of the compost facility.

3.8. Additional Requirements

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The Permittee must ensure the following requirements are met:

3.8.1. Class A compost must meet the requirements of pathogen reduction processes, vector attraction reduction, pathogen reduction limits, quality criteria, sampling and analysis – protocols and frequency, and record keeping as outlined in the Organic Matter Recycling Regulation.

3.8.2. Biosolids used as feedstock for the production of Class A compost must not exceed the standards for Class B biosolids set out in Column 3 of Schedule 4.

3.8.3. At least half of the compost stored at 551Commonage Road, Vernon, BC must be removed annually from the facility.

3.8.4. The receiving, storage, processing and curing areas of the composting facility must be located on asphalt, concrete or another similar impermeable surface that is capable of withstanding wear and tear from normal operations and that will prevent the release of leachate into the environment.

3.8.5. Residuals from the composting process must be stored so as to prevent vector attraction, and be disposed of on a regular basis in accordance the *Environmental Management Act.*

3.8.6. Residuals that are stored at a composting facility must not at any time exceed 15 cubic meters in total.

4. MONITORING REQUIREMENTS

4.1. Odour emissions

The Permittee must continue to monitor air emissions at the facility and in the surrounding areas using existing e-noses and H2S monitors. The Permittee must monitor odour emissions in accordance with the approved odour management plan and results must be presented and interpreted in the annual report.

4.2. Surface Water Monitoring

The Permittee must continue to implement a surface water monitor program as required in writing by the Director and in accordance with recommendations from a Qualified Professional. The Director may request additional information or changes with respect to the monitoring program based on monitoring results and upon submission and review of the Leachate Management System Plan, required under Section 3.5.

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4.3. Environmental Impact Study

The Permittee must retain on site a copy of the most recently submitted environmental impact study for inspection. The Director may request additional information with respect to the environmental impact study that he or she considers necessary for the protection of human health and the environment, and may specify particular concerns or questions that the impact study must address.

4.4. Air Emissions Review Study

The Permittee must retain the services of a qualified professional to review and analyze all emissions data collected at the facility with e-noses, H_2S monitors and odorous gas measurements. The report must be submitted by March 31, 2018 and must:

4.4.1. Describe odour emissions on-site for each odour generating area;

4.4.2. Describe how odours are migrating off-site and identify all affected areas;

4.4.3. Use quantitative and qualitative units for descriptions;

4.4.4. Include daily, seasonal and annual trends;

4.4.5. Discuss how meteorological conditions effect odour generation and dispersion;

4.4.6. Provide a qualitative assessment of how odours have improved since 2010;

4.4.7. Report on the effectiveness of odour mitigation strategies used at the facility;

4.4.8. Discuss calibration schedule/requirements of the OdoWatch system; and

4.4.9. Make recommendations on how the facility could further reduce its odour emissions.

4.5. Foul Air Study

The Director may request the Permittee to conduct a foul air study or similar study to measure the effectiveness of the facility's odour management plan and to quantify the odours migrating off-site.

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4.6. Sampling Procedures

The Permittee must carry out sampling in accordance with the procedures described in the "British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013", or the most recent edition, or by alternative procedures as authorized by the Director. A copy of the above manual is available on the Ministry web page at: http://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/sampling-methods-quality-assurance/bc-field-sampling-manual

4.7. Analytical Procedures

The Permittee must carry out analyses in accordance with the procedures described in the "British Columbia Laboratory Manual, 2015 ", or the most current edition, or by suitable alternative procedures as authorized by the Director.
A copy of the above manual is available on the Ministry web page at: http://www2.gov.bc.ca/gov/content/environment/research-monitoring-reporting/monitoring/sampling-methods-quality-assurance/bc-environmental-laboratory-manual

5. REPORTING REQUIREMENTS

5.1. Maintenance of Records

The Permittee must maintain all records and plans required by this authorization and produce them for inspection by an officer when requested.

5.2. Electronic Submission

The Permittee must submit all data required to be submitted under this permit by email to the Ministry's Routine Environmental Reporting Submission Mailbox (RERSM) at Envauthorizationsreporting@gov.bc.ca. For guidelines on how to properly name the files and email subject lines or for more information visit the Ministry website: http://www2.gov.bc.ca/gov/content/environment/waste-management/waste-discharge-authorization/data-and-report-submissions/routine-environmental-reporting-submission-mailbox

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5.3. Spill Reporting

The Permittee must immediately report all spills to the environment (as defined in the Spill Reporting Regulation) in accordance with the Spill Reporting Regulation, which among other things, requires notification to the Provincial Emergency Program at 1-800-663-3456.

5.4. Non-Compliance

The Permittee must immediately notify the Director or designate by email at EnvironmentalCompliance@gov.bc.ca of any non-compliance with the requirements of this authorization by the Permittee and take remedial action to remedy any effects of such non-compliance. The Permittee must immediately notify the Director or designate of any non-compliance with the requirements of this Permit and take appropriate remedial action. Written confirmation of all non-compliance events, including available test results is required within 24 hours of the original notification unless otherwise directed by the Director, Environmental Protection.

Within 30 days of the non-compliant event, the Permittee must submit to the Director, Environmental Protection, a written report including, but not necessarily limited to, the following:

(a) all relevant test results related to the noncompliance;
(b) an explanation of the most probable cause(s) of the noncompliance; and
(c) remedial action planned and/or taken to prevent similar noncompliance(s) in the future.

5.5. Annual Reporting

The Permittee must submit a comprehensive annual report to the Director, on or before March 31st of each year for the previous calendar year. The annual report must include but not be limited to:

5.5.1. The type and tonnage of compostable materials received for the preceding calendar year;

5.5.2. The quantity of finished compost transported off site and the amount stored on site at the end of each calendar year;

5.5.3. The results of all monitoring programs as specified in this authorization. The Permittee must ensure that data interpretation and trend analysis, as well as an

evaluation of the impacts of the discharges on the receiving environment in the previous calendar year must be carried out by a qualified professional;

5.5.4. A summary and analysis of all complaints received in the previous calendar year; and

5.5.5. Any improvements made to the facility or operations to reduce and control odour.

6. LICENCE TO PUBLISH DOCUMENTS

6.1. Subject to 6.2, the Permittee authorizes the Province to publish on the Ministry of Environment website the entirety of any Regulatory Document.

6.2. The Province will not publish any information that could not, if it were subject to a request under section 5 of the Freedom of Information and Protection of Privacy Act, be disclosed under that Act.

6.3. The Permittee will indemnify and save harmless the Province and the Province's employees and agents from any claim for infringement of copyright or other intellectual property rights that the Province or any of the Province's employees or agents may sustain, incur, suffer or be put to at any time that arise from the publication of a Regulatory Document.

GLOSSARY

"Foreign matter" means a contaminant that is not readily decomposed during the composting process, and includes demolition waste, metal, glass, plastic, rubber and leather, but does not include silt, sand, rocks or stones, or gravel less than 2.5 centimeters in diameter, or other similar mineral materials naturally found in soil;

"Oversized material" or "overs" means the product resulting from secondary teardown screening which removes the compost particles smaller than 19 mm.

"**Province**" means Her Majesty the Queen in right of British Columbia;

"**Regulatory Document**" means any document that the permittee is required to provide to the Director or the Province pursuant to:

(i) this authorization;

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(ii) any regulation made under the *Environmental Management Act* that regulates the facility described in this authorization or the discharge of waste from that facility; or,

(iii) any order issued under the *Environmental Management Act* directed against the Permittee that is related to the facility described in this authorization or the discharge of waste from that facility;

"Residuals" means material that can't be used in the composting process and includes organic material that can't be composted because it is unauthorized, or fails to meet OMRR standards, or is defined as foreign matter;

"**Secondary teardown"** means unscreened compost that has been processed for 24 to 28 days on the primary zone to achieve process to further reduce pathogens (PFRP) and vector attraction reduction (VAR) requirements, then moved to the secondary composting zone where aeration is continued for an additional 24 to 30 days of curing. The secondary teardown at the end of this process is approximately 56 days old and has met OMRR requirements;

"Stabilized municipal sewage sludge" means sludge resulting from a municipal waste water treatment process or septage treatment process which has been sufficiently treated through biological, thermal or chemical stabilization to allow the sludge to be beneficially recycled.

"Untreated and unprocessed wood residuals" means clean (non-contaminated and untreated) wood from lumber manufacture, including: shavings, sawdust, chips, hog fuel, ground mill ends and land clearing waste which has been ground with the majority of the greenery removed and no soil present but does not include construction and demolition debris;

"Yard waste" means clean and untreated wood waste or non-food vegetative matter resulting from gardening operations, landscaping, and land clearing; yard waste does not include wood waste derived from construction or demolition. Neither human or animal food waste that is diverted from residential, commercial or institutional sources, nor manure, is yard waste.

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SITE PLAN

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Appendix B

Water Quality Report 2019

REPORT

2019 Water Quality Monitoring Report

Regional Biosolids Composting Facility, 551 Commonage Road, Vernon, BC

Submitted to:

City of Kelowna
1435 Water Street
Kelowna, BC
V1Y 1J4

Submitted by:

Golder
590 McKay Avenue, Suite 300
Kelowna, British Columbia,
V1Y 5A8 Canada

1542527-010-R-Rev0

26 March 2020

Distribution List

1 eCopy - City of Kelowna

1 eCopy - Golder Associates Ltd.

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APPENDIX A

CARO Analytical Services, Laboratory Certificates of Analysis (2019)

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) is pleased to provide the City of Kelowna (CoK) with this monitoring report that documents the results of a water quality monitoring program completed in 2019 at the Regional Biosolids Composting Facility (RBCF) located at 551 Commonage Road in Vernon, BC (hereafter referred to as the Site). The monitoring data were collected by CoK personnel and provided to Golder for compiling this report.

It is our understanding that the purpose of the monitoring program is to assess potential leachate infiltration of stormwater runoff and leachate that is generated at the Site. The monitoring program satisfies the requirements of the Ministry of Environment and Climate Change Strategy (MoE) discharge Permit 108537, issued by the MoE to the CoK on 12 July 2017, with regards to implementing a surface water monitoring program at the Site (Section 4.2 of Permit). The monitoring program also addresses recommendations made by the MoE in a letter to the CoK entitled “Response to the Notice of Proposed Expansion of Biosolid Composting Facility”, dated 27 April 2010; and by Golder in subsequent letters and annual monitoring reports prepared for the CoK for submission to the MoE.

This report satisfies the reporting requirements of Permit 108537, including data interpretation and trend analysis and an evaluation of the impacts of discharges on the receiving environment (Section 5.5.3 of Permit).

2.0 BACKGROUND

The RBCF was constructed in 2006 and is located on Commonage Road in Vernon, BC (Figures 1 and 2). The Site composts wastewater treatment plant biosolid material and currently consists of an administration building, biosolids receiving building, a mixing building, primary and secondary aeration cells, and a compost curing area. An expansion of the facility and facility upgrades were completed in 2010, at which time the entire composting curing area was paved. Prior to the construction of the RBCF, a septage disposal facility was operated at the Site by the City of Vernon (CoV) and North Okanagan Regional District (NORD).

The Site is surrounded primarily by undeveloped and agricultural land. Surface water bodies in close proximity to the Site include the following (refer to Figures 1 and 2):

- Drainage Pond: located approximately 100 m west of the RBFC, between the Site and Commonage Road, and used to store stormwater runoff generated at the Site.
- Rose’s Pond: located approximately 200 m northwest of the RBFC (and approximately 100 m northwest of the Drainage Pond), on the northwest side of Commonage Road.
- Davidson Pond: a privately-owned pond on the Davidson Property, located approximately 100 m south of the RBFC (and approximately 200 m south and southwest of the Drainage Pond).

Our understanding of the Site operations is as follows: stormwater runoff generated at the Site is directed towards a drainage trench along the Site’s south-western boundary, and then gravity-fed into the Drainage Pond (Figure 2). Water entering the drainage trench and Drainage Pond consists primarily of stormwater that may contain leachate from the compost material stored on the curing pads; and potentially irrigation water runoff, as water is regularly added to the compost material, particularly in the hot summer months. Leachate from the primary and secondary aeration cells at the Site is directed to a holding tank and then truck-hauled for treatment at NORD’s septage facility located at 1700 Polson Drive, Vernon BC, which then discharges into the CoV’s Water Reclamation Centre located at 2100 43rd Street, Vernon BC. In 2019, leachate was hauled to NORD’s septage

facility until August 2020. At that time, the septage facility closed, and septage was then taken to a receiving area at CoV's Water Reclamation Centre for the remainder of 2019.

In the summer months, treated (chlorinated) effluent from the CoV's MacKay Reservoir (located approximately 2 km west-southwest of the Site) is periodically used to flush the drainage trench; in the winter months, effluent on route to the MacKay Reservoir from CoV's Water Reclamation Centre is diverted and treated (filtered and/or chlorinated) at the Site, then used to flush the drainage trench. When the water level at the Drainage Pond is near capacity, water is pumped to the MacKay Reservoir. The volume of water pumped out of the Drainage Pond in 2019 (prior to construction activities; see below) was 64,718 m^3. No water was pumped out of the Drainage Pond after 28 August 2019.

In 2009, the CoK retained Golder to complete an initial review of the Site, which was documented in the report titled "*Interim Report on Leachate Drainage Pond, Kelowna – Vernon Compost Facility*", dated 17 February 2010. The purpose of the report was to compile local and regional data on the hydrogeology in the area, monitor water quality, and monitor drainage and pond water levels to assess potential infiltration of leachate. The 2010 report indicated that the RBFC and the Drainage Pond are located on dense glacial tills that inhibit water infiltration into the groundwater aquifer located within the underlying bedrock. It was inferred that water infiltrating into the ground could migrate along the top of the glacial till and may eventually discharge into local ponds (i.e., Davidson Pond and Rose's Pond), with a small component of infiltration migrating vertically through the till into deeper bedrock fractures.

Between 2010 and 2019, the CoK conducted monitoring programs at the Drainage Pond, Davidson Pond and Rose's Pond (except in 2013 and 2016), to assess whether water at the Drainage Pond may be infiltrating into the ground and discharging into Rose's Pond and/or Davidson Pond. The results of these monitoring programs have been documented in various reports prepared by Golder and submitted to the CoK.

Pursuant to the 9 June 2016 amendments to the Organic Matter Recycling Regulation, Permit 108537 was issued by the MoE to the CoK on 12 July 2017 authorizing the discharge of contaminants to the air from the Site, specifying surface water monitoring and reporting requirements at the Site, and requiring that the Drainage Pond and drainage trench be lined by 31 October 2019.

In early 2018, the CoK installed silt fencing around the Drainage Pond to support future construction works. In accordance with a wildlife permit issued to the CoK for the future construction works, the silt fencing was installed to prevent entry of turtles into the pond so that no additional turtles will be present in the pond when it is drained and re-lined later in 2019 (personnel communication, M. Browne; 12 February 2019). Between May and July 2019, the COK implemented a turtle and wildlife removal program from the Drainage Pond in preparation for the construction works. The turtle and wildlife removal program was completed by Associated Environmental Consultants Inc. of Vernon BC; and an associated report was submitted separately to the Ministry of Forests, Lands and Natural Resource Operations.

In August of 2019, construction works commenced at the Site under the supervision of WSP and included re-lining of the Drainage Pond and the drainage trench along the Site's south-western boundary. The construction works were summarized by WSP and the COK, as follows:

- The Drainage Pond was dewatered, and accumulated sludge excavated and removed until native material (clay) was exposed. The COK noted that the native material at the excavated base of the Drainage Pond consisted primarily of homogeneous clay with rounded cobbles. The initial construction plan was to place imported sand on top of the excavated base of the Drainage Pond prior to installation of the liner; however, given the native materials that were encountered, the use of imported sand was reportedly not warranted.

During the excavation activities, groundwater was observed to seep into the excavation from the southeast (at an unknown depth). A french drain was installed to aid in the drainage of groundwater from the base of the excavation. A total of 4,260 m² of non-woven geotextile underneath an LDPE liner was then installed at the base of the excavation (with the french drain remaining in place). The liner was an Enviroliner 6040X liner manufactured by Layfield Group Limited. The liner covered the entire area of the Drainage Pond up to the top of bank on all four sides.

- The drainage trench was dewatered, and accumulated sludge excavated and removed until the existing concrete base was exposed. All concrete was removed and vegetation on the slopes around the drainage trench stripped and disposed of at an off-Site location. The native material beneath the concrete was inferred to be glacial till, and consisted of a combination of sand, gravels, cobbles and clay. A total of 640 m² of non-woven geotextile underneath an LDPE liner was then installed. The liner was an Enviroliner 6040X liner manufactured by Layfield Group Limited. The liner covered the entire area of the Drainage Trench up to the top of bank on all four sides.
- Integrity testing of all seams, joints, and protrusion welds within both the Drainage Pond and drainage trench was completed by the liner supplier and installer prior to reintroducing water into the pond/trench. WSP reported that all testing passed.
- Since construction commenced and until the end of 2019, there was no diversion of treated effluent from the CoV's MacKay Reservoir or effluent from the CoV's Water Reclamation Centre to the Site.

3.0 2019 SCOPE OF WORK

The scope of work for the 2019 annual water quality monitoring program is provided below. The scope of work was based on Golder's recommendations outlined in our report entitled "*2018 Water Quality Monitoring Report, Regional Biosolids Composting Facility, 551 Commonage Road, Vernon, BC*", dated 26 March 2019. The field portion of the scope of work was completed by CoK personnel:

- Collect monthly samples between May and November of 2019 at the Drainage Pond and at the neighbouring Rose's Pond and Davidson Pond for analysis of potential indicators of biosolids (i.e., septage) contaminants including:
  - Phosphorous (including ortho-phosphate), chloride, ammonia, nitrate, nitrite, total kjeldahl nitrogen and total nitrogen.
  - Biological oxygen demand (BOD) and chemical oxygen demand (COD).
  - Metals (total and dissolved).
  - pH, total dissolved solids (TDS), total suspended solids (TSS) and hardness.
  - Microbiological parameters (total coliforms and Escherichia coli [E. coli].
- Field measurement of pH and temperature of the water samples during sample collection.
- Review of analytical results.

The recommendations for 2019 included an assessment of evaporation from the Drainage Pond to evaluate the potential of infiltration of water from the Drainage Pond into the ground surface. However, as construction activities to re-line the Drainage Pond began in 2019, this task was not completed.

Based on the above scope of work, Golder has prepared this monitoring report for submission to the MoE by the CoK. The monitoring report provides discussions on:

- Water level monitoring and water quality results for the Drainage Pond.
- Water quality results for Rose's Pond and Davidson Pond, including potential impacts from the Drainage Pond, if any.
- Monitoring and sampling recommendations for the 2020 monitoring program.

4.0 SURFACE WATER ASSESSMENT CRITERIA

Pond water quality data were tabulated by Golder and compared to the following standards and/or criteria:

- Freshwater aquatic life (AW) standards in the BC Contaminated Sites Regulation (CSR) (B.C. Reg. 375/96; last amended 24 January 2019 by B.C. Reg. 13/2019).
- Drinking water (DW) standards in the CSR.
- "*British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture, Summary Report",* dated August 2019 (BCWQG) for freshwater aquatic life (AW) criteria. Where applicable, the most conservative of the long-term average and short-term maximum guidelines are referenced.
- "*Working Water Quality Guidelines for British Columbia (June 2017)"* for freshwater aquatic life (AW) criteria.

According to BC Technical Guidance Document 15: Concentration Limits for the Protection of Aquatic Receiving Environments (Version 2.0; 1 November 2017):

- For maintained watercourses, the CSR AW standards are applicable to surface water, porewater, and groundwater.
- Surface water in aquatic receiving environments other than maintained watercourses should be evaluated against the BCWQG.

For the purposes of this assessment, the Drainage Pond is considered to be a maintained watercourse; and as there is no overland flow from the Drainage Pond, and potential contaminants can only migrate through groundwater to other surface water bodies or drinking water wells, the water quality data from the Drainage Pond has been compared to the CSR AW and DW standards. Rose's Pond and Davidson Pond are considered to be aquatic receiving environments, and water quality data for these two ponds have been compared to the BCWQG, and conservatively against the CSR AW and DW standards.

For the comparison of ammonia concentrations, the BCWQG AW guideline for ammonia is pH and temperature dependent and was derived using the pH and temperature measured in the field during collection of each water sample. The CSR AW standard for ammonia is pH dependent and assumes a temperature of 10 degrees Celsius; the CSR AW standard for ammonia was derived using the field pH.

For the comparison of metals concentrations, the total metals (unfiltered) concentrations in the samples were used for comparison to the CSR standards and the BCWQG AW guidelines, in accordance with standard practice for surface water samples. Total metals parameter exceedances of the applicable criteria are shown in tables and discussed in the body of this report. For inclusiveness, the dissolved metals (filtered) concentrations were also compared to the CSR standards and the BCWQG AW guidelines; however, while dissolved metals parameter exceedances are shown in the applicable tables, they are not further discussed in the body of this report.

In late 2019, the BCWQG AW guideline for copper changed from a total copper guideline that was hardness dependent to long-term chronic and short-term acute dissolved copper guidelines that are dependent on the specific chemistry of the water (including, temperature, dissolved organ carbon [DOC], pH and hardness) and are calculated using the Biotic Ligand Model (BLM) software program (MoE, 2019[1]). As the BCWQG AW guidelines for dissolved copper only became effective towards the end of the 2019 water quality monitoring program at the Site, one of the required parameters for calculating the guidelines (i.e., DOC) was not included as an analytical parameter in water samples collected at Davidson and Rose's Ponds in 2019. Therefore, site-specific BCWQG AW guidelines for dissolved copper cannot be calculated for the Davidson and Rose's Pond samples. It is recommended that in 2020, DOC be added to the list of analytical parameters for the samples at Davidson Pond and Rose's Pond.

4.1 Regional Background Concentrations

BC MoE issued Technical Bulletin #3 *"Regional Background Concentrations for Select Inorganic Substances in Groundwater*" (24 September 2018) which establishes regional background concentration estimates for arsenic, lithium, selenium, vanadium, and uranium in groundwater for several regions in British Columbia, including the Thompson-Okanagan. Under Technical Bulletin #3, groundwater substances at concentrations exceeding the applicable DW and/or AW standard, but less than the local regional background concentrations, would not be considered "contaminated" under Section 11 (3) of the BC Contaminated Sites Regulation (CSR).

As per Technical Bulletin #3, the Site and surrounding area fall outside of the geographic boundaries of the Thompson-Okanagan region. Furthermore, regional background concentrations can only be applied to groundwater obtained from a non-consolidated overburden aquifer, not a bedrock aquifer; and regional background concentrations must only be applied to groundwater, not surface water. Thus, without further assessment, the regional background concentration estimates may not be applicable to water quality at the Drainage Pond, Davidson Pond and Rose's Pond.

As discussed below, arsenic, selenium, vanadium, and uranium concentrations measured at the Drainage Pond, Davidson Pond and Rose's Pond in 2019 did not exceed the applicable CSR DW or AW standards; however, lithium concentrations measured at the Drainage Pond, Davidson Pond and Rose's Pond in 2019 exceeded the applicable CSR DW standard. Based on our experience, elevated lithium concentrations in groundwater are widespread in the Okanagan Valley and the elevated lithium concentrations at the Site and surrounding area may

[1] B.C. Ministry of Environment and Climate Change Strategy (MoE), 2019. Copper Water Quality Guideline for the Protection of Freshwater Aquatic Life – Technical Report. Water Quality Guideline Series No. WQG-03-1. Prov. B.C., Victoria B.C.

be related to regional background conditions. Thus, for the 2019 annual water quality monitoring report, lithium concentrations at the Drainage Pond, Davidson Pond and Rose's Pond have been compared to the BC CSR DW and AW standard, and for comparison, to the regional background concentration for lithium.

Technical Bulletin #3 also states that a cobalt interim background groundwater estimate of 20 µg/L (or, 0.020 mg/L) may be used at all sites in British Columbia. The cobalt interim background groundwater estimate has been applied to the water quality data.

5.0 FIELD MONITORING

5.1 Field Monitoring

Field monitoring in 2019 was conducted between May and November 2019 and included the following tasks:

- Sampling of the Drainage Pond in May, June and July 2019 (for a total of three samples) and analysis of samples for septage contaminants listed under Section 3.0.
- Sampling of Davidson Pond and Rose's Pond monthly in May through July 2019 and September through November 2019 (for a total of six samples from each location) and analysis of samples for septage contaminants listed under Section 3.0.
- Collection of a duplicate water sample from Rose's Pond in September 2019 for quality assurance/quality control purposes.
- Measuring the pH and temperature (in degrees Celsius) of pond water during sample collection, as well as general comments, including wildlife observations, and ambient temperature.

5.2 Field Sampling Methods

CoK staff collected all water levels and water samples described in this report. Grab samples were collected from below the water surface near the shoreline of each pond and placed in bottles supplied by CARO Analytical Services (CARO) of Kelowna, BC. The collected samples were delivered to CARO for analysis. The CARO analytical reports were provided to Golder by the CoK. During each sampling event, CoK staff measured the pH and temperature of the pond water. CoK staff have indicated that the pH was measured at their on-Site lab within an hour or two of sampling (and that future pH measurements will be made at the time of sample collection); and that the meter was calibrated with each use and calibration records are kept on file.

Golder tabulated the 2019 data to allow for an assessment of the water quality results; tabulated data are provided in this report along with the data from 2014 through 2018.

6.0 RESULTS

6.1 Drainage Pond Quality

A summary of the analytical results for water samples collected from the Drainage Pond in 2019 is presented in Table 1, attached. The CARO analytical reports (laboratory report numbers 9052444-02, 9061376-02 and 9072356-02) are included in Appendix A.

The following is a summary of the 2019 analytical results. Results were compared to the CSR AW and DW standards, where applicable.

- Ammonia (as N) concentrations exceeded the applicable CSR AW standard during the May and July sampling events (there is no CSR DW standard for ammonia as N). The ammonia (as N) concentration measured in July (24.6 mg/L) was the highest concentration measured at the Drainage Pond between 2014 and 2019.
- Total cobalt concentrations exceeded the CSR DW standard of 0.001 mg/L during the July sampling event; however, were below the regional background concentration of 0.020 mg/L. Total cobalt concentrations were below the CSR AW standard of 0.04 mg/L during the May through July sampling events.
- Total lithium concentrations exceeded the CSR DW standard of 0.008 mg/L during the May through July sampling events (there is no CSR AW standard for lithium). Should the regional background concentration for lithium of 0.096 mg/L apply at the Site, lithium concentrations at the Drainage Pond would be below the regional background concentration for lithium.
- Concentrations of total coliforms and E. coli in the samples collected from the Drainage Pond were the lowest in June, with most probable number (mpn) per 100 mL of 11,000 for total coliforms and 15 mpn / 100 mL for E. coli. The highest concentration of total coliforms was measured in July as >110,000 mpn / 100 mL; and the highest concentration of E. coli was measured in July as 29,000 mpn / 100 mL.
- All other concentrations of nutrients parameters, chloride, and total metals in the Drainage Pond were below the applicable CSR AW and DW standards.

The following is a summary of notable trends observed between 2014 and 2019 at the Drainage Pond.

- As in previous years, elevated concentrations were generally apparent during the spring and summer (May through July) sampling events; however, in 2019 no additional data was collected past July.
- Concentrations of ammonia (as N), BOD, COD and most total and dissolved metal parameters measured in 2019 (i.e., arsenic, cobalt, copper, phosphorus, selenium) were generally similar to concentrations measured in 2018, and generally higher than concentrations measured in 2014 through 2017.
- Ammonia (as N) showed an increasing trend in 2019. Ammonia (as N) concentration trends at the Drainage Pond are shown in Figure A below.
- Chloride concentrations measured in 2019 were generally within the range of concentrations measured between 2014 and 2018. Chloride concentration trends at the Drainage Pond are shown in Figure A below.

Figure A: Ammonia (as N) and Chloride Concentration Trends in Water at the Drainage Pond (2014-2019 data)

6.2 Davidson Pond and Rose's Pond Quality

A summary of the analytical results for water samples collected from the neighboring Davidson and Rose's Ponds in 2019 is presented in Table 2, attached. The CARO analytical reports (laboratory report numbers for Davidson Pond: 9052444-03, 9061376-03, 9072356-03, 9100009-02, N000923-01 and 9111055-02; and for Rose's Pond: 9052444-01, 9061376-01, 9072356-01, 900009-01, 9100009-03, N000923-01 and 9111055-01) are included in Appendix A.

The following is a summary of the 2019 analytical results. Results were compared to the BCWQG AW guidelines, CSR AW, and CSR DW standards, where applicable.

6.2.1 Davidson Pond

Concentrations of most parameters were less than the BCWQG AW guidelines and CSR AW and DW standards during the six sampling events in 2019, except for the following parameters:

- Chloride concentrations exceeded the long-term average BCWQG AW guideline and the CSR DW standard, but were less than the short-term maximum BCWQG AW guideline and the CSR AW standard, during all sampling events.
- Total lithium concentrations exceeded the CSR DW standard during all sampling events. Should the regional background concentration for lithium of 0.096 mg/L apply at the Site, lithium concentrations at Davidson Pond would be below the regional background concentration for lithium.
- Total sodium concentrations exceeded the CSR DW standard of 200 mg/L during all sampling events. There are no BCWQG AW or CSR AW criteria for sodium.
- The total phosphorous concentrations in May, June, September, October and November exceeded the BCWQG AW working guideline of 0.015 mg/L. The reported analytical detection limit for total phosphorus exceeded the BCWQG AW guideline during the July sampling event. There is no CRS AW and CSR DW standard for total phosphorous.

The following is a summary of notable trends observed between 2014 and 2019 at Davidson Pond.

- Ammonia (as N) concentrations measured in May through November 2019 were generally higher than previous concentrations measured at Davidson Pond during the same months between 2014 and 2018.
- Metal parameter concentrations measured in 2019 were generally within the range of concentrations measured in 2014 through 2018.
- Concentrations of total coliforms in the samples collected from Davidson Pond were generally higher than in 2018, but generally lower than those measured in 2014 through 2017; E. coli concentrations were variable, but within the range of those measured in 2014 through 2018.

Ammonia (as N), chloride and total sodium concentration trends are provided in Figure B below. A slight increase in trend is noted in ammonia (as N) and sodium concentrations between 2014 and 2019.

6.2.2 Rose's Pond

Concentrations of most parameters were less than the BCWQG AW guidelines and CSR AW and DW standards during the six-month sampling events in 2019, except for the following parameters:

- Chloride concentrations exceeded the long-term average BCWQG AW guideline and the CSR DW standard, but were less than the short-term maximum BCWQG AW guideline and the CSR AW standard, during all sampling events.
- Total lithium concentrations exceeded the CSR DW standard during all sampling events. Should the regional background concentration for lithium of 0.096 mg/L apply at the Site, lithium concentrations at Rose's Pond would be below the regional background concentration for lithium.
- The total phosphorous concentration in June and November exceeded the BCWQG AW working guideline of 0.015 mg/L. The reported analytical detection limit for total phosphorus exceeded the BCWQG AW guideline during the May, July, September and October sampling events. There is no CRS AW and CSR DW standard for total phosphorous.
- Total sodium concentrations exceeded the CSR DW standard during all sampling events.

The following is a summary of notable trends observed between 2014 and 2019 at Rose's Pond.

- Ammonia (as N) concentrations measured in May through November 2019 exhibited a slight increase in trend with the peak concentration measured in July 2019.
- The remaining parameter concentrations measured in 2019 were generally within the range of concentrations measured in 2014 through 2019.
- Concentrations of total coliforms in the samples collected from Rose's Pond were generally higher than those measured in 2018, but lower than those measured in 2014 through 2017; and E. coli concentrations were within the range of those measured in 2014 through 2018.

Ammonia (as N), chloride and total sodium concentration trends are provided in Figure B below. An overall decrease in trends is noted in chloride and total sodium concentrations between 2014 and 2019.

Figure B: Ammonia (as N), Chloride and Total Sodium Concentration Trends in Water at Davidson's Pond and Rose's Pond (2014-2019 data).

6.3 Quality Assurance/Quality Control

The Relative Percent Difference (RPD) between field duplicate sample results was used to assess duplicate sample data. The RPD is a measure of the variability between two outcomes from the same procedure or process and is calculated by:

$$\left|\left(\frac{(x1 - x2)}{average\ (x1, x2)}\right)\right| x100$$

where: x1 is the original sample result and x2 is the field duplicate result.

When the concentration in a sample was less than five times the reported analytical detection limit (RADL), the difference factor (DF) was calculated. The DF is also a measure of the variability between two outcomes from the same procedure or process and is calculated by:

$$\left|\left(\frac{(x1 - x2)}{RADL}\right)\right|$$

where: x1 is the original sample result, x2 is the blind field duplicate result and RADL is the reported analytical detection limit.

For this project, a target RPD of less than 20% was set for all parameters. For parameters with concentrations less than five times the RADL, a difference factor of less than two was set.

The duplicate analyses for groundwater water samples are provided in Table 3, attached.

In generally, the RPD values were less than the 20% criteria, with the exception of nitrate (RPD of 30%), total coliforms (RPD of 87%), E. coli (RPD of 87%), total aluminum (RPD of 50%) and total iron (43%). Where calculated, DF values were less than two.

Given that the majority of the nutrient, total metals and dissolved metals parameters met the RPD criteria of 20%, it is possible that nitrate, total coliforms, E. coli, total aluminum and total iron concentrations are naturally variable within Rose's Pond.

7.0 DISCUSSION

The concentrations of typical septage contaminants at the Drainage Pond (i.e., ammonia, BOD, COD and phosphorus), and most total and dissolved metal parameters, were generally similar to those measured in 2018 and higher than those measured in 2014 through 2017. The ammonia (as N) concentrations at the Drainage Pond exceeded the CSR AW standard in May and July 2019; and the July 2019 ammonia (as N) concentration was the highest measured concentration at the Drainage Pond to date. The ammonia (as N) concentrations at the Drainage Pond in May, June and July of 2019 were much greater than the nitrate (as N) and nitrite (as N) concentrations, and, as in previous years, indicative that little nitrification is occurring. The total nitrogen concentrations at the Drainage Pond were greater than the combined ammonia, nitrate and nitrite concentrations (as in previous years), indicative that a portion of the total nitrogen in the water samples was organic nitrogen.

At Davidson Pond and Rose's Pond, ammonia (as N) concentrations were slightly higher in 2019 than those measured in 2014 through 2018; however, the concentrations of remaining typical septage contaminants (BOD, COD, nitrate, nitrite, total nitrogen and phosphorus) were generally within the range of concentrations previously measured in 2014 through 2018.

CoK personnel observed waterfowl at the Drainage Pond, Davidson Pond, and Rose's Pond; and have previously noted that cattle have access to Davidson's Pond. It is likely that wildlife using these ponds have contributed to the elevated total coliform and E. coli counts measured at the ponds. As these parameters were generally higher at the Drainage Pond than at Davidson Pond and Rose's Pond, it is possible that elevated total coliform and E. coli counts at the Drainage Pond may also be due to Site runoff into the Drainage Pond.

As in 2014 through 2018, samples collected during the 2019 sampling events indicated that biosolids (i.e., septage) parameter concentrations were higher at the Drainage Pond than at Davidson Pond and Rose's Pond, as follows:

- Total nitrogen concentrations were up to approximately 20 times greater at the Drainage Pond than at Davidson Pond and Rose's Pond.
- BOD concentrations were generally higher (up to approximately 10 times greater) at the Drainage Pond than at Davidson Pond and Rose's Pond.
- Phosphorus concentrations were generally higher (up to approximately two orders of magnitude greater) at the Drainage Pond than at Davidson Pond and Rose's Pond.
- Certain metals parameters were higher at the Drainage Pond than at Davidson Pond and Rose's Pond (including aluminum, barium, boron, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, silicon and zinc).

As in 2014 through 2018, samples collected during the 2019 sampling events indicated that certain inorganic and metals parameters were higher at Davidson Pond and Rose's Pond relative to the Drainage Pond, as follows:

- Chloride concentrations were approximately three times higher at Davidson Pond, and approximately three to four times higher at Rose's Pond, than at the Drainage Pond.

- Sodium concentrations were approximately five to six times higher at Davidson Pond, and approximately seven to eight times higher at Rose's Pond, than at the Drainage Pond.
- Lithium concentrations were approximately three to four times higher at Davidson Pond and Rose's Pond than at the Drainage Pond.
- Magnesium concentrations were approximately four to five times higher at Davidson Pond, and approximately two orders of magnitude higher at Rose's Pond, than at the Drainage Pond.
- Potassium concentrations were up to approximately two times higher at Davidson Pond, and up to approximately three times higher at Rose's Pond, than at the Drainage Pond.
- Sulphur concentrations were up to approximately 10 times higher at Davidson Pond, and up to approximately 20 times higher at Rose's Pond, than at the Drainage Pond.
- The elevated chloride and sodium (and possibly magnesium and potassium) concentrations at Rose's Pond and Davidson Pond may be due, in part, to the application of road salt on Commonage Road.

At this time, the regional background concentration for lithium may not be applicable at the Site; and further assessment may be required to confirm the applicability of the regional background concentrations at the Site. Based on our experience, elevated lithium concentrations in groundwater are widespread in the Okanagan Valley and the elevated lithium concentrations at the Site and surrounding area may be related to regional background conditions. Should the regional background concentration for lithium of 0.096 mg/L apply at the Site, lithium concentrations at the Drainage Pond, Davidson Pond and Rose's Pond would be below the regional background concentration for lithium.

8.0 CONCLUSIONS

Any water potentially infiltrating from the Drainage Pond may be considered a source of contamination for groundwater, particularly with respect to ammonia (as N). However, it has been noted in previous monitoring events that minimal infiltration is inferred to be occurring from the Drainage Pond, as it has been assessed that evaporation from the Drainage Pond accounts for most of the losses within the Drainage Pond compared to infiltration.

Given that minimal infiltration is inferred to be occurring from the Drainage Pond, and as exceedances and elevated parameter concentrations noted at one pond(s) were not noted at the other pond(s), the water quality at Davidson Pond and Rose's Pond does not appear to be adversely impacted by water that may be infiltrating and migrating from the Drainage Pond.

The City of Kelowna should confirm that the quality of the water pumped from the Drainage Pond to the CoV's Mackay Reservoir is acceptable, particularly with respect to ammonia concentrations.

With the completion of the re-lining of the Drainage Pond and drainage trench, the potential for water infiltration from the Drainage Pond and drainage trench into the ground surface has been further reduced.

9.0 RECOMMENDATIONS FOR 2020

As per Section 4.2. *Surface Water Monitoring* of discharge Permit 108537, the City is required to continue to implement a surface water monitoring program at the Site, in accordance with recommendations from a Qualified Professional.

Continued monthly monitoring is recommended at the Drainage Pond and at the neighboring Davidson Pond and Rose's Pond between the months of April and November (or, when the pond is not frozen) in 2020, as follows:

- Collecting and analyzing samples for potential septage contaminants including:
  - Phosphorous (including ortho-phosphate), chloride, ammonia, nitrate, nitrite, and total kjeldahl nitrogen.
  - BOD and COD.
  - DOC, for calculating the applicable BCWQG AW dissolved copper guidelines.
  - Metals (total and dissolved).
  - pH, total dissolved solids (TDS), total suspended solids (TSS) and hardness.
- The City of Kelowna should request that the laboratory use lower analytical detection limits for phosphorus (i.e., <0.005 mg/L) for reasonable comparison of results with the applicable guidelines.
- Samples should be taken such that minimal to no suspended particles or disturbed sediment are collected in the sampling bottles, and that no surface matter (i.e., algae) is inadvertently collected.
- The field pH and temperature of the water samples should be measured immediately at the time of collection with a properly-calibrated meter by CoK personnel during the collection of pond water samples so that the suitability of the ammonia guidelines can be assessed. Often laboratory-measured pH can be slightly different than field pH, due to geochemical changes in the sample bottle during transport. The field pH and temperature will be used in the assessment of pond water quality and in determining the appropriate criteria to use in the comparison of analytical ammonia results. Calibration records for the meter should be retained on file by the CoK.
- Continue to implement a QA/QC program to minimize errors in the field and obtain accurate monitoring results. This may include: i) collection of a field duplicate sample from a select pond during each sampling event; ii) use of dedicated monitoring and sampling sheets during the collection of water samples (refer to next bullet); iii) review of analytical results soon after receipt; and iv) contacting the analytical laboratory should anomalous analytical results be identified to determine whether anomalous results are laboratory-related.
- Dedicated monitoring and sampling sheets should be completed during sampling events at each location and reviewed in conjunction with the analytical water quality data. Field notes on the sheets should include: sample location, date and time of sample collection, weather, surface water conditions, approximate pond levels at the time of sample collection, the approximate depth that each sample is collected (from top of water surface), equipment used for sampling, field (pH and temperature) parameter measurements, apparent sample turbidity, type and size of bottles used, and whether the sample was preserved (including preservative type) and/or field filtered.
- Develop a program for monitoring potential leakage from the new liners at the Drainage Pond and drainage trench. It is understood that the COK has a monitoring program in place to assess the integrity of the pavement across the composting curing area.

- Operational changes, significant precipitation events, or other activities that may have a potential affect on the surface water quality at the Site (i.e., an increase, decrease or change in the amount of stormwater runoff or in the volume of water used to flush the drainage trench) should be noted during the monthly sampling events in 2020.
- Compile an annual report to the City of Kelowna with the comparison of surface water sample results to applicable criteria.

10.0 LIMITATIONS AND USE OF REPORT

This report was prepared for the exclusive use of the City of Kelowna and MoE. The findings, interpretations, and conclusions are based solely on the Site conditions during the sampling events. The data presented in this report represent the leachate quality conditions at the sampling locations tested. Leachate conditions may vary with location, depth, sampling, methodology, analytical techniques, and other factors.

Except where specifically stated to the contrary, the information contained in this report (including reports, information, and data) was provided to Golder by others and has not been independently verified or otherwise examined by Golder to determine its accuracy or completeness. Golder has relied in good faith on this information and does not accept the responsibility of any deficiency, misstatements or inaccuracies contained in the report as a result of omissions, misinterpretation and/or fraudulent acts of the persons interviewed or contacted, or errors or omissions in the reviewed documentation.

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The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

If new information is discovered during future work, including excavations, borings or other studies, Golder should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required.

11.0 CLOSURE

We trust that this report provides the information you require at this time. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Golder Associates Ltd.

PROFESSIONAL PROVINCE OF P. ATHANASOPOULOS # 35943 BRITISH COLUMBIA GEOSCIENTIST

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Table 1: 2014 - 2018 Results of Water Analyses - Drainage Pond
City of Kelowna-Vernon Biosolids Facility
511 Commonage Road, Vernon, BC

Location					Drainage Pond																		
ALS and CARO Laboratory ID	Aquatic Life		Drinking		L1440745-1	L1462088-1	L1502217-1	L1515479-1	L1532630-1	L1547862-3	L1625288-1	L1645255-1	L1656492-1	L1669705-1	L1684336-1	L1698669-1	L1742616-1	L1752610-1	L1763882-1	L1777367-1	L1794599-1	L1811981-1	L1832582-1
Date	CSR-AW[(1)] (freshwater)	Notes	Water CSR-DW[(1)]	Notes	07-Apr-14	28-May-14	13-Aug-14	09-Sep-14	14-Oct-14	17-Nov-14	10-Jun-15	20-Jul-15	11-Aug-15	7-Sep-15	6-Oct-15	4-Nov-15	8-Mar-16	05-Apr-16	03-May-16	01-Jun-16	05-Jul-16	10-Aug-16	21-Sep-16
General Parameters																							
Temperature (field)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (field)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH (laboratory)					9.13	8.15	9.21	8.25	8.50	8.11	9.44	8.12	8.67	8.22	8.19	7.57	7.82	8.19	9.11	8.17	8.03	8.19	8.24
conductivity (laboratory)					1460	949	922	977	928	918	883	1250	944	847	987	769	1670	1710	1050	992	919	961	962
total suspended solids (TSS)					43.9	4.6	46.9	9.2	35.7	7.4	37.8	31.0	27.6	34.0	16.0	52.4	21.5	32.1	22.4	7.5	24.8	5.0	<3.0
biochemical oxygen demand (5-day BOD)					25.9	3.8	27.7	6.0	13.5	<2.0	13.1	41.1	13.2	13.1	6.1	15.5	12.8	13.6	7.3	3.7	10.8	<2.0	6.2
chemical oxygen demand					118	59	155	92	93	57	109	430	92	88	102	195	158	86	60	37	102	55	75
hardness as CaCO3					576	247	233	246	242	217	239	260	232	199	227	157	575	592	305	247	225	234	222
Inorganics																							
ammonia (total; as N)	1.31 - 18.5	pH/T			**1.97***	2.06	0.0990	**5.76***	**2.79***	1.35	0.0265	**19.7***	0.192	**5.13***	**3.94***	8.68	**13.9***	**4.98***	0.0232	1.55	1.84	0.965	2.33
nitrate (as N)	400		10		1.35	0.540	0.068	0.118	0.997	2.75	<0.010	<0.025	0.568	0.172	0.090	0.222	6.84	5.82	0.029	0.521	0.408	0.533	0.336
nitrite (as N)	0.2 - 2	Cl	1		0.127	0.032	0.034	0.094	0.085	0.077	<0.0020	<0.0050	0.226	0.109	0.0160	0.678	0.513	0.229	0.0886	0.0606	0.159	0.127	0.211
total nitrogen					8.76	4.31	7.02	8.56	7.43	5.54	4.68	36.6	5.02	9.70	7.75	17.5	25.1	15.6	2.98	3.66	3.38	3.26	4.71
chloride	1500		250		105	98.7	104	102	97.2	97.4	96	117	102	85.6	102	64.1	112	129	105	98.7	102	99.2	99.4
ortho-phosphate (dissolved; as P)					0.455	1.42	1.84	2.02	1.02	0.683	0.450	4.92	1.03	2.68	1.60	3.99	2.98	1.19	0.464	0.968	2.01	1.21	1.36
Total Kjeldahl Nitrogen					-	-	-	-	-	-	-	-	-	-	-	-	-	9.06	2.39	3.08	2.81	2.77	4.16
Microbiological Analyses																							
total coliforms (mpn/100mL)					236	3650	10500	242000	38700	5790	12000	92100	1180	>241960	41100	>241960	37200	1780	100	>24196	64900	>241960	1660
Escherichia coli (mpn/100mL)					1	107	4	14100	980	62	7	13000	12	19900	2420	19900	2000	30	<10	70	411	130000	<10
Total Metals																							
aluminum			9.5		0.074	0.065	0.038	0.069	0.130	0.021	0.068	0.198	0.066	0.258	0.166	0.705	0.225	0.182	0.066	0.116	0.080	0.088	0.116
antimony	0.09		0.006		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
arsenic	0.05		0.01		0.0019	0.0012	0.0016	0.0017	0.0014	<0.0010	0.0013	0.0050	0.0013	0.0022	0.0016	0.0029	0.0033	0.0019	0.0013	0.0011	0.0023	0.0011	0.00136
barium	10		1		0.028	0.022	0.025	0.030	0.023	<0.020	0.025	0.036	0.023	0.034	0.030	0.050	0.048	0.039	0.027	0.029	0.027	0.033	0.034
beryllium	0.0015		0.008		***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	<0.0010
bismuth					<0.20	<0.20	<0.20	-	-	-	-	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
boron	12		5		0.14	0.16	0.17	0.20	0.17	0.17	0.17	0.21	0.16	0.16	0.17	0.14	0.13	0.14	0.15	0.16	0.17	0.14	0.16
cadmium	0.0005 - 0.004	H	0.005		<0.000050	<0.000050	0.000087	<0.000050	<0.000050	<0.000050	<0.000050	0.000467	<0.000050	0.000095	0.000063	0.000272	0.000146	0.000071	<0.000050	<0.000050	<0.000050	<0.000050	0.0000468
calcium					117	58.1	55.5	64.3	55.3	50.9	57.0	62.6	55.0	48.9	54.7	41.5	123	122	65.5	58.9	54.4	54.5	53.1
chromium	0.010^{VI}, 0.090^{III}	V	0.05^{VI}, 6^{III}		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00098	<0.00050	0.00066	<0.00050	0.00168	0.00104	0.00090	<0.00050	<0.00050	<0.00050	<0.00050	<0.00177	<0.0010
cobalt	0.04		0.001 (0.020)		0.00064	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00081	<0.00050	<0.00050	<0.00050	0.00074	0.00076	0.00076	<0.00050	<0.00050	<0.00050	<0.00050	0.00042
copper	0.020 - 0.090	H	1.5		0.0056	0.0061	0.0090	0.0066	0.0051	0.0071	0.0045	0.0531	0.0051	0.0148	0.0092	0.0373	0.0234	0.0118	0.0039	0.0036	0.0070	0.0047	0.0117
iron			6.5		0.205	0.154	0.094	0.162	0.238	0.057	0.142	0.384	0.114	0.272	0.238	0.893	0.472	0.409	0.130	0.225	0.179	0.141	0.206
lead	0.040 - 0.160	H	0.01		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0034	<0.0010	0.0013	<0.0010	0.0031	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050
lithium			0.008		***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	**0.0107**
magnesium					64.8	25.2	23.2	27.0	23.8	21.9	23.6	25.2	22.1	19.8	22.3	16.1	66.1	68.6	30.4	23.8	22.1	21.2	22.0
manganese			1.5		0.221	0.143	0.087	0.159	0.122	<0.010	0.123	0.193	0.104	0.140	0.130	0.276	0.265	0.208	0.109	0.158	0.124	0.126	0.147
mercury	0.00025		0.001		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0000050
molybdenum	10		0.25		0.0057	0.0066	0.0075	0.0065	0.0048	0.0043	0.0057	0.0069	0.0053	0.0057	0.0060	0.0042	0.0067	0.0056	0.0052	0.0045	0.0055	0.0045	0.0044
nickel	0.250 - 1.5	H	0.08		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0025
phosphorus					1.35	1.67	2.52	-	-	-	-	6.10	-	-	1.90	5.73	3.85	1.88	0.93	1.20	2.99	1.53	1.66
potassium					24.4	21.0	28.4	-	-	-	-	72.7	-	-	24.7	27.2	33.3	26.7	19.9	22.0	25.5	19.9	22.1
selenium	0.02		0.01		0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0042	0.0035	<0.0010	<0.0010	<0.0010	<0.0010	0.000534
silicon					5.41	3.61	2.84	-	-	-	-	4.47	-	-	4.28	4.16	5.98	5.81	3.56	3.54	3.75	3.46	3.96
silver	0.0005 - 0.015	H	0.02		0.000051	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000279	<0.000050	0.000111	0.000098	0.000215	0.000093	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000063
sodium			200		125	104	105	116	95.4	101	93.1	106	98.2	90.0	93.9	73.3	131	146	110	103	99.8	101	108
strontium			2.5		1.18	0.583	0.535	-	-	-	-	0.566	-	-	0.545	0.359	1.16	1.23	0.642	0.566	0.549	0.527	0.558
sulfur					-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	-	-	-	-	-	-
tellurium					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
thallium	0.003				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thorium					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
titanium	1				<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010
tin			2.5		<0.030	<0.030	<0.030	-	-	-	-	<0.030	-	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.00050
tungsten			0.003		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
uranium	0.085		0.02		0.00444	0.00197	0.00209	0.00180	0.00178	0.00100	0.00223	0.00250	0.00202	0.00214	0.00241	0.00116	0.00615	0.00592	0.00265	0.00204	0.00224	0.00210	0.00193
vanadium			0.02		<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.00126
zinc	0.075 - 2.4	H	3		0.0267	0.0266	0.0282	0.0180	0.0238	0.0385	0.0196	0.0866	0.0198	0.0310	0.0188	0.0822	0.0715	0.0539	0.0240	0.0229	0.0191	0.0237	0.0284
zirconium					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Metals																							
aluminum			9.5		0.036	0.013	0.014	0.017	0.021	0.072	0.017	0.067	0.018	0.063	0.033	0.104	0.045	0.025	0.015	0.013	0.030	0.010	0.0185
antimony	0.09		0.006		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
arsenic	0.05		0.01		0.0016	0.0012	0.0015	0.0016	0.0013	<0.0010	0.0011	0.0046	0.0012	0.0020	0.0016	0.0026	0.0031	0.0018	0.0012	0.0010	0.0021	0.0012	0.00114
barium	10		1		<0.020	<0.020	<0.020	0.023	<0.020	<0.020	<0.020	0.028	0.020	<0.020	0.024	<0.020	0.032	0.032	0.026	0.026	0.020	0.033	0.030
beryllium	0.0015		0.008		***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	***<0.0050***	<0.0010
bismuth					<0.20	<0.20	<0.20	-	-	-	-	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
boron	12		5		0.14	0.16	0.17	0.17	0.18	0.16	0.17	0.20	0.16	0.16	0.17	0.13	0.13	0.14	0.15	0.16	0.16	0.16	0.17
cadmium	0.0005 - > 0.004	H	0.005		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000154	<0.000050	<0.000050	<0.000050	0.000126	0.000088	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.0000229
calcium					121	57.5	54.7	58.3	56.6	50.0	56.8	62.4	55.7	47.5	54.9	37.9	120	123	70.2	59.7	53.8	57.2	53.9
chromium	0.010^{VI}, 0.090^{III}	V	0.05^{VI}, 6^{III}		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	0.00066	<0.00050	<0.00050	<0.00050	0.00064	0.00058	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010
cobalt	0.04		0.001 (0.020)		0.00055	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	<0.00050	<0.00050	0.00067	0.00069	<0.00050	<0.00050	<0.00050	<0.00050	0.00032
copper	0.020 - 0.090	H	1.5		0.0025	0.0036	0.0059	0.0037	0.0025	0.0096	0.0030	0.0219	0.0030	0.0065	0.0045	0.0174	0.0147	0.0057	0.0024	0.0021	0.0048	0.0031	0.0036
iron			6.5		<0.030	0.056	<0.030	0.046	<0.030	0.174	<0.030	0.210	<0.030	0.034	0.041	0.177	0.162	0.064	<0.030	0.053	0.072	0.037	0.043
lead	0.040 - 0.160	H	0.01		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050
lithium			0.008		***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	***<0.050***	**0.0095**
magnesium					66.4	25.1	23.3	24.4	24.4	21.7	23.6	25.2	22.4	19.4	21.9	15.2	66.8	69.0	31.4	23.9	22.1	22.1	21.2
manganese			1.5		0.026	0.062	0.010	<0.010	<0.010	0.074	<0.010	0.023	<0.010	<0.010	<0.010	0.128	0.144	0.102	<0.010	0.139	0.050	0.102	0.0596
mercury	0.00025		0.001		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.000025
molybdenum	10		0.25		0.0060	0.0065	0.0072	0.0065	0.0049	0.0050	0.0057	0.0063	0.0053	0.0056	0.0057	0.0041	0.0065	0.0056	0.0049	0.0041	0.0052	0.0042	0.0040
nickel	0.250 - 1.5	H	0.08		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0016
phosphorus					0.81	1.51	1.42	-	-	-	-	5.32	-	-	1.74	4.37	3.31	1.34	0.64	1.15	2.58	1.48	1.49
potassium					24.6	20.9	28.6	-	-	-	-	76.4	-	-	24.3	25.6	31.3	24.9	21.1	21.7	25.4	20.5	20.3
selenium	0.02		0.01		0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0039	0.0034	<0.0010	<0.0010	<0.0010	<0.0010	0.000507
silicon					5.44	3.43	2.87	-	-	-	-	3.63	-	-	4.08	3.30	5.50	5.73	3.61	3.35	3.62	3.45	3.71
silver	0.0005 - 0.015	H	0.02		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000071	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020
sodium			200		126	103	107	106	98.2	99.2	93.9	110	100	86.9	94.8	71.2	125	148	118	103	99.5	105	101
strontium			2.5		1.16	0.578	0.522	-	-	-	-	0.557	-	-	0.546	0.316	1.10	1.27	0.682	0.568	0.542	0.549	0.539
sulfur					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tellurium					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
thallium	0.003				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.000014	<0.00020	<0.00020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.00020
thorium					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
tin			2.5		<0.030	<0.030	<0.030	-	-	-	-	<0.030	-	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.00050
titanium	1				<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010
tungsten			0.003		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
uranium	0.085		0.02		0.00478	0.00195	0.00197	0.00182	0.00179	-	0.00217	0.00246	0.00208	0.00198	0.00233	0.00079	0.00602	0.00606	0.00185	0.00173	0.00210	0.00194	0.00173
vanadium			0.02		<0.030	<0.030	<0.030	<0.030	<0.030	0.00122	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.00097
zinc	0.075 - 2.4	H	3		0.0118	0.0254	0.0146	0.0134	0.0169	<0.030	0.0072	0.0508	0.0144	0.0137	0.0119	0.0448	0.0549	0.0423	0.0194	0.0248	0.0181	0.0238	0.0212
zirconium					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
All concentrations in milligrams per litre (mg/L), unless otherwise noted.
(1) Standards from the Contaminated Sites Regulation (CSR), updated to 24 January 2019.
The regional background concentration for cobalt is shown in red bracketed text; this concentration is from BC CSR Technical Bulletin 3, dated 24 September 2018.
Land Use abbreviations: AW (Aquatic Life); and DW (Drinking Water).
H = standard is Hardness dependent; pH = standard is pH dependent; Cl = standard is chloride dependent; V = standard is valence dependent, VI=chromium VI and III=chromium III; T = standard varies with temperature (assumed 10 deg C).
1.97 indicates parameter concentration exceeds applicable CSR AW or DW standards. For cobalt, only parameter concentrations exceeding the regional background concentration are highlighted.
*Exceedance based on laboratory pH

Table 1: 2014 - 2018 Results of Water Analyses - Drainage Pond
City of Kelowna-Vernon Biosolids Facility
511 Commonage Road, Vernon, BC

Location					Drainage Pond															
ALS and CARO Laboratory ID	Aquatic Life		Drinking		L1924064-1	L1946645-1	L1965494-1	L1984896-1	L1994913-1	L2016326-1	8050004-01	8052709-2	8062501-2	8080016-2	8082786-2	8092304-2	8102373-2	9052444-02	9061376-02	9072356-02
Date	CSR-AW(1) (freshwater)	Notes	Water CSR-DW(1)	Notes	09-May-17	21-Jun-17	26-Jul-17	31-Aug-17	20-Sep-17	31-Oct-17	30-Apr-18	29-May-18	26-Jun-18	31-Jul-18	28-Aug-18	25-Sep-18	25-Oct-18	27-May-19	13-Jun-19	23-Jul-19
General Parameters																				
Temperature (field)					14.0	20.0	24.0	19.0	13.0	3.0	-	22.5	19	24.5	18	16	8.5	20	26	19
pH (field)					7.6	8.0	8.0	8.0	8.1	8.7	-	8.1	7.8	8.4	8.1	8.4	8.0	8	9.3	9
pH (laboratory)					8.00	8.23	8.20	8.20	8.19	8.68	8.27	8.18	7.90	7.84	7.79	7.67	8.05	8.08	9.29	7.96
conductivity (laboratory)					899	1590	1070	913	1020	784	1300	1300	1850	1060	1190	891	956	1060	900	1250
total suspended solids (TSS)					3.6	19.2	4.9	9.1	11.6	31.3	36	6.0	41.7	30.0	40.0	66.7	6.5	39.3	29	52
biochemical oxygen demand (5-day BOD)					<2.0	13.4	<2.0	3.9	3.0	15.0	7.6	6.1	69.7	29.2	36.4	50.3	<4.2	25.2	17.9	61.3
chemical oxygen demand					28	261	61	49	121	117	36	81	364	170	460	249	89	197	104	547
hardness as CaCO3					217	484	279	226	254	107	385	412	548	223	232	216	212	242	233	227
Inorganics																				
ammonia (total; as N)	1.31 - 18.5	pH/T			0.915	10.6	3.29	1.38	6.55	3.99	1.88	3.49	19.2	10.4	18.2	8.09	5.84	5.68	0.31	24.6
nitrate (as N)	400		10		1.21	1.72	0.356	0.314	0.150	1.04	7.25	1.21	0.035	0.015	<0.010	0.128	0.856	<0.010	<0.010	<0.010
nitrite (as N)	0.2 - 2	Cl	1		0.0156	0.287	0.106	0.0230	0.106	0.104	0.106	0.253	<0.010	0.035	<0.010	0.041	0.027	<0.010	<0.010	<0.010
total nitrogen					3.26	25.5	5.63	3.17	12.0	10.3	13.8	8.19	44.8	22.3	43.3	20.7	12.6	15.8	5	47.7
chloride	1500		250		97.6	132	105	104	104	73.8	108	118	105	99.6	104	79.2	94.4	91.4	96.2	99.4
ortho-phosphate (dissolved; as P)					0.647	1.65	2.05	0.929	1.69	2.51	-	-	-	-	-	-	-	2.47	1.06	-
Total Kjeldahl Nitrogen					2.03	23.5	5.17	2.83	11.7	9.20	6.40	6.73	44.8	22.2	43.3	20.5	11.7	15.8	5	47.7
Microbiological Analyses																				
total coliforms (mpn/100mL)					980	90000	24200	>24196	3260	24200	390	24000	110000	>110000	>110000	>110000	91	24000	11000	>110000
Escherichia coli (mpn/100mL)					23	<10000	120	480	70	290	9.1	30	11000	>110000	24000	46000	15	930	15	29000
Total Metals																				
aluminum			9.5		0.0282	0.215	0.047	0.108	0.026	0.069	0.482	0.0636	0.343	0.131	0.239	0.228	0.0963	0.0882	0.0796	0.182
antimony	0.09		0.006		<0.00050	0.0007	<0.00050	<0.00050	<0.00050	<0.00050	0.00047	0.00034	0.00083	0.00036	0.00074	0.00050	0.00042	0.00043	0.00035	0.0006
arsenic	0.05		0.01		0.00086	0.00047	0.0015	0.00130	0.0020	0.0024	0.00201	0.00217	0.00773	0.00324	0.00506	0.00321	0.00202	0.00329	0.00256	0.00673
barium	10		1		0.029	0.056	0.035	0.035	0.030	0.023	0.0646	0.0355	0.101	0.0380	0.0590	0.0603	0.0433	0.0478	0.0341	0.0686
beryllium	0.0015		0.008		<0.0010	<0.0010	<0.00010	<0.00010	<0.0050	<0.0050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
bismuth					<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.00050	0.00014	0.00077	0.00020	0.00129	0.00057	0.00026	0.00028	<0.00010	0.0012
boron	12		5		0.15	0.17	0.14	0.15	0.16	0.16	0.174	0.497	0.35	0.181	0.190	0.149	0.204	0.168	0.162	0.196
cadmium	0.0005 - 0.004	H	0.005		0.0000125	0.000285	<0.000050	0.0000249	<0.000050	0.000063	0.000141	0.000068	0.000300	0.000078	0.000399	0.000207	0.000076	0.000125	0.000041	0.000822
calcium					56.2	105	72.1	55.6	57.7	41.1	79.5	91.1	127	58.0	53.7	52.3	57.7	59.8	57.4	55.6
chromium	0.010^{VI}, 0.090^{III}	V	0.05^{VI}, 6^{III}		<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	0.00063	0.00171	<0.00050	0.00163	0.00098	0.00210	0.00105	0.00078	0.00069	0.00107	0.00159
cobalt	0.04		0.001 (0.020)		0.00030	0.00081	<0.00050	0.00033	<0.00050	<0.00050	0.00061	0.0005	0.00121	0.00067	0.00113	0.00065	0.00065	0.00061	0.00051	0.0012
copper	0.020 - 0.090	H	1.5		0.0032	0.0544	0.0043	0.0039	0.0062	0.0130	0.0253	0.0156	0.0469	0.0180	0.0767	0.0368	0.0173	0.0178	0.00691	0.0814
iron			6.5		0.061	0.484	0.205	0.170	0.108	0.237	1.10	0.210	0.738	0.327	0.739	0.471	0.301	0.332	0.203	0.575
lead	0.040 - 0.160	H	0.01		<0.00050	0.00123	<0.0010	<0.00050	<0.0010	<0.0010	0.00305	0.00079	0.00136	0.00055	0.00157	0.00092	0.00068	0.0006	0.00042	0.00169
lithium			0.008		0.0102	0.0178	0.0131	0.0105	*<0.050*	*<0.050*	0.0140	0.0157	0.0243	0.0116	0.0130	0.00998	0.0133	0.0125	0.0125	0.0153
magnesium					23.3	54.8	28.4	23.1	23.6	18.4	41.4	46.5	74.4	26.1	22.5	22.1	24.3	26.8	26	24.3
manganese			1.5		0.0980	0.272	0.183	0.117	0.095	0.137	0.148	0.123	0.547	0.216	0.288	0.300	0.164	0.194	0.126	0.316
mercury	0.00025		0.001		<0.0000050	0.000062	<0.0000050	0.0000135	<0.00020	<0.00020	0.000077	<0.000010	0.000035	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
molybdenum	10		0.25		0.0043	0.0119	0.0044	0.0043	0.0042	0.0039	0.00809	0.0106	0.0103	0.00488	0.00556	0.00413	0.00420	0.00454	0.00354	0.00472
nickel	0.250 - 1.5	H	0.08		0.0017	0.0044	<0.0050	0.0019	<0.0050	<0.0050	0.00325	0.00280	0.00599	0.00354	0.00579	0.00307	0.00220	0.00296	0.00245	0.00505
phosphorus					0.85	2.59	2.31	1.22	1.84	3.33	1.62	2.05	11.1	5.49	5.22	5.28	3.58	3.93	2.13	10.2
potassium					19.5	44.5	22.6	20.8	28.9	25.2	21.4	29.7	76.1	38.2	59.1	28.7	26.2	32.6	25.1	68
selenium	0.02		0.01		0.000512	0.00187	<0.0010	0.000622	<0.0010	<0.0010	0.00207	0.00140	0.00234	0.00118	0.00165	0.00082	0.00069	0.00108	0.00068	0.0012
silicon					2.96	4.76	4.11	3.68	3.92	0.49	3.0	<1.0	12.7	4.9	4.4	4.2	5.0	2.9	3.3	4.3
silver	0.0005 - 0.015	H	0.02		<0.000020	0.000227	<0.000050	0.000036	<0.000050	<0.000050	0.000145	<0.000050	0.000148	<0.000050	0.000241	<0.000050	0.000053	0.000054	<0.000050	0.000199
sodium			200		103	135	103	103	109	81.4	118	132	147	109	94.2	89.2	104	95.2	102	98.5
strontium			2.5		0.541	1.10	0.647	0.551	0.569	0.376	0.922	0.841	1.35	0.581	0.509	0.523	0.548	0.63	0.603	0.608
sulfur					<0.00020	<0.00020	<0.00020	<0.000010	<0.00020	<0.00020	59.4	88.3	150	37.2	30.8	30.4	35	46	41.3	35.1
tellurium					-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
thallium	0.003				<0.00020	<0.00020	<0.00020	<0.000010	<0.00020	<0.00020	<0.000020	<0.000020	<0.000020	<0.000020	0.000032	<0.000020	<0.000020	<0.000020	<0.000020	0.000038
thorium					-	-	-	-	-	-	<0.00010	<0.00010	0.0001	-	-	-	-	<0.00010	<0.00010	<0.00010
titanium	1				<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	0.0155	<0.0050	0.0127	0.0054	0.0092	0.0066	<0.0050	<0.0050	<0.0050	0.0058
tin			2.5		<0.00050	0.00080	<0.00050	<0.00050	<0.030	<0.030	0.00068	0.00036	0.00106	0.00033	0.00185	0.00044	0.00043	0.00052	0.00025	0.00102
tungsten			0.003		-	-	-	-	-	-	<0.0010	<0.0010	0.0012	<0.0010	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
uranium	0.085		0.02		0.00241	0.00984	0.00306	0.00275	0.00262	0.00134	0.00638	0.00625	0.00759	0.00253	0.00271	0.00220	0.00129	0.00245	0.00161	0.00197
vanadium			0.02		0.00088	0.00193	0.00071	0.00136	<0.030	<0.030	0.0023	0.0010	0.0038	0.0017	0.0022	0.0017	<0.0010	0.0014	0.0013	0.0018
zinc	0.075 - 2.4	H	3		0.0270	0.0574	0.0130	0.0226	0.0177	0.0418	0.0675	0.0224	0.0756	0.0336	0.101	0.0728	0.0531	0.0404	0.0227	0.151
zirconium					-	-	-	-	-	-	0.00045	0.00012	0.00051	0.00024	0.00082	0.00045	0.00027	0.00029	0.00021	0.00066
Dissolved Metals																				
aluminum			9.5		0.0056	0.0818	0.020	0.0136	0.031	<0.010	<0.0050	0.0264	0.0305	0.0372	0.148	0.0460	0.0266	0.0219	0.0194	0.0689
antimony	0.09		0.006		<0.00050	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	0.00047	0.00031	0.00060	0.00032	0.00033	0.00035	0.00036	0.00043	0.00035	0.00033
arsenic	0.05		0.01		0.00081	0.00449	0.0015	0.00120	0.0021	<0.0010	0.00136	0.00206	0.00590	0.00291	0.00490	0.00299	0.00180	0.0031	0.00226	0.00423
barium	10		1		0.027	0.043	0.036	0.030	0.031	0.023	0.0265	0.0323	0.0593	0.0242	0.0505	0.0327	0.0318	0.0389	0.0208	0.0444
beryllium	0.0015		0.008		<0.0010	<0.0010	<0.00010	<0.00010	*<0.0050*	*<0.0050*	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
bismuth					<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.00010	<0.00010	<0.00010	<0.00010	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	0.00018
boron	12		5		0.13	0.16	0.15	0.14	0.18	<0.10	0.136	0.165	0.192	0.179	0.186	0.121	0.179	0.153	0.156	0.178
cadmium	0.0005 - > 0.004	H	0.005		0.0000102	0.000159	<0.000050	0.0000150	0.000059	<0.000050	0.000023	0.000048	0.000016	0.000027	0.0000910	0.000059	0.000048	0.000054	0.000023	0.000128
calcium					51.0	99.5	65.0	53.9	61.3	28.3	88.4	88.2	111	50.8	56.6	51.4	49.6	53.6	53.1	51
chromium	0.010^{VI}, 0.090^{III}	V	0.05^{VI}, 6^{III}		<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00061	0.00090	<0.00050	<0.00050	<0.00050	<0.00050	0.00084
cobalt	0.04		0.001 (0.020)		<0.00030	0.00059	<0.00050	<0.00030	<0.00050	<0.00050	0.00032	0.00045	0.00049	0.00048	0.00080	0.00040	0.00046	0.00051	0.00043	0.00071
copper	0.020 - 0.090	H	1.5		0.0025	0.0142	0.0020	0.0024	0.0085	0.0025	0.00511	0.00724	0.00306	0.00775	0.0112	0.00784	0.00723	0.00937	0.00537	0.0133
iron			6.5		<0.030	0.144	0.104	<0.030	0.112	0.121	0.012	0.082	0.143	0.113	0.535	0.101	0.106	0.121	0.047	0.336
lead	0.040 - 0.160	H	0.01		<0.00050	<0.00050	<0.0010	<0.00050	<0.0010	<0.0010	0.00325	0.00027	<0.00020	0.00021	0.00031	<0.00020	0.00028	0.00026	<0.00020	0.00033
lithium			0.008		0.0098	0.0172	0.0120	0.0101	*<0.050*	*<0.050*	0.0141	0.0151	0.0202	0.0117	0.0128	0.00921	0.0121	0.012	0.0117	0.014
magnesium					21.8	57.2	28.3	22.2	24.6	8.79	39.8	46.5	65.5	23.3	22.0	21.2	21.3	26.1	24.4	24.2
manganese			1.5		0.0835	0.211	0.171	0.0413	<0.010	<0.010	0.00247	0.103	0.381	0.0305	0.269	0.199	0.0928	0.115	0.0183	0.249
mercury	0.00025		0.001		<0.0000050	<0.000025	<0.0000050	<0.0000050	<0.00020	<0.00020	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000020	<0.000010	<0.000040	<0.000040	<0.000040
molybdenum	10		0.25		0.0041	0.0055	0.0042	0.0040	0.0041	<0.0010	0.00771	0.00690	0.00659	0.00428	0.00151	0.00233	0.00315	0.00485	0.00424	0.00294
nickel	0.250 - 1.5	H	0.08		0.0015	0.0035	<0.0050	0.0017	<0.0050	<0.0050	0.00225	0.00268	0.00342	0.00281	0.00368	0.00223	0.00155	0.00267	0.00199	0.00359
phosphorus					0.76	2.09	2.45	1.08	1.94	3.44	0.725	1.96	9.35	4.90	5.15	3.68	3.05	3.3	1.38	8.7
potassium					18.3	44.3	25.4	19.7	30.3	2.2	22.8	29.6	67.9	33.7	59.2	28.8	22.8	32	24	64.6
selenium	0.02		0.01		0.000579	0.00137	<0.0010	0.000572	<0.0010	<0.0010	0.00164	0.00124	0.00149	0.00069	0.00093	<0.00050	<0.00050	0.00087	0.00068	0.00083
silicon					2.71	4.56	4.17	3.33	3.91	0.273	2.6	1.0	6.1	4.7	4.3	4.7	4.4	2.2	3.3	4.1
silver	0.0005 - 0.015	H	0.02		<0.000020	<0.000020	<0.000050	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
sodium			200		96.0	136	108	97.3	108	7.3	120	133	131	94.0	93.4	87.1	88.7	92.3	96	101
strontium			2.5		0.515	1.09	0.639	0.544	0.572	0.133	0.775	0.827	1.15	0.535	0.505	0.528	0.484	0.617	0.554	0.523
sulfur					-	-	-	-	-	-	76.6	90.2	137	38.1	30.3	31.6	31.7	44.1	40.6	31.6
tellurium					-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
thallium	0.003				<0.00020	<0.00020	<0.00020	<0.00020	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
thorium											<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin			2.5		<0.00050	<0.00050	<0.00050	<0.00050	<0.030	<0.030	<0.00020	<0.00020	0.00085	<0.00020	0.00028	0.00026	<0.00020	0.00034	<0.00020	0.00068
titanium	1				<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
tungsten			0.003		-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
uranium	0.085		0.02		0.00202	0.00620	0.00275	0.00246	0.00254	<0.00020	0.00570	0.00583	0.00604	0.00232	0.00101	0.00145	0.000938	0.00271	0.00227	0.00136
vanadium			0.02		0.00077	0.00161	0.00062	0.00096	<0.030	<0.030	0.0012	<0.0010	<0.0010	0.0013	0.0011	0.0014	<0.0010	<0.0010	0.0013	0.001
zinc	0.075 - 2.4	H	3		0.0242	0.0394	0.0103	0.0145	0.0206	0.0233	0.0229	0.0189	0.0092	0.0185	0.0612	0.0303	0.0387	0.0244	0.0109	0.032
zirconium					-	-	-	-	-	-	0.00016	0.00016	0.00035	0.00020	0.00099	0.00040	0.00024	0.00029	0.00014	0.00055

Notes:
All concentrations in milligrams per litre (mg/L), unless otherwise noted.
(1) Standards from the Contaminated Sites Regulation (CSR), updated to 24 January 2019.
The regional background concentration for cobalt is shown in red bracketed text; this concentration is from BC CSI
Land Use abbreviations: AW (Aquatic Life); and DW (Drinking Water).
H = standard is Hardness dependent; pH = standard is pH dependent; Cl = standard is chloride dependent; V = st
1.97 indicates parameter concentration exceeds applicable CSR AV
*Exceedance based on laboratory pH

Table 2: 2014 - 2018 Results of Water Analyses at Davidson Pond and Rose's Pond
City of Kelowna-Vernon Biosolids Facility
511 Commonage Road, Vernon, BC

Location							Davidson Pond																																		
ALS and CARO Laboratory ID	Aquatic Life	Notes	Drinking Water	Notes	BC Water Quality	Notes	L1502217-2	L1515479-2	L1532630-2	L1547862-2	L1625288-2	L1645255-2	L1656492-2	L1669705-2	L1684336-2	L1698669-2	L1742616-2	L1752610-2	L1763882-2	L1777367-2	L1794599-2	L1811981-2	L1832582-2	L1924064-2	L1946645-2	L1965494-2	L1984896-2	L1994913-2	L2016326-2	8050004-03	8052709-03	8062501-03	8080016-03	8082786-03	8092304-03	8102373-03	9052444-03	9061376-03	9072356-03	9100009-02	N000923-01	9111055-02
Date	CSR-AW (freshwater)		CSR-DW		Aquatic Life (freshwater)		13-Aug-14	09-Sep-14	14-Oct-14	17-Nov-14	10-Jun-15	20-Jul-15	11-Aug-15	7-Sep-15	6-Oct-15	4-Nov-15	8-Mar-16	5-Apr-16	3-May-16	1-Jun-16	5-Jul-16	10-Aug-16	21-Sep-16	9-May-17	21-Jun-17	26-Jul-17	31-Aug-17	20-Sep-17	31-Oct-17	30-Apr-18	29-May-18	26-Jun-18	31-Jul-18	28-Aug-18	25-Sep-18	25-Oct-18	27-May-19	13-Jun-19	23-Jul-19	30-Sep-19	29-Oct-19	27-Nov-19
Parameters																																									
Temperature (field)							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	21	23.5	24	15	5	-	21	20.5	24.5	21.5	19	9	20	26	23	14	6	2
pH (field)					6.5 - 9.0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8	9.1	8.8	9.3	9.2	7.80	-	8.7	8.8	8.8	8.8	8.3	8.7	8.7	8.8	8.4	8.3	8.1	8.1	
pH (laboratory)					6.5 - 9.0		8.68	8.77	8.49	8.31	8.70	8.67	8.71	8.64	8.46	8.35	8.75	8.73	8.81	8.66	8.77	8.82	8.62	8.76	8.89	8.74	8.96	8.78	8.36	8.83	8.64	8.58	8.56	8.72	8.61	8.24	8.78	8.69	8.65	8.31	8.23	8.23
conductivity (laboratory)							3140	3110	3160	3210	2870	3250	3350	3230	3500	3480	2480	2980	3100	3250	3140	3470	3550	2500	2720	3010	3150	3290	3510	2600	2710	2980	3120	3280	3320	3320	3120	3240	3340	3340	3470	3510	3600
total suspended solids (TSS)							<3.0	6.6	8.9	19.0	5.5	4.6	3.0	10.2	23.3	16.3	12.8	<3.0	3.4	<3.0	6.0	3.4	<3.0	22.8	24.2	6.1	4.1	6.6	16.7	<5.0	2.6	22.2	2.6	4.4	22.6	11.3	6.6	5.4	5.8	30.2	6.6	3.2
biochemical oxygen demand (5-day BOD)							<2.0	<2.0	<2.0	<2.0	<2.0	2.9	<2.0	<2.0	4.9	4.1	5.7	<2.0	<2.0	<2.0	<2.0	<2.0	2.1	<2.0	<2.0	<2.0	<2.0	2.9	2.9	<4.3	<5.5	6.3	5.0	6.2	<4.7	<4.2	<8.0	6.1	<5.9	<5.0	<10.0	7.3
chemical oxygen demand (COD)							56	63	70	90	64	64	63	58	79	63	1050	57	56	61	58	101	75	49	68	64	71	72	65	48	54	45	61	64	76	83	60	70	75	61	59	58
hardness as CaCO3							532	526	531	545	539	527	525	544	549	564	461	533	566	561	540	563	565	482	514	560	556	535	139	483	531	527	504	554	598	570	538	568	588	648	636	597
Inorganics																																									
ammonia (total; as N)	1.31 - 18.5	pH/T			0.131 - 1.84*	pH/T	0.0176	0.0235	0.203	0.957	0.0142	0.0149	0.0114	0.119	0.166	0.583	0.0111	0.0283	0.0238	0.0208	0.0143	0.0455	0.0278	0.0768	0.0161	0.0160	0.0198	0.0140	0.0450	0.054	0.041	0.1290	0.1460	0.094	0.138	0.189	0.057	0.108	0.115	0.448	0.188	0.738
nitrate (as N)	400		10		3.0*		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.79	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.76	<0.10	<0.10	<0.10	<0.10	<0.10	0.010	<0.010	<0.010	<0.010	0.038	0.023	<0.010	<0.010	<0.100	<0.010	<0.010	<0.010	<0.010
nitrite (as N)	0.2 - 2	Cl	1		0.02 - 0.20*	Cl	<0.020	<0.020	<0.020	0.050	<0.020	<0.020	<0.020	<0.020	<0.020	0.030	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.13	0.017	<0.010	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	0.014
total nitrogen							1.60	467	1.82	2.79	1.60	1.69	1.71	1.90	2.47	2.62	1.69	1.70	1.55	2.49	1.72	1.81	1.72	1.52	1.75	1.76	2.24	1.88	2.42	1.66	1.64	2.00	2.23	1.90	2.29	2.14	1.73	1.74	2.09	2.79	2.74	2.79
chloride	1500		250		150+, 600*		310	311	327	319	303	329	326	322	311	340	254	296	304	312	307	336	347	268	285	309	348	340	328	248	270	280	315	334	268	304	303	305	313	340	315	323
ortho-phosphate (dissolved; as P)							0.011	0.0022	0.0085	0.0883	<0.0010	<0.0010	<0.0010	<0.0010	0.0027	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0067	<0.0010	<0.0010	0.0010	0.0010	0.0010	-	-	-	-	-	-	-	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050
Total Kjeldahl Nitrogen							-	-	-	-	-	-	-	-	-	-	-	1.66	1.54	2.49	1.72	1.73	1.72	1.52	1.75	1.76	2.24	1.88	2.42	1.64	1.64	2.00	2.21	1.86	2.27	2.14	1.73	1.74	2.09	2.79	2.73	2.77
Microbiological Analyses																																									
total coliforms (mpn/100mL)							173000	13000	2910	411	11200	92100	24200	1730	1530	248	88	71	365	387	>2419.6	>241960	488000	1000	4610	24200	9800	2420	37	3.0	93	460	36	7.3	93	93	43	460	93	240	461	435
Escherichia coli (mpn/100mL)							261	61	17	2	3	17	3	6	22	12	48	6	1	<1	<1	21	2720	1000	5	6	<10	1	9	<3.0	23	460	36	3.6	43	43	3.6	39.0	93.0	240.0	17.3	2
Total Metals																																									
aluminum			9.5		See Dissolved Metals		<0.010	0.166	0.038	0.053	0.027	<0.010	<0.010	0.012	0.122	0.034	0.056	0.0107	<0.0060	0.0063	<0.0060	0.0435	<0.015	0.0256	0.174	0.0122	0.0174	<0.0060	0.014	<0.0050	0.0187	0.596	0.0304	0.0185	0.443	0.121	0.036	0.136	0.0923	0.376	0.0553	0.013
antimony	0.09		0.006		0.009	W	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00052	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00044	0.00025	0.00051	0.00037	0.00043	0.00039	0.00040	0.00035	0.00035	0.00038	0.00042	0.00039	0.00035
arsenic	0.05		0.01		0.008		0.0031	0.0031	0.0035	0.0032	0.0032	0.0029	0.0028	0.0036	0.0046	0.0038	0.0026	0.00312	0.00298	0.00317	0.00358	0.00347	0.00358	0.00273	0.00314	0.00386	0.00342	0.00321	0.00408	0.00285	0.00283	0.00407	0.00351	0.00353	0.00395	0.00385	0.00382	0.00398	0.00381	0.00426	0.00393	0.0031
barium	10		1		1	W	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0195	0.0060	0.0129	0.0094	0.0124	0.0167	0.0146	<0.0050	0.0086	0.0133	0.0203	0.0165	0.0159
beryllium	0.0015		0.008		0.00013	W	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	<0.00010	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
bismuth							<0.20	-	-	-	-	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
boron	12		5		1.2		<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.0271	0.0513	0.0408	0.0488	0.0376	0.0372	0.0454	0.0371	0.0334	0.0439	0.0518	0.0413	0.045
cadmium	0.0005 - 0.004	H	0.005		See Dissolved Metals		<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.00001	<0.000010	0.000052	<0.000010	0.000025	<0.000010	<0.000010	0.000024	0.000011	<0.000010	0.000023	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000016	<0.000010	<0.000010
calcium							59.9	62.2	61.7	61.0	64.6	58.2	57.0	58.7	61.5	60.5	61.7	67.5	66.4	64.1	59.9	54.9	52.4	64.5	58.1	54.9	50.2	47.0	59.3	57.2	59.8	62.5	53.4	53.6	55.2	61.4	62.5	57	53.8	67.6	64.3	57.4
chromium	0.010VI, 0.090III	V	0.05VI, 6III		0.001VI, 0.0089III	W	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	0.0151	<0.0050	<0.0050	0.0071	<0.0050	<0.0050	<0.0050	0.00147	<0.0050	0.0077	<0.0050
cobalt	0.04		0.001 (0.020)		0.004		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0010	0.00011	0.00036	<0.00010	<0.00010	0.00033	0.00012	0.00013	0.00017	0.00013	0.0003	<0.00010	<0.00010
copper	0.020 - 0.090	H	1.5		1*		<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	0.0017	<0.0010	<0.0010	0.0012	0.0010	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00041	0.00053	0.00292	0.00052	0.00052	0.00187	0.00044	0.00055	0.00081	<0.00040	0.00165	0.00041	0.00041
iron	6.5		6.5		1*		<0.030	0.083	0.069	0.111	0.043	<0.030	<0.030	<0.030	0.153	0.053	0.094	<0.030	<0.030	<0.030	<0.030	0.054	<0.030	0.043	0.233	0.033	0.041	<0.030	0.043	0.012	0.059	0.879	0.051	0.037	0.753	0.215	0.086	0.196	0.146	0.6	0.116	0.037
lead	0.040 - 0.160	H	0.01		calculation	H	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	0.00059	<0.00020	<0.00020	0.00042	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00031	<0.00020	<0.00020
lithium			0.008				<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.0392	0.0423	0.0474	0.0495	0.0501	0.0323	0.0348	0.0485	0.0447	0.0427	0.0472	0.0347	0.0401	0.0461	0.0397	0.0479	0.0435	0.0520	0.0468	0.0481	0.0497	0.0514	0.051	0.0435
magnesium							91.6	93.9	99.1	97.2	88.5	88.3	96.7	98.7	101	98.9	75.9	91.1	89.8	93.1	97.7	104	110	82.6	90.1	108	110	97.2	119.0	85.2	100	109	109	110	110	117	131	131	112	109	126	124	112
manganese			1.5		calculation	H	0.029	0.032	0.125	0.103	0.032	0.022	0.012	0.129	0.161	0.158	0.111	0.0340	0.0405	0.0415	0.0110	0.0149	0.0841	0.0358	0.0326	0.0245	0.0222	0.0306	0.1570	0.0271	0.0467	0.0970	0.0265	0.0275	0.0836	0.0954	0.1110	0.0484	0.0552	0.172	0.148	0.111
mercury	0.00025		0.001				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000040	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
molybdenum	10		0.25		<1*		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0013	<0.0010	<0.0010	0.0011	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00121	0.00126	0.00244	0.00091	0.00086	0.00088	0.00097	0.00102	0.00105	0.00095	0.00098	0.00097	0.009
nickel	0.250 - 1.5	H	0.08		0.15	H ≥ 180 mg/L CaCO3; W	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0016	0.0019	0.0014	0.0017	0.0021	<0.0025	0.0014	0.0020	0.0018	0.0018	0.0017	0.0018	0.00147	0.00174	0.00268	0.00211	0.00168	0.00229	0.00173	0.00198	0.00235	0.00143	0.00229	0.00186	0.00178
phosphorus					0.005-0.015	see note 1	1	-	-	-	-	<0.30	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.050	<0.050	<0.050	<0.050	<0.050	0.077	<0.050	0.064	0.077	<0.050	0.138	0.156	0.153
potassium							41.7	-	-	-	-	40.9	-	-	46.6	43.6	32.6	39.2	37.7	40.4	41.1	44.5	46.2	32.5	35.9	44.0	43.2	40.1	44.3	34.6	36.6	42.2	41.2	41.7	43.8	44.3	49.1	40.5	42.4	49.9	48.4	45.3
selenium	0.02		0.01		0.002	see note 2	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00020	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	0.00015	0.00031	0.000116	0.00010	0.00010	<0.00040	<0.0050	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
silicon							2.24	-	-	-	-	3.80	-	-	4.69	1.76	1.25	0.461	0.340	1.05	1.46	1.61	1.63	0.76	0.57	1.42	1.11	1.48	2.56	1.3	<1.0	8.3	2.8	2.8	4.1	3.2	1.9	1.3	1.5	3.6	2.8	3
silver	0.0005 - 0.015	H	0.02		0.0015	H > 100 mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.000020	<0.000020	<0.000020	<0.000050	<0.000020	<0.000020	<0.000020	<0.000486	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050	0.000081	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
sodium			200				539	540	561	529	446	514	542	567	537	546	397	494	487	481	520	561	596	405	431	567	559	518	566	409	528	527	567	552	559	582	649	549	536	627	616	548
strontium			2.5				0.664	-	-	-	-	0.690	-	-	0.797	0.775	0.648	0.773	0.779	0.783	0.832	0.772	0.784	0.775	0.766	0.753	0.734	0.706	0.874	0.927	0.776	0.898	0.832	0.83900	0.900	0.928	1	0.887	0.963	0.984	1.02	0.996
sulfur							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	280	343	353	373	343	366	393	471	393	382	426	444	371
tellurium							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
thallium	0.003				0.0008	W	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.000010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thorium							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin			2.5				<0.030	-	-	-	-	<0.030	-	-	<0.030	<0.030	<0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00020	<0.00020	0.00042	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
titanium	1						<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
tungsten			0.003				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
uranium	0.085		0.02		0.0085	W	0.00396	0.00415	0.00462	0.00527	0.00564	0.00505	0.00492	0.0098	0.0060	0.00585	0.00516	0.00590	0.00611	0.00540	0.00583	0.00623	0.00481	0.00545	0.00525	0.0093	0.00551	0.00502	0.00548	0.00614	0.00584	0.0522	0.00438	0.00433	0.00455	0.00481	0.00519	0.0492	0.00441	0.00516	0.00542
vanadium			0.02				<0.030	<0.060	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025	<0.0010	0.0011	<0.0010	0.00082	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0031	<0.0010	<0.0010	0.0019	<0.0010	0.0012	<0.0010	0.001	0.0019	0.001	<0.0010
zinc	0.075 - 2.4	H	3		calculation	H; H > 90 mg/L	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0040	<0.0040	0.0060	0.0046	0.0042	0.0043	0.0054	<0.0040	<0.0040	<0.0040	0.0043	<0.0040	<0.0040
zirconium							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00015	0.00011	0.00050	0.00012	0.00012	0.00049	0.00020	0.0020	0.00028	0.00022	0.0004	<0.00010	<0.00010
Dissolved Metals																																									
aluminum			9.5		0.05+ (dis)	pH >6.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	0.0277	0.0057	<0.0050	<0.0050	<0.0050	0.0077
antimony	0.09		0.006				<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00040	0.00030	0.00040	0.00031	0.00039	0.00034	0.00036	0.00033	0.00037	0.00034	0.00035	0.00038	0.00029
arsenic	0.05		0.01				0.0031	0.0031	0.0028	0.0031	0.0032	0.0029	0.0028	0.0032	0.0039	0.0037	0.0024	0.00289	0.00328	0.00333	0.00316	0.00340	0.00338	0.00269	0.00308	0.00339	0.00337	0.00318	0.00350	0.00268	0.00269	0.00322	0.00326	0.00317	0.00336	0.00325	0.00327	0.00348	0.00319	0.00386	0.00348	0.00179
barium	10		1				<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0132	<0.0050	0.0085	0.0084	0.0125	0.0125	0.0136	<0.0050	0.0074	0.0113	0.0156	0.0154	0.0153
beryllium	0.0015		0.008				<0.0050	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
bismuth							<0.20	-	-	-	-	<0.20	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
boron	12		5				<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.0262	0.0334	0.0351	0.0450	0.0354	0.0374	0.0372	0.0316	0.0329	0.0385	0.0458	0.0405	0.0357
cadmium	0.0005 - 0.004	H	0.005		calculation (dis)	H	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050

Table 2: 2014 - 2018 Results of Water Analyses at Davidson Pond and Rose's Pond
City of Kelowna-Vernon Biosolids Facility
511 Commonage Road, Vernon, BC

| Location | | | | | | | | Rose's Pond | | | | | | | |

Table 3: Results of QA/QC Analyses
City of Kelowna-Vernon Biosolids Facility
511 Commonage Road, Vernon, BC

Location	Rose's Pond		RADL	Mean	Relative Percent Difference (%)	Difference Factor (-)
ALS and CARO Laboratory ID	9100009-01	9100009-03				
Date	30-Sep-19	30-Sep-19				
Parameters						
pH (laboratory)	8.55	8.55	0.1	8.55	0%	NA
conductivity (laboratory)	4880	4820	2	4850	1%	NA
total dissolved solids (TDS)	3780	3830	15	3805	1%	NA
total suspended solids (TSS)	5.4	4.6	2	5.0	NA	0.4
biochemical oxygen demand (5-day BOD)	<5.0	<5.0	2	NA	NA	NA
chemical oxygen demand (COD)	44	46	20	45	NA	0.1
hardness as CaCO3	1260	1250	0.5	1255	1%	NA
Inorganics						
ammonia (total; as N)	0.121	0.133	0.02	0.127	9%	NA
nitrate (as N)	0.052	0.07	0.01	0.06	**30%**	NA
nitrite (as N)	<0.010	<0.010	0.01	NA	NA	NA
total nitrogen	1.57	1.75	0.05	1.66	11%	NA
chloride	395	397	0.1	396	1%	NA
ortho-phosphate (dissolved; as P)	<0.0050	<0.0050	0.005	NA	NA	NA
Total Kjeldahl Nitrogen	1.51	1.68	0.05	1.60	11%	NA
Microbiological Analyses						
total coliforms (mpn/100mL)	23	9.1	3.0	16.1	**87%**	NA
Escherichia coli (mpn/100mL)	23	9.1	3.0	16.1	**87%**	NA
Total Metals						
aluminum	0.0388	0.0646	0.005	0.0517	**50%**	NA
antimony	0.00047	0.00044	0.0002	0.000455	NA	0.2
arsenic	0.0036	0.00379	0.0005	0.00370	5%	NA
barium	0.015	0.0154	0.005	0.0152	NA	0.1
beryllium	<0.00010	<0.00010	0.0001	NA	NA	NA
bismuth	<0.00010	<0.00010	0.0001	NA	NA	NA
boron	0.115	0.113	0.005	0.114	2%	NA
cadmium	<0.000010	<0.000010	0.00001	NA	NA	NA
calcium	65.2	68.0	0.2	66.6	4%	NA
chromium	<0.00050	<0.00050	0.0005	NA	NA	NA
cobalt	0.00013	0.00017	0.0001	0.00015	NA	0.4
copper	0.0005	0.00056	0.0004	0.00053	NA	0.2
iron	0.067	0.104	0.01	0.086	**43%**	NA
lead	<0.00020	<0.00020	0.0002	NA	NA	NA
lithium	0.0476	0.0492	0.0001	0.0484	3%	NA
magnesium	258	271	0.01	265	5%	NA
manganese	0.108	0.117	0.0002	0.113	8%	NA
mercury	<0.000010	<0.000010	0.00001	NA	NA	NA
molybdenum	0.00223	0.00233	0.0001	0.00228	4%	NA
nickel	0.00113	0.00119	0.0004	0.00116	NA	0.15
phosphorus	<0.050	<0.050	0.05	NA	NA	NA
potassium	79.6	82.4	0.1	81.0	3%	NA
selenium	<0.00050	<0.00050	0.0005	NA	NA	NA
silicon	1.0	1.2	1	1.1	NA	0.2
silver	<0.000050	<0.000050	0.00005	NA	NA	NA
sodium	782	818	0.1	800	5%	NA
strontium	0.558	0.578	0.001	0.568	4%	NA
sulfur	699	729	3	714	4%	NA
tellurium	<0.00050	<0.00050	0.0005	NA	NA	NA
thallium	<0.000020	<0.000020	0.00002	NA	NA	NA
thorium	<0.00010	<0.00010	0.0001	NA	NA	NA
titanium	<0.0050	<0.0050	0.005	NA	NA	NA
tin	<0.00020	<0.00020	0.0002	NA	NA	NA
tungsten	<0.0010	<0.0010	0.001	NA	NA	NA
uranium	0.00568	0.00564	0.00002	0.00566	1%	NA
vanadium	0.0011	0.0013	0.001	0.0012	NA	0.2
zinc	<0.0040	<0.0040	0.004	NA	NA	NA
zirconium	0.00021	0.00021	0.0001	0.00021	NA	0
Dissolved Metals						
aluminum	<0.0050	<0.0050	0.005	NA	NA	NA
antimony	0.00041	0.00039	0.0002	0.00040	NA	0.1
arsenic	0.00389	0.00394	0.0005	0.003915	1%	NA
barium	0.0141	0.0137	0.005	0.0139	NA	0.1
beryllium	<0.00010	<0.00010	0.0001	NA	NA	NA
bismuth	<0.00010	<0.00010	0.0001	NA	NA	NA
boron	0.106	0.103	0.005	0.105	3%	NA
cadmium	<0.000010	<0.000010	0.00001	NA	NA	NA
calcium	65.2	66.5	0.2	65.9	2%	NA
chromium	<0.00050	<0.00050	0.0005	NA	NA	NA
cobalt	0.00011	0.00011	0.0001	0.00011	NA	0
copper	<0.00040	<0.00040	0.0004	NA	NA	NA
iron	<0.010	<0.010	0.01	NA	NA	NA
lead	<0.00020	<0.00020	0.0002	NA	NA	NA
lithium	0.0514	0.0505	0.0001	0.0510	2%	NA
magnesium	265	264	0.01	265	0%	NA
manganese	0.0253	0.0303	0.0002	0.0278	18%	NA
mercury	<0.000010	<0.000010	0.00001	NA	NA	NA
molybdenum	0.00227	0.00219	0.0001	0.00223	4%	NA
nickel	0.00102	0.00105	0.0004	0.001035	NA	0.07
phosphorus	<0.050	<0.050	0.05	NA	NA	NA
potassium	81.3	81.5	0.1	81.4	0%	NA
selenium	<0.00050	<0.00050	0.0005	NA	NA	NA
silicon	1.1	1.2	1	1.2	NA	0.1
silver	<0.000050	<0.000050	0.00005	NA	NA	NA
sodium	790	788	0.1	789	0%	NA
strontium	0.578	0.573	0.001	0.576	1%	NA
sulfur	755	759	3	757	1%	NA
tellurium	<0.00050	<0.00050	0.0005	NA	NA	NA
thallium	<0.000020	<0.000020	0.00002	NA	NA	NA
thorium	<0.00010	<0.00010	0.0001	NA	NA	NA
tin	<0.00020	<0.00020	0.005	NA	NA	NA
titanium	<0.0050	<0.0050	0.0002	NA	NA	NA
tungsten	<0.0010	<0.0010	0.001	NA	NA	NA
uranium	0.00588	0.00573	0.00002	0.00581	3%	NA
vanadium	<0.0010	0.001	0.001	NA	NA	NA
zinc	<0.0040	<0.0040	0.004	NA	NA	NA
zirconium	0.0002	0.0002	0.0001	0.0002	NA	0

Notes:
RADL = reported analytical detection limit.
QA/QC = Quality Assurance/Quality Control; FDA = Field Duplicate Available; FD = Field Duplicate
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the MDL; Golder's RPD target is less than 20%.
Difference Factor (DF) is calculated when the mean value is less than five times the MDL; Golder's DF target is less than 2.
< = Less than RADL; (-) = Parameter not analyzed; NC = Not Calculated; NA = Not Applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

LEGEND

- SITE LOCATION
- AIRFIELD
- INDIAN RESERVE
- PARK / PROTECTED AREA
- RESIDENTIAL AREA
- WETLAND
- WATERBODY
- WOODED AREA
- HIGHWAY
- MAJOR ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- CONTOUR (20m)

0 1,000 2,000

1:50,000 METRES

REFERENCES

1. ROAD, CONTOUR, WOODED AREA, HYDROLOGY, RESIDENTIAL AREAS AND AIRFIELD DATA OBTAINED FROM CANVEC © DEPARTMENT OF NATURAL RESOURCES CANADA. ALL RIGHTS RESERVED.
2. INDIAN RESERVES, PARK / PROTECTED AREAS, RAILWAY AND TOWN DATA CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENSE – BRITISH COLUMBIA.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 10N

CLIENT
CITY OF KELOWNA

PROJECT
2019 ANNUAL MONITORING REPORT BIOSOLID COMPOSTING FACILITY, VERNON, BC.

TITLE
KEY PLAN

CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-10
DESIGNED	GD
PREPARED	JP
REVIEWED	HH
APPROVED	PA

PROJECT NO.	PHASE	REV.	FIGURE
1542527	6000	A	1

PATH: Y:\burnaby\CAD-GIS\Client\City_of_Kelowna\Vernon\99_PROJECTS\1542527_2014_2015_ANNUAL_MONITORING_REPORT\02_PRODUCTION\ANNUAL_REPORT\MXD\Report\1542527_FIG1_KEY_PLAN_2017.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

25mm 0

LEGEND

MAJOR ROAD

0 150 300

1:6,000 METRES

REFERENCES

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3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 11N

CLIENT
CITY OF KELOWNA

PROJECT
2019 ANNUAL MONITORING REPORT
BIOSOLID COMPOSTING FACILITY, VERNON, BC.

TITLE
SITE PLAN

CONSULTANT
GOLDER

YYYY-MM-DD	2020-03-10
DESIGNED	GD
PREPARED	JP
REVIEWED	HH
APPROVED	PA

PROJECT NO.	PHASE	REV.	FIGURE
1542527	6000	A	2

PATH: Y:\burnaby\CAD-GIS\Client\City_of_Kelowna\Vernon\99_PROJECTS\1542527_2014_2015_ANNUAL_MONITORING_REPORT\02_PRODUCTION\ANNUAL_REPORT\MXD\Report\1542527_FIG2_SITE_PLAN_2017.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
25mm
0

APPENDIX A

CARO Analytical Services, Laboratory Certificates of Analysis (2019)

CERTIFICATE OF ANALYSIS

REPORTED TO	Kelowna, City of 1435 Water Street KELOWNA, BC V1Y 1J4		
ATTENTION	Marcia Browne	**WORK ORDER**	9052444
PO NUMBER	527007	**RECEIVED / TEMP**	2019-05-27 14:31 / 14°C
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12
PROJECT INFO		**COC NUMBER**	No Number

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of RBCF	**WORK ORDER**	9052444
PROJECT	Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9052444-01) | Matrix: Water | Sampled: 2019-05-27					F1
Anions					
Chloride	**391**	0.10	mg/L	2019-05-29	
Nitrate (as N)	**0.237**	0.010	mg/L	2019-05-29	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-05-28	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-05-28	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1080**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.237**	0.100	mg/L	N/A	
Nitrogen, Total	**1.75**	0.100	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0068**	0.0050	mg/L	2019-05-31	
Antimony, dissolved	**0.00037**	0.00020	mg/L	2019-05-31	
Arsenic, dissolved	**0.00323**	0.00050	mg/L	2019-05-31	
Barium, dissolved	**0.0201**	0.0050	mg/L	2019-05-31	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Boron, dissolved	**0.0791**	0.0050	mg/L	2019-05-31	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-05-31	
Calcium, dissolved	**72.4**	0.20	mg/L	2019-05-31	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Copper, dissolved	**0.00046**	0.00040	mg/L	2019-05-31	
Iron, dissolved	**0.013**	0.010	mg/L	2019-05-31	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-05-31	
Lithium, dissolved	**0.0443**	0.00010	mg/L	2019-05-31	
Magnesium, dissolved	**218**	0.010	mg/L	2019-05-31	
Manganese, dissolved	**0.00710**	0.00020	mg/L	2019-05-31	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-05-31	CT5
Molybdenum, dissolved	**0.00226**	0.00010	mg/L	2019-05-31	
Nickel, dissolved	**0.00106**	0.00040	mg/L	2019-05-31	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-05-31	
Potassium, dissolved	**65.2**	0.10	mg/L	2019-05-31	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Silicon, dissolved	< 1.0	1.0	mg/L	2019-05-31	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-05-31	
Sodium, dissolved	**649**	0.10	mg/L	2019-05-31	
Strontium, dissolved	**0.780**	0.0010	mg/L	2019-05-31	
Sulfur, dissolved	**619**	3.0	mg/L	2019-05-31	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-05-31	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-05-31	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9052444-01) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-05-31	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-05-31	
Uranium, dissolved	**0.00577**	0.000020	mg/L	2019-05-31	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-05-31	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-05-31	
Zirconium, dissolved	**0.00032**	0.00010	mg/L	2019-05-31	
General Parameters					
Ammonia, Total (as N)	**0.041**	0.020	mg/L	2019-05-29	
BOD, 5-day	< 8.0	2.0	mg/L	2019-06-03	
Chemical Oxygen Demand	**46**	20	mg/L	2019-05-31	
Conductivity (EC)	**4510**	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	**1.51**	0.050	mg/L	2019-05-31	
pH	**8.59**	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	**0.0232**	0.0020	mg/L	2019-06-02	
Solids, Total Dissolved	**3310**	15	mg/L	2019-05-31	
Solids, Total Suspended	**2.8**	2.0	mg/L	2019-05-29	
Microbiological Parameters					
Coliforms, Total (MPN)	**460**	3.0	MPN/100 mL	2019-05-28	
E. coli (MPN)	**23**	3.0	MPN/100 mL	2019-05-28	
Total Metals					
Aluminum, total	**0.0115**	0.0050	mg/L	2019-05-30	
Antimony, total	**0.00042**	0.00020	mg/L	2019-05-30	
Arsenic, total	**0.00356**	0.00050	mg/L	2019-05-30	
Barium, total	**0.0211**	0.0050	mg/L	2019-05-30	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-05-30	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-05-30	
Boron, total	**0.0892**	0.0050	mg/L	2019-05-30	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-05-30	
Calcium, total	**84.3**	0.20	mg/L	2019-05-30	
Chromium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Cobalt, total	**0.00013**	0.00010	mg/L	2019-05-30	
Copper, total	**0.00059**	0.00040	mg/L	2019-05-30	
Iron, total	**0.024**	0.010	mg/L	2019-05-30	
Lead, total	< 0.00020	0.00020	mg/L	2019-05-30	
Lithium, total	**0.0490**	0.00010	mg/L	2019-05-30	
Magnesium, total	**236**	0.010	mg/L	2019-05-30	
Manganese, total	**0.0384**	0.00020	mg/L	2019-05-30	
Mercury, total	< 0.000010	0.000010	mg/L	2019-06-02	
Molybdenum, total	**0.00226**	0.00010	mg/L	2019-05-30	
Nickel, total	**0.00104**	0.00040	mg/L	2019-05-30	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9052444-01) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Total Metals, Continued					
Phosphorus, total	< 0.050	0.050	mg/L	2019-05-30	
Potassium, total	**70.4**	0.10	mg/L	2019-05-30	
Selenium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Silicon, total	< 1.0	1.0	mg/L	2019-05-30	
Silver, total	< 0.000050	0.000050	mg/L	2019-05-30	
Sodium, total	**706**	0.10	mg/L	2019-05-30	
Strontium, total	**0.840**	0.0010	mg/L	2019-05-30	
Sulfur, total	**681**	3.0	mg/L	2019-05-30	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Thallium, total	< 0.000020	0.000020	mg/L	2019-05-30	
Thorium, total	< 0.00010	0.00010	mg/L	2019-05-30	
Tin, total	< 0.00020	0.00020	mg/L	2019-05-30	
Titanium, total	< 0.0050	0.0050	mg/L	2019-05-30	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-05-30	
Uranium, total	**0.00582**	0.000020	mg/L	2019-05-30	
Vanadium, total	< 0.0010	0.0010	mg/L	2019-05-30	
Zinc, total	< 0.0040	0.0040	mg/L	2019-05-30	
Zirconium, total	**0.00034**	0.00010	mg/L	2019-05-30	
Drainage Pond (9052444-02) | Matrix: Water | Sampled: 2019-05-27					F1
Anions					
Chloride	**91.4**	0.10	mg/L	2019-05-29	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-05-28	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-05-28	
Phosphate (as P)	**2.47**	0.0050	mg/L	2019-05-28	
Calculated Parameters					
Hardness, Total (as CaCO3)	**242**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**15.8**	0.500	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0219**	0.0050	mg/L	2019-05-31	
Antimony, dissolved	**0.00043**	0.00020	mg/L	2019-05-31	
Arsenic, dissolved	**0.00310**	0.00050	mg/L	2019-05-31	
Barium, dissolved	**0.0389**	0.0050	mg/L	2019-05-31	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Boron, dissolved	**0.153**	0.0050	mg/L	2019-05-31	
Cadmium, dissolved	**0.000054**	0.000010	mg/L	2019-05-31	
Calcium, dissolved	**53.6**	0.20	mg/L	2019-05-31	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Drainage Pond (9052444-02) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Dissolved Metals, Continued					
Cobalt, dissolved	**0.00051**	0.00010	mg/L	2019-05-31	
Copper, dissolved	**0.00937**	0.00040	mg/L	2019-05-31	
Iron, dissolved	**0.121**	0.010	mg/L	2019-05-31	
Lead, dissolved	**0.00026**	0.00020	mg/L	2019-05-31	
Lithium, dissolved	**0.0120**	0.00010	mg/L	2019-05-31	
Magnesium, dissolved	**26.1**	0.010	mg/L	2019-05-31	
Manganese, dissolved	**0.115**	0.00020	mg/L	2019-05-31	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-05-31	CT5
Molybdenum, dissolved	**0.00485**	0.00010	mg/L	2019-05-31	
Nickel, dissolved	**0.00267**	0.00040	mg/L	2019-05-31	
Phosphorus, dissolved	**3.30**	0.050	mg/L	2019-05-31	
Potassium, dissolved	**32.0**	0.10	mg/L	2019-05-31	
Selenium, dissolved	**0.00087**	0.00050	mg/L	2019-05-31	
Silicon, dissolved	**2.2**	1.0	mg/L	2019-05-31	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-05-31	
Sodium, dissolved	**92.3**	0.10	mg/L	2019-05-31	
Strontium, dissolved	**0.617**	0.0010	mg/L	2019-05-31	
Sulfur, dissolved	**44.1**	3.0	mg/L	2019-05-31	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-05-31	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Tin, dissolved	**0.00034**	0.00020	mg/L	2019-05-31	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-05-31	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-05-31	
Uranium, dissolved	**0.00271**	0.000020	mg/L	2019-05-31	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-05-31	
Zinc, dissolved	**0.0244**	0.0040	mg/L	2019-05-31	
Zirconium, dissolved	**0.00029**	0.00010	mg/L	2019-05-31	
General Parameters					
Ammonia, Total (as N)	**5.68**	0.020	mg/L	2019-05-29	
BOD, 5-day	**25.2**	2.0	mg/L	2019-06-03	
Chemical Oxygen Demand	**197**	20	mg/L	2019-05-31	
Conductivity (EC)	**1060**	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	**15.8**	0.050	mg/L	2019-05-31	
pH	**8.08**	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	**3.35**	0.0020	mg/L	2019-06-01	
Solids, Total Dissolved	**728**	15	mg/L	2019-05-31	
Solids, Total Suspended	**39.3**	2.0	mg/L	2019-05-29	
Microbiological Parameters					
Coliforms, Total (MPN)	**24000**	3.0	MPN/100 mL	2019-05-28	HT1
E. coli (MPN)	**930**	3.0	MPN/100 mL	2019-05-28	HT1

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Drainage Pond (9052444-02) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Total Metals					
Aluminum, total	**0.0882**	0.0050	mg/L	2019-05-30	
Antimony, total	**0.00043**	0.00020	mg/L	2019-05-30	
Arsenic, total	**0.00329**	0.00050	mg/L	2019-05-30	
Barium, total	**0.0478**	0.0050	mg/L	2019-05-30	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-05-30	
Bismuth, total	**0.00028**	0.00010	mg/L	2019-05-30	
Boron, total	**0.168**	0.0050	mg/L	2019-05-30	
Cadmium, total	**0.000125**	0.000010	mg/L	2019-05-30	
Calcium, total	**59.8**	0.20	mg/L	2019-05-30	
Chromium, total	**0.00069**	0.00050	mg/L	2019-05-30	
Cobalt, total	**0.00061**	0.00010	mg/L	2019-05-30	
Copper, total	**0.0178**	0.00040	mg/L	2019-05-30	
Iron, total	**0.332**	0.010	mg/L	2019-05-30	
Lead, total	**0.00060**	0.00020	mg/L	2019-05-30	
Lithium, total	**0.0125**	0.00010	mg/L	2019-05-30	
Magnesium, total	**26.8**	0.010	mg/L	2019-05-30	
Manganese, total	**0.194**	0.00020	mg/L	2019-05-30	
Mercury, total	< 0.000010	0.000010	mg/L	2019-06-02	
Molybdenum, total	**0.00454**	0.00010	mg/L	2019-05-30	
Nickel, total	**0.00296**	0.00040	mg/L	2019-05-30	
Phosphorus, total	**3.93**	0.050	mg/L	2019-05-30	
Potassium, total	**32.6**	0.10	mg/L	2019-05-30	
Selenium, total	**0.00108**	0.00050	mg/L	2019-05-30	
Silicon, total	**2.9**	1.0	mg/L	2019-05-30	
Silver, total	**0.000054**	0.000050	mg/L	2019-05-30	
Sodium, total	**95.2**	0.10	mg/L	2019-05-30	
Strontium, total	**0.630**	0.0010	mg/L	2019-05-30	
Sulfur, total	**46.0**	3.0	mg/L	2019-05-30	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Thallium, total	< 0.000020	0.000020	mg/L	2019-05-30	
Thorium, total	< 0.00010	0.00010	mg/L	2019-05-30	
Tin, total	**0.00052**	0.00020	mg/L	2019-05-30	
Titanium, total	< 0.0050	0.0050	mg/L	2019-05-30	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-05-30	
Uranium, total	**0.00245**	0.000020	mg/L	2019-05-30	
Vanadium, total	**0.0014**	0.0010	mg/L	2019-05-30	
Zinc, total	**0.0404**	0.0040	mg/L	2019-05-30	
Zirconium, total	**0.00029**	0.00010	mg/L	2019-05-30	
Davidson Pond (9052444-03) | Matrix: Water | Sampled: 2019-05-27					F1
Anions					

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9052444-03) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Anions, Continued					
Chloride	**303**	0.10	mg/L	2019-05-29	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-05-28	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-05-28	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-05-28	
Calculated Parameters					
Hardness, Total (as CaCO3)	**538**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**1.73**	0.100	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0277**	0.0050	mg/L	2019-05-31	
Antimony, dissolved	**0.00033**	0.00020	mg/L	2019-05-31	
Arsenic, dissolved	**0.00327**	0.00050	mg/L	2019-05-31	
Barium, dissolved	< 0.0050	0.0050	mg/L	2019-05-31	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Boron, dissolved	**0.0316**	0.0050	mg/L	2019-05-31	
Cadmium, dissolved	**0.000012**	0.000010	mg/L	2019-05-31	
Calcium, dissolved	**54.2**	0.20	mg/L	2019-05-31	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-05-31	
Iron, dissolved	**0.026**	0.010	mg/L	2019-05-31	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-05-31	
Lithium, dissolved	**0.0437**	0.00010	mg/L	2019-05-31	
Magnesium, dissolved	**97.7**	0.010	mg/L	2019-05-31	
Manganese, dissolved	**0.0529**	0.00020	mg/L	2019-05-31	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-05-31	CT5
Molybdenum, dissolved	**0.00099**	0.00010	mg/L	2019-05-31	
Nickel, dissolved	**0.00253**	0.00040	mg/L	2019-05-31	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-05-31	
Potassium, dissolved	**36.7**	0.10	mg/L	2019-05-31	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Silicon, dissolved	< 1.0	1.0	mg/L	2019-05-31	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-05-31	
Sodium, dissolved	**481**	0.10	mg/L	2019-05-31	
Strontium, dissolved	**0.871**	0.0010	mg/L	2019-05-31	
Sulfur, dissolved	**344**	3.0	mg/L	2019-05-31	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-05-31	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-05-31	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-05-31	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-05-31	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9052444-03) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-05-31	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-05-31	
Uranium, dissolved	**0.00521**	0.000020	mg/L	2019-05-31	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-05-31	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-05-31	
Zirconium, dissolved	**0.00016**	0.00010	mg/L	2019-05-31	
General Parameters					
Ammonia, Total (as N)	**0.057**	0.020	mg/L	2019-05-29	
BOD, 5-day	< 8.0	2.0	mg/L	2019-06-03	
Chemical Oxygen Demand	**60**	20	mg/L	2019-05-31	
Conductivity (EC)	**3120**	2.0	µS/cm	2019-05-28	
Nitrogen, Total Kjeldahl	**1.73**	0.050	mg/L	2019-05-31	
pH	**8.78**	0.10	pH units	2019-05-28	HT2
Phosphorus, Total (as P)	**0.0334**	0.0020	mg/L	2019-06-01	
Solids, Total Dissolved	**2090**	15	mg/L	2019-05-31	
Solids, Total Suspended	**6.6**	2.0	mg/L	2019-05-29	
Microbiological Parameters					
Coliforms, Total (MPN)	**43**	3.0	MPN/100 mL	2019-05-28	
E. coli (MPN)	**3.6**	3.0	MPN/100 mL	2019-05-28	
Total Metals					
Aluminum, total	**0.0360**	0.0050	mg/L	2019-05-30	
Antimony, total	**0.00035**	0.00020	mg/L	2019-05-30	
Arsenic, total	**0.00382**	0.00050	mg/L	2019-05-30	
Barium, total	< 0.0050	0.0050	mg/L	2019-05-30	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-05-30	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-05-30	
Boron, total	**0.0371**	0.0050	mg/L	2019-05-30	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-05-30	
Calcium, total	**62.5**	0.20	mg/L	2019-05-30	
Chromium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Cobalt, total	**0.00013**	0.00010	mg/L	2019-05-30	
Copper, total	**0.00055**	0.00040	mg/L	2019-05-30	
Iron, total	**0.086**	0.010	mg/L	2019-05-30	
Lead, total	< 0.00020	0.00020	mg/L	2019-05-30	
Lithium, total	**0.0468**	0.00010	mg/L	2019-05-30	
Magnesium, total	**131**	0.010	mg/L	2019-05-30	
Manganese, total	**0.111**	0.00020	mg/L	2019-05-30	
Mercury, total	< 0.000010	0.000010	mg/L	2019-06-02	
Molybdenum, total	**0.00102**	0.00010	mg/L	2019-05-30	
Nickel, total	**0.00198**	0.00040	mg/L	2019-05-30	

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9052444-03) | Matrix: Water | Sampled: 2019-05-27, Continued					F1
Total Metals, Continued					
Phosphorus, total	**0.064**	0.050	mg/L	2019-05-30	
Potassium, total	**49.1**	0.10	mg/L	2019-05-30	
Selenium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Silicon, total	**1.9**	1.0	mg/L	2019-05-30	
Silver, total	< 0.000050	0.000050	mg/L	2019-05-30	
Sodium, total	**649**	0.10	mg/L	2019-05-30	
Strontium, total	**1.00**	0.0010	mg/L	2019-05-30	
Sulfur, total	**471**	3.0	mg/L	2019-05-30	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-05-30	
Thallium, total	< 0.000020	0.000020	mg/L	2019-05-30	
Thorium, total	< 0.00010	0.00010	mg/L	2019-05-30	
Tin, total	< 0.00020	0.00020	mg/L	2019-05-30	
Titanium, total	< 0.0050	0.0050	mg/L	2019-05-30	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-05-30	
Uranium, total	**0.00519**	0.000020	mg/L	2019-05-30	
Vanadium, total	**0.0012**	0.0010	mg/L	2019-05-30	
Zinc, total	< 0.0040	0.0040	mg/L	2019-05-30	
Zirconium, total	**0.00020**	0.00010	mg/L	2019-05-30	

Sample Qualifiers:

CT5	This sample has been incorrectly preserved for Mercury analysis
F1	The sample was not field-filtered and was therefore filtered through a 0.45 µm membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.
HT1	The sample was prepared and/or analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Coliforms, Total in Water	SM 9221 B (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
E. coli in Water	SM 9221 (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:acrump@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9E2186										
Blank (B9E2186-BLK1)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
LCS (B9E2186-BS1)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Chloride	15.7	0.10	mg/L	16.0		98	90-110			
Nitrate (as N)	4.00	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	2.08	0.010	mg/L	2.00		104	85-115			
Phosphate (as P)	1.08	0.0050	mg/L	1.00		108	80-120			
Dissolved Metals, Batch B9E2399										
Blank (B9E2399-BLK1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9E2399, Continued										
Blank (B9E2399-BLK1), Continued				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
Blank (B9E2399-BLK2)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9E2399, Continued										
Blank (B9E2399-BLK2), Continued				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B9E2399-BS1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Aluminum, dissolved	0.0222	0.0050	mg/L	0.0200		111	80-120			
Antimony, dissolved	0.0212	0.00020	mg/L	0.0200		106	80-120			
Arsenic, dissolved	0.0201	0.00050	mg/L	0.0200		100	80-120			
Barium, dissolved	0.0207	0.0050	mg/L	0.0200		103	80-120			
Beryllium, dissolved	0.0211	0.00010	mg/L	0.0200		106	80-120			
Bismuth, dissolved	0.0218	0.00010	mg/L	0.0200		109	80-120			
Boron, dissolved	0.0207	0.0050	mg/L	0.0200		104	80-120			
Cadmium, dissolved	0.0207	0.000010	mg/L	0.0200		103	80-120			
Calcium, dissolved	1.92	0.20	mg/L	2.00		96	80-120			
Chromium, dissolved	0.0201	0.00050	mg/L	0.0200		100	80-120			
Cobalt, dissolved	0.0202	0.00010	mg/L	0.0200		101	80-120			
Copper, dissolved	0.0182	0.00040	mg/L	0.0200		91	80-120			
Iron, dissolved	1.88	0.010	mg/L	2.00		94	80-120			
Lead, dissolved	0.0207	0.00020	mg/L	0.0200		104	80-120			
Lithium, dissolved	0.0209	0.00010	mg/L	0.0200		105	80-120			
Magnesium, dissolved	2.04	0.010	mg/L	2.00		102	80-120			
Manganese, dissolved	0.0204	0.00020	mg/L	0.0200		102	80-120			
Mercury, dissolved	0.000886	0.000040	mg/L	0.00100		89	80-120			
Molybdenum, dissolved	0.0201	0.00010	mg/L	0.0200		101	80-120			
Nickel, dissolved	0.0209	0.00040	mg/L	0.0200		105	80-120			
Phosphorus, dissolved	1.91	0.050	mg/L	2.00		96	80-120			
Potassium, dissolved	1.85	0.10	mg/L	2.00		92	80-120			
Selenium, dissolved	0.0206	0.00050	mg/L	0.0200		103	80-120			
Silicon, dissolved	1.9	1.0	mg/L	2.00		96	80-120			
Silver, dissolved	0.0202	0.000050	mg/L	0.0200		101	80-120			
Sodium, dissolved	1.94	0.10	mg/L	2.00		97	80-120			
Strontium, dissolved	0.0205	0.0010	mg/L	0.0200		102	80-120			
Sulfur, dissolved	5.0	3.0	mg/L	5.00		101	80-120			
Tellurium, dissolved	0.0226	0.00050	mg/L	0.0200		113	80-120			
Thallium, dissolved	0.0215	0.000020	mg/L	0.0200		108	80-120			
Thorium, dissolved	0.0209	0.00010	mg/L	0.0200		104	80-120			
Tin, dissolved	0.0211	0.00020	mg/L	0.0200		106	80-120			
Titanium, dissolved	0.0208	0.0050	mg/L	0.0200		104	80-120			
Tungsten, dissolved	0.0204	0.0010	mg/L	0.0200		102	80-120			
Uranium, dissolved	0.0226	0.000020	mg/L	0.0200		113	80-120			
Vanadium, dissolved	0.0197	0.0010	mg/L	0.0200		99	80-120			
Zinc, dissolved	0.0217	0.0040	mg/L	0.0200		108	80-120			
Zirconium, dissolved	0.0220	0.00010	mg/L	0.0200		110	80-120			
Reference (B9E2399-SRM1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Aluminum, dissolved	0.239	0.0050	mg/L	0.233		102	79-114			
Antimony, dissolved	0.0468	0.00020	mg/L	0.0430		109	89-123			
Arsenic, dissolved	0.440	0.00050	mg/L	0.438		101	87-113			
Barium, dissolved	3.55	0.0050	mg/L	3.35		106	85-114			
Beryllium, dissolved	0.226	0.00010	mg/L	0.213		106	79-122			
Boron, dissolved	1.68	0.0050	mg/L	1.74		96	79-117			
Cadmium, dissolved	0.227	0.000010	mg/L	0.224		101	89-112			
Calcium, dissolved	7.04	0.20	mg/L	7.69		92	85-120			
Chromium, dissolved	0.428	0.00050	mg/L	0.437		98	87-113			
Cobalt, dissolved	0.126	0.00010	mg/L	0.128		99	90-117			
Copper, dissolved	0.846	0.00040	mg/L	0.844		100	90-115			
Iron, dissolved	1.20	0.010	mg/L	1.29		93	86-112			
Lead, dissolved	0.113	0.00020	mg/L	0.112		101	90-113			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9E2399, Continued										
Reference (B9E2399-SRM1), Continued				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Lithium, dissolved	0.104	0.00010	mg/L	0.104		100	77-127			
Magnesium, dissolved	6.45	0.010	mg/L	6.92		93	84-116			
Manganese, dissolved	0.334	0.00020	mg/L	0.345		97	85-113			
Molybdenum, dissolved	0.421	0.00010	mg/L	0.426		99	87-112			
Nickel, dissolved	0.842	0.00040	mg/L	0.840		100	90-114			
Phosphorus, dissolved	0.493	0.050	mg/L	0.495		100	74-119			
Potassium, dissolved	2.77	0.10	mg/L	3.19		87	78-119			
Selenium, dissolved	0.0338	0.00050	mg/L	0.0331		102	89-123			
Sodium, dissolved	17.1	0.10	mg/L	19.1		90	81-117			
Strontium, dissolved	0.926	0.0010	mg/L	0.916		101	82-111			
Thallium, dissolved	0.0417	0.000020	mg/L	0.0393		106	90-113			
Uranium, dissolved	0.257	0.000020	mg/L	0.266		97	87-113			
Vanadium, dissolved	0.843	0.0010	mg/L	0.869		97	85-110			
Zinc, dissolved	0.922	0.0040	mg/L	0.881		105	88-114			
General Parameters, Batch B9E2247										
Blank (B9E2247-BLK1)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9E2247-BLK2)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B9E2247-BS3)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Conductivity (EC)	1370	2.0	µS/cm	1410		97	95-104			
LCS (B9E2247-BS4)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Conductivity (EC)	1360	2.0	µS/cm	1410		97	95-104			
Reference (B9E2247-SRM1)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
pH	7.00	0.10	pH units	7.01		100	98-102			
Reference (B9E2247-SRM2)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
pH	7.01	0.10	pH units	7.01		100	98-102			
General Parameters, Batch B9E2267										
Blank (B9E2267-BLK1)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9E2267-BLK2)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9E2267-BLK3)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9E2267-BLK4)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9E2267-BS1)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	1.03	0.020	mg/L	1.00		103	90-115			
LCS (B9E2267-BS2)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	1.06	0.020	mg/L	1.00		106	90-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9E2267, Continued										
LCS (B9E2267-BS3)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	1.10	0.020	mg/L	1.00		110	90-115			
LCS (B9E2267-BS4)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Ammonia, Total (as N)	1.09	0.020	mg/L	1.00		109	90-115			
General Parameters, Batch B9E2384										
Blank (B9E2384-BLK1)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Solids, Total Suspended	< 1.0	1.0	mg/L							
LCS (B9E2384-BS1)				Prepared: 2019-05-29, Analyzed: 2019-05-29						
Solids, Total Suspended	102	10.0	mg/L	100		102	85-115			
Duplicate (B9E2384-DUP1)		**Source: 9052444-02**		Prepared: 2019-05-29, Analyzed: 2019-05-29						
Solids, Total Suspended	36.0	2.0	mg/L		39.3			9	20	
General Parameters, Batch B9E2391										
Blank (B9E2391-BLK1)				Prepared: 2019-05-29, Analyzed: 2019-06-03						
BOD, 5-day	< 2.0	2.0	mg/L							
LCS (B9E2391-BS1)				Prepared: 2019-05-29, Analyzed: 2019-06-03						
BOD, 5-day	197	2.0	mg/L	198		100	85-115			
General Parameters, Batch B9E2407										
Blank (B9E2407-BLK1)				Prepared: 2019-05-30, Analyzed: 2019-05-31						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
Blank (B9E2407-BLK2)				Prepared: 2019-05-30, Analyzed: 2019-05-31						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
LCS (B9E2407-BS1)				Prepared: 2019-05-30, Analyzed: 2019-05-31						
Nitrogen, Total Kjeldahl	1.05	0.050	mg/L	1.00		105	85-115			
LCS (B9E2407-BS2)				Prepared: 2019-05-30, Analyzed: 2019-05-31						
Nitrogen, Total Kjeldahl	1.02	0.050	mg/L	1.00		102	85-115			
Duplicate (B9E2407-DUP1)		**Source: 9052444-03**		Prepared: 2019-05-30, Analyzed: 2019-05-31						
Nitrogen, Total Kjeldahl	1.76	0.050	mg/L		1.73			2	15	
Matrix Spike (B9E2407-MS1)		**Source: 9052444-03**		Prepared: 2019-05-30, Analyzed: 2019-05-31						
Nitrogen, Total Kjeldahl	5.88	0.200	mg/L	4.00	1.73	104	65-135			
General Parameters, Batch B9E2488										
Blank (B9E2488-BLK1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B9E2488-BS1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Solids, Total Dissolved	232	15	mg/L	240		97	85-115			
Duplicate (B9E2488-DUP1)		**Source: 9052444-03**		Prepared: 2019-05-31, Analyzed: 2019-05-31						
Solids, Total Dissolved	2150	15	mg/L		2090			3	15	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9E2522										
Blank (B9E2522-BLK1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Chemical Oxygen Demand	< 20	20	mg/L							
LCS (B9E2522-BS1)				Prepared: 2019-05-31, Analyzed: 2019-05-31						
Chemical Oxygen Demand	503	20	mg/L	500		101	89-115			
Duplicate (B9E2522-DUP1)		**Source: 9052444-01**		Prepared: 2019-05-31, Analyzed: 2019-05-31						
Chemical Oxygen Demand	49	20	mg/L		46				14	
Matrix Spike (B9E2522-MS1)		**Source: 9052444-01**		Prepared: 2019-05-31, Analyzed: 2019-05-31						
Chemical Oxygen Demand	2030	20	mg/L	2000	46	99	75-125			
General Parameters, Batch B9F0003										
Blank (B9F0003-BLK1)				Prepared: 2019-06-01, Analyzed: 2019-06-02						
Phosphorus, Total (as P)	< 0.0020	0.0020	mg/L							
LCS (B9F0003-BS1)				Prepared: 2019-06-01, Analyzed: 2019-06-02						
Phosphorus, Total (as P)	0.0961	0.0020	mg/L	0.100		96	85-115			
Microbiological Parameters, Batch B9E2209										
Blank (B9E2209-BLK1)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Blank (B9E2209-BLK2)				Prepared: 2019-05-28, Analyzed: 2019-05-28						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Total Metals, Batch B9E2398										
Blank (B9E2398-BLK1)				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9E2398, Continued										
Blank (B9E2398-BLK1), Continued				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9E2398-BLK2)				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9E2398, Continued										
Blank (B9E2398-BLK3)				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B9E2398-BS1)				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Aluminum, total	0.0225	0.0050	mg/L	0.0200		113	80-120			
Antimony, total	0.0219	0.00020	mg/L	0.0200		110	80-120			
Arsenic, total	0.0215	0.00050	mg/L	0.0200		108	80-120			
Barium, total	0.0206	0.0050	mg/L	0.0200		103	80-120			
Beryllium, total	0.0215	0.00010	mg/L	0.0200		107	80-120			
Bismuth, total	0.0219	0.00010	mg/L	0.0200		109	80-120			
Boron, total	0.0221	0.0050	mg/L	0.0200		110	80-120			
Cadmium, total	0.0212	0.000010	mg/L	0.0200		106	80-120			
Calcium, total	2.07	0.20	mg/L	2.00		103	80-120			
Chromium, total	0.0205	0.00050	mg/L	0.0200		102	80-120			
Cobalt, total	0.0205	0.00010	mg/L	0.0200		103	80-120			
Copper, total	0.0218	0.00040	mg/L	0.0200		109	80-120			
Iron, total	1.90	0.010	mg/L	2.00		95	80-120			
Lead, total	0.0207	0.00020	mg/L	0.0200		104	80-120			
Lithium, total	0.0216	0.00010	mg/L	0.0200		108	80-120			
Magnesium, total	2.06	0.010	mg/L	2.00		103	80-120			
Manganese, total	0.0200	0.00020	mg/L	0.0200		100	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9052444
PROJECT	RBCF Ponds	**REPORTED**	2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9E2398, Continued										
LCS (B9E2398-BS1), Continued				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Molybdenum, total	0.0199	0.00010	mg/L	0.0200		100	80-120			
Nickel, total	0.0211	0.00040	mg/L	0.0200		106	80-120			
Phosphorus, total	2.08	0.050	mg/L	2.00		104	80-120			
Potassium, total	1.93	0.10	mg/L	2.00		96	80-120			
Selenium, total	0.0240	0.00050	mg/L	0.0200		120	80-120			
Silicon, total	2.1	1.0	mg/L	2.00		107	80-120			
Silver, total	0.0204	0.000050	mg/L	0.0200		102	80-120			
Sodium, total	2.00	0.10	mg/L	2.00		100	80-120			
Strontium, total	0.0206	0.0010	mg/L	0.0200		103	80-120			
Sulfur, total	4.0	3.0	mg/L	5.00		81	80-120			
Tellurium, total	0.0223	0.00050	mg/L	0.0200		112	80-120			
Thallium, total	0.0218	0.000020	mg/L	0.0200		109	80-120			
Thorium, total	0.0207	0.00010	mg/L	0.0200		103	80-120			
Tin, total	0.0205	0.00020	mg/L	0.0200		102	80-120			
Titanium, total	0.0210	0.0050	mg/L	0.0200		105	80-120			
Tungsten, total	0.0204	0.0010	mg/L	0.0200		102	80-120			
Uranium, total	0.0232	0.000020	mg/L	0.0200		116	80-120			
Vanadium, total	0.0211	0.0010	mg/L	0.0200		106	80-120			
Zinc, total	0.0234	0.0040	mg/L	0.0200		117	80-120			
Zirconium, total	0.0220	0.00010	mg/L	0.0200		110	80-120			
Reference (B9E2398-SRM1)				Prepared: 2019-05-30, Analyzed: 2019-05-30						
Aluminum, total	0.276	0.0050	mg/L	0.303		91	82-114			
Antimony, total	0.0511	0.00020	mg/L	0.0511		100	88-115			
Arsenic, total	0.122	0.00050	mg/L	0.118		104	88-111			
Barium, total	0.779	0.0050	mg/L	0.823		95	83-110			
Beryllium, total	0.0505	0.00010	mg/L	0.0496		102	80-119			
Boron, total	3.31	0.0050	mg/L	3.45		96	80-118			
Cadmium, total	0.0493	0.000010	mg/L	0.0495		100	90-110			
Calcium, total	10.7	0.20	mg/L	11.6		92	85-113			
Chromium, total	0.251	0.00050	mg/L	0.250		100	88-111			
Cobalt, total	0.0383	0.00010	mg/L	0.0377		102	90-114			
Copper, total	0.515	0.00040	mg/L	0.486		106	90-117			
Iron, total	0.451	0.010	mg/L	0.488		92	90-116			
Lead, total	0.197	0.00020	mg/L	0.204		97	90-110			
Lithium, total	0.401	0.00010	mg/L	0.403		100	79-118			
Magnesium, total	3.63	0.010	mg/L	3.79		96	88-116			
Manganese, total	0.103	0.00020	mg/L	0.109		94	88-108			
Molybdenum, total	0.191	0.00010	mg/L	0.198		97	88-110			
Nickel, total	0.248	0.00040	mg/L	0.249		100	90-112			
Phosphorus, total	0.220	0.050	mg/L	0.227		97	72-118			
Potassium, total	6.67	0.10	mg/L	7.21		93	87-116			
Selenium, total	0.140	0.00050	mg/L	0.121		116	90-122			
Sodium, total	7.07	0.10	mg/L	7.54		94	86-118			
Strontium, total	0.373	0.0010	mg/L	0.375		99	86-110			
Thallium, total	0.0826	0.000020	mg/L	0.0805		103	90-113			
Uranium, total	0.0313	0.000020	mg/L	0.0306		102	88-112			
Vanadium, total	0.382	0.0010	mg/L	0.386		99	87-110			
Zinc, total	2.69	0.0040	mg/L	2.49		108	90-113			
Total Metals, Batch B9F0051										
Blank (B9F0051-BLK1)				Prepared: 2019-06-02, Analyzed: 2019-06-02						
Mercury, total	< 0.000010	0.000010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Kelowna, City of
PROJECT RBCF Ponds

WORK ORDER 9052444
REPORTED 2019-06-03 16:12

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9F0051, Continued										
Blank (B9F0051-BLK2)				Prepared: 2019-06-02, Analyzed: 2019-06-02						
Mercury, total	< 0.000010	0.000010	mg/L							
Duplicate (B9F0051-DUP1)			**Source: 9052444-01**	Prepared: 2019-06-02, Analyzed: 2019-06-02						
Mercury, total	< 0.000010	0.000010	mg/L		< 0.000010				20	
Matrix Spike (B9F0051-MS1)			**Source: 9052444-03**	Prepared: 2019-06-02, Analyzed: 2019-06-02						
Mercury, total	0.000219	0.000010	mg/L	0.000250	< 0.000010	88	70-130			
Reference (B9F0051-SRM1)				Prepared: 2019-06-02, Analyzed: 2019-06-02						
Mercury, total	0.00446	0.000010	mg/L	0.00489		91	80-120			
Reference (B9F0051-SRM2)				Prepared: 2019-06-02, Analyzed: 2019-06-02						
Mercury, total	0.00415	0.000010	mg/L	0.00489		85	80-120			

CERTIFICATE OF ANALYSIS

REPORTED TO	Kelowna, City of 1435 Water Street KELOWNA, BC V1Y 1J4		
ATTENTION	Marcia Browne	**WORK ORDER**	9061376
PO NUMBER	527007	**RECEIVED / TEMP**	2019-06-13 15:12 / 17°C
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17
PROJECT INFO		**COC NUMBER**	43627.55633

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9061376-01) | Matrix: Water | Sampled: 2019-06-13 13:30					F1
Anions					
Chloride	**370**	0.10	mg/L	2019-06-15	
Nitrate (as N)	< 0.100	0.010	mg/L	2019-06-15	RA1
Nitrite (as N)	< 0.010	0.010	mg/L	2019-06-15	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-06-15	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1110**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.100	0.100	mg/L	N/A	
Nitrogen, Total	**1.54**	0.100	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0094**	0.0050	mg/L	2019-06-20	
Antimony, dissolved	**0.00040**	0.00020	mg/L	2019-06-20	
Arsenic, dissolved	**0.00348**	0.00050	mg/L	2019-06-20	
Barium, dissolved	**0.0198**	0.0050	mg/L	2019-06-20	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Boron, dissolved	**0.0806**	0.0050	mg/L	2019-06-20	
Cadmium, dissolved	**0.000017**	0.000010	mg/L	2019-06-20	
Calcium, dissolved	**73.3**	0.20	mg/L	2019-06-20	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Cobalt, dissolved	**0.00011**	0.00010	mg/L	2019-06-20	
Copper, dissolved	**0.00061**	0.00040	mg/L	2019-06-20	
Iron, dissolved	< 0.010	0.010	mg/L	2019-06-20	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-06-20	
Lithium, dissolved	**0.0451**	0.00010	mg/L	2019-06-20	
Magnesium, dissolved	**226**	0.010	mg/L	2019-06-20	
Manganese, dissolved	**0.00124**	0.00020	mg/L	2019-06-20	
Mercury, dissolved	**0.000553**	0.000040	mg/L	2019-06-20	CT5
Molybdenum, dissolved	**0.00221**	0.00010	mg/L	2019-06-20	
Nickel, dissolved	**0.00109**	0.00040	mg/L	2019-06-20	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-06-20	
Potassium, dissolved	**67.1**	0.10	mg/L	2019-06-20	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Silicon, dissolved	< 1.0	1.0	mg/L	2019-06-20	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-06-20	
Sodium, dissolved	**673**	0.10	mg/L	2019-06-20	
Strontium, dissolved	**0.725**	0.0010	mg/L	2019-06-20	
Sulfur, dissolved	**667**	3.0	mg/L	2019-06-20	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-06-20	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-06-20	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9061376-01) | Matrix: Water | Sampled: 2019-06-13 13:30, Continued					F1
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-06-20	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-06-20	
Uranium, dissolved	**0.00522**	0.000020	mg/L	2019-06-20	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-06-20	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-06-20	
Zirconium, dissolved	**0.00032**	0.00010	mg/L	2019-06-20	
General Parameters					
Ammonia, Total (as N)	**0.086**	0.020	mg/L	2019-06-17	
BOD, 5-day	**8.2**	2.0	mg/L	2019-06-19	
Chemical Oxygen Demand	**86**	20	mg/L	2019-06-17	
Conductivity (EC)	**4600**	2.0	µS/cm	2019-06-17	
Nitrogen, Total Kjeldahl	**1.54**	0.050	mg/L	2019-06-17	
pH	**8.71**	0.10	pH units	2019-06-17	HT2
Phosphorus, Total (as P)	**0.0426**	0.0020	mg/L	2019-06-18	
Solids, Total Dissolved	**3280**	15	mg/L	2019-06-17	
Solids, Total Suspended	**7.6**	2.0	mg/L	2019-06-14	
Microbiological Parameters					
Coliforms, Total (MPN)	**1100**	3.0	MPN/100 mL	2019-06-14	
E. coli (MPN)	**9.1**	3.0	MPN/100 mL	2019-06-14	
Total Metals					
Aluminum, total	**0.145**	0.0050	mg/L	2019-06-20	
Antimony, total	**0.00046**	0.00020	mg/L	2019-06-20	
Arsenic, total	**0.00395**	0.00050	mg/L	2019-06-20	
Barium, total	**0.0219**	0.0050	mg/L	2019-06-20	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-06-20	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-06-20	
Boron, total	**0.0859**	0.0050	mg/L	2019-06-20	
Cadmium, total	**0.000026**	0.000010	mg/L	2019-06-20	
Calcium, total	**78.6**	0.20	mg/L	2019-06-20	
Chromium, total	**0.00117**	0.00050	mg/L	2019-06-20	
Cobalt, total	**0.00021**	0.00010	mg/L	2019-06-20	
Copper, total	**0.00097**	0.00040	mg/L	2019-06-20	
Iron, total	**0.115**	0.010	mg/L	2019-06-20	
Lead, total	< 0.00020	0.00020	mg/L	2019-06-20	
Lithium, total	**0.0494**	0.00010	mg/L	2019-06-20	
Magnesium, total	**248**	0.010	mg/L	2019-06-20	
Manganese, total	**0.0327**	0.00020	mg/L	2019-06-20	
Mercury, total	< 0.000010	0.000010	mg/L	2019-06-20	
Molybdenum, total	**0.00226**	0.00010	mg/L	2019-06-20	
Nickel, total	**0.00438**	0.00040	mg/L	2019-06-20	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9061376-01) | Matrix: Water | Sampled: 2019-06-13 13:30, Continued					F1
Total Metals, Continued					
Phosphorus, total	**0.066**	0.050	mg/L	2019-06-20	
Potassium, total	**71.4**	0.10	mg/L	2019-06-20	
Selenium, total	< 0.00050	0.00050	mg/L	2019-06-20	
Silicon, total	< 1.0	1.0	mg/L	2019-06-20	
Silver, total	< 0.000050	0.000050	mg/L	2019-06-20	
Sodium, total	**732**	0.10	mg/L	2019-06-20	
Strontium, total	**0.772**	0.0010	mg/L	2019-06-20	
Sulfur, total	**698**	3.0	mg/L	2019-06-20	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-06-20	
Thallium, total	< 0.000020	0.000020	mg/L	2019-06-20	
Thorium, total	< 0.00010	0.00010	mg/L	2019-06-20	
Tin, total	< 0.00020	0.00020	mg/L	2019-06-20	
Titanium, total	< 0.0050	0.0050	mg/L	2019-06-20	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-06-20	
Uranium, total	**0.00580**	0.000020	mg/L	2019-06-20	
Vanadium, total	< 0.0010	0.0010	mg/L	2019-06-20	
Zinc, total	< 0.0040	0.0040	mg/L	2019-06-20	
Zirconium, total	**0.00042**	0.00010	mg/L	2019-06-20	
Drainage Pond (9061376-02) | Matrix: Water | Sampled: 2019-06-13 13:00					F1
Anions					
Chloride	**96.2**	0.10	mg/L	2019-06-15	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-06-15	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-06-15	
Phosphate (as P)	**1.06**	0.0050	mg/L	2019-06-15	
Calculated Parameters					
Hardness, Total (as CaCO3)	**233**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**5.00**	1.00	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0194**	0.0050	mg/L	2019-06-20	
Antimony, dissolved	**0.00035**	0.00020	mg/L	2019-06-20	
Arsenic, dissolved	**0.00226**	0.00050	mg/L	2019-06-20	
Barium, dissolved	**0.0208**	0.0050	mg/L	2019-06-20	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Boron, dissolved	**0.156**	0.0050	mg/L	2019-06-20	
Cadmium, dissolved	**0.000023**	0.000010	mg/L	2019-06-20	
Calcium, dissolved	**53.1**	0.20	mg/L	2019-06-20	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Drainage Pond (9061376-02) | Matrix: Water | Sampled: 2019-06-13 13:00, Continued					F1
Dissolved Metals, Continued					
Cobalt, dissolved	**0.00043**	0.00010	mg/L	2019-06-20	
Copper, dissolved	**0.00537**	0.00040	mg/L	2019-06-20	
Iron, dissolved	**0.047**	0.010	mg/L	2019-06-20	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-06-20	
Lithium, dissolved	**0.0117**	0.00010	mg/L	2019-06-20	
Magnesium, dissolved	**24.4**	0.010	mg/L	2019-06-20	
Manganese, dissolved	**0.0183**	0.00020	mg/L	2019-06-20	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-06-20	CT5
Molybdenum, dissolved	**0.00424**	0.00010	mg/L	2019-06-20	
Nickel, dissolved	**0.00199**	0.00040	mg/L	2019-06-20	
Phosphorus, dissolved	**1.38**	0.050	mg/L	2019-06-20	
Potassium, dissolved	**24.0**	0.10	mg/L	2019-06-20	
Selenium, dissolved	**0.00068**	0.00050	mg/L	2019-06-20	
Silicon, dissolved	**3.3**	1.0	mg/L	2019-06-20	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-06-20	
Sodium, dissolved	**96.0**	0.10	mg/L	2019-06-20	
Strontium, dissolved	**0.554**	0.0010	mg/L	2019-06-20	
Sulfur, dissolved	**40.6**	3.0	mg/L	2019-06-20	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-06-20	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-06-20	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-06-20	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-06-20	
Uranium, dissolved	**0.00227**	0.000020	mg/L	2019-06-20	
Vanadium, dissolved	**0.0013**	0.0010	mg/L	2019-06-20	
Zinc, dissolved	**0.0109**	0.0040	mg/L	2019-06-20	
Zirconium, dissolved	**0.00014**	0.00010	mg/L	2019-06-20	
General Parameters					
Ammonia, Total (as N)	**0.310**	0.020	mg/L	2019-06-17	
BOD, 5-day	**17.9**	2.0	mg/L	2019-06-19	
Chemical Oxygen Demand	**104**	20	mg/L	2019-06-17	
Conductivity (EC)	**900**	2.0	µS/cm	2019-06-17	
Nitrogen, Total Kjeldahl	**5.00**	0.050	mg/L	2019-06-17	
pH	**9.29**	0.10	pH units	2019-06-17	HT2
Phosphorus, Total (as P)	**2.10**	0.0020	mg/L	2019-06-18	
Solids, Total Dissolved	**613**	15	mg/L	2019-06-17	
Solids, Total Suspended	**29.0**	2.0	mg/L	2019-06-14	
Microbiological Parameters					
Coliforms, Total (MPN)	**11000**	3.0	MPN/100 mL	2019-06-14	
E. coli (MPN)	**15**	3.0	MPN/100 mL	2019-06-14	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Drainage Pond (9061376-02) | Matrix: Water | Sampled: 2019-06-13 13:00, Continued					F1
Total Metals					
Aluminum, total	**0.0796**	0.0050	mg/L	2019-06-20	
Antimony, total	**0.00035**	0.00020	mg/L	2019-06-20	
Arsenic, total	**0.00256**	0.00050	mg/L	2019-06-20	
Barium, total	**0.0341**	0.0050	mg/L	2019-06-20	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-06-20	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-06-20	
Boron, total	**0.162**	0.0050	mg/L	2019-06-20	
Cadmium, total	**0.000041**	0.000010	mg/L	2019-06-20	
Calcium, total	**57.4**	0.20	mg/L	2019-06-20	
Chromium, total	**0.00107**	0.00050	mg/L	2019-06-20	
Cobalt, total	**0.00051**	0.00010	mg/L	2019-06-20	
Copper, total	**0.00691**	0.00040	mg/L	2019-06-20	
Iron, total	**0.203**	0.010	mg/L	2019-06-20	
Lead, total	**0.00042**	0.00020	mg/L	2019-06-20	
Lithium, total	**0.0125**	0.00010	mg/L	2019-06-20	
Magnesium, total	**26.0**	0.010	mg/L	2019-06-20	
Manganese, total	**0.126**	0.00020	mg/L	2019-06-20	
Mercury, total	< 0.000010	0.000010	mg/L	2019-06-20	
Molybdenum, total	**0.00354**	0.00010	mg/L	2019-06-20	
Nickel, total	**0.00245**	0.00040	mg/L	2019-06-20	
Phosphorus, total	**2.13**	0.050	mg/L	2019-06-20	
Potassium, total	**25.1**	0.10	mg/L	2019-06-20	
Selenium, total	**0.00068**	0.00050	mg/L	2019-06-20	
Silicon, total	**3.3**	1.0	mg/L	2019-06-20	
Silver, total	< 0.000050	0.000050	mg/L	2019-06-20	
Sodium, total	**102**	0.10	mg/L	2019-06-20	
Strontium, total	**0.603**	0.0010	mg/L	2019-06-20	
Sulfur, total	**41.3**	3.0	mg/L	2019-06-20	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-06-20	
Thallium, total	< 0.000020	0.000020	mg/L	2019-06-20	
Thorium, total	< 0.00010	0.00010	mg/L	2019-06-20	
Tin, total	**0.00025**	0.00020	mg/L	2019-06-20	
Titanium, total	< 0.0050	0.0050	mg/L	2019-06-20	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-06-20	
Uranium, total	**0.00161**	0.000020	mg/L	2019-06-20	
Vanadium, total	**0.0013**	0.0010	mg/L	2019-06-20	
Zinc, total	**0.0227**	0.0040	mg/L	2019-06-20	
Zirconium, total	**0.00021**	0.00010	mg/L	2019-06-20	
Davidson Pond (9061376-03) | Matrix: Water | Sampled: 2019-06-13 11:00					F1
Anions					

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9061376-03) | Matrix: Water | Sampled: 2019-06-13 11:00, Continued					F1
Anions, Continued					
Chloride	**305**	0.10	mg/L	2019-06-15	
Nitrate (as N)	< 0.100	0.010	mg/L	2019-06-15	RA1
Nitrite (as N)	< 0.010	0.010	mg/L	2019-06-15	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-06-15	
Calculated Parameters					
Hardness, Total (as CaCO3)	**568**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.100	0.100	mg/L	N/A	
Nitrogen, Total	**1.74**	0.100	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0057**	0.0050	mg/L	2019-06-20	
Antimony, dissolved	**0.00037**	0.00020	mg/L	2019-06-20	
Arsenic, dissolved	**0.00348**	0.00050	mg/L	2019-06-20	
Barium, dissolved	**0.0074**	0.0050	mg/L	2019-06-20	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Boron, dissolved	**0.0329**	0.0050	mg/L	2019-06-20	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-06-20	
Calcium, dissolved	**54.3**	0.20	mg/L	2019-06-20	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Cobalt, dissolved	**0.00011**	0.00010	mg/L	2019-06-20	
Copper, dissolved	**0.00048**	0.00040	mg/L	2019-06-20	
Iron, dissolved	< 0.010	0.010	mg/L	2019-06-20	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-06-20	
Lithium, dissolved	**0.0455**	0.00010	mg/L	2019-06-20	
Magnesium, dissolved	**105**	0.010	mg/L	2019-06-20	
Manganese, dissolved	**0.00140**	0.00020	mg/L	2019-06-20	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-06-20	CT5
Molybdenum, dissolved	**0.00098**	0.00010	mg/L	2019-06-20	
Nickel, dissolved	**0.00173**	0.00040	mg/L	2019-06-20	
Phosphorus, dissolved	**0.055**	0.050	mg/L	2019-06-20	
Potassium, dissolved	**38.7**	0.10	mg/L	2019-06-20	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Silicon, dissolved	**1.3**	1.0	mg/L	2019-06-20	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-06-20	
Sodium, dissolved	**515**	0.10	mg/L	2019-06-20	
Strontium, dissolved	**0.848**	0.0010	mg/L	2019-06-20	
Sulfur, dissolved	**375**	3.0	mg/L	2019-06-20	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-06-20	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-06-20	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-06-20	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-06-20	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9061376-03) | Matrix: Water | Sampled: 2019-06-13 11:00, Continued					F1
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-06-20	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-06-20	
Uranium, dissolved	**0.00458**	0.000020	mg/L	2019-06-20	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-06-20	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-06-20	
Zirconium, dissolved	**0.00017**	0.00010	mg/L	2019-06-20	
General Parameters					
Ammonia, Total (as N)	**0.108**	0.020	mg/L	2019-06-17	
BOD, 5-day	**6.1**	2.0	mg/L	2019-06-19	
Chemical Oxygen Demand	**70**	20	mg/L	2019-06-17	
Conductivity (EC)	**3240**	2.0	µS/cm	2019-06-17	
Nitrogen, Total Kjeldahl	**1.74**	0.050	mg/L	2019-06-17	
pH	**8.69**	0.10	pH units	2019-06-17	HT2
Phosphorus, Total (as P)	**0.0437**	0.0020	mg/L	2019-06-18	
Solids, Total Dissolved	**2160**	15	mg/L	2019-06-17	
Solids, Total Suspended	**5.4**	2.0	mg/L	2019-06-14	
Microbiological Parameters					
Coliforms, Total (MPN)	**460**	3.0	MPN/100 mL	2019-06-14	
E. coli (MPN)	**39**	3.0	MPN/100 mL	2019-06-14	
Total Metals					
Aluminum, total	**0.136**	0.0050	mg/L	2019-06-20	
Antimony, total	**0.00035**	0.00020	mg/L	2019-06-20	
Arsenic, total	**0.00398**	0.00050	mg/L	2019-06-20	
Barium, total	**0.0086**	0.0050	mg/L	2019-06-20	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-06-20	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-06-20	
Boron, total	**0.0334**	0.0050	mg/L	2019-06-20	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-06-20	
Calcium, total	**57.0**	0.20	mg/L	2019-06-20	
Chromium, total	**0.00147**	0.00050	mg/L	2019-06-20	
Cobalt, total	**0.00017**	0.00010	mg/L	2019-06-20	
Copper, total	**0.00081**	0.00040	mg/L	2019-06-20	
Iron, total	**0.196**	0.010	mg/L	2019-06-20	
Lead, total	< 0.00020	0.00020	mg/L	2019-06-20	
Lithium, total	**0.0481**	0.00010	mg/L	2019-06-20	
Magnesium, total	**112**	0.010	mg/L	2019-06-20	
Manganese, total	**0.0484**	0.00020	mg/L	2019-06-20	
Mercury, total	< 0.000010	0.000010	mg/L	2019-06-20	
Molybdenum, total	**0.00105**	0.00010	mg/L	2019-06-20	
Nickel, total	**0.00235**	0.00040	mg/L	2019-06-20	

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9061376-03) | Matrix: Water | Sampled: 2019-06-13 11:00, Continued					F1
Total Metals, Continued					
Phosphorus, total	**0.077**	0.050	mg/L	2019-06-20	
Potassium, total	**40.5**	0.10	mg/L	2019-06-20	
Selenium, total	< 0.00050	0.00050	mg/L	2019-06-20	
Silicon, total	**1.3**	1.0	mg/L	2019-06-20	
Silver, total	< 0.000050	0.000050	mg/L	2019-06-20	
Sodium, total	**549**	0.10	mg/L	2019-06-20	
Strontium, total	**0.887**	0.0010	mg/L	2019-06-20	
Sulfur, total	**393**	3.0	mg/L	2019-06-20	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-06-20	
Thallium, total	< 0.000020	0.000020	mg/L	2019-06-20	
Thorium, total	< 0.00010	0.00010	mg/L	2019-06-20	
Tin, total	< 0.00020	0.00020	mg/L	2019-06-20	
Titanium, total	**0.0066**	0.0050	mg/L	2019-06-20	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-06-20	
Uranium, total	**0.00492**	0.000020	mg/L	2019-06-20	
Vanadium, total	< 0.0010	0.0010	mg/L	2019-06-20	
Zinc, total	< 0.0040	0.0040	mg/L	2019-06-20	
Zirconium, total	**0.00028**	0.00010	mg/L	2019-06-20	

Sample Qualifiers:

CT5	This sample has been incorrectly preserved for Mercury analysis
F1	The sample was not field-filtered and was therefore filtered through a 0.45 µm membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
RA1	The Reporting Limit has been raised due to matrix interference.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Coliforms, Total in Water	SM 9221 B (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
E. coli in Water	SM 9221 (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:acrump@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9F1046										
Blank (B9F1046-BLK1)				Prepared: 2019-06-15, Analyzed: 2019-06-15						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9F1046-BLK2)				Prepared: 2019-06-15, Analyzed: 2019-06-15						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9F1046-BLK3)				Prepared: 2019-06-16, Analyzed: 2019-06-16						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
LCS (B9F1046-BS1)				Prepared: 2019-06-15, Analyzed: 2019-06-15						
Chloride	16.2	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.07	0.010	mg/L	4.00		102	90-110			
Nitrite (as N)	2.15	0.010	mg/L	2.00		108	85-115			
Phosphate (as P)	1.02	0.0050	mg/L	1.00		102	80-120			
LCS (B9F1046-BS2)				Prepared: 2019-06-15, Analyzed: 2019-06-15						
Chloride	16.1	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	3.96	0.010	mg/L	4.00		99	90-110			
Nitrite (as N)	1.98	0.010	mg/L	2.00		99	85-115			
Phosphate (as P)	1.03	0.0050	mg/L	1.00		103	80-120			
LCS (B9F1046-BS3)				Prepared: 2019-06-15, Analyzed: 2019-06-15						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	4.02	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	2.05	0.010	mg/L	2.00		102	85-115			
Phosphate (as P)	1.07	0.0050	mg/L	1.00		107	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9F1563										
Blank (B9F1563-BLK1)				Prepared: 2019-06-20, Analyzed: 2019-06-20						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
Blank (B9F1563-BLK2)				Prepared: 2019-06-20, Analyzed: 2019-06-20						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9F1563, Continued										
Blank (B9F1563-BLK2), Continued				Prepared: 2019-06-20, Analyzed: 2019-06-20						
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B9F1563-BS1)				Prepared: 2019-06-20, Analyzed: 2019-06-20						
Aluminum, dissolved	0.0239	0.0050	mg/L	0.0200		120	80-120			
Antimony, dissolved	0.0199	0.00020	mg/L	0.0200		100	80-120			
Arsenic, dissolved	0.0200	0.00050	mg/L	0.0200		100	80-120			
Barium, dissolved	0.0195	0.0050	mg/L	0.0200		97	80-120			
Beryllium, dissolved	0.0204	0.00010	mg/L	0.0200		102	80-120			
Bismuth, dissolved	0.0204	0.00010	mg/L	0.0200		102	80-120			
Boron, dissolved	0.0178	0.0050	mg/L	0.0200		89	80-120			
Cadmium, dissolved	0.0193	0.000010	mg/L	0.0200		97	80-120			
Calcium, dissolved	2.12	0.20	mg/L	2.00		106	80-120			
Chromium, dissolved	0.0200	0.00050	mg/L	0.0200		100	80-120			
Cobalt, dissolved	0.0205	0.00010	mg/L	0.0200		102	80-120			
Copper, dissolved	0.0208	0.00040	mg/L	0.0200		104	80-120			
Iron, dissolved	1.86	0.010	mg/L	2.00		93	80-120			
Lead, dissolved	0.0201	0.00020	mg/L	0.0200		100	80-120			
Lithium, dissolved	0.0211	0.00010	mg/L	0.0200		105	80-120			
Magnesium, dissolved	2.00	0.010	mg/L	2.00		100	80-120			
Manganese, dissolved	0.0199	0.00020	mg/L	0.0200		100	80-120			
Mercury, dissolved	0.000874	0.000040	mg/L	0.00100		87	80-120			
Molybdenum, dissolved	0.0197	0.00010	mg/L	0.0200		99	80-120			
Nickel, dissolved	0.0206	0.00040	mg/L	0.0200		103	80-120			
Phosphorus, dissolved	2.04	0.050	mg/L	2.00		102	80-120			
Potassium, dissolved	1.91	0.10	mg/L	2.00		95	80-120			
Selenium, dissolved	0.0194	0.00050	mg/L	0.0200		97	80-120			
Silicon, dissolved	2.2	1.0	mg/L	2.00		111	80-120			
Silver, dissolved	0.0199	0.000050	mg/L	0.0200		100	80-120			
Sodium, dissolved	2.03	0.10	mg/L	2.00		101	80-120			
Strontium, dissolved	0.0194	0.0010	mg/L	0.0200		97	80-120			
Sulfur, dissolved	5.1	3.0	mg/L	5.00		101	80-120			
Tellurium, dissolved	0.0200	0.00050	mg/L	0.0200		100	80-120			
Thallium, dissolved	0.0204	0.000020	mg/L	0.0200		102	80-120			
Thorium, dissolved	0.0199	0.00010	mg/L	0.0200		99	80-120			
Tin, dissolved	0.0202	0.00020	mg/L	0.0200		101	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9F1563, Continued										
LCS (B9F1563-BS1), Continued				Prepared: 2019-06-20, Analyzed: 2019-06-20						
Titanium, dissolved	0.0214	0.0050	mg/L	0.0200		107	80-120			
Tungsten, dissolved	0.0206	0.0010	mg/L	0.0200		103	80-120			
Uranium, dissolved	0.0216	0.000020	mg/L	0.0200		108	80-120			
Vanadium, dissolved	0.0198	0.0010	mg/L	0.0200		99	80-120			
Zinc, dissolved	0.0185	0.0040	mg/L	0.0200		93	80-120			
Zirconium, dissolved	0.0218	0.00010	mg/L	0.0200		109	80-120			
Reference (B9F1563-SRM1)				Prepared: 2019-06-20, Analyzed: 2019-06-20						
Aluminum, dissolved	0.218	0.0050	mg/L	0.235		93	79-114			
Antimony, dissolved	0.0432	0.00020	mg/L	0.0431		100	89-123			
Arsenic, dissolved	0.424	0.00050	mg/L	0.423		100	87-113			
Barium, dissolved	2.87	0.0050	mg/L	3.30		87	85-114			
Beryllium, dissolved	0.210	0.00010	mg/L	0.209		100	79-122			
Boron, dissolved	1.58	0.0050	mg/L	1.65		96	79-117			
Cadmium, dissolved	0.210	0.000010	mg/L	0.221		95	89-112			
Calcium, dissolved	6.93	0.20	mg/L	7.72		90	85-120			
Chromium, dissolved	0.430	0.00050	mg/L	0.434		99	87-113			
Cobalt, dissolved	0.125	0.00010	mg/L	0.124		101	90-117			
Copper, dissolved	0.837	0.00040	mg/L	0.815		103	90-115			
Iron, dissolved	1.18	0.010	mg/L	1.27		93	86-112			
Lead, dissolved	0.108	0.00020	mg/L	0.110		98	90-113			
Lithium, dissolved	0.102	0.00010	mg/L	0.100		102	77-127			
Magnesium, dissolved	6.45	0.010	mg/L	6.59		98	84-116			
Manganese, dissolved	0.329	0.00020	mg/L	0.342		96	85-113			
Molybdenum, dissolved	0.405	0.00010	mg/L	0.404		100	87-112			
Nickel, dissolved	0.836	0.00040	mg/L	0.835		100	90-114			
Phosphorus, dissolved	0.510	0.050	mg/L	0.499		102	74-119			
Potassium, dissolved	2.74	0.10	mg/L	2.88		95	78-119			
Selenium, dissolved	0.0331	0.00050	mg/L	0.0324		102	89-123			
Sodium, dissolved	17.4	0.10	mg/L	18.0		96	81-117			
Strontium, dissolved	0.873	0.0010	mg/L	0.935		93	82-111			
Thallium, dissolved	0.0384	0.000020	mg/L	0.0385		100	90-113			
Uranium, dissolved	0.239	0.000020	mg/L	0.258		93	87-113			
Vanadium, dissolved	0.836	0.0010	mg/L	0.873		96	85-110			
Zinc, dissolved	0.844	0.0040	mg/L	0.848		100	88-114			
General Parameters, Batch B9F1119										
Blank (B9F1119-BLK1)				Prepared: 2019-06-14, Analyzed: 2019-06-14						
Solids, Total Suspended	< 1.0	1.0	mg/L							
Blank (B9F1119-BLK2)				Prepared: 2019-06-14, Analyzed: 2019-06-14						
Solids, Total Suspended	< 1.0	1.0	mg/L							
LCS (B9F1119-BS1)				Prepared: 2019-06-14, Analyzed: 2019-06-14						
Solids, Total Suspended	98.0	10.0	mg/L	100		98	85-115			
LCS (B9F1119-BS2)				Prepared: 2019-06-14, Analyzed: 2019-06-14						
Solids, Total Suspended	102	10.0	mg/L	100		102	85-115			
Duplicate (B9F1119-DUP2)		**Source: 9061376-02**		Prepared: 2019-06-14, Analyzed: 2019-06-14						
Solids, Total Suspended	30.5	2.0	mg/L		29.0			5	20	
General Parameters, Batch B9F1129										

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9F1129, Continued										
Blank (B9F1129-BLK1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9F1129-BLK2)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9F1129-BLK3)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9F1129-BLK4)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9F1129-BS1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	0.971	0.020	mg/L	1.00		97	90-115			
LCS (B9F1129-BS2)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	0.956	0.020	mg/L	1.00		96	90-115			
LCS (B9F1129-BS3)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	1.01	0.020	mg/L	1.00		101	90-115			
LCS (B9F1129-BS4)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Ammonia, Total (as N)	0.916	0.020	mg/L	1.00		92	90-115			
General Parameters, Batch B9F1144										
Blank (B9F1144-BLK1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B9F1144-BS1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Solids, Total Dissolved	236	15	mg/L	240		98	85-115			
Duplicate (B9F1144-DUP1)		**Source: 9061376-03**		Prepared: 2019-06-17, Analyzed: 2019-06-17						
Solids, Total Dissolved	2260	15	mg/L		2160			5	15	
General Parameters, Batch B9F1183										
Blank (B9F1183-BLK1)				Prepared: 2019-06-14, Analyzed: 2019-06-19						
BOD, 5-day	< 2.0	2.0	mg/L							
LCS (B9F1183-BS1)				Prepared: 2019-06-14, Analyzed: 2019-06-19						
BOD, 5-day	180	37.6	mg/L	180		100	85-115			
Duplicate (B9F1183-DUP1)		**Source: 9061376-01**		Prepared: 2019-06-14, Analyzed: 2019-06-19						
BOD, 5-day	4.7	2.0	mg/L		8.2				22	
General Parameters, Batch B9F1255										
Blank (B9F1255-BLK1)				Prepared: 2019-06-16, Analyzed: 2019-06-17						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
Blank (B9F1255-BLK2)				Prepared: 2019-06-16, Analyzed: 2019-06-17						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
LCS (B9F1255-BS1)				Prepared: 2019-06-16, Analyzed: 2019-06-17						
Nitrogen, Total Kjeldahl	1.04	0.050	mg/L	1.00		104	85-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9F1255, Continued										
LCS (B9F1255-BS2)				Prepared: 2019-06-16, Analyzed: 2019-06-17						
Nitrogen, Total Kjeldahl	1.05	0.050	mg/L	1.00		105	85-115			
General Parameters, Batch B9F1273										
Blank (B9F1273-BLK1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Chemical Oxygen Demand	< 20	20	mg/L							
LCS (B9F1273-BS1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Chemical Oxygen Demand	518	20	mg/L	500		104	89-115			
General Parameters, Batch B9F1304										
Blank (B9F1304-BLK1)				Prepared: 2019-06-17, Analyzed: 2019-06-18						
Phosphorus, Total (as P)	< 0.0020	0.0020	mg/L							
LCS (B9F1304-BS1)				Prepared: 2019-06-17, Analyzed: 2019-06-18						
Phosphorus, Total (as P)	0.0962	0.0020	mg/L	0.100		96	85-115			
General Parameters, Batch B9F1322										
Blank (B9F1322-BLK1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9F1322-BLK2)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9F1322-BLK3)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B9F1322-BS4)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Conductivity (EC)	1390	2.0	µS/cm	1410		99	95-104			
LCS (B9F1322-BS5)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Conductivity (EC)	1380	2.0	µS/cm	1410		98	95-104			
LCS (B9F1322-BS6)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
Reference (B9F1322-SRM1)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
pH	7.01	0.10	pH units	7.01		100	98-102			
Reference (B9F1322-SRM2)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
pH	7.01	0.10	pH units	7.01		100	98-102			
Reference (B9F1322-SRM3)				Prepared: 2019-06-17, Analyzed: 2019-06-17						
pH	7.02	0.10	pH units	7.01		100	98-102			
Microbiological Parameters, Batch B9F1123										
Blank (B9F1123-BLK1)				Prepared: 2019-06-14, Analyzed: 2019-06-14						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Microbiological Parameters, Batch B9F1123, Continued										
Blank (B9F1123-BLK2)				Prepared: 2019-06-14, Analyzed: 2019-06-14						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Duplicate (B9F1123-DUP1)			**Source: 9061376-01**	Prepared: 2019-06-14, Analyzed: 2019-06-14						
Coliforms, Total (MPN)	1100	3.0	MPN/100 mL		1100			< 1	136	
Coliforms, Fecal (MPN)	43	3.0	MPN/100 mL		9.1			130	107	MIC29
E. coli (MPN)	43	3.0	MPN/100 mL		9.1			130	133	
Total Metals, Batch B9F1571										
Blank (B9F1571-BLK1)				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Mercury, total	< 0.000010	0.000010	mg/L							
Reference (B9F1571-SRM1)				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Mercury, total	0.00464	0.000010	mg/L	0.00489		95	80-120			
Total Metals, Batch B9F1597										
Blank (B9F1597-BLK1)				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9F1597, Continued										
Blank (B9F1597-BLK1), Continued				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9F1597-BLK2)				Prepared: 2019-06-19, Analyzed: 2019-06-21						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9F1597-BLK3)				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9F1597, Continued										
Blank (B9F1597-BLK3), Continued				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B9F1597-BS1)				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Aluminum, total	0.0235	0.0050	mg/L	0.0200		117	80-120			
Antimony, total	0.0209	0.00020	mg/L	0.0200		105	80-120			
Arsenic, total	0.0203	0.00050	mg/L	0.0200		102	80-120			
Barium, total	0.0198	0.0050	mg/L	0.0200		99	80-120			
Beryllium, total	0.0207	0.00010	mg/L	0.0200		103	80-120			
Bismuth, total	0.0207	0.00010	mg/L	0.0200		104	80-120			
Boron, total	0.0182	0.0050	mg/L	0.0200		91	80-120			
Cadmium, total	0.0200	0.000010	mg/L	0.0200		100	80-120			
Calcium, total	2.08	0.20	mg/L	2.00		104	80-120			
Chromium, total	0.0205	0.00050	mg/L	0.0200		103	80-120			
Cobalt, total	0.0213	0.00010	mg/L	0.0200		107	80-120			
Copper, total	0.0217	0.00040	mg/L	0.0200		109	80-120			
Iron, total	1.92	0.010	mg/L	2.00		96	80-120			
Lead, total	0.0204	0.00020	mg/L	0.0200		102	80-120			
Lithium, total	0.0216	0.00010	mg/L	0.0200		108	80-120			
Magnesium, total	2.10	0.010	mg/L	2.00		105	80-120			
Manganese, total	0.0210	0.00020	mg/L	0.0200		105	80-120			
Molybdenum, total	0.0202	0.00010	mg/L	0.0200		101	80-120			
Nickel, total	0.0211	0.00040	mg/L	0.0200		106	80-120			
Phosphorus, total	2.06	0.050	mg/L	2.00		103	80-120			
Potassium, total	1.95	0.10	mg/L	2.00		97	80-120			
Selenium, total	0.0213	0.00050	mg/L	0.0200		106	80-120			
Silicon, total	2.1	1.0	mg/L	2.00		105	80-120			
Silver, total	0.0206	0.000050	mg/L	0.0200		103	80-120			
Sodium, total	2.12	0.10	mg/L	2.00		106	80-120			
Strontium, total	0.0195	0.0010	mg/L	0.0200		98	80-120			
Sulfur, total	5.0	3.0	mg/L	5.00		101	80-120			
Tellurium, total	0.0199	0.00050	mg/L	0.0200		99	80-120			
Thallium, total	0.0209	0.000020	mg/L	0.0200		104	80-120			
Thorium, total	0.0201	0.00010	mg/L	0.0200		101	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9061376
PROJECT	RBCF Ponds	**REPORTED**	2019-06-21 12:17

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9F1597, Continued										
LCS (B9F1597-BS1), Continued				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Tin, total	0.0208	0.00020	mg/L	0.0200		104	80-120			
Titanium, total	0.0211	0.0050	mg/L	0.0200		106	80-120			
Tungsten, total	0.0212	0.0010	mg/L	0.0200		106	80-120			
Uranium, total	0.0217	0.000020	mg/L	0.0200		109	80-120			
Vanadium, total	0.0209	0.0010	mg/L	0.0200		105	80-120			
Zinc, total	0.0185	0.0040	mg/L	0.0200		93	80-120			
Zirconium, total	0.0221	0.00010	mg/L	0.0200		111	80-120			
Reference (B9F1597-SRM1)				Prepared: 2019-06-19, Analyzed: 2019-06-20						
Aluminum, total	0.303	0.0050	mg/L	0.303		100	82-114			
Antimony, total	0.0526	0.00020	mg/L	0.0511		103	88-115			
Arsenic, total	0.123	0.00050	mg/L	0.118		105	88-111			
Barium, total	0.810	0.0050	mg/L	0.823		98	83-110			
Beryllium, total	0.0526	0.00010	mg/L	0.0496		106	80-119			
Boron, total	3.39	0.0050	mg/L	3.45		98	80-118			
Cadmium, total	0.0505	0.000010	mg/L	0.0495		102	90-110			
Calcium, total	10.6	0.20	mg/L	11.6		91	85-113			
Chromium, total	0.262	0.00050	mg/L	0.250		105	88-111			
Cobalt, total	0.0417	0.00010	mg/L	0.0377		111	90-114			
Copper, total	0.543	0.00040	mg/L	0.486		112	90-117			
Iron, total	0.487	0.010	mg/L	0.488		100	90-116			
Lead, total	0.209	0.00020	mg/L	0.204		102	90-110			
Lithium, total	0.430	0.00010	mg/L	0.403		107	79-118			
Magnesium, total	3.94	0.010	mg/L	3.79		104	88-116			
Manganese, total	0.111	0.00020	mg/L	0.109		102	88-108			
Molybdenum, total	0.209	0.00010	mg/L	0.198		106	88-110			
Nickel, total	0.265	0.00040	mg/L	0.249		107	90-112			
Phosphorus, total	0.260	0.050	mg/L	0.227		115	72-118			
Potassium, total	7.11	0.10	mg/L	7.21		99	87-116			
Selenium, total	0.127	0.00050	mg/L	0.121		105	90-122			
Sodium, total	7.73	0.10	mg/L	7.54		103	86-118			
Strontium, total	0.379	0.0010	mg/L	0.375		101	86-110			
Thallium, total	0.0840	0.000020	mg/L	0.0805		104	90-113			
Uranium, total	0.0311	0.000020	mg/L	0.0306		102	88-112			
Vanadium, total	0.400	0.0010	mg/L	0.386		104	87-110			
Zinc, total	2.55	0.0040	mg/L	2.49		102	90-113			

QC Qualifiers:

MIC29 The difference in logs is less than the R value.

CERTIFICATE OF ANALYSIS

REPORTED TO	Kelowna, City of 1435 Water Street KELOWNA, BC V1Y 1J4		
ATTENTION	Marcia Browne	**WORK ORDER**	9072356
PO NUMBER	527007	**RECEIVED / TEMP**	2019-07-23 16:05 / 19°C
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08
PROJECT INFO		**COC NUMBER**	43662.46333

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9072356-01) | Matrix: Water | Sampled: 2019-07-23 14:00					F1
Anions					
Chloride	**392**	0.10	mg/L	2019-07-25	
Nitrate (as N)	**0.120**	0.010	mg/L	2019-07-25	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-07-25	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1130**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.120**	0.100	mg/L	N/A	
Nitrogen, Total	**1.65**	0.100	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-08-01	
Antimony, dissolved	**0.00041**	0.00020	mg/L	2019-08-01	
Arsenic, dissolved	**0.00325**	0.00050	mg/L	2019-08-01	
Barium, dissolved	**0.0142**	0.0050	mg/L	2019-08-01	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Boron, dissolved	**0.0864**	0.0050	mg/L	2019-08-01	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-08-01	
Calcium, dissolved	**58.8**	0.20	mg/L	2019-08-01	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-08-01	
Iron, dissolved	< 0.010	0.010	mg/L	2019-08-01	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-08-01	
Lithium, dissolved	**0.0431**	0.00010	mg/L	2019-08-01	
Magnesium, dissolved	**240**	0.010	mg/L	2019-08-01	
Manganese, dissolved	**0.00073**	0.00020	mg/L	2019-08-01	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-08-01	CT5
Molybdenum, dissolved	**0.00218**	0.00010	mg/L	2019-08-01	
Nickel, dissolved	**0.00091**	0.00040	mg/L	2019-08-01	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-08-01	
Potassium, dissolved	**69.2**	0.10	mg/L	2019-08-01	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Silicon, dissolved	< 1.0	1.0	mg/L	2019-08-01	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-08-01	
Sodium, dissolved	**720**	0.10	mg/L	2019-08-01	
Strontium, dissolved	**0.588**	0.0010	mg/L	2019-08-01	
Sulfur, dissolved	**616**	3.0	mg/L	2019-08-01	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-08-01	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-08-01	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-08-01	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9072356-01) | Matrix: Water | Sampled: 2019-07-23 14:00, Continued					F1
Dissolved Metals, Continued					
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-08-01	
Uranium, dissolved	**0.00532**	0.000020	mg/L	2019-08-01	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-08-01	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-08-01	
Zirconium, dissolved	**0.00021**	0.00010	mg/L	2019-08-01	
General Parameters					
Ammonia, Total (as N)	**0.338**	0.020	mg/L	2019-07-25	
BOD, 5-day	< 5.9	2.0	mg/L	2019-07-29	
Chemical Oxygen Demand	**59**	20	mg/L	2019-07-29	
Conductivity (EC)	**4730**	2.0	µS/cm	2019-07-25	
Nitrogen, Total Kjeldahl	**1.53**	0.050	mg/L	2019-07-29	
pH	**8.82**	0.10	pH units	2019-07-25	HT2
Solids, Total Dissolved	**3490**	15	mg/L	2019-07-25	
Solids, Total Suspended	**5.2**	2.0	mg/L	2019-07-25	
Microbiological Parameters					
Coliforms, Total (MPN)	**23**	3.0	MPN/100 mL	2019-07-24	
E. coli (MPN)	< 3.0	3.0	MPN/100 mL	2019-07-24	
Total Metals					
Aluminum, total	**0.0142**	0.0050	mg/L	2019-07-27	
Antimony, total	**0.00043**	0.00020	mg/L	2019-07-27	
Arsenic, total	**0.00362**	0.00050	mg/L	2019-07-27	
Barium, total	**0.0152**	0.0050	mg/L	2019-07-27	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-07-27	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-07-27	
Boron, total	**0.0955**	0.0050	mg/L	2019-07-27	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-07-27	
Calcium, total	**61.0**	0.20	mg/L	2019-07-27	
Chromium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Cobalt, total	< 0.00010	0.00010	mg/L	2019-07-27	
Copper, total	< 0.00040	0.00040	mg/L	2019-07-27	
Iron, total	**0.013**	0.010	mg/L	2019-07-27	
Lead, total	< 0.00020	0.00020	mg/L	2019-07-27	
Lithium, total	**0.0488**	0.00010	mg/L	2019-07-27	
Magnesium, total	**233**	0.010	mg/L	2019-07-27	
Manganese, total	**0.0112**	0.00020	mg/L	2019-07-27	
Mercury, total	< 0.000010	0.000010	mg/L	2019-07-26	
Molybdenum, total	**0.00238**	0.00010	mg/L	2019-07-27	
Nickel, total	**0.00075**	0.00040	mg/L	2019-07-27	
Phosphorus, total	< 0.050	0.050	mg/L	2019-07-27	
Potassium, total	**71.6**	0.10	mg/L	2019-07-27	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9072356-01) | Matrix: Water | Sampled: 2019-07-23 14:00, Continued					F1
Total Metals, Continued					
Selenium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Silicon, total	< 1.0	1.0	mg/L	2019-07-27	
Silver, total	< 0.000050	0.000050	mg/L	2019-07-27	
Sodium, total	**700**	0.10	mg/L	2019-07-27	
Strontium, total	**0.648**	0.0010	mg/L	2019-07-27	
Sulfur, total	**670**	3.0	mg/L	2019-07-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Thallium, total	< 0.000020	0.000020	mg/L	2019-07-27	
Thorium, total	< 0.00010	0.00010	mg/L	2019-07-27	
Tin, total	< 0.00020	0.00020	mg/L	2019-07-27	
Titanium, total	< 0.0050	0.0050	mg/L	2019-07-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-07-27	
Uranium, total	**0.00524**	0.000020	mg/L	2019-07-27	
Vanadium, total	< 0.0010	0.0010	mg/L	2019-07-27	
Zinc, total	**0.0057**	0.0040	mg/L	2019-07-27	
Zirconium, total	**0.00024**	0.00010	mg/L	2019-07-27	
Drainage Pond (9072356-02) | Matrix: Water | Sampled: 2019-07-23 14:30					F1
Anions					
Chloride	**99.4**	0.10	mg/L	2019-07-25	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-07-25	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-07-25	
Calculated Parameters					
Hardness, Total (as CaCO3)	**227**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**47.7**	2.50	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	**0.0689**	0.0050	mg/L	2019-08-01	
Antimony, dissolved	**0.00033**	0.00020	mg/L	2019-08-01	
Arsenic, dissolved	**0.00423**	0.00050	mg/L	2019-08-01	
Barium, dissolved	**0.0444**	0.0050	mg/L	2019-08-01	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Bismuth, dissolved	**0.00018**	0.00010	mg/L	2019-08-01	
Boron, dissolved	**0.178**	0.0050	mg/L	2019-08-01	
Cadmium, dissolved	**0.000128**	0.000010	mg/L	2019-08-01	
Calcium, dissolved	**51.0**	0.20	mg/L	2019-08-01	
Chromium, dissolved	**0.00084**	0.00050	mg/L	2019-08-01	
Cobalt, dissolved	**0.00071**	0.00010	mg/L	2019-08-01	
Copper, dissolved	**0.0133**	0.00040	mg/L	2019-08-01	
Iron, dissolved	**0.336**	0.010	mg/L	2019-08-01	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Drainage Pond (9072356-02) | Matrix: Water | Sampled: 2019-07-23 14:30, Continued					F1
Dissolved Metals, Continued					
Lead, dissolved	**0.00033**	0.00020	mg/L	2019-08-01	
Lithium, dissolved	**0.0140**	0.00010	mg/L	2019-08-01	
Magnesium, dissolved	**24.2**	0.010	mg/L	2019-08-01	
Manganese, dissolved	**0.249**	0.00020	mg/L	2019-08-01	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-08-01	CT5
Molybdenum, dissolved	**0.00294**	0.00010	mg/L	2019-08-01	
Nickel, dissolved	**0.00359**	0.00040	mg/L	2019-08-01	
Phosphorus, dissolved	**8.70**	0.050	mg/L	2019-08-01	
Potassium, dissolved	**64.6**	0.10	mg/L	2019-08-01	
Selenium, dissolved	**0.00083**	0.00050	mg/L	2019-08-01	
Silicon, dissolved	**4.1**	1.0	mg/L	2019-08-01	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-08-01	
Sodium, dissolved	**101**	0.10	mg/L	2019-08-01	
Strontium, dissolved	**0.523**	0.0010	mg/L	2019-08-01	
Sulfur, dissolved	**31.6**	3.0	mg/L	2019-08-01	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-08-01	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Tin, dissolved	**0.00068**	0.00020	mg/L	2019-08-01	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-08-01	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-08-01	
Uranium, dissolved	**0.00136**	0.000020	mg/L	2019-08-01	
Vanadium, dissolved	**0.0010**	0.0010	mg/L	2019-08-01	
Zinc, dissolved	**0.0320**	0.0040	mg/L	2019-08-01	
Zirconium, dissolved	**0.00055**	0.00010	mg/L	2019-08-01	
General Parameters					
Ammonia, Total (as N)	**24.6**	0.020	mg/L	2019-07-25	
BOD, 5-day	**61.3**	2.0	mg/L	2019-07-29	
Chemical Oxygen Demand	**547**	20	mg/L	2019-07-29	
Conductivity (EC)	**1250**	2.0	µS/cm	2019-07-25	
Nitrogen, Total Kjeldahl	**47.7**	0.050	mg/L	2019-07-29	
pH	**7.96**	0.10	pH units	2019-07-25	HT2
Solids, Total Dissolved	**971**	15	mg/L	2019-07-25	
Solids, Total Suspended	**52.0**	2.0	mg/L	2019-07-25	
Microbiological Parameters					
Coliforms, Total (MPN)	**> 110000**	3.0	MPN/100 mL	2019-07-24	
E. coli (MPN)	**29000**	3.0	MPN/100 mL	2019-07-24	
Total Metals					
Aluminum, total	**0.182**	0.0050	mg/L	2019-07-27	
Antimony, total	**0.00060**	0.00020	mg/L	2019-07-27	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Drainage Pond (9072356-02) | Matrix: Water | Sampled: 2019-07-23 14:30, Continued					F1
Total Metals, Continued					
Arsenic, total	**0.00673**	0.00050	mg/L	2019-07-27	
Barium, total	**0.0686**	0.0050	mg/L	2019-07-27	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-07-27	
Bismuth, total	**0.00120**	0.00010	mg/L	2019-07-27	
Boron, total	**0.196**	0.0050	mg/L	2019-07-27	
Cadmium, total	**0.000822**	0.000010	mg/L	2019-07-27	
Calcium, total	**55.6**	0.20	mg/L	2019-07-27	
Chromium, total	**0.00159**	0.00050	mg/L	2019-07-27	
Cobalt, total	**0.00120**	0.00010	mg/L	2019-07-27	
Copper, total	**0.0814**	0.00040	mg/L	2019-07-27	
Iron, total	**0.575**	0.010	mg/L	2019-07-27	
Lead, total	**0.00169**	0.00020	mg/L	2019-07-27	
Lithium, total	**0.0153**	0.00010	mg/L	2019-07-27	
Magnesium, total	**24.3**	0.010	mg/L	2019-07-27	
Manganese, total	**0.316**	0.00020	mg/L	2019-07-27	
Mercury, total	< 0.000010	0.000010	mg/L	2019-07-26	
Molybdenum, total	**0.00472**	0.00010	mg/L	2019-07-27	
Nickel, total	**0.00505**	0.00040	mg/L	2019-07-27	
Phosphorus, total	**10.2**	0.050	mg/L	2019-07-27	
Potassium, total	**68.0**	0.10	mg/L	2019-07-27	
Selenium, total	**0.00120**	0.00050	mg/L	2019-07-27	
Silicon, total	**4.3**	1.0	mg/L	2019-07-27	
Silver, total	**0.000199**	0.000050	mg/L	2019-07-27	
Sodium, total	**98.5**	0.10	mg/L	2019-07-27	
Strontium, total	**0.608**	0.0010	mg/L	2019-07-27	
Sulfur, total	**35.1**	3.0	mg/L	2019-07-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Thallium, total	**0.000038**	0.000020	mg/L	2019-07-27	
Thorium, total	< 0.00010	0.00010	mg/L	2019-07-27	
Tin, total	**0.00102**	0.00020	mg/L	2019-07-27	
Titanium, total	**0.0058**	0.0050	mg/L	2019-07-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-07-27	
Uranium, total	**0.00197**	0.000020	mg/L	2019-07-27	
Vanadium, total	**0.0018**	0.0010	mg/L	2019-07-27	
Zinc, total	**0.151**	0.0040	mg/L	2019-07-27	
Zirconium, total	**0.00066**	0.00010	mg/L	2019-07-27	
Davidson Pond (9072356-03) | Matrix: Water | Sampled: 2019-07-23 15:00					F1
Anions					
Chloride	**313**	0.10	mg/L	2019-07-25	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-07-25	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9072356-03) | Matrix: Water | Sampled: 2019-07-23 15:00, Continued					F1
Anions, Continued					
Nitrite (as N)	< 0.010	0.010	mg/L	2019-07-25	
Calculated Parameters					
Hardness, Total (as CaCO3)	**588**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**2.09**	0.100	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-08-01	
Antimony, dissolved	**0.00034**	0.00020	mg/L	2019-08-01	
Arsenic, dissolved	**0.00319**	0.00050	mg/L	2019-08-01	
Barium, dissolved	**0.0113**	0.0050	mg/L	2019-08-01	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Boron, dissolved	**0.0385**	0.0050	mg/L	2019-08-01	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-08-01	
Calcium, dissolved	**52.0**	0.20	mg/L	2019-08-01	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-08-01	
Iron, dissolved	**0.010**	0.010	mg/L	2019-08-01	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-08-01	
Lithium, dissolved	**0.0450**	0.00010	mg/L	2019-08-01	
Magnesium, dissolved	**111**	0.010	mg/L	2019-08-01	
Manganese, dissolved	**0.00172**	0.00020	mg/L	2019-08-01	
Mercury, dissolved	< 0.000040	0.000040	mg/L	2019-08-01	CT5
Molybdenum, dissolved	**0.00088**	0.00010	mg/L	2019-08-01	
Nickel, dissolved	**0.00140**	0.00040	mg/L	2019-08-01	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-08-01	
Potassium, dissolved	**40.7**	0.10	mg/L	2019-08-01	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Silicon, dissolved	**1.3**	1.0	mg/L	2019-08-01	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-08-01	
Sodium, dissolved	**557**	0.10	mg/L	2019-08-01	
Strontium, dissolved	**0.843**	0.0010	mg/L	2019-08-01	
Sulfur, dissolved	**353**	3.0	mg/L	2019-08-01	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-08-01	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-08-01	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-08-01	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-08-01	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-08-01	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-08-01	
Uranium, dissolved	**0.00445**	0.000020	mg/L	2019-08-01	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9072356-03) | Matrix: Water | Sampled: 2019-07-23 15:00, Continued					F1
Dissolved Metals, Continued					
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-08-01	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-08-01	
Zirconium, dissolved	**0.00011**	0.00010	mg/L	2019-08-01	
General Parameters					
Ammonia, Total (as N)	**0.115**	0.020	mg/L	2019-07-25	
BOD, 5-day	< 5.9	2.0	mg/L	2019-07-29	
Chemical Oxygen Demand	**75**	20	mg/L	2019-07-29	
Conductivity (EC)	**3340**	2.0	µS/cm	2019-07-25	
Nitrogen, Total Kjeldahl	**2.09**	0.050	mg/L	2019-07-29	
pH	**8.65**	0.10	pH units	2019-07-25	HT2
Solids, Total Dissolved	**2350**	15	mg/L	2019-07-25	
Solids, Total Suspended	**5.8**	2.0	mg/L	2019-07-25	
Microbiological Parameters					
Coliforms, Total (MPN)	**93**	3.0	MPN/100 mL	2019-07-24	
E. coli (MPN)	**93**	3.0	MPN/100 mL	2019-07-24	
Total Metals					
Aluminum, total	**0.0923**	0.0050	mg/L	2019-07-27	
Antimony, total	**0.00038**	0.00020	mg/L	2019-07-27	
Arsenic, total	**0.00381**	0.00050	mg/L	2019-07-27	
Barium, total	**0.0133**	0.0050	mg/L	2019-07-27	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-07-27	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-07-27	
Boron, total	**0.0439**	0.0050	mg/L	2019-07-27	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-07-27	
Calcium, total	**53.8**	0.20	mg/L	2019-07-27	
Chromium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Cobalt, total	**0.00013**	0.00010	mg/L	2019-07-27	
Copper, total	< 0.00040	0.00040	mg/L	2019-07-27	
Iron, total	**0.146**	0.010	mg/L	2019-07-27	
Lead, total	< 0.00020	0.00020	mg/L	2019-07-27	
Lithium, total	**0.0497**	0.00010	mg/L	2019-07-27	
Magnesium, total	**109**	0.010	mg/L	2019-07-27	
Manganese, total	**0.0552**	0.00020	mg/L	2019-07-27	
Mercury, total	< 0.000010	0.000010	mg/L	2019-07-26	
Molybdenum, total	**0.00095**	0.00010	mg/L	2019-07-27	
Nickel, total	**0.00143**	0.00040	mg/L	2019-07-27	
Phosphorus, total	< 0.050	0.050	mg/L	2019-07-27	
Potassium, total	**42.4**	0.10	mg/L	2019-07-27	
Selenium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Silicon, total	**1.5**	1.0	mg/L	2019-07-27	

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9072356-03) | Matrix: Water | Sampled: 2019-07-23 15:00, Continued					F1
Total Metals, Continued					
Silver, total	< 0.000050	0.000050	mg/L	2019-07-27	
Sodium, total	**536**	0.10	mg/L	2019-07-27	
Strontium, total	**0.963**	0.0010	mg/L	2019-07-27	
Sulfur, total	**382**	3.0	mg/L	2019-07-27	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-07-27	
Thallium, total	< 0.000020	0.000020	mg/L	2019-07-27	
Thorium, total	< 0.00010	0.00010	mg/L	2019-07-27	
Tin, total	< 0.00020	0.00020	mg/L	2019-07-27	
Titanium, total	< 0.0050	0.0050	mg/L	2019-07-27	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-07-27	
Uranium, total	**0.00441**	0.000020	mg/L	2019-07-27	
Vanadium, total	**0.0010**	0.0010	mg/L	2019-07-27	
Zinc, total	< 0.0040	0.0040	mg/L	2019-07-27	
Zirconium, total	**0.00022**	0.00010	mg/L	2019-07-27	

Sample Qualifiers:

CT5 This sample has been incorrectly preserved for Mercury analysis

F1 The sample was not field-filtered and was therefore filtered through a 0.45 µm membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Coliforms, Total in Water	SM 9221 B (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
E. coli in Water	SM 9221 (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
>	Greater than the specified Result
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:acrump@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9G2085										
Blank (B9G2085-BLK1)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Blank (B9G2085-BLK2)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Blank (B9G2085-BLK3)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
LCS (B9G2085-BS1)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Chloride	16.1	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	3.98	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	1.96	0.010	mg/L	2.00		98	85-115			
LCS (B9G2085-BS2)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Chloride	16.1	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	4.00	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	2.01	0.010	mg/L	2.00		101	85-115			
LCS (B9G2085-BS3)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Chloride	16.1	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.00	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	2.01	0.010	mg/L	2.00		101	85-115			
Dissolved Metals, Batch B9G2556										
Blank (B9G2556-BLK1)				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9G2556, Continued										
Blank (B9G2556-BLK1), Continued				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
Blank (B9G2556-BLK2)				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Mercury, dissolved	< 0.000040	0.000040	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9G2556, Continued										
Blank (B9G2556-BLK2), Continued				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B9G2556-BS1)				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Aluminum, dissolved	0.0188	0.0050	mg/L	0.0200		94	80-120			
Antimony, dissolved	0.0198	0.00020	mg/L	0.0200		99	80-120			
Arsenic, dissolved	0.0184	0.00050	mg/L	0.0200		92	80-120			
Barium, dissolved	0.0190	0.0050	mg/L	0.0200		95	80-120			
Beryllium, dissolved	0.0192	0.00010	mg/L	0.0200		96	80-120			
Bismuth, dissolved	0.0204	0.00010	mg/L	0.0200		102	80-120			
Boron, dissolved	0.0199	0.0050	mg/L	0.0200		99	80-120			
Cadmium, dissolved	0.0193	0.000010	mg/L	0.0200		97	80-120			
Calcium, dissolved	1.96	0.20	mg/L	2.02		97	80-120			
Chromium, dissolved	0.0184	0.00050	mg/L	0.0200		92	80-120			
Cobalt, dissolved	0.0190	0.00010	mg/L	0.0200		95	80-120			
Copper, dissolved	0.0197	0.00040	mg/L	0.0200		98	80-120			
Iron, dissolved	1.82	0.010	mg/L	2.02		90	80-120			
Lead, dissolved	0.0202	0.00020	mg/L	0.0200		101	80-120			
Lithium, dissolved	0.0193	0.00010	mg/L	0.0199		97	80-120			
Magnesium, dissolved	2.02	0.010	mg/L	2.02		100	80-120			
Manganese, dissolved	0.0197	0.00020	mg/L	0.0200		99	80-120			
Mercury, dissolved	0.000802	0.000040	mg/L	0.00100		80	80-120			
Molybdenum, dissolved	0.0193	0.00010	mg/L	0.0200		96	80-120			
Nickel, dissolved	0.0190	0.00040	mg/L	0.0200		95	80-120			
Phosphorus, dissolved	1.90	0.050	mg/L	2.00		95	80-120			
Potassium, dissolved	1.89	0.10	mg/L	2.02		94	80-120			
Selenium, dissolved	0.0203	0.00050	mg/L	0.0200		102	80-120			
Silicon, dissolved	1.6	1.0	mg/L	2.00		81	80-120			
Silver, dissolved	0.0189	0.000050	mg/L	0.0200		94	80-120			
Sodium, dissolved	2.11	0.10	mg/L	2.02		105	80-120			
Strontium, dissolved	0.0192	0.0010	mg/L	0.0200		96	80-120			
Sulfur, dissolved	4.2	3.0	mg/L	5.00		84	80-120			
Tellurium, dissolved	0.0201	0.00050	mg/L	0.0200		101	80-120			
Thallium, dissolved	0.0210	0.000020	mg/L	0.0200		105	80-120			
Thorium, dissolved	0.0199	0.00010	mg/L	0.0200		100	80-120			
Tin, dissolved	0.0205	0.00020	mg/L	0.0200		103	80-120			
Titanium, dissolved	0.0188	0.0050	mg/L	0.0200		94	80-120			
Tungsten, dissolved	0.0197	0.0010	mg/L	0.0200		99	80-120			
Uranium, dissolved	0.0228	0.000020	mg/L	0.0200		114	80-120			
Vanadium, dissolved	0.0188	0.0010	mg/L	0.0200		94	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9G2556, Continued										
LCS (B9G2556-BS1), Continued				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Zinc, dissolved	0.0196	0.0040	mg/L	0.0200		98	80-120			
Zirconium, dissolved	0.0217	0.00010	mg/L	0.0200		108	80-120			
Reference (B9G2556-SRM1)				Prepared: 2019-08-01, Analyzed: 2019-08-01						
Aluminum, dissolved	0.213	0.0050	mg/L	0.235		91	79-114			
Antimony, dissolved	0.0456	0.00020	mg/L	0.0431		106	89-123			
Arsenic, dissolved	0.417	0.00050	mg/L	0.423		98	87-113			
Barium, dissolved	3.02	0.0050	mg/L	3.30		92	85-114			
Beryllium, dissolved	0.209	0.00010	mg/L	0.209		100	79-122			
Boron, dissolved	1.52	0.0050	mg/L	1.65		92	79-117			
Cadmium, dissolved	0.219	0.000010	mg/L	0.221		99	89-112			
Calcium, dissolved	6.71	0.20	mg/L	7.72		87	85-120			
Chromium, dissolved	0.410	0.00050	mg/L	0.434		94	87-113			
Cobalt, dissolved	0.122	0.00010	mg/L	0.124		98	90-117			
Copper, dissolved	0.809	0.00040	mg/L	0.815		99	90-115			
Iron, dissolved	1.17	0.010	mg/L	1.27		92	86-112			
Lead, dissolved	0.112	0.00020	mg/L	0.110		102	90-113			
Lithium, dissolved	0.0983	0.00010	mg/L	0.100		98	77-127			
Magnesium, dissolved	6.59	0.010	mg/L	6.59		100	84-116			
Manganese, dissolved	0.336	0.00020	mg/L	0.342		98	85-113			
Molybdenum, dissolved	0.412	0.00010	mg/L	0.404		102	87-112			
Nickel, dissolved	0.811	0.00040	mg/L	0.835		97	90-114			
Phosphorus, dissolved	0.468	0.050	mg/L	0.499		94	74-119			
Potassium, dissolved	2.79	0.10	mg/L	2.88		97	78-119			
Selenium, dissolved	0.0343	0.00050	mg/L	0.0324		106	89-123			
Sodium, dissolved	18.0	0.10	mg/L	18.0		100	81-117			
Strontium, dissolved	0.858	0.0010	mg/L	0.935		92	82-111			
Thallium, dissolved	0.0407	0.000020	mg/L	0.0385		106	90-113			
Uranium, dissolved	0.248	0.000020	mg/L	0.258		96	87-113			
Vanadium, dissolved	0.787	0.0010	mg/L	0.873		90	85-110			
Zinc, dissolved	0.877	0.0040	mg/L	0.848		103	88-114			
General Parameters, Batch B9G2144										
Blank (B9G2144-BLK1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9G2144-BLK2)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9G2144-BLK3)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9G2144-BS1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Ammonia, Total (as N)	1.00	0.020	mg/L	1.00		100	90-115			
LCS (B9G2144-BS2)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Ammonia, Total (as N)	1.04	0.020	mg/L	1.00		104	90-115			
LCS (B9G2144-BS3)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Ammonia, Total (as N)	0.973	0.020	mg/L	1.00		97	90-115			
General Parameters, Batch B9G2162										

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9G2162, Continued										
Blank (B9G2162-BLK1)				Prepared: 2019-07-24, Analyzed: 2019-07-29						
BOD, 5-day	< 2.0	2.0	mg/L							
LCS (B9G2162-BS1)				Prepared: 2019-07-24, Analyzed: 2019-07-29						
BOD, 5-day	200	2.0	mg/L	180		111	85-115			
Duplicate (B9G2162-DUP2)		**Source: 9072356-01**		Prepared: 2019-07-24, Analyzed: 2019-07-29						
BOD, 5-day	< 5.9	2.0	mg/L		< 5.9				22	
General Parameters, Batch B9G2194										
Blank (B9G2194-BLK1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Suspended	< 2.0	2.0	mg/L							
Blank (B9G2194-BLK2)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Suspended	< 2.0	2.0	mg/L							
LCS (B9G2194-BS1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Suspended	98.0	10.0	mg/L	100		98	85-115			
LCS (B9G2194-BS2)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Suspended	101	10.0	mg/L	100		101	85-115			
General Parameters, Batch B9G2291										
Blank (B9G2291-BLK1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B9G2291-BS1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Dissolved	234	15	mg/L	240		98	85-115			
Duplicate (B9G2291-DUP1)		**Source: 9072356-01**		Prepared: 2019-07-25, Analyzed: 2019-07-25						
Solids, Total Dissolved	3690	15	mg/L		3490			6	15	
General Parameters, Batch B9G2296										
Blank (B9G2296-BLK1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9G2296-BLK2)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9G2296-BLK3)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B9G2296-BS4)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
LCS (B9G2296-BS5)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Conductivity (EC)	1380	2.0	µS/cm	1410		98	95-104			
LCS (B9G2296-BS6)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
Conductivity (EC)	1390	2.0	µS/cm	1410		99	95-104			
Reference (B9G2296-SRM1)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
pH	6.98	0.10	pH units	7.01		100	98-102			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9G2296, Continued										
Reference (B9G2296-SRM2)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
pH	6.99	0.10	pH units	7.01		100	98-102			
Reference (B9G2296-SRM3)				Prepared: 2019-07-25, Analyzed: 2019-07-25						
pH	6.98	0.10	pH units	7.01		100	98-102			
General Parameters, Batch B9G2340										
Blank (B9G2340-BLK1)				Prepared: 2019-07-26, Analyzed: 2019-07-29						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
Blank (B9G2340-BLK2)				Prepared: 2019-07-26, Analyzed: 2019-07-29						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
LCS (B9G2340-BS1)				Prepared: 2019-07-26, Analyzed: 2019-07-29						
Nitrogen, Total Kjeldahl	1.10	0.050	mg/L	1.00		110	85-115			
LCS (B9G2340-BS2)				Prepared: 2019-07-26, Analyzed: 2019-07-29						
Nitrogen, Total Kjeldahl	1.04	0.050	mg/L	1.00		104	85-115			
General Parameters, Batch B9G2491										
Blank (B9G2491-BLK1)				Prepared: 2019-07-29, Analyzed: 2019-07-29						
Chemical Oxygen Demand	< 20	20	mg/L							
LCS (B9G2491-BS1)				Prepared: 2019-07-29, Analyzed: 2019-07-29						
Chemical Oxygen Demand	504	20	mg/L	500		101	89-115			
Microbiological Parameters, Batch B9G2098										
Blank (B9G2098-BLK1)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Blank (B9G2098-BLK2)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Blank (B9G2098-BLK3)				Prepared: 2019-07-24, Analyzed: 2019-07-24						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Duplicate (B9G2098-DUP1)				**Source: 9072356-03**	Prepared: 2019-07-24, Analyzed: 2019-07-24					
Coliforms, Total (MPN)	93	3.0	MPN/100 mL		93			< 1	136	
Coliforms, Fecal (MPN)	43	3.0	MPN/100 mL		93			74	107	
E. coli (MPN)	43	3.0	MPN/100 mL		93			74	133	
Total Metals, Batch B9G2391										
Blank (B9G2391-BLK1)				Prepared: 2019-07-26, Analyzed: 2019-07-26						
Mercury, total	< 0.000010	0.000010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9G2391, Continued										
Blank (B9G2391-BLK2)				Prepared: 2019-07-26, Analyzed: 2019-07-26						
Mercury, total	< 0.000010	0.000010	mg/L							
Reference (B9G2391-SRM1)				Prepared: 2019-07-26, Analyzed: 2019-07-26						
Mercury, total	0.00442	0.000010	mg/L	0.00489		90	80-120			
Reference (B9G2391-SRM2)				Prepared: 2019-07-26, Analyzed: 2019-07-26						
Mercury, total	0.00436	0.000010	mg/L	0.00489		89	80-120			
Total Metals, Batch B9G2414										
Blank (B9G2414-BLK1)				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9G2414-BLK2)				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9G2414, Continued										
Blank (B9G2414-BLK2), Continued				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9G2414-BLK3)				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9G2414, Continued										
Blank (B9G2414-BLK3), Continued				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B9G2414-BS1)				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Aluminum, total	0.0230	0.0050	mg/L	0.0200		115	80-120			
Antimony, total	0.0240	0.00020	mg/L	0.0200		120	80-120			
Arsenic, total	0.0218	0.00050	mg/L	0.0200		109	80-120			
Barium, total	0.0226	0.0050	mg/L	0.0200		113	80-120			
Beryllium, total	0.0233	0.00010	mg/L	0.0200		116	80-120			
Bismuth, total	0.0222	0.00010	mg/L	0.0200		111	80-120			
Boron, total	0.0222	0.0050	mg/L	0.0200		111	80-120			
Cadmium, total	0.0228	0.000010	mg/L	0.0200		114	80-120			
Calcium, total	2.00	0.20	mg/L	2.02		99	80-120			
Chromium, total	0.0209	0.00050	mg/L	0.0200		104	80-120			
Cobalt, total	0.0213	0.00010	mg/L	0.0200		107	80-120			
Copper, total	0.0208	0.00040	mg/L	0.0200		104	80-120			
Iron, total	1.99	0.010	mg/L	2.02		98	80-120			
Lead, total	0.0218	0.00020	mg/L	0.0200		109	80-120			
Lithium, total	0.0224	0.00010	mg/L	0.0199		112	80-120			
Magnesium, total	2.00	0.010	mg/L	2.02		99	80-120			
Manganese, total	0.0251	0.00020	mg/L	0.0200		125	80-120			SPK1
Molybdenum, total	0.0209	0.00010	mg/L	0.0200		105	80-120			
Nickel, total	0.0214	0.00040	mg/L	0.0200		107	80-120			
Phosphorus, total	2.10	0.050	mg/L	2.00		105	80-120			
Potassium, total	1.94	0.10	mg/L	2.02		96	80-120			
Selenium, total	0.0236	0.00050	mg/L	0.0200		118	80-120			
Silicon, total	1.8	1.0	mg/L	2.00		88	80-120			
Silver, total	0.0225	0.000050	mg/L	0.0200		112	80-120			
Sodium, total	2.09	0.10	mg/L	2.02		104	80-120			
Strontium, total	0.0231	0.0010	mg/L	0.0200		115	80-120			
Sulfur, total	5.3	3.0	mg/L	5.00		105	80-120			
Tellurium, total	0.0236	0.00050	mg/L	0.0200		118	80-120			
Thallium, total	0.0228	0.000020	mg/L	0.0200		114	80-120			
Thorium, total	0.0233	0.00010	mg/L	0.0200		117	80-120			
Tin, total	0.0225	0.00020	mg/L	0.0200		112	80-120			
Titanium, total	0.0201	0.0050	mg/L	0.0200		101	80-120			
Tungsten, total	0.0220	0.0010	mg/L	0.0200		110	80-120			
Uranium, total	0.0237	0.000020	mg/L	0.0200		118	80-120			
Vanadium, total	0.0218	0.0010	mg/L	0.0200		109	80-120			
Zinc, total	0.0223	0.0040	mg/L	0.0200		111	80-120			
Zirconium, total	0.0238	0.00010	mg/L	0.0200		119	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9072356
PROJECT	RBCF Ponds	**REPORTED**	2019-08-01 17:08

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9G2414, Continued										
Reference (B9G2414-SRM1)				Prepared: 2019-07-26, Analyzed: 2019-07-27						
Aluminum, total	0.291	0.0050	mg/L	0.303		96	82-114			
Antimony, total	0.0556	0.00020	mg/L	0.0511		109	88-115			
Arsenic, total	0.127	0.00050	mg/L	0.118		108	88-111			
Barium, total	0.866	0.0050	mg/L	0.823		105	83-110			
Beryllium, total	0.0567	0.00010	mg/L	0.0496		114	80-119			
Boron, total	3.38	0.0050	mg/L	3.45		98	80-118			
Cadmium, total	0.0544	0.000010	mg/L	0.0495		110	90-110			
Calcium, total	10.2	0.20	mg/L	11.6		88	85-113			
Chromium, total	0.253	0.00050	mg/L	0.250		101	88-111			
Cobalt, total	0.0399	0.00010	mg/L	0.0377		106	90-114			
Copper, total	0.532	0.00040	mg/L	0.486		109	90-117			
Iron, total	0.489	0.010	mg/L	0.488		100	90-116			
Lead, total	0.213	0.00020	mg/L	0.204		104	90-110			
Lithium, total	0.442	0.00010	mg/L	0.403		110	79-118			
Magnesium, total	3.64	0.010	mg/L	3.79		96	88-116			
Manganese, total	0.112	0.00020	mg/L	0.109		103	88-108			
Molybdenum, total	0.207	0.00010	mg/L	0.198		105	88-110			
Nickel, total	0.257	0.00040	mg/L	0.249		103	90-112			
Phosphorus, total	0.219	0.050	mg/L	0.227		96	72-118			
Potassium, total	7.20	0.10	mg/L	7.21		100	87-116			
Selenium, total	0.139	0.00050	mg/L	0.121		115	90-122			
Sodium, total	7.25	0.10	mg/L	7.54		96	86-118			
Strontium, total	0.403	0.0010	mg/L	0.375		108	86-110			
Thallium, total	0.0853	0.000020	mg/L	0.0805		106	90-113			
Uranium, total	0.0309	0.000020	mg/L	0.0306		101	88-112			
Vanadium, total	0.388	0.0010	mg/L	0.386		100	87-110			
Zinc, total	2.73	0.0040	mg/L	2.49		110	90-113			

QC Qualifiers:

SPK1 The recovery of this analyte was outside of established control limits. The data was accepted based on performance of other batch QC.

CERTIFICATE OF ANALYSIS

REPORTED TO	Kelowna, City of 1435 Water Street KELOWNA, BC V1Y 1J4		
ATTENTION	Marcia Browne	**WORK ORDER**	9100009
PO NUMBER	527007	**RECEIVED / TEMP**	2019-09-30 15:29 / 12°C
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14
PROJECT INFO		**COC NUMBER**	43734.56803

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9100009-01) | Matrix: Water | Sampled: 2019-09-30 11:30					F1
Anions					
Chloride	**395**	0.10	mg/L	2019-10-03	
Nitrate (as N)	**0.052**	0.010	mg/L	2019-10-03	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-10-03	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-10-03	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1260**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.0519**	0.0100	mg/L	N/A	
Nitrogen, Total	**1.57**	0.0500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0514**	0.00010	mg/L	2019-10-06	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-10-06	
Antimony, dissolved	**0.00041**	0.00020	mg/L	2019-10-06	
Arsenic, dissolved	**0.00389**	0.00050	mg/L	2019-10-06	
Barium, dissolved	**0.0141**	0.0050	mg/L	2019-10-06	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Boron, dissolved	**0.106**	0.0050	mg/L	2019-10-06	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-10-06	
Calcium, dissolved	**65.2**	0.20	mg/L	2019-10-06	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Cobalt, dissolved	**0.00011**	0.00010	mg/L	2019-10-06	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-10-06	
Iron, dissolved	< 0.010	0.010	mg/L	2019-10-06	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-10-06	
Magnesium, dissolved	**265**	0.010	mg/L	2019-10-06	
Manganese, dissolved	**0.0253**	0.00020	mg/L	2019-10-06	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-10-06	
Molybdenum, dissolved	**0.00227**	0.00010	mg/L	2019-10-06	
Nickel, dissolved	**0.00102**	0.00040	mg/L	2019-10-06	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-10-06	
Potassium, dissolved	**81.3**	0.10	mg/L	2019-10-06	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Silicon, dissolved	**1.1**	1.0	mg/L	2019-10-06	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-10-06	
Sodium, dissolved	**790**	0.10	mg/L	2019-10-06	
Strontium, dissolved	**0.578**	0.0010	mg/L	2019-10-06	
Sulfur, dissolved	**755**	3.0	mg/L	2019-10-06	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-10-06	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-10-06	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9100009-01) | Matrix: Water | Sampled: 2019-09-30 11:30, Continued					F1
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-10-06	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-10-06	
Uranium, dissolved	**0.00588**	0.000020	mg/L	2019-10-06	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-10-06	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-10-06	
Zirconium, dissolved	**0.00020**	0.00010	mg/L	2019-10-06	
General Parameters					
Ammonia, Total (as N)	**0.121**	0.020	mg/L	2019-10-01	
BOD, 5-day	< 5.0	2.0	mg/L	2019-10-07	
Chemical Oxygen Demand	**44**	20	mg/L	2019-10-03	
Conductivity (EC)	**4880**	2.0	µS/cm	2019-10-03	
Nitrogen, Total Kjeldahl	**1.51**	0.050	mg/L	2019-10-03	
pH	**8.55**	0.10	pH units	2019-10-03	HT2
Solids, Total Dissolved	**3780**	15	mg/L	2019-10-03	
Solids, Total Suspended	**5.4**	2.0	mg/L	2019-10-03	
Microbiological Parameters					
Coliforms, Total (MPN)	**23**	3.0	MPN/100 mL	2019-10-01	
E. coli (MPN)	**23**	3.0	MPN/100 mL	2019-10-01	
Total Metals					
Aluminum, total	**0.0388**	0.0050	mg/L	2019-10-07	
Antimony, total	**0.00047**	0.00020	mg/L	2019-10-07	
Arsenic, total	**0.00360**	0.00050	mg/L	2019-10-07	
Barium, total	**0.0150**	0.0050	mg/L	2019-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-10-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-10-07	
Boron, total	**0.115**	0.0050	mg/L	2019-10-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-10-07	
Calcium, total	**65.2**	0.20	mg/L	2019-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Cobalt, total	**0.00013**	0.00010	mg/L	2019-10-07	
Copper, total	**0.00050**	0.00040	mg/L	2019-10-07	
Iron, total	**0.067**	0.010	mg/L	2019-10-07	
Lead, total	< 0.00020	0.00020	mg/L	2019-10-07	
Lithium, total	**0.0476**	0.00010	mg/L	2019-10-07	
Magnesium, total	**258**	0.010	mg/L	2019-10-07	
Manganese, total	**0.108**	0.00020	mg/L	2019-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2019-10-06	
Molybdenum, total	**0.00223**	0.00010	mg/L	2019-10-07	
Nickel, total	**0.00113**	0.00040	mg/L	2019-10-07	
Phosphorus, total	< 0.050	0.050	mg/L	2019-10-07	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9100009-01) | Matrix: Water | Sampled: 2019-09-30 11:30, Continued					F1
Total Metals, Continued					
Potassium, total	**79.6**	0.10	mg/L	2019-10-07	
Selenium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Silicon, total	**1.0**	1.0	mg/L	2019-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2019-10-07	
Sodium, total	**782**	0.10	mg/L	2019-10-07	
Strontium, total	**0.558**	0.0010	mg/L	2019-10-07	
Sulfur, total	**699**	3.0	mg/L	2019-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2019-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2019-10-07	
Tin, total	< 0.00020	0.00020	mg/L	2019-10-07	
Titanium, total	< 0.0050	0.0050	mg/L	2019-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-10-07	
Uranium, total	**0.00568**	0.000020	mg/L	2019-10-07	
Vanadium, total	**0.0011**	0.0010	mg/L	2019-10-07	
Zinc, total	< 0.0040	0.0040	mg/L	2019-10-07	
Zirconium, total	**0.00021**	0.00010	mg/L	2019-10-07	
Davidson Pond (9100009-02) | Matrix: Water | Sampled: 2019-09-30 12:00					F1
Anions					
Chloride	**340**	0.10	mg/L	2019-10-03	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-10-03	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-10-03	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-10-03	
Calculated Parameters					
Hardness, Total (as CaCO3)	**648**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**2.79**	0.0500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0499**	0.00010	mg/L	2019-10-06	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-10-06	
Antimony, dissolved	**0.00035**	0.00020	mg/L	2019-10-06	
Arsenic, dissolved	**0.00386**	0.00050	mg/L	2019-10-06	
Barium, dissolved	**0.0156**	0.0050	mg/L	2019-10-06	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Boron, dissolved	**0.0458**	0.0050	mg/L	2019-10-06	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-10-06	
Calcium, dissolved	**61.4**	0.20	mg/L	2019-10-06	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9100009-02) | Matrix: Water | Sampled: 2019-09-30 12:00, Continued					F1
Dissolved Metals, Continued					
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-10-06	
Iron, dissolved	**0.020**	0.010	mg/L	2019-10-06	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-10-06	
Magnesium, dissolved	**120**	0.010	mg/L	2019-10-06	
Manganese, dissolved	**0.00153**	0.00020	mg/L	2019-10-06	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-10-06	
Molybdenum, dissolved	**0.00087**	0.00010	mg/L	2019-10-06	
Nickel, dissolved	**0.00165**	0.00040	mg/L	2019-10-06	
Phosphorus, dissolved	**0.068**	0.050	mg/L	2019-10-06	
Potassium, dissolved	**47.4**	0.10	mg/L	2019-10-06	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Silicon, dissolved	**3.0**	1.0	mg/L	2019-10-06	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-10-06	
Sodium, dissolved	**595**	0.10	mg/L	2019-10-06	
Strontium, dissolved	**0.936**	0.0010	mg/L	2019-10-06	
Sulfur, dissolved	**432**	3.0	mg/L	2019-10-06	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-10-06	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-10-06	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-10-06	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-10-06	
Uranium, dissolved	**0.00501**	0.000020	mg/L	2019-10-06	
Vanadium, dissolved	**0.0010**	0.0010	mg/L	2019-10-06	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-10-06	
Zirconium, dissolved	**0.00016**	0.00010	mg/L	2019-10-06	
General Parameters					
Ammonia, Total (as N)	**0.448**	0.020	mg/L	2019-10-01	
BOD, 5-day	< 5.0	2.0	mg/L	2019-10-07	
Chemical Oxygen Demand	**61**	20	mg/L	2019-10-03	
Conductivity (EC)	**3470**	2.0	µS/cm	2019-10-03	
Nitrogen, Total Kjeldahl	**2.79**	0.050	mg/L	2019-10-03	
pH	**8.31**	0.10	pH units	2019-10-03	HT2
Solids, Total Dissolved	**2520**	15	mg/L	2019-10-03	
Solids, Total Suspended	**30.2**	2.0	mg/L	2019-10-03	
Microbiological Parameters					
Coliforms, Total (MPN)	**240**	3.0	MPN/100 mL	2019-10-01	
E. coli (MPN)	**240**	3.0	MPN/100 mL	2019-10-01	
Total Metals					

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9100009-02) | Matrix: Water | Sampled: 2019-09-30 12:00, Continued					F1
Total Metals, Continued					
Aluminum, total	**0.376**	0.0050	mg/L	2019-10-07	
Antimony, total	**0.00042**	0.00020	mg/L	2019-10-07	
Arsenic, total	**0.00426**	0.00050	mg/L	2019-10-07	
Barium, total	**0.0203**	0.0050	mg/L	2019-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-10-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-10-07	
Boron, total	**0.0518**	0.0050	mg/L	2019-10-07	
Cadmium, total	**0.000016**	0.000010	mg/L	2019-10-07	
Calcium, total	**67.6**	0.20	mg/L	2019-10-07	
Chromium, total	**0.00077**	0.00050	mg/L	2019-10-07	
Cobalt, total	**0.00030**	0.00010	mg/L	2019-10-07	
Copper, total	**0.00165**	0.00040	mg/L	2019-10-07	
Iron, total	**0.600**	0.010	mg/L	2019-10-07	
Lead, total	**0.00031**	0.00020	mg/L	2019-10-07	
Lithium, total	**0.0514**	0.00010	mg/L	2019-10-07	
Magnesium, total	**126**	0.010	mg/L	2019-10-07	
Manganese, total	**0.172**	0.00020	mg/L	2019-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2019-10-06	
Molybdenum, total	**0.00098**	0.00010	mg/L	2019-10-07	
Nickel, total	**0.00229**	0.00040	mg/L	2019-10-07	
Phosphorus, total	**0.138**	0.050	mg/L	2019-10-07	
Potassium, total	**49.9**	0.10	mg/L	2019-10-07	
Selenium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Silicon, total	**3.6**	1.0	mg/L	2019-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2019-10-07	
Sodium, total	**637**	0.10	mg/L	2019-10-07	
Strontium, total	**0.984**	0.0010	mg/L	2019-10-07	
Sulfur, total	**426**	3.0	mg/L	2019-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2019-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2019-10-07	
Tin, total	< 0.00020	0.00020	mg/L	2019-10-07	
Titanium, total	**0.0165**	0.0050	mg/L	2019-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-10-07	
Uranium, total	**0.00516**	0.000020	mg/L	2019-10-07	
Vanadium, total	**0.0019**	0.0010	mg/L	2019-10-07	
Zinc, total	**0.0043**	0.0040	mg/L	2019-10-07	
Zirconium, total	**0.00040**	0.00010	mg/L	2019-10-07	
Rose's Pond 2 (9100009-03) | Matrix: Water | Sampled: 2019-09-30 11:45					F1
Anions					

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond 2 (9100009-03) | Matrix: Water | Sampled: 2019-09-30 11:45, Continued					F1
Anions, Continued					
Chloride	**397**	0.10	mg/L	2019-10-06	
Nitrate (as N)	**0.070**	0.010	mg/L	2019-10-03	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-10-03	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-10-03	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1250**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.0705**	0.0100	mg/L	N/A	
Nitrogen, Total	**1.75**	0.0500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0505**	0.00010	mg/L	2019-10-06	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-10-06	
Antimony, dissolved	**0.00039**	0.00020	mg/L	2019-10-06	
Arsenic, dissolved	**0.00394**	0.00050	mg/L	2019-10-06	
Barium, dissolved	**0.0137**	0.0050	mg/L	2019-10-06	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Boron, dissolved	**0.103**	0.0050	mg/L	2019-10-06	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-10-06	
Calcium, dissolved	**66.5**	0.20	mg/L	2019-10-06	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Cobalt, dissolved	**0.00011**	0.00010	mg/L	2019-10-06	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-10-06	
Iron, dissolved	< 0.010	0.010	mg/L	2019-10-06	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-10-06	
Magnesium, dissolved	**264**	0.010	mg/L	2019-10-06	
Manganese, dissolved	**0.0303**	0.00020	mg/L	2019-10-06	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-10-06	
Molybdenum, dissolved	**0.00219**	0.00010	mg/L	2019-10-06	
Nickel, dissolved	**0.00105**	0.00040	mg/L	2019-10-06	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-10-06	
Potassium, dissolved	**81.5**	0.10	mg/L	2019-10-06	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Silicon, dissolved	**1.2**	1.0	mg/L	2019-10-06	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-10-06	
Sodium, dissolved	**788**	0.10	mg/L	2019-10-06	
Strontium, dissolved	**0.573**	0.0010	mg/L	2019-10-06	
Sulfur, dissolved	**759**	3.0	mg/L	2019-10-06	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-10-06	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-10-06	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-10-06	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-10-06	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond 2 (9100009-03) | Matrix: Water | Sampled: 2019-09-30 11:45, Continued					F1
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-10-06	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-10-06	
Uranium, dissolved	**0.00573**	0.000020	mg/L	2019-10-06	
Vanadium, dissolved	**0.0010**	0.0010	mg/L	2019-10-06	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-10-06	
Zirconium, dissolved	**0.00020**	0.00010	mg/L	2019-10-06	
General Parameters					
Ammonia, Total (as N)	**0.133**	0.020	mg/L	2019-10-01	
BOD, 5-day	< 5.0	2.0	mg/L	2019-10-07	
Chemical Oxygen Demand	**46**	20	mg/L	2019-10-03	
Conductivity (EC)	**4820**	2.0	µS/cm	2019-10-03	
Nitrogen, Total Kjeldahl	**1.68**	0.050	mg/L	2019-10-03	
pH	**8.55**	0.10	pH units	2019-10-03	HT2
Solids, Total Dissolved	**3830**	15	mg/L	2019-10-03	
Solids, Total Suspended	**4.6**	2.0	mg/L	2019-10-03	
Microbiological Parameters					
Coliforms, Total (MPN)	**9.1**	3.0	MPN/100 mL	2019-10-01	
E. coli (MPN)	**9.1**	3.0	MPN/100 mL	2019-10-01	
Total Metals					
Aluminum, total	**0.0646**	0.0050	mg/L	2019-10-07	
Antimony, total	**0.00044**	0.00020	mg/L	2019-10-07	
Arsenic, total	**0.00379**	0.00050	mg/L	2019-10-07	
Barium, total	**0.0154**	0.0050	mg/L	2019-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-10-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-10-07	
Boron, total	**0.113**	0.0050	mg/L	2019-10-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-10-07	
Calcium, total	**68.0**	0.20	mg/L	2019-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Cobalt, total	**0.00017**	0.00010	mg/L	2019-10-07	
Copper, total	**0.00056**	0.00040	mg/L	2019-10-07	
Iron, total	**0.104**	0.010	mg/L	2019-10-07	
Lead, total	< 0.00020	0.00020	mg/L	2019-10-07	
Lithium, total	**0.0492**	0.00010	mg/L	2019-10-07	
Magnesium, total	**271**	0.010	mg/L	2019-10-07	
Manganese, total	**0.117**	0.00020	mg/L	2019-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2019-10-06	
Molybdenum, total	**0.00233**	0.00010	mg/L	2019-10-07	
Nickel, total	**0.00119**	0.00040	mg/L	2019-10-07	
Phosphorus, total	< 0.050	0.050	mg/L	2019-10-07	

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond 2 (9100009-03) | Matrix: Water | Sampled: 2019-09-30 11:45, Continued					F1
Total Metals, Continued					
Potassium, total	**82.4**	0.10	mg/L	2019-10-07	
Selenium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Silicon, total	**1.2**	1.0	mg/L	2019-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2019-10-07	
Sodium, total	**818**	0.10	mg/L	2019-10-07	
Strontium, total	**0.578**	0.0010	mg/L	2019-10-07	
Sulfur, total	**729**	3.0	mg/L	2019-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2019-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2019-10-07	
Tin, total	< 0.00020	0.00020	mg/L	2019-10-07	
Titanium, total	< 0.0050	0.0050	mg/L	2019-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-10-07	
Uranium, total	**0.00564**	0.000020	mg/L	2019-10-07	
Vanadium, total	**0.0013**	0.0010	mg/L	2019-10-07	
Zinc, total	< 0.0040	0.0040	mg/L	2019-10-07	
Zirconium, total	**0.00021**	0.00010	mg/L	2019-10-07	

Sample Qualifiers:

F1 The sample was not field-filtered and was therefore filtered through a 0.45 µm membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Coliforms, Total in Water	SM 9221 B (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
E. coli in Water	SM 9221 (2017)	Most Probable Number / Multiple-Tube Fermentation	Kelowna
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:acrump@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9I2587										
Blank (B9I2587-BLK1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
LCS (B9I2587-BS1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Chloride	16.1	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	3.89	0.010	mg/L	4.00		97	90-110			
Nitrite (as N)	1.99	0.010	mg/L	2.00		99	85-115			
Phosphate (as P)	0.928	0.0050	mg/L	1.00		93	80-120			
Dissolved Metals, Batch B9J0462										
Blank (B9J0462-BLK1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9J0462, Continued										
Blank (B9J0462-BLK1), Continued				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B9J0462-BS1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Lithium, dissolved	0.0212	0.00010	mg/L	0.0199		107	80-120			
Aluminum, dissolved	0.0224	0.0050	mg/L	0.0200		112	80-120			
Antimony, dissolved	0.0207	0.00020	mg/L	0.0200		104	80-120			
Arsenic, dissolved	0.0205	0.00050	mg/L	0.0200		103	80-120			
Barium, dissolved	0.0201	0.0050	mg/L	0.0200		100	80-120			
Beryllium, dissolved	0.0227	0.00010	mg/L	0.0200		113	80-120			
Bismuth, dissolved	0.0220	0.00010	mg/L	0.0200		110	80-120			
Boron, dissolved	0.0176	0.0050	mg/L	0.0200		88	80-120			
Cadmium, dissolved	0.0200	0.000010	mg/L	0.0200		100	80-120			
Calcium, dissolved	2.33	0.20	mg/L	2.02		115	80-120			
Chromium, dissolved	0.0194	0.00050	mg/L	0.0200		97	80-120			
Cobalt, dissolved	0.0200	0.00010	mg/L	0.0200		100	80-120			
Copper, dissolved	0.0203	0.00040	mg/L	0.0200		102	80-120			
Iron, dissolved	1.91	0.010	mg/L	2.02		95	80-120			
Lead, dissolved	0.0217	0.00020	mg/L	0.0200		108	80-120			
Magnesium, dissolved	1.96	0.010	mg/L	2.02		97	80-120			
Manganese, dissolved	0.0201	0.00020	mg/L	0.0200		100	80-120			
Molybdenum, dissolved	0.0196	0.00010	mg/L	0.0200		98	80-120			
Nickel, dissolved	0.0203	0.00040	mg/L	0.0200		102	80-120			
Phosphorus, dissolved	1.97	0.050	mg/L	2.00		98	80-120			
Potassium, dissolved	1.86	0.10	mg/L	2.02		92	80-120			
Selenium, dissolved	0.0194	0.00050	mg/L	0.0200		97	80-120			
Silicon, dissolved	2.1	1.0	mg/L	2.00		103	80-120			
Silver, dissolved	0.0205	0.000050	mg/L	0.0200		102	80-120			
Sodium, dissolved	1.81	0.10	mg/L	2.02		90	80-120			
Strontium, dissolved	0.0198	0.0010	mg/L	0.0200		99	80-120			
Sulfur, dissolved	4.4	3.0	mg/L	5.00		88	80-120			
Tellurium, dissolved	0.0233	0.00050	mg/L	0.0200		116	80-120			
Thallium, dissolved	0.0218	0.000020	mg/L	0.0200		109	80-120			
Thorium, dissolved	0.0211	0.00010	mg/L	0.0200		106	80-120			
Tin, dissolved	0.0213	0.00020	mg/L	0.0200		106	80-120			
Titanium, dissolved	0.0207	0.0050	mg/L	0.0200		103	80-120			
Tungsten, dissolved	0.0213	0.0010	mg/L	0.0200		106	80-120			
Uranium, dissolved	0.0213	0.000020	mg/L	0.0200		107	80-120			
Vanadium, dissolved	0.0191	0.0010	mg/L	0.0200		96	80-120			
Zinc, dissolved	0.0213	0.0040	mg/L	0.0200		107	80-120			
Zirconium, dissolved	0.0204	0.00010	mg/L	0.0200		102	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9J0462, Continued										
LCS (B9J0462-BS2)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Lithium, dissolved	0.0211	0.00010	mg/L	0.0199		106	80-120			
Aluminum, dissolved	0.0227	0.0050	mg/L	0.0200		113	80-120			
Antimony, dissolved	0.0209	0.00020	mg/L	0.0200		104	80-120			
Arsenic, dissolved	0.0209	0.00050	mg/L	0.0200		104	80-120			
Barium, dissolved	0.0199	0.0050	mg/L	0.0200		100	80-120			
Beryllium, dissolved	0.0220	0.00010	mg/L	0.0200		110	80-120			
Bismuth, dissolved	0.0213	0.00010	mg/L	0.0200		107	80-120			
Boron, dissolved	0.0174	0.0050	mg/L	0.0200		87	80-120			
Cadmium, dissolved	0.0204	0.000010	mg/L	0.0200		102	80-120			
Calcium, dissolved	2.01	0.20	mg/L	2.02		99	80-120			
Chromium, dissolved	0.0200	0.00050	mg/L	0.0200		100	80-120			
Cobalt, dissolved	0.0205	0.00010	mg/L	0.0200		102	80-120			
Copper, dissolved	0.0208	0.00040	mg/L	0.0200		104	80-120			
Iron, dissolved	1.96	0.010	mg/L	2.02		97	80-120			
Lead, dissolved	0.0210	0.00020	mg/L	0.0200		105	80-120			
Magnesium, dissolved	2.04	0.010	mg/L	2.02		101	80-120			
Manganese, dissolved	0.0209	0.00020	mg/L	0.0200		105	80-120			
Molybdenum, dissolved	0.0197	0.00010	mg/L	0.0200		99	80-120			
Nickel, dissolved	0.0207	0.00040	mg/L	0.0200		103	80-120			
Phosphorus, dissolved	2.07	0.050	mg/L	2.00		104	80-120			
Potassium, dissolved	1.93	0.10	mg/L	2.02		96	80-120			
Selenium, dissolved	0.0195	0.00050	mg/L	0.0200		98	80-120			
Silicon, dissolved	2.2	1.0	mg/L	2.00		111	80-120			
Silver, dissolved	0.0207	0.000050	mg/L	0.0200		104	80-120			
Sodium, dissolved	1.88	0.10	mg/L	2.02		93	80-120			
Strontium, dissolved	0.0199	0.0010	mg/L	0.0200		100	80-120			
Sulfur, dissolved	5.0	3.0	mg/L	5.00		100	80-120			
Tellurium, dissolved	0.0237	0.00050	mg/L	0.0200		118	80-120			
Thallium, dissolved	0.0210	0.000020	mg/L	0.0200		105	80-120			
Thorium, dissolved	0.0204	0.00010	mg/L	0.0200		102	80-120			
Tin, dissolved	0.0213	0.00020	mg/L	0.0200		107	80-120			
Titanium, dissolved	0.0212	0.0050	mg/L	0.0200		106	80-120			
Tungsten, dissolved	0.0215	0.0010	mg/L	0.0200		107	80-120			
Uranium, dissolved	0.0206	0.000020	mg/L	0.0200		103	80-120			
Vanadium, dissolved	0.0196	0.0010	mg/L	0.0200		98	80-120			
Zinc, dissolved	0.0201	0.0040	mg/L	0.0200		100	80-120			
Zirconium, dissolved	0.0208	0.00010	mg/L	0.0200		104	80-120			
Duplicate (B9J0462-DUP2)		**Source: 9100009-02**		Prepared: 2019-10-06, Analyzed: 2019-10-06						
Lithium, dissolved	0.0514	0.00010	mg/L		0.0499			3	14	
Aluminum, dissolved	< 0.0050	0.0050	mg/L		< 0.0050				11	
Antimony, dissolved	0.00038	0.00020	mg/L		0.00035				20	
Arsenic, dissolved	0.00396	0.00050	mg/L		0.00386			2	8	
Barium, dissolved	0.0157	0.0050	mg/L		0.0156				7	
Beryllium, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				14	
Bismuth, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, dissolved	0.0431	0.0050	mg/L		0.0458			6	13	
Cadmium, dissolved	< 0.000010	0.000010	mg/L		< 0.000010				20	
Calcium, dissolved	63.2	0.20	mg/L		61.4			3	8	
Chromium, dissolved	< 0.00050	0.00050	mg/L		< 0.00050				14	
Cobalt, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				10	
Copper, dissolved	< 0.00040	0.00040	mg/L		< 0.00040				20	
Iron, dissolved	0.020	0.010	mg/L		0.020				14	
Lead, dissolved	< 0.00020	0.00020	mg/L		< 0.00020				20	
Magnesium, dissolved	122	0.010	mg/L		120			2	6	
Manganese, dissolved	0.00154	0.00020	mg/L		0.00153			1	9	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9J0462, Continued										
Duplicate (B9J0462-DUP2), Continued		**Source: 9100009-02**		Prepared: 2019-10-06, Analyzed: 2019-10-06						
Molybdenum, dissolved	0.00089	0.00010	mg/L		0.00087			3	19	
Nickel, dissolved	0.00175	0.00040	mg/L		0.00165				20	
Phosphorus, dissolved	0.054	0.050	mg/L		0.068				14	
Potassium, dissolved	48.7	0.10	mg/L		47.4			3	8	
Selenium, dissolved	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silicon, dissolved	3.0	1.0	mg/L		3.0				12	
Silver, dissolved	< 0.000050	0.000050	mg/L		< 0.000050				20	
Sodium, dissolved	608	0.10	mg/L		595			2	6	
Strontium, dissolved	0.954	0.0010	mg/L		0.936			2	6	
Sulfur, dissolved	434	3.0	mg/L		432			< 1	20	
Tellurium, dissolved	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, dissolved	< 0.000020	0.000020	mg/L		< 0.000020				13	
Thorium, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				20	
Tin, dissolved	< 0.00020	0.00020	mg/L		< 0.00020				20	
Titanium, dissolved	< 0.0050	0.0050	mg/L		< 0.0050				20	
Tungsten, dissolved	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, dissolved	0.00503	0.000020	mg/L		0.00501			< 1	14	
Vanadium, dissolved	0.0010	0.0010	mg/L		0.0010				20	
Zinc, dissolved	< 0.0040	0.0040	mg/L		< 0.0040				11	
Zirconium, dissolved	0.00016	0.00010	mg/L		0.00016				20	
Reference (B9J0462-SRM1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Lithium, dissolved	0.103	0.00010	mg/L	0.100		103	77-127			
Aluminum, dissolved	0.232	0.0050	mg/L	0.235		99	79-114			
Antimony, dissolved	0.0432	0.00020	mg/L	0.0431		100	89-123			
Arsenic, dissolved	0.455	0.00050	mg/L	0.423		108	87-113			
Barium, dissolved	3.10	0.0050	mg/L	3.30		94	85-114			
Beryllium, dissolved	0.230	0.00010	mg/L	0.209		110	79-122			
Boron, dissolved	1.50	0.0050	mg/L	1.65		91	79-117			
Cadmium, dissolved	0.223	0.000010	mg/L	0.221		101	89-112			
Calcium, dissolved	7.78	0.20	mg/L	7.72		101	85-120			
Chromium, dissolved	0.431	0.00050	mg/L	0.434		99	87-113			
Cobalt, dissolved	0.126	0.00010	mg/L	0.124		102	90-117			
Copper, dissolved	0.840	0.00040	mg/L	0.815		103	90-115			
Iron, dissolved	1.27	0.010	mg/L	1.27		100	86-112			
Lead, dissolved	0.114	0.00020	mg/L	0.110		104	90-113			
Magnesium, dissolved	6.60	0.010	mg/L	6.59		100	84-116			
Manganese, dissolved	0.343	0.00020	mg/L	0.342		100	85-113			
Molybdenum, dissolved	0.416	0.00010	mg/L	0.404		103	87-112			
Nickel, dissolved	0.851	0.00040	mg/L	0.835		102	90-114			
Phosphorus, dissolved	0.529	0.050	mg/L	0.499		106	74-119			
Potassium, dissolved	2.81	0.10	mg/L	2.88		98	78-119			
Selenium, dissolved	0.0336	0.00050	mg/L	0.0324		104	89-123			
Sodium, dissolved	17.4	0.10	mg/L	18.0		96	81-117			
Strontium, dissolved	0.913	0.0010	mg/L	0.935		98	82-111			
Thallium, dissolved	0.0409	0.000020	mg/L	0.0385		106	90-113			
Uranium, dissolved	0.257	0.000020	mg/L	0.258		100	87-113			
Vanadium, dissolved	0.834	0.0010	mg/L	0.873		96	85-110			
Zinc, dissolved	0.843	0.0040	mg/L	0.848		99	88-114			
Reference (B9J0462-SRM2)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Lithium, dissolved	0.105	0.00010	mg/L	0.100		105	77-127			
Aluminum, dissolved	0.235	0.0050	mg/L	0.235		100	79-114			
Antimony, dissolved	0.0420	0.00020	mg/L	0.0431		97	89-123			
Arsenic, dissolved	0.447	0.00050	mg/L	0.423		106	87-113			
Barium, dissolved	3.04	0.0050	mg/L	3.30		92	85-114			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9J0462, Continued										
Reference (B9J0462-SRM2), Continued				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Beryllium, dissolved	0.232	0.00010	mg/L	0.209		111	79-122			
Boron, dissolved	1.58	0.0050	mg/L	1.65		96	79-117			
Cadmium, dissolved	0.218	0.000010	mg/L	0.221		99	89-112			
Calcium, dissolved	7.80	0.20	mg/L	7.72		101	85-120			
Chromium, dissolved	0.430	0.00050	mg/L	0.434		99	87-113			
Cobalt, dissolved	0.126	0.00010	mg/L	0.124		101	90-117			
Copper, dissolved	0.828	0.00040	mg/L	0.815		102	90-115			
Iron, dissolved	1.25	0.010	mg/L	1.27		98	86-112			
Lead, dissolved	0.114	0.00020	mg/L	0.110		103	90-113			
Magnesium, dissolved	6.71	0.010	mg/L	6.59		102	84-116			
Manganese, dissolved	0.347	0.00020	mg/L	0.342		101	85-113			
Molybdenum, dissolved	0.409	0.00010	mg/L	0.404		101	87-112			
Nickel, dissolved	0.845	0.00040	mg/L	0.835		101	90-114			
Phosphorus, dissolved	0.522	0.050	mg/L	0.499		105	74-119			
Potassium, dissolved	2.87	0.10	mg/L	2.88		100	78-119			
Selenium, dissolved	0.0326	0.00050	mg/L	0.0324		101	89-123			
Sodium, dissolved	17.8	0.10	mg/L	18.0		99	81-117			
Strontium, dissolved	0.893	0.0010	mg/L	0.935		95	82-111			
Thallium, dissolved	0.0406	0.000020	mg/L	0.0385		106	90-113			
Uranium, dissolved	0.256	0.000020	mg/L	0.258		99	87-113			
Vanadium, dissolved	0.827	0.0010	mg/L	0.873		95	85-110			
Zinc, dissolved	0.829	0.0040	mg/L	0.848		98	88-114			
Dissolved Metals, Batch B9J0619										
Blank (B9J0619-BLK1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Blank (B9J0619-BLK2)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Reference (B9J0619-SRM1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, dissolved	0.00449	0.000010	mg/L	0.00489		92	80-120			
Reference (B9J0619-SRM2)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, dissolved	0.00430	0.000010	mg/L	0.00489		88	80-120			
General Parameters, Batch B9J0012										
Blank (B9J0012-BLK1)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9J0012-BLK2)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9J0012-BLK3)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9J0012-BLK4)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9J0012-BS1)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	1.07	0.020	mg/L	1.00		107	90-115			
LCS (B9J0012-BS2)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	1.04	0.020	mg/L	1.00		104	90-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9J0012, Continued										
LCS (B9J0012-BS3)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	1.04	0.020	mg/L	1.00		104	90-115			
LCS (B9J0012-BS4)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	1.03	0.020	mg/L	1.00		103	90-115			
Duplicate (B9J0012-DUP4)		**Source: 9100009-03**		Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	0.137	0.020	mg/L		0.133			3	15	
Matrix Spike (B9J0012-MS4)		**Source: 9100009-03**		Prepared: 2019-10-01, Analyzed: 2019-10-01						
Ammonia, Total (as N)	0.375	0.020	mg/L	0.250	0.133	97	75-125			
General Parameters, Batch B9J0197										
Blank (B9J0197-BLK1)				Prepared: 2019-10-02, Analyzed: 2019-10-03						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
LCS (B9J0197-BS1)				Prepared: 2019-10-02, Analyzed: 2019-10-03						
Nitrogen, Total Kjeldahl	0.988	0.050	mg/L	1.00		99	85-115			
General Parameters, Batch B9J0263										
Blank (B9J0263-BLK1)				Prepared: 2019-10-02, Analyzed: 2019-10-07						
BOD, 5-day	< 2.0	2.0	mg/L							
LCS (B9J0263-BS1)				Prepared: 2019-10-02, Analyzed: 2019-10-07						
BOD, 5-day	188	2.0	mg/L	180		104	85-115			
General Parameters, Batch B9J0322										
Blank (B9J0322-BLK1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Chemical Oxygen Demand	< 20	20	mg/L							
Blank (B9J0322-BLK2)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Chemical Oxygen Demand	< 20	20	mg/L							
LCS (B9J0322-BS1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Chemical Oxygen Demand	500	20	mg/L	500		100	89-115			
LCS (B9J0322-BS2)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Chemical Oxygen Demand	502	20	mg/L	500		100	89-115			
General Parameters, Batch B9J0381										
Blank (B9J0381-BLK1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B9J0381-BS1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Dissolved	233	15	mg/L	240		97	85-115			
Duplicate (B9J0381-DUP1)		**Source: 9100009-01**		Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Dissolved	3700	15	mg/L		3780			2	15	
General Parameters, Batch B9J0385										

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9J0385, Continued										
Blank (B9J0385-BLK1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Suspended	< 2.0	2.0	mg/L							
Blank (B9J0385-BLK2)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Suspended	< 2.0	2.0	mg/L							
LCS (B9J0385-BS1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Suspended	97.0	10.0	mg/L	100		97	85-115			
LCS (B9J0385-BS2)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Solids, Total Suspended	97.0	10.0	mg/L	100		97	85-115			
General Parameters, Batch B9J0401										
Blank (B9J0401-BLK1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9J0401-BLK2)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9J0401-BLK3)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B9J0401-BS4)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
LCS (B9J0401-BS5)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Conductivity (EC)	1370	2.0	µS/cm	1410		97	95-104			
LCS (B9J0401-BS6)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
Conductivity (EC)	1390	2.0	µS/cm	1410		99	95-104			
Reference (B9J0401-SRM1)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
pH	7.02	0.10	pH units	7.01		100	98-102			
Reference (B9J0401-SRM2)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
pH	7.00	0.10	pH units	7.01		100	98-102			
Reference (B9J0401-SRM3)				Prepared: 2019-10-03, Analyzed: 2019-10-03						
pH	7.01	0.10	pH units	7.01		100	98-102			
Microbiological Parameters, Batch B9J0013										
Blank (B9J0013-BLK1)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Blank (B9J0013-BLK2)				Prepared: 2019-10-01, Analyzed: 2019-10-01						
Coliforms, Total (MPN)	< 3.0	3.0	MPN/100 mL							
Coliforms, Fecal (MPN)	< 3.0	3.0	MPN/100 mL							
E. coli (MPN)	< 3.0	3.0	MPN/100 mL							
Total Metals, Batch B9J0520										
Blank (B9J0520-BLK1)				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Aluminum, total	< 0.0050	0.0050	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9J0520, Continued										
Blank (B9J0520-BLK1), Continued				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9J0520-BLK2)				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9J0520, Continued										
Blank (B9J0520-BLK2), Continued				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B9J0520-BS1)				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Aluminum, total	0.0237	0.0050	mg/L	0.0199		119	80-120			
Antimony, total	0.0222	0.00020	mg/L	0.0200		111	80-120			
Arsenic, total	0.0198	0.00050	mg/L	0.0200		99	80-120			
Barium, total	0.0209	0.0050	mg/L	0.0198		106	80-120			
Beryllium, total	0.0200	0.00010	mg/L	0.0198		101	80-120			
Bismuth, total	0.0211	0.00010	mg/L	0.0200		105	80-120			
Boron, total	0.0188	0.0050	mg/L	0.0200		94	80-120			
Cadmium, total	0.0208	0.000010	mg/L	0.0199		104	80-120			
Calcium, total	2.16	0.20	mg/L	2.02		107	80-120			
Chromium, total	0.0200	0.00050	mg/L	0.0198		101	80-120			
Cobalt, total	0.0200	0.00010	mg/L	0.0199		101	80-120			
Copper, total	0.0208	0.00040	mg/L	0.0200		104	80-120			
Iron, total	1.92	0.010	mg/L	2.02		95	80-120			
Lead, total	0.0207	0.00020	mg/L	0.0199		104	80-120			
Lithium, total	0.0204	0.00010	mg/L	0.0200		102	80-120			
Magnesium, total	2.00	0.010	mg/L	2.02		99	80-120			
Manganese, total	0.0213	0.00020	mg/L	0.0199		107	80-120			
Molybdenum, total	0.0199	0.00010	mg/L	0.0200		100	80-120			
Nickel, total	0.0202	0.00040	mg/L	0.0200		101	80-120			
Phosphorus, total	2.03	0.050	mg/L	2.00		101	80-120			
Potassium, total	1.94	0.10	mg/L	2.02		96	80-120			
Selenium, total	0.0215	0.00050	mg/L	0.0200		108	80-120			
Silicon, total	2.1	1.0	mg/L	2.00		104	80-120			
Silver, total	0.0202	0.000050	mg/L	0.0200		101	80-120			
Sodium, total	2.08	0.10	mg/L	2.02		103	80-120			
Strontium, total	0.0200	0.0010	mg/L	0.0200		100	80-120			
Sulfur, total	5.0	3.0	mg/L	5.00		101	80-120			
Tellurium, total	0.0214	0.00050	mg/L	0.0200		107	80-120			
Thallium, total	0.0208	0.000020	mg/L	0.0199		105	80-120			
Thorium, total	0.0199	0.00010	mg/L	0.0200		99	80-120			
Tin, total	0.0211	0.00020	mg/L	0.0200		106	80-120			
Titanium, total	0.0192	0.0050	mg/L	0.0200		96	80-120			
Tungsten, total	0.0208	0.0010	mg/L	0.0200		104	80-120			
Uranium, total	0.0200	0.000020	mg/L	0.0200		100	80-120			
Vanadium, total	0.0194	0.0010	mg/L	0.0200		97	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9J0520, Continued										
LCS (B9J0520-BS1), Continued				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Zinc, total	0.0217	0.0040	mg/L	0.0200		108	80-120			
Zirconium, total	0.0195	0.00010	mg/L	0.0200		98	80-120			
Duplicate (B9J0520-DUP1)			**Source: 9100009-02**	Prepared: 2019-10-04, Analyzed: 2019-10-07						
Aluminum, total	0.367	0.0050	mg/L		0.376			2	20	
Antimony, total	0.00039	0.00020	mg/L		0.00042				20	
Arsenic, total	0.00424	0.00050	mg/L		0.00426			< 1	15	
Barium, total	0.0203	0.0050	mg/L		0.0203				9	
Beryllium, total	< 0.00010	0.00010	mg/L		< 0.00010				16	
Bismuth, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, total	0.0554	0.0050	mg/L		0.0518			7	20	
Cadmium, total	0.000016	0.000010	mg/L		0.000016				20	
Calcium, total	63.3	0.20	mg/L		67.6			7	12	
Chromium, total	0.00076	0.00050	mg/L		0.00077				12	
Cobalt, total	0.00027	0.00010	mg/L		0.00030				13	
Copper, total	0.00140	0.00040	mg/L		0.00165				20	
Iron, total	0.584	0.010	mg/L		0.600			3	18	
Lead, total	0.00035	0.00020	mg/L		0.00031				20	
Lithium, total	0.0489	0.00010	mg/L		0.0514			5	19	
Magnesium, total	122	0.010	mg/L		126			3	10	
Manganese, total	0.171	0.00020	mg/L		0.172			< 1	13	
Molybdenum, total	0.00093	0.00010	mg/L		0.00098			5	20	
Nickel, total	0.00216	0.00040	mg/L		0.00229			6	20	
Phosphorus, total	0.118	0.050	mg/L		0.138				20	
Potassium, total	48.9	0.10	mg/L		49.9			2	13	
Selenium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silicon, total	3.4	1.0	mg/L		3.6				11	
Silver, total	< 0.000050	0.000050	mg/L		< 0.000050				18	
Sodium, total	622	0.10	mg/L		637			3	10	
Strontium, total	0.967	0.0010	mg/L		0.984			2	9	
Sulfur, total	420	3.0	mg/L		426			1	20	
Tellurium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, total	< 0.000020	0.000020	mg/L		< 0.000020				20	
Thorium, total	< 0.00010	0.00010	mg/L		< 0.00010				18	
Tin, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Titanium, total	0.0164	0.0050	mg/L		0.0165				20	
Tungsten, total	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, total	0.00491	0.000020	mg/L		0.00516			5	14	
Vanadium, total	0.0019	0.0010	mg/L		0.0019				17	
Zinc, total	< 0.0040	0.0040	mg/L		0.0043				8	
Zirconium, total	0.00040	0.00010	mg/L		0.00040				20	
Reference (B9J0520-SRM1)				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Aluminum, total	0.302	0.0050	mg/L	0.303		100	82-114			
Antimony, total	0.0503	0.00020	mg/L	0.0511		98	88-115			
Arsenic, total	0.118	0.00050	mg/L	0.118		100	88-111			
Barium, total	0.819	0.0050	mg/L	0.823		99	83-110			
Beryllium, total	0.0484	0.00010	mg/L	0.0496		98	80-119			
Boron, total	3.40	0.0050	mg/L	3.45		99	80-118			
Cadmium, total	0.0500	0.000010	mg/L	0.0495		101	90-110			
Calcium, total	11.6	0.20	mg/L	11.6		100	85-113			
Chromium, total	0.247	0.00050	mg/L	0.250		99	88-111			
Cobalt, total	0.0383	0.00010	mg/L	0.0377		102	90-114			
Copper, total	0.504	0.00040	mg/L	0.486		104	90-117			
Iron, total	0.489	0.010	mg/L	0.488		100	90-116			
Lead, total	0.202	0.00020	mg/L	0.204		99	90-110			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9100009
PROJECT	RBCF Ponds	**REPORTED**	2019-10-08 12:14

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9J0520, Continued										
Reference (B9J0520-SRM1), Continued				Prepared: 2019-10-04, Analyzed: 2019-10-07						
Lithium, total	0.395	0.00010	mg/L	0.403		98	79-118			
Magnesium, total	3.90	0.010	mg/L	3.79		103	88-116			
Manganese, total	0.111	0.00020	mg/L	0.109		102	88-108			
Molybdenum, total	0.196	0.00010	mg/L	0.198		99	88-110			
Nickel, total	0.246	0.00040	mg/L	0.249		99	90-112			
Phosphorus, total	0.236	0.050	mg/L	0.227		104	72-118			
Potassium, total	7.43	0.10	mg/L	7.21		103	87-116			
Selenium, total	0.131	0.00050	mg/L	0.121		108	90-122			
Sodium, total	7.68	0.10	mg/L	7.54		102	86-118			
Strontium, total	0.374	0.0010	mg/L	0.375		100	86-110			
Thallium, total	0.0826	0.000020	mg/L	0.0805		103	90-113			
Uranium, total	0.0301	0.000020	mg/L	0.0306		98	88-112			
Vanadium, total	0.366	0.0010	mg/L	0.386		95	87-110			
Zinc, total	2.50	0.0040	mg/L	2.49		101	90-113			
Total Metals, Batch B9J0629										
Blank (B9J0629-BLK1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, total	< 0.000010	0.000010	mg/L							
Blank (B9J0629-BLK2)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, total	< 0.000010	0.000010	mg/L							
Reference (B9J0629-SRM1)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, total	0.00484	0.000010	mg/L	0.00489		99	80-120			
Reference (B9J0629-SRM2)				Prepared: 2019-10-06, Analyzed: 2019-10-06						
Mercury, total	0.00456	0.000010	mg/L	0.00489		93	80-120			

CERTIFICATE OF ANALYSIS

REPORTED TO	Kelowna, City of 1435 Water Street KELOWNA, BC V1Y 1J4		
ATTENTION	Marcia Browne	**WORK ORDER**	N000923
PO NUMBER	527007	**RECEIVED / TEMP**	2019-10-29 14:25 / 8°C
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50
PROJECT INFO		**COC NUMBER**	43766.56707

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (N000923-01) | Matrix: Water | Sampled: 2019-10-29 11:30					
Anions					
Chloride	**399**	0.10	mg/L	2019-11-13	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-11-13	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2019-11-13	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-11-13	HT1
Calculated Parameters					
Hardness, Total (as CaCO3)	**1280**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**1.65**	0.0500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0517**	0.00010	mg/L	2019-11-02	
Aluminum, dissolved	**0.0111**	0.0050	mg/L	2019-11-02	
Antimony, dissolved	**0.00049**	0.00020	mg/L	2019-11-02	
Arsenic, dissolved	**0.00391**	0.00050	mg/L	2019-11-02	
Barium, dissolved	**0.0147**	0.0050	mg/L	2019-11-02	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Boron, dissolved	**0.0924**	0.0050	mg/L	2019-11-02	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-11-02	
Calcium, dissolved	**63.9**	0.20	mg/L	2019-11-02	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-11-02	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-11-02	
Iron, dissolved	< 0.010	0.010	mg/L	2019-11-02	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-11-02	
Magnesium, dissolved	**271**	0.010	mg/L	2019-11-02	
Manganese, dissolved	**0.0127**	0.00020	mg/L	2019-11-02	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-11-03	
Molybdenum, dissolved	**0.00212**	0.00010	mg/L	2019-11-02	
Nickel, dissolved	**0.00104**	0.00040	mg/L	2019-11-02	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-11-02	
Potassium, dissolved	**82.0**	0.10	mg/L	2019-11-02	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-11-02	
Silicon, dissolved	< 1.0	1.0	mg/L	2019-11-02	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-11-02	
Sodium, dissolved	**800**	0.10	mg/L	2019-11-02	
Strontium, dissolved	**0.605**	0.0010	mg/L	2019-11-02	
Sulfur, dissolved	**787**	3.0	mg/L	2019-11-02	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-11-02	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-11-02	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-11-02	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (N000923-01) | Matrix: Water | Sampled: 2019-10-29 11:30, Continued					
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-11-02	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-11-02	
Uranium, dissolved	**0.00503**	0.000020	mg/L	2019-11-02	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-11-02	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-11-02	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
General Parameters					
Ammonia, Total (as N)	**0.195**	0.020	mg/L	2019-10-31	
BOD, 5-day	< 10.0	2.0	mg/L	2019-11-05	
Chemical Oxygen Demand	**58**	20	mg/L	2019-11-01	
Conductivity (EC)	**5140**	2.0	µS/cm	2019-11-04	
Nitrogen, Total Kjeldahl	**1.65**	0.050	mg/L	2019-11-03	
pH	**8.28**	0.10	pH units	2019-11-04	HT2
Solids, Total Dissolved	**4090**	15	mg/L	2019-11-04	
Solids, Total Suspended	**3.0**	2.0	mg/L	2019-10-31	
Microbiological Parameters					
Coliforms, Total	**687**	1.0	MPN/100 mL	2019-10-30	
E. coli	< 1.0	1.0	MPN/100 mL	2019-10-30	
Total Metals					
Aluminum, total	**0.0053**	0.0050	mg/L	2019-11-02	
Antimony, total	**0.00050**	0.00020	mg/L	2019-11-02	
Arsenic, total	**0.00422**	0.00050	mg/L	2019-11-02	
Barium, total	**0.0159**	0.0050	mg/L	2019-11-02	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-11-02	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-11-02	
Boron, total	**0.0948**	0.0050	mg/L	2019-11-02	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-11-02	
Calcium, total	**67.1**	0.20	mg/L	2019-11-02	
Chromium, total	< 0.00050	0.00050	mg/L	2019-11-02	
Cobalt, total	< 0.00010	0.00010	mg/L	2019-11-02	
Copper, total	< 0.00040	0.00040	mg/L	2019-11-02	
Iron, total	**0.016**	0.010	mg/L	2019-11-02	
Lead, total	< 0.00020	0.00020	mg/L	2019-11-02	
Lithium, total	**0.0528**	0.00010	mg/L	2019-11-02	
Magnesium, total	**282**	0.010	mg/L	2019-11-02	
Manganese, total	**0.0379**	0.00020	mg/L	2019-11-02	
Mercury, total	< 0.000010	0.000010	mg/L	2019-11-13	
Molybdenum, total	**0.00225**	0.00010	mg/L	2019-11-02	
Nickel, total	**0.00108**	0.00040	mg/L	2019-11-02	
Phosphorus, total	< 0.050	0.050	mg/L	2019-11-02	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (N000923-01) | Matrix: Water | Sampled: 2019-10-29 11:30, Continued					
Total Metals, Continued					
Potassium, total	**85.0**	0.10	mg/L	2019-11-02	
Selenium, total	< 0.00050	0.00050	mg/L	2019-11-02	
Silicon, total	< 1.0	1.0	mg/L	2019-11-02	
Silver, total	< 0.000050	0.000050	mg/L	2019-11-02	
Sodium, total	**839**	0.10	mg/L	2019-11-02	
Strontium, total	**0.634**	0.0010	mg/L	2019-11-02	
Sulfur, total	**796**	3.0	mg/L	2019-11-02	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-11-02	
Thallium, total	< 0.000020	0.000020	mg/L	2019-11-02	
Thorium, total	< 0.00010	0.00010	mg/L	2019-11-02	
Tin, total	< 0.00020	0.00020	mg/L	2019-11-02	
Titanium, total	< 0.0050	0.0050	mg/L	2019-11-02	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-11-02	
Uranium, total	**0.00529**	0.000020	mg/L	2019-11-02	
Vanadium, total	**0.0010**	0.0010	mg/L	2019-11-02	
Zinc, total	< 0.0040	0.0040	mg/L	2019-11-02	
Zirconium, total	< 0.00010	0.00010	mg/L	2019-11-02	
Davidson Pond (N000923-02) | Matrix: Water | Sampled: 2019-10-29 12:00					
Anions					
Chloride	**315**	0.10	mg/L	2019-11-13	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-11-13	HT1
Nitrite (as N)	**0.013**	0.010	mg/L	2019-11-13	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-11-13	HT1
Calculated Parameters					
Hardness, Total (as CaCO3)	**636**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.0130**	0.0100	mg/L	N/A	
Nitrogen, Total	**2.74**	0.0500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0493**	0.00010	mg/L	2019-11-02	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-11-02	
Antimony, dissolved	**0.00038**	0.00020	mg/L	2019-11-02	
Arsenic, dissolved	**0.00348**	0.00050	mg/L	2019-11-02	
Barium, dissolved	**0.0154**	0.0050	mg/L	2019-11-02	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Boron, dissolved	**0.0405**	0.0050	mg/L	2019-11-02	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-11-02	
Calcium, dissolved	**61.0**	0.20	mg/L	2019-11-02	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-11-02	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (N000923-02) | Matrix: Water | Sampled: 2019-10-29 12:00, Continued					
Dissolved Metals, Continued					
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-11-02	
Iron, dissolved	**0.014**	0.010	mg/L	2019-11-02	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-11-02	
Magnesium, dissolved	**117**	0.010	mg/L	2019-11-02	
Manganese, dissolved	**0.128**	0.00020	mg/L	2019-11-02	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-11-03	
Molybdenum, dissolved	**0.00094**	0.00010	mg/L	2019-11-02	
Nickel, dissolved	**0.00180**	0.00040	mg/L	2019-11-02	
Phosphorus, dissolved	**0.118**	0.050	mg/L	2019-11-02	
Potassium, dissolved	**46.1**	0.10	mg/L	2019-11-02	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-11-02	
Silicon, dissolved	**2.5**	1.0	mg/L	2019-11-02	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-11-02	
Sodium, dissolved	**582**	0.10	mg/L	2019-11-02	
Strontium, dissolved	**0.975**	0.0010	mg/L	2019-11-02	
Sulfur, dissolved	**431**	3.0	mg/L	2019-11-02	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-11-02	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-11-02	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-11-02	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-11-02	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-11-02	
Uranium, dissolved	**0.00521**	0.000020	mg/L	2019-11-02	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-11-02	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-11-02	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2019-11-02	
General Parameters					
Ammonia, Total (as N)	**0.188**	0.020	mg/L	2019-11-12	
BOD, 5-day	< 10.0	2.0	mg/L	2019-11-05	
Chemical Oxygen Demand	**59**	20	mg/L	2019-11-01	
Conductivity (EC)	**3510**	2.0	µS/cm	2019-11-04	
Nitrogen, Total Kjeldahl	**2.73**	0.050	mg/L	2019-11-03	
pH	**8.23**	0.10	pH units	2019-11-04	HT2
Solids, Total Dissolved	**2800**	15	mg/L	2019-11-04	
Solids, Total Suspended	**6.6**	2.0	mg/L	2019-10-31	
Microbiological Parameters					
Coliforms, Total	**461**	1.0	MPN/100 mL	2019-10-30	
E. coli	**17.3**	1.0	MPN/100 mL	2019-10-30	
Total Metals					

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (N000923-02) | Matrix: Water | Sampled: 2019-10-29 12:00, Continued					
Total Metals, Continued					
Aluminum, total	**0.0553**	0.0050	mg/L	2019-11-02	
Antimony, total	**0.00039**	0.00020	mg/L	2019-11-02	
Arsenic, total	**0.00393**	0.00050	mg/L	2019-11-02	
Barium, total	**0.0165**	0.0050	mg/L	2019-11-02	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-11-02	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-11-02	
Boron, total	**0.0413**	0.0050	mg/L	2019-11-02	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-11-02	
Calcium, total	**64.3**	0.20	mg/L	2019-11-02	
Chromium, total	< 0.00050	0.00050	mg/L	2019-11-02	
Cobalt, total	< 0.00010	0.00010	mg/L	2019-11-02	
Copper, total	**0.00041**	0.00040	mg/L	2019-11-02	
Iron, total	**0.116**	0.010	mg/L	2019-11-02	
Lead, total	< 0.00020	0.00020	mg/L	2019-11-02	
Lithium, total	**0.0510**	0.00010	mg/L	2019-11-02	
Magnesium, total	**124**	0.010	mg/L	2019-11-02	
Manganese, total	**0.148**	0.00020	mg/L	2019-11-02	
Mercury, total	< 0.000010	0.000010	mg/L	2019-11-13	
Molybdenum, total	**0.00097**	0.00010	mg/L	2019-11-02	
Nickel, total	**0.00186**	0.00040	mg/L	2019-11-02	
Phosphorus, total	**0.156**	0.050	mg/L	2019-11-02	
Potassium, total	**48.4**	0.10	mg/L	2019-11-02	
Selenium, total	< 0.00050	0.00050	mg/L	2019-11-02	
Silicon, total	**2.8**	1.0	mg/L	2019-11-02	
Silver, total	< 0.000050	0.000050	mg/L	2019-11-02	
Sodium, total	**616**	0.10	mg/L	2019-11-02	
Strontium, total	**1.02**	0.0010	mg/L	2019-11-02	
Sulfur, total	**444**	3.0	mg/L	2019-11-02	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-11-02	
Thallium, total	< 0.000020	0.000020	mg/L	2019-11-02	
Thorium, total	< 0.00010	0.00010	mg/L	2019-11-02	
Tin, total	< 0.00020	0.00020	mg/L	2019-11-02	
Titanium, total	< 0.0050	0.0050	mg/L	2019-11-02	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-11-02	
Uranium, total	**0.00542**	0.000020	mg/L	2019-11-02	
Vanadium, total	**0.0010**	0.0010	mg/L	2019-11-02	
Zinc, total	< 0.0040	0.0040	mg/L	2019-11-02	
Zirconium, total	< 0.00010	0.00010	mg/L	2019-11-02	

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Sample Qualifiers:

HT1	The sample was prepared and/or analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Coliforms, Total in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

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PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:acrump@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9K1077										
Blank (B9K1077-BLK1)				Prepared: 2019-11-12, Analyzed: 2019-11-12						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK2)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK3)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK4)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK5)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK6)				Prepared: 2019-11-07, Analyzed: 2019-11-07						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9K1077, Continued										
Blank (B9K1077-BLK7)				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK8)				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K1077-BLK9)				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
LCS (B9K1077-BS1)				Prepared: 2019-11-12, Analyzed: 2019-11-12						
Chloride	16.1	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.07	0.010	mg/L	4.00		102	90-110			
Nitrite (as N)	2.01	0.010	mg/L	2.00		101	85-115			
Phosphate (as P)	1.03	0.0050	mg/L	1.00		103	80-120			
LCS (B9K1077-BS2)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	16.4	0.10	mg/L	16.0		103	90-110			
Nitrate (as N)	4.06	0.010	mg/L	4.00		101	90-110			
Nitrite (as N)	2.00	0.010	mg/L	2.00		100	85-115			
Phosphate (as P)	0.982	0.0050	mg/L	1.00		98	80-120			
LCS (B9K1077-BS3)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	16.2	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.13	0.010	mg/L	4.00		103	90-110			
Nitrite (as N)	1.93	0.010	mg/L	2.00		96	85-115			
Phosphate (as P)	0.993	0.0050	mg/L	1.00		99	80-120			
LCS (B9K1077-BS4)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	16.3	0.10	mg/L	16.0		102	90-110			
Nitrate (as N)	4.17	0.010	mg/L	4.00		104	90-110			
Nitrite (as N)	2.00	0.010	mg/L	2.00		100	85-115			
Phosphate (as P)	0.984	0.0050	mg/L	1.00		98	80-120			
LCS (B9K1077-BS5)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Chloride	16.4	0.10	mg/L	16.0		102	90-110			
Nitrate (as N)	4.04	0.010	mg/L	4.00		101	90-110			
Nitrite (as N)	2.00	0.010	mg/L	2.00		100	85-115			
Phosphate (as P)	0.925	0.0050	mg/L	1.00		93	80-120			
LCS (B9K1077-BS6)				Prepared: 2019-11-07, Analyzed: 2019-11-07						
Chloride	16.2	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.08	0.010	mg/L	4.00		102	90-110			
Nitrite (as N)	2.02	0.010	mg/L	2.00		101	85-115			
Phosphate (as P)	1.01	0.0050	mg/L	1.00		101	80-120			
LCS (B9K1077-BS7)				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Chloride	16.1	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.11	0.010	mg/L	4.00		103	90-110			
Nitrite (as N)	1.97	0.010	mg/L	2.00		99	85-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9K1077, Continued										
LCS (B9K1077-BS7), Continued				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Phosphate (as P)	0.915	0.0050	mg/L	1.00		91	80-120			
LCS (B9K1077-BS8)				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	4.07	0.010	mg/L	4.00		102	90-110			
Nitrite (as N)	1.97	0.010	mg/L	2.00		99	85-115			
Phosphate (as P)	0.993	0.0050	mg/L	1.00		99	80-120			
LCS (B9K1077-BS9)				Prepared: 1980-01-01, Analyzed: 1980-01-01						
Chloride	15.9	0.10	mg/L	16.0		99	90-110			
Nitrate (as N)	3.91	0.010	mg/L	4.00		98	90-110			
Nitrite (as N)	1.96	0.010	mg/L	2.00		98	85-115			
Phosphate (as P)	1.03	0.0050	mg/L	1.00		103	80-120			
Dissolved Metals, Batch B9K0238										
Blank (B9K0238-BLK1)				Prepared: 2019-11-04, Analyzed: 2019-11-03						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Reference (B9K0238-SRM1)				Prepared: 2019-11-04, Analyzed: 2019-11-03						
Mercury, dissolved	0.00521	0.000010	mg/L	0.00489		106	80-120			
Dissolved Metals, Batch B9K0413										
Blank (B9K0413-BLK1)				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							

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REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9K0413, Continued										
Blank (B9K0413-BLK1), Continued				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
Blank (B9K0413-BLK2)				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B9K0413-BS1)				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Lithium, dissolved	0.0207	0.00010	mg/L	0.0200		104	80-120			
Aluminum, dissolved	0.0217	0.0050	mg/L	0.0199		109	80-120			
Antimony, dissolved	0.0201	0.00020	mg/L	0.0200		101	80-120			
Arsenic, dissolved	0.0210	0.00050	mg/L	0.0200		105	80-120			
Barium, dissolved	0.0208	0.0050	mg/L	0.0198		105	80-120			
Beryllium, dissolved	0.0209	0.00010	mg/L	0.0198		106	80-120			
Bismuth, dissolved	0.0206	0.00010	mg/L	0.0200		103	80-120			
Boron, dissolved	0.0240	0.0050	mg/L	0.0200		120	80-120			

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PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9K0413, Continued										
LCS (B9K0413-BS1), Continued				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Cadmium, dissolved	0.0213	0.000010	mg/L	0.0199		107	80-120			
Calcium, dissolved	2.32	0.20	mg/L	2.02		115	80-120			
Chromium, dissolved	0.0205	0.00050	mg/L	0.0198		104	80-120			
Cobalt, dissolved	0.0206	0.00010	mg/L	0.0199		104	80-120			
Copper, dissolved	0.0212	0.00040	mg/L	0.0200		106	80-120			
Iron, dissolved	1.89	0.010	mg/L	2.02		93	80-120			
Lead, dissolved	0.0201	0.00020	mg/L	0.0199		101	80-120			
Magnesium, dissolved	2.01	0.010	mg/L	2.02		100	80-120			
Manganese, dissolved	0.0208	0.00020	mg/L	0.0199		104	80-120			
Molybdenum, dissolved	0.0205	0.00010	mg/L	0.0200		102	80-120			
Nickel, dissolved	0.0209	0.00040	mg/L	0.0200		104	80-120			
Phosphorus, dissolved	2.08	0.050	mg/L	2.00		104	80-120			
Potassium, dissolved	1.92	0.10	mg/L	2.02		95	80-120			
Selenium, dissolved	0.0220	0.00050	mg/L	0.0200		110	80-120			
Silicon, dissolved	2.1	1.0	mg/L	2.00		106	80-120			
Silver, dissolved	0.0206	0.000050	mg/L	0.0200		103	80-120			
Sodium, dissolved	2.02	0.10	mg/L	2.02		100	80-120			
Strontium, dissolved	0.0213	0.0010	mg/L	0.0200		106	80-120			
Sulfur, dissolved	5.9	3.0	mg/L	5.00		118	80-120			
Tellurium, dissolved	0.0212	0.00050	mg/L	0.0200		106	80-120			
Thallium, dissolved	0.0199	0.000020	mg/L	0.0199		100	80-120			
Thorium, dissolved	0.0194	0.00010	mg/L	0.0200		97	80-120			
Tin, dissolved	0.0218	0.00020	mg/L	0.0200		109	80-120			
Titanium, dissolved	0.0208	0.0050	mg/L	0.0200		104	80-120			
Tungsten, dissolved	0.0213	0.0010	mg/L	0.0200		107	80-120			
Uranium, dissolved	0.0198	0.000020	mg/L	0.0200		99	80-120			
Vanadium, dissolved	0.0200	0.0010	mg/L	0.0200		100	80-120			
Zinc, dissolved	0.0234	0.0040	mg/L	0.0200		117	80-120			
Zirconium, dissolved	0.0199	0.00010	mg/L	0.0200		100	80-120			
Reference (B9K0413-SRM1)				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Lithium, dissolved	0.105	0.00010	mg/L	0.100		105	77-127			
Aluminum, dissolved	0.223	0.0050	mg/L	0.235		95	79-114			
Antimony, dissolved	0.0472	0.00020	mg/L	0.0431		110	89-123			
Arsenic, dissolved	0.461	0.00050	mg/L	0.423		109	87-113			
Barium, dissolved	3.21	0.0050	mg/L	3.30		97	85-114			
Beryllium, dissolved	0.218	0.00010	mg/L	0.209		104	79-122			
Boron, dissolved	1.61	0.0050	mg/L	1.65		97	79-117			
Cadmium, dissolved	0.233	0.000010	mg/L	0.221		105	89-112			
Calcium, dissolved	7.79	0.20	mg/L	7.72		101	85-120			
Chromium, dissolved	0.448	0.00050	mg/L	0.434		103	87-113			
Cobalt, dissolved	0.130	0.00010	mg/L	0.124		105	90-117			
Copper, dissolved	0.859	0.00040	mg/L	0.815		105	90-115			
Iron, dissolved	1.34	0.010	mg/L	1.27		106	86-112			
Lead, dissolved	0.112	0.00020	mg/L	0.110		102	90-113			
Magnesium, dissolved	6.63	0.010	mg/L	6.59		101	84-116			
Manganese, dissolved	0.342	0.00020	mg/L	0.342		100	85-113			
Molybdenum, dissolved	0.424	0.00010	mg/L	0.404		105	87-112			
Nickel, dissolved	0.864	0.00040	mg/L	0.835		103	90-114			
Phosphorus, dissolved	0.531	0.050	mg/L	0.499		106	74-119			
Potassium, dissolved	2.86	0.10	mg/L	2.88		99	78-119			
Selenium, dissolved	0.0364	0.00050	mg/L	0.0324		112	89-123			
Sodium, dissolved	17.8	0.10	mg/L	18.0		99	81-117			
Strontium, dissolved	0.961	0.0010	mg/L	0.935		103	82-111			
Thallium, dissolved	0.0388	0.000020	mg/L	0.0385		101	90-113			
Uranium, dissolved	0.249	0.000020	mg/L	0.258		96	87-113			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9K0413, Continued										
Reference (B9K0413-SRM1), Continued				Prepared: 2019-11-02, Analyzed: 2019-11-02						
Vanadium, dissolved	0.883	0.0010	mg/L	0.873		101	85-110			
Zinc, dissolved	0.952	0.0040	mg/L	0.848		112	88-114			
General Parameters, Batch B9K0234										
Blank (B9K0234-BLK1)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Solids, Total Dissolved	17	15	mg/L							SPK1
LCS (B9K0234-BS1)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Solids, Total Dissolved	255	15	mg/L	240		106	85-115			
Duplicate (B9K0234-DUP1)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Solids, Total Dissolved	9710		mg/L					200	15	
General Parameters, Batch B9K0247										
Blank (B9K0247-BLK1)				Prepared: 2019-10-31, Analyzed: 2019-10-31						
Solids, Total Suspended	< 2.0	2.0	mg/L							
LCS (B9K0247-BS1)				Prepared: 2019-10-31, Analyzed: 2019-10-31						
Solids, Total Suspended	85.0	2.0	mg/L	100		85	85-115			
General Parameters, Batch B9K0599										
Blank (B9K0599-BLK1)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9K0599-BLK2)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9K0599-BLK3)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B9K0599-BS4)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Conductivity (EC)	1380	2.0	µS/cm	1410		98	95-104			
LCS (B9K0599-BS5)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Conductivity (EC)	1380	2.0	µS/cm	1410		98	95-104			
LCS (B9K0599-BS6)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
Conductivity (EC)	1380	2.0	µS/cm	1410		98	95-104			
Reference (B9K0599-SRM1)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
pH	7.00	0.10	pH units	7.01		100	98-102			
Reference (B9K0599-SRM2)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
pH	7.01	0.10	pH units	7.01		100	98-102			
Reference (B9K0599-SRM3)				Prepared: 2019-11-04, Analyzed: 2019-11-04						
pH	6.98	0.10	pH units	7.01		100	98-102			
General Parameters, Batch B9K0604										
Blank (B9K0604-BLK1)				Prepared: 2019-11-01, Analyzed: 2019-11-01						
Chemical Oxygen Demand	< 20	20	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9K0604, Continued										
LCS (B9K0604-BS1)				Prepared: 2019-11-01, Analyzed: 2019-11-01						
Chemical Oxygen Demand	503	20	mg/L	500		101	89-115			
General Parameters, Batch B9K0667										
Blank (B9K0667-BLK1)				Prepared: 2019-11-02, Analyzed: 2019-11-03						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
Blank (B9K0667-BLK2)				Prepared: 2019-11-02, Analyzed: 2019-11-03						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
LCS (B9K0667-BS1)				Prepared: 2019-11-02, Analyzed: 2019-11-03						
Nitrogen, Total Kjeldahl	1.07	0.050	mg/L	1.00		107	85-115			
LCS (B9K0667-BS2)				Prepared: 2019-11-02, Analyzed: 2019-11-03						
Nitrogen, Total Kjeldahl	1.06	0.050	mg/L	1.00		106	85-115			
General Parameters, Batch B9K0689										
Blank (B9K0689-BLK1)				Prepared: 2019-10-31, Analyzed: 2019-10-31						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9K0689-BS1)				Prepared: 2019-10-31, Analyzed: 2019-10-31						
Ammonia, Total (as N)	0.956	0.020	mg/L	1.00		96	90-115			
LCS (B9K0689-BS2)				Prepared: 2019-10-31, Analyzed: 2019-10-31						
Ammonia, Total (as N)	1.01	0.020	mg/L	1.00		101	90-115			
General Parameters, Batch B9K0786										
Blank (B9K0786-BLK1)				Prepared: 2019-10-31, Analyzed: 2019-11-05						
BOD, 5-day	< 10.0	10.0	mg/L							
LCS (B9K0786-BS1)				Prepared: 2019-10-31, Analyzed: 2019-11-05						
BOD, 5-day	190	10.0	mg/L	180		105	85-115			
General Parameters, Batch B9K0902										
Blank (B9K0902-BLK1)				Prepared: 2019-11-12, Analyzed: 2019-11-12						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9K0902-BLK2)				Prepared: 2019-11-12, Analyzed: 2019-11-12						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9K0902-BLK3)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9K0902-BLK4)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9K0902-BLK5)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9K0902-BS1)				Prepared: 2019-11-12, Analyzed: 2019-11-12						
Ammonia, Total (as N)	1.00	0.020	mg/L	1.00		100	90-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9K0902, Continued										
LCS (B9K0902-BS2)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	1.04	0.020	mg/L	1.00		104	90-115			
LCS (B9K0902-BS3)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	1.04	0.020	mg/L	1.00		104	90-115			
LCS (B9K0902-BS4)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	1.07	0.020	mg/L	1.00		107	90-115			
LCS (B9K0902-BS5)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Ammonia, Total (as N)	1.05	0.020	mg/L	1.00		105	90-115			
Microbiological Parameters, Batch B9K0772										
Blank (B9K0772-BLK1)				Prepared: 2019-10-30, Analyzed: 2019-10-30						
Coliforms, Total	< 1.0	1.0	MPN/100 mL							
E. coli	< 1.0	1.0	MPN/100 mL							
Blank (B9K0772-BLK3)				Prepared: 2019-10-30, Analyzed: 2019-10-30						
Coliforms, Total	< 1.0	1.0	MPN/100 mL							
E. coli	< 1.0	1.0	MPN/100 mL							
Total Metals, Batch B9K0417										
Blank (B9K0417-BLK1)				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9K0417, Continued										
Blank (B9K0417-BLK1), Continued				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
Blank (B9K0417-BLK2)				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Silicon, total	< 1.0	1.0	mg/L							
Blank (B9K0417-BLK3)				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Silicon, total	< 1.0	1.0	mg/L							
LCS (B9K0417-BS1)				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Aluminum, total	0.0199	0.0050	mg/L	0.0199		100	80-120			
Antimony, total	0.0214	0.00020	mg/L	0.0200		107	80-120			
Arsenic, total	0.0214	0.00050	mg/L	0.0200		107	80-120			
Barium, total	0.0206	0.0050	mg/L	0.0198		104	80-120			
Beryllium, total	0.0214	0.00010	mg/L	0.0198		108	80-120			
Bismuth, total	0.0212	0.00010	mg/L	0.0200		106	80-120			
Boron, total	0.0209	0.0050	mg/L	0.0200		104	80-120			
Cadmium, total	0.0218	0.000010	mg/L	0.0199		109	80-120			
Calcium, total	2.25	0.20	mg/L	2.02		111	80-120			
Chromium, total	0.0211	0.00050	mg/L	0.0198		107	80-120			
Cobalt, total	0.0212	0.00010	mg/L	0.0199		106	80-120			
Copper, total	0.0219	0.00040	mg/L	0.0200		110	80-120			
Iron, total	1.93	0.010	mg/L	2.02		96	80-120			
Lead, total	0.0209	0.00020	mg/L	0.0199		105	80-120			
Lithium, total	0.0217	0.00010	mg/L	0.0200		109	80-120			
Magnesium, total	2.06	0.010	mg/L	2.02		102	80-120			
Manganese, total	0.0209	0.00020	mg/L	0.0199		105	80-120			
Molybdenum, total	0.0210	0.00010	mg/L	0.0200		105	80-120			
Nickel, total	0.0214	0.00040	mg/L	0.0200		107	80-120			
Phosphorus, total	2.11	0.050	mg/L	2.00		105	80-120			
Potassium, total	1.96	0.10	mg/L	2.02		97	80-120			
Selenium, total	0.0234	0.00050	mg/L	0.0200		117	80-120			
Silicon, total	2.1	1.0	mg/L	2.00		103	80-120			
Silver, total	0.0212	0.000050	mg/L	0.0200		106	80-120			
Sodium, total	2.08	0.10	mg/L	2.02		103	80-120			
Strontium, total	0.0206	0.0010	mg/L	0.0200		103	80-120			
Sulfur, total	5.8	3.0	mg/L	5.00		117	80-120			
Tellurium, total	0.0216	0.00050	mg/L	0.0200		108	80-120			
Thallium, total	0.0206	0.000020	mg/L	0.0199		103	80-120			
Thorium, total	0.0202	0.00010	mg/L	0.0200		101	80-120			
Tin, total	0.0217	0.00020	mg/L	0.0200		108	80-120			
Titanium, total	0.0204	0.0050	mg/L	0.0200		102	80-120			
Tungsten, total	0.0214	0.0010	mg/L	0.0200		107	80-120			
Uranium, total	0.0204	0.000020	mg/L	0.0200		102	80-120			
Vanadium, total	0.0211	0.0010	mg/L	0.0200		105	80-120			
Zinc, total	0.0233	0.0040	mg/L	0.0200		117	80-120			
Zirconium, total	0.0201	0.00010	mg/L	0.0200		101	80-120			
Reference (B9K0417-SRM1)				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Aluminum, total	0.296	0.0050	mg/L	0.303		98	82-114			
Antimony, total	0.0539	0.00020	mg/L	0.0511		106	88-115			
Arsenic, total	0.127	0.00050	mg/L	0.118		108	88-111			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	N000923
PROJECT	RBCF Ponds	**REPORTED**	2019-11-22 12:50

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9K0417, Continued										
Reference (B9K0417-SRM1), Continued				Prepared: 2019-11-05, Analyzed: 2019-11-02						
Barium, total	0.818	0.0050	mg/L	0.823		99	83-110			
Beryllium, total	0.0521	0.00010	mg/L	0.0496		105	80-119			
Boron, total	3.27	0.0050	mg/L	3.45		95	80-118			
Cadmium, total	0.0529	0.000010	mg/L	0.0495		107	90-110			
Calcium, total	11.1	0.20	mg/L	11.6		95	85-113			
Chromium, total	0.259	0.00050	mg/L	0.250		104	88-111			
Cobalt, total	0.0407	0.00010	mg/L	0.0377		108	90-114			
Copper, total	0.541	0.00040	mg/L	0.486		111	90-117			
Iron, total	0.535	0.010	mg/L	0.488		110	90-116			
Lead, total	0.208	0.00020	mg/L	0.204		102	90-110			
Lithium, total	0.429	0.00010	mg/L	0.403		106	79-118			
Magnesium, total	3.99	0.010	mg/L	3.79		105	88-116			
Manganese, total	0.111	0.00020	mg/L	0.109		101	88-108			
Molybdenum, total	0.206	0.00010	mg/L	0.198		104	88-110			
Nickel, total	0.260	0.00040	mg/L	0.249		104	90-112			
Phosphorus, total	0.251	0.050	mg/L	0.227		111	72-118			
Potassium, total	7.22	0.10	mg/L	7.21		100	87-116			
Selenium, total	0.139	0.00050	mg/L	0.121		114	90-122			
Sodium, total	7.68	0.10	mg/L	7.54		102	86-118			
Strontium, total	0.387	0.0010	mg/L	0.375		103	86-110			
Thallium, total	0.0823	0.000020	mg/L	0.0805		102	90-113			
Uranium, total	0.0303	0.000020	mg/L	0.0306		99	88-112			
Vanadium, total	0.392	0.0010	mg/L	0.386		102	87-110			
Zinc, total	2.76	0.0040	mg/L	2.49		111	90-113			
Total Metals, Batch B9K1327										
Blank (B9K1327-BLK1)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Mercury, total	< 0.000010	0.000010	mg/L							
Blank (B9K1327-BLK2)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Mercury, total	< 0.000010	0.000010	mg/L							
Reference (B9K1327-SRM1)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Mercury, total	0.00579	0.000010	mg/L	0.00489		118	80-120			
Reference (B9K1327-SRM2)				Prepared: 2019-11-13, Analyzed: 2019-11-13						
Mercury, total	0.00533	0.000010	mg/L	0.00489		109	80-120			

QC Qualifiers:

SPK1 The recovery of this analyte was outside of established control limits. The data was accepted based on performance of other batch QC.

CERTIFICATE OF ANALYSIS

REPORTED TO	Kelowna, City of 1435 Water Street KELOWNA, BC V1Y 1J4		
ATTENTION	Marcia Browne	**WORK ORDER**	9111055
PO NUMBER	527007	**RECEIVED / TEMP**	2019-11-27 14:55 / 7°C
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35
PROJECT INFO		**COC NUMBER**	43796.55839

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9111055-01) | Matrix: Water | Sampled: 2019-11-27 13:00					
Anions					
Chloride	**423**	0.10	mg/L	2019-11-30	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-11-30	
Nitrite (as N)	< 0.010	0.010	mg/L	2019-11-30	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-11-30	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1220**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	**1.78**	0.0500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0526**	0.00010	mg/L	2019-12-05	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2019-12-05	
Antimony, dissolved	**0.00039**	0.00020	mg/L	2019-12-05	
Arsenic, dissolved	**0.00196**	0.00050	mg/L	2019-12-05	
Barium, dissolved	**0.0161**	0.0050	mg/L	2019-12-05	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Boron, dissolved	**0.111**	0.0050	mg/L	2019-12-05	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-12-05	
Calcium, dissolved	**63.1**	0.20	mg/L	2019-12-05	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-12-05	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-12-05	
Iron, dissolved	< 0.010	0.010	mg/L	2019-12-05	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-12-05	
Magnesium, dissolved	**259**	0.010	mg/L	2019-12-05	
Manganese, dissolved	**0.00058**	0.00020	mg/L	2019-12-05	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-12-05	
Molybdenum, dissolved	**0.00193**	0.00010	mg/L	2019-12-05	
Nickel, dissolved	**0.00110**	0.00040	mg/L	2019-12-05	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2019-12-05	
Potassium, dissolved	**77.0**	0.10	mg/L	2019-12-05	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-12-05	
Silicon, dissolved	**1.0**	1.0	mg/L	2019-12-05	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-12-05	
Sodium, dissolved	**763**	0.10	mg/L	2019-12-05	
Strontium, dissolved	**0.609**	0.0010	mg/L	2019-12-05	
Sulfur, dissolved	**713**	3.0	mg/L	2019-12-05	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-12-05	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-12-05	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-12-05	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9111055-01) | Matrix: Water | Sampled: 2019-11-27 13:00, Continued					
Dissolved Metals, Continued					
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-12-05	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-12-05	
Uranium, dissolved	**0.00524**	0.000020	mg/L	2019-12-05	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-12-05	
Zinc, dissolved	**0.0042**	0.0040	mg/L	2019-12-05	
Zirconium, dissolved	**0.00020**	0.00010	mg/L	2019-12-05	
General Parameters					
Ammonia, Total (as N)	**0.126**	0.020	mg/L	2019-11-29	
BOD, 5-day	< 7.0	2.0	mg/L	2019-12-03	
Chemical Oxygen Demand	**57**	20	mg/L	2019-11-29	
Conductivity (EC)	**5170**	2.0	µS/cm	2019-11-30	
Nitrogen, Total Kjeldahl	**1.78**	0.050	mg/L	2019-11-29	
pH	**8.26**	0.10	pH units	2019-11-30	HT2
Solids, Total Dissolved	**3970**	15	mg/L	2019-11-29	
Solids, Total Suspended	**5.6**	2.0	mg/L	2019-11-29	
Microbiological Parameters					
Coliforms, Total	**299**	1.0	MPN/100 mL	2019-11-28	
E. coli	< 1.0	1.0	MPN/100 mL	2019-11-28	
Total Metals					
Aluminum, total	**0.0109**	0.0050	mg/L	2019-12-07	
Antimony, total	**0.00044**	0.00020	mg/L	2019-12-07	
Arsenic, total	**0.00338**	0.00050	mg/L	2019-12-07	
Barium, total	**0.0160**	0.0050	mg/L	2019-12-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-12-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-12-07	
Boron, total	**0.118**	0.0050	mg/L	2019-12-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-12-07	
Calcium, total	**63.5**	0.20	mg/L	2019-12-07	
Chromium, total	< 0.00050	0.00050	mg/L	2019-12-07	
Cobalt, total	**0.00012**	0.00010	mg/L	2019-12-07	
Copper, total	< 0.00040	0.00040	mg/L	2019-12-07	
Iron, total	**0.021**	0.010	mg/L	2019-12-07	
Lead, total	< 0.00020	0.00020	mg/L	2019-12-07	
Lithium, total	**0.0467**	0.00010	mg/L	2019-12-07	
Magnesium, total	**260**	0.010	mg/L	2019-12-07	
Manganese, total	**0.0536**	0.00020	mg/L	2019-12-07	
Mercury, total	< 0.000010	0.000010	mg/L	2019-12-05	
Molybdenum, total	**0.00190**	0.00010	mg/L	2019-12-07	
Nickel, total	**0.00133**	0.00040	mg/L	2019-12-07	
Phosphorus, total	**0.059**	0.050	mg/L	2019-12-07	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Rose's Pond (9111055-01) | Matrix: Water | Sampled: 2019-11-27 13:00, Continued					
Total Metals, Continued					
Potassium, total	**80.8**	0.10	mg/L	2019-12-07	
Selenium, total	< 0.00050	0.00050	mg/L	2019-12-07	
Silicon, total	**1.3**	1.0	mg/L	2019-12-07	
Silver, total	< 0.000050	0.000050	mg/L	2019-12-07	
Sodium, total	**756**	0.10	mg/L	2019-12-07	
Strontium, total	**0.634**	0.0010	mg/L	2019-12-07	
Sulfur, total	**685**	3.0	mg/L	2019-12-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-12-07	
Thallium, total	< 0.000020	0.000020	mg/L	2019-12-07	
Thorium, total	< 0.00010	0.00010	mg/L	2019-12-07	
Tin, total	< 0.00020	0.00020	mg/L	2019-12-07	
Titanium, total	< 0.0050	0.0050	mg/L	2019-12-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-12-07	
Uranium, total	**0.00492**	0.000020	mg/L	2019-12-07	
Vanadium, total	< 0.0010	0.0010	mg/L	2019-12-07	
Zinc, total	< 0.0040	0.0040	mg/L	2019-12-07	
Zirconium, total	**0.00023**	0.00010	mg/L	2019-12-07	
Davidson Pond (9111055-02) | Matrix: Water | Sampled: 2019-11-27 13:30					
Anions					
Chloride	**323**	0.10	mg/L	2019-11-30	
Nitrate (as N)	< 0.010	0.010	mg/L	2019-11-30	
Nitrite (as N)	**0.014**	0.010	mg/L	2019-11-30	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2019-11-30	
Calculated Parameters					
Hardness, Total (as CaCO3)	**597**	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.0142**	0.0100	mg/L	N/A	
Nitrogen, Total	**2.79**	0.100	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0467**	0.00010	mg/L	2019-12-05	
Aluminum, dissolved	**0.0077**	0.0050	mg/L	2019-12-05	
Antimony, dissolved	**0.00029**	0.00020	mg/L	2019-12-05	
Arsenic, dissolved	**0.00179**	0.00050	mg/L	2019-12-05	
Barium, dissolved	**0.0153**	0.0050	mg/L	2019-12-05	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Boron, dissolved	**0.0357**	0.0050	mg/L	2019-12-05	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2019-12-05	
Calcium, dissolved	**53.6**	0.20	mg/L	2019-12-05	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2019-12-05	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9111055-02) | Matrix: Water | Sampled: 2019-11-27 13:30, Continued					
Dissolved Metals, Continued					
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Copper, dissolved	< 0.00040	0.00040	mg/L	2019-12-05	
Iron, dissolved	**0.012**	0.010	mg/L	2019-12-05	
Lead, dissolved	< 0.00020	0.00020	mg/L	2019-12-05	
Magnesium, dissolved	**112**	0.010	mg/L	2019-12-05	
Manganese, dissolved	**0.00288**	0.00020	mg/L	2019-12-05	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2019-12-05	
Molybdenum, dissolved	**0.00090**	0.00010	mg/L	2019-12-05	
Nickel, dissolved	**0.00193**	0.00040	mg/L	2019-12-05	
Phosphorus, dissolved	**0.101**	0.050	mg/L	2019-12-05	
Potassium, dissolved	**43.1**	0.10	mg/L	2019-12-05	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2019-12-05	
Silicon, dissolved	**2.6**	1.0	mg/L	2019-12-05	
Silver, dissolved	< 0.000050	0.000050	mg/L	2019-12-05	
Sodium, dissolved	**553**	0.10	mg/L	2019-12-05	
Strontium, dissolved	**0.940**	0.0010	mg/L	2019-12-05	
Sulfur, dissolved	**389**	3.0	mg/L	2019-12-05	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2019-12-05	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2019-12-05	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2019-12-05	
Tin, dissolved	< 0.00020	0.00020	mg/L	2019-12-05	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2019-12-05	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2019-12-05	
Uranium, dissolved	**0.00510**	0.000020	mg/L	2019-12-05	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2019-12-05	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2019-12-05	
Zirconium, dissolved	**0.00013**	0.00010	mg/L	2019-12-05	
General Parameters					
Ammonia, Total (as N)	**0.738**	0.020	mg/L	2019-11-29	
BOD, 5-day	**7.3**	2.0	mg/L	2019-12-03	
Chemical Oxygen Demand	**58**	20	mg/L	2019-11-29	
Conductivity (EC)	**3600**	2.0	µS/cm	2019-11-30	
Nitrogen, Total Kjeldahl	**2.77**	0.050	mg/L	2019-11-29	
pH	**8.23**	0.10	pH units	2019-11-30	HT2
Solids, Total Dissolved	**2530**	15	mg/L	2019-11-29	
Solids, Total Suspended	**3.2**	2.0	mg/L	2019-11-29	
Microbiological Parameters					
Coliforms, Total	**435**	1.0	MPN/100 mL	2019-11-28	
E. coli	**2.0**	1.0	MPN/100 mL	2019-11-28	
Total Metals					

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Davidson Pond (9111055-02) | Matrix: Water | Sampled: 2019-11-27 13:30, Continued					
Total Metals, Continued					
Aluminum, total	**0.0130**	0.0050	mg/L	2019-12-07	
Antimony, total	**0.00035**	0.00020	mg/L	2019-12-07	
Arsenic, total	**0.00310**	0.00050	mg/L	2019-12-07	
Barium, total	**0.0159**	0.0050	mg/L	2019-12-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2019-12-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2019-12-07	
Boron, total	**0.0450**	0.0050	mg/L	2019-12-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2019-12-07	
Calcium, total	**57.4**	0.20	mg/L	2019-12-07	
Chromium, total	< 0.00050	0.00050	mg/L	2019-12-07	
Cobalt, total	< 0.00010	0.00010	mg/L	2019-12-07	
Copper, total	**0.00041**	0.00040	mg/L	2019-12-07	
Iron, total	**0.037**	0.010	mg/L	2019-12-07	
Lead, total	< 0.00020	0.00020	mg/L	2019-12-07	
Lithium, total	**0.0435**	0.00010	mg/L	2019-12-07	
Magnesium, total	**112**	0.010	mg/L	2019-12-07	
Manganese, total	**0.111**	0.00020	mg/L	2019-12-07	
Mercury, total	< 0.000010	0.000010	mg/L	2019-12-05	
Molybdenum, total	**0.00090**	0.00010	mg/L	2019-12-07	
Nickel, total	**0.00178**	0.00040	mg/L	2019-12-07	
Phosphorus, total	**0.153**	0.050	mg/L	2019-12-07	
Potassium, total	**45.3**	0.10	mg/L	2019-12-07	
Selenium, total	< 0.00050	0.00050	mg/L	2019-12-07	
Silicon, total	**3.0**	1.0	mg/L	2019-12-07	
Silver, total	< 0.000050	0.000050	mg/L	2019-12-07	
Sodium, total	**548**	0.10	mg/L	2019-12-07	
Strontium, total	**0.996**	0.0010	mg/L	2019-12-07	
Sulfur, total	**371**	3.0	mg/L	2019-12-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2019-12-07	
Thallium, total	< 0.000020	0.000020	mg/L	2019-12-07	
Thorium, total	< 0.00010	0.00010	mg/L	2019-12-07	
Tin, total	< 0.00020	0.00020	mg/L	2019-12-07	
Titanium, total	< 0.0050	0.0050	mg/L	2019-12-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2019-12-07	
Uranium, total	**0.00505**	0.000020	mg/L	2019-12-07	
Vanadium, total	< 0.0010	0.0010	mg/L	2019-12-07	
Zinc, total	< 0.0040	0.0040	mg/L	2019-12-07	
Zirconium, total	< 0.00010	0.00010	mg/L	2019-12-07	

Sample Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Coliforms, Total in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:acrump@caro.ca

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9K2884										
Blank (B9K2884-BLK1)				Prepared: 2019-11-29, Analyzed: 2019-11-29						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
Blank (B9K2884-BLK2)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Phosphate (as P)	< 0.0050	0.0050	mg/L							
LCS (B9K2884-BS1)				Prepared: 2019-11-29, Analyzed: 2019-11-29						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	3.99	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	2.01	0.010	mg/L	2.00		101	85-115			
Phosphate (as P)	1.03	0.0050	mg/L	1.00		103	80-120			
LCS (B9K2884-BS2)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Chloride	16.2	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	4.10	0.010	mg/L	4.00		102	90-110			
Nitrite (as N)	2.03	0.010	mg/L	2.00		101	85-115			
Phosphate (as P)	1.02	0.0050	mg/L	1.00		102	80-120			
Dissolved Metals, Batch B9L0048										
Blank (B9L0048-BLK1)				Prepared: 2019-12-02, Analyzed: 2019-12-05						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Reference (B9L0048-SRM1)				Prepared: 2019-12-02, Analyzed: 2019-12-05						
Mercury, dissolved	0.00513	0.000010	mg/L	0.00489		105	80-120			
Dissolved Metals, Batch B9L0258										
Blank (B9L0258-BLK1)				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Lithium, dissolved	< 0.00010	0.00010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9L0258, Continued										
Blank (B9L0258-BLK1), Continued				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
Blank (B9L0258-BLK2)				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0050	0.0050	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9L0258, Continued										
Blank (B9L0258-BLK2), Continued				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B9L0258-BS1)				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Lithium, dissolved	0.0227	0.00010	mg/L	0.0200		113	80-120			
Aluminum, dissolved	0.0218	0.0050	mg/L	0.0199		109	80-120			
Antimony, dissolved	0.0225	0.00020	mg/L	0.0200		113	80-120			
Arsenic, dissolved	0.0228	0.00050	mg/L	0.0200		114	80-120			
Barium, dissolved	0.0198	0.0050	mg/L	0.0198		100	80-120			
Beryllium, dissolved	0.0236	0.00010	mg/L	0.0198		119	80-120			
Bismuth, dissolved	0.0222	0.00010	mg/L	0.0200		111	80-120			
Boron, dissolved	0.0241	0.0050	mg/L	0.0200		120	80-120			
Cadmium, dissolved	0.0206	0.000010	mg/L	0.0199		103	80-120			
Calcium, dissolved	2.39	0.20	mg/L	2.02		119	80-120			
Chromium, dissolved	0.0238	0.00050	mg/L	0.0198		120	80-120			
Cobalt, dissolved	0.0200	0.00010	mg/L	0.0199		101	80-120			
Copper, dissolved	0.0215	0.00040	mg/L	0.0200		107	80-120			
Iron, dissolved	1.95	0.010	mg/L	2.02		96	80-120			
Lead, dissolved	0.0225	0.00020	mg/L	0.0199		113	80-120			
Magnesium, dissolved	1.93	0.010	mg/L	2.02		95	80-120			
Manganese, dissolved	0.0201	0.00020	mg/L	0.0199		101	80-120			
Molybdenum, dissolved	0.0202	0.00010	mg/L	0.0200		101	80-120			
Nickel, dissolved	0.0206	0.00040	mg/L	0.0200		103	80-120			
Phosphorus, dissolved	2.33	0.050	mg/L	2.00		116	80-120			
Potassium, dissolved	1.83	0.10	mg/L	2.02		91	80-120			
Selenium, dissolved	0.0221	0.00050	mg/L	0.0200		110	80-120			
Silicon, dissolved	1.8	1.0	mg/L	2.00		92	80-120			
Silver, dissolved	0.0202	0.000050	mg/L	0.0200		101	80-120			
Sodium, dissolved	1.90	0.10	mg/L	2.02		94	80-120			
Strontium, dissolved	0.0201	0.0010	mg/L	0.0200		100	80-120			
Sulfur, dissolved	5.8	3.0	mg/L	5.00		116	80-120			
Tellurium, dissolved	0.0190	0.00050	mg/L	0.0200		95	80-120			
Thallium, dissolved	0.0225	0.000020	mg/L	0.0199		113	80-120			
Thorium, dissolved	0.0207	0.00010	mg/L	0.0200		104	80-120			
Tin, dissolved	0.0201	0.00020	mg/L	0.0200		101	80-120			
Titanium, dissolved	0.0202	0.0050	mg/L	0.0200		101	80-120			
Tungsten, dissolved	0.0213	0.0010	mg/L	0.0200		106	80-120			
Uranium, dissolved	0.0221	0.000020	mg/L	0.0200		111	80-120			
Vanadium, dissolved	0.0199	0.0010	mg/L	0.0200		100	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B9L0258, Continued										
LCS (B9L0258-BS1), Continued				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Zinc, dissolved	0.0228	0.0040	mg/L	0.0200		114	80-120			
Zirconium, dissolved	0.0200	0.00010	mg/L	0.0200		100	80-120			
Reference (B9L0258-SRM1)				Prepared: 2019-12-05, Analyzed: 2019-12-05						
Lithium, dissolved	0.107	0.00010	mg/L	0.100		107	77-127			
Aluminum, dissolved	0.224	0.0050	mg/L	0.235		96	79-114			
Antimony, dissolved	0.0472	0.00020	mg/L	0.0431		110	89-123			
Arsenic, dissolved	0.371	0.00050	mg/L	0.423		88	87-113			
Barium, dissolved	3.16	0.0050	mg/L	3.30		96	85-114			
Beryllium, dissolved	0.208	0.00010	mg/L	0.209		99	79-122			
Boron, dissolved	1.54	0.0050	mg/L	1.65		94	79-117			
Cadmium, dissolved	0.231	0.000010	mg/L	0.221		105	89-112			
Calcium, dissolved	7.89	0.20	mg/L	7.72		102	85-120			
Chromium, dissolved	0.450	0.00050	mg/L	0.434		104	87-113			
Cobalt, dissolved	0.128	0.00010	mg/L	0.124		103	90-117			
Copper, dissolved	0.863	0.00040	mg/L	0.815		106	90-115			
Iron, dissolved	1.25	0.010	mg/L	1.27		99	86-112			
Lead, dissolved	0.116	0.00020	mg/L	0.110		105	90-113			
Magnesium, dissolved	6.52	0.010	mg/L	6.59		99	84-116			
Manganese, dissolved	0.344	0.00020	mg/L	0.342		101	85-113			
Molybdenum, dissolved	0.435	0.00010	mg/L	0.404		108	87-112			
Nickel, dissolved	0.865	0.00040	mg/L	0.835		104	90-114			
Phosphorus, dissolved	0.381	0.050	mg/L	0.499		76	74-119			
Potassium, dissolved	2.80	0.10	mg/L	2.88		97	78-119			
Selenium, dissolved	0.0291	0.00050	mg/L	0.0324		90	89-123			
Sodium, dissolved	17.3	0.10	mg/L	18.0		96	81-117			
Strontium, dissolved	0.946	0.0010	mg/L	0.935		101	82-111			
Thallium, dissolved	0.0412	0.000020	mg/L	0.0385		107	90-113			
Uranium, dissolved	0.260	0.000020	mg/L	0.258		101	87-113			
Vanadium, dissolved	0.866	0.0010	mg/L	0.873		99	85-110			
Zinc, dissolved	0.868	0.0040	mg/L	0.848		102	88-114			
General Parameters, Batch B9K2881										
Blank (B9K2881-BLK1)				Prepared: 2019-11-28, Analyzed: 2019-12-03						
BOD, 5-day	< 2.0	2.0	mg/L							
LCS (B9K2881-BS1)				Prepared: 2019-11-28, Analyzed: 2019-12-03						
BOD, 5-day	175	2.0	mg/L	180		97	85-115			
General Parameters, Batch B9K2917										
Blank (B9K2917-BLK1)				Prepared: 2019-11-28, Analyzed: 2019-11-29						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
Blank (B9K2917-BLK2)				Prepared: 2019-11-28, Analyzed: 2019-11-29						
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L							
LCS (B9K2917-BS1)				Prepared: 2019-11-28, Analyzed: 2019-11-29						
Nitrogen, Total Kjeldahl	0.973	0.050	mg/L	1.00		97	85-115			
LCS (B9K2917-BS2)				Prepared: 2019-11-28, Analyzed: 2019-11-29						
Nitrogen, Total Kjeldahl	0.971	0.050	mg/L	1.00		97	85-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9K2917, Continued										
Duplicate (B9K2917-DUP2)				**Source: 9111055-02**	Prepared: 2019-11-28, Analyzed: 2019-11-29					
Nitrogen, Total Kjeldahl	2.67	0.050	mg/L		2.77			4	15	
Matrix Spike (B9K2917-MS2)				**Source: 9111055-02**	Prepared: 2019-11-28, Analyzed: 2019-11-29					
Nitrogen, Total Kjeldahl	6.46	0.200	mg/L	4.00	2.77	92	65-135			
General Parameters, Batch B9K2938										
Blank (B9K2938-BLK1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Chemical Oxygen Demand	< 20	20	mg/L							
LCS (B9K2938-BS1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Chemical Oxygen Demand	502	20	mg/L	500		100	89-115			
General Parameters, Batch B9K2939										
Blank (B9K2939-BLK1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9K2939-BLK2)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
Blank (B9K2939-BLK3)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Ammonia, Total (as N)	< 0.020	0.020	mg/L							
LCS (B9K2939-BS1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Ammonia, Total (as N)	0.954	0.020	mg/L	1.00		95	90-115			
LCS (B9K2939-BS2)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Ammonia, Total (as N)	0.971	0.020	mg/L	1.00		97	90-115			
LCS (B9K2939-BS3)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Ammonia, Total (as N)	0.961	0.020	mg/L	1.00		96	90-115			
General Parameters, Batch B9K2958										
Blank (B9K2958-BLK1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Suspended	< 1.0	1.0	mg/L							
Blank (B9K2958-BLK2)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Suspended	< 1.0	1.0	mg/L							
LCS (B9K2958-BS1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Suspended	89.0	10.0	mg/L	100		89	85-115			
LCS (B9K2958-BS2)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Suspended	91.0	10.0	mg/L	100		91	85-115			
General Parameters, Batch B9K3015										
Blank (B9K3015-BLK1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B9K3015-BS1)					Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Dissolved	243	15	mg/L	240		101	85-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9K3015, Continued										
Duplicate (B9K3015-DUP1)				**Source: 9111055-01**	Prepared: 2019-11-29, Analyzed: 2019-11-29					
Solids, Total Dissolved	4410	15	mg/L		3970			11	15	
General Parameters, Batch B9K3064										
Blank (B9K3064-BLK1)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9K3064-BLK2)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B9K3064-BLK3)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B9K3064-BS4)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Conductivity (EC)	1400	2.0	µS/cm	1410		99	95-104			
LCS (B9K3064-BS5)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Conductivity (EC)	1420	2.0	µS/cm	1410		101	95-104			
LCS (B9K3064-BS6)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
Conductivity (EC)	1420	2.0	µS/cm	1410		101	95-104			
Reference (B9K3064-SRM1)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
pH	7.00	0.10	pH units	7.01		100	98-102			
Reference (B9K3064-SRM2)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
pH	6.99	0.10	pH units	7.01		100	98-102			
Reference (B9K3064-SRM3)				Prepared: 2019-11-30, Analyzed: 2019-11-30						
pH	6.99	0.10	pH units	7.01		100	98-102			
Microbiological Parameters, Batch B9K2841										
Blank (B9K2841-BLK1)				Prepared: 2019-11-28, Analyzed: 2019-11-28						
Coliforms, Total	< 1.0	1.0	MPN/100 mL							
E. coli	< 1.0	1.0	MPN/100 mL							
Blank (B9K2841-BLK2)				Prepared: 2019-11-28, Analyzed: 2019-11-28						
E. coli	< 1.0	1.0	MPN/100 mL							
Blank (B9K2841-BLK3)				Prepared: 2019-11-28, Analyzed: 2019-11-28						
Coliforms, Total	< 1.0	1.0	MPN/100 mL							
E. coli	< 1.0	1.0	MPN/100 mL							
Total Metals, Batch B9L0051										
Blank (B9L0051-BLK1)				Prepared: 2019-12-02, Analyzed: 2019-12-05						
Mercury, total	< 0.000010	0.000010	mg/L							
Matrix Spike (B9L0051-MS1)				**Source: 9111055-02**	Prepared: 2019-12-02, Analyzed: 2019-12-05					
Mercury, total	0.000224	0.000010	mg/L	0.000250	< 0.000010	90	70-130			
Reference (B9L0051-SRM1)				Prepared: 2019-12-02, Analyzed: 2019-12-05						
Mercury, total	0.00485	0.000010	mg/L	0.00489		99	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9L0313										
Blank (B9L0313-BLK1)				Prepared: 2019-12-04, Analyzed: 2019-12-07						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0050	0.0050	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B9L0313-BS1)				Prepared: 2019-12-04, Analyzed: 2019-12-07						
Aluminum, total	0.0228	0.0050	mg/L	0.0199		114	80-120			
Antimony, total	0.0214	0.00020	mg/L	0.0200		107	80-120			
Arsenic, total	0.0181	0.00050	mg/L	0.0200		91	80-120			
Barium, total	0.0216	0.0050	mg/L	0.0198		109	80-120			
Beryllium, total	0.0203	0.00010	mg/L	0.0198		103	80-120			
Bismuth, total	0.0208	0.00010	mg/L	0.0200		104	80-120			
Boron, total	0.0192	0.0050	mg/L	0.0200		96	80-120			
Cadmium, total	0.0201	0.000010	mg/L	0.0199		101	80-120			
Calcium, total	2.30	0.20	mg/L	2.02		114	80-120			
Chromium, total	0.0230	0.00050	mg/L	0.0198		116	80-120			
Cobalt, total	0.0225	0.00010	mg/L	0.0199		113	80-120			
Copper, total	0.0228	0.00040	mg/L	0.0200		114	80-120			
Iron, total	2.10	0.010	mg/L	2.02		104	80-120			
Lead, total	0.0209	0.00020	mg/L	0.0199		105	80-120			
Lithium, total	0.0209	0.00010	mg/L	0.0200		105	80-120			
Magnesium, total	2.08	0.010	mg/L	2.02		103	80-120			
Manganese, total	0.0206	0.00020	mg/L	0.0199		104	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9L0313, Continued										
LCS (B9L0313-BS1), Continued				Prepared: 2019-12-04, Analyzed: 2019-12-07						
Molybdenum, total	0.0213	0.00010	mg/L	0.0200		107	80-120			
Nickel, total	0.0224	0.00040	mg/L	0.0200		112	80-120			
Phosphorus, total	1.90	0.050	mg/L	2.00		95	80-120			
Potassium, total	2.10	0.10	mg/L	2.02		104	80-120			
Selenium, total	0.0187	0.00050	mg/L	0.0200		94	80-120			
Silicon, total	2.2	1.0	mg/L	2.00		110	80-120			
Silver, total	0.0204	0.000050	mg/L	0.0200		102	80-120			
Sodium, total	2.14	0.10	mg/L	2.02		106	80-120			
Strontium, total	0.0228	0.0010	mg/L	0.0200		114	80-120			
Sulfur, total	5.2	3.0	mg/L	5.00		105	80-120			
Tellurium, total	0.0169	0.00050	mg/L	0.0200		84	80-120			
Thallium, total	0.0209	0.000020	mg/L	0.0199		105	80-120			
Thorium, total	0.0200	0.00010	mg/L	0.0200		100	80-120			
Tin, total	0.0209	0.00020	mg/L	0.0200		104	80-120			
Titanium, total	0.0224	0.0050	mg/L	0.0200		112	80-120			
Tungsten, total	0.0209	0.0010	mg/L	0.0200		104	80-120			
Uranium, total	0.0204	0.000020	mg/L	0.0200		102	80-120			
Vanadium, total	0.0216	0.0010	mg/L	0.0200		108	80-120			
Zinc, total	0.0237	0.0040	mg/L	0.0200		119	80-120			
Zirconium, total	0.0210	0.00010	mg/L	0.0200		105	80-120			
Duplicate (B9L0313-DUP1)			**Source: 9111055-02**	Prepared: 2019-12-04, Analyzed: 2019-12-07						
Aluminum, total	0.0140	0.0050	mg/L		0.0130				20	
Antimony, total	0.00037	0.00020	mg/L		0.00035				20	
Arsenic, total	0.00325	0.00050	mg/L		0.00310			5	15	
Barium, total	0.0163	0.0050	mg/L		0.0159				9	
Beryllium, total	< 0.00010	0.00010	mg/L		< 0.00010				16	
Bismuth, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, total	0.0413	0.0050	mg/L		0.0450			9	20	
Cadmium, total	< 0.000010	0.000010	mg/L		< 0.000010				20	
Calcium, total	62.1	0.20	mg/L		57.4			8	12	
Chromium, total	< 0.00050	0.00050	mg/L		< 0.00050				12	
Cobalt, total	0.00012	0.00010	mg/L		< 0.00010				13	
Copper, total	0.00041	0.00040	mg/L		0.00041				20	
Iron, total	0.034	0.010	mg/L		0.037				18	
Lead, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Lithium, total	0.0464	0.00010	mg/L		0.0435			6	19	
Magnesium, total	120	0.010	mg/L		112			7	10	
Manganese, total	0.118	0.00020	mg/L		0.111			6	13	
Molybdenum, total	0.00096	0.00010	mg/L		0.00090			7	20	
Nickel, total	0.00176	0.00040	mg/L		0.00178				20	
Phosphorus, total	0.171	0.050	mg/L		0.153				20	
Potassium, total	48.4	0.10	mg/L		45.3			7	13	
Selenium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silicon, total	3.5	1.0	mg/L		3.0				11	
Silver, total	< 0.000050	0.000050	mg/L		< 0.000050				18	
Sodium, total	581	0.10	mg/L		548			6	10	
Strontium, total	1.06	0.0010	mg/L		0.996			6	9	
Sulfur, total	395	3.0	mg/L		371			6	20	
Tellurium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, total	< 0.000020	0.000020	mg/L		< 0.000020				20	
Thorium, total	< 0.00010	0.00010	mg/L		< 0.00010				18	
Tin, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Titanium, total	< 0.0050	0.0050	mg/L		< 0.0050				20	
Tungsten, total	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, total	0.00552	0.000020	mg/L		0.00505			9	14	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Kelowna, City of	**WORK ORDER**	9111055
PROJECT	RBCF Ponds	**REPORTED**	2019-12-10 16:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9L0313, Continued										
Duplicate (B9L0313-DUP1), Continued		**Source: 9111055-02**		Prepared: 2019-12-04, Analyzed: 2019-12-07						
Vanadium, total	< 0.0010	0.0010	mg/L		< 0.0010				17	
Zinc, total	< 0.0040	0.0040	mg/L		< 0.0040				8	
Zirconium, total	0.00011	0.00010	mg/L		0.00010				20	
Reference (B9L0313-SRM1)				Prepared: 2019-12-04, Analyzed: 2019-12-07						
Aluminum, total	0.317	0.0050	mg/L	0.303		105	82-114			
Antimony, total	0.0526	0.00020	mg/L	0.0511		103	88-115			
Arsenic, total	0.104	0.00050	mg/L	0.118		88	88-111			
Barium, total	0.839	0.0050	mg/L	0.823		102	83-110			
Beryllium, total	0.0515	0.00010	mg/L	0.0496		104	80-119			
Boron, total	3.59	0.0050	mg/L	3.45		104	80-118			
Cadmium, total	0.0474	0.000010	mg/L	0.0495		96	90-110			
Calcium, total	11.3	0.20	mg/L	11.6		97	85-113			
Chromium, total	0.278	0.00050	mg/L	0.250		111	88-111			
Cobalt, total	0.0419	0.00010	mg/L	0.0377		111	90-114			
Copper, total	0.538	0.00040	mg/L	0.486		111	90-117			
Iron, total	0.495	0.010	mg/L	0.488		101	90-116			
Lead, total	0.209	0.00020	mg/L	0.204		103	90-110			
Lithium, total	0.420	0.00010	mg/L	0.403		104	79-118			
Magnesium, total	3.80	0.010	mg/L	3.79		100	88-116			
Manganese, total	0.107	0.00020	mg/L	0.109		98	88-108			
Molybdenum, total	0.201	0.00010	mg/L	0.198		101	88-110			
Nickel, total	0.267	0.00040	mg/L	0.249		107	90-112			
Phosphorus, total	0.221	0.050	mg/L	0.227		97	72-118			
Potassium, total	7.62	0.10	mg/L	7.21		106	87-116			
Selenium, total	0.114	0.00050	mg/L	0.121		95	90-122			
Sodium, total	7.56	0.10	mg/L	7.54		100	86-118			
Strontium, total	0.410	0.0010	mg/L	0.375		109	86-110			
Thallium, total	0.0859	0.000020	mg/L	0.0805		107	90-113			
Uranium, total	0.0313	0.000020	mg/L	0.0306		102	88-112			
Vanadium, total	0.394	0.0010	mg/L	0.386		102	87-110			
Zinc, total	2.67	0.0040	mg/L	2.49		107	90-113			

GOLDER

golder.com

Appendix C

Odowatch Alert Point Report 2019

OdoWatch Report for Kelowna

Site:	Kelowna	**Generated:**	3/30/2020 3:42:16 PM
Type of Report:	Alert Point Concentration Report	**Processing Start Date:**	3/30/2020 3:42:09 PM
Report Period:	1/1/2019 12:00:00 AM - 12/31/2019 11:59:59 PM	**Pollutant Type:**	Compost
Comments:			

Compost

ID	Alert Point Name	Number of active hours	Highest 1-Hour Average (ou/m³)	Maximum 4-Minute Value (ou/m³)	Total Exceeding Time					
					Low Threshold		Medium Threshold		High Threshold	
					hh:mm	%	hh:mm	%	hh:mm	%
41	Kekuli Bay Rd N	6131:36	< 1	3	2:08	0.0	0:12	0.0	0:00	0.0
42	Bailey & Commonage intersection	6131:36	2	5	14:52	0.2	2:28	0.0	0:24	0.0
44	Property Boundary North	6131:36	12	31	0:00	0.0	0:00	0.0	0:00	0.0
45	Property Boundary East	6131:36	7	13	0:00	0.0	0:00	0.0	0:00	0.0
46	Property Boundary South	6131:36	17	44	0:00	0.0	0:00	0.0	0:00	0.0
47	Property Boundary West	6131:36	10	34	0:00	0.0	0:00	0.0	0:00	0.0
48	Predator Ridge	6131:36	< 1	1	0:04	0.0	0:00	0.0	0:00	0.0
49	Kekuli Bay Rd S	6131:36	< 1	1	1:24	0.0	0:00	0.0	0:00	0.0
51	552 Commonage Rd	6131:36	2	15	44:20	0.7	16:32	0.3	7:52	0.1
71	Kokanee Rd.	6131:36	< 1	< 1	0:00	0.0	0:00	0.0	0:00	0.0

OdoWatch Report for Kelowna

Site:	Kelowna	**Generated:**	3/30/2020 3:42:16 PM
Type of Report:	Alert Point Concentration Report	**Processing Start Date:**	3/30/2020 3:42:09 PM
Report Period:	1/1/2019 12:00:00 AM - 12/31/2019 11:59:59 PM	**Pollutant Type:**	Compost
Comments			

Legend

ID		Identification number of the alert point used in the OdoWatch system
Alert Point Name		Descriptive name assigned to this alert point
Highest 1-Hour Average	(ou/m³)	Highest 1-hour average value in this reporting period
Maximum 4-Minute Value	(ou/m³)	Maximum 4-minute value in this reporting period
Total Exceeding Time	hh:mm	Total time that a threshold limit was exceeded in this active monitoring period during the report period
Total Exceeding Time	%	Percentage of this active monitoring period during the report period where a treshold limit was exceeded
Low Threshold		Low threshold level. Triggers low level alarm (>50 ou/m3 for 2 hours continuously)
Medium Threshold		Medium threshold level. Trigger medium level alarm (>75 ou/m3 for 2 hours continuously)
High Threshold		High threshold level. Triggers high level alarm (>100 ou/m3 for 2 hours continuously)

Appendix D

CQA Compost Analytical Results

www.compostquality.ca

SUMMARY OF ANALYSIS REPORT

To:	City of Kelowna 1435 Water Street Kelowna, British Columbia V1Y 1J4	**CQA Member#:**	18-2800
Attention:	Marcia Browne or Jose Garcia	**Sample I.D.:**	OGOGROWAUGUST2019
Report#:	C19310-10250 C19310-70010 C19332-70016	**Sample Date:** **Reported Date:**	 12/5/2019

Compost to be Manufacture in: British Columbia

Feedstock: *Leaf and Yard Residues, Municipal Biosolids, Forestry Residues*

CQA COMPOST QUALITY & VALUE TESTING PARAMETERS REPORT

SAMPLE ID	RECOMMENDED END USE/MARKET
OGOGROWAUGUST2019	**Category A**
Regulatory	See Appendix I
Product Quality	See Appendix II
Product Value/ Soil Suitability*	See Appendix III (Soil, Enviro, Manure Compost)

The Compost Quality Alliance (CQA) is a voluntary quality monitoring program established by the Compost Council of Canada and the compost producers utilizing recognized standardized testing methodologies and uniform operating protocols to provide customer assurance in compost selection its use, and proper end-use utilization.

All analysis of this compost product was conducted and provided by A&L Canada Laboratories Inc. for the Compost Quality Alliance (CQA).

Haifeng Song, Senior Chemist

Ian McLachlin, Vice-President

A&L Canada Laboratories Inc.
London, Ontario Canada
(519) 457-2575

A proud member of

Fièrement membre du Conseil canadien du COMPOST Council of Canada Proud to be a member

***PLEASE NOTE: Major Nutrients under the Fertilizer Act and Regulations (CFIA)**

Please see Appendix III for nutrient content (of impact to claims and labelling if used in declarations).

Compost is classified in Schedule II as a supplement, and as such nutrient guarantees are not mandatory. However, if any claims are made regarding nutritional value of the product, such as for composted manure, the product would then be classified as a supplement and a fertilizer, and the label would have to include the guarantees for the major nutrients. The guarantees for the major nutrients include the minimum amounts of Total Nitrogen (N), Available Phosphoric Acid (P2O5) and Soluble Potash K2O. Source: T-4-120 - Regulation of Compost under the Fertilizers Act and Regulations. http://www.inspection.gc.ca/plants/fertilizers/trade-memoranda/t-4-120/eng/1307910204607/1307910352783

Appendix I

CCME Guidelines 2005 & CFIA Fertilizer Act & Regulations:

Alberta, Manitoba, New Brunswick, Nova Scotia, Newfoundland, Prince Edward Island & Territories

A. Maximum Concentrations for Trace Metals in Compost‡

		Category A	Category B
Trace Elements	Test Results (ug/g)	Maximum Concentration within Product (mg/kg dry weight)	
Arsenic (As)	2.33	13	75
Cadmium (Cd)	BDL	3	20
Chromium (Cr)	8.59	210	**
Cobalt (Co)	1.68	34	150
Copper (Cu)	155.70	400	**
Lead (Pb)	5.85	150	500
Mercury (Hg)	0.18	0.8	5
Molybdenum (Mo)	3.40	5	20
Nickel (Ni)	5.43	62	180
Selenium (Se)	BDL*	2	14
Zinc (Zn)	207.10	700	1850

** Upper limits are not established in the Trade Memorandum.

B. Foreign Matter in Compost‡

	Test Results	Category A	Category B
Foreign Matter		Contains no more than 1 piece of foreign matter >25mm/500ml	Contains no more than 2 pieces of foreign matter > 25mm/500mL
Pieces >25mm/500mL	0		
Sharp Foreign Matter		No sharp foreign matter >3mm per 500ml	No more than 3 pieces of sharp matter < 12.5mm/500mL Note: This compost shall not be used in pastures, parks, or residential
Pieces > 3mm/500mL	0		
Pieces > 12.5mm/500mL	0		

C. Maturity/Stability‡

Method	Test Results	Required Limits
CO_2 Respiration Rate CO_2 Respiration Rate	0.70	≤ 4 mg of carbon in the form of carbon dioxide per gram of organic matter per day
O_2 Uptake Respiration Rate O_2 Uptake Respiration Rate		≤ 400 mg oxygen/kg of volatile solids (or organic matter)/hour

D. Pathogens‡

Pathogen	Test Results	Required Limits
Fecal Coliform (MPN/g dry)	181	<1000 MPN/g of total solids calculated on a dry weight basis
Salmonella (P-A/25g(ml))	NEGATIVE	<3 MPN/4g total solids calculated on a dry weight basis

‡The following references are from the CCME guidelines (PN1340), October 2005

*BDL = Below Detectable Limits

E. CFIA

Parameter	Test Results
Total Organic Matter (%)	79.48%
Moisture (%)	48.57%

All analysis conducted and prepared by:
A L Canada Laboratories
2136 Jetstream Rd London, Ontario N5V 3P5 (519) 457-2575

Appendix II
Finished Compost Quality

Parameter	Test Results
pH	8.0
Carbon to Nitrogen Ratio	20:1
Particle Size/Texture (inch)+	3/8 Inch
Soluble Salts (ms/cm)	1.9
Sodium Base Saturation (%Na)	5.04%
Major Nutrients	
Available Potassium (%K)	20.20%
Available Magnesium (%Mg)	28.94%
Available Calcium (%Ca)	45.83%

+ Majority of sample passes through this sieve size

Reference Compost Quality Parameters for CQA

Use	pH	C:N	Moisture	Particle Size	Soluble Salts	%Na
Remediation	5.8-8.5	10-40	NA	<2 in	<20	<3%
Soil Amendment	5.8-8.5	10-30	NA	<1/2 in	<6	<2%
Landscaping	5.8-8.5	12-22	<50%	<1/2 in	<5	<2%
Planting Media	5.5-7.8	12-22	<50%	<1/2 in	<4	<2%
Turf Establishment & Topdressing	5.5-7.8	12-22	<50%	<3/8 in	<3	<1%
Greenhouse Seeding	6-7	12-22	<25%	<1/4 in	<2	<0.5%
Greenhouse Establishement	6-7	12-22	<30%	<1/2 in	2-3.5	<0.5%
Field Nursery	5.8-8	10-30	<50%	<1/2 in	<3.5	<1%
Agricultural Soil Amendments	6-8	10-30	<50%	<1/2 in	<20	<1%
Potting Soil	5.5-7.2	12-22	<50%	<1/4 in	<2	<1%

These are examples of some of the many end uses suitable for compost

Unrestricted Use: Category A - Compost that can be used in any application, such as agricultural lands, residential gardens, horticultural operations, the nursery industry, and other businesses. Category A criteria for trace elements are achievable using best source separated MSW feedstock, municipal biosolids, pulp and paper mill biosolids, or manure.

Restricted Use: Category B - Compost that has a restricted use because of the presence of sharp foreign matter or higher trace element content. Category B compost may require additional control when deemed necessary by a province or territory.

Note: For a compost to meet the unrestricted use category, it must meet the unrestricted (Category A) requirements for all trace elements and sharp foreign matter. If the compost fails one criterion of the guideline for unrestricted use but meets the criteria for restricted (Category B) use, then is is classified as a Category B product. Products that do not meet the criteria for either Category A or B must be used or disposed of appropriately.

All analysis conducted and prepared by:
A L Canada Laboratories
2136 Jetstream Rd London, Ontario N5V 3P5 (519) 457-2575

Appendix III

Compost Agricultural Product Value

on as is basis

Agricultural End-Use	Analysis Result	Unit	Quantity in lbs/Ton
Physical Parameters			
Dry Matter	51.43%	%	
pH	8.0		
Bulk Density	534	kg/m3	
C:N Ratio	20:1		
Fertilizer Equivalent Minerals			
Nitrogen Total	2.20%	%	44.0
Ammonium Nitrogen	938.72	ppm	1.88
Total Phosphate (P as P2O5)	0.99%	%	19.8
Total Potash (K as K2O)	0.43%	%	8.6
Calcium	0.91%	%	18.2
Magnesium	0.19%	%	3.8
Sulfur	1468.58	ppm	2.9

The Compost Quality Assurance program goes beyond the provincial requirements to establish full value and appropriate end-use. The Compsot Report and Compost End-use table in Appendix II, has 10 different compost application uses from soil remediation, through to potting soil blends. Of note are available soluble salt limits and the percent available sodium for sensitive plants. Appendix III, lists the primary agricultural use parameters and quantitative nutrient content that reflects this compost samples agricultural end-use, and application value. This value includes macro and micro nutrients, soil building properties such as the addition of organic matter, increasing moisture holding capacity, and the soils slow release nutrients. These parameters improve beneficial soil health components soil structure and stability.

The results of our testing on this sample indicates that this product is a fine textured, compost (84%+ 3/8 in.), with rich mineral properties, which would meet criteria for agricultural soil amendment, blending and topdressing end-uses purposes. The C:N ratio 20:1 from Appendix II, on the soil suitability report indicates a low C:N ratio and indicating good nitrogen availability. The low C:N ratio in conjunction with the higher total nitrogen content listed in Appendix III indicates early high available nitrogen levels, and should be considered for crop planning. The proportion of available sodium (5.04% Na), which if used in too heavy a proportion could cause some problems with sensitive species. The sodium levels of this compost sample though high, is suitable for agricultural broadcast field applications and are made to improve the organic matter level and major nutrients phosphorus, potassium and magnesium levels. The compost is also rich in available calcium, sulfur, and iron, which make it ideal for soil enriching, and amendment. We recommend blending this material at a minimum of 3-4 parts soil blended to each part of this compost to dilute the sodium concentration.

Major Nutrients - Compost is classified in Schedule II (CFIA Fertilizer Act & Regulations) as a supplement, and as such, nutrient guarantees are not mandatory. However, if any claims are made regarding nutritional value of the product, such as for composted manure, the product would then be classified as a supplement and a fertilizer, and label would have to include the guarantees for the major nutrients. The guarantees for the major nutrients include the minimum amounts of Total Nitrogen (N), Available Phosphoric Acid (P2O5) and Soluble Potash (K2O).

All analysis conducted and prepared by:
A L Canada Laboratories
2136 Jetstream Rd London, Ontario N5V 3P5 (519) 457-2575

Report Number: C19310-10250
Account Number: 01759

A & L Canada Laboratories Inc.

2136 Jetstream Road, London, Ontario, N5V 3P5
Telephone: (519) 457-2575 Fax: (519) 457-2664

C19310-10250

To: CITY OF KELOWNA
1435 WATER STREET
KELOWNA, BC V1Y 1J4

For: OGOGROWAUGUST2019

Attn: MARCIA BROWNE OR JOSE GARCIA

P.O. Number: 529772

Reported Date:
Printed Date: Nov 14, 2019

COMPOST REPORT

Sample Number	Lab Number	pH	Lime Index	Available Organic Matter %	Phosphorus P ppm	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm
OGOGROWSUGU	**67816**	**8.0**	**6.8**	**66.4**	**1830**	**2196**	**981**	**2555**

Sulfur S ppm	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Sodium Na ppm	Nitrate-N NO3-N ppm	Soluble Salt ms/cm	Nitrogen (Total) (%)	Moisture %
105	**58.4**	**149**	**168**	**9.9**	**3.2**	**323**	**32**	**2.0**	**2.20**	

INTERPRETATION

CEC		Percent Base Saturation				Proportional Equivalents (meq)				Cation Ratio		C/N Ratio
meq/100g	% BS	% K	% Mg	% Ca	% Na	K	Mg	Ca	Na	Mg/K	Ca/Mg	
27.9	**100.0**	**20.20**	**28.94**	**45.83**	**5.04**	**5.63**	**8.07**	**12.78**	**1.40**	**1:1**	**2:1**	**20:1**
Optimum Range:		3 - 5	8 - 20	60 - 80		0.5 - 1.3				7:1	5:1	

CQA

* Results reported on a dry weight basis.
The results of this report relate to the sample submitted and analyzed.
* Crop yield is influenced by a number of factors in addition to soil fertility.
No guarantee or warranty concerning crop performance is made by A & L.

Results Authorized By: **Ian McLachlin, Vice President**

A&L Canada Laboratories Inc. is accredited by the Standards Council of Canada for specific tests as listed on www.scc.ca and by the Canadian Association for Laboratory Accreditation as listed on www.cala.ca
Additional information available upon request

REPORT NUMBER: C19310-10250
ACCOUNT NUMBER: 01759

A & L Canada Laboratories Inc.

2136 Jetstream Rd, London, Ontario, N5V 3P5
Telephone: (519) 457-2575 Fax: (519) 457-2664

REPORT OF ANALYSIS

TO: CITY OF KELOWNA
1435 WATER STREET
KELOWNA, BC V1Y 1J4

RE: OGOGROWAUGUST2019

CQA1900446

DATE RECEIVED: 2019-11-06
DATE REPORTED: 2019-11-14

P.O. NUMBER: 529772

Attn: MARCIA BROWNE OR JOSE GARCIA

LAB NO.	SAMPLE ID	ANALYSIS	RESULT	UNIT	METHOD
67816	OGOGROWSUGUST	Nitrogen (Total)	2.2	%	TMECC.04.02-D

C19310-10250

Results Authorized By:

A&L Canada is a laboratory accredited by Standards Council of Canada / CAEAL and OMAF

REPORT NO.
C19310-70010

ACCOUNT NUMBER
01759

A & L Canada Laboratories Inc.

2136 Jetstream Road, London, ON, N5V 3P5 Tel: (519) 457-2575 Fax: (519) 457-2664

TO: CITY OF KELOWNA
1435 WATER STREET
KELOWNA, BC V1Y 1J4

FOR: OGOGROW AUGUST 2019

ATTN: Marcia Browne or Jose Garcia

Phone: 250-469-8796

CERTIFICATE OF ANALYSIS

PROJECT NO:

PO#: 529772
LAB NUMBER: 3107015
SAMPLE ID: OGOGROW AUGUST 2019

SAMPLE MATRIX: COMPOST
DATE SAMPLED: NONE GIVEN
DATE RECEIVED: 2019-11-06
DATE REPORTED: 2019-11-13
DATE PRINTED: 2019-11-14

PARAMETER	Result	UNIT	DETECTION LIMIT	METHOD REFERENCE
Arsenic	2.33	ug/g	1.00	EPA 3050B/6010B(mod) *
Cadmium	BDL	ug/g	1.00	EPA 3050B/6010B(mod) *
Cobalt	1.68	ug/g	1.00	TMECC.04.06;EPA 3050/6010(mod)
Chromium	8.59	ug/g	1.00	TMECC.04.06;EPA 3050/6010(mod*
Copper	155.70	ug/g	1.00	TMECC.04.06;EPA 3050/6010(mod)
Mercury	0.18	ug/g	0.10	EPA 7471 *
Molybdenum	3.4	ug/g	1.0	TMECC.04.06;EPA 3050/6010(mod*
Nickel	5.43	ug/g	1.00	TMECC.04.06;EPA 3050/6010(mod)
Lead	5.85	ug/g	1.00	EPA 3050B/6010B(mod) *
Selenium	2.40	ug/g	1.00	EPA 3050/6010 (mod) *
Zinc	207.10	ug/g	1.00	TMECC.04.06;EPA 3050/6010(mod)

* - accredited test
BDL - Below detectable levels
The results of this report relate to the sample submitted and analyzed.

C19310-70010

Results Authorized By:

Haifeng Song, Ph.D., C.Chem. Lab Director

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PARAMETER	Result	UNIT	DETECTION LIMIT	METHOD REFERENCE
E. coli	<3	MPN/g dry	3	TMECC 07.01
Salmonella spp.	NEGATIVE	P-A/ 25.0g(ml)	1 CFU	MFLP-75 *
Fecal Coliform	181	MPN/g dry	3	TMECC 07.01
Total sharps > 2.8 mm*	0	pieces/500ml		TMECC 03.08
Total sharps > 12.5 mm	0	pieces/500ml		TMECC 03.08
Total FM > 2.8 mm*	BDL	%	0.01	TMECC 03.08
Total FM > 25 mm	0	pieces/500ml		TMECC 03.08
Total plastics > 2.8 mm*	BDL	%	0.01	TMECC 03.08
Total Organic Matter @ 550 deg C	79.48	%	0.10	LOI@550C
Moisture	48.57	%	0.10	TMECC.03.09-A
Sieve 2 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 1 Inch (% Passing)	100.00	%	0.10	ASTMD422
Sieve 1/2 Inch (% Passing)	92.70	%	0.10	ASTMD422
Sieve 3/8 Inch (% Passing)	84.00	%	0.01	ASTMD422
Sieve 1/4 Inch (% Passing)	71.60	%	0.10	ASTMD422
Compost Stability Index	8	---		TMECC.05.08-B
Respiration-mgCO2-C/g OM/day	0.70	mgCO2-C/ gOM/day	0.01	TMECC.05.08-B
Respiration - mgCO2-C/g TS/day	0.50	mgCO2-C/ gTS/day	0.01	TMECC.05.08-B

Maturity Index: 8 - Inactive, highly matured compost, very well aged, possibly over-aged, like soil; no limitations for usage.

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BDL - Below detectable levels

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FOR: OGOGROW AUGUST 2019

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Phone: 250-469-8796

CERTIFICATE OF ANALYSIS

PROJECT NO:

PO#: 529772
LAB NUMBER: 3107015
SAMPLE ID: OGOGROW AUGUST 2019

SAMPLE MATRIX: COMPOST
DATE SAMPLED: NONE GIVEN
DATE RECEIVED: 2019-11-06
DATE REPORTED: 2019-11-13
DATE PRINTED: 2019-11-14

PARAMETER	Result Dry Weight	Result As Received	UNIT	DETECTION LIMIT	METHOD REFERENCE
Total Solids (as received)		51.43	%	0.10	Gravimetric
Nitrogen & Carbon					
Total Organic Carbon		44.16	%	0.10	Combustion
Ammonia (NH3/NH4-N)	1825.24	938.72	ug/g	.01	Colourimetric
Metals					
Potassium	6890.00	3543.53	ug/g	5.00	TMECC.04.06
Total Potassium (as K20)	0.83	0.43	%	0.05	ICP
Phosphorus	8390.00	4314.98	ug/g	5.00	TMECC.04.06 *
Total Phosphorus (as P205)	1.92	0.99	%	0.05	ICP
Aluminum	2225.50	1144.57	ug/g	5.00	TMECC.04.06 *
Boron	27.26	14.02	ug/g	1.00	TMECC.04.06
Calcium	1.77	0.91	%	0.01	TMECC.04.06
Iron	4518.50	2323.86	ug/g	5.00	TMECC.04.06 *
Magnesium	0.36	0.19	%	0.01	TMECC.04.06
Manganese	598.00	307.55	ug/g	1.00	TMECC.04.06
Sodium	0.14	0.07	%	0.01	TMECC.04.05 *
Sulphur	2855.50	1468.58	ug/g	5.00	TMECC.04.06 *
Additional Parameters					
Bulk Density (as Recieved)		534	kg/m3	10	Gravimetric
Conductivity (@ 25 deg C)		3.01	ms/cm	0.02	Conductivity Meter

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Results Authorized By:

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Additional information available upon request

REPORT NO.
C19332-70016

ACCOUNT NUMBER
01759

A & L Canada Laboratories Inc.

2136 Jetstream Road, London, ON, N5V 3P5 Tel: (519) 457-2575 Fax: (519) 457-2664

TO: CITY OF KELOWNA
1435 WATER STREET
KELOWNA, BC V1Y 1J4

FOR: OGOGROW AUG 2019 re SE

ATTN: Marcia Browne or Jose Garcia

Phone: 250-469-8796

Compost Analysis Proficiency Testing Program

CERTIFICATE OF ANALYSIS

PROJECT NO:
PO#: 529772
LAB NUMBER: 3327015
SAMPLE ID: OGOGROW AUGUST 2019

SAMPLE MATRIX: COMPOST
DATE SAMPLED: 2019-11-27
DATE RECEIVED: 2019-11-28
DATE REPORTED: 2019-12-06
DATE PRINTED: 2019-12-09

PARAMETER	RESULT	UNIT	DETECTION LIMIT	METHOD REFERENCE
Selenium	BDL	ug/g	1.00	EPA 3050/6010 (mod) *

Comment:

Results reported on a dry weight basis
* - accredited test
BDL - Below detectable levels
The results of this report relate to the sample submitted and analyzed.

C19332-70016

Results Authorized By:

Haifeng Song, Ph.D., C.Chem. Lab Director

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Additional information available upon request