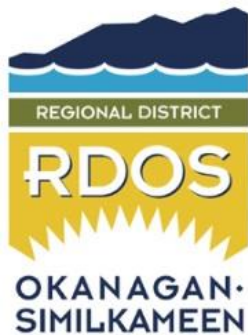


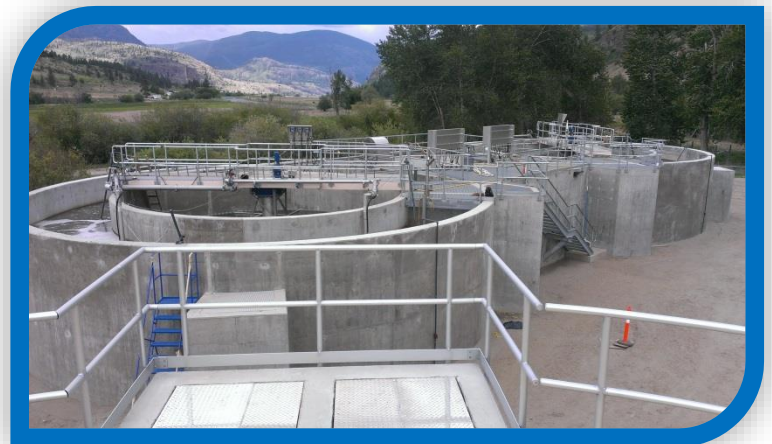
# 2020 Operations and Monitoring Report Okanagan Falls Wastewater Treatment Facility Okanagan Falls B.C.

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## EXECUTIVE SUMMARY

The Regional District of Okanagan-Similkameen is pleased to provide this report in conjunction with Larratt Aquatic for the Okanagan Falls Wastewater Treatment Facility located on Rail Road. All 2020 monitoring data and related data analysis by associated qualified professionals have been included in this report.

The Biological Nutrient Removal wastewater treatment facility is located on Rail Road south of the community of Okanagan Falls and has been in operation since 2013. This facility produces highly treated effluent that is discharged directly into the Okanagan River adjacent to the treatment plant site, or starting in 2020, an option to discharge to a constructed polishing wetland. In 2020, 215,702 m<sup>3</sup> of treated effluent was discharged, with 195,600 m<sup>3</sup> being discharged to Okanagan River and 20,102 m<sup>3</sup> being discharged to the polishing wetland. Only a small volume, 2,898 m<sup>3</sup> was discharged from the wetland to the River. The daily average flow rate of the Okanagan River was 2,938,440 m<sup>3</sup>/day.

The monthly 5-day biochemical oxygen demand (BOD) and weekly total suspended solids (TSS) were consistently less than the maximum allowable concentrations of 10 mg/L in 2020. Weekly TSS averaged 1.3 mg/L with a maximum at 3.4 mg/L. Monthly 5-day BOD averaged 3.1 mg/L with a maximum of 8.3 mg/L.

Total phosphorus loadings from the WWTF were lower in 2020 (32 kg/year) compared to 2019 (39 kg/year). The maximum total phosphorus of the effluent grab sample was 0.353 mg/L P on November 4, 2020. The annual average concentration for total phosphorus of the weekly effluent grab samples was 0.147 mg/L P, which is below the allowable limit of 0.20 mg/L P. For the 366 effluent composite samples analyzed in-house for total phosphorus, the annual average was also 0.147 mg/L P with a maximum of 0.481 mg/L P on October 7, 2020.

The average total nitrogen was 3.74 mg/L N from the effluent compliance samples, well below the average annual limit of 6.0 mg/L N. There were no exceedance of Total Daily Nitrogen limit of 10 mg/L in either the accredited lab data (maximum was 7.21 mg/L N on January 15, 2020) or the in-house data for grab effluent samples or composite effluent samples (maximum was 8.33 mg/L N on January 20, 2020). This is a significant improvement over the previous years. Meeting the total nitrogen annual average of <6 mg/L continues to be the focus for the operations staff.

The maximum allowable concentration for E. Coli is 2.2 CFU/100 mL from April 15<sup>th</sup> to October 15<sup>th</sup> and 50 CFU/100 mL from October 16<sup>th</sup> to April 14<sup>th</sup> annually. All results from the outside lab for E. Coli for 2020 met the compliance limits for the entire year. Of the 52 compliance samples, E. Coli was only once detected on June 24, 2020 at 1.0 CFU.

Two types of thickened sludge are produced – Thickened Waste Activated Sludge (TWAS) and Fermented Primary Sludge (FPS) from the process. Currently both sludges are not dewatered onsite but instead hauled to Penticton's Advanced Wastewater Treatment Plant for further processing. The TWAS sludge hauled to Penticton in 2020 was estimated at 35,244 kilograms (dry weight) which is down 1,388 kg from 2019. The FPS sludge was estimated at 6,733 (dry weight) kilograms, which down from the previous year by 5019 kg. In 2020, all sludge samples met the requirements for Class B biosolids as specified in Provincial Organic Material Recycling Regulations. The RDOS purchased a centrifuge in 2020 and will be constructing a building addition to the OK Falls WWTP in 2021 that will allow the RDOS to process the solids in house. The biosolids will then be transported the Compost facility at the Campbell Mountain landfill in Penticton for further processing. This new

addition will eliminate the need to send liquid sewage to the Penticton AWWTP greatly reducing costs and the RDOS carbon footprint in with regard to trucking.

Commissioning of the constructed polishing wetland adjacent to the Okanagan Falls Wastewater Treatment Plant continued in 2020. Effluent was discharged from the wastewater treatment plant intermittently during the commissioning phase in 2020 to allow for germination and establishment of cattail vegetation. As a result, a net reduction of 17,205 m<sup>3</sup> was not discharged to Okanagan River, with corresponding reductions in nutrient loadings. Once the wetland is fully operational, anticipated spring 2022, treated effluent will be discharged to the wetland during the growing season, - typically April to October. Polished effluent discharged from the wetland flows through a sand filter to remove coarse organic material and fine silt prior to being discharged into the Okanagan River via one of the two existing outfall diffusers which was part of the original Okanagan Falls BNR WWTF construction. Background water quality data from offsite domestic/irrigation wells located south-east and south of the constructed wetland were collected in 2020.

Since operation began in 2013, samples have been collected from Okanagan River 100 m upstream as well as 100 m and 500 m downstream of the WWTP to evaluate possible impacts of the treated effluent on Okanagan River. Similarly, water quality in Vaseux Lake has been monitored to evaluate possible impacts from the WWTP. Larratt Aquatics, on the behalf of the Regional District of Okanagan Similkameen, statistically evaluated WWTP, Okanagan River and Vaseux Lake water quality data for possible impacts of the treated effluent on either of these two water bodies. In 2020, only 0.02% of the total annual volume entering Vaseux Lake was discharged from the WWTP, compared to the Okanagan River. Consequently, most of the annual nutrient loading into Vaseux Lake came from Okanagan River and internal nutrient recycling with the anoxic zone of Vaseux Lake. From 2013-2020 there were no observed impacts from the WWTP operation on Vaseux Lake chemistry and biology or the chemistry of Okanagan River. Benthic invertebrate samples have been collected upstream and downstream of the WWTP for every year since 2014 to 2020, excluding 2015. The benthic invertebrate data indicate the WWTP may be impacting benthic invertebrates in some years, although this pattern is not yet statistically significant. Upstream impacts from intense freshets in some years also play a large role on species richness.

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## **I. INTRODUCTION AND SITE BACKGROUND**

The Okanagan Falls sewer system and facility is owned and operated by the RDOS and serves approximately 750 properties, including single-family, multi-family, commercial, recreational, and institutional uses.

In March of 2013, the Biological Nutrient Removal (BNR) Wastewater Treatment Facility (WWTF) on Rail Road began operation. The Okanagan Falls BNR WWTF is located 2 km downstream of the old de-activated extended aeration activated sludge wastewater treatment facility on Cedar Street. Figure 1 shows a map of the old extended aeration wastewater treatment facility and associated rapid infiltration basin and the BNR WWTF. The sewage collection system consists of three lift pump stations, pressurized forcemains and gravity sewer mains which deliver sewage to a new lift pump station at the old Facility on Cedar Street (Crown Reserve 11, Sub Lot 37, Similkameen Division of Yale District (S.D.Y.D.)). This new lift pump station pumps the sewage into a forcemain which travels to the BNR Facility along Rail Road.

The old extended aeration activated sludge wastewater treatment plant, located on Cedar Street, ceased producing effluent in March 2013. Monitoring of well static levels at the rapid infiltration basins (Figure 2) was discontinued in 2017 as the requirement of monitoring of these wells was for a minimum of 3 years after flow ceases. With no water present in 2014, 2015, and 2016 a notification was sent to MOE that the RDOS would no longer monitor the rapid infiltration basins. Acknowledgement of this notification was received December 31, 2017 from the Ministry of Environment BC.

The Okanagan Falls BNR Wastewater Treatment Facility is located south of the community of Okanagan Falls, BC on Lot 3, Plan KAP 88006, District Lot 10 in the Similkameen Division of Yale District (S.D.Y.D.). The BNR Wastewater Treatment Facility consists of screening, primary clarifier/fermenter, bioreactors, secondary clarifiers, filtration units, ultraviolet disinfection and discharge outlets to the river channel. Figure 4 shows the location of the BNR WWTF and associated surface water monitoring locations on Okanagan River. Figure 5 shows the Vaseux Lake surface monitoring location.

The Okanagan Falls BNR Wastewater Treatment Facility and river outfall are operated under the Operational Certificate (OC) No. ME 106555, issued in 2013 to the RDOS by the BC MOE under the provisions of the Environmental Management Act (EMA). This report was prepared in accordance with the Annual Reporting requirements outlined in Section 5.2 of OC No. ME 106555. Appendix A provides a copy of this Operational Certificate. This report presents the monitoring activities for the 2020 reporting period from January 1 to December 31, 2020.

Analysis of our environmental monitoring data has been carried out by qualified environmental professionals through Larratt Aquatic and is included within this report. The full report prepared by Larratt Aquatic is available in Appendix Q.

The photograph below provides a close up view of the Okanagan Falls BNR wastewater treatment facility.



## **2. FACILITY AND REGULATORY SETTING**

### **2.1 FACILITY DESCRIPTION**

The Okanagan Falls BNR WWTF is located on Lot 3, Plan KAP 88006, District Lot 10 in the Similkameen Division of Yale District (S.D.Y.D.). The highly treated effluent is discharged directly into the Okanagan River immediately southwest of the treatment plant. The outfall diffuser consists of two laterals with duck billed diffuser ports that open only when effluent is being discharged.

### **2.2 TOPOGRAPHY AND DRAINAGE**

The regional topography is described as slightly hummocky and kettled. The general topography slopes to the southwest, towards the Okanagan River.

The Okanagan Falls BNR Wastewater Treatment Facility is located directly beside Okanagan River. At the beginning of construction the top layer was determined to be loose silty sand and peat deposits for approximately 4 meters. These layers were removed and replaced with 150mm minus well-graded pit run sand and gravel which was left to preload and naturally compact on site. The material below the added sand and gravel is soft compressible fine-grained soils up to a depth of 15 m.

### **2.3 REGULATORY SETTING**

The Operational Certificate (OC) No. ME 106555 was issued to the RDOS by the BC MOE in 2013, under the provisions of the Environmental Management Act. Amendments were made to this OC in 2020 to include an optional seasonal polishing wetland as authorized works of the wastewater treatment processes. A finalized amended Operational Certificate is pending from the BC MOE for OC 106555. According to Section I.1.1 of the OC, the Facility is authorized to discharge effluent to the River Channel at a maximum rate of 2,196 m<sup>3</sup>/day in 2020. Appendix A contains OC 106555

The existing monitoring and reporting requirements outlined in the original and/or draft amended OC, include the following:

- Influent monitoring (E292549) – quarterly sampling and analysis.
- Sludge monitoring (E292609) – quarterly sampling and analysis of both sludges, in addition to recording of volumes of each sludge produced and sent to Penticton's Advanced Wastewater Treatment Plant (AWWTP)
- Effluent monitoring after disinfection (E292449) – sampling and analysis of the effluent after disinfection, in addition to the recording of the daily effluent volume discharged to the wetland and/or Okanagan River.
- Wetland monitoring (E319911) – measurement, sampling and analysis of wetland water quality and flow to Okanagan River.
- Groundwater monitoring of private wells located southeast of the wetland along HWY 97 – annual measurement, sampling and analysis of water quality.



- Surface water monitoring – measurement, sampling, and analysis of surface water in sites along Okanagan River at 100m Upstream (E295990), 100m Downstream (E295991), and 500m Downstream (E295992) and in Vaseux Lake (E220331)

### **3. WASTEWATER TREATMENT MONITORING AND RESULTS**

RDOS staff collected the following samples:

- Compliance influent, sludge, effluent and wetland samples.
- Influent, effluent and wetland in-house samples for process control, both grab and composites.
- Groundwater samples from private wells southeast of wetland.
- Surface water samples from Okanagan River Channel upstream and downstream sites.

Larratt Aquatic Staff collected the following samples

- Benthic samples from Okanagan River Channel upstream and downstream sites.
- Surface water samples from Vaseux Lake.

Collected samples were sent to independent accredited laboratories in accordance with the Operational Certificate. Wastewater, wetland, groundwater, surface water, sludge and bioassay samples were sent to CARO Analytical Services. Benthic samples were sent to Cordillera Consulting.

In accordance with the terms and conditions of the Environmental Data Quality Assurance Regulation (EDQA), Certificates of Analysis for analytical results are provided in the relevant appendices containing the lab data. Quality control samples collected from the WWTF in 2020 consisted of triplicate samples and a field blank sample for effluent; triplicate and field blank samples for influent; and triplicate samples for sludge data.

#### **3.1 INFLUENT MONITORING AND RESULTS**

In 2020, the Okanagan Falls BNR Wastewater Treatment Facility influent (E292549) was sampled quarterly for chemical analysis consisting of biological oxygen demand (BOD), phosphorus and nitrogen parameters. Additional composite samples were collected daily from Jan to March 2020 and analyzed in house. Appendices B and C provides the database summary and lab data for 2020 influent samples respectively. Table I provides a summary of 2020, 2019 and 2018 influent data showing the averages, number of samples (n) and the standard deviation (Std. Dev.).

In 2020, quality control triplicate samples were collected in July by filling three 1-litre bottles in succession with influent using a 500 mL cup on a sampling pole. The triplicate data is included in the number of samples, n, in Table I above (i.e. quarterly samples, plus two replicates). A field blank was collected in April 2020 by exposing the field blank bottle and water to the influent sampling site. Field blank water supplied by the

accredited lab was used as the field blank and all influent analytes were less than detection limit in the field blank. Quality Control data can be found in Appendix J.

**Table I Summary of Influent Samples**

Parameter	Average	n	Std. Dev.
<b>2020</b>			
BOD (mg/L)	227	6	34
Total Phosphorus (mg/L)	7.25	6	0.83
Ortho Phosphorus (mg/L)	4.27	6	0.45
Total Nitrogen (mg/L)	62.7	6	7.6
<b>2019</b>			
BOD (mg/L)	298	6	34
Total Phosphorus (mg/L)	9.89	6	0.76
Ortho Phosphorus (mg/L)	4.59	6	0.25
Total Nitrogen (mg/L)	78.3	6	5.1
<b>2018</b>			
BOD (mg/L)	250	6	25
Total Phosphorus (mg/L)	7.32	6	.9
Ortho Phosphorus (mg/L)	3.73	6	1.83
Total Nitrogen (mg/L)	68.1	6	13

### 3.2 SLUDGE MONITORING AND RESULTS

Okanagan Fall BNR WWTF produces two thickened sludges; TWAS (thickened waste activated sludge) and FPS (fermented primary sludge). Samples were analyzed in 2020 for total solids and leachable metals as listed in OC ME10655. In 2020 all of the samples met the requirements for Class B biosolids from Organic Material Recycling Regulations, Schedule 4, column 3. Appendices D and E provides the database summary and lab data for both of these sludges (E292609). Table 2 and 3 provides a summary of 2020 and 2019 sludge samples leachable metal analyses.

Quality control samples in 2020 consisted of triplicate samples collected in July on both the TWAS and the FPS sludges by filling six sample containers per sample location in succession using a 500 mL cup on a sampling pole. The triplicate data is included in the number of samples, n, in Table 2 and 3 below. Quality Control data can be found in Appendix J.

**Table 2 Summary of Fermented Primary Sludge (FPS) Samples**

FPS	2020			2019		
	Average	n	Std. Dev.	Average	n	Std. Dev.
Total solids, %	5.6	6	1.0	7.5	6	1.7
Arsenic, ug/g	2.99	6	0.53	1.60	6	1.0
Cadmium, ug/g	0.904	6	0.138	0.622	6	0.40
Chromium, ug/g	16.2	6	2.7	10.0	6	8.0
Cobalt, ug/g)	0.85	6	0.07	0.54	6	0.40
Copper, ug/g	212	6	16.4	123	6	77
Lead, ug/g	10.1	6	2.57	6.43	6	4.5
Mercury, ug/g	0.467	6	0.131	0.22	6	0.16
Molybdenum, ug/g	6.34	6	0.67	3.77	6	2.30
Nickel, ug/g	8.46	6	0.45	6.08	6	4.3
Selenium, ug/g	4.22	6	0.53	2.41	6	1.42
Zinc, ug/g	657	6	100	359	6	225

**Table 3 Summary of Thickened Waste Activated Sludge (TWAS) Samples**

TWAS	2020			2019		
	Average	n	Std. Dev.	Average	n	Std. Dev.
Total solids, %	2.6	6	0.3	3.0	6	0.2
Arsenic, ug/g	2.79	6	0.71	2.73	6	0.40
Cadmium, ug/g	0.747	6	0.119	0.889	6	0.17
Chromium, ug/g	6.2	6	1.4	6.8	6	2.3
Cobalt, ug/g)	0.98	6	0.22	1.0	6	0.08
Copper, ug/g	223	6	53.2	210	6	24
Lead, ug/g	6.15	6	2.85	6.99	6	1.9
Mercury, ug/g	0.150	6	0.032	0.189	6	0.06
Molybdenum, ug/g	6.94	6	1.67	6.90	6	0.71
Nickel, ug/g	6.21	6	1.13	7.42	6	1.5
Selenium, ug/g	5.12	6	1.29	5.42	6	0.70
Zinc, ug/g	471	6	118	501	6	112

### 3.3 EFFLUENT MONITORING AND RESULTS

In 2020, the average effluent discharged after disinfection was 589 m<sup>3</sup>/day. The maximum rate of discharge from the WWTP after disinfection to Okanagan River was recorded on July 15 at 882 m<sup>3</sup>. However, the maximum combined rate of discharge from both the WWTP and the wetland to the Okanagan River was recorded on November 17 at 1,113 m<sup>3</sup>. Both of these maximums are below the maximum authorized effluent discharge rate of 2,196 m<sup>3</sup>/day stipulated in Section 1.1.1 of the OC for the year 2020. The minimum

flow from the WWTP after disinfection was recorded on April 23 in 2020 at 191 m<sup>3</sup>/day, but this low flow is suspect due to electrical issues with a PLC at this time.

Commissioning of the wetland started in 2020, allowing effluent leaving the WWTP after disinfection to be optionally discharged to either the wetland from March until October and/or continuously discharged to Okanagan River for all months of the year. In total, 20,102 m<sup>3</sup> of effluent was discharged to the wetland between March 23 and October 22 and only 2,898 m<sup>3</sup> was discharged from the wetland to Okanagan River from October 1 to November 30. Thus 17,205 m<sup>3</sup> of effluent was diverted from discharging into Okanagan River in 2020. Flows from the wetland to Okanagan River occurred only in October and November in 2020 since wetland vegetation was being established during the spring and summer months.

A summary of the total, average, minimum and maximum flows from the WWTP to wetland and/or Okanagan River and from wetland to Okanagan River has been summarized in Table 4 below. For comparison purposes, daily flow data are in Appendix G.

**Table 4 Summary of Effluent and Polishing Wetland Flows**

	Effluent flow to Wetland	Effluent flow to Okanagan River	Wetland flow to Okanagan River	Effluent flow after Disinfection	Total Effluent and Wetland flows to Okanagan River
Average, m <sup>3</sup> /day	330	534	111	589	542
Minimum, m <sup>3</sup> /day	0.1	9	4	191	9
Maximum, m <sup>3</sup> /day	772	882	488	933	1113
Total, m <sup>3</sup> /year	20,102	195,600	2,898	215,702	198,497
Number of days	92	366	26	366	366

From data supplied by Environment Canada, Water Office,<sup>1</sup> the average daily flow in Okanagan River at Station 08NM002 was 2,938,440 m<sup>3</sup>/day, with maximum flow 6,894,176 m<sup>3</sup>/day occurring on June 18<sup>th</sup>, 2020 and minimum flow 897,325 m<sup>3</sup>/day occurring on January 5<sup>th</sup>, 2019. Dilution factors in 2020 ranged from a maximum of 315,877 on March 31<sup>st</sup> to a minimum of 1,124 occurring November 17<sup>th</sup>, with an average dilution factor of 10,531. Table 5 provides a summary of 2020 to 2018 WWTP effluent flows after disinfection and Okanagan River flows. Daily 2020 flows are in Appendix G. Figure 6 graphs monthly effluent flows after disinfection for 2020 to 2018.

**Table 5 Summary of Effluent and Okanagan River Flows (Station 08NM002)**

	Flow to Okanagan River From Effluent and/or Wetland	Okanagan River Flow (Station 08NM002)	Dilution Factor = $\frac{(\text{OK River} + \text{WWTP})}{\text{WWTP}}$
<b>2020</b>			
Average, m <sup>3</sup> /day	542	2,938,440	10,531
Minimum, m <sup>3</sup> /day	9	897,325	1,124
Maximum, m <sup>3</sup> /day	1,113	6,894,176	315,877
Total, m <sup>3</sup> /year	198,497	1,075,469,017	
<b>2019</b>			
Average, m <sup>3</sup> /day	517	1,051,352	2,119
Minimum, m <sup>3</sup> /day	123	695,002	1,194
Maximum, m <sup>3</sup> /day	808	1,412,417	8,350
Total, m <sup>3</sup> /year	188,765	383,743,391	
<b>2018</b>			
Average, m <sup>3</sup> /day	575	2,638,258	4,387
Minimum, m <sup>3</sup> /day	174	575,424	1,057
Maximum, m <sup>3</sup> /day	1,275	6,644,160	13,988
Total, m <sup>3</sup> /year	209,831	962,964,288	

Effluent pH and temperature were measured continuously via an online HACH Digital PEEK pH/Temperature probe located in the treated effluent channel. Effluent (E292449) samples for analysis by an independent accredited laboratory were collected in the appropriate laboratory-supplied sample containers and preserved as required by RDOS staff. Samples were submitted under chain-of-custody protocol, to Caro Analytical Services for analysis as follows:

- weekly for chemical oxygen demand (COD), ammonia-nitrogen, nitrite-nitrogen, nitrate-nitrogen, total phosphorus, orthophosphorus, total suspended solids, UV transmittance at 254 nm, Fecal Coliforms and E. Coli.;
- monthly for biochemical oxygen demand (BOD<sub>5</sub>), organic nitrogen, total kjeldahl nitrogen, total nitrogen, dissolved total phosphorus and pH;
- quarterly for alkalinity, carbonaceous biochemical oxygen demand(cBOD<sub>5</sub>), hardness, metals and common anions.
- annually for toxicity testing, 96-hour LC50

The summary statistics provided in Table 6 are from the weekly and/or monthly samples submitted to an independent laboratory with the exception of pH and temperature, which are based on daily 24-hour average online results. Complete effluent database summaries and laboratory reports are presented in Appendices H and I respectively. Annual toxicity LC50 bioassay was completed on July 27, 2020 and results are presented in Appendix K. There were no mortalities in effluent concentration of 100%.

**Table 6 Effluent Water Quality Statistics for daily, weekly or monthly Samples**

Parameter	Average	n	Std. Dev.	Minimum	Maximum
Biochemical Oxygen Demand (BOD <sub>5</sub> ) (mg/L)	3.1	19	1.7	1.8	8.3
Carbonaceous Biochemical Oxygen Demand (cBOD <sub>5</sub> ) (mg/L)	1.0	6	0.5	<1.1	1.8
pH, daily online measurement	6.93	366	0.08	6.79	7.17
Temperature, (°C) daily online measurement	15.7	366	4.2	8.2	22.5
Total Nitrogen, (mg/L)	3.74	16	1.34	1.72	7.21
Ammonia-Nitrogen as N (mg/L)	0.377	54	0.522	0.068	3.30
Nitrate-Nitrogen as N (mg/L)	1.946	54	0.993	0.272	4.74
Nitrite-Nitrogen as N (mg/L)	0.102	54	0.062	0.019	0.299
Total Kjeldahl Nitrogen, (mg/L)	1.81	16	0.94	1.11	4.62
Organic N, (mg/L)	1.29	16	0.196	0.949	1.65
Total Phosphorus, (mg/L)	0.1473	54	0.0532	0.0911	0.353
Total Suspended Solids (mg/L)	1.3	54	0.6	<2.0	3.4
E. Coli, (MPN/100mL)	<1	54	0.1	<1	1

Table 7 provides comparison of the OC ME 106555 nutrient limits with the effluent compliance samples collected after disinfection and sent to the independent laboratory for analyses.

**Table 7 2020 Effluent Compliance Samples summary compared to OC Requirements**

Parameter	OC limit	WWTP (average)	WWTP (maximum)
Biochemical Oxygen Demand (BOD <sub>5</sub> ) (mg/L)	10 mg/L Maximum	3.1	8.3
Total Suspended Solids (mg/L)	10 mg/L Maximum	1.3	3.4
Total Phosphorus, Maximum Annual Average	0.20 mg/L	0.1473	
Total Phosphorus, Maximum Daily Concentration	2.0 mg/L		0.353
Total Phosphorus, Total Annual Discharge after Disinfection	300 kg/yr		32
Total Nitrogen, Maximum Daily Concentration	Less than 10 mg/L		7.21
Total Nitrogen, Annual Average	6.0 mg/L	3.74	
E. Coli, April 15 to October 15	2.2 CFU/100 mL	<1	1
E. Coli, October 16 to April 14	50 CFU/100 mL	<1	1

Effluent quality control samples in 2020 consisted of a set of triplicate effluent samples analyzed for quarterly parameters, and a field blank sample of double deionized water exposed to the effluent sampling site and analyzed for quarterly parameters as defined above. The field blank was collected on April 15, 2020 by attaching the required bottles to the sampling pole, removing the lids, and lowering the sample pole with bottles attached into the effluent channel just after disinfection, but not letting the bottles touch the water. The bottles were then removed from the sample pole and filled with double de-ionized water supplied by an independent laboratory and preserved as required immediately in the field. Triplicate samples were collected on July 22, 2020. Since it is not practical to attach all of the required bottles in triplicate to the sampling pole at once, the following protocol was used.

- 
- Disinfect sampling pole with 70% to 90% ethanol, prior to attaching sample bottles.
  - Attach in triplicate bacteriological sample bottles to sampling pole, remove cap and collect samples.
  - As quickly as possible remove the bacteriological bottles from the sampling pole and replace caps.
  - Attach in triplicate, 1-Litre sample bottles to sampling pole, remove caps and collect sample
  - As quickly as possible remove the 1-Litre bottles from the sampling pole and replace the caps.
  - Attach 125-mL bottles and 60-mL bottles required in triplicate to sampling pole, remove caps and collect sample
  - As quickly as possible remove the 125-mL and 60-mL bottles from the sampling pole and replace caps.
  - Add required preservatives to sample bottles, once back in the WWTP in-house laboratory.

The field blank sample was below detection limit for all nutrients and total metals, except for total and dissolved total phosphorus which were detected at 0.0035 and 0.0039 mg/L P respectively. These background levels of phosphorus detected in the field blank samples were at least 10 times below the minimum phosphorus levels measured in the effluent samples and therefore represent a negligible contribution to the effluent phosphorus data. Database summary of quality control effluent and field blank samples are in Appendix J.

In-house effluent (E292499) sampling consisted of grab and composite samples monitored for total phosphorus, reactive orthophosphate, ammonia, nitrate, nitrite, total nitrogen, pH and temperature. A HACH Sigma SD900 composite sampler with a 4-bottle swing arm configuration programmed to collect 48 samples per bottle was used to collect approximately 100 mL of effluent sample every 30 minutes from the effluent channel. The purchase of the swing arm with multiple bottle configuration minimizes the chance of missed composite samples. Grab samples were taken from the effluent channel by dipping sample bottles or a sample cup secured onto the end of a sample pole into the effluent channel. With the exception of pH and temperature, nutrient analyses were performed on a HACH DR3900 Spectrophotometer using associated Test-N-tube or powder pillow methodologies for ammonia, nitrate, nitrite, total nitrogen, orthophosphate and total phosphorus. pH and temperature were recorded using online HACH Digital PEEK pH/temperature probe in the effluent channel for continuous monitoring via SCADA output. Continuous effluent monitoring for ammonia, reactive orthophosphate, and nitrate plus nitrite was performed using a ChemScan online analyzer with output to SCADA. Appendix L contains 2020 raw data, graphs and summary statistics for in-house grab and composite effluent samples, online nutrient monitoring data and independent accredited laboratory effluent data. Data reported as less than detection limit, were treated as a zero for the purpose of graphical representation.

Figures 7 to 13 show 2018 to 2020 time series plots for the parameters listed in Table 7 above, plus the total phosphorus and total nitrogen in-house analysis on effluent composite samples. Data that was reported as below the detection limit are plotted as zero on the time series plot.

Since operation began in 2013, there have been no exceedances for the maximum daily concentration, 10 mg/L, of Biological Oxygen Demand (BOD<sub>5</sub>) of the effluent sampled monthly. Depending on the dilution ratio used by the independent accredited laboratory when performing this test, detection limits ranged from <2 mg/L to <7 mg/L and results ranged from 1.8 mg/L to 8.3 mg/L in 2020. The BOD<sub>5</sub> values from 2018 to 2020 are plotted in Figure 7.

Similarly, since operation of the BNR WWTF began in 2013, there have been no exceedances for the maximum daily concentration, 10 mg/L, of Total Suspended Solids (TSS) of the effluent sampled weekly. The TSS results from the independent accredited laboratory ranged from <2 mg/L to a maximum of 3.4 mg/L with an average of 1.3 mg/L in 2020. The TSS results for the treated effluent from 2018 to 2020 are presented in Figure 8.

In 2020, the annual average total phosphorus from grab samples sent to independent laboratory was 0.147 mg/L P, which is below the maximum allowable annual average for total phosphorus of 0.20 mg/L. There were no exceedances of the maximum daily allowable concentration of 2.0 mg/L P in 2020. The total phosphorus discharged from WWTP samples collected after disinfection was 32 kg/yr almost 10 times lower than the allowable annual discharge of 300 kg/yr. Figure 9 shows the trend of total phosphorus levels in grab effluent samples analyzed by CARO Analytical Services. With the exception of a few events over the last three years, total phosphorus levels in the effluent has remained steady.

As shown in Figure 10, the annual rolling average total phosphorus in the daily effluent composite has increased slightly over the last three years from 0.121 mg/L P at the beginning of 2018 to 0.147 mg/L at the end of 2020. The daily effluent composite samples were analyzed in-house using HACH TNT 843 method on a HACH DR3900 spectrophotometer. In 2020, daily effluent composite total phosphorus analyzed in-house ranged from 0.093 to 0.481 mg/L total phosphorus. The in-house composite effluent data is in Appendix L.

Figure 11 plots the total nitrogen data from 2018 to 2020. This graph illustrates the total nitrogen monthly or weekly data, while variable, shows an overall trend of remaining below the 6 mg/L annual running average since 2018. In 2020, the plant achieved an annual average of 3.74 mg/L N for the compliance samples analyzed by independent accredited laboratory. None of the accredited lab results, nor any of the in-house grab or composite treated effluent results exceeded the maximum allowable daily concentration of 10.0 mg/L N in 2020. A reliable online analyzer greatly assists operations staff to optimize the Biological Nutrient Removal process to improve quality of effluent discharged to the Okanagan River. The total nitrogen loading based on compliance samples collected after disinfection was 807 kg/year N in 2020.

As shown in Figure 12, the annual rolling average total nitrogen has steadily decreased in the daily effluent composite samples analyzed in-house using HACH TNT 826 method on a HACH DR3900 spectrophotometer. In 2020, the annual average composite total Nitrogen analyzed in-house was 4.82 mg/L with a range of 2.60 mg/L to 8.33 mg/L N. The in-house composite effluent data is in Appendix L.



Figure 13 is a 2018 to 2020 time series plot of weekly effluent E. Coli data. In 2020, there were no exceedances in E. Coli results. The highest E. Coli result of 1 MPN/100 mL was recorded on June 24, 2020.

Overall, the quality of the treated effluent from the Okanagan Falls BNR WWTF has been steady during the last 3 years of operation, for total phosphorus and nitrogen concentrations and loadings and E. Coli concentrations. The addition of the constructed polishing wetland in 2020 as part of the authorized WWTP works provided further reduction in nutrient loadings to Okanagan River, even in the commissioning phase.

### **3.4 WETLAND MONITORING AND RESULTS**

Commissioning of the constructed polishing wetland resumed in the spring of 2020 while concurrently working with the Ministry of Environment on amendments to Operational Certificate 106555 to include optional seasonal operation of the polishing wetland (March 1 to November 30) and effluent monitoring at the end of the wetland (E319911). At the time of writing this report, the RDOS is still awaiting a final copy of amended OC 106555.

Following direction provided by Native Plant Solutions to RDOS staff, effluent was diverted to the wetland as required to maintain appropriate water levels to ensure;

- proper functioning of inlet and outlet piping and flow meters;
- germination of the cattail seeds sowed in March 2020;
- discourage growth of reed canary grass, an invasive species which could outcompete cattail; and
- healthy establishment of cattail at end of first year growing season.

A total of 20,102 m<sup>3</sup> of effluent was diverted into the constructed polishing wetland between March 23 and October 22 (92 days). Discharge from the wetland, a total of 2898 m<sup>3</sup>, to Okanagan River occurred from October 22 to November 30 (26 days) in 2020 in preparation of winter drawdown. Overall, commissioning of the wetland in 2020 reduced discharges to the Okanagan River by a net volume of 17,205 m<sup>3</sup>. Flows from the WWTP to the wetland, from the WWTP to Okanagan River and from the wetland to Okanagan River have been summarized in Table 4 in section 3.3 above. Appendix G provides a detailed tabulation of these flows.

To provide an indication of wetland water quality during commissioning, wetland water samples collected from the north-west cross ditch prior to the sand filter were sent for analysis to an independent accredited laboratory. These samples were collected in the appropriate laboratory-supplied sample containers and preserved as required by RDOS staff. Samples were collected approximately 15 centimeters below the surface with the sample bottle(s) completely submerged to prevent floating debris from entering the sample bottles. Samples were submitted under chain-of-custody protocol, to Caro Analytical Services for analysis as follows:

- Monthly (March to June, August, September, and November) for biochemical oxygen demand (BOD<sub>5</sub>), chemical oxygen demand (COD), pH, ammonia-nitrogen, nitrite-nitrogen, nitrate-nitrogen, total Kjeldahl nitrogen, total nitrogen, orthophosphorus, dissolved total phosphorus, total phosphorus, total suspended solids, fecal coliforms and *E. coli*;
- Annually for toxicity (96-hour LC50), alkalinity, carbonaceous biochemical oxygen demand (cBOD<sub>5</sub>), hardness, metals and common anions in November prior to discharging from the wetland to Okanagan River.

One sample was drawn through the sampling port just after the sand filters on June 10, 2020 to test the functionality of using a peristaltic pump to pull sample up through the sampling port.

Data in Appendix M to Appendix O contains field parameters and independent accredited laboratory data and reports for wetland water samples. Table 8 below provides a summary of the wetland water quality data from samples collected from the north-west cross ditch just prior to the sand filter during commissioning in 2020.

**Table 8 Polishing Wetland Water Quality Summary Statistics**

Parameter	Average	n	Std. Dev.	Minimum	Maximum
Biochemical Oxygen Demand (BOD <sub>5</sub> ) (mg/L)	5.2	7	6.5	1.1	19.7
Carbonaceous Biochemical Oxygen Demand (cBOD <sub>5</sub> ) (mg/L)	<5.8	1		<5.8	<5.8
pH, field measurement	8.04	14	0.28	7.42	8.45
Temperature, (°C) field measurement	13.7	14	7	1.9	24.8
Total Nitrogen, (mg/L)	1.80	7	0.58	1.06	2.73
Ammonia-Nitrogen as N (mg/L)	0.147	7	0.163	<0.050	0.510
Nitrate-Nitrogen as N (mg/L)	0.127	7	0.319	<0.010	0.851
Nitrite-Nitrogen as N (mg/L)	0.017	7	0.031	<0.010	0.031
Total Kjeldahl Nitrogen, (mg/L)	1.67	7	0.41	1.06	2.21
Organic N, (mg/L)	1.52	7	.342	0.96	2.00
Total Phosphorus, (mg/L)	0.061	9	0.023	0.0404	0.109
Total Suspended Solids (mg/L)	11.6	7	15.60	<2.0	38.8
<i>E. coli</i> , (MPN/100mL)	45.7	11	84.7	<1.0	276

In addition to the samples sent to an independent accredited laboratory, field parameters and in-house samples were collected by RDOS staff approximately biweekly from the north-west cross ditch just prior to the entrance of the sand filter using an extendable sampling pole with attached sample bottle(s). Field parameters of temperature, pH, dissolved oxygen [DO], oxidation-reduction potential [ORP], conductivity [EC], and total dissolved solids [TDS], and turbidity were measured using a YSI Pro Plus multi-meter and a HACH portable turbidity meter in the field immediately after collecting a sample from the wetland cross ditch. In-house biweekly wetland cross ditch grab samples were analyzed for total phosphorus, reactive orthophosphate, ammonia, nitrate, nitrite, total nitrogen on a HACH DR3900 Spectrophotometer using associated Test-N-tube or powder pillow methodologies. Total suspended solids were measured using

gravimetric method with AH934 glass fiber filter discs dried at 103 °C to 105 °C as per Standard Methods 2540 D, 22<sup>nd</sup> Edition.

Besides reducing the net volume of water discharged to the Okanagan River by 17,205 m<sup>3</sup>, the commissioning of the wetland in 2020 resulted in reduction in nutrient loadings to Okanagan River as given in Table 9 below.

**Table 9 Nutrient Loadings from WWTP and Polishing Wetland (kg/yr)**

Parameter (kg/yr)	Total Loadings from WWTP after disinfection	Loadings from WWTP to Okanagan River	Loadings from WWTP to Polishing Wetland	Loadings from Polishing Wetland to Okanagan River	Total Loadings to Okanagan River	Reduction in Loadings to Okanagan River
Biochemical Oxygen Demand (BOD <sub>5</sub> )	669	606	62	21	627	42
Carbonaceous Biochemical Oxygen Demand (cBOD <sub>5</sub> )	216	196	20	17	212	3
Chemical Oxygen Demand (COD)	6790	6158	633	96	6253	537
Total Nitrogen	807	732	75	3.1	735	72
Ammonia-Nitrogen as N	81	74	8	.3	74	7
Nitrate-Nitrogen as N	42	381	39	0.03	381	39
Nitrite-Nitrogen as N	22	20	2	0.03	20	2
Total Kjeldahl Nitrogen	390	354	36	3.1	357	33
Organic N, (mg/L)	278	252	26	2.8	255	23
Orthophosphate (dissolved as P)	8	7	1	0.01	7	1
Total Dissolved Phosphorus	22	20	2	0.1	20	2
Total Phosphorus	32	29	3	0.1	29	3
Total Suspended Solids	280	254	26	5.8	260	20

#### 4. GROUNDWATER AND SURFACE WATER MONITORING AND RESULTS

To provide background data, monitoring of wells along Hwy 97 continued in 2020 during commissioning of a constructed wetland across from Okanagan Falls BNR WWTF. The location of the four properties and constructed wetland are shown in Figure 3. The domestic wells located at 1998 Hwy 97 and 2126 Hwy 97 were monitored once in 2020 in April and March respectively. The well located at 2150A Hwy 97 irrigates a vineyard located on this property; however despite a few tries, no groundwater samples were collected from this well in 2020 since the irrigation system is on a timer and the irrigation system was not running during the times RDOS staff attempted to get a sample from this well. Two samples

were collected at the domestic well located at 2150 Hwy 97 – one in March prior to occupancy of the new house constructed in 2019 and one in September approximately one month after occupancy in the new house on this property.

Surface water monitoring required under OC MEI0655 includes four sites - three on Okanagan River and one in Vaseux Lake as summarized in Table 10 below. Figures 3 to 5 show the location of the BNR wastewater treatment plant, the polishing wetland, offsite well locations and the surface water sampling locations.

**Table 10 Groundwater and Surface Water Monitored Locations**

Monitored Location	EMS #	Description	2020 Sampling Frequency
1998 Hwy97		Domestic well southeast of wetland construction. Provincial Well	Spring 2020
2126 Hwy 97		Domestic well southeast of wetland construction. Provincial Well ID 17895	Spring 2020
2150A Hwy 97		Irrigation well in vineyard south of wetland construction. Well Plate Id 37318	None in 2020
2150 Hwy 97		Domestic well south of wetland construction.	Spring and Fall 2020
Ok River 100m Upstream	295990	Northwest of BNR WWTP	Monthly*
OK River Downstream 100m of diffuser	295991	South of diffuser at BNR WWTP	Monthly*
OK River Downstream 500m of diffuser	295992	South of diffuser at BNR WWTP	Monthly*
Vaseux Lake	220331	Central deep location (ice off to November)	Monthly

\*In addition to the monthly samples, microbiological samples are required weekly for these three sites from May to September.

#### 4.1 GROUNDWATER AND SURFACE WATER MONITORING METHODS

For groundwater well sampling, field parameters were continuously monitored during a sampling event using an YSI Pro Plus multi-meter submerged in a steady flow of groundwater from the well. Field parameters for conductivity, temperature and pH were allowed to stabilize before any samples were collected to ensure samples were representative of the groundwater and all piping has been adequately flushed. RDOS staff followed the sampling protocol outlined below.

- Field measurements of temperature, dissolved oxygen [DO], conductivity [EC], total dissolved solids [TDS], pH and oxidation reduction potential [ORP] were recorded every 5 minutes.
- Samples were collected once conductivity, temperature and pH readings from the multi-meter had stabilized.
- Groundwater samples were collected in the appropriate laboratory-supplied sample containers and preserved as required.
- Groundwater samples were submitted under chain-of-custody protocol, to Caro Analytical Services for analysis of general chemistry parameters, anions, nutrients, microbiology, dissolved metals and total metals.

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In order to ensure that representative surface water quality samples were obtained from Okanagan River upstream and downstream of the BNR WWTP, and that no contamination of the recovered samples occurred, the following sampling protocols were adhered to during the monitoring events by RDOS staff:

- Disinfect, with 70% to 90% ethanol, the sampling pole prior to attaching sample bottles.
- Collect Okanagan River samples in areas of the surface water body that were representative of the surface water body conditions.
- Collect samples approximately 15 centimeters below the surface with the sample bottle completely submerged to prevent floating debris from entering the sample bottles.
- Collect samples in the appropriate laboratory-supplied sample containers and preserved as required.
- Submit samples, under chain-of-custody protocol, to Caro Analytical Services for analysis of general chemistry parameters, anions, nutrients, microbiology and total metals.

During each monthly Okanagan River monitoring event, field measured parameters included temperature, pH, dissolved oxygen [DO], oxidation-reduction potential [ORP], conductivity [EC], and total dissolved solids [TDS], and turbidity. (Measured using an YSI Pro Plus multi-meter and a HACH portable turbidity meter). Water quality samples were collected for the chemical parameters defined in OC. ME 106555.

Monthly testing of Okanagan River samples was conducted by RDOS staff in accordance with OC ME 106555 from January to December for the above parameters with additional testing completed weekly from May to September for Microbiological samples. A review of the data for these parameters for 2020 can be found in Appendix M.

Sampling at Vaseux Lake was carried out by Larratt Aquatic on behalf of the Regional District for the collection of water chemistry, phytoplankton, zooplankton and field parameters (Secchi depth, conductivity, density, dissolved oxygen, salinity, temperature and total dissolved solids) for the identified sampling location on Vaseux Lake. In 2020, sampling started in March and continued monthly until November.

- Lake water samples were collected at the central deep sampling location is identified as EMS#220331 and has site coordinates of Lat 49.287684, Long -119.529662.
- Sample were collected in the appropriate laboratory-supplied sample containers and preserved as required.
- Water chemistry samples were collected within the epilimnion and hypolimnion of the lake. Two composite samples were collected – one at 1, 5 and 10m representing the epilimnion and the other at 20, 22 and 24m representing the hypolimnion.
- Water chemistry samples were submitted under chain-of-custody protocol, to Caro Analytical Services for analysis of general chemistry parameters, nutrients, total metals, and chlorophyll A.

- Field parameters (Temperature, Salinity, Density, Dissolved Oxygen, Total Dissolved Solids and Conductivity) were taken using a multi-meter probe at one meter intervals from the water surface to the bottom sediments.
- Algae samples were collected at 0, 10 and 20 m depths and their algae contents (Diatoms, Yellow-Brown Algae, Green Algae, Cyanobacteria, and Flagellates) was identified and enumerated by Larratt Aquatics.
- Phytoplankton and zooplankton were sampled qualitatively for type and abundance by towing an 80 µm net at 1m below the water surface. Larratt Aquatics analyzed the samples using light microscopy.

In addition to Vaseux Lake sampling, Larratt Aquatics conducted annual benthic invertebrate sampling at the three sites in Okanagan River in October 2020. Benthic samples were submitted by Larratt Aquatics to Cordillera Consulting for taxonomic sorting and identification.

#### 4.2 GROUNDWATER AND SURFACE WATER MONITORING RESULTS

Background well water data was collected from three groundwater wells located south-east and south of the wetland during 2020. An independent hydrogeologist identified the groundwater wells that were to be sampled. Appendix P contains the database summaries for the four sampling events, while Appendix Q contains the independent laboratory results. Comparisons were made to BC Source Drinking Water Quality Guidelines (BC SDWQG) and to the federal Guidelines for Canadian Drinking Water Quality (GCDWQ). The water quality exceedances for the three wells monitored in 2020 are summarized as given in Table II.

**Table II Summary of 2020 Water Quality Exceedances in Groundwater Wells South-east and South of Polishing Wetland**

Sampling Location	Guideline <sup>1</sup>	Exceedances <sup>2</sup>
1998 Hwy 97	GCDWQ MAC	Arsenic (total and dissolved), Fluoride
	GCDWQ AO	Total dissolved solids (F)
	BC SDWQG MAC	Arsenic (total and dissolved), Fluoride
2126 Hwy 97	GCDWQ MAC	Fluoride
	GCDWQ AO	Iron (total), Manganese (total and dissolved)
	BC SDWQG MAC	Fluoride
	BC SDWQG OC	Iron (total), Manganese (total and dissolved)
2150 Hwy 97	GCDWQ MAC	Lead (total)
	GCDWQ AO	Iron (total), Manganese (total and dissolved)
	BC SDWQG MAC	Lead (total)
	BC SDWQG OC	Iron (total), Manganese (total and dissolved)

1. GCDWQ MAC = Guidelines for Canadian Drinking Water Quality Maximum Acceptable Concentrations  
 GCDWQ AO = Guidelines for Canadian Drinking Water Quality Aesthetic Objectives  
 BC SDWQG MAC = BC Source Drinking Water Quality Guidelines Maximum Acceptable Concentrations  
 BC SDWQG AO = BC Source Drinking Water Quality Guidelines Aesthetic Objectives

2. [F] = Field Result(s)

Quality control sampling of the Okanagan River in 2020 consisted of one set of triplicates and a field blank sample taken at the 100m downstream monitoring site. The field blank was collected on April 15, 2020 by attaching the required bottles to the sampling pole, removing the lids, and swinging the sample pole with bottles attached over the surface water and back again, but not letting the bottles touch the water. The bottles were then removed from the sample pole and filled with double de-ionized water supplied by an independent laboratory and preserved as required immediately in the field. Triplicate samples were collected on July 22, 2020. Since it is not practical to attach all of the required bottles in triplicate to the sampling pole at once, the following protocol was used. The same sampling method described in Section 4.1 was used for each triplicate bottle cluster at the 100m downstream sampling location.

- Attach in triplicate bacteriological sample bottles to sampling pole, remove cap and collect sample
- As quickly as possible remove the bacteriological bottles from the sampling pole and replace caps.
- Attach in triplicate, 1-Litre sample bottles to sampling pole, remove caps and collect sample
- As quickly as possible remove the 1-Litre bottles from the sampling pole and replace the caps.
- Attach 125-mL bottles and 60-mL bottles required in triplicate to sampling pole, remove caps and collect sample
- As quickly as possible remove the 125-mL and 60-mL bottles from the sampling pole and replace caps.
- Preserve samples bottles as required in the field.

Dissolved total phosphorus, total phosphorus, sodium and sulphur were detected in the field blank sample collected at Okanagan River 100m downstream site. The phosphorus detected in the field blank was 0.0033 mg/L P for dissolved total phosphorus and 0.0039 mg/L for total P respectively. The sodium detected in the field blank was 3.34 mg/. In the last two years (2019 and 2018) both phosphorus and sodium in the field blank at Okanagan River was less than the detection limit of <0.0020 P and <0.10 mg/L Na respectively. Sulphur was detected at 4.0 mg/L S in the field blank samples. The source of the phosphorus, sodium and sulphur detected in the 2020 field blank samples collected at Okanagan River 100m downstream site is unknown. Database summary of quality control Okanagan River triplicates and field blank samples are in Appendix J.

A set of triplicate samples for Vaseux Lake were collected by Larratt Aquatic on behalf of the Regional District for the 1, 5, and 10 m composite and for the 20, 22 and 24 m composite in July 2020 as seen in Appendix J.

The results of the surface water monitoring program for the 2020 reporting period are presented in Appendices R to U. The database summaries for the three Okanagan River monitoring sites (Appendix R) and the Vaseux Lake monitoring (Appendix T) highlight if a guideline was exceeded. Comparisons were made to BC Approved Water Quality Guidelines (BCAWQG), BC Source Drinking Water Quality Guidelines (BC SDWQG), Working Water Quality Guidelines for British Columbia (BCWWQG) and BC CSR, Schedule 3.2, Generic Numerical Water Standards (2017 and updates) (BC CSR). Comparisons to

the federal Guidelines for Canadian Drinking Water Quality (GCDWQ) were also made. The water quality exceedances for both Okanagan River and Vaseux Lake have been combined into one summary as given in Table 12 below.

Details regarding the analysis of the Okanagan River samples and the Vaseux Lake samples in relation to the treated effluent discharged from the treatment plant are found in the complete report from Larratt Aquatic available in Appendix V. This report provides a summary of monthly nutrient loading for total phosphorus, nitrate and total nitrogen from the discharged effluent. It also trends water quality parameters measured in Okanagan River at all three sites and at Vaseux Lake since 2013 and notes any significant trends over this seven-year period. A brief overview of the report conclusions are;

- Flow from WWTP effluent and polishing wetland into Okanagan River was only 0.02% of the total flow in Okanagan River measured at Okanagan Falls during 2020.
- No statistically significant difference between samples taken upstream and downstream of the WWTP for any forms of nitrogen and phosphorus from 2013 to 2020.
- Increasing trends in ammonia have been observed throughout the Okanagan in recent years, including ammonia increasing significantly upstream of the WWTP.
- A very small fraction of nutrient loadings in Okanagan River comes from the WWTP.
- The benthic invertebrate data indicate Okanagan River is not a healthy water body and the WWTP may be impacting benthic invertebrates in some years with regards to species richness. However upstream impacts appear to play a larger role.

Trends in Vaseux Lake in relationship to the WWTP effluent as noted in Report in Appendix V are as follows:

- Effluent total nitrogen and nitrate concentrations have decreased from 2013 to 2020. Nitrogen loadings from the WWTP account for 0.26% of the annual total nitrogen into Vaseux Lake.
- The increase in ammonia in Vaseux Lake is related to watershed influences and not the WWTP.
- WWTP contributed 0.8% of total phosphorus loadings into Vaseux Lake in 2020 during low flow periods.
- To date, no observable water quality impacts on Vaseux Lake from the WWTP during 2020.
- Algae trends identified to date appear to be climate-driven and there were no indications of nutrient enrichment or other impacts by the WWTP on Vaseux Lake's algae population from 2013 to 2020.

Recommendations are to continue with the monitoring program for several years to clarify water quality trends. More years of study will be required to determine conclusively if there are impacts on Okanagan River benthic invertebrate community from the WWTP.



**Table 12 Summary of 2019 Water Quality Exceedances in Okanagan River and Vaseux Lake**

Sampling Location	Guideline <sup>1</sup>	Exceedances <sup>2</sup>
Okanagan River Channel 100m Upstream	BCAWQG AL (ST)	Temperature [F]
	BCAWQG AL (LT)	Dissolved oxygen [F], Temperature [F]
	GCDWQ MAC	E. coli (MPN), Fecal coliforms (MPN)
	GCDWQ AO	Temperature [F]
	BC SDWQG MAC	E. coli (MPN), Fecal coliforms (MPN)
	BC SDWQG AO	Temperature [F]
Okanagan River Channel 100m Downstream	BCAWQG AL (ST)	Temperature [F]
	BCAWQG AL (LT)	Dissolved oxygen [F], Temperature [F]
	BCWWQG AL	Beryllium (total)
	GCDWQ MAC	E. coli (MPN), Fecal coliforms (MPN)
	GCDWQ AO	Temperature [F]
	BC SDWQG MAC	E. coli (MPN), Fecal coliforms (MPN)
	BC SDWQG AO	Temperature [F]
Okanagan River Channel 500m Downstream	BCAWQG AL (ST)	Temperature [F]
	BCAWQG AL (LT)	Dissolved oxygen [F], Temperature [F]
	GCDWQ MAC	E. coli (MPN), Fecal coliforms (MPN)
	GCDWQ AO	Temperature [F]
	BC SDWQG MAC	E. coli (MPN), Fecal coliforms (MPN)
	BC SDWQG AO	Temperature [F]
Vaseux Lake 1, 5, 10 m composite	BCAWQG AL (LT)	Dissolved oxygen [F]
	GCDWQ AO	Temperature [F]
	BC SDWQG AO	Temperature [F]
Vaseux Lake 20, 22, 24 m composite	BCAWQG AL (ST)	Dissolved oxygen [F]
	BCAWQG AL (LT)	Dissolved oxygen [F]
	GCDWQ MAC	Manganese (total)
	GCDWQ AO	Iron (total), Manganese (total)
	BCWWQG I	Manganese (total)
	BC SDWQG MAC	Manganese (total)
	BC SDWQG AO	Iron (total), Manganese (total)
	BC CSR IW	Manganese (total)

- BCAWQG AL (ST) = BC Approved Water Quality Guidelines for freshwater aquatic life (Short-term acute)  
 BCAAQG AL (LT) = BC Approved Water Quality Guidelines for freshwater aquatic life (Long-term chronic)  
 BC CSR IW = BC CSR, Schedule 3.2, Generic Numerical Water Standards for Irrigation (2017 and updates)  
 BC SDWQG MAC = BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2017 and updates)  
 BC SDWQG AO = BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2017 and updates)  
 BCWWQG AL = Working Water Quality Guidelines for British Columbia for freshwater aquatic life  
 BCWWQG I = Working Water Quality Guidelines for British Columbia for irrigation  
 GCDWQ MAC = Guidelines for Canadian Drinking Water Quality Maximum Acceptable Concentrations  
 GCDWQ AO = Guidelines for Canadian Drinking Water Quality Aesthetic Objectives
- [F] = Field Result(s)

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## 5. FACILITY OPERATIONS AND MAINTENANCE

The Okanagan Falls Wastewater Treatment Facility consists of four lift stations, forcemains, gravity mains, and Level IV biological nutrient removal plant with an outfall diffuser into Okanagan River.

Operations staff continued to implement process changes to facilitate more stable effluent throughout the year. 2020 results are again within the Total Nitrogen and Total Phosphorus annual average due to the online analyzer which is able to give real time data for the final effluent prior to discharge to the Okanagan River.

Preventative maintenance program continues with emphasis on equipment replacement. Several quotes were obtained in 2020 for an asset management plan for the RDOS which will include software that will allow for a maintenance software.

With age, equipment is being replaced within the collection system and the treatment plant. In July 2019 in Lift Station 3, one of the large 10 hP pump failed after 19 years of running. It was replaced with a new spare pump. The \$11, 000 purchase of another pump for replacement of the second large pump was ordered in 2020 with estimated shipment in early 2021.

The RDOS has service level agreements with several outside contractors to maintain equipment for HVAC, electrical, and instrumentation. With age of the facility comes the need to budget for replacement equipment in the future. Budgets are being forecast over the next few years to allocate monies for asset management.

On October 2, 2020 operations staff received a phone call from the RDOS Emergency Operations Centre at 9:05 am of a suspected sewer back up. Staff was on scene within 20 minutes and immediately noticed sewage flowing out of a manhole onto the grass near Skaha Lake at 604 Willow Drive in Okanagan Falls. Operations staff contacted a septic truck and other emergency mitigation equipment to stop the spill. It was determined there was a failure of the Uninterrupted Power Supply (UPS) at Lift Station 3 which resulted in pumps shutting off. There were no notifications to alarm and dialer systems which would have alerted operations staff of a problem early on. A Contractor had configured this UPS system setup in a 2018 upgrade of the Sewage Station. An electrician was on site within 10 minutes and able to restore pumping power to the station which immediately stopped the flow from the manhole to the yard. The RDOS contacted Emergency Management BC (EMBC Incident DGIR202369), MOE and Interior Health of the incident by 10 am. RDOS laboratory staff was asked to collect samples at the spill site and while sewage was not witnessed flowing into Skaha Lake, as a precaution, samples were taken of the lake in various spots adjacent to the area. Samples were expedited to the laboratory in Kelowna for analysis and corresponding laboratory reports are in Appendix W. In a follow-up briefing the RDOS hired Centrix Controls to determine the root cause of the issue with the lift station which was the failure of the UPS. A new one was installed same day and Centrix provided a written report solution to have the PLC control replaced and a new monitor for the UPS as well as a backup battery for the dialer systems. This upgrade was

implemented within 4 weeks of the incident at a cost of \$23, 500. Several changes to the system include redundant back up for the alarms, dialer, radio and control of the PLC. It was also determined that this Lift Station, due to its proximity with the lake, would now be included in the RDOS SCADA upgrade for 2021 which would give operations staff more control over alarms and set points to significantly reduce unexpected emergencies.

2020 saw the first use of the polishing wetland. This initiative was part of the original plan of the plant and the RDOS retained Ducks Unlimited Canada, operating as Native Plant Solutions, to design the constructed wetland that will receive treated effluent for additional polishing prior to discharge to the Okanagan River. The wetland is located within species habitat that are red and blue listed including the western painted turtle, yellow breasted chat, tiger salamander and great basin spadefoot. Construction was completed in spring of 2020 with the seeding of cattail at that time. It is estimated to take up to 2 growing seasons for the vegetation to establish before the wetland will be fully operational. Treated effluent was used to establish the plants in 2020. As the wetland becomes fully operational, the vegetation will provide an additional level of treatment. Wetland monitoring in 2020 was summarized in Section 3.4, while Appendix M and N provides tabulated data and individual laboratory reports respectively.

Operational staff in 2020 and their Environmental Operators Certification Program (EOCP) of BC certification, as required by Section 3.2.3 of OC ME10655 are summarized in Table 13 below.

**Table 13 Operational Staff in 2020**

Name	RDOS Position Title	EOCP Certification
Rina Seppen	Utilities Foreman	Municipal Wastewater Treatment Level IV Wastewater Collection Level I
Steve Anderson	Systems Operator IV	Municipal Wastewater Treatment Level IV Wastewater Collection Level I
Karen Moore	Lab Technician	Municipal Wastewater Treatment Level III

## 5.1 SLUDGE MANAGEMENT PLAN

The Fermented Primary Sludge (FPS) is thickened as it ferments and settles in the primary clarifier. Dissolved Air Floatation (DAF) thickens Waste Activated Sludge (WAS) from the bioreactor. Both thickened sludges are held in storage vaults until they are pumped out and hauled to the Penticton Advanced Wastewater Treatment Plant for further processing.

The FPS sludge was received at Penticton’s Septic Waste Receiving Facility and the TWAS sludge was received into a holding tank directly for processing by their dewatering equipment. The volume of sludge delivered and the density of each delivery is measured at City of Penticton’s AWWTP and this data is provided monthly to RDOS for billing purposes. A monthly summary of sludge disposed of at City of

Penticton’s AWWTP in 2020, is presented in Appendix F, while Table 14 provides a yearly summary of the sludge disposed of in 2020, 2019 and 2018. As in illustrated in Table 14 below, FPS disposed of in 2020 were comparable to 2018 data. In 2019, the volume of FPS disposed of was higher because of the need to remove primary effluent liquid and FPS solids from the fermented primary sludge tank to allow for repair of a broken weld on the raking mechanism in this tank. The average FPS percent total solids in 2020 were similar to 2019 and 2018 values.

With the assistance of grant money from the Province, the RDOS purchased a centrifuge in 2020 and will begin building a dewatering system spring 2021 to eliminate the costs associated with hauling and disposing of liquid sludge to the AWWTP in Penticton. AECOM has presented design for the system with requests for proposals for construction anticipated spring 2021. Once awarded, construction on the project is anticipated to commence in July 2021.

**Table 14 Summary of TWAS and FPS Sludge hauled offsite**

	2020		2019		2018	
	Average	Total	Average	Total	Average	Total.
FPS						
Total solids, %	5.5		5.8		5.5	
Volume, m <sup>3</sup>	14.0	126.0	18.2	218.3	9.05	109
Dry Weight, kg	748.1	6733	979.4	11752.4	531.8	6382
TWAS						
Total solids, %	2.7		2.8		2.9	
Volume, m <sup>3</sup>	109.2	1309.9	106.7	1280.8	99.9	1199
Dry Weight, kg	2937	35244	3052.7	36632.0	2597	35488

## 5.2 SEWERAGE REGULATION BYLAW

In 2020 the Sewerage Regulation Bylaw No. 1707, 1996 has not been amended. The Sewer Bylaw is planned to be reviewed in 2021.

## 5.3 CONTINGENCY PLAN

In 2020, no revisions were made to the Contingency Plan located in the Emergency Response Plan. There will be a revision made in fall of 2021 to include the new polishing treatment wetland contingency plan.

## 5.4 OPERATION AND MAINTENANCE EXPENDITURES

The annual operation costs for the Facility during the reporting period was \$1, 230, 511 (Total expenses less Depreciation, Debt Interest, Debt Principal, Transfer to Reserve and Transfer Interest to Reserves). The 2020 annual budget was \$ 3,359,739 (Total expenses less Depreciation, Debt Interest, Debt Principal, Transfer to Reserve and Transfer Interest to Reserves). These costs include the site operations labour, and

other ancillary expenses. The major project of the construction of the new Solids Processing Facility with Provincial Grant money will be deferred to the 2021 when construction will commence. The centrifuge was purchased in 2020 but the vast majority of the expense will be in the construction cost of the facility addition which will come in the spring of 2021.

**Table 15 Summary of 2020 OKFWWTP Budget**

Financial Summary		2020 Year Actual	2020 Annual Budget	2020 Variance	2019 Year Actual
<b>Revenue:</b>					
4-1-3800-2700	INTEREST INCOME	31			31
4-1-3800-2955	GAS TAX	188033	2,011,470		141,750
4-1-3800-2915	COMMUNITY WORKS GAS TAX		75,000		450,463
4-1-3800-4500	USER FEES	1,090,858	856,922		1,077,432
4-1-3800-4510	CONNECTION & EXTENSION FEES	1,050	1,500		1,750
4-1-3800-4520	NEW SERVICES INSTALLATION FEES		250		
4-1-3800-4570	USER FEES - CAPITAL		239,366		
4-1-3800-6000	TRANSFER FROM RESERVE		13,400		
4-1-3800-6290	TRANSFER FROM OPERATING RESERVE		185		
4-1-3800-8510	OBWB GRANT - DEBENTURE	80,227	80,226		
4-1-3800-9000	MISCELLANEOUS REVENUE	146			8000
4-1-3800-8900	CLEAN WATER & WW FUND GRANT				
4-1-3800-9990	PRIOR YEARS SURPLUS	(91,357)	(33,860)		(91,262)
	<b>Total Revenue</b>	<b>1,679,426</b>	<b>3,314,235</b>		<b>1,668,392</b>
<b>Expenses:</b>					
4-2-3800-1000	SALARIES & WAGES	353,363	352,319	1,044	351,005
4-2-3800-1400	ADMINISTRATION CHARGES	35,064	35,064	0	34,717
4-2-3800-1500	IS	11,039	11,039	0	11,039
4-2-3800-2500	OPERATIONS	22,110	30,200	8,090	33,154
4-2-3800-2501	SEWER FLUSHING		15,000	15,000	
4-2-3800-2502	MAINTENANCE AND PARTS	96,801	74,100	(20,701)	56,734
4-2-3800-2503	CHEMICALS	7,124	3,000	(4,124)	8,999
4-2-3800-2505	OPS – SLUDGE HAULING	63,519	12,000	(51,519)	60,619
4-2-3800-2506	OPS – SLUDGE DISPOSAL	88,962	37,000	(51,962)	85,663
4-2-3800-2595	OP - ENVIRONMENTAL MONITORING	18,383	10,000	(8,383)	10,694
4-2-3800-2596	OUTSIDE LAB	27,896	25,000	(2,896)	27,375
4-2-3800-2597	INHOUSE LAB	17,358	17,000	(358)	15,470
4-2-3800-2640	OPERATIONS - HEALTH & SAFETY	4,564	2,000	(2564)	4,318
4-2-3800-2960	OK WWTP SOLIDS PROCESSING	188,040	1,811,470	1,623,430	141,750
4-2-3800-2961	OK FALLS WETLAND ENHANCEMENT	124,944	200,000	75,056	450,463
4-2-3800-3000	CONSULTANTS	6,039	7,763	1,724	13,164
4-2-3800-4000	EDUCATION & TRAINING	1,026	2,000	974	1,937
4-2-3800-5400	DEPRECIATION		5000	0	5,000
4-2-3800-5500	CAPITAL EXPENDITURES	41,818	88,400	46,582	630
4-2-3800-6000	INSURANCE - PROPERTY	7,907	7,626	(281)	7,422
4-2-3800-6050	INSURANCE - LIABILITY	16,422	19,437	3,015	17,431
4-2-3800-6150	INSURANCE - ENVIRONMENTAL	7,247	6,626	(621)	7,255
4-2-3800-6200	LEGAL FEES		500	500	
4-2-3800-7000	SUPPLIES	29		(29)	38
4-2-3800-8200	TRAVEL/LEASING	13,470	10,369	(3,101)	12,725
4-2-3800-8500	UTILITIES	77,386	80,000	2,614	82,521
4-2-3800-9010	DEBT INTEREST	158,400	158,400	0	158,400
4-2-3800-9020	DEBT PRINCIPAL	161,192	161,192	0	161,192
4-2-3800-9200	TRANSFER TO RESERVE		73,562	73,562	
4-2-3800-9205	TRANSFER INTEREST TO RESERVES	5,000			
	<b>Total Expenses</b>	<b>1,555,103</b>	<b>2,986,067</b>	<b>1,430,964</b>	<b>1,759,749</b>

The unexpected failure of the cooling system for the UV disinfection added \$11,000 to the maintenance expense. There were added chemical and health and safety costs due to the Covid 19 pandemic where the wastewater treatment plant was deemed essential service and protocols were put into place for added social distancing, sanitation and remote IT costs for “touchless” plant control. A summary of the budgetary information for the Okanagan Falls BNR WWTF during the reporting period is presented in Table 15.

## **6. CONCLUSIONS**

The seventh year of operation of the Okanagan Falls Biological Nutrient Removal Wastewater Treatment Facility has shown a steady improvement in the quality of effluent discharged to the Okanagan River in terms of nutrient loadings. There were no exceedances of the permitted effluent parameters in 2020 for the OK Falls WWTP. There were several major maintenance issues that are indicative of the age of the treatment plant and the sewer system. Adjustments to the maintenance budget and preventative maintenance program will be made for 2021.

The construction phase of the wetland project was completed in spring of 2020 with the commissioning phase of cattail establishment continuing throughout the remainder of the year. Final effluent was periodically diverted (20,102 m<sup>3</sup>) to the wetland between March and October with discharge (2898 m<sup>3</sup>) to the Okanagan River occurring in November. Overall, commissioning of the wetland in 2020 reduced discharges to the Okanagan River by a net volume of 17,205 m<sup>3</sup>. The addition of this tertiary treatment process has the intention to continue to increase the ability for the system to meet the effluent parameters, increase habitat for threatened species in the area, as well as to promote the removal of endocrine disrupters in the water.

The report from Larratt Aquatic has indicated from 2013-2020 there were no observed impacts from the WWTP operation on Vaseux Lake chemistry and biology or the chemistry of Okanagan River. The benthic invertebrate data indicate Okanagan River is not a healthy water body and the WWTP may be impacting benthic invertebrates in some years with regards to species richness. However upstream impacts appear to play a larger role. Algae trends in Vaseux Lake identified to date appear to be climate-driven and there were no indications of nutrient enrichment or other impacts by the WWTP on Vasuex Lake’s algae population from 2013 to 2020.

## **7. RECOMMENDATIONS**

Based on the results of the 2020 monitoring program, the following recommendations are provided:

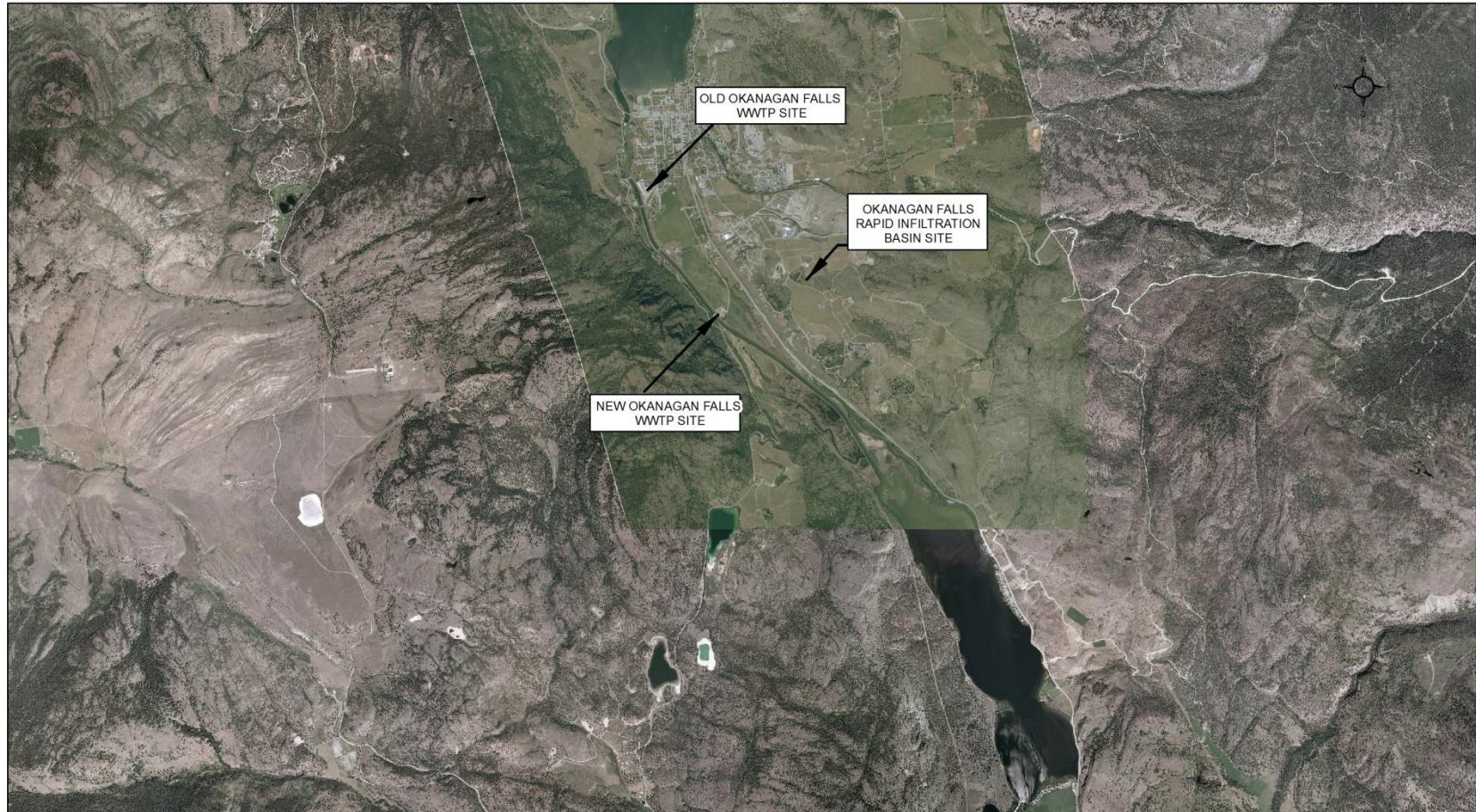
- I. Review the monitoring program on an annual basis to accommodate changes in Facility conditions and monitoring program results.

## **8. REFERENCES**

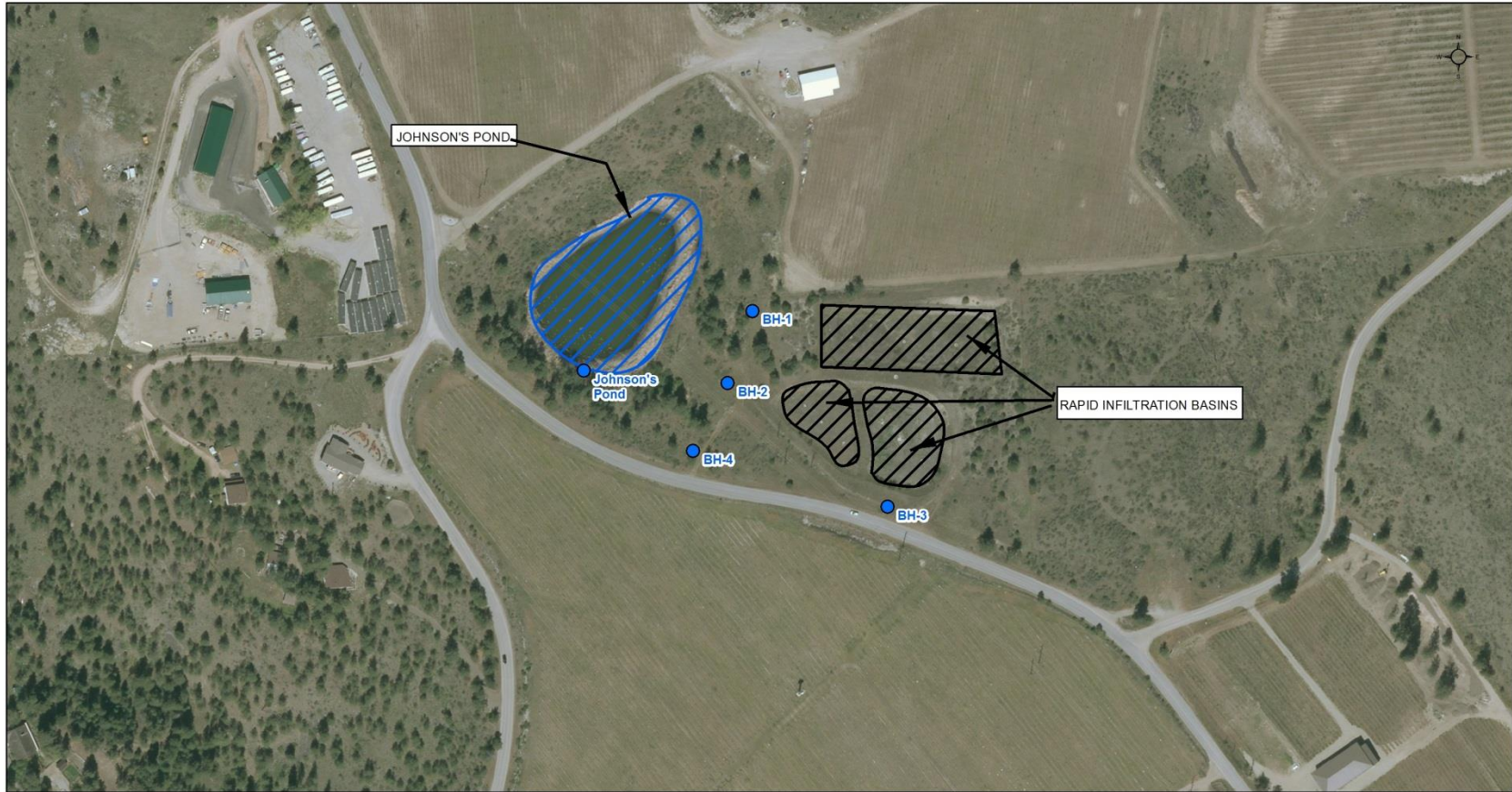
- I. Environment Canada, Water Office – 2020 daily mean discharge for Station 08NM002 was received January 14, 2021 via email from National Hydrological Services Meteorological Service of Canada Branch Environment and Climate Change Canada/Government of Canada.

# FIGURES






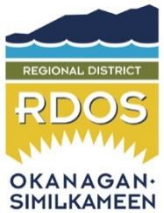
<b>SITE LOCATION MAP</b>		
2015 OPERATIONS AND MONITORING REPORT		
OKANAGAN FALLS WASTEWATER TREATMENT FACILITY		
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN		
DATE : APRIL 2016	1:40,000	FIGURE NO. 1



**LEGEND**

● MONITORING WELL

RAPID INFILTRATION BASIN SITE PLAN		
2015 OPERATIONS AND MONITORING REPORT		
 OKANAGAN FALLS WASTEWATER TREATMENT FACILITY REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN		
DATE : APRIL 2016	1:2,000	FIGURE NO. 2



## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

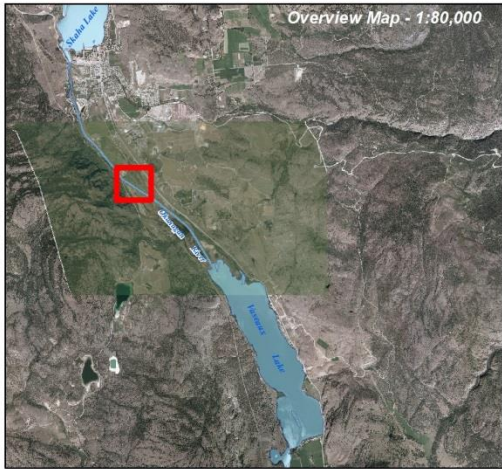
FIGURE 3: CONSTRUCTED WETLAND AND OFFSITE WELLS SAMPLING LOCATION PLAN

DATE: APRIL 2021

**SURFACE WATER SAMPLING LOCATION PLAN**

2015 OPERATIONS AND MONITORING REPORT  
OKANAGAN FALLS WASTEWATER TREATMENT FACILITY  
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

DATE : APRIL 2016      1:2,500      FIGURE NO. 4



# SURFACE WATER SAMPLING LOCATION PLAN

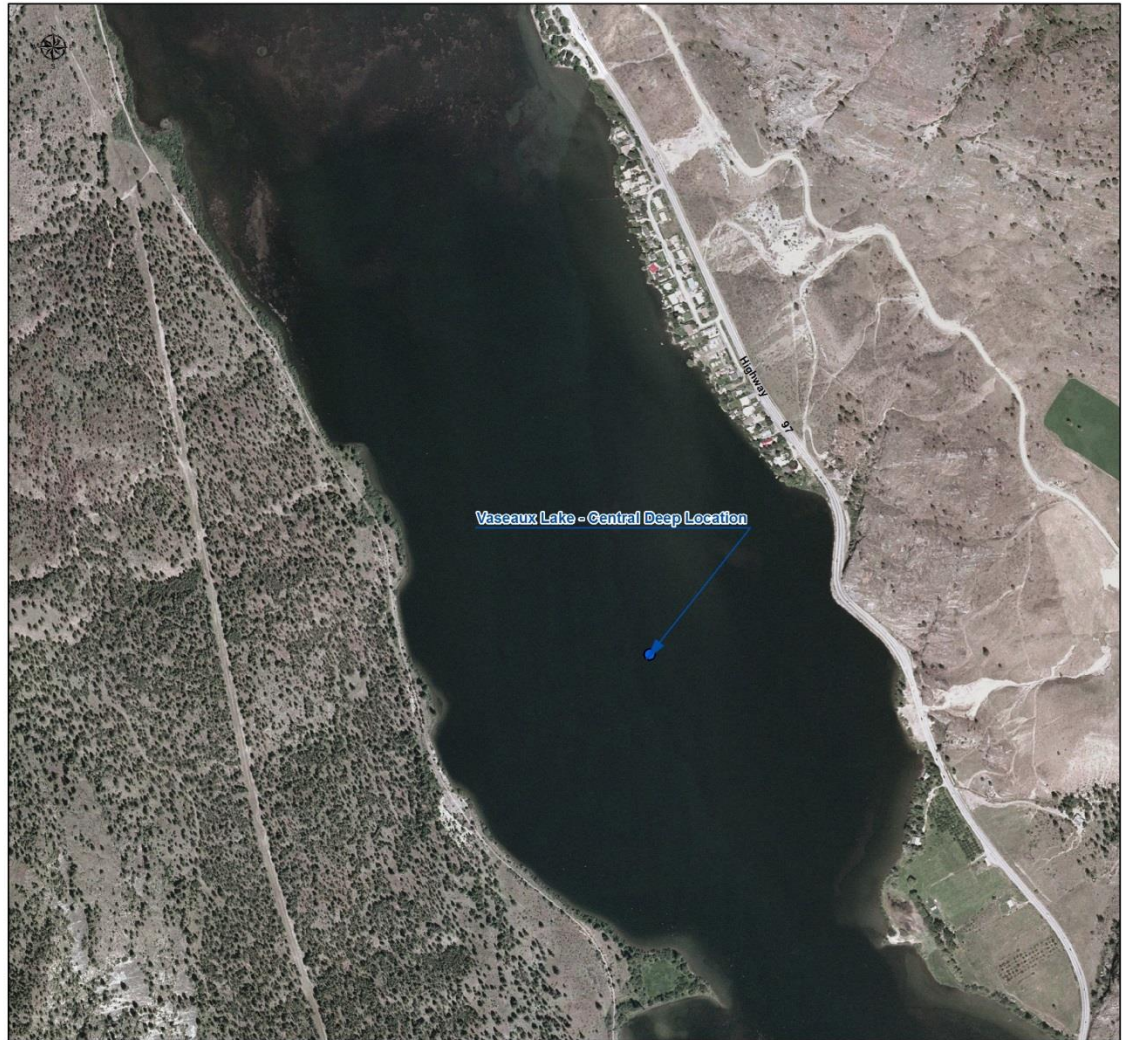
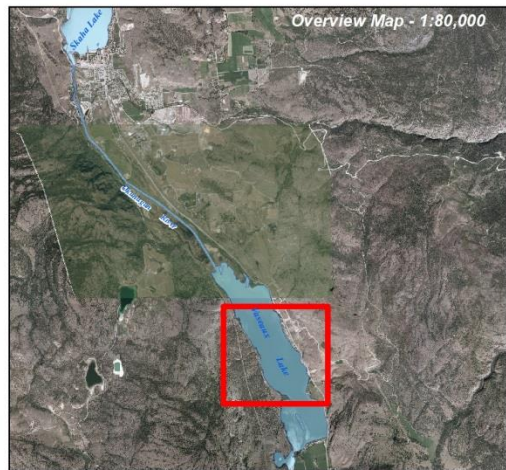


2015 OPERATIONS AND MONITORING REPORT  
OKANAGAN FALLS WASTEWATER TREATMENT FACILITY  
REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

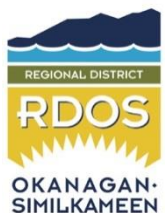
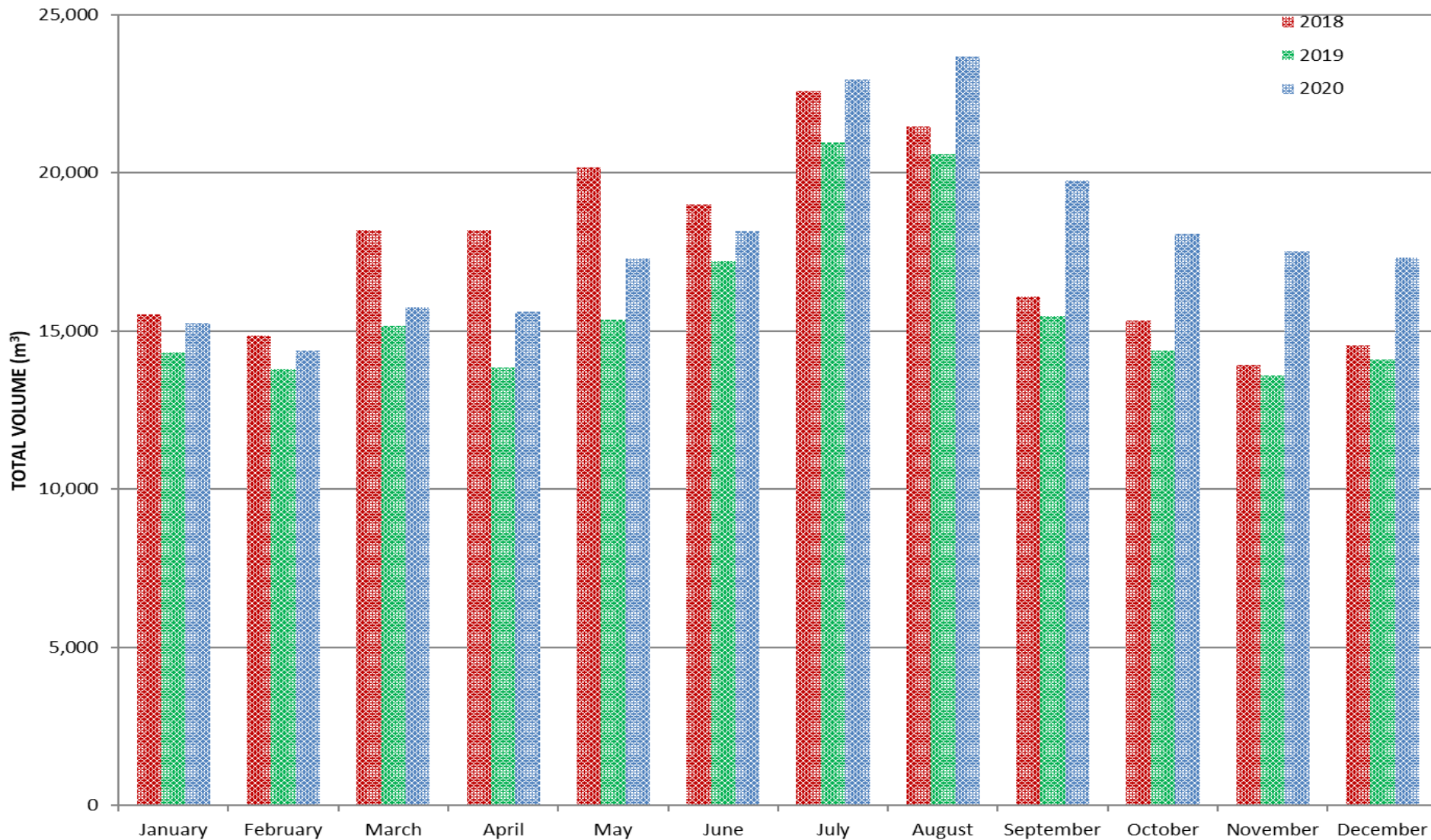
DATE : APRIL 2016

1:7,500

FIGURE NO. 5



# MONTHLY EFFLUENT FLOWS FROM WWTP

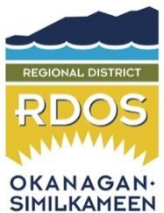
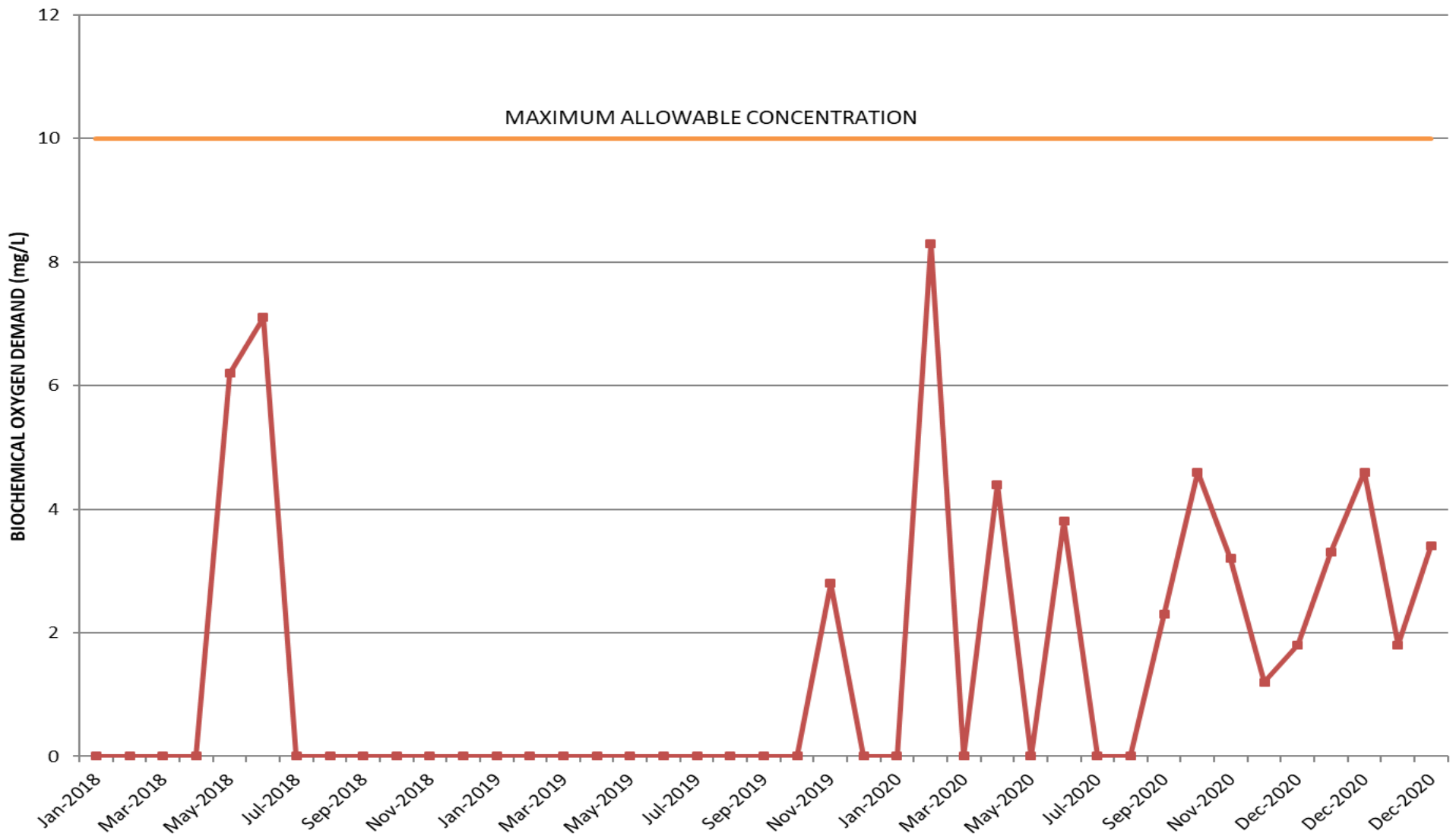


## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 6: EFFLUENT MONTHLY FLOWS

DATE: APRIL 2021

# MONTHLY EFFLUENT GRAB SAMPLE - BIOCHEMICAL OXYGEN DEMAND

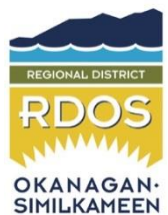
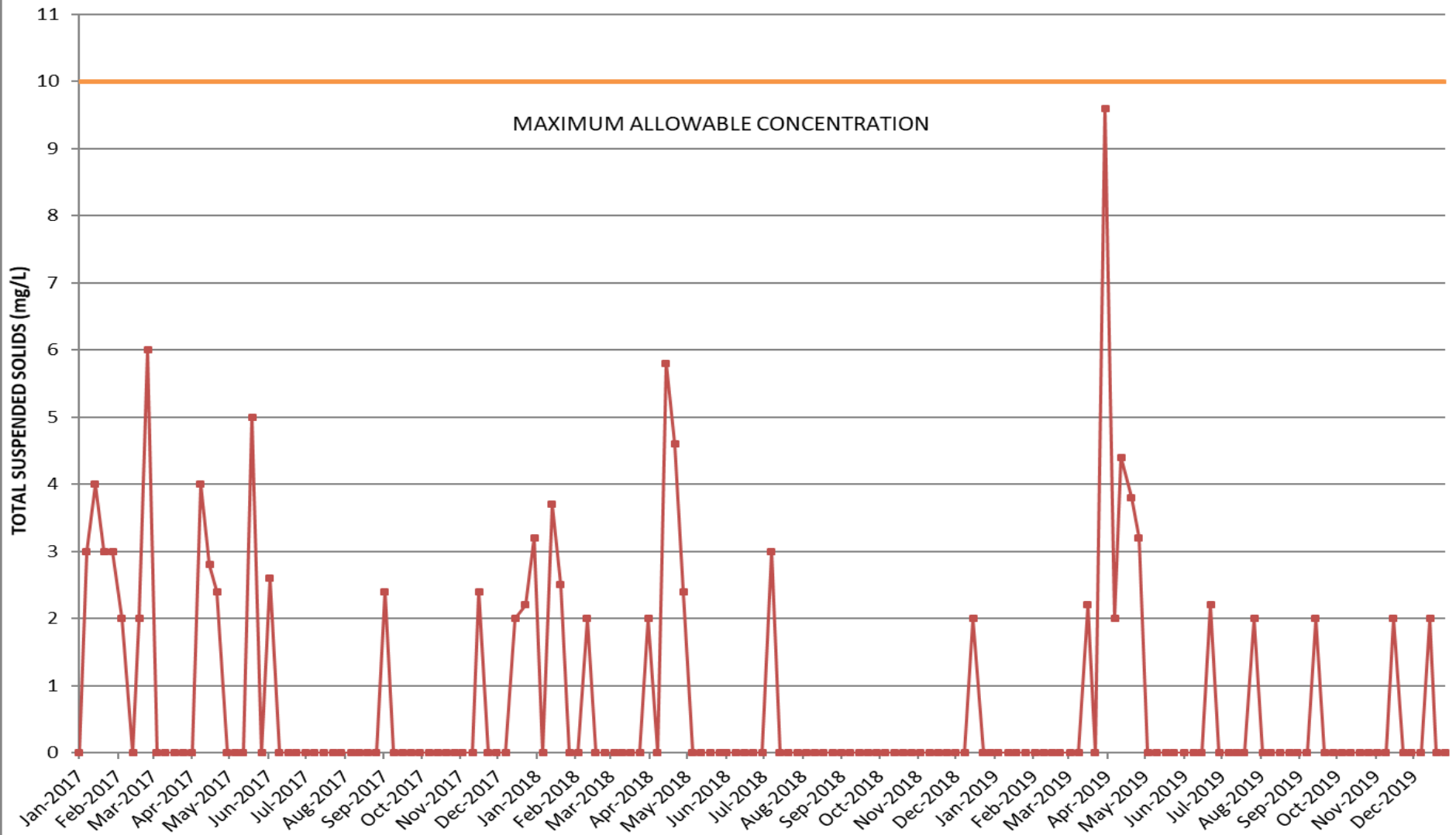


## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 7: EFFLUENT MONTHLY BIOCHEMICAL OXYGEN DEMAND TIME SERIES PLOT

DATE: APRIL 2021

# WEEKLY EFFLUENT GRAB SAMPLE - TOTAL SUSPENDED SOLIDS (TSS)



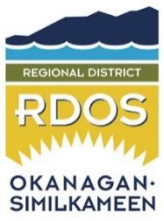
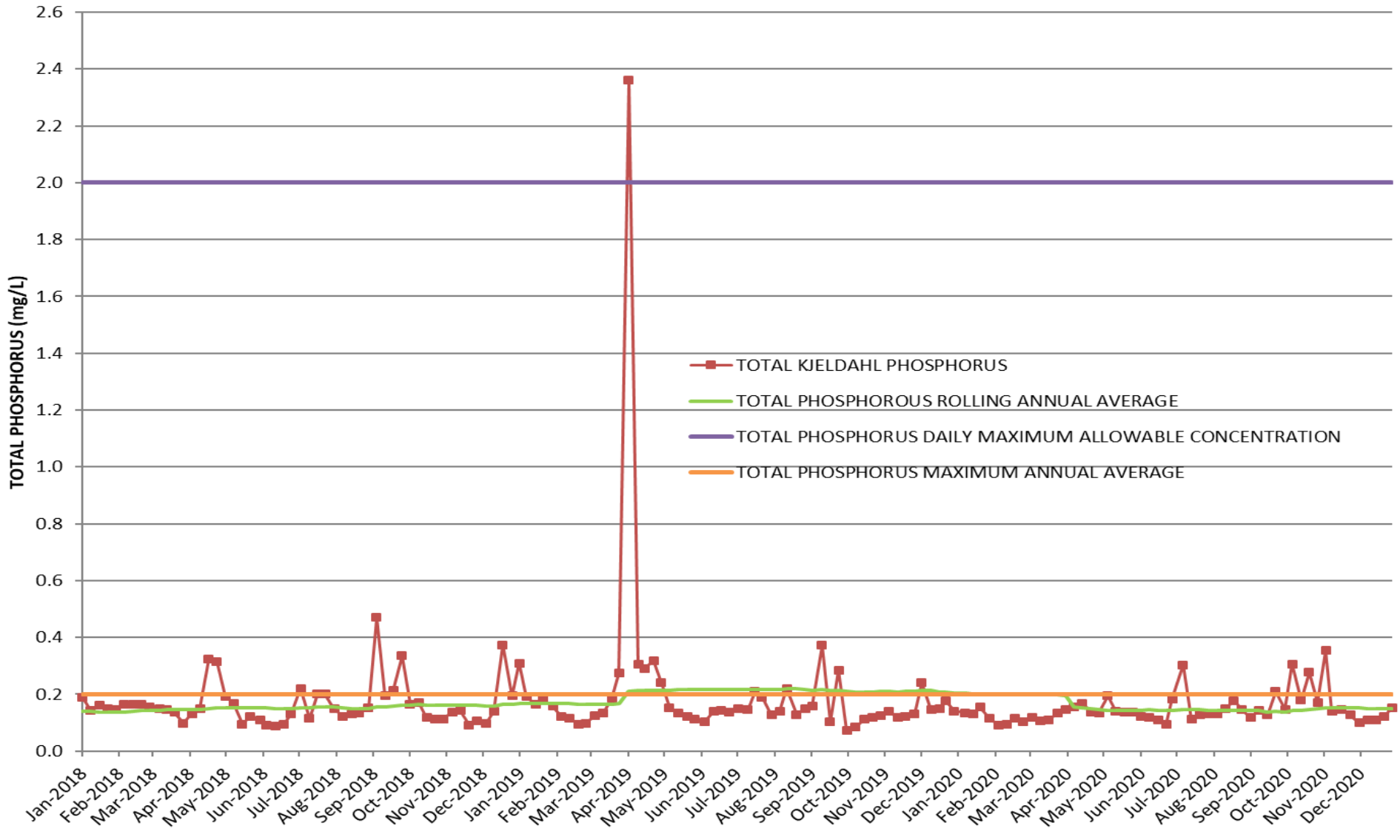
## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 8: EFFLUENT WEEKLY TOTAL SUSPENDED SOLIDS TIME SERIES PLOT

DATE: APRIL 2021



# WEEKLY EFFLUENT GRAB SAMPLE - TOTAL PHOSPHORUS

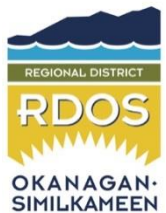
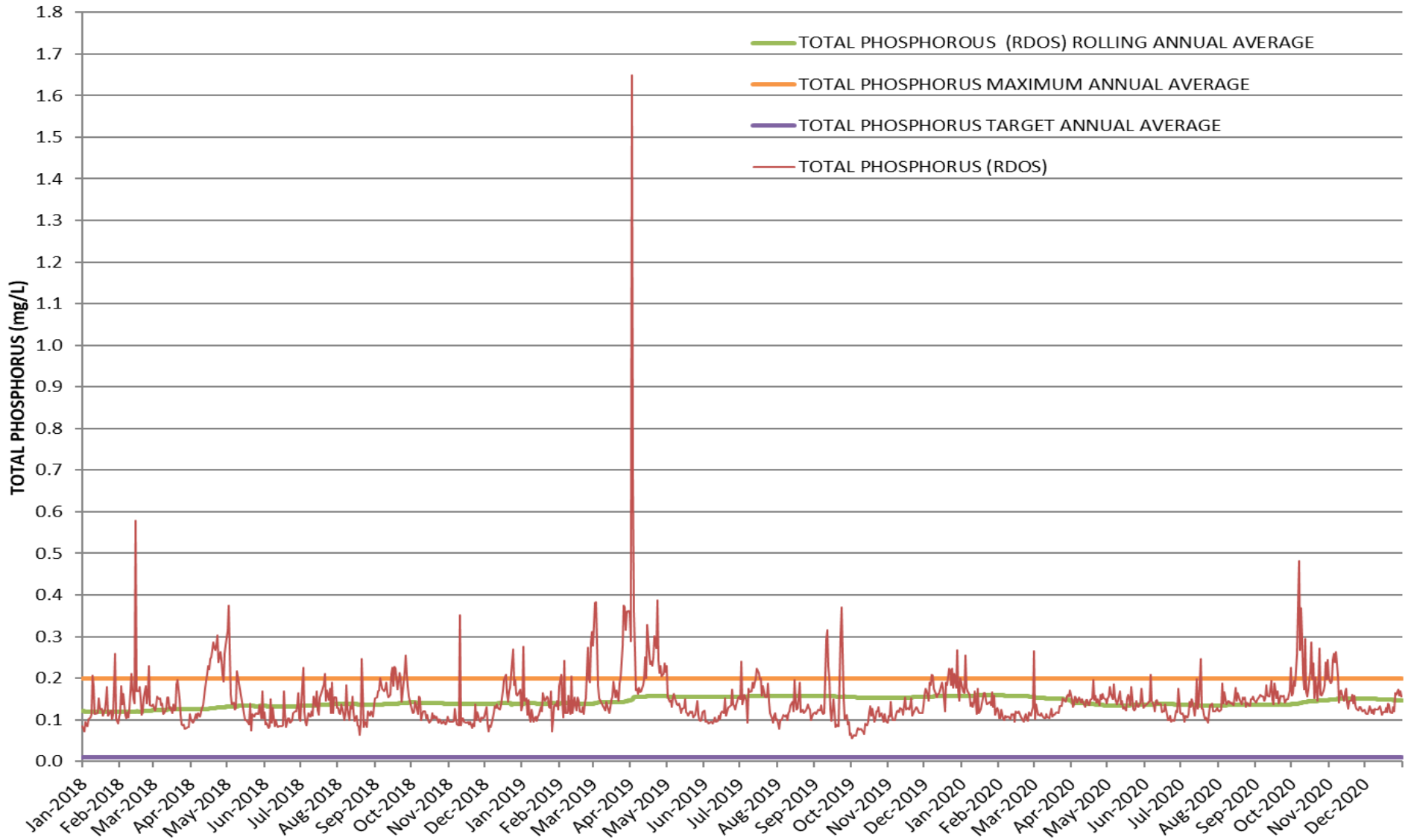


## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 9: EFFLUENT WEEKLY TOTAL PHOSPHORUS TIME SERIES PLOT

DATE: APRIL 2021

# DAILY COMPOSITE SAMPLE - ANNUAL AVERAGE TOTAL PHOSPHORUS

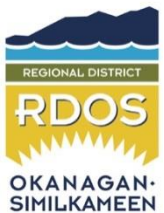
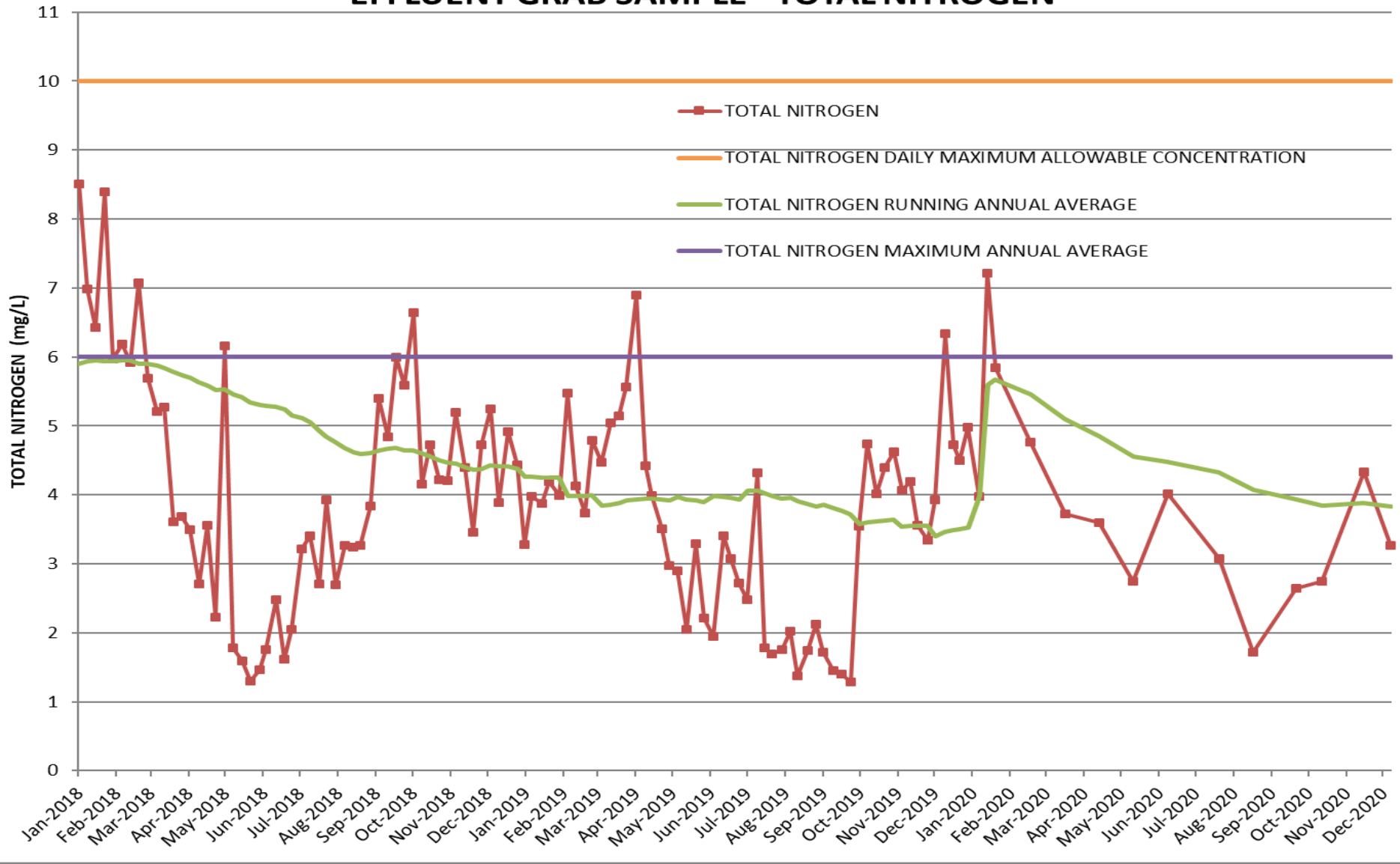


## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 10: EFFLUENT (COMPOSITE) ANNUAL AVERAGE TOTAL PHOSPHORUS TIME SERIES PLOT

DATE: APRIL 2021

## EFFLUENT GRAB SAMPLE - TOTAL NITROGEN

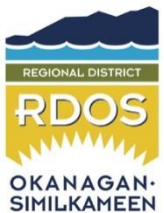
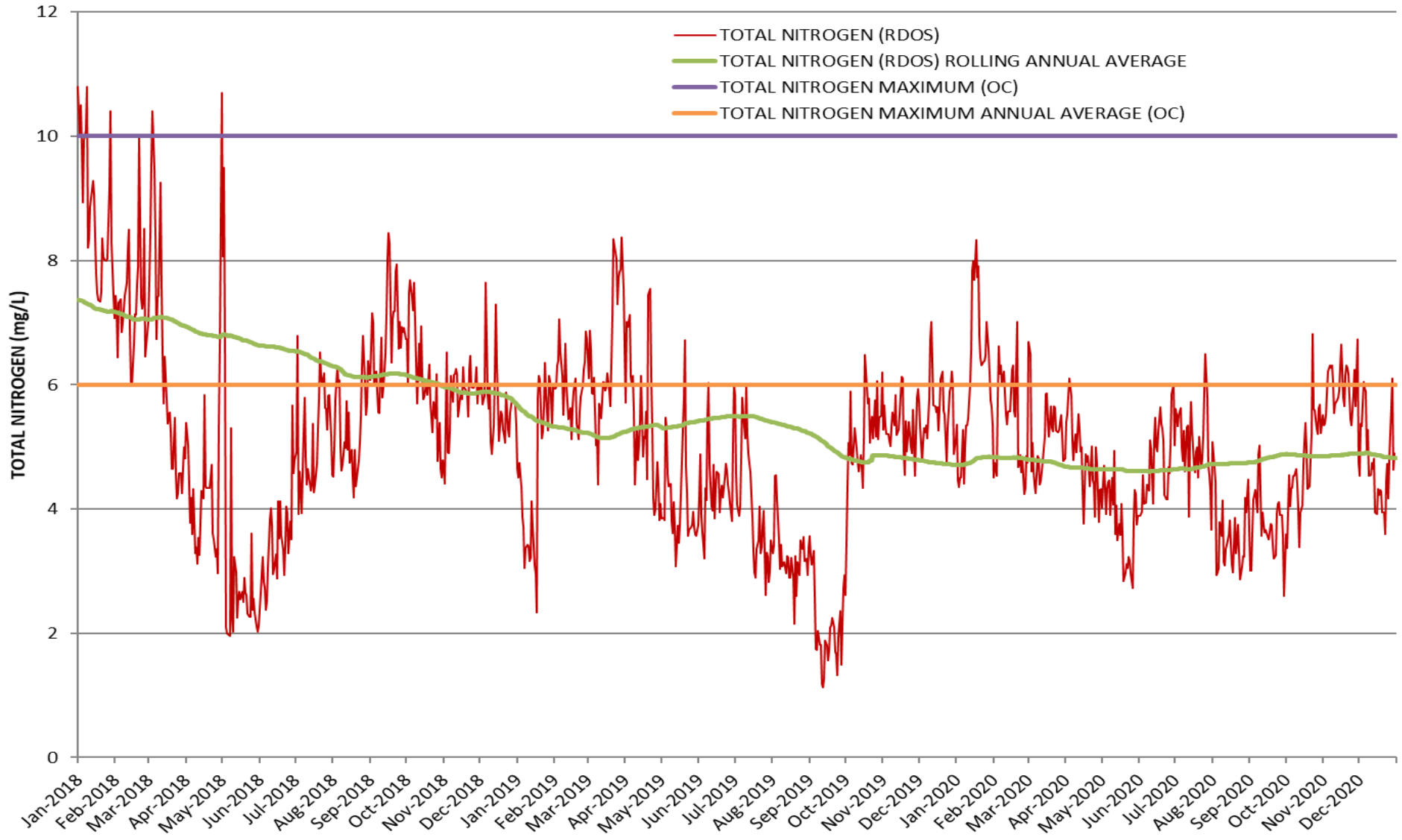


### REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 11: EFFLUENT TOTAL NITROGEN TIME SERIES PLOT

DATE: APRIL 2021

# DAILY COMPOSITE SAMPLE - ANNUAL AVERAGE TOTAL NITROGEN

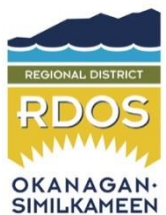
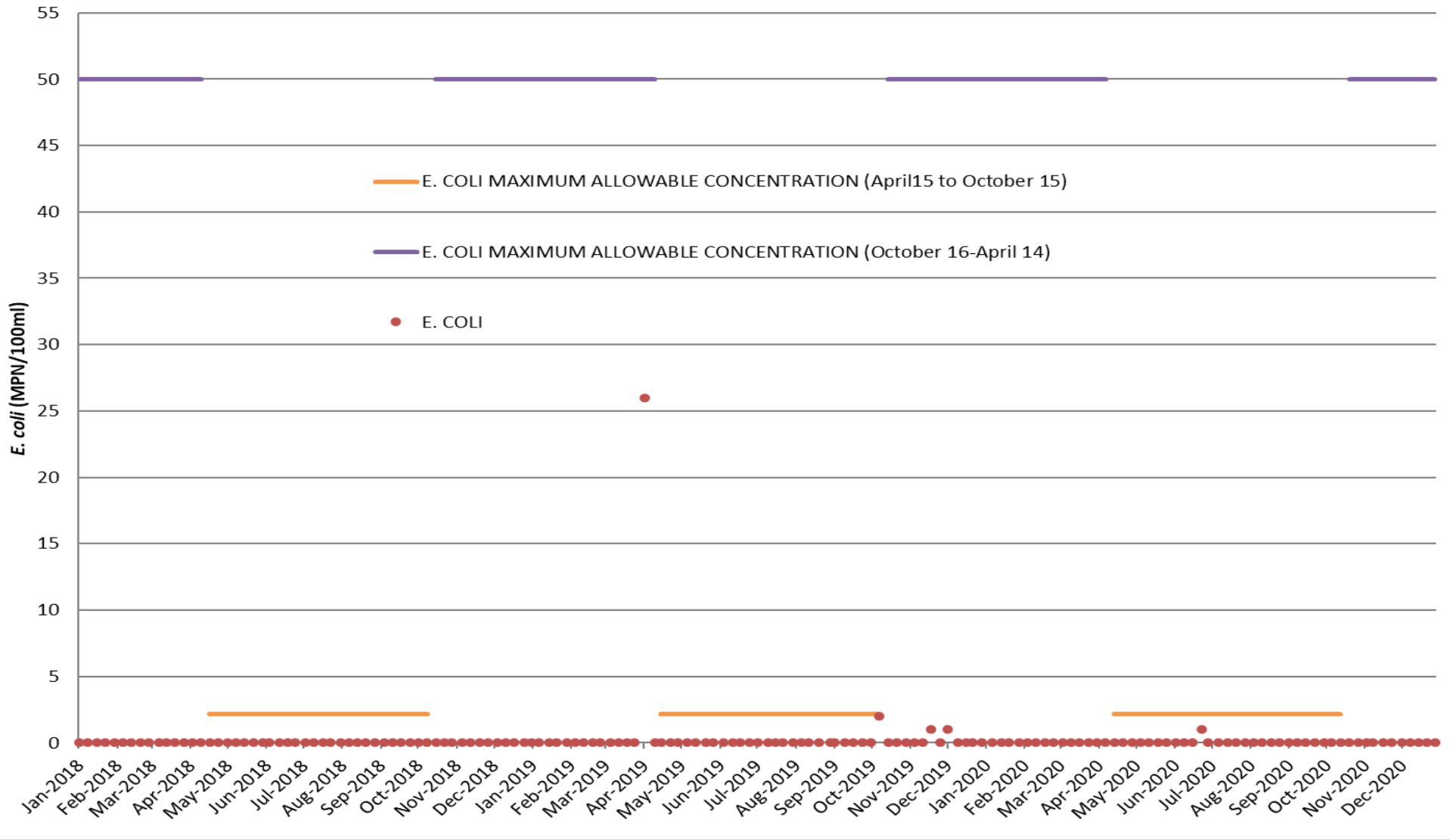


## REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 12: EFFLUENT (COMPOSITE) ANNUAL AVERAGE TOTAL NITROGEN TIME SERIES PLOT

DATE: APRIL 2021

## WEEKLY EFFLUENT GRAB SAMPLE - *E. COLI*



### REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN

FIGURE 13: EFFLUENT WEEKLY *E. Coli* TIME SERIES PLOT

DATE: APRIL 2021



# **APPENDIX A**

## **Operational Certificate ME 106555**

Okanagan Falls  
Biological Nutrient Removal  
Wastewater Treatment Facility



May 6, 2013

Tracking Number: 278137  
Authorization Number: 106555

**REGISTERED MAIL**

05-08-13P12:25 RCVD

Regional District Okanagan-Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

Dear Operational Certificate Holder:

Enclosed is Operational Certificate (OC) 106555 issued under the provisions of the *Environmental Management Act*. Your attention is respectfully directed to the terms and conditions outlined in the OC. An annual fee will be determined according to the Permit Fees Regulation.

This OC 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 OC holder. It is also the responsibility of the OC holder 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.

Administration of this OC will be carried out by staff from the Southern Interior Region - Okanagan. Plans, data and reports pertinent to the OC are to be submitted to the Regional Manager, Environmental Protection, at Ministry of Environment, Regional Operations, Southern Interior Region - Okanagan, 102 Industrial Pl., Penticton, BC V2A 7C8.

Yours truly,

Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan



106555

page 2

Date: May 6, 2013

Enclosure

cc: Environment Canada



MINISTRY OF  
ENVIRONMENT

**OPERATIONAL CERTIFICATE**

106555

Under the Provisions of the *Environmental Management Act* and in accordance with the approved Regional District of Okanagan-Similkameen Okanagan Falls Area Liquid Waste Management Plan, the

**REGIONAL DISTRICT OF OKANAGAN-SIMILKAMEEN  
101 MARTIN STREET  
PENTICTON, BC V2A 5J9**

Is authorized to discharge effluent from a municipal wastewater collection and treatment system located in Okanagan Falls, British Columbia, to the Okanagan River channel, and reclaimed water to the ground by irrigation, and is further authorized to discharge sludge from this same system to an authorized compost facility, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may result in prosecution.

Definitions:

“Director” means the Director or a person delegated to act on behalf of the Director, as defined in the *Environmental Management Act*.

“Regional Director” means the Regional Director or acting Regional Director, Environmental Protection for the Kootenay-Okanagan Regions.

“Regional District” means the Regional District of Okanagan-Similkameen

“Qualified Professional” means an applied scientist or technologist specializing in a particular applied science including, but not necessarily limited to: agronomy, biology, chemistry, engineering, geology, or hydrology; and 1) who is registered in British Columbia with their appropriate professional organization, acting under that association’s Code of Ethics and subject to disciplinary action by that association; and 2) who, through suitable education, accreditation and knowledge, may be reasonably relied on to provide advice within their area of expertise.

Date issued: May 6, 2013

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## 1. AUTHORIZED DISCHARGES

### 1.1 Authorized source

This section applies to the discharge of effluent from the Okanagan Falls Advanced Wastewater Treatment plant (AWWTP). The site reference number for this discharge is E292449.

- 1.1.1** The maximum rate of effluent to be discharged from the wastewater treatment plant, averaged on a monthly basis, to the Okanagan River channel is as follows:

Year	Maximum Daily Flow m <sup>3</sup> /d		
	Okanagan Falls	Skaha Estates	Kaleden Lakeshore
2013	1848	433	341
2014	1894	444	349
2015	1941	456	358
2016	1990	467	367
2017	2039	479	376
2018	2090	490	385
2019	2143	502	394
2020	2196	513	403
2021	2251	525	412
2022	2307	536	421
2023	2365	552	433
2024	2424	567	445
2025	2485	582	457
2026	2547	598	469
2027	2610	613	482
2028	2676	628	494
2029	2743	644	506
2030	2811	659	518
2031	2881	674	530
2032	2954	689	542
2033	3027	709	557
2034	3103	728	572
2035	3181	747	587

It is anticipated that sewers extending to the Skaha Lake Estates and Kaleden

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Lakeshore areas will be constructed and connected to the Okanagan Falls AWWTP. The timing of connection is as yet unknown, once grant funding becomes available. The total flow from the Okanagan Falls AWWTP would be the sum of the flows from each of the three individual collection systems. Currently only the Okanagan Falls collection system exists.

For the purposes of permit fee calculations, the permit fees for the nominal year that begins on the anniversary date of the Operational Certificate will use the maximum flow value for the calendar year for Okanagan Falls area only. Any additional flows from the proposed connected areas must be entered into the permit fee calculation.

1.1.2 The characteristics of the discharge must be equivalent to or better than:

Biochemical Oxygen Demand <sub>5</sub> (BOD <sub>5</sub> )	Maximum:	10 mg/L
Total Suspended Solids (TSS)	Maximum:	10 mg/L
Total Phosphorus (TP):		
Maximum Annual Average:		0.20 mg/L
Maximum Daily Concentration:		2.0 mg/L
Total Annual discharge not to exceed:		300 kg/yr
Level to strive for:		0.01 mg/L
(The level to strive for is the Okanagan River background level).		
Total Nitrogen (TN):		
Maximum daily concentration:		less than 10.0 mg/L
Annual Average:		6.0 mg/L
E. coli:	2.2 CFU /100ml	(April 15- October 15 of each year)
E. coli:	50 CFU /100ml	(October 16- April 14 of each year)

1.1.3 The authorized works are a wastewater collection system and treatment system consisting of the following processes: raw sewage lift station (at old plant site), headworks (screening), primary treatment (primary clarification/fermentation), secondary treatment (bioreactor and secondary clarification - combined treatment unit), tertiary treatment (cloth media disk filtration), disinfection (ultraviolet irradiation), solids thickening (dissolved air floatation), an effluent outfall to the Okanagan River channel and related appurtenances approximately located as shown on Site Plan A.

1.1.4 The wastewater collection system currently services areas within the Okanagan Falls and sewers may be extended to service the Skaha Lake Estates and Kaleden Lakeshore areas.

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- 1.1.5 The location of the wastewater treatment plant from which the wastewater is discharged is legally described as; Lot 3, Plan KAP88006, District Lot 10, Land District Similkameen Division of Yale.
- 1.1.6 The location of the discharge to the Okanagan River channel is legally described as the Plan of Statutory Right of Way over unsurveyed Crown Land (being the bed of Okanagan River to the Southwest of Lot 3, Plan KAP88006, District Lot 10, Land District Similkameen Div of Yale.

1.2 **Authorized source**

This section applies to the use of reclaimed water (as defined in the Municipal Wastewater Regulation (MWR) for beneficial purposes including irrigation. The site reference number for this discharge is E292529.

1.2.1 There is no maximum authorized rate of reclaimed water that may be beneficially used provided there is no effluent surfacing, overland flow and groundwater breakouts.

1.2.2 The beneficial use of reclaimed water including irrigation must be in accordance with the requirements of MWR. For the purposes of permit fee calculations the following discharge factors have been assumed for the characteristics of the reclaimed water discharged from the wastewater treatment plant:

Biochemical Oxygen Demand<sub>5</sub> - 10 mg/L; and

Total Suspended Solids - 10 mg/L.

1.2.3 The authorized works are facilities and related appurtenances required for the beneficial use of reclaimed water.

1.2.4 The location of the area where reclaimed water may be used for beneficial purposes including irrigation is described generally as the Okanagan Falls area. Actual authorization for a specific beneficial use is contingent upon the submission of a "Beneficial Use Plan" prepared by a suitably qualified person, to the Director for written approval prior to use.

The Regional District is authorized to use reclaimed water on site for heat recovery through heat exchange processes, for toilets, urinals and wetting activities in selected treatment processes.

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## 2. GENERAL REQUIREMENTS

### 2.1 Maintenance of Works and Emergency Procedures

The Regional District must inspect the authorized works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the Regional District which prevents effective operation of the authorized works or leads to unauthorized discharge, the Regional District must comply with all applicable statutory requirements, immediately (within one business day) notify the Regional Director, Environmental Protection, and take appropriate remedial action for the prevention or mitigation of pollution. The Director may reduce or suspend operations to protect the environment until the authorized works have been restored and/or corrective steps have been taken to prevent unauthorized discharges.

### 2.2 Bypasses

The discharge of effluent which has bypassed the authorized treatment works is prohibited unless the prior approval of the Director is obtained and confirmed in writing.

### 2.3 Process Modifications

The Director must be notified prior to implementing changes to any process that may affect the quality and/or quantity of the discharge.

### 2.4 Plans - New Works

2.4.1 Plans of modifications and/or extensions to the existing works must be signed and sealed by a Professional Engineer licensed to practice in the Province of British Columbia. The works must be constructed in accordance with such plans.

2.4.2 Copies of all "as-built" plans and specifications of any proposed modifications or additions to works authorized in this Operational Certificate must be retained by the Regional District for perusal by the Director, or his/her delegate, upon request.

2.4.3 Plans for Reclaimed water irrigation system, if applicable, must be

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signed and sealed by a Professional Engineer or Professional Agrologist suitably qualified and licensed to practice in the Province of British Columbia, or as otherwise acceptable to the Director.

- 2.4.4 Reclaimed water irrigation works, if applicable, must be designed and constructed in accordance with current agricultural best management practices and the "Code of Practice for Use of Reclaimed Water - a companion document to the Municipal Wastewater Regulation".

## 2.5 Qualified Professionals

All facilities and information, including works, plans, assessments, investigations, surveys, programs and reports, must be certified by qualified professionals.

## 3. GENERAL REQUIREMENTS - ALL DISCHARGES

### 3.1 Operation and Maintenance

- 3.1.1 Develop and maintain both an Operations and Maintenance Manual for the wastewater collection, wastewater treatment, reclaimed water utilization and wastewater disposal works. A copy of the Operations and Maintenance Manuals must be retained at the treatment plant for inspections by the Director or regional Environmental Protection staff.
- 3.1.2 Operate and maintain a system of preventative maintenance for the wastewater collection, wastewater treatment, effluent utilization and effluent disposal.

### 3.2 Facility Classification And Operator Certification

- 3.2.1 The Regional District must operate, staff and maintain the existing wastewater treatment plant as an Environmental Operator Certification Program (EOCP) Level IV facility and have at least one designated chief operator. The chief operator(s) must maintain a class 4 EOCP certification. Should there be any changes in the Chief Operator(s) the Regional District must notify the Director within 30 business days of the change.
- 3.2.2 Upon commissioning of the Okanagan Falls AWWTP, the Regional District must submit a facility update to the EOCP program to confirm

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the constructed and operator classification requirements within 90 days of the issuance of this Operational Certificate. That submission should be copied to the Director and include a specific request for a written response from the EOCP. Within 60 days of receiving the EOCP's written response, the Regional District must provide a copy to the Director along with a submission documenting compliance or a plan to achieve compliance.

- 3.2.3** The Regional District must log changes in certification levels of the other operating staff on an ongoing basis and submit an annual comparison of staff certification relative to EOCP requirements as part of the annual reporting requirements.

### **3.3 Water Management and Conservation**

The Okanagan Falls Irrigation District (OKFID) is the owner operator of the Okanagan Falls water system, and not affiliated with the Regional District. It is recommended that the Regional District, with support from the Ministry, write a letter to the OKFID requesting that they institute a water conservation program to minimize the amount of wastewater being generated and delivered to the wastewater collection system for treatment. The letter should stress the benefits to the OKFID of water use reduction providing a savings to the OKFID as well as a reduction in wastewater treatment cost to the Regional District. It is possible that water conservation programs could be developed in a partnership with the Regional District who may be eligible for grant monies to offset the cost of water saving toilets and showerheads.

### **3.4 Wastewater Collection System - Infiltration, Inflow and Cross Connections**

Inspect and maintain the Wastewater Collection System works so as to minimize the possibility of cross connections between the storm sewer and the sanitary sewer systems, to minimize infiltration of groundwater, to minimize inflow of water from basement sump pumps and roof drains, and minimize exfiltration of the collected wastewater from the collection system to be discharged to the Okanagan River channel. Report of efforts made to reduce infiltration, inflow and cross-connections are to be included in the annual report each year.

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### 3.5 Sanitary Sewer Bylaw

In order to minimize the potential effect of heavy metals or other toxic materials in the effluent and/or sludge, the Regional District must prepare, or review and if necessary update, and implement a Sanitary Sewer Bylaw to regulate the input of such wastes to the wastewater collection system. The installation of devices to process household putrescible waste for disposal to the wastewater collection system should be prohibited. Copy of existing Influent Bylaws, or amendments, or similar bylaws or building codes, is to be included in the first Annual Report and any amendments submitted with subsequent annual reports.

The Regional District is strongly advised to seek the active cooperation of the public through a proactive public education program.

### 3.6 Contingency Plan

Prepare a Contingency Plan that will address the appropriate course of action to be taken in any particular preconceived emergency situation, and submit a copy of the Contingency Plan to the Director by April 30, 2013. The Contingency Plan must include Spill Procedures including leaks, toxic substances in plant influent, chlorine and sulphur dioxide leaks or spills and any potential point of concern in the collection, treatment and disposal systems. Attention is to be given to public safety and the protection of the environment. The plan is to be continually updated as necessary to reflect the current operation. Any revisions to the Contingency Plan are to be submitted annually to the Director.

### 3.7 Sludge Management Plan

The management of sludge produced by the subject operation, whether at the treatment plant site or at a site remote from the treatment plant site, must be in accordance with the Organic Matter Recycling Regulation (OMRR). Sludge sampling and testing must comply with the OMRR.

### 3.8 Odours

The Regional District must implement measures to control odour from the sewage collection system and treatment plant operations by using the best available technology. Should any aspect of the operation give rise to objectionable odours, appropriate remedial measures may be required, when directed in writing by the Director.

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### 3.9 Fencing

The Regional District must erect and maintain a fence around the Okanagan Falls AWWTP, the existing fence around the exfiltration lagoons and such other areas as required by the Director. The height and type of fencing must meet the approval of the Director.

### 3.10 Signage

The Regional District must erect a sign at the main entrance to the Okanagan Falls AWWTP, and one along the alignment of the outfall diffuser, above the high water mark advising of the presence of an underwater pipe. The signage must meet the signage criteria specified in MWR.

### 3.11 Disinfection

- 3.11.1** Treated effluent to be discharged to the Okanagan River channel, by the outfall pipe, must undergo disinfection via ultraviolet. Multiple banks of UV lamps are to be maintained so as to be capable of full disinfection with one unit out of operation for maintenance.

E. Coli levels in the treated effluent must not exceed 50 CFU/100 ml in any given sample before it is discharged to the Okanagan River channel, by the outfall pipe during the winter season. During the summer season i.e., April 15 to October 15 of any calendar year, the level of E. Coli in any given sample of treated effluent intended for discharge to the Okanagan River channel or use for beneficial purposes including irrigation must not exceed 2.2 CFU/100 ml.

Exceedances of either of these seasonal limits including those detected by in-house E.Coli monitoring must be reported to the Director within five business days of the occurrence.

The Regional District will strive to consistently comply with effluent E. Coli levels of 2.2 CFU/100 ml.

- 3.11.2** If chlorination is to be used for disinfection, the Regional District must maintain a total chlorine residual of 0.5 mg/L in treated effluent immediately prior to de-chlorination, and a total chlorine residual of 0.0 mg/L after de-chlorination and prior to the discharge of the treated

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effluent to the Okanagan River channel.

### **3.12 Reclaimed Water Irrigation**

- 3.12.1 Reclaimed water discharged to the ground by irrigation is to comply with all requirements of the MWR.
- 3.12.2 Reclaimed water utilized for irrigation outside the plant site may, in addition to the above, be required to carry a disinfectant residual within the irrigation system and otherwise comply with the MWR.

### **3.13 Ex-filtration Lagoons Decommissioning**

Monitoring of the groundwater at the three ex-filtration lagoons located at the location of the point of discharge in Plan M15197, Similkameen Division of Yale District, must continue on a quarterly basis unless otherwise requested by the Director, for a minimum of three years from the date that the discharge of effluent to the lagoons ceases.

### **3.14 Surface Water Diversionary Works**

Surface water must be intercepted and diverted away from the effluent treatment to the greatest extent possible.

## **4. MONITORING REQUIREMENTS**

### **4.1 Sampling and Analytical Procedures**

- 4.1.1 Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc. Sampling must be carried out in accordance with the procedures described in the most recent edition of the "British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publications Centre, P. O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). A copy of

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the manual is also available for inspection at all regional Environmental Protection offices.

- 4.1.2** Analyses must be carried out in accordance with the procedures described in the most recent edition of the "British Columbia Environmental Laboratory Methods Manual for the Analysis of Water, Wastewater, Sediment, Biological Materials and Discrete Ambient Air Samples", or by suitable alternative procedures as authorized by the Director.

A copy of the above manual may be purchased from the Queen's Printer Publication Centre, P. O. Box 9452, Stn. Prov. Govt. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or (250) 387-6409). The manual is also available for review at all regional Environmental Protection offices. Copies of the manuals mentioned above are available on-line at: <http://www.publications.gov.bc.ca>

- 4.1.3** The Regional District is required to follow the terms and conditions of the Environmental Data Quality Assurance Regulation (EDQAR). Ten percent of the samples collected must be duplicated to provide data quality assurance. Quality control information generated by the Regional District's lab while analyzing parameters required by this Operational Certificate must also be provided with the data required to be reported.

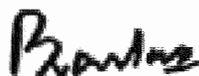
- 4.1.4** The Regional District must ensure that all data collected under the following monitoring plans are uploaded into the Environmental Monitoring System (EMS database). Further, the Regional District must ensure that the available historic data for all the monitoring sites contained in this monitoring plan is also uploaded into EMS by December 31, 2013.

## **4.2 Influent Sampling Program**

- 4.2.1** Install and maintain a suitable sampling facility (EMS site number E292549) and obtain a grab sample of the plant influent once each quarter during a period of maximum daily flow for check analysis of nutrient levels.

- 4.2.2** Obtain analyses of the influent sample for the following:  
Biological Oxygen Demand<sub>5</sub>, in mg/L;  
Total phosphorus, ortho phosphorus, expressed as P in mg/L;

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total nitrogen expressed as N in mg/L; and  
pH.

**4.3 Effluent Sampling Program**

**4.3.1** Install and maintain a suitable sampling facility (EMS site number E292449) and obtain a composite sample of the effluent prior to discharge, daily for in-house analysis of ortho-P and pH. The sample is to consist of four grab samples taken over a two-hour period at maximum flow and mixed to form a single sample for subsequent analysis. A proportional continuous sampler may be used. Proper care should be taken in sampling, storing and transporting the samples to adequately control temperature and avoid contamination, breakage, etc.

**4.3.2** Obtain an effluent sample prior to discharge monthly for analysis by an independent accredited lab. Weekly samples may be completed in the laboratory onsite provided that quality control is maintained to the satisfaction of the Director. The following will be tested;

<b>Parameter</b>	<b>Frequency</b>	<b>Type</b>
flow	continuous	In-line flow meter
temperature	Daily or continuous	Grab or meter
BOD5	monthly	Grab
COD	weekly	Grab
pH	Daily or continuous	Grab or meter
total N	monthly	Grab
ammonia N	weekly	Grab
nitrate N	weekly	Grab
nitrite N	monthly	Grab
TKN	monthly	Grab
organic N	monthly	Grab
total P	weekly	Grab
dissolved P	monthly	Grab
ortho-phosphate	weekly	Grab
total suspended solids	monthly	Grab
fecal coliforms	weekly	Grab
E. coli	weekly	Grab
Toxicity (96-hour LC50)	annually	Grab

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**4.3.2** Monitoring for E.coli using an accredited lab, or in the laboratory onsite at the discretion of the Director, must be conducted on a weekly basis provided:

- (a) the individual results for any two consecutive E. Coli samples (either in-house or accredited lab samples) do not exceed 2.2 CFU/100 ml.

Should two consecutive results exceed 2.2 CFU/100 ml E. Coli, daily testing for E.coli is required using an accredited lab for a minimum of two days, or until the individual results of two consecutive daily tests are all less than 2.2 CFU/100 ml.

**4.3.3** Annually obtain and analyze the treated effluent sample for full chemical analysis including main cations, anions, and total metals (aluminum, arsenic, cadmium, calcium, chromium, cobalt, copper, iron, manganese, mercury, molybdenum, nickel, lead, selenium, silver, sodium and zinc).

**4.3.4** Provide and maintain a suitable flow measuring device and record once per day the effluent volume discharged to the Okanagan River channel and the volume utilized for beneficial purposes including irrigation that is discharged to the ground, over a 24-hour period. Record the flows for each calendar month and for each calendar year.

**4.3.5** Utilizing Okanagan River flow data available on the internet at the Water Survey of Canada Real time data site, record daily flows measured at Okanagan River @ Okanagan Falls (08NM002) in order to identify flows and calculate the degrees of dilution available. Flow data must be downloaded not less than once per week.

#### **4.4** Sludge Sampling Program

**4.4.1** Obtain a representative sample of the sludge being produced at the treatment plant at least once every six months (EMS site number E292609).

**4.4.2** Obtain analyses consistent with OMRR for Class B biosolids (Column 3 of Schedule 4, Quality Criteria) of the sludge sample for the following:

- (a) Arsenic, mg/kg;
- (b) Cadmium, mg/kg;
- (c) Chromium, mg/kg;

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- (d) Cobalt, mg/kg;
- (e) Copper, mg/kg;
- (f) Lead, mg/kg;
- (g) Mercury, mg/kg;
- (h) Molybdenum, mg/kg;
- (i) Nickel, mg/kg;
- (j) Selenium, mg/kg;
- (k) Zinc, mg/kg;

**4.4.3** Install and maintain a system for measuring and recording the volumes of sludge produced, the location where the sludge was discharged, and the amount of sludge discharged at each location.

**4.5 Groundwater and Spray Irrigation Monitoring Program**

The Regional District must have a Qualified Professional assess and develop an irrigation plan for any and all sites that utilize reclaimed water for irrigation purposes. The irrigation plan must clearly document appropriate agronomic loading rates for each site. Each site and irrigation plan should be reassessed every five years or whenever major changes to the site occur and must include auditing of irrigation duration and application rates. The first such evaluation is required within two years of the issuance of this Operational Certificate.

**4.6 Surface Water Impact Sampling and Monitoring Program**

The Regional District is required to undertake Okanagan River and Vaseux Lake sampling and monitoring as specified below.

**4.6.1 Sampling Sites**

A surface water impact monitoring program is required on the Okanagan River and Vaseux Lake. The monitoring program, as a minimum, must consist of one set of samples taken monthly at hydrologically appropriate locations upstream and downstream of the effluent diffuser as follows. Site locations and sampling procedures are to be approved in writing, by the Director.

**Okanagan River sites**

- 1) Upstream site – 50 metres or less upstream of the weir adjacent

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- to the AWWTP;
- 2) Edge of initial dilution zone (IDZ) – 100 metres downstream of the diffuser;
  - 3) Downstream of IDZ – 500 metres downstream of diffuser; and
  - 4) Downstream of Vaseux Lake

**Vaseux Lake site**

Central deep location (EMS#220331: site co-ordinates 49.300000, 119.533300)

**4.6.2 Analyses**

Obtain analyses of the Okanagan River sites samples for the following:

Parameter	Frequency	Type
temperature	monthly	meter
dissolved oxygen	monthly	meter
specific conductivity	monthly	meter
pH	monthly	meter
total suspended solids	monthly	grab
ions (hardness, Cl, SO <sub>4</sub> , Na, K, Mg)	monthly	grab
nitrogen, (total N, TKN, organic N, nitrate, nitrite, ammonia)	monthly	grab
phosphorus (total P, dissolved P, ortho-phosphate)	monthly	grab
microbiological (October – April)	monthly	grab
microbiological (May – September)	weekly for sites 1, 2 and 3; monthly for site 4	grab
benthic macro-invertebrates (if suitable habitat is available)	annually (late summer to early fall)	follow Environment Canada CABIN protocol

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Obtain analyses of the Vaseux Lake site samples for the following:

Parameter	Frequency	Type	Sampling Depths		
			Epilimnion	Hypolimnion	Vertical Profile
temperature	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
dissolved oxygen	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
specific conductivity	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
pH	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
ions (hardness, Cl, SO <sub>4</sub> , Na, K, Mg)	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite	20, 22, 24m composite	n/a
nitrogen, (total N, TKN, organic N, nitrate, nitrite, ammonia)	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite	20, 22, 24m composite	n/a
phosphorus (total P, dissolved P, ortho-phosphate)	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite	20, 22, 24m composite	n/a
chlorophyll-A	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite (2 x 1 litre replicate)	20, 22, 24m composite (2 x 1 litre replicate)	n/a
secchi depth (water clarity)	monthly (March (or ice off) to November)	secchi disc	at surface	n/a	n/a

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The Regional District must submit the proposed method of determining the locations to the Director for approval prior to the commencement of sampling.

Occasional full physical, biological, and chemical analysis of water, sediments and benthic organisms at the outfall location and at reference locations may be required at the discretion of the Director.

#### **4.7 Basin-wide Collaborative Lake Monitoring Program**

The Regional District may be required to participate in the development, funding and implementation of any basin-wide collaborative lake monitoring initiative, if required by the Director in writing, which would help track lake water quality, set water quality objectives and lead to better determination of nutrient loading limits. Funding mechanisms and scope of work will be developed collaboratively with all appropriate stakeholders.

#### **4.8 Additional Phosphorus Treatment**

In the event that significant levels of phosphorus are found in surface waters, as a result of effluent discharge, a higher level of phosphorus removal may be specified by the Director.

#### **4.9 Environmental Impact**

Inspections of the discharge will be carried out by Environmental Protection Division staff as a part of the routine permit inspection procedure. Based on these inspections and any other information available to the Director on the effect of the discharge on the receiving environment, the Regional District may be required to undertake additional monitoring and/or install additional pollution control works.

#### **4.10 Changes to Sampling and Monitoring Program**

On the basis of findings during routine inspections and any other information related to the effect of the discharge on the receiving environment, the Director may allow reductions to, or require additional sampling and monitoring of the discharge and receiving environment.

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## 5. REPORTING

### 5.1 General Reporting

- 5.1.1 Maintain the monitoring data required in Section 4 for inspection.
- 5.1.2 The influent/effluent water quality analyses and flow data is to be submitted to the Director such that they are received by the Director within 30 days of the results being completed in-house or being sent out by the testing agency.
- 5.1.3 Monitoring data must be submitted in an electronic and printed format satisfactory to the Director. All monitoring data must be entered into the Environmental Monitoring System (EMS) electronically within sixty days of the end of a calendar year for the year's monitoring. Further, the Regional District must ensure that the available historic data for all the monitoring sites contained in this monitoring plan is also uploaded by December 31, 2013. Electronic Data Transfer information is available at: [http://www.env.gov.bc.ca/epd/ems\\_edt.html](http://www.env.gov.bc.ca/epd/ems_edt.html) and further information is available at: [http://www.env.gov.bc.ca/air/wamr/labsys/ems\\_wr/index.html](http://www.env.gov.bc.ca/air/wamr/labsys/ems_wr/index.html).

### 5.2 Annual Reporting

Annually, the Regional District must compile all data, as required by this Operational Certificate, and combine into a single report, prepared by a qualified professional (QP) and submit the report to the Director by April 30 of each year for the previous calendar year. This report must be in a format suitable for review by the public and/or other government agencies, and include, but not be limited to, data interpretation, trend analysis with graphs of the historic and current water quality data to help determine any trends or concerns with respect to the various standards contained or described in this Operational Certificate. The Annual Report must also include an Executive Summary that contains a statement by a QP that all monitoring and reporting requirements of the Operational Certificate have been met for the reporting year. Copies of all raw data, as required by the EDQAR are to be attached as appendices to the report.

Date issued: May 6, 2013



Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan

Maintain and submit records of the following as a part of the annual report:

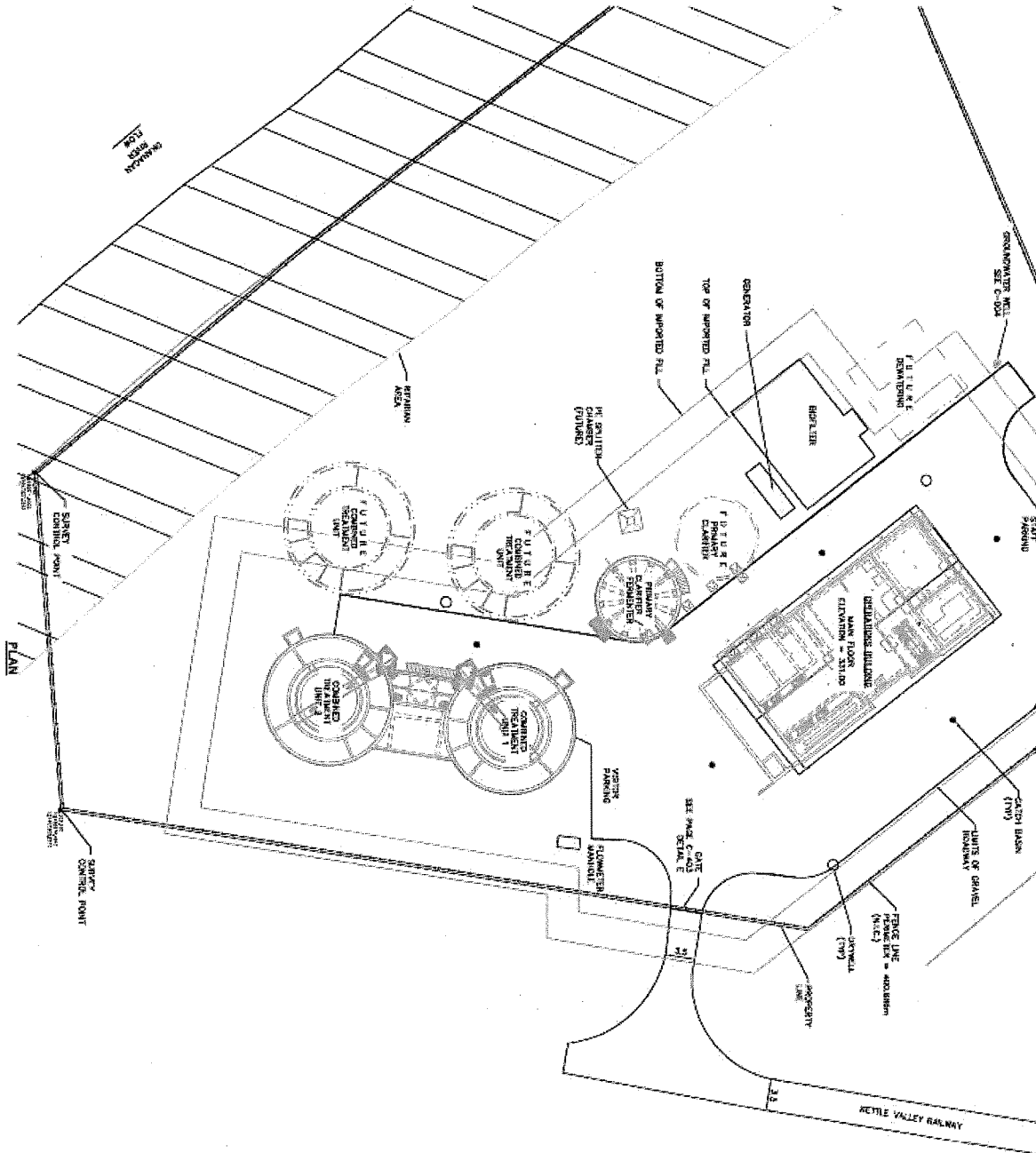
- 5.2.1 Records of influent, effluent analyses and flow data for inspection by the Director and /or his/her delegate.
- 5.2.2 Records of effluent water balance, which would include the plant influent flow, the volume of effluent discharged to the Okanagan River channel, Okanagan River discharge data, other volumetric information, and the volume of effluent utilized for irrigation.
- 5.2.3 Records of the duration, intensity, acreage, location and type of reclaimed water irrigation.
- 5.2.4 Records of the efforts to reduce infiltration, inflow and cross connections.
- 5.2.5 Records of efforts to administer the Sanitary Sewer and Storm Sewer by-law(s). Include as an attachment, any amendments to the influent wastes by-law(s) that have been made during the past year.
- 5.2.6 Records of withdrawal of sludge from the wastewater treatment plant, records of analyses and the location(s) used for disposal and/or utilization.
- 5.2.7 Records of total phosphorus (expressed as total P in kilograms) discharged to the Okanagan River channel and Vaseux Lake monthly and during the last calendar year.
- 5.2.8 Records of efforts to reduce infiltration, inflow and cross connections.
- 5.2.9 Records of efforts to implement water conservation initiatives.
- 5.2.10 Records of data collected under the EDQAR.

Date issued: May 6, 2013



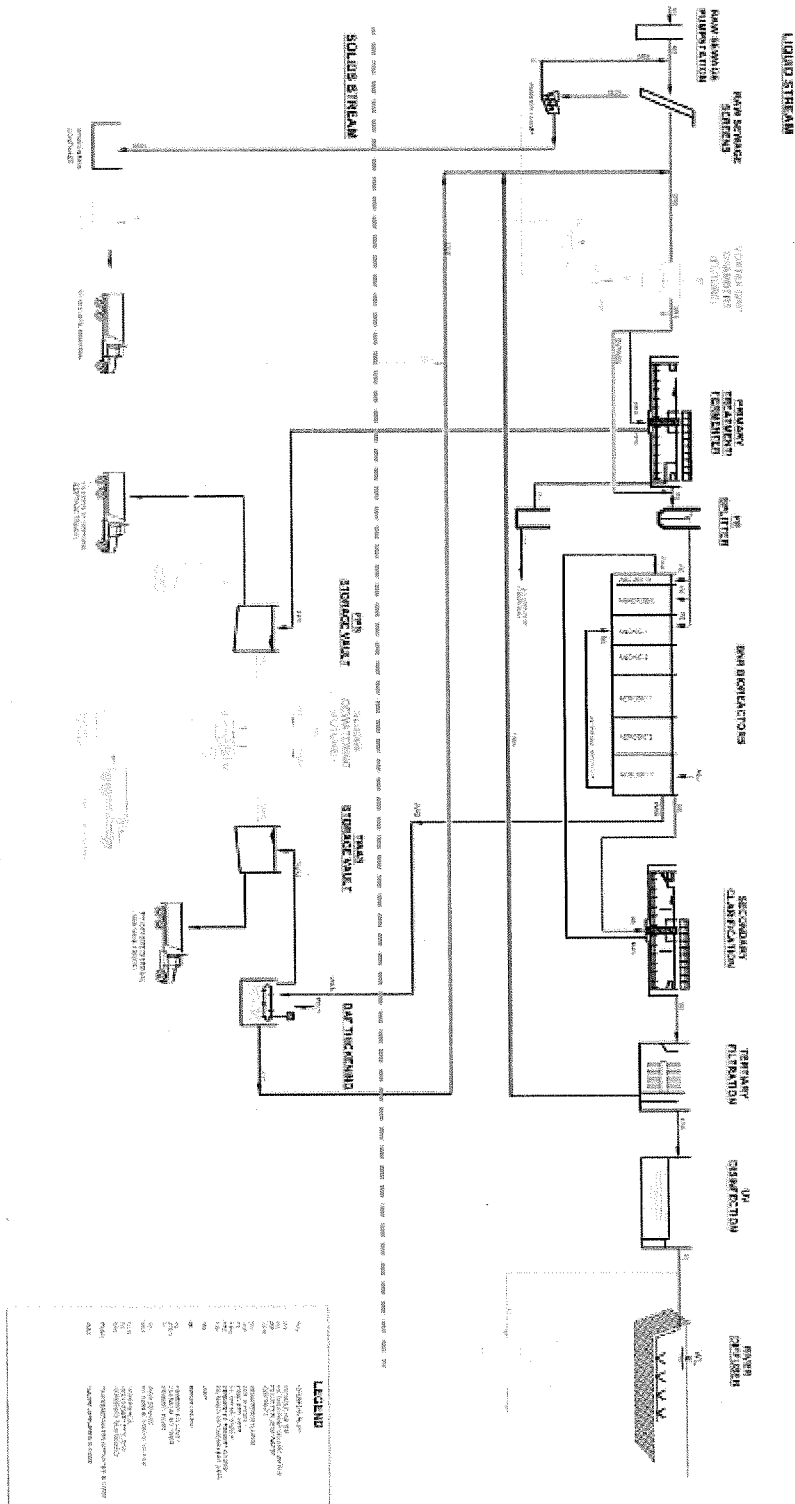
Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan

SITE PLAN A



Date issued: May 6, 2013

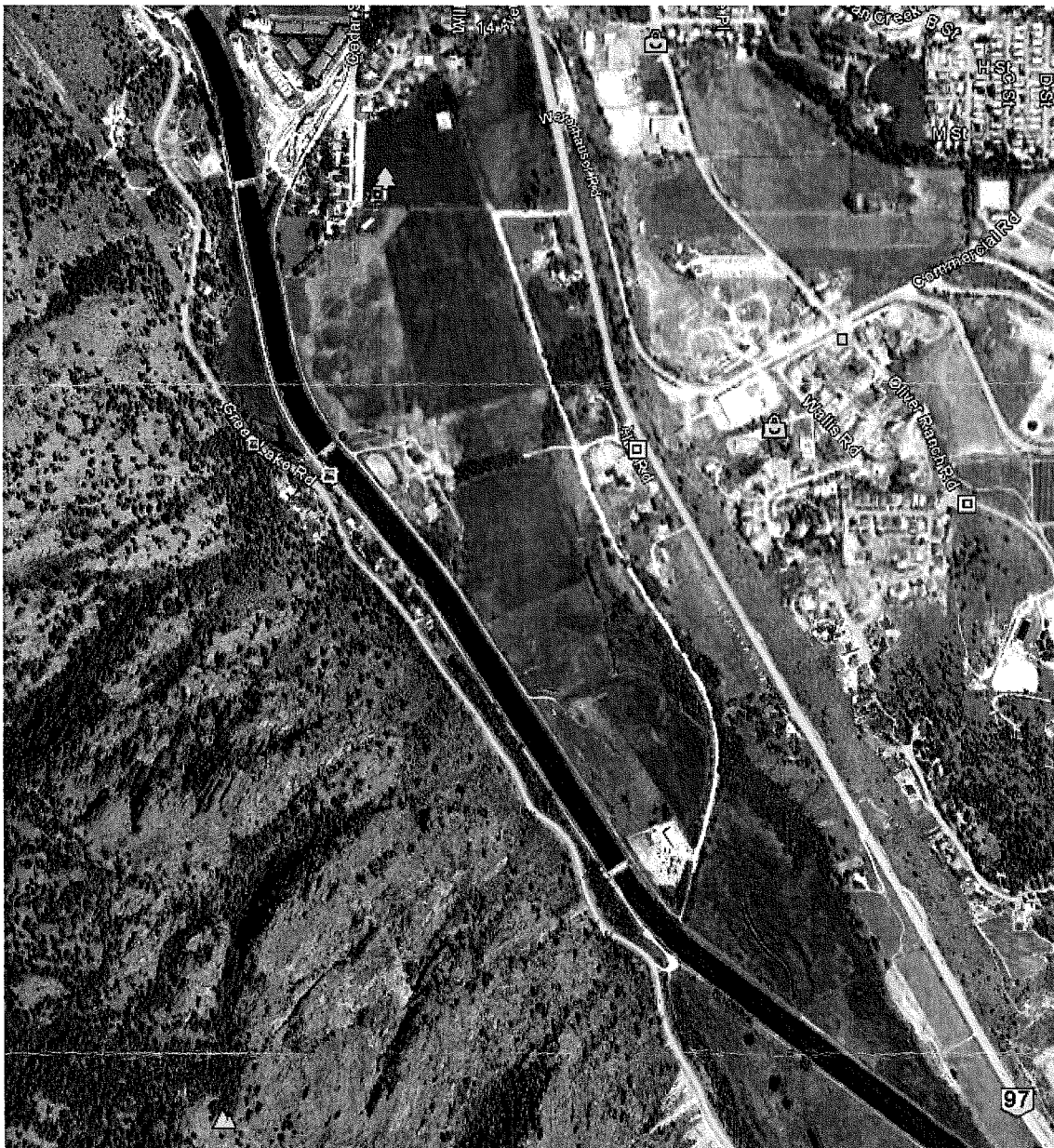
Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan



Date issued: May 6, 2013

*Barlas*  
Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan

### LOCATION MAP



Date issued: May 6, 2013

A handwritten signature in black ink, appearing to read 'Barlas'.

Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan

## **APPENDIX B**

### **Influent 2020 Monitoring Database Summary and RDOS Process Monitoring Data**



## Appendix B

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

<b>Sampling Location</b>	Influent	Influent	Influent	Influent	Influent	Influent
<b>Date Sampled</b>	21-Jan-20	16-Apr-20	22-Jul-20	22-Jul-20	22-Jul-20	14-Oct-20
<b>Lab Sample ID</b>	0011324-01	0041271-01	0072401-01	0072401-02	0072401-03	20J1339-01
<b>Sample Type</b>	Normal	Normal	Normal	Duplicate	Duplicate	Normal

Analyte	Unit							Average	Minimum	Maximum	Standard Deviation
<b>Field Results</b>											
pH		7.87	7.47	7.49			7.74	7.64	7.47	7.87	0.20
Temperature	°C	10.1	11.3	18.7			17.4	14.4	10.1	18.7	4.3
<b>Lab Results</b>											
<b>General</b>											
Biochemical oxygen demand	mg/L	238	160	239	225	256	241	227	160	256	34
pH		6.9	6.96	6.67	6.63	6.62	6.89	6.78	6.62	6.96	0.15
<b>Nutrients</b>											
Ammonia (total, as N)	mg/L	40.4	29.8	35.0	35.7	31.6	38.1	35.1	29.8	40.4	3.9
Nitrate (as N)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0
Total nitrogen	mg/L	61.4	48.7	68.7	65.8	69.2	62.1	62.7	48.7	69.2	7.6
Total kjeldahl nitrogen	mg/L	61.4	48.7	68.7	65.8	69.2	62.1	62.7	48.7	69.2	7.6
Orthophosphate (dissolved, as P)	mg/L	4.21	3.45	4.60	4.63	4.56	4.15	4.27	3.45	4.63	0.45
Phosphorus (total, APHA 4500-P)	mg/L	7.78	6.39	7.80	7.71	7.81	5.99	7.25	5.99	7.81	0.83



## Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
No Guideline	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<b>No Guideline</b>	Highlighted value exceeds No Guideline
SL Criteria Override	Highlighted value exceeds sampling location criteria override

## Water Quality Results

DATE ANALYZED	DATE COMPOSITE STARTED	TIME COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE PHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	pH Composite (RDOS)	COMMENTS
dd-mm-yr	dd/mm/yr	hh:mm		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
	01-Jan-20										No sample as sampling line was plugged
03-Jan-20	02-Jan-20	11:02	KM			27.3				7.39	
06-Jan-20	03-Jan-20	10:32	KM			32.1				7.36	
06-Jan-20	04-Jan-20	9:35	KM			30.0				7.48	
06-Jan-20	05-Jan-20	8:44	KM			37.9				7.44	
07-Jan-20	06-Jan-20	9:24	KM	4.21	4.77	36.3	0.301	6.4	43.0	7.37	
08-Jan-20	07-Jan-20	10:43	KM			38.7				7.37	
09-Jan-20	08-Jan-20	10:45	KM			40.3				7.38	
14-Jan-20	09-Jan-20	11:20	KM			38.1				7.3	
14-Jan-20	10-Jan-20	9:42	KM			35.8				7.35	Sample jug frozen. Defrosted before analyses.
14-Jan-20	11-Jan-20	10:22	KM			34.2				7.36	Sample jug frozen. Defrosted before analyses.
14-Jan-20	12-Jan-20	10:15	KM			34.3				7.37	Sample jug frozen. Defrosted before analyses.
14-Jan-20	13-Jan-20	10:07	KM			34.5				7.41	
15-Jan-20	14-Jan-20	11:15	KM	4.01	4.51	34.8	0.249	5.9	40.9	7.49	
	15-Jan-20	10:30	KM								Very litte samples as line frozen inside fridge
	16-Jan-20		KM								No sample
	17-Jan-20										No sample
	18-Jan-20										No sample
	19-Jan-20										No sample
	20-Jan-20										No sample
23-Jan-20	21-Jan-20	8:48	KM			31.1				7.34	
23-Jan-20	22-Jan-20	12:50	KM			32.5				7.4	
24-Jan-20	23-Jan-20	10:00	KM	3.77	4.82	34.9	0.290	2.5	37.7	7.41	
27-Jan-20	24-Jan-20	10:31	KM			39.9				7.50	
27-Jan-20	25-Jan-20	8:59	KM			33.8				7.44	
27-Jan-20	26-Jan-20	8:51	KM			33.6				7.37	
29-Jan-20	27-Jan-20	11:30	KM			35.7				7.35	
29-Jan-20	28-Jan-20	10:50	KM	4.17	4.96	35.6	0.276	2.5	38.4	7.36	
31-Jan-20	29-Jan-20	10:56	KM			34.7				7.35	
31-Jan-20	30-Jan-20	10:01	KM			32.6				7.33	
04-Feb-20	31-Jan-20	10:35	KM			34.5				7.27	
04-Feb-20	01-Feb-20	12:25	KM			31.4				7.30	
04-Feb-20	02-Feb-20	9:07	KM			32.7				7.34	
04-Feb-20	03-Feb-20	9:09	KM			30.1				7.33	
05-Feb-20	04-Feb-20	8:45	KM			25.0				7.33	
07-Feb-20	05-Feb-20	10:18	KM	4.15	4.85	38.0	0.330	3.7	42.0	7.42	
07-Feb-20	06-Feb-20	10:55	KM			43.3				7.5	
10-Feb-20	07-Feb-20	8:52	KM			33.1				7.35	
10-Feb-20	08-Feb-20	11:45	KM			31.6				7.35	
10-Feb-20	09-Feb-20	13:20	KM			33.2				7.36	
12-Feb-20	10-Feb-20	9:20	KM			29.0				7.34	
12-Feb-20	11-Feb-20	10:25	KM	3.58	5.15	32.1	0.267	6.9	39.3	7.33	
14-Feb-20	12-Feb-20	10:03	KM			35.7				7.33	
14-Feb-20	13-Feb-20	13:18	KM			32.3				7.38	
18-Feb-20	14-Feb-20	10:40	KM			31.2				7.28	
18-Feb-20	15-Feb-20	10:10	KM			32.4				7.38	
18-Feb-20	16-Feb-20	9:49	KM			33.2				7.41	
18-Feb-20	17-Feb-20	9:49	KM			32.8				7.27	
19-Feb-20	18-Feb-20	11:00	KM	3.91	4.85	36.3	0.452	8.3	45.1	7.39	
21-Feb-20	19-Feb-20	11:00	KM			42.1				7.34	
21-Feb-20	20-Feb-20	9:05	KM			30.5				7.58	
24-Feb-20	21-Feb-20	9:50	KM			32.7				7.34	

DATE ANALYZED	DATE COMPOSITE STARTED	TIME COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE PHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	pH Composite (RDOS)	COMMENTS
dd-mm-yr	dd/mm/yr	hh:mm		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
24-Feb-20	22-Feb-20	9:45	KM			30.8				7.3	
24-Feb-20	23-Feb-20	11:30	KM			31.6				7.26	
26-Feb-20	24-Feb-20	9:50	KM			33.6				7.42	
26-Feb-20	25-Feb-20	9:40	KM	3.73	4.26	35.2	0.329	3.0	38.5	7.32	
	26-Feb-20	11:02									No sample - line plugged
	27-Feb-20										No sample - line plugged
02-Mar-20	28-Feb-20	10:15	KM			36.9				7.68	
02-Mar-20	29-Feb-20	10:04	KM			30.1				7.63	
02-Mar-20	01-Mar-20	8:16	KM			32.0				7.6	
04-Mar-20	02-Mar-20	10:35	KM			35.5				7.46	
04-Mar-20	03-Mar-20	13:50	KM	3.80	4.37	33.7	0.437	2.8	36.9	7.44	
06-Mar-20	04-Mar-20	9:10	KM			28.9				7.42	
06-Mar-20	05-Mar-20	11:00	KM			31.1				7.45	
09-Mar-20	06-Mar-20	9:25	KM			29.3				7.46	
09-Mar-20	07-Mar-20	10:45	KM			30.2				7.39	
09-Mar-20	08-Mar-20	13:46	KM			29.8				7.38	
11-Mar-20	09-Mar-20	10:00	KM			30.7				7.44	
11-Mar-20	10-Mar-20	14:03	KM	3.30	4.01	30.0	0.288	7.3	37.6	7.43	
13-Mar-20	11-Mar-20	10:50	KM			34.8				7.39	
13-Mar-20	12-Mar-20	10:22	KM			36.7				7.48	
16-Mar-20	13-Mar-20	8:00	KM			29.9				7.41	Defrosted as partially frozen
16-Mar-20	14-Mar-20	9:40	KM			29.2				7.45	
16-Mar-20	15-Mar-20	10:00	KM			23.7				7.46	
	16-Mar-20	11:15									Sampler line plugged
	17-Mar-20										Sampler line plugged
	18-Mar-20										Sampler line plugged
	19-Mar-20										Sampler line plugged
	20-Mar-20										Sampler line plugged
	21-Mar-20										Sampler line plugged
	22-Mar-20										Sampler line plugged
25-Mar-20	23-Mar-20	11:00	KM			39.3				7.60	
25-Mar-20	24-Mar-20	11:04	KM			32.1				7.57	
27-Mar-20	25-Mar-20	8:53	KM			32.6				7.48	
27-Mar-20	26-Mar-20	10:35	KM	3.98	4.56	39.0	0.385			7.55	
30-Mar-20	27-Mar-20	11:02	KM			28.4				7.67	
30-Mar-20	28-Mar-20	13:35	KM								Very little sample collected
30-Mar-20	29-Mar-20	11:30	KM			56.5				7.77	Lots of solids in sample and sample had overflowed container
<b>Do to problems with sampler line becoming plugged and sample overflowing container, the influent composite sampler was disconnected for the remainder of 2020</b>											
<b>Average</b>				3.87	4.65	33.7	0.33	4.93	39.94	7.41	
<b>n</b>				11	11	72	11	10	10	72	
<b>Std. Dev.</b>				0.28	0.34	4.56	0.07	2.26	2.70	0.10	
<b>Min</b>				3.30	4.01	23.7	0.25	2.51	36.90	7.26	
<b>Max</b>				4.21	5.15	56.5	0.45	8.35	45.10	7.77	

# **APPENDIX C**

## **Influent Monitoring 2020 Lab Reports**



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0011324
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-01-22 12:10 / 9°C
<b>PO NUMBER</b>	OK Falls WW	<b>REPORTED</b>	2020-01-28 15:17
<b>PROJECT</b>	OK Falls WWTP QI	<b>COC NUMBER</b>	B66313
<b>PROJECT INFO</b>			

**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.

**Work Order Comments:**

Custody Seals Intact: YES

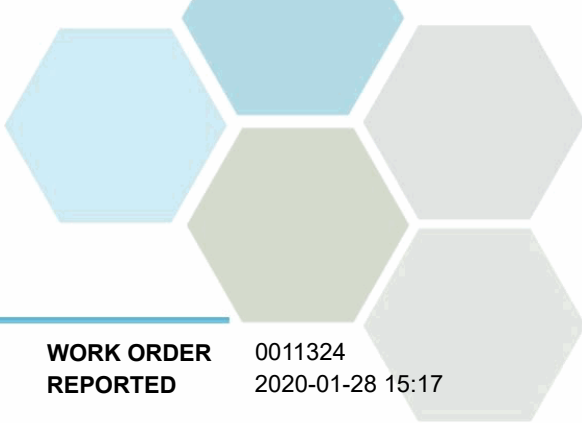
*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

**Authorized By:**

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

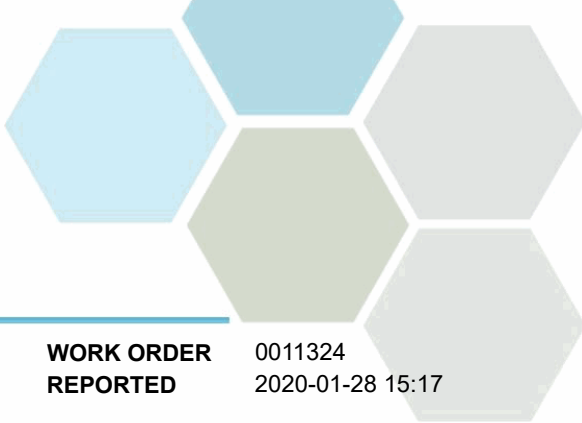
**WORK ORDER REPORTED** 0011324  
2020-01-28 15:17

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Influent Grab (0011324-01)   Matrix: Water   Sampled: 2020-01-21 10:12</b>					<b>PRES</b>
<b>Anions</b>					
Nitrate (as N)	< 0.010	0.010	mg/L	2020-01-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-01-24	
Phosphate (as P)	<b>4.21</b>	0.0050	mg/L	2020-01-24	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>61.4</b>	2.00	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	<b>40.4</b>	0.020	mg/L	2020-01-23	
BOD, 5-day	<b>238</b>	2.0	mg/L	2020-01-28	
Nitrogen, Total Kjeldahl	<b>61.4</b>	0.050	mg/L	2020-01-23	
pH	<b>6.90</b>	0.10	pH units	2020-01-27	HT2
Phosphorus, Total (as P)	<b>7.78</b>	0.0020	mg/L	2020-01-23	

**Sample Qualifiers:**

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

PRES Sample has been preserved for NH3, TKN, TP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 0011324  
2020-01-28 15:17

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
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

*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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)





## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QI

**PROJECT INFO**

**WORK ORDER** 0041271

**RECEIVED / TEMP** 2020-04-16 11:30 / 6°C  
**REPORTED** 2020-04-23 14:56

**COC NUMBER** B78515

### Introduction:

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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.

### Work Order Comments:

Custody Seals Intact: YES

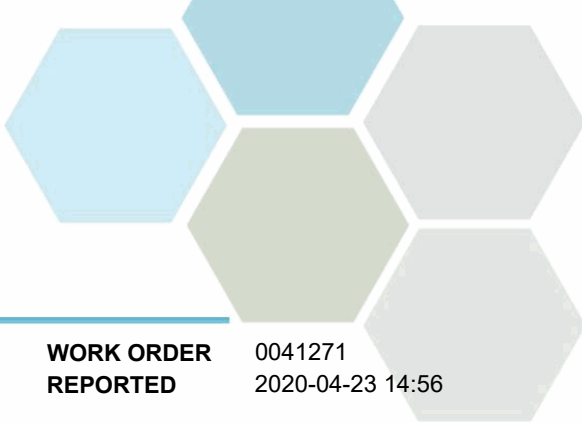
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 0041271  
2020-04-23 14:56

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Influent Grab (0041271-01)   Matrix: Water   Sampled: 2020-04-16 09:15</b>					<b>PRES</b>
<b>Anions</b>					
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	<b>3.45</b>	0.0050	mg/L	2020-04-17	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>48.7</b>	2.00	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	<b>29.8</b>	0.050	mg/L	2020-04-21	
BOD, 5-day	<b>160</b>	2.0	mg/L	2020-04-23	
Nitrogen, Total Kjeldahl	<b>48.7</b>	0.050	mg/L	2020-04-22	
pH	<b>6.96</b>	0.10	pH units	2020-04-17	HT2
Phosphorus, Total (as P)	<b>6.39</b>	0.0020	mg/L	2020-04-22	

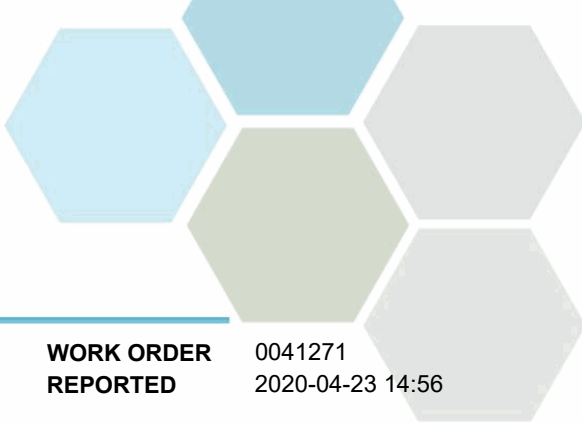
**Field Blank - Influent (0041271-02) | Matrix: Water | Sampled: 2020-04-16 09:20**

**PRES**

<b>Anions</b>					
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-04-17	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-04-21	
BOD, 5-day	< 5.9	2.0	mg/L	2020-04-23	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2020-04-22	
pH	<b>4.36</b>	0.10	pH units	2020-04-17	HT2
Phosphorus, Total (as P)	< 0.0020	0.0020	mg/L	2020-04-22	

**Sample Qualifiers:**

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
PRES Sample has been preserved for NH3, TKN and TP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 0041271  
2020-04-23 14:56

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
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

*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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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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](mailto:acrump@caro.ca)

## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QI

**PROJECT INFO**

**WORK ORDER** 0072401

**RECEIVED / TEMP** 2020-07-23 12:15 / 14°C  
**REPORTED** 2020-07-30 16:47

**COC NUMBER** B67420

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

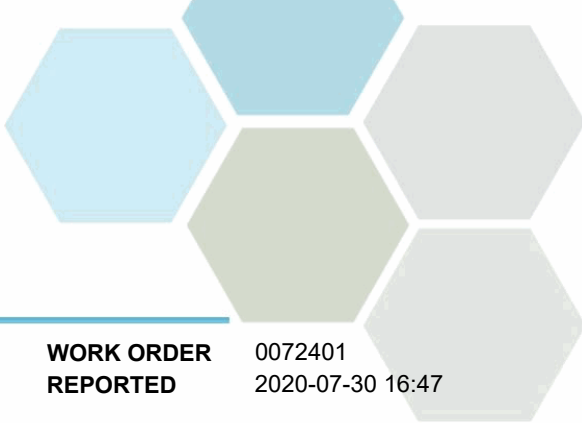
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 0072401  
2020-07-30 16:47

Analyte	Result	RL	Units	Analyzed	Qualifier
---------	--------	----	-------	----------	-----------

**Influent Grab (0072401-01) | Matrix: Water | Sampled: 2020-07-22 09:43**

PRES

**Anions**

Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-26	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-26	HT1
Phosphate (as P)	<b>4.60</b>	0.0050	mg/L	2020-07-26	HT1

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>68.7</b>	2.00	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>35.0</b>	0.050	mg/L	2020-07-27	
BOD, 5-day	<b>239</b>	2.0	mg/L	2020-07-30	
Nitrogen, Total Kjeldahl	<b>68.7</b>	0.050	mg/L	2020-07-29	
pH	<b>6.67</b>	0.10	pH units	2020-07-28	HT2
Phosphorus, Total (as P)	<b>7.80</b>	0.0050	mg/L	2020-07-30	

**REP1 Influent Grab (0072401-02) | Matrix: Water | Sampled: 2020-07-22 09:43**

PRES

**Anions**

Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-26	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-26	HT1
Phosphate (as P)	<b>4.63</b>	0.0050	mg/L	2020-07-26	HT1

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>65.8</b>	2.00	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>35.7</b>	0.050	mg/L	2020-07-27	
BOD, 5-day	<b>225</b>	2.0	mg/L	2020-07-30	
Nitrogen, Total Kjeldahl	<b>65.8</b>	0.050	mg/L	2020-07-29	
pH	<b>6.63</b>	0.10	pH units	2020-07-28	HT2
Phosphorus, Total (as P)	<b>7.71</b>	0.0050	mg/L	2020-07-30	

**REP2 Influent Grab (0072401-03) | Matrix: Water | Sampled: 2020-07-22 09:43**

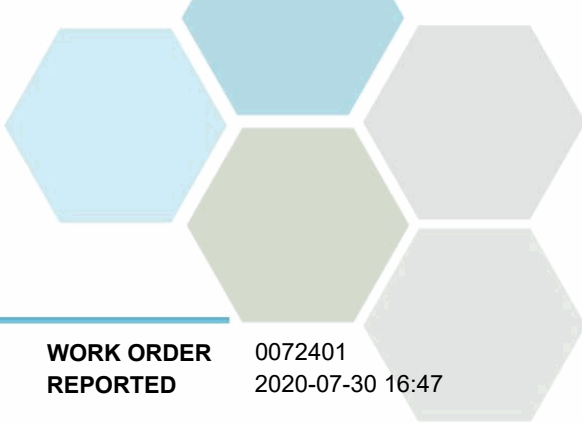
PRES

**Anions**

Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-26	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-26	HT1
Phosphate (as P)	<b>4.56</b>	0.0050	mg/L	2020-07-26	HT1

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>69.2</b>	2.00	mg/L	N/A	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 0072401  
2020-07-30 16:47

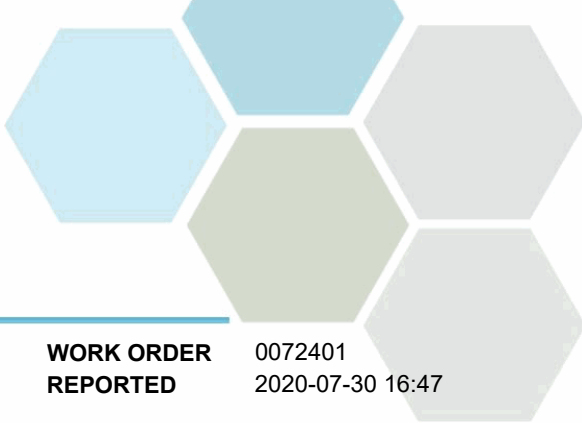
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>REP2 Influent Grab (0072401-03)   Matrix: Water   Sampled: 2020-07-22 09:43, Continued</b>					<b>PRES</b>

**General Parameters**

Ammonia, Total (as N)	<b>31.6</b>	0.050	mg/L	2020-07-27	
BOD, 5-day	<b>256</b>	2.0	mg/L	2020-07-30	
Nitrogen, Total Kjeldahl	<b>69.2</b>	0.050	mg/L	2020-07-29	
pH	<b>6.62</b>	0.10	pH units	2020-07-28	HT2
Phosphorus, Total (as P)	<b>7.81</b>	0.0050	mg/L	2020-07-30	

**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.
- PRES Sample has been preserved for TKN and TP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 0072401  
2020-07-30 16:47

Analysis Description	Method Ref.	Technique	Accredited	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
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

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

### Glossary of Terms:

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SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QI

**PROJECT INFO**

**WORK ORDER** 20J1339

**RECEIVED / TEMP** 2020-10-15 12:00 / 7°C

**REPORTED** 2020-10-21 12:55

**COC NUMBER** B67433

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

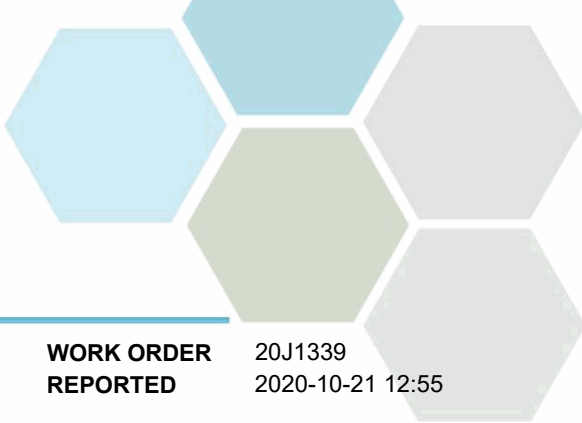
### Authorized By:

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# TEST RESULTS

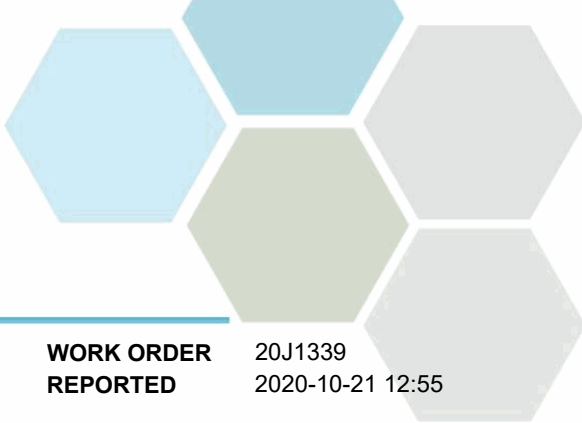
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 20J1339  
2020-10-21 12:55

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Influent Grab (20J1339-01)   Matrix: Water   Sampled: 2020-10-14 09:45</b>					<b>PRES</b>
<b>Anions</b>					
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-16	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-16	
Phosphate (as P)	<b>4.15</b>	0.0050	mg/L	2020-10-16	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>62.1</b>	2.00	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	<b>38.1</b>	0.050	mg/L	2020-10-17	
BOD, 5-day	<b>241</b>	2.0	mg/L	2020-10-21	
Nitrogen, Total Kjeldahl	<b>62.1</b>	0.050	mg/L	2020-10-21	
pH	<b>6.89</b>	0.10	pH units	2020-10-20	HT2
Phosphorus, Total (as P)	<b>5.99</b>	0.0050	mg/L	2020-10-20	

**Sample Qualifiers:**

- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TKN and TP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QI

**WORK ORDER REPORTED** 20J1339  
2020-10-21 12:55

Analysis Description	Method Ref.	Technique	Accredited	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
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

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

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mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
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# **APPENDIX D**

## **Solids (TWAS and FPS) Monitoring Database Summary 2020**

# Okanagan Falls Advanced Wastewater Treatment Facility

## Soil Quality Results

<b>Sampling Location</b>  <b>Date Sampled</b>  <b>Lab Sample ID</b>  <b>Sample Type</b>		<b>Fermented Primary Sludge (FPS)</b>						
		Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)	
		21-Jan-20	15-Apr-20	23-Jul-20	23-Jul-20	23-Jul-20	12-Oct-20	
		0011323-02	0041270-02	0072398-04	0072398-05	0072398-06	20J1342-02	
		Normal	Normal	Normal	Duplicate	Duplicate	Normal	
Analyte	Unit	Guideline						
		<b>BC OMRR Class B</b>						
<b>Lab Results</b>								
<b>General</b>								
Percent solids	% wet	NG	4.2	7.2	5.2	5.4	6.2	5.5
Total volatile solids (percent)	% dry	NG	89.5	91.9	88.6	89.5	90.4	90.1
<b>Metals</b>								
Arsenic	µg/g	75	2.98	1.95	3.09	3.21	3.36	3.33
Cadmium	µg/g	20	0.714	0.789	0.867	1	0.973	1.08
Chromium	µg/g	1060	14.2	14.5	21.4	15.1	16.1	15.6
Cobalt	µg/g	150	0.79	0.74	0.91	0.91	0.89	0.85
Copper	µg/g	2200	199	185	221	221	223	225
Lead	µg/g	500	15.2	9.25	8.38	8.49	9.59	9.5
Mercury	µg/g	15	0.623	0.607	0.39	0.5	0.376	0.304
Molybdenum	µg/g	20	6.04	5.18	6.39	6.61	6.78	7.06
Nickel	µg/g	180	8.61	8.7	8.11	8.23	7.93	9.15
Selenium	µg/g	14	3.45	3.74	4.35	4.25	4.74	4.76
Zinc	µg/g	1850	617	470	706	706	736	708

BC OMRR Class B = BC Organic Matter Recycling Regulation, Quality Criteria for Class B biosolids and Class B compost, Schedule 4



# Okanagan Falls Advanced Wastewater Treatment Facility

## Soil Quality Results

Sampling Location		Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	
		Date Sampled	21-Jan-20	15-Apr-20	22-Jul-20	22-Jul-20	22-Jul-20	14-Oct-20
Lab Sample ID		0011323-01	0041270-01	0072398-01	0072398-02	0072398-03	20J1342-01	
Sample Type		Normal	Normal	Normal	Duplicate	Duplicate	Normal	
Analyte	Unit	Guideline						
		BC OMRR Class B						
<b>Lab Results</b>								
<b>General</b>								
Percent solids	% wet	NG	2.7	2.6	2.8	2.8	2.7	2
Total volatile solids (percent)	% dry	NG	81.2	81.8	79.6	78.7	78.4	80.3
<b>Metals</b>								
Arsenic	µg/g	75	3.01	2.5	3.11	3.33	3.33	1.48
Cadmium	µg/g	20	0.66	0.857	0.786	0.79	0.838	0.548
Chromium	µg/g	1060	5.8	6.3	7.7	7.1	6.7	3.7
Cobalt	µg/g	150	0.95	0.91	1.11	1.16	1.17	0.58
Copper	µg/g	2200	221	268	237	249	244	119
Lead	µg/g	500	11.7	5.17	5.37	5.74	5.55	3.38
Mercury	µg/g	15	0.172	0.127	0.163	0.16	0.171	0.091
Molybdenum	µg/g	20	7.09	6.75	7.85	8.1	8.14	3.73
Nickel	µg/g	180	7.15	7.63	6.16	5.84	6.11	4.37
Selenium	µg/g	14	4.47	5.08	5.95	6.42	5.89	2.9
Zinc	µg/g	1850	455	439	540	569	563	259

BC OMRR Class B = BC Organic Matter Recycling Regulation, Quality Criteria for Class B biosolids and Class B compost, Schedule 4



## Okanagan Falls Advanced Wastewater Treatment Facility

## Soil Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	95% Percentile	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
<b>Lab Results</b>										
<b>General</b>										
Percent solids	Fermented Primary Sludge (FPS)	% wet	5.6	4.2	7.2	7.0	1.0	6	6	0
	Thickened Waste Activated Sludge (TWAS)	% wet	2.6	2	2.8	2.8	0.3	6	6	0
Total volatile solids (percent)	Fermented Primary Sludge (FPS)	% dry	90.0	88.6	91.9	91.5	1.1	6	6	0
	Thickened Waste Activated Sludge (TWAS)	% dry	80.0	78.4	81.8	81.7	1.4	6	6	0
<b>Metals</b>										
Arsenic	Fermented Primary Sludge (FPS)	µg/g	2.99	1.95	3.36	3.35	0.53	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	2.79	1.48	3.33	3.33	0.71	6	6	0
Cadmium	Fermented Primary Sludge (FPS)	µg/g	0.904	0.714	1.08	1.06	0.138	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	0.747	0.548	0.857	0.852	0.119	6	6	0
Chromium	Fermented Primary Sludge (FPS)	µg/g	16.2	14.2	21.4	20.1	2.7	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	6.2	3.7	7.7	7.6	1.4	6	6	0
Cobalt	Fermented Primary Sludge (FPS)	µg/g	0.85	0.74	0.91	0.91	0.07	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	0.98	0.58	1.17	1.2	0.22	6	6	0
Copper	Fermented Primary Sludge (FPS)	µg/g	212	185	225	224	16.4	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	223	119	268	263	53.2	6	6	0
Lead	Fermented Primary Sludge (FPS)	µg/g	10.1	8.38	15.2	13.8	2.57	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	6.15	3.38	11.7	10.2	2.85	6	6	0
Mercury	Fermented Primary Sludge (FPS)	µg/g	0.467	0.304	0.623	0.619	0.131	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	0.150	0.091	0.172	0.170	0.032	6	6	0
Molybdenum	Fermented Primary Sludge (FPS)	µg/g	6.34	5.18	7.06	6.99	0.67	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	6.94	3.73	8.14	8.13	1.67	6	6	0
Nickel	Fermented Primary Sludge (FPS)	µg/g	8.46	7.93	9.15	9.04	0.45	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	6.21	4.37	7.63	7.51	1.13	6	6	0
Selenium	Fermented Primary Sludge (FPS)	µg/g	4.22	3.45	4.76	4.76	0.53	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	5.12	2.9	6.42	6.3	1.29	6	6	0
Zinc	Fermented Primary Sludge (FPS)	µg/g	657	470	736	729	100	6	6	0
	Thickened Waste Activated Sludge (TWAS)	µg/g	471	259	569	568	118	6	6	0

## Legend for Reports for RDOS Wastewater Treatment Sites Soil Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
BC OMRR Class B	BC Organic Matter Recycling Regulation, Quality Criteria for Class B biosolids and Class B compost, Schedule 4
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<b>BC OMRR Class B</b>	Highlighted value exceeds BC OMRR Class B
SL Criteria Override	Highlighted value exceeds sampling location criteria override

# **APPENDIX E**

## **Solids (TWAS and FPS) 2020 Lab Reports**



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QS

**PROJECT INFO**

**WORK ORDER** 0011323

**RECEIVED / TEMP** 2020-01-22 12:10 / 9°C

**REPORTED** 2020-01-30 11:43

**COC NUMBER** B66313

### 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.

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

## TEST RESULTS

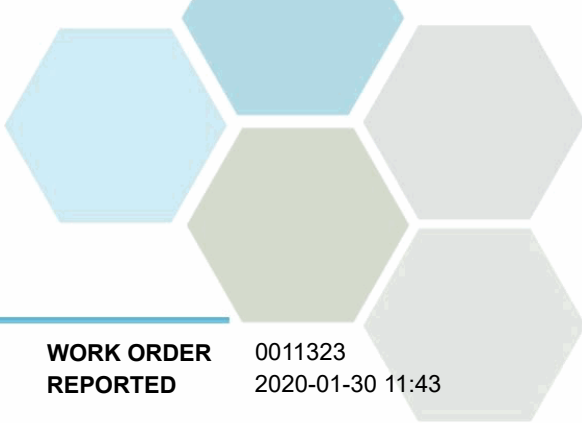
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0011323  
2020-01-30 11:43

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>TWAS (0011323-01)   Matrix: Solid   Sampled: 2020-01-21 10:05</b>					
<i>General Parameters</i>					
Solids, Total	2.7	0.1	% wet	2020-01-27	
Solids, Volatile	81.2	0.1	% dry	2020-01-27	
<i>Strong Acid Leachable Metals</i>					
Arsenic	3.01	0.30	mg/kg dry	2020-01-30	
Cadmium	0.660	0.040	mg/kg dry	2020-01-30	
Chromium	5.8	1.0	mg/kg dry	2020-01-30	
Cobalt	0.95	0.10	mg/kg dry	2020-01-30	
Copper	221	0.40	mg/kg dry	2020-01-30	
Lead	11.7	0.20	mg/kg dry	2020-01-30	
Mercury	0.172	0.040	mg/kg dry	2020-01-30	
Molybdenum	7.09	0.10	mg/kg dry	2020-01-30	
Nickel	7.15	0.60	mg/kg dry	2020-01-30	
Selenium	4.47	0.20	mg/kg dry	2020-01-30	
Zinc	455	2.0	mg/kg dry	2020-01-30	

**FPS (0011323-02) | Matrix: Solid | Sampled: 2020-01-21 10:06**

<i>General Parameters</i>					
Solids, Total	4.2	0.1	% wet	2020-01-27	
Solids, Volatile	89.5	0.1	% dry	2020-01-27	
<i>Strong Acid Leachable Metals</i>					
Arsenic	2.98	0.30	mg/kg dry	2020-01-30	
Cadmium	0.714	0.040	mg/kg dry	2020-01-30	
Chromium	14.2	1.0	mg/kg dry	2020-01-30	
Cobalt	0.79	0.10	mg/kg dry	2020-01-30	
Copper	199	0.40	mg/kg dry	2020-01-30	
Lead	15.2	0.20	mg/kg dry	2020-01-30	
Mercury	0.623	0.040	mg/kg dry	2020-01-30	
Molybdenum	6.04	0.10	mg/kg dry	2020-01-30	
Nickel	8.61	0.60	mg/kg dry	2020-01-30	
Selenium	3.45	0.20	mg/kg dry	2020-01-30	
Zinc	617	2.0	mg/kg dry	2020-01-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0011323  
2020-01-30 11:43

Analysis Description	Method Ref.	Technique	Location
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Solids, Total in Solid	SM 2540 G (2017)	Gravimetry	Kelowna
Solids, Volatile in Solid	SM 2540 G (2017)	Gravimetry	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
mg/kg dry	Milligrams per kilogram (dry weight basis)
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QS

**PROJECT INFO**

**WORK ORDER** 0041270

**RECEIVED / TEMP** 2020-04-16 11:30 / 6°C

**REPORTED** 2020-04-22 16:21

**COC NUMBER** B78515

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

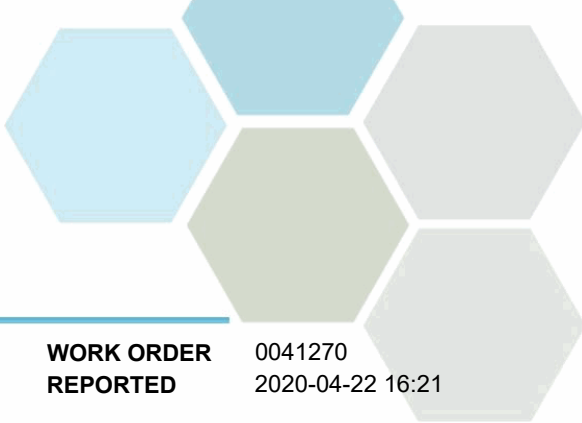
*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

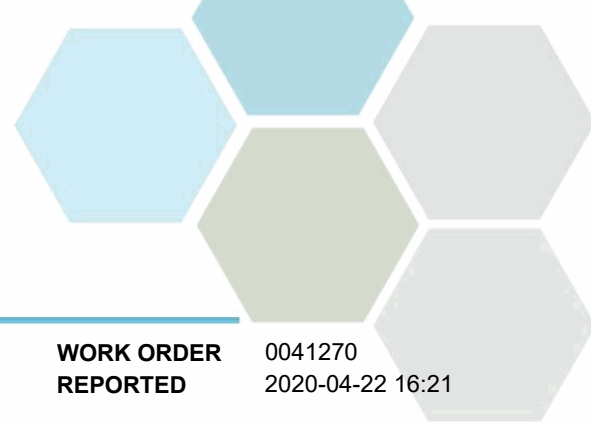
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0041270  
2020-04-22 16:21

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>TWAS (0041270-01)   Matrix: Solid   Sampled: 2020-04-15 08:50</b>					
<i>General Parameters</i>					
Solids, Total	2.6	0.1	% wet	2020-04-21	
Solids, Volatile	81.8	0.1	% dry	2020-04-21	
<i>Strong Acid Leachable Metals</i>					
Arsenic	2.50	0.30	mg/kg dry	2020-04-22	
Cadmium	0.857	0.040	mg/kg dry	2020-04-22	
Chromium	6.3	1.0	mg/kg dry	2020-04-22	
Cobalt	0.91	0.10	mg/kg dry	2020-04-22	
Copper	268	0.40	mg/kg dry	2020-04-22	
Lead	5.17	0.20	mg/kg dry	2020-04-22	
Mercury	0.127	0.040	mg/kg dry	2020-04-22	
Molybdenum	6.75	0.10	mg/kg dry	2020-04-22	
Nickel	7.63	0.60	mg/kg dry	2020-04-22	
Selenium	5.08	0.20	mg/kg dry	2020-04-22	
Zinc	439	2.0	mg/kg dry	2020-04-22	

**FPS (0041270-02) | Matrix: Solid | Sampled: 2020-04-15 08:55**

<i>General Parameters</i>					
Solids, Total	7.2	0.1	% wet	2020-04-21	
Solids, Volatile	91.9	0.1	% dry	2020-04-21	
<i>Strong Acid Leachable Metals</i>					
Arsenic	1.95	0.30	mg/kg dry	2020-04-22	
Cadmium	0.789	0.040	mg/kg dry	2020-04-22	
Chromium	14.5	1.0	mg/kg dry	2020-04-22	
Cobalt	0.74	0.10	mg/kg dry	2020-04-22	
Copper	185	0.40	mg/kg dry	2020-04-22	
Lead	9.25	0.20	mg/kg dry	2020-04-22	
Mercury	0.607	0.040	mg/kg dry	2020-04-22	
Molybdenum	5.18	0.10	mg/kg dry	2020-04-22	
Nickel	8.70	0.60	mg/kg dry	2020-04-22	
Selenium	3.74	0.20	mg/kg dry	2020-04-22	
Zinc	470	2.0	mg/kg dry	2020-04-22	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0041270  
2020-04-22 16:21

Analysis Description	Method Ref.	Technique	Location
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO <sub>3</sub> +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Solids, Total in Solid	SM 2540 G (2017)	Gravimetry	Kelowna
Solids, Volatile in Solid	SM 2540 G (2017)	Gravimetry	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
mg/kg dry	Milligrams per kilogram (dry weight basis)
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QS

**PROJECT INFO**

**WORK ORDER** 0072398

**RECEIVED / TEMP** 2020-07-23 12:15 / 14°C  
**REPORTED** 2020-07-30 14:19

**COC NUMBER** B67420

### Introduction:

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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.

### Work Order Comments:

Custody Seals Intact: YES

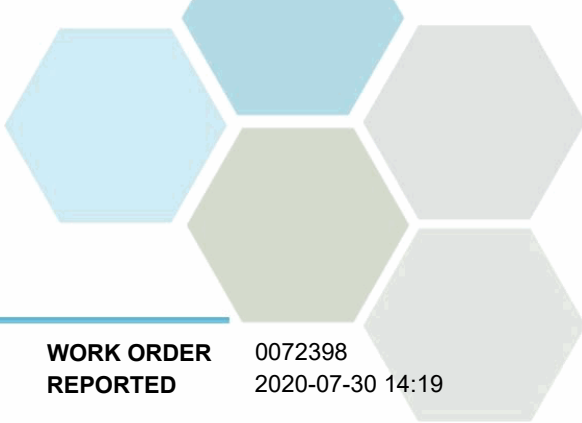
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0072398  
2020-07-30 14:19

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>TWAS (0072398-01)   Matrix: Solid   Sampled: 2020-07-22 09:32</b>					
<i>General Parameters</i>					
Solids, Total	2.8	0.1	% wet	2020-07-28	
Solids, Volatile	79.6	0.1	% dry	2020-07-28	
<i>Strong Acid Leachable Metals</i>					
Arsenic	3.11	0.30	mg/kg dry	2020-07-27	
Cadmium	0.786	0.040	mg/kg dry	2020-07-27	
Chromium	7.7	1.0	mg/kg dry	2020-07-27	
Cobalt	1.11	0.10	mg/kg dry	2020-07-27	
Copper	237	0.40	mg/kg dry	2020-07-27	
Lead	5.37	0.20	mg/kg dry	2020-07-27	
Mercury	0.163	0.040	mg/kg dry	2020-07-27	
Molybdenum	7.85	0.10	mg/kg dry	2020-07-27	
Nickel	6.16	0.60	mg/kg dry	2020-07-27	
Selenium	5.95	0.20	mg/kg dry	2020-07-27	
Zinc	540	2.0	mg/kg dry	2020-07-27	

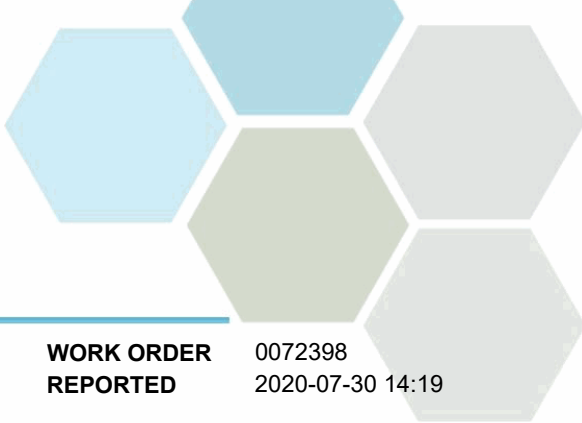
**REP1 TWAS (0072398-02) | Matrix: Solid | Sampled: 2020-07-22 09:32**

<i>General Parameters</i>					
Solids, Total	2.8	0.1	% wet	2020-07-28	
Solids, Volatile	78.7	0.1	% dry	2020-07-28	
<i>Strong Acid Leachable Metals</i>					
Arsenic	3.33	0.30	mg/kg dry	2020-07-27	
Cadmium	0.790	0.040	mg/kg dry	2020-07-27	
Chromium	7.1	1.0	mg/kg dry	2020-07-27	
Cobalt	1.16	0.10	mg/kg dry	2020-07-27	
Copper	249	0.40	mg/kg dry	2020-07-27	
Lead	5.74	0.20	mg/kg dry	2020-07-27	
Mercury	0.160	0.040	mg/kg dry	2020-07-27	
Molybdenum	8.10	0.10	mg/kg dry	2020-07-27	
Nickel	5.84	0.60	mg/kg dry	2020-07-27	
Selenium	6.42	0.20	mg/kg dry	2020-07-27	
Zinc	569	2.0	mg/kg dry	2020-07-27	

**REP2 TWAS (0072398-03) | Matrix: Solid | Sampled: 2020-07-22 09:32**

<i>General Parameters</i>					
Solids, Total	2.7	0.1	% wet	2020-07-28	
Solids, Volatile	78.4	0.1	% dry	2020-07-28	
<i>Strong Acid Leachable Metals</i>					
Arsenic	3.33	0.30	mg/kg dry	2020-07-28	





# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0072398  
2020-07-30 14:19

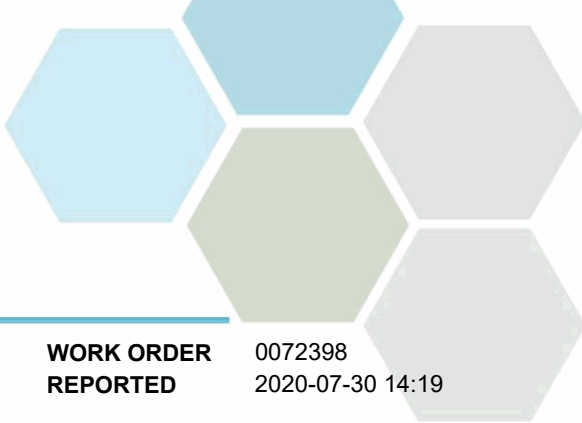
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>REP2 TWAS (0072398-03)   Matrix: Solid   Sampled: 2020-07-22 09:32, Continued</b>					
<i>Strong Acid Leachable Metals, Continued</i>					
Cadmium	0.838	0.040	mg/kg dry	2020-07-28	
Chromium	6.7	1.0	mg/kg dry	2020-07-28	
Cobalt	1.17	0.10	mg/kg dry	2020-07-28	
Copper	244	0.40	mg/kg dry	2020-07-28	
Lead	5.55	0.20	mg/kg dry	2020-07-28	
Mercury	0.171	0.040	mg/kg dry	2020-07-28	
Molybdenum	8.14	0.10	mg/kg dry	2020-07-28	
Nickel	6.11	0.60	mg/kg dry	2020-07-28	
Selenium	5.89	0.20	mg/kg dry	2020-07-28	
Zinc	563	2.0	mg/kg dry	2020-07-28	

**FPS (0072398-04) | Matrix: Solid | Sampled: 2020-07-23 09:42**

<i>General Parameters</i>					
Solids, Total	5.2	0.1	% wet	2020-07-28	
Solids, Volatile	88.6	0.1	% dry	2020-07-28	
<i>Strong Acid Leachable Metals</i>					
Arsenic	3.09	0.30	mg/kg dry	2020-07-28	
Cadmium	0.867	0.040	mg/kg dry	2020-07-28	
Chromium	21.4	1.0	mg/kg dry	2020-07-28	
Cobalt	0.91	0.10	mg/kg dry	2020-07-28	
Copper	221	0.40	mg/kg dry	2020-07-28	
Lead	8.38	0.20	mg/kg dry	2020-07-28	
Mercury	0.390	0.040	mg/kg dry	2020-07-28	
Molybdenum	6.39	0.10	mg/kg dry	2020-07-28	
Nickel	8.11	0.60	mg/kg dry	2020-07-28	
Selenium	4.35	0.20	mg/kg dry	2020-07-28	
Zinc	706	2.0	mg/kg dry	2020-07-28	

**REP1 FPS (0072398-05) | Matrix: Solid | Sampled: 2020-07-23 09:42**

<i>General Parameters</i>					
Solids, Total	5.4	0.1	% wet	2020-07-28	
Solids, Volatile	89.5	0.1	% dry	2020-07-28	
<i>Strong Acid Leachable Metals</i>					
Arsenic	3.21	0.30	mg/kg dry	2020-07-28	
Cadmium	1.00	0.040	mg/kg dry	2020-07-28	
Chromium	15.1	1.0	mg/kg dry	2020-07-28	
Cobalt	0.91	0.10	mg/kg dry	2020-07-28	
Copper	221	0.40	mg/kg dry	2020-07-28	
Lead	8.49	0.20	mg/kg dry	2020-07-28	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0072398  
2020-07-30 14:19

Analyte	Result	RL	Units	Analyzed	Qualifier
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**REP1 FPS (0072398-05) | Matrix: Solid | Sampled: 2020-07-23 09:42, Continued**

**Strong Acid Leachable Metals, Continued**

Mercury	0.500	0.040	mg/kg dry	2020-07-28	
Molybdenum	6.61	0.10	mg/kg dry	2020-07-28	
Nickel	8.23	0.60	mg/kg dry	2020-07-28	
Selenium	4.25	0.20	mg/kg dry	2020-07-28	
Zinc	706	2.0	mg/kg dry	2020-07-28	

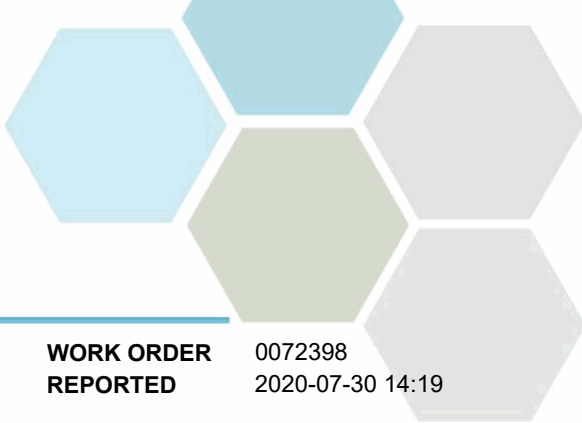
**REP2 FPS (0072398-06) | Matrix: Solid | Sampled: 2020-07-23 09:42**

**General Parameters**

Solids, Total	6.2	0.1	% wet	2020-07-28	
Solids, Volatile	90.4	0.1	% dry	2020-07-28	

**Strong Acid Leachable Metals**

Arsenic	3.36	0.30	mg/kg dry	2020-07-28	
Cadmium	0.973	0.040	mg/kg dry	2020-07-28	
Chromium	16.1	1.0	mg/kg dry	2020-07-28	
Cobalt	0.89	0.10	mg/kg dry	2020-07-28	
Copper	223	0.40	mg/kg dry	2020-07-28	
Lead	9.59	0.20	mg/kg dry	2020-07-28	
Mercury	0.376	0.040	mg/kg dry	2020-07-28	
Molybdenum	6.78	0.10	mg/kg dry	2020-07-28	
Nickel	7.93	0.60	mg/kg dry	2020-07-28	
Selenium	4.74	0.20	mg/kg dry	2020-07-28	
Zinc	736	2.0	mg/kg dry	2020-07-28	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 0072398  
2020-07-30 14:19

Analysis Description	Method Ref.	Technique	Accredited	Location
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO <sub>3</sub> +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	SM 2540 G (2017)	Gravimetry		Kelowna
Solids, Volatile in Solid	SM 2540 G (2017)	Gravimetry		Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
mg/kg dry	Milligrams per kilogram (dry weight basis)
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability*



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QS

**PROJECT INFO**

**WORK ORDER** 20J1342

**RECEIVED / TEMP** 2020-10-15 12:00 / 7°C  
**REPORTED** 2020-10-29 16:31

**COC NUMBER** B67433

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

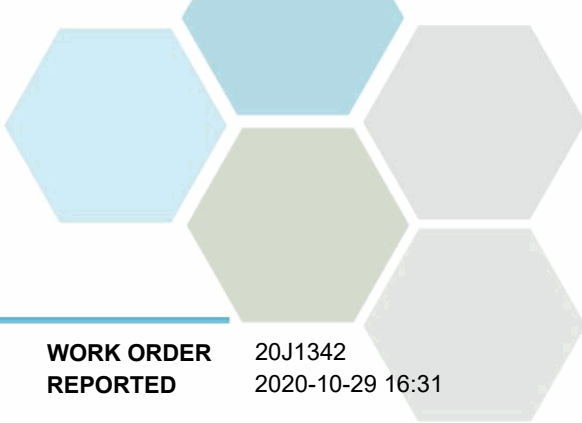
If you have any questions or concerns, please contact me at [acrump2@caro.ca](mailto:acrump2@caro.ca)

### Authorized By:

Alana Crump temp  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 20J1342  
2020-10-29 16:31

Analyte	Result	RL	Units	Analyzed	Qualifier
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**TWAS (20J1342-01) | Matrix: Solid | Sampled: 2020-10-14 09:50**

**General Parameters**

Solids, Total	2.0	0.1	% wet	2020-10-20	
Solids, Volatile	80.3	0.1	% dry	2020-10-20	

**Strong Acid Leachable Metals**

Arsenic	1.48	0.30	mg/kg dry	2020-10-29	
Cadmium	0.548	0.040	mg/kg dry	2020-10-29	
Chromium	3.7	1.0	mg/kg dry	2020-10-29	
Cobalt	0.58	0.10	mg/kg dry	2020-10-29	
Copper	119	0.40	mg/kg dry	2020-10-29	
Lead	3.38	0.20	mg/kg dry	2020-10-29	
Mercury	0.091	0.040	mg/kg dry	2020-10-29	
Molybdenum	3.73	0.10	mg/kg dry	2020-10-29	
Nickel	4.37	0.60	mg/kg dry	2020-10-29	
Selenium	2.90	0.20	mg/kg dry	2020-10-29	
Zinc	259	2.0	mg/kg dry	2020-10-29	

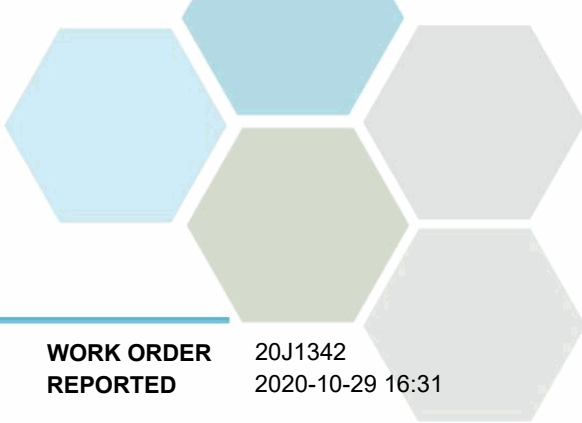
**FPS (20J1342-02) | Matrix: Solid | Sampled: 2020-10-12 11:33**

**General Parameters**

Solids, Total	5.5	0.1	% wet	2020-10-20	
Solids, Volatile	90.1	0.1	% dry	2020-10-20	

**Strong Acid Leachable Metals**

Arsenic	3.33	0.30	mg/kg dry	2020-10-29	
Cadmium	1.08	0.040	mg/kg dry	2020-10-29	
Chromium	15.6	1.0	mg/kg dry	2020-10-29	
Cobalt	0.85	0.10	mg/kg dry	2020-10-29	
Copper	225	0.40	mg/kg dry	2020-10-29	
Lead	9.50	0.20	mg/kg dry	2020-10-29	
Mercury	0.304	0.040	mg/kg dry	2020-10-29	
Molybdenum	7.06	0.10	mg/kg dry	2020-10-29	
Nickel	9.15	0.60	mg/kg dry	2020-10-29	
Selenium	4.76	0.20	mg/kg dry	2020-10-29	
Zinc	708	2.0	mg/kg dry	2020-10-29	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QS

**WORK ORDER REPORTED** 20J1342  
2020-10-29 16:31

Analysis Description	Method Ref.	Technique	Accredited	Location
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO <sub>3</sub> +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	SM 2540 G (2017)	Gravimetry		Kelowna
Solids, Volatile in Solid	SM 2540 G (2017)	Gravimetry		Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
mg/kg dry	Milligrams per kilogram (dry weight basis)
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## **APPENDIX F**

### **Solids (TWAS and FPS) 2020 Disposal Volumes and Weights**

## Appendix F Okanagan Falls Wastewater Treatment Facility

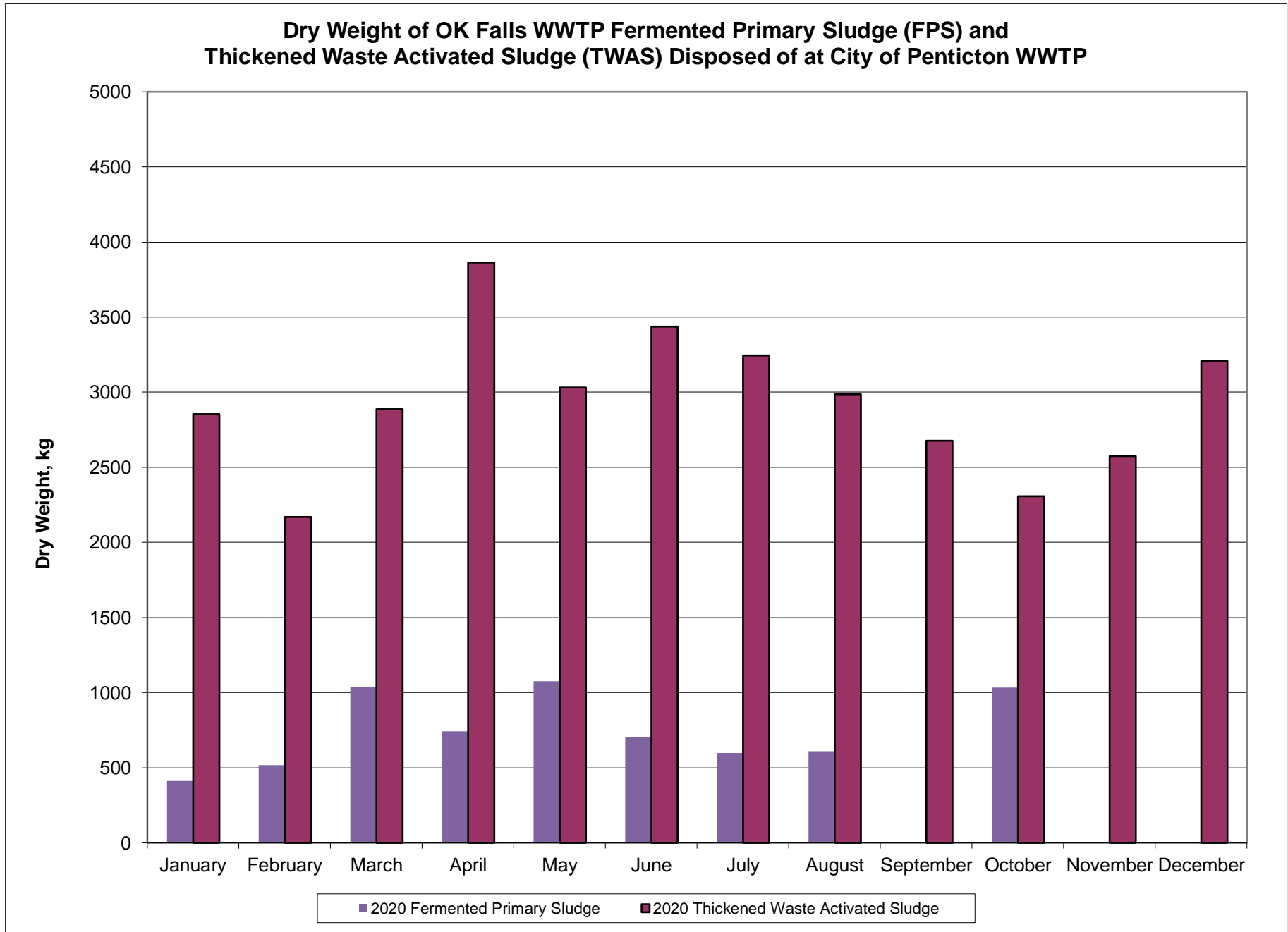
### OK Falls WWTP Fermented Primary Sludge (FPS) Disposed of at City of Penticton WWTP

2020	Volume m <sup>3</sup>	Density %	Dry Weight Kg
January	10.5	3.9	410.6
February	10.5	4.9	518.7
March	21.0	5.0	1039.5
April	10.5	7.1	743.4
May	21.0	5.1	1077.3
June	10.5	6.7	702.5
July	10.5	5.7	597.5
August	10.5	5.8	610.1
September			
October	21.0	4.9	1033.2
November			
December			
<b>Total</b>	<b>126.0</b>		<b>6733</b>
<b>Average</b>	<b>14.0</b>	<b>5.5</b>	<b>748.1</b>

### OK Falls WWTP Thickened Waste Activated Sludge (TWAS) Disposed of at City of Penticton WWTP

2020	Volume m <sup>3</sup>	Density %	Dry Weight Kg
January	106.9	2.67	2855.3
February	83.4	2.60	2168.4
March	105.8	2.73	2888.3
April	138.5	2.79	3864.2
May	109.0	2.78	3030.2
June	133.2	2.58	3436.6
July	115.1	2.82	3245.8
August	100.2	2.98	2986.0
September	103.4	2.59	2678.1
October	94.9	2.43	2308.0
November	94.7	2.72	2575.8
December	124.8	2.57	3207.4
<b>Total</b>	<b>1309.9</b>		<b>35244</b>
<b>Average</b>	<b>109.2</b>	<b>2.7</b>	<b>2937.0</b>





## **APPENDIX G**

### **Flows for WWTP Effluent, Wetland Effluent and Okanagan River Channel 2020**

## Okanagan Falls Wastewater Treatment Facility

## DAILY FLOWS FROM OKANAGAN FALLS WASTEWATER TREATMENT PLANT TO RIVER AND WETLAND AND FROM WETLAND TO RIVER

Day of Month	January-20			February-20			March-20				April-20			
	From WWTP To River	Total Flow From WWTP	Total Flow To River	From WWTP To River	Total Flow From WWTP	Total Flow To River	From WWTP To River	From WWTP To Wetland	Total Flow From WWTP	Total Flow To River	From WWTP To River	From WWTP To Wetland	Total Flow From WWTP	Total Flow To River
1	514	514	514	500	500	500	517.2		517.2	517.2	8.8	607.8	616.7	8.8
2	486	486	486	505	505	505	474.3		474.3	474.3	19.5	612.4	631.9	19.5
3	469	469	469	494	494	494	461.0		461.0	461.0	227.8	351.2	579.0	227.8
4	468	468	468	483	483	483	460.9		460.9	460.9	539.1		539.1	539.1
5	475	475	475	458	458	458	471.4		471.4	471.4	571.2		571.2	571.2
6	501	501	501	471	471	471	462.4		462.4	462.4	130.3	485.6	616.0	130.3
7	461	461	461	494	494	494	488.7		488.7	488.7	13.7	604.6	618.3	13.7
8	446	446	446	531	531	531	502.0		502.0	502.0	9.9	623.7	633.6	9.9
9	450	450	450	543	543	543	494.2		494.2	494.2	200.1	381.6	581.7	200.1
10	424	424	424	530	530	530	466.0		466.0	466.0	489.9	15.3	505.2	489.9
11	465	465	465	537	537	537	484.9		484.9	484.9	515.6		515.6	515.6
12	501	501	501	495	495	495	471.8		471.8	471.8	518.1	22.4	540.5	518.1
13	507	507	507	492	492	492	459.1		459.1	459.1	503.3	58.2	561.5	503.3
14	497	497	497	482	482	482	491.2		491.2	491.2	140.3	488.1	628.4	140.3
15	495	495	495	494	494	494	505.4		505.4	505.4	10.8	651.8	662.7	10.8
16	514	514	514	522	522	522	486.4		486.4	486.4	261.8	239.5	501.2	261.8
17	469	469	469	566	566	566	495.6		495.6	495.6	434.6		434.6	434.6
18	483	483	483	481	481	481	492.5		492.5	492.5	427.2		427.2	427.2
19	625	625	625	480	480	480	490.3		490.3	490.3	442.5		442.5	442.5
20	532	532	532	482	482	482	509.5		509.5	509.5	242.4	251.7	494.1	242.4
21	513	513	513	479	479	479	503.9		503.9	503.9	190.3	397.0	587.3	190.3
22	513	513	513	498	498	498	521.4		521.4	521.4	325.6	17.8	343.4	325.6
23	509	509	509	516	516	516	372.4	138.6	511.1	372.4	190.9		190.9	190.9
24	489	489	489	494	494	494	287.7	231	518.7	287.7	348.4		348.4	348.4
25	493	493	493	481	481	481	86.9	474	560.9	86.9	461.9		461.9	461.9
26	521	521	521	466	466	466	10.2	599	609.2	10.2	488.7		488.7	488.7
27	493	493	493	466	466	466	194.9	341	535.9	194.9	465.5		465.5	465.5
28	471	471	471	463	463	463	475.2	0.2	475.4	475.2	236.4	293.8	530.2	236.4
29	480	480	480	479	479	479	445.4	86.4	531.8	445.4	231.4	362.7	594.1	231.4
30	481	481	481				164.2	505.8	670.0	164.2	498.0	0.1	498.0	498.0
31	504	504	504				8.6	619.2	627.8	8.6				
Total (m <sup>3</sup> )	15250	15250	15250	14384	14384	14384	12756	2995	15751	12756	9144	6465	15610	9144
Average (m <sup>3</sup> )	492	492	492	496	496	496	411	333	508	411	305	340	520	305
min	424	424	424	458	458	458	9	0	459	9	9	0	191	9
max	625	625	625	566	566	566	521	619	670	521	571	652	663	571
n	31	31	31	29	29	29	31	9	31	31	30	19	30	30

## Okanagan Falls Wastewater Treatment Facility

## DAILY FLOWS FROM OKANAGAN FALLS WASTEWATER TREATMENT PLANT TO RIVER AND WETLAND AND FROM WETLAND TO RIVER

Day of Month	May-20				June-20			July-20				August-20			
	From WWTP To River	From WWTP To Wetland	Total Flow From WWTP	Total Flow To River	From WWTP To River	Total Flow From WWTP	Total Flow To River	From WWTP To River	From WWTP To Wetland	Total Flow From WWTP	Total Flow To River	From WWTP To River	From WWTP To Wetland	Total Flow From WWTP	Total Flow To River
1	359.1	156.7	515.8	359.1	542	542	542	676.6		676.6	676.6	801.0		801.0	801.0
2	512.5	15.8	528.3	512.5	517	517	517	697.2		697.2	697.2	822.1		822.1	822.1
3	601.8		601.8	601.8	520	520	520	710.2		710.2	710.2	829.5		829.5	829.5
4	512.1		512.1	512.1	528	528	528	770.5		770.5	770.5	240.9	628.4	869.4	240.9
5	177.4	420.3	597.6	177.4	532	532	532	783.9		783.9	783.9	161.6	771.8	933.4	161.6
6	441.1	150.1	591.3	441.1	654	654	654	736.1		736.1	736.1	578.6	181.9	760.4	578.6
7	537.6		537.6	537.6	591	591	591	712.9		712.9	712.9	715.5		715.5	715.5
8	347.8	215.8	563.6	347.8	561	561	561	782.5		782.5	782.5	756.4		756.4	756.4
9	550.7		550.7	550.7	559	559	559	626.6		626.6	626.6	756.2		756.2	756.2
10	571.7		571.7	571.7	545	545	545	698.4		698.4	698.4	730.4		730.4	730.4
11	171.3	467.4	638.7	171.3	530	530	530	721.0		721.0	721.0	708.6		708.6	708.6
12	389.1	165.2	554.3	389.1	550	550	550	697.3		697.3	697.3	740.4		740.4	740.4
13	497.9		497.9	497.9	581	581	581	713.7		713.7	713.7	716.5		716.5	716.5
14	499.4		499.4	499.4	613	613	613	774.9		774.9	774.9	746.0		746.0	746.0
15	504.0		504.0	504.0	600	600	600	881.7		881.7	881.7	754.0		754.0	754.0
16	516.3		516.3	516.3	608	608	608	861.1		861.1	861.1	809.5		809.5	809.5
17	570.5		570.5	570.5	633	633	633	696.1		696.1	696.1	236.5	611.4	847.9	236.5
18	601.7		601.7	601.7	689	689	689	776.2		776.2	776.2	400.7	447.7	848.4	400.7
19	136.1	544.2	680.3	136.1	691	691	691	749.5		749.5	749.5	685.5		685.5	685.5
20	412.4	181.4	593.9	412.4	677	677	677	645.8		645.8	645.8	711.8		711.8	711.8
21	531.9		531.9	531.9	718	718	718	270.6	482.1	752.7	270.6	740.5		740.5	740.5
22	546.0		546.0	546.0	708	708	708	388.6	338.9	727.5	388.6	732.5		732.5	732.5
23	531.8		531.8	531.8	678	678	678	266.4	473.0	739.5	266.4	764.2		764.2	764.2
24	572.0		572.0	572.0	667	667	667	546.6	91	637.7	546.6	683.7		683.7	683.7
25	578.7		578.7	578.7	715	715	715	737.5		737.5	737.5	324.9	449	774.2	324.9
26	541.0		541.0	541.0	656	656	656	778.7		778.7	778.7	429.8	423	853.0	429.8
27	540.2		540.2	540.2	652	652	652	463.3	317	779.9	463.3	710.0		710.0	710.0
28	544.5		544.5	544.5	636	636	636	715.3	12.3	727.6	715.3	731.1		731.1	731.1
29	533.7		533.7	533.7	402	402	402	795.0		795.0	795.0	704.2		704.2	704.2
30	559.6		559.6	559.6	603	603	603	766.6		766.6	766.6	764.8		764.8	764.8
31	580.7		580.7	580.7				792.8		792.8	792.8	683.5		683.5	683.5
Total (m <sup>3</sup> )	14971	2317	17288	14971	18157	18157	18157	21234	1714	22948	21234	20171	3514	23685	20171
Average (m <sup>3</sup> )	483	257	558	483	605	605	605	685	286	740	685	651	502	764	651
min	136	16	498	136	402	402	402	266	12	627	266	162	182	684	162
max	602	544	680	602	718	718	718	882	482	882	882	829	772	933	829
n	31	9	31	31	30	30	30	31	6	31	31	31	7	31	31

## DAILY FLOWS FROM OKANAGAN FALLS WASTEWATER TREATMENT PLANT TO RIVER AND WETLAND AND FROM WETLAND TO RIVER

Day of Month	September-20				October-20					Nov-20				Dec-20		
	From WWTP To River	From WWTP To Wetland	Total Flow From WWTP	Total Flow To River	From WWTP To River	From WWTP To Wetland	From Wetland to River	Total Flow From WWTP	Total Flow to River	From WWTP To River	From Wetland to River	Total Flow From WWTP	Total Flow to River	From WWTP To River	Total Flow From WWTP	Total Flow to River
1	289.4	501.7	791.1	289.4	350.3	126.8		477.1	350.3	666.5		666.5	666.5	556.6	556.6	556.6
2	406.7	341.3	748.0	406.7	471.1	70.6		541.7	471.1	594.6		594.6	594.6	545.9	545.9	545.9
3	688.9		688.9	688.9	598.5			598.5	598.5	585.7	157.6	585.7	743.3	548.6	548.6	548.6
4	729.7		729.7	729.7	640.1			640.1	640.1	574.3	192.5	574.3	766.9	557.0	557.0	557.0
5	757.4		757.4	757.4	471.8	114.2		586.0	471.8	587.4	150.1	587.4	737.4	544.8	544.8	544.8
6	765.9		765.9	765.9	439.6	135.3		575.0	439.6	559.4	109.2	559.4	668.7	544.6	544.6	544.6
7	662.1		662.1	662.1	506.2			506.2	506.2	588.5	90.4	588.5	678.9	522.4	522.4	522.4
8	236.1	486.3	722.4	236.1	557.0			557.0	557.0	591.9	71.4	591.9	663.4	554.4	554.4	554.4
9	406.0	345.2	751.1	406.0	594.2			594.2	594.2	590.8	53.2	590.8	644.0	563.0	563.0	563.0
10	611.8		611.8	611.8	590.6			590.6	590.6	571.3	45.8	571.3	617.1	549.6	549.6	549.6
11	667.0		667.0	667.0	637.8			637.8	637.8	602.9	29.5	602.9	632.4	557.8	557.8	557.8
12	657.4		657.4	657.4	631.0			631.0	631.0	559.9	19.9	559.9	579.7	545.1	545.1	545.1
13	644.9		644.9	644.9	627.4			627.4	627.4	601.2	7.3	601.2	608.5	602.3	602.3	602.3
14	649.9		649.9	649.9	559.7			559.7	559.7	608.4		608.4	608.4	539.9	539.9	539.9
15	608.0		608.0	608.0	538.4			538.4	538.4	611.7		611.7	611.7	521.1	521.1	521.1
16	633.6		633.6	633.6	544.4			544.4	544.4	603.8		603.8	603.8	556.9	556.9	556.9
17	596.9		596.9	596.9	561.0			561.0	561.0	624.5	488.2	624.5	1112.7	552.2	552.2	552.2
18	600.9		600.9	600.9	613.3			613.3	613.3	603.1	422.6	603.1	1025.7	538.5	538.5	538.5
19	646.6		646.6	646.6	606.9			606.9	606.9	581.7		581.7	581.7	536.0	536.0	536.0
20	716.6		716.6	716.6	551.1			551.1	551.1	587.4		587.4	587.4	570.5	570.5	570.5
21	164.8	518.7	683.4	164.8	537.5			537.5	537.5	581.3		581.3	581.3	606.6	606.6	606.6
22	285.9	380.5	666.4	285.9	483.7	76.6	66.7	560.3	550.4	613.5		613.5	613.5	583.1	583.1	583.1
23	580.1		580.1	580.1	594.6		4.5	594.6	599.1	578.8		578.8	578.8	547.6	547.6	547.6
24	549.8		549.8	549.8	587.4			587.4	587.4	549.6	420.1	549.6	969.7	603.2	603.2	603.2
25	644.6		644.6	644.6	637.9			637.9	637.9	568.9	145.9	568.9	714.8	583.9	583.9	583.9
26	636.9		636.9	636.9	615.6			615.6	615.6	565.1	68.1	565.1	633.2	545.1	545.1	545.1
27	621.9		621.9	621.9	590.6		50.3	590.6	640.9	550.9	40.7	550.9	591.6	554.2	554.2	554.2
28	577.0		577.0	577.0	610.7		77.3	610.7	688.0	417.6	23.6	417.6	441.2	595.1	595.1	595.1
29	562.7		562.7	562.7	585.8		80.1	585.8	666.0	602.6	23.6	602.6	626.2	550.5	550.5	550.5
30	582.3		582.3	582.3	585.9		38.5	585.9	624.4	576.1	20.5	576.1	596.5	546.8	546.8	546.8
31					622.9			622.9	622.9					586.1	586.1	586.1
Total (m <sup>3</sup> )	17182	2574	19755	17182	17543	524	317	18067	17860	17499	2580	17499	20080	17310	17310	17310
Average (m <sup>3</sup> )	573	429	659	573	566	105	53	583	576	583	129	583	669	558	558	558
min	165	341	550	165	350	71	4	477	350	418	7.3	418	441	521	521	521
max	766	519	791	766	640	135	80	640	688	667	488	667	1113	607	607	607
n	30	6	30	30	31	5	6	31	31	30	20	30	30	31	31	31

## Okanagan Falls Wastewater Treatment Facility

## DAILY FLOWS AND DILUTION FACTOR FOR OKANAGAN RIVER (STATION 08NM002) AND FOR OKANAGAN FALLS WASTEWATER TREATMENT PLANT

2020	January			February			March			April		
Day of the Month	Okanagan River Flows (Station 08NM002) <sup>1</sup> m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) <sup>1</sup> m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) <sup>1</sup> m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) <sup>1</sup> m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>
1	902759	513.6	1759	1914678	499.5	3834	2871435	517.2	6002	2708047	8.8	315877
2	903076	486.0	1859	1907448	505.4	3775	2854613	474.3	5520	2706684	19.5	306472
3	903102	469.1	1926	1906616	494.2	3859	2841626	461.0	5992	2700667	227.8	138713
4	902567	467.6	1931	1895983	483.4	3923	2836547	460.9	6154	2699701	539.1	11853
5	897325	474.6	1892	1904046	457.9	4159	2822813	471.4	6126	2698292	571.2	5006
6	899249	501.5	1794	1911948	471.2	4058	2808967	462.4	5960	2698141	130.3	4725
7	903936	461.0	1962	1917814	494.4	3880	2800952	488.7	6058	2703542	13.7	20742
8	936294	446.2	2099	1922770	531.4	3619	2794748	502.0	5719	2705427	9.9	197037
9	1392415	450.4	3092	1919034	543.1	3535	2786895	494.2	5553	2700834	200.1	272101
10	1581521	423.8	3733	1918458	529.6	3624	2774662	466.0	5615	2696841	489.9	13478
11	1583538	464.8	3408	1925411	536.9	3587	2764160	484.9	5933	2697544	515.6	5508
12	1582396	501.4	3157	2463320	495.5	4972	2762587	471.8	5698	2699134	518.1	5236
13	1572776	506.7	3105	2863325	492.4	5816	2760409	459.1	5852	2690865	503.3	5195
14	1563369	497.3	3145	2862909	482.3	5937	2757168	491.2	6007	2689986	140.3	5346
15	1548412	494.9	3129	2866189	494.3	5799	2747040	505.4	5593	2690196	10.8	19181
16	1551908	514.0	3020	2866727	521.6	5497	2737628	486.4	5417	2695545	261.8	248910
17	1553229	468.7	3315	2865106	566.3	5060	2732481	495.6	5619	2689775	434.6	10277
18	1553325	483.3	3215	2869495	481.3	5963	2730177	492.5	5509	2689207	427.2	6189
19	1566271	624.9	2508	2873029	479.9	5988	2730328	490.3	5545	2695317	442.5	6310
20	1575460	532.5	2960	2873896	482.0	5963	2725844	509.5	5561	2697364	242.4	6096
21	1575145	513.3	3070	2870809	478.9	5995	2725093	503.9	5349	2702272	190.3	11147
22	1575472	512.5	3075	2882608	497.9	5790	2725261	521.4	5409	2703742	325.6	14206
23	1578005	509.0	3101	2890277	515.5	5607	2721417	372.4	5220	2709635	190.9	8323
24	1581229	488.7	3237	2897833	493.9	5869	2718921	287.7	7301	2721130	348.4	14257
25	1581423	493.0	3208	2897954	481.2	6023	2714597	86.9	9436	2730679	461.9	7838
26	1581350	521.0	3036	2906874	465.8	6242	2713471	10.2	31243	2744077	488.7	5941
27	1755630	492.6	3565	2897719	466.3	6215	2709682	194.9	265062	2768549	465.5	5666
28	1911259	471.3	4056	2883889	463.2	6228	2710832	475.2	13913	2788492	236.4	5991
29	1908968	480.3	3976	2871435	478.5	6002	2708645	445.4	5701	2802162	231.4	11854
30	1907022	481.4	3962				2706518	164.2	6077	2823347	498.0	12202
31	1906406	504.2	3782				2705520	8.6	16482			
TOTAL	44734840	15250		69576164	14384		85501036	12756		81447191	9144	
AVERAGE	1443059	491.9	2938	2484863	496.6	5029	2758098	411.5	15698	2714906	304.8	56723
MINIMUM	897325	423.8	1759	1895983	457.9	3535	2705520	8.6	5220	2689207	8.8	4725
MAXIMUM	1911259	624.9	4056	2906874	566.3	6242	2871435	521.4	265062	2823347	571.2	315877

<sup>1</sup> Data received from Environment Canada with the following qualification "Data is unapproved and subject to revision."

<sup>2</sup> Dilution Factor = (OK River flow + WWTP flow)/ WWTP flow

## Okanagan Falls Wastewater Treatment Facility

## DAILY FLOWS AND DILUTION FACTOR FOR OKANAGAN RIVER (STATION 08NM002) AND FOR OKANAGAN FALLS WASTEWATER TREATMENT PLANT

2020	May			June			July			August		
Day of the Month	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>
1	2858877	359.1	5742	6126156	541.8	10550	6702217	676.6	11114	4965205	801.0	6264
2	2885401	512.5	8036	6156611	516.8	11365	6669569	697.2	9859	4951555	822.1	6182
3	2916266	601.8	5692	6441475	520.0	12466	6671932	710.2	9570	4927219	829.5	5994
4	3127515	512.1	5198	6597688	527.8	12688	6667938	770.5	9390	4908747	240.9	5919
5	3320717	177.4	6485	6611480	532.3	12528	6649349	783.9	8631	4881539	161.6	20261
6	3322545	441.1	18731	6598683	653.9	12397	6622719	736.1	8449	4860933	578.6	30083
7	3332987	537.6	7556	6618075	590.8	10121	6594258	712.9	8959	4858957	715.5	8399
8	3353390	347.8	6239	6600606	561.2	11173	6584691	782.5	9238	4849376	756.4	6779
9	3360405	550.7	9663	6613962	558.9	11787	6558698	626.6	8383	4822286	756.2	6376
10	3371292	571.7	6122	6592648	545.0	11796	6463554	698.4	10316	4797988	730.4	6345
11	3384354	171.3	5921	6608381	530.0	12127	6400978	721.0	9166	4673902	708.6	6400
12	3574460	389.1	20873	6585378	550.2	12426	6399848	697.3	8877	4575710	740.4	6458
13	3693944	497.9	9494	6598701	581.1	11995	6393712	713.7	9171	4579172	716.5	6186
14	3692475	499.4	7417	6589143	612.5	11341	6346191	774.9	8894	3844847	746.0	5367
15	3685789	504.0	7381	6608873	600.5	10791	6326531	881.7	8165	3432736	754.0	4602
16	3681221	516.3	7306	6626071	608.2	11036	6317180	861.1	7166	3470024	809.5	4603
17	3662544	570.5	7095	6640265	633.3	10919	6293642	696.1	7310	3503266	236.5	4329
18	3662080	601.7	6420	6786982	688.9	10717	6208218	776.2	8920	3532876	400.7	14939
19	3701117	136.1	6152	6894176	690.9	10008	6150646	749.5	7925	3545839	685.5	8851
20	3730847	412.4	27413	6885007	676.8	9966	6152766	645.8	8210	3555128	711.8	5187
21	4365543	531.9	10586	6854198	717.8	10128	6130997	270.6	9495	2856230	740.5	4013
22	4982940	546.0	9369	6873524	707.9	9577	5572086	388.6	20592	2335747	732.5	3155
23	5365014	531.8	9827	6883062	678.3	9724	5060192	266.4	13023	2356730	764.2	3218
24	5722642	572.0	10763	6872984	667.1	10133	5064833	546.6	19011	2368509	683.7	3100
25	6020176	578.7	10525	6854817	715.2	10276	5055693	737.5	9250	2380514	324.9	3483
26	5997653	541.0	10364	6847215	656.4	9575	5033473	778.7	6826	2383663	429.8	7337
27	6057337	540.2	11197	6829941	652.2	10406	5025783	463.3	6455	2385306	710.0	5550
28	6076476	544.5	11250	6793509	635.6	10417	5006222	715.3	10808	2389145	731.1	3366
29	6075036	533.7	11159	6743032	402.4	10610	5003342	795.0	6995	2392534	704.2	3273
30	6093822	559.6	11420	6720712	603.1	16703	4984150	766.6	6270	2401430	764.8	3411
31	6094272	580.7	10891				4972726	792.8	6488	2394702	683.5	3132
TOTAL	131169138	14971		200053354	18157		186084135	21234		114181814	20171	
AVERAGE	4231263	482.9	9751	6668445	605.2	11191	6002714	685.0	9449	3683284	650.7	6857
MINIMUM	2858877	136.1	5198	6126156	402.4	9575	4972726	266.4	6270	2335747	161.6	3100
MAXIMUM	6094272	601.8	27413	6894176	717.8	16703	6702217	881.7	20592	4965205	829.5	30083

<sup>1</sup> Data received from Environment Canada with the following qualification "Data is unapproved and subject to revision."

<sup>2</sup> Dilution Factor = (OK River flow + WWTP flow)/ WWTP flow

## Okanagan Falls Wastewater Treatment Facility

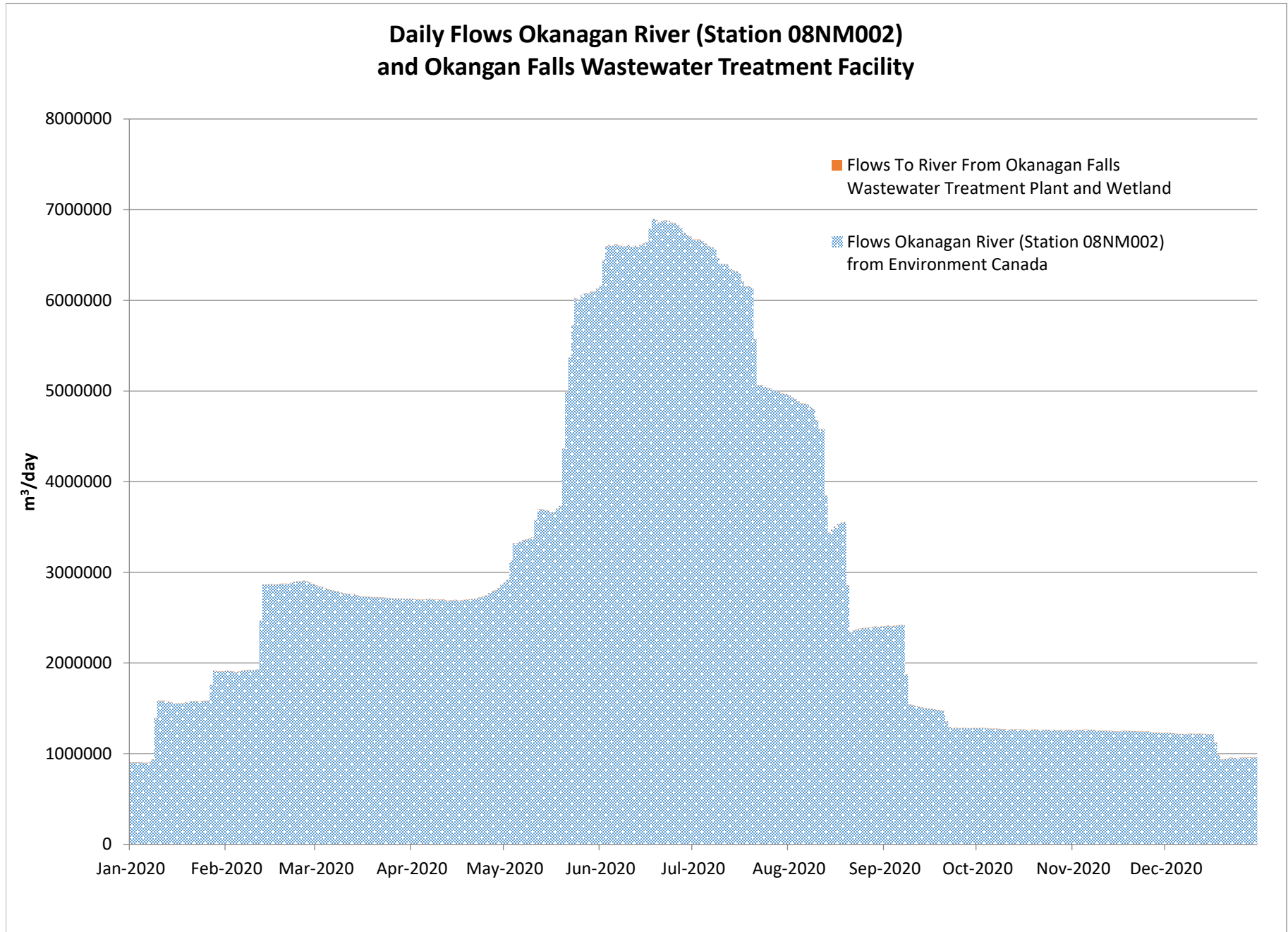
## DAILY FLOWS AND DILUTION FACTOR FOR OKANAGAN RIVER (STATION 08NM002) AND FOR OKANAGAN FALLS WASTEWATER TREATMENT PLANT

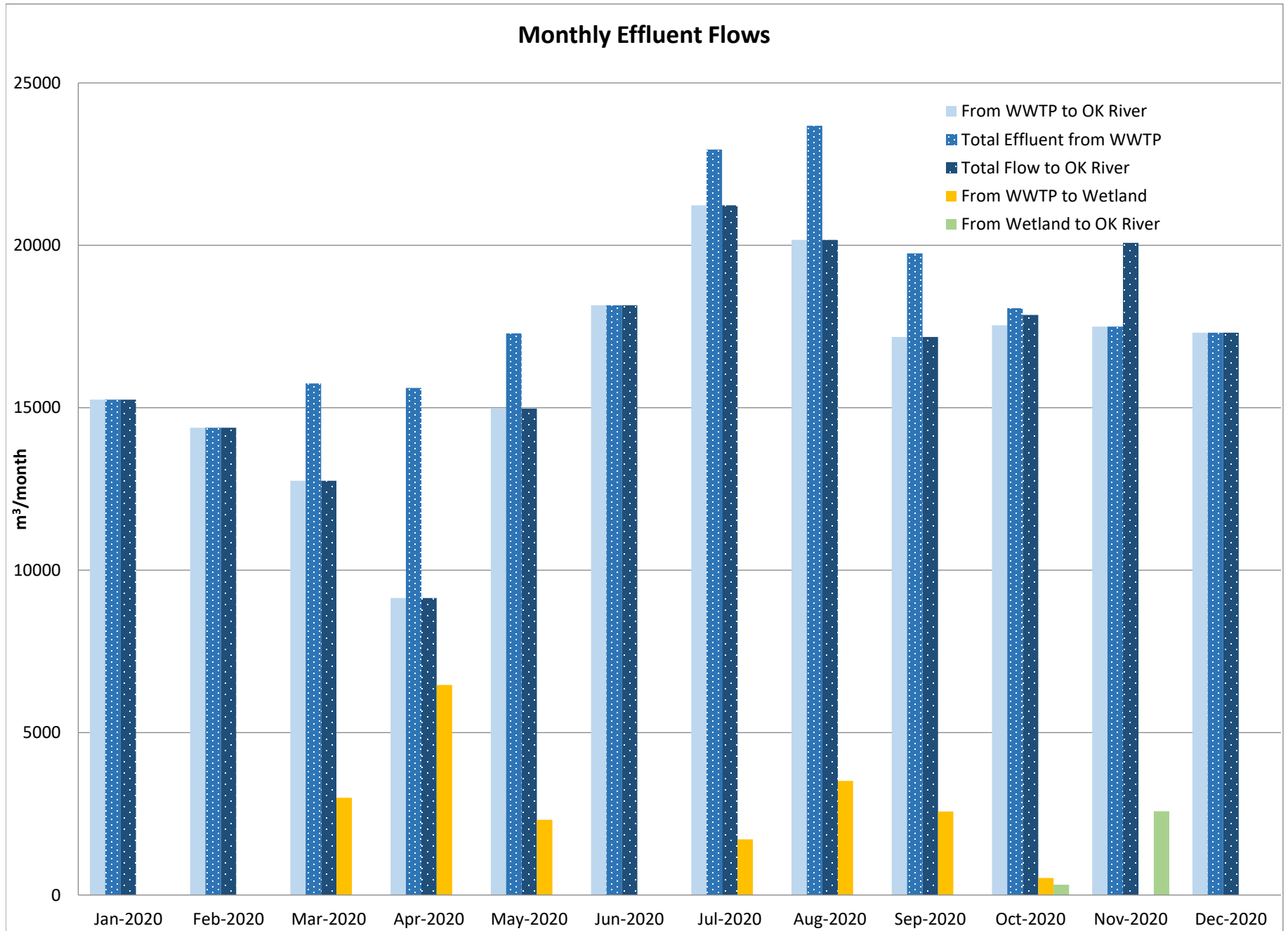
2020	September			October			November			December		
Day of the Month	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>	Okanagan River Flows (Station 08NM002) 1 m3/day	Flows to Okanagan River from WWTP and Wetland m3/day	Dilution Factor <sup>2</sup>
1	2400457	289.4	3513	1280466	350.3	2200	1258531	666.5	2021	1227932	556.6	2059
2	2404025	406.7	8309	1279811	471.1	3655	1259712	594.6	1891	1227600	545.9	2207
3	2410510	688.9	5928	1281022	598.5	2720	1258653	743.3	2118	1227018	548.6	2249
4	2404823	729.7	3492	1280404	640.1	2140	1258337	766.9	1694	1223204	557.0	2231
5	2407546	757.4	3300	1278507	471.8	1998	1260914	737.4	1645	1220277	544.8	2192
6	2411828	765.9	3185	1275178	439.6	2704	1265528	668.7	1717	1216549	544.6	2234
7	2418420	662.1	3159	1274234	506.2	2899	1261964	678.9	1888	1215890	522.4	2234
8	2416149	236.1	3650	1275031	557.0	2520	1260801	663.4	1858	1213781	554.4	2325
9	1872812	406.0	7933	1270456	594.2	2282	1258289	644.0	1898	1215813	563.0	2194
10	1539147	611.8	3792	1269608	590.6	2138	1251008	617.1	1944	1219026	549.6	2166
11	1535162	667.0	2510	1267861	637.8	2148	1252278	632.4	2030	1216809	557.8	2215
12	1525585	657.4	2288	1262808	631.0	1981	1251445	579.7	1980	1218031	545.1	2185
13	1515765	644.9	2307	1265563	627.4	2007	1250451	608.5	2158	1218993	602.3	2237
14	1507853	649.9	2339	1265128	559.7	2017	1249886	608.4	2055	1216268	539.9	2020
15	1499975	608.0	2309	1267943	538.4	2266	1247089	611.7	2051	1216148	521.1	2253
16	1494482	633.6	2459	1264430	544.4	2349	1243293	603.8	2033	1214360	556.9	2331
17	1491809	596.9	2356	1264340	561.0	2323	1242951	1112.7	2060	1213610	552.2	2180
18	1487697	600.9	2493	1262807	613.3	2252	1249130	1025.7	1124	119366	538.5	2028
19	1480619	646.6	2465	1262583	606.9	2060	1249948	581.7	1220	981749	536.0	1824
20	1475717	716.6	2283	1263135	551.1	2082	1249478	587.4	2149	936240	570.5	1748
21	1467018	164.8	2048	1262930	537.5	2293	1247786	581.3	2125	941014	606.6	1651
22	1357204	285.9	8238	1262746	483.7	2350	1246863	613.5	2146	946200	583.1	1561
23	1288262	580.1	4507	1262725	594.6	2612	1245383	578.8	2031	955830	547.6	1640
24	1279908	549.8	2207	1262725	587.4	2125	1245211	969.7	2153	950915	603.2	1737
25	1283551	644.6	2336	1262725	637.9	2151	1241592	714.8	1281	950091	583.9	1576
26	1280201	636.9	1987	1262725	615.6	1981	1244718	633.2	1742	953546	545.1	1634
27	1280610	621.9	2012	1260842	590.6	2049	1234296	591.6	1950	955466	554.2	1754
28	1281392	577.0	2061	1254527	610.7	2125	1228096	441.2	2077	956406	595.1	1727
29	1279133	562.7	2218	1255554	585.8	2057	1229514	626.2	2788	956965	550.5	1609
30	1278826	582.3	2273	1256975	585.9	2147	1227972	596.5	1962	956344	546.8	1738
31				1257744	622.9	2148				957905	586.1	1753
TOTAL	50776485	17182		39273533	17543		37471119	20080		34239347	17310	
AVERAGE	1692550	572.7	3332	1266888	565.9	2283	1249037	669.3	1926	1104495	558.4	1984
MINIMUM	1278826	164.8	1987	1254527	350.3	1981	1227972	441.2	1124	936240	521.1	1561
MAXIMUM	2418420	765.9	8309	1281022	640.1	3655	1265528	1112.7	2788	1227932	606.6	2331

<sup>1</sup>Data received from Environment Canada with the following qualification "Data is unapproved and subject to revision."

<sup>2</sup>Dilution Factor = (OK River flow + WWTP flow)/ WWTP flow







# **APPENDIX H**

## **Effluent Water Quality Monitoring Database Summary 2020**

## Water Quality Results

Analyte	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
<b>Field Results</b>							
<b>Reading Type: Online Instrument</b>							
pH - 24 hour average 0:00 to 24:00hr		6.93	6.79	7.17	0.08	366	366
Temperature - 24 hour average 0:00 to 24:00 hr	°C	15.7	8.2	22.5	4.2	366	366
pH - when sample collected		6.94	6.84	7.15	0.08	56	56
Temperature - when sample collected	°C	16.0	8.5	22.7	4.3	56	56
<b>Lab Results</b>							
<b>General</b>							
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	228	207	259	17	6	6
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L					6	0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L					6	0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L					6	0
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	228	207	259	17	6	6
Biochemical oxygen demand	mg/L	3.1	1.8	8.3	1.7	19	12
5-d Carbonaceous BOD	mg/L	1	<1.1	1.8	0.5	6	1
Chemical Oxygen Demand	mg/L	31	16	234	29	54	50
Chloride	mg/L	111	91	124	11	6	6
Conductivity	µS/cm	876	837	940	35	6	6
Fluoride	mg/L	0.2	0.18	0.25	0.03	6	6
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	244	212	265	22	6	6
pH		7.79	7.42	8.04	0.16	14	14
Sulphate	mg/L	47.7	45.8	51.5	2.0	6	6
Total suspended solids	mg/L	1.3	<2.0	3.4	0.6	54	6
UV transmittance at 254 nm - filtered	%	69.4	62.8	76.1	3.1	54	54
<b>Microbiological</b>							
E. coli (MPN)	MPN/100 mL	0.5	1	1	0.1	54	1
Fecal coliforms (MPN)	MPN/100 mL	0.5	1	1	0.1	54	1
<b>Toxicity</b>							
LC50, 96 hour, Rainbow Trout	%					1	0
<b>Nutrients</b>							
Ammonia (total, as N)	mg/L	0.377	0.068	3.3	0.522	54	54
Nitrate (as N)	mg/L	1.946	0.272	4.74	0.993	54	54
Nitrite (as N)	mg/L	0.102	0.019	0.299	0.062	54	54
Total nitrogen	mg/L	3.74	1.72	7.21	1.34	16	16
Total kjeldahl nitrogen	mg/L	1.81	1.11	4.62	0.94	16	16
Total organic nitrogen	mg/L	1.29	0.949	1.51	0.196	8	8
Orthophosphate (dissolved, as P)	mg/L	0.0357	0.0050	0.1810	0.0349	54	52
Phosphorus (total, by ICPMS/ICPOES)	mg/L	0.162	0.138	0.197	0.025	6	6
Phosphorus (total, APHA 4500-P)	mg/L	0.1473	0.0911	0.353	0.0532	54	54
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.1015	0.0568	0.1720	0.0337	14	14
Potassium (total)	mg/L	16.6	15.1	18.1	1.0	6	6

## Water Quality Results

Analyte	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
<b>Total Metals</b>							
Aluminum (total)	mg/L	0.0476	0.0159	0.0748	0.0271	6	6
Antimony (total)	mg/L	0.00012	0.0002	0.0002	0.00004	6	1
Arsenic (total)	mg/L	0.00102	0.00053	0.00341	0.00117	6	6
Barium (total)	mg/L	0.0603	0.0472	0.0867	0.0141	6	6
Beryllium (total)	mg/L					6	0
Bismuth (total)	mg/L					6	0
Boron (total)	mg/L	0.141	0.122	0.181	0.024	6	6
Cadmium (total)	mg/L					6	0
Calcium (total)	mg/L	75.3	66.2	81.7	7.1	6	6
Chromium (total)	mg/L					6	0
Cobalt (total)	mg/L	0.00016	0.00015	0.0002	0.00002	6	6
Copper (total)	mg/L	0.00223	0.00122	0.00452	0.00128	6	6
Iron (total)	mg/L	0.026	0.016	0.047	0.012	6	6
Lead (total)	mg/L	0.00012	0.0002	0.0002	0.00004	6	1
Lithium (total)	mg/L	0.00638	0.00581	0.00732	0.00066	6	6
Magnesium (total)	mg/L	13.6	11.3	14.8	1.2	6	6
Manganese (total)	mg/L	0.0453	0.0267	0.0539	0.0095	6	6
Mercury (total)	mg/L					6	0
Molybdenum (total)	mg/L	0.0013	0.001	0.00192	0.00032	6	6
Nickel (total)	mg/L	0.00123	0.00089	0.00189	0.0004	6	6
Selenium (total)	mg/L	0.00035	0.0005	0.00061	0.00016	6	2
Silicon (total, as Si)	mg/L	10.8	10.1	11.5	0.5	6	6
Silver (total)	mg/L					6	0
Sodium (total)	mg/L	84.4	71.1	94.2	7.6	6	6
Strontium (total)	mg/L	0.641	0.568	0.705	0.053	6	6
Sulphur (total)	mg/L	17.5	15.4	18.8	1.2	6	6
Tellurium (total)	mg/L					6	0
Thallium (total)	mg/L					6	0
Thorium (total)	mg/L					6	0
Tin (total)	mg/L	0.00020	<0.00020	0.00034	0.00011	6	3
Titanium (total)	mg/L					6	0
Tungsten (total)	mg/L					6	0
Uranium (total)	mg/L	0.00231	0.00203	0.00276	0.00024	6	6
Vanadium (total)	mg/L	0.0006	<0.0010	0.0012	0.0003	6	1
Zinc (total)	mg/L	0.0238	0.0224	0.0273	0.0018	6	6
Zirconium (total)	mg/L	0.00008	0.00010	0.00013	0.00004	6	3



Water Quality Results

Analyte	Unit	Sampling Location								
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	01-Jan-20	02-Jan-20	03-Jan-20	04-Jan-20	05-Jan-20	06-Jan-20	07-Jan-20	08-Jan-20
		Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	
<b>Field Results</b>										
<b>Reading Type: Online Instrument</b>										
pH - 24 hour average		6.81	6.81	6.82	6.81	6.79	6.8	6.82	6.86	
Temperature - 24 hour average	°C	11.7	11.8	11.9	11.9	11.7	11.7	11.8	11.7	
pH - when sample collected										
Temperature - when sample collected	°C									
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO3)	mg/L									
Alkalinity (carbonate, as CaCO3)	mg/L									
Alkalinity (hydroxide, as CaCO3)	mg/L									
Alkalinity (phenolphthalein, as CaCO3)	mg/L									
Alkalinity (total, as CaCO3)	mg/L									
Biochemical oxygen demand	mg/L									
5-d Carbonaceous BOD	mg/L									
Chemical Oxygen Demand	mg/L									
Chloride	mg/L									
Conductivity	µS/cm									
Fluoride	mg/L									
Hardness, Total (total as CaCO3)	mg/L									
pH										
Sulphate	mg/L									
Total suspended solids	mg/L									
UV transmittance at 254 nm - filtered	%									
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL									
Fecal coliforms (MPN)	MPN/100 mL									
<b>Toxicity</b>										
LC50, 96 hour, Rainbow Trout	%									
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L									
Nitrate (as N)	mg/L									
Nitrite (as N)	mg/L									
Total nitrogen	mg/L									
Total kjeldahl nitrogen	mg/L									
Total organic nitrogen	mg/L									
Orthophosphate (dissolved, as P)	mg/L									
Phosphorus (total, by ICPMS/ICPOES)	mg/L									
Phosphorus (total, APHA 4500-P)	mg/L									
Phosphorus (dissolved, APHA 4500-P)	mg/L									



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	08-Jan-20	08-Jan-20	09-Jan-20	10-Jan-20	11-Jan-20	12-Jan-20	13-Jan-20
		Lab Sample ID	0010450-01	0010448-01					
		Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average				6.84	6.87	6.86	6.88	6.91	
Temperature - 24 hour average	°C			11.4	11	11.2	11	9.4	
pH - when sample collected		6.86	6.86						
Temperature - when sample collected	°C	11.6	11.6						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L	27							
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L	<2.0							
UV transmittance at 254 nm - filtered	%	69.3							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1.0						
Fecal coliforms (MPN)	MPN/100 mL		<1.0						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	0.206							
Nitrate (as N)	mg/L	2.36							
Nitrite (as N)	mg/L	0.027							
Total nitrogen	mg/L	3.98							
Total kjeldahl nitrogen	mg/L	1.59							
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L	0.0444							
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L	0.134							
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	14-Jan-20	15-Jan-20	15-Jan-20	15-Jan-20	16-Jan-20	17-Jan-20	18-Jan-20
		Lab Sample ID			0010892-01	0010893-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.88	6.88			6.9	6.88	6.86	
Temperature - 24 hour average	°C	8.7	8.5			8.2	8.7	9.2	
pH - when sample collected				6.87	6.87				
Temperature - when sample collected	°C			8.5	8.5				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			25					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			67.6					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			3.30					
Nitrate (as N)	mg/L			2.53					
Nitrite (as N)	mg/L			0.059					
Total nitrogen	mg/L			7.21					
Total kjeldahl nitrogen	mg/L			4.62					
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.028					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.132					
Phosphorus (dissolved, APHA 4500-P)	mg/L								





## Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		19-Jan-20	20-Jan-20	21-Jan-20	21-Jan-20	21-Jan-20	22-Jan-20	23-Jan-20
		Lab Sample ID			0011328-01	0011329-01		
Analyte	Unit	Field Only	Field Only	Field Only	Normal	Normal	Field Only	Field Only
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.88	6.89	6.87			6.85	6.84
Temperature - 24 hour average	°C	9.9	10.4	10.5			10.7	10.9
pH - when sample collected					6.84	6.84		
Temperature - when sample collected	°C				10.4	10.4		
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L				221			
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L				<1.0			
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L				<1.0			
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L				<1.0			
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L				221			
Biochemical oxygen demand	mg/L				<6.2			
5-d Carbonaceous BOD	mg/L				<1.1			
Chemical Oxygen Demand	mg/L				<20			
Chloride	mg/L				106			
Conductivity	µS/cm				859			
Fluoride	mg/L				0.18			
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L				221			
pH					7.69			
Sulphate	mg/L				47.5			
Total suspended solids	mg/L				2.8			
UV transmittance at 254 nm - filtered	%				68.5			
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL					<1.0		
Fecal coliforms (MPN)	MPN/100 mL					<1.0		
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L				2.28			
Nitrate (as N)	mg/L				2.42			
Nitrite (as N)	mg/L				0.049			
Total nitrogen	mg/L				5.84			
Total kjeldahl nitrogen	mg/L				3.38			
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L				0.0265			
Phosphorus (total, by ICPMS/ICPOES)	mg/L				0.144			
Phosphorus (total, APHA 4500-P)	mg/L				0.155			
Phosphorus (dissolved, APHA 4500-P)	mg/L				0.118			



## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		24-Jan-20	25-Jan-20	26-Jan-20	27-Jan-20	28-Jan-20	29-Jan-20	29-Jan-20
Lab Sample ID								0012031-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.84	6.84	6.86	6.88	7.02	7.14	
Temperature - 24 hour average	°C	11	11.1	11.1	11.2	11.2	10.8	
pH - when sample collected								7.13
Temperature - when sample collected	°C							10.9
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							26
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							<2.0
UV transmittance at 254 nm - filtered	%							67.6
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							1.1
Nitrate (as N)	mg/L							2.96
Nitrite (as N)	mg/L							0.054
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							0.0604
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							0.115
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		29-Jan-20	30-Jan-20	31-Jan-20	01-Feb-20	02-Feb-20	03-Feb-20	04-Feb-20
Date Sampled								
Lab Sample ID		0012030-01						
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			7.14	7.14	7.17	7.15	7.17	7.16
Temperature - 24 hour average	°C		10.6	10.6	10.7	10.6	10.5	10
pH - when sample collected		7.13						
Temperature - when sample collected	°C	10.9						
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	<1.0						
Fecal coliforms (MPN)	MPN/100 mL	<1.0						
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	05-Feb-20	05-Feb-20	05-Feb-20	06-Feb-20	07-Feb-20	08-Feb-20	09-Feb-20
		Lab Sample ID		0020430-01	0020429-01				
		Sample Type	Field Only	Normal	Normal	Field Only	Field Only	Field Only	Field Only
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average			7.16			7.15	7.15	7.15	7.14
Temperature - 24 hour average	°C		9.8			9.8	10	10.1	10.2
pH - when sample collected				7.15	7.15				
Temperature - when sample collected	°C			9.8	9.8				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			27					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<4.0					
UV transmittance at 254 nm - filtered	%			69.1					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.422					
Nitrate (as N)	mg/L			4.74					
Nitrite (as N)	mg/L			0.052					
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.0202					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.0911					
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		10-Feb-20	11-Feb-20	12-Feb-20	12-Feb-20	12-Feb-20	13-Feb-20	14-Feb-20
		Lab Sample ID			0021075-01	0021073-01		
Sample Type		Field Only	Field Only	Field Only	Normal	Normal	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		7.15	7.15	7.14			7.14	7.14
Temperature - 24 hour average	°C	10.5	10.5	10.4			10.1	10
pH - when sample collected					7.13	7.13		
Temperature - when sample collected	°C				10.5	10.5		
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L				24			
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L				<2.0			
UV transmittance at 254 nm - filtered	%				70.1			
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL					<1.0		
Fecal coliforms (MPN)	MPN/100 mL					<1.0		
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L				0.241			
Nitrate (as N)	mg/L				3.33			
Nitrite (as N)	mg/L				0.065			
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L				0.0145			
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L				0.0939			
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		15-Feb-20	16-Feb-20	17-Feb-20	18-Feb-20	19-Feb-20	19-Feb-20	19-Feb-20
		Lab Sample ID					0021619-01	0021617-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		7.15	7.14	7.14	7.15	7.13		
Temperature - 24 hour average	°C	10	10.1	10.2	10.2	9.9		
pH - when sample collected							7.13	7.13
Temperature - when sample collected	°C						10	10
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L						8.3	
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L						27	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH							7.74	
Sulphate	mg/L							
Total suspended solids	mg/L						2.2	
UV transmittance at 254 nm - filtered	%						68.2	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1.0
Fecal coliforms (MPN)	MPN/100 mL							<1.0
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L						0.202	
Nitrate (as N)	mg/L						3.15	
Nitrite (as N)	mg/L						0.064	
Total nitrogen	mg/L						4.77	
Total kjeldahl nitrogen	mg/L						1.55	
Total organic nitrogen	mg/L						1.35	
Orthophosphate (dissolved, as P)	mg/L						0.0153	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L						0.117	
Phosphorus (dissolved, APHA 4500-P)	mg/L						0.0626	



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		20-Feb-20	21-Feb-20	22-Feb-20	23-Feb-20	24-Feb-20	25-Feb-20	26-Feb-20
Date Sampled								
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		7.13	7.13	7.12	7.11	7.12	7.09	7.09
Temperature - 24 hour average	°C	9.8	10	10.2	10.4	10.6	10.6	10.6
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	26-Feb-20	26-Feb-20	27-Feb-20	28-Feb-20	29-Feb-20	01-Mar-20	02-Mar-20
		Lab Sample ID	0022232-01	0022234-01					
		Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average				7.09	7.07	7.07	7.05	7.05	
Temperature - 24 hour average	°C			10.8	10.8	10.8	10.9	11	
pH - when sample collected		7.12	7.12						
Temperature - when sample collected	°C	10.6	10.6						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L		37						
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L		<2.0						
UV transmittance at 254 nm - filtered	%		68.3						
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<1.0							
Fecal coliforms (MPN)	MPN/100 mL	<1.0							
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L		0.068						
Nitrate (as N)	mg/L		2.06						
Nitrite (as N)	mg/L		0.063						
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L		0.0164						
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L		0.104						
Phosphorus (dissolved, APHA 4500-P)	mg/L								





## Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	03-Mar-20	04-Mar-20	04-Mar-20	04-Mar-20	05-Mar-20	06-Mar-20	07-Mar-20
		Lab Sample ID			0030439-01	0030436-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		7.07	7.04			7.04	7.03	7.03	
Temperature - 24 hour average	°C	11.1	11.1			11	11.2	11.4	
pH - when sample collected				7.05	7.05				
Temperature - when sample collected	°C			11.1	11.1				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			27					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			70.3					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.179					
Nitrate (as N)	mg/L			2.34					
Nitrite (as N)	mg/L			0.021					
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.0143					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.119					
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	08-Mar-20	09-Mar-20	10-Mar-20	11-Mar-20	11-Mar-20	11-Mar-20	12-Mar-20
		Lab Sample ID					0031056-01	0031054-01	
Analyte	Unit	Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		7.02	7.03	7.02	7.01			7.01	
Temperature - 24 hour average	°C	11.4	11.3	11.2	11.3			11.4	
pH - when sample collected						7.01	7.01		
Temperature - when sample collected	°C					11.2	11.2		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L					25			
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L					<2.0			
UV transmittance at 254 nm - filtered	%					68.8			
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL						<1.0		
Fecal coliforms (MPN)	MPN/100 mL						<1.0		
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L					0.147			
Nitrate (as N)	mg/L					1.66			
Nitrite (as N)	mg/L					0.019			
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L					0.0287			
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L					0.107			
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		13-Mar-20	14-Mar-20	15-Mar-20	16-Mar-20	17-Mar-20	18-Mar-20
Date Sampled							
Lab Sample ID							0031672-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal
Analyte	Unit						
<b>Field Results</b>							
<b>Reading Type: Online Instrument</b>							
pH - 24 hour average		7.02	7.05	7.05	7.04	7	6.99
Temperature - 24 hour average	°C	11.1	10.4	9.9	9.9	10.3	10.5
pH - when sample collected							7.01
Temperature - when sample collected	°C						10.5
<b>Lab Results</b>							
<b>General</b>							
Alkalinity (bicarbonate, as CaCO3)	mg/L						
Alkalinity (carbonate, as CaCO3)	mg/L						
Alkalinity (hydroxide, as CaCO3)	mg/L						
Alkalinity (phenolphthalein, as CaCO3)	mg/L						
Alkalinity (total, as CaCO3)	mg/L						
Biochemical oxygen demand	mg/L						<5.5
5-d Carbonaceous BOD	mg/L						
Chemical Oxygen Demand	mg/L						29
Chloride	mg/L						
Conductivity	µS/cm						
Fluoride	mg/L						
Hardness, Total (total as CaCO3)	mg/L						
pH							7.6
Sulphate	mg/L						
Total suspended solids	mg/L						<2.0
UV transmittance at 254 nm - filtered	%						67.8
<b>Microbiological</b>							
E. coli (MPN)	MPN/100 mL						
Fecal coliforms (MPN)	MPN/100 mL						
<b>Toxicity</b>							
LC50, 96 hour, Rainbow Trout	%						
<b>Nutrients</b>							
Ammonia (total, as N)	mg/L						0.198
Nitrate (as N)	mg/L						2.04
Nitrite (as N)	mg/L						0.081
Total nitrogen	mg/L						3.72
Total kjeldahl nitrogen	mg/L						1.6
Total organic nitrogen	mg/L						1.4
Orthophosphate (dissolved, as P)	mg/L						0.0153
Phosphorus (total, by ICPMS/ICPOES)	mg/L						
Phosphorus (total, APHA 4500-P)	mg/L						0.109
Phosphorus (dissolved, APHA 4500-P)	mg/L						0.0568



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		18-Mar-20	19-Mar-20	20-Mar-20	21-Mar-20	22-Mar-20	23-Mar-20	24-Mar-20
Date Sampled		18-Mar-20	19-Mar-20	20-Mar-20	21-Mar-20	22-Mar-20	23-Mar-20	24-Mar-20
Lab Sample ID		0031670-01						
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			6.98	6.97	6.97	6.98	6.97	6.96
Temperature - 24 hour average	°C		10.6	10.9	11	11.2	11.4	11.5
pH - when sample collected		7.01						
Temperature - when sample collected	°C	10.5						
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	<1.0						
Fecal coliforms (MPN)	MPN/100 mL	<1.0						
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	25-Mar-20	25-Mar-20	25-Mar-20	26-Mar-20	27-Mar-20	28-Mar-20	29-Mar-20
		Lab Sample ID		0032163-01	0032162-01				
		Sample Type	Field Only	Normal	Normal	Field Only	Field Only	Field Only	Field Only
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average			6.96			6.95	6.93	6.93	6.95
Temperature - 24 hour average	°C		11.5			11.6	11.8	12	12.3
pH - when sample collected				6.95	6.95				
Temperature - when sample collected	°C			11.5	11.5				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			31					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			66					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.422					
Nitrate (as N)	mg/L			2.21					
Nitrite (as N)	mg/L			0.147					
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.0113					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.134					
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	30-Mar-20	31-Mar-20	01-Apr-20	01-Apr-20	01-Apr-20	02-Apr-20	03-Apr-20
		Lab Sample ID				0040177-01	0040176-01		
Sample Type		Field Only	Field Only	Field Only	Normal	Normal	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.96	6.92	6.95			6.94	6.94	
Temperature - 24 hour average	°C	12.4	12.3	11.8			11.7	11.7	
pH - when sample collected					6.94	6.94			
Temperature - when sample collected	°C				11.9	11.9			
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L				28				
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L				2.6				
UV transmittance at 254 nm - filtered	%				65.5				
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL					<1.0			
Fecal coliforms (MPN)	MPN/100 mL					<1.0			
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L				0.306				
Nitrate (as N)	mg/L				1.99				
Nitrite (as N)	mg/L				0.196				
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L				0.0144				
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L				0.146				
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		Date Sampled	04-Apr-20	05-Apr-20	06-Apr-20	07-Apr-20	08-Apr-20	08-Apr-20
		Lab Sample ID						0040780-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.94	6.95	6.94	6.93	6.92		
Temperature - 24 hour average	°C	11.5	11.7	12	12.3	12.5		
pH - when sample collected							6.93	6.93
Temperature - when sample collected	°C						12.5	12.5
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L						31	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L						3.4	
UV transmittance at 254 nm - filtered	%						65	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1.0
Fecal coliforms (MPN)	MPN/100 mL							<1.0
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L						0.276	
Nitrate (as N)	mg/L						2.27	
Nitrite (as N)	mg/L						0.23	
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L						0.0077	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L						0.154	
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		Date Sampled	09-Apr-20	10-Apr-20	11-Apr-20	12-Apr-20	13-Apr-20	14-Apr-20
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.92	6.94	6.97	6.97	6.96	6.94	6.95
Temperature - 24 hour average	°C	12.6	12.9	12.8	12.6	12.6	12.9	13.2
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							





## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	15-Apr-20	15-Apr-20	16-Apr-20	17-Apr-20	18-Apr-20	19-Apr-20	20-Apr-20
		Lab Sample ID	0041193-01	0041194-01					
Analyte	Unit	Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	Field Only
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average					6.93	6.93	6.93	6.92	6.92
Temperature - 24 hour average	°C				13.3	13.4	13.6	13.8	14.1
pH - when sample collected		6.97	6.97						
Temperature - when sample collected	°C	13.4	13.4						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L		259						
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L		<1.0						
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L		<1.0						
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L		<1.0						
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L		259						
Biochemical oxygen demand	mg/L		4.4						
5-d Carbonaceous BOD	mg/L		1.8						
Chemical Oxygen Demand	mg/L		29						
Chloride	mg/L		124						
Conductivity	µS/cm		940						
Fluoride	mg/L		0.2						
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L		252						
pH			7.91						
Sulphate	mg/L		51.5						
Total suspended solids	mg/L		<2.0						
UV transmittance at 254 nm - filtered	%		65.8						
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1.0						
Fecal coliforms (MPN)	MPN/100 mL		<1.0						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L		0.181						
Nitrate (as N)	mg/L		1.57						
Nitrite (as N)	mg/L		0.179						
Total nitrogen	mg/L		3.59						
Total kjeldahl nitrogen	mg/L		1.83						
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L		0.0292						
Phosphorus (total, by ICPMS/ICPOES)	mg/L		0.197						
Phosphorus (total, APHA 4500-P)	mg/L		0.169						
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0877						



Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	21-Apr-20	22-Apr-20	22-Apr-20	22-Apr-20	23-Apr-20	24-Apr-20	25-Apr-20
		Lab Sample ID			0041757-01	0041755-01			
Sample Type	Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only		
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.93	6.92			6.91	6.92	6.91	
Temperature - 24 hour average	°C	14.4	14.5			14.4	14.5	14.7	
pH - when sample collected				6.92	6.92				
Temperature - when sample collected	°C			11.0	11.0				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			26					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			65.1					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.322					
Nitrate (as N)	mg/L			1.87					
Nitrite (as N)	mg/L			0.234					
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.0166					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.138					
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	26-Apr-20	27-Apr-20	28-Apr-20	29-Apr-20	29-Apr-20	29-Apr-20	30-Apr-20
		Lab Sample ID					0042318-01	0042317-01	
Analyte	Unit	Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.92	6.93	6.92	6.92			6.92	
Temperature - 24 hour average	°C	14.7	14.9	15.0	15.0			15.1	
pH - when sample collected						6.92	6.92		
Temperature - when sample collected	°C					15.1	15.1		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L					28			
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L					<2.0			
UV transmittance at 254 nm - filtered	%					63.7			
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL						<1.0		
Fecal coliforms (MPN)	MPN/100 mL						<1.0		
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L					0.199			
Nitrate (as N)	mg/L					0.95			
Nitrite (as N)	mg/L					0.254			
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L					0.0161			
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L					0.134			
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		01-May-20	02-May-20	03-May-20	04-May-20	05-May-20	06-May-20	06-May-20
Date Sampled								
Lab Sample ID								0050605-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.91	6.92	6.92	6.93	6.91	6.92	
Temperature - 24 hour average	°C	15.1	15.2	15.2	15.1	15.3	15.4	
pH - when sample collected								6.88
Temperature - when sample collected	°C							15.4
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							36
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							<2.0
UV transmittance at 254 nm - filtered	%							64.9
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							0.598
Nitrate (as N)	mg/L							0.713
Nitrite (as N)	mg/L							0.299
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							0.0243
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							0.195
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		06-May-20	07-May-20	08-May-20	09-May-20	10-May-20	11-May-20	12-May-20
Date Sampled		06-May-20	07-May-20	08-May-20	09-May-20	10-May-20	11-May-20	12-May-20
Lab Sample ID		0050604-01						
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			6.93	6.93	6.93	6.94	6.95	6.95
Temperature - 24 hour average	°C		15.4	15.6	15.8	16.1	16.4	16.6
pH - when sample collected		6.88						
Temperature - when sample collected	°C	15.4						
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	<1.0						
Fecal coliforms (MPN)	MPN/100 mL	<1.0						
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	13-May-20	13-May-20	13-May-20	14-May-20	15-May-20	16-May-20	17-May-20
		Lab Sample ID		0051243-01	0051242-01				
		Sample Type	Field Only	Normal	Normal	Field Only	Field Only	Field Only	Field Only
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average			6.93			6.93	6.91	6.91	6.9
Temperature - 24 hour average	°C		16.6			16.7	16.7	16.7	16.7
pH - when sample collected				6.94	6.94				
Temperature - when sample collected	°C			16.6	16.6				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L			<7.0					
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			35					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH				7.73					
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			62.8					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.446					
Nitrate (as N)	mg/L			0.619					
Nitrite (as N)	mg/L			0.162					
Total nitrogen	mg/L			2.74					
Total kjeldahl nitrogen	mg/L			1.96					
Total organic nitrogen	mg/L			1.51					
Orthophosphate (dissolved, as P)	mg/L			0.02					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.139					
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0913					



Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		18-May-20	19-May-20	20-May-20	20-May-20	20-May-20	21-May-20	22-May-20
		Lab Sample ID			0051661-01	0051660-01		
Analyte	Unit	Field Only	Field Only	Field Only	Normal	Normal	Field Only	Field Only
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.89	6.91	6.89			6.88	6.86
Temperature - 24 hour average	°C	16.8	17.0	17.3			17.1	16.9
pH - when sample collected					6.89	6.89		
Temperature - when sample collected	°C				17.0	17.0		
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L				37			
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L				<2.0			
UV transmittance at 254 nm - filtered	%				64.4			
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL					<1.0		
Fecal coliforms (MPN)	MPN/100 mL					<1.0		
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L				0.627			
Nitrate (as N)	mg/L				0.272			
Nitrite (as N)	mg/L				0.126			
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L				0.0192			
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L				0.136			
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		23-May-20	24-May-20	25-May-20	26-May-20	27-May-20	27-May-20	27-May-20
Date Sampled								
Lab Sample ID							0052374-01	0052373-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.86	6.84	6.84	6.85	6.85		
Temperature - 24 hour average	°C	16.9	17.1	17.3	17.4	17.5		
pH - when sample collected							6.89	6.89
Temperature - when sample collected	°C						17.4	17.4
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L						30	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L						2.6	
UV transmittance at 254 nm - filtered	%						66.4	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1.0
Fecal coliforms (MPN)	MPN/100 mL							<1.0
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L						0.199	
Nitrate (as N)	mg/L						0.917	
Nitrite (as N)	mg/L						0.044	
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L						0.0315	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L						0.136	
Phosphorus (dissolved, APHA 4500-P)	mg/L							





Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		28-May-20	29-May-20	30-May-20	31-May-20	01-Jun-20	02-Jun-20	03-Jun-20
Date Sampled								
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.83	6.83	6.84	6.85	6.87	6.89	6.9
Temperature - 24 hour average	°C	17.6	17.9	18.1	18.1	17.9	17.8	17.8
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	03-Jun-20	03-Jun-20	04-Jun-20	05-Jun-20	06-Jun-20	07-Jun-20	08-Jun-20
		Lab Sample ID	0060489-01	0060488-01					
		Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average				6.88	6.86	6.85	6.86	6.86	
Temperature - 24 hour average	°C			17.9	18	17.9	17.8	17.8	
pH - when sample collected		6.9	6.9						
Temperature - when sample collected	°C	17.6	17.6						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L	36							
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L	<2.0							
UV transmittance at 254 nm - filtered	%	66							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1.0						
Fecal coliforms (MPN)	MPN/100 mL		<1.0						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	0.49							
Nitrate (as N)	mg/L	1.57							
Nitrite (as N)	mg/L	0.055							
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L	0.0136							
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L	0.123							
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	09-Jun-20	10-Jun-20	10-Jun-20	10-Jun-20	11-Jun-20	12-Jun-20	13-Jun-20
		Lab Sample ID			0061237-01	0061236-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only	
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.85	6.83			6.84	6.85	6.87	
Temperature - 24 hour average	°C	17.7	17.9			18.2	18.4	18	
pH - when sample collected				6.84	6.84				
Temperature - when sample collected	°C			18.3	18.3				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L			3.8					
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			27					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH				7.42					
Sulphate	mg/L								
Total suspended solids	mg/L			<4.0					
UV transmittance at 254 nm - filtered	%			66.9					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1.0				
Fecal coliforms (MPN)	MPN/100 mL				<1.0				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.85					
Nitrate (as N)	mg/L			1.61					
Nitrite (as N)	mg/L			0.055					
Total nitrogen	mg/L			4.02					
Total kjeldahl nitrogen	mg/L			2.35					
Total organic nitrogen	mg/L			1.5					
Orthophosphate (dissolved, as P)	mg/L			0.0129					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.118					
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0652					



## Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	14-Jun-20	15-Jun-20	16-Jun-20	17-Jun-20	17-Jun-20	17-Jun-20	18-Jun-20
		Lab Sample ID					0061953-01	0061944-01	
Sample Type		Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.85	6.86	6.85	6.84				6.84
Temperature - 24 hour average	°C	17.9	17.8	18	18.1				18.3
pH - when sample collected						6.85	6.85		
Temperature - when sample collected	°C					18.4	18.4		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L					33			
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L					2.2			
UV transmittance at 254 nm - filtered	%					66			
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL						<1.0		
Fecal coliforms (MPN)	MPN/100 mL						<1.0		
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L					0.439			
Nitrate (as N)	mg/L					2.17			
Nitrite (as N)	mg/L					0.089			
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L					0.0067			
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L					0.108			
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		19-Jun-20	20-Jun-20	21-Jun-20	22-Jun-20	23-Jun-20	24-Jun-20	24-Jun-20
Lab Sample ID								0062635-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.84	6.87	6.87	6.88	6.87	6.88	
Temperature - 24 hour average	°C	18.7	19	19.1	19.2	19.4	19.5	
pH - when sample collected								6.91
Temperature - when sample collected	°C							19.6
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							20
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							<2.0
UV transmittance at 254 nm - filtered	%							72.5
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							0.178
Nitrate (as N)	mg/L							0.862
Nitrite (as N)	mg/L							0.061
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							0.0144
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							0.0935
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	24-Jun-20	25-Jun-20	26-Jun-20	27-Jun-20	28-Jun-20	29-Jun-20	29-Jun-20
		Lab Sample ID	0062634-01						0063045-01
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Normal	
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average			6.88	6.89	6.91	6.91	6.94		
Temperature - 24 hour average	°C		19.7	19.8	19.7	19.4	19.6		
pH - when sample collected		6.91						6.91	
Temperature - when sample collected	°C	19.6						19.4	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L							27	
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L							<2.0	
UV transmittance at 254 nm - filtered	%							70.3	
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	1							
Fecal coliforms (MPN)	MPN/100 mL	1							
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L							0.198	
Nitrate (as N)	mg/L							2.95	
Nitrite (as N)	mg/L							0.101	
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L							0.0401	
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L							0.184	
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		0063044-01						
Date Sampled		29-Jun-20	30-Jun-20	01-Jul-20	02-Jul-20	03-Jul-20	04-Jul-20	05-Jul-20
Lab Sample ID		0063044-01						
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			6.96	6.95	6.94	6.94	6.94	6.93
Temperature - 24 hour average	°C		19.7	19.5	19.5	19.3	19.4	19.6
pH - when sample collected		6.91						
Temperature - when sample collected	°C	19.4						
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	<1.0						
Fecal coliforms (MPN)	MPN/100 mL	<1.0						
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	06-Jul-20	07-Jul-20	08-Jul-20	08-Jul-20	08-Jul-20	09-Jul-20	10-Jul-20
		Lab Sample ID				0070849-01	0070848-01		
Sample Type		Field Only	Field Only	Field Only	Normal	Normal	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.93	6.97	6.91			6.91	6.93	
Temperature - 24 hour average	°C	20.0	19.9	19.9			19.8	20.2	
pH - when sample collected					6.91	6.91			
Temperature - when sample collected	°C				20.0	20.0			
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L				22				
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L				<2.0				
UV transmittance at 254 nm - filtered	%				71.8				
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL					<1.0			
Fecal coliforms (MPN)	MPN/100 mL					<1.0			
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L				0.22				
Nitrate (as N)	mg/L				2.39				
Nitrite (as N)	mg/L				0.1				
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L				0.0906				
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L				0.303				
Phosphorus (dissolved, APHA 4500-P)	mg/L								





## Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		11-Jul-20	12-Jul-20	13-Jul-20	14-Jul-20	15-Jul-20	15-Jul-20	15-Jul-20
		Lab Sample ID					0071399-01	0071398-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.95	6.95	6.95	6.93	6.92		
Temperature - 24 hour average	°C	20.1	19.9	19.9	20.0	20.2		
pH - when sample collected							6.95	6.95
Temperature - when sample collected	°C						19.8	19.8
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L						22	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L						<2.0	
UV transmittance at 254 nm - filtered	%						73.2	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1
Fecal coliforms (MPN)	MPN/100 mL							<1
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L						0.265	
Nitrate (as N)	mg/L						3.39	
Nitrite (as N)	mg/L						0.182	
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L						0.0369	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L						0.112	
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		16-Jul-20	17-Jul-20	18-Jul-20	19-Jul-20	20-Jul-20	21-Jul-20	22-Jul-20
Date Sampled								
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.95	6.94	6.9	6.9	6.92	6.9	6.89
Temperature - 24 hour average	°C	20.6	20.8	20.9	20.9	21.1	21.5	21.7
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		22-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20	23-Jul-20
Date Sampled		22-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20	23-Jul-20
Lab Sample ID		0072255-01	0072255-02	0072255-03	0072254-01	0072254-02	0072254-03	
Sample Type		Normal	Duplicate	Duplicate	Normal	Duplicate	Duplicate	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average								6.91
Temperature - 24 hour average	°C							21.7
pH - when sample collected		6.89	6.89	6.89	6.89	6.89	6.89	
Temperature - when sample collected	°C	22.1	22.1	22.1	22.1	22.1	22.1	
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	228	224	228				
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0				
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0				
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0				
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	228	224	228				
Biochemical oxygen demand	mg/L	<2.0	<2.0	<2.0				
5-d Carbonaceous BOD	mg/L	<2.0	<2.0	<2.0				
Chemical Oxygen Demand	mg/L	<20	<20	<20				
Chloride	mg/L	115	114	116				
Conductivity	µS/cm	868	871	882				
Fluoride	mg/L	0.19	0.18	0.2				
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	260	255	265				
pH		7.83	7.76	7.82				
Sulphate	mg/L	47	47	47.2				
Total suspended solids	mg/L	<2.0	<2.0	<2.0				
UV transmittance at 254 nm - filtered	%	76.1	76.1	76				
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL				<1	<1	<1	
Fecal coliforms (MPN)	MPN/100 mL				<1	<1	<1	
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L	0.16	0.164	0.158				
Nitrate (as N)	mg/L	1.84	1.84	1.8				
Nitrite (as N)	mg/L	0.116	0.119	0.115				
Total nitrogen	mg/L	3.07	3.09	3.07				
Total kjeldahl nitrogen	mg/L	1.11	1.13	1.15				
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L	0.0336	0.0326	0.0353				
Phosphorus (total, by ICPMS/ICPOES)	mg/L	0.138	0.149	0.153				
Phosphorus (total, APHA 4500-P)	mg/L	0.132	0.126	0.129				
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0969	0.0939	0.0961				



Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		24-Jul-20	25-Jul-20	26-Jul-20	27-Jul-20	27-Jul-20	28-Jul-20	29-Jul-20
Lab Sample ID						0072601-01		
Sample Type		Field Only	Field Only	Field Only	Field Only	Normal	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.92	6.94	6.95	6.97		6.96	6.97
Temperature - 24 hour average	°C	21.4	21.2	21.2	21.4		21.6	21.8
pH - when sample collected						6.97		
Temperature - when sample collected	°C					21.5		
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%					>100		
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	29-Jul-20	29-Jul-20	30-Jul-20	31-Jul-20	01-Aug-20	02-Aug-20	03-Aug-20
		Lab Sample ID	0073035-01	0073034-01					
Analyte	Unit	Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average					6.96	6.95	6.96	6.93	6.93
Temperature - 24 hour average	°C				22	22.1	22.1	22.1	22
pH - when sample collected		7.00	7.00						
Temperature - when sample collected	°C	21.7	21.7						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L	21							
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L	<2.0							
UV transmittance at 254 nm - filtered	%	73.3							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1						
Fecal coliforms (MPN)	MPN/100 mL		<1						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	0.13							
Nitrate (as N)	mg/L	1.5							
Nitrite (as N)	mg/L	0.054							
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L	0.0331							
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L	0.132							
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	04-Aug-20	05-Aug-20	05-Aug-20	05-Aug-20	06-Aug-20	07-Aug-20	08-Aug-20
		Lab Sample ID			0080446-01	0080445-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.95	6.96			6.99	6.92	6.82	
Temperature - 24 hour average	°C	22	22			22	21.8	21.7	
pH - when sample collected				6.95	6.95				
Temperature - when sample collected	°C			21.9	21.9				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			22					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			73					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1				
Fecal coliforms (MPN)	MPN/100 mL				<1				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.176					
Nitrate (as N)	mg/L			0.445					
Nitrite (as N)	mg/L			0.033					
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.0309					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.132					
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	09-Aug-20	10-Aug-20	11-Aug-20	12-Aug-20	12-Aug-20	12-Aug-20	13-Aug-20
		Lab Sample ID					0081247-01	0081245-01	
Analyte	Unit	Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.85	6.85	6.86	6.87			6.86	
Temperature - 24 hour average	°C	21.6	21.7	21.8	21.6			21.5	
pH - when sample collected						6.87	6.87		
Temperature - when sample collected	°C					21.6	21.6		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L					22			
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L					<2.0			
UV transmittance at 254 nm - filtered	%					71.6			
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL						<1		
Fecal coliforms (MPN)	MPN/100 mL						<1		
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L					0.243			
Nitrate (as N)	mg/L					0.484			
Nitrite (as N)	mg/L					0.043			
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L					0.0298			
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L					0.148			
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		14-Aug-20	15-Aug-20	16-Aug-20	17-Aug-20	18-Aug-20	19-Aug-20	19-Aug-20
Lab Sample ID								0081996-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.85	6.87	6.87	6.88	6.87	6.86	
Temperature - 24 hour average	°C	21.5	21.7	22	22.3	22.5	22.4	
pH - when sample collected								6.86
Temperature - when sample collected	°C							22.7
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							<5.1
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							22
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								8.02
Sulphate	mg/L							
Total suspended solids	mg/L							<2.0
UV transmittance at 254 nm - filtered	%							72.3
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							0.373
Nitrate (as N)	mg/L							0.333
Nitrite (as N)	mg/L							0.064
Total nitrogen	mg/L							1.72
Total kjeldahl nitrogen	mg/L							1.32
Total organic nitrogen	mg/L							0.949
Orthophosphate (dissolved, as P)	mg/L							0.0597
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							0.177
Phosphorus (dissolved, APHA 4500-P)	mg/L							0.131





Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		19-Aug-20	20-Aug-20	21-Aug-20	22-Aug-20	23-Aug-20	24-Aug-20	25-Aug-20
Date Sampled		19-Aug-20	20-Aug-20	21-Aug-20	22-Aug-20	23-Aug-20	24-Aug-20	25-Aug-20
Lab Sample ID		0081993-01						
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			6.87	6.88	6.89	6.88	6.9	6.9
Temperature - 24 hour average	°C		22.4	22.4	22.2	22	21.7	21.5
pH - when sample collected		6.86						
Temperature - when sample collected	°C	22.7						
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	<1						
Fecal coliforms (MPN)	MPN/100 mL	<1						
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	26-Aug-20	26-Aug-20	26-Aug-20	27-Aug-20	28-Aug-20	29-Aug-20	30-Aug-20
		Lab Sample ID		0082635-01	0082634-01				
		Sample Type	Field Only	Normal	Normal	Field Only	Field Only	Field Only	Field Only
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average			6.89			6.89	6.89	6.9	6.9
Temperature - 24 hour average	°C		21.6			21.5	21.6	21.5	21.3
pH - when sample collected				6.92	6.92				
Temperature - when sample collected	°C			21.3	21.3				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			23					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			71.1					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1				
Fecal coliforms (MPN)	MPN/100 mL				<1				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.257					
Nitrate (as N)	mg/L			0.961					
Nitrite (as N)	mg/L			0.109					
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L			0.126					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.146					
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	31-Aug-20	01-Sep-20	02-Sep-20	02-Sep-20	02-Sep-20	03-Sep-20	04-Sep-20
		Lab Sample ID				0090447-01	0090445-01		
Sample Type		Field Only	Field Only	Field Only	Normal	Normal	Field Only	Field Only	
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.91	6.89	6.91			6.91	6.92	
Temperature - 24 hour average	°C	21.3	21.4	21.7			21.7	21.7	
pH - when sample collected					6.93	6.93			
Temperature - when sample collected	°C				21.7	21.7			
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L				24				
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L				<2.0				
UV transmittance at 254 nm - filtered	%				72.2				
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL					<1			
Fecal coliforms (MPN)	MPN/100 mL					<1			
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L				0.213				
Nitrate (as N)	mg/L				0.639				
Nitrite (as N)	mg/L				0.098				
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L				0.0309				
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L				0.118				
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		Date Sampled	05-Sep-20	06-Sep-20	07-Sep-20	08-Sep-20	09-Sep-20	09-Sep-20
		Lab Sample ID						0091056-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.92	6.89	6.92	6.92	6.92		
Temperature - 24 hour average	°C	21.7	21.7	21.5	21.3	21.1		
pH - when sample collected							6.95	6.95
Temperature - when sample collected	°C						21	21
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L						25	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L						<2.0	
UV transmittance at 254 nm - filtered	%						70.3	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1
Fecal coliforms (MPN)	MPN/100 mL							<1
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L						0.34	
Nitrate (as N)	mg/L						1.7	
Nitrite (as N)	mg/L						0.106	
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L						0.0415	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L						0.142	
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		10-Sep-20	11-Sep-20	12-Sep-20	13-Sep-20	14-Sep-20	15-Sep-20	16-Sep-20
Date Sampled								
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.88	6.89	6.93	6.93	6.93	6.93	6.92
Temperature - 24 hour average	°C	21.1	21.2	21.3	21.3	21.2	21.4	21.5
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	16-Sep-20	16-Sep-20	17-Sep-20	18-Sep-20	19-Sep-20	20-Sep-20	21-Sep-20
		Lab Sample ID	0091829-01	0091828-01					
Analyte	Unit	Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average					6.94	6.94	6.92	6.94	6.95
Temperature - 24 hour average	°C				21.4	21.3	21.3	21.1	20.9
pH - when sample collected		6.94	6.94						
Temperature - when sample collected	°C	21.6	21.6						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L	20							
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L	<2.0							
UV transmittance at 254 nm - filtered	%	70.2							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1						
Fecal coliforms (MPN)	MPN/100 mL		<1						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	0.159							
Nitrate (as N)	mg/L	1.02							
Nitrite (as N)	mg/L	0.046							
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L	0.0143							
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L	0.127							
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		22-Sep-20	23-Sep-20	23-Sep-20	23-Sep-20	24-Sep-20	25-Sep-20	26-Sep-20
		Lab Sample ID		0092599-01	0092597-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.94	6.93			6.92	6.93	6.92
Temperature - 24 hour average	°C	20.8	20.8			20.6	20.2	19.8
pH - when sample collected				6.92	6.92			
Temperature - when sample collected	°C			20.8	20.8			
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L			2.3				
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L			18				
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH				8.04				
Sulphate	mg/L							
Total suspended solids	mg/L			<2.0				
UV transmittance at 254 nm - filtered	%			70.2				
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL				<1			
Fecal coliforms (MPN)	MPN/100 mL				<1			
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L			0.243				
Nitrate (as N)	mg/L			1.26				
Nitrite (as N)	mg/L			0.063				
Total nitrogen	mg/L			2.65				
Total kjeldahl nitrogen	mg/L			1.33				
Total organic nitrogen	mg/L			1.08				
Orthophosphate (dissolved, as P)	mg/L			0.0679				
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L			0.209				
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.172				



## Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		Date Sampled	27-Sep-20	28-Sep-20	29-Sep-20	30-Sep-20	01-Oct-20	01-Oct-20
		Lab Sample ID						0109354-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.9	6.92	6.91	6.92	6.92		
Temperature - 24 hour average	°C	19.7	19.8	19.8	19.8	19.8		
pH - when sample collected							6.93	6.93
Temperature - when sample collected	°C						19.7	19.7
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L						22	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L						<2.0	
UV transmittance at 254 nm - filtered	%						69.9	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1
Fecal coliforms (MPN)	MPN/100 mL							<1
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L						0.296	
Nitrate (as N)	mg/L						1.93	
Nitrite (as N)	mg/L						0.089	
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L						0.0278	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L						0.147	
Phosphorus (dissolved, APHA 4500-P)	mg/L							





## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		02-Oct-20	03-Oct-20	04-Oct-20	05-Oct-20	06-Oct-20	07-Oct-20	07-Oct-20
Lab Sample ID								20J0459-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.91	6.9	6.9	6.91	6.9	6.88	
Temperature - 24 hour average	°C	19.7	19.7	19.7	19.7	19.8	19.9	
pH - when sample collected								6.90
Temperature - when sample collected	°C							19.7
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							33
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							<2.0
UV transmittance at 254 nm - filtered	%							73.3
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							0.237
Nitrate (as N)	mg/L							3.02
Nitrite (as N)	mg/L							0.061
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							0.14
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							0.306
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		07-Oct-20	08-Oct-20	09-Oct-20	10-Oct-20	11-Oct-20	12-Oct-20	13-Oct-20	14-Oct-20
Lab Sample ID		20J0456-01							
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average			6.9	6.85	6.84	6.82	6.84	6.87	6.86
Temperature - 24 hour average	°C		19.9	19.8	19.6	19.3	18.9	18.5	18.3
pH - when sample collected		6.90							
Temperature - when sample collected	°C	19.7							
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L								
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L								
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L								
UV transmittance at 254 nm - filtered	%								
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<1							
Fecal coliforms (MPN)	MPN/100 mL	<1							
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L								
Nitrate (as N)	mg/L								
Nitrite (as N)	mg/L								
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L								
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L								
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	14-Oct-20	14-Oct-20	15-Oct-20	16-Oct-20	17-Oct-20	18-Oct-20	19-Oct-20
		Lab Sample ID	20J1346-01	20J1344-01					
Analyte	Unit	Normal	Normal	Field Only	Field Only	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average				6.85	6.87	6.87	6.87	6.87	
Temperature - 24 hour average	°C			18.3	18.1	17.9	17.8	17.7	
pH - when sample collected		6.85	6.85						
Temperature - when sample collected	°C	18.3	18.3						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L	207							
Alkalinity (carbonate, as CaCO3)	mg/L	<1.0							
Alkalinity (hydroxide, as CaCO3)	mg/L	<1.0							
Alkalinity (phenolphthalein, as CaCO3)	mg/L	<1.0							
Alkalinity (total, as CaCO3)	mg/L	207							
Biochemical oxygen demand	mg/L	4.6							
5-d Carbonaceous BOD	mg/L	<1.1							
Chemical Oxygen Demand	mg/L	30							
Chloride	mg/L	91.3							
Conductivity	µS/cm	837							
Fluoride	mg/L	0.25							
Hardness, Total (total as CaCO3)	mg/L	212							
pH		7.82							
Sulphate	mg/L	45.8							
Total suspended solids	mg/L	<2.0							
UV transmittance at 254 nm - filtered	%	68.3							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1						
Fecal coliforms (MPN)	MPN/100 mL		<1						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	0.138							
Nitrate (as N)	mg/L	1.38							
Nitrite (as N)	mg/L	0.102							
Total nitrogen	mg/L	2.74							
Total kjeldahl nitrogen	mg/L	1.27							
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L	0.0508							
Phosphorus (total, by ICPMS/ICPOES)	mg/L	0.189							
Phosphorus (total, APHA 4500-P)	mg/L	0.179							
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.155							



## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		20-Oct-20	21-Oct-20	21-Oct-20	21-Oct-20	22-Oct-20	23-Oct-20	24-Oct-20
Lab Sample ID				20J2228-01	20J2228-02			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.87	6.87			6.85	6.97	6.86
Temperature - 24 hour average	°C	17.7	17.3			16.9	16.6	16
pH - when sample collected				6.88	6.88			
Temperature - when sample collected	°C			17.7	17.7			
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L			40				
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L			<2.0				
UV transmittance at 254 nm - filtered	%			69.5				
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL				<1			
Fecal coliforms (MPN)	MPN/100 mL				<1			
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L			0.153				
Nitrate (as N)	mg/L			2.24				
Nitrite (as N)	mg/L			0.09				
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L			0.113				
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L			0.277				
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		25-Oct-20	26-Oct-20	27-Oct-20	28-Oct-20	28-Oct-20	28-Oct-20	29-Oct-20
Lab Sample ID						20J2976-01	20J2976-02	
Sample Type		Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.84	6.85	6.85	6.85			6.84
Temperature - 24 hour average	°C	15.5	15.4	15.3	15.4			15.5
pH - when sample collected						6.85	6.85	
Temperature - when sample collected	°C					15.4	15.4	
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L					31		
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L					<2.0		
UV transmittance at 254 nm - filtered	%					73.9		
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL						<1	
Fecal coliforms (MPN)	MPN/100 mL						<1	
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L					0.15		
Nitrate (as N)	mg/L					3.3		
Nitrite (as N)	mg/L					0.087		
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L					0.0522		
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L					0.172		
Phosphorus (dissolved, APHA 4500-P)	mg/L							



## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		30-Oct-20	31-Oct-20	01-Nov-20	02-Nov-20	03-Nov-20	04-Nov-20	04-Nov-20
Lab Sample ID								20K0603-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.86	6.85	6.87	6.88	6.88	6.87	
Temperature - 24 hour average	°C	15.8	15.8	15.7	15.6	15.6	15.7	
pH - when sample collected								6.88
Temperature - when sample collected	°C							15.7
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							<1
Fecal coliforms (MPN)	MPN/100 mL							<1
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Analyte	Unit	Sampling Location						OK Falls AWWTP Treated Effluent
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		04-Nov-20	05-Nov-20	06-Nov-20	07-Nov-20	08-Nov-20	09-Nov-20	09-Nov-20
Lab Sample ID		20K0605-01						20K1116-01
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Normal
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			6.87	6.89	6.89	6.91	6.9	
Temperature - 24 hour average	°C		16	15.6	15	14.3	14.1	
pH - when sample collected		6.88						6.89
Temperature - when sample collected	°C	15.7						14.2
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L	16						22
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L	<2.0						<2.0
UV transmittance at 254 nm - filtered	%	71						70
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L	0.17						0.307
Nitrate (as N)	mg/L	3.63						4.09
Nitrite (as N)	mg/L	0.081						0.093
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L	0.181						0.0242
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L	0.353						0.139
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		09-Nov-20	10-Nov-20	11-Nov-20	12-Nov-20	13-Nov-20	14-Nov-20	15-Nov-20
Date Sampled		09-Nov-20	10-Nov-20	11-Nov-20	12-Nov-20	13-Nov-20	14-Nov-20	15-Nov-20
Lab Sample ID		20K1114-01						
Sample Type		Normal	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average			6.88	6.87	6.88	6.89	6.88	6.88
Temperature - 24 hour average	°C		14.2	14.3	14.3	13.8	13.9	13.8
pH - when sample collected		6.89						
Temperature - when sample collected	°C	14.2						
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	<1						
Fecal coliforms (MPN)	MPN/100 mL	<1						
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							





## Water Quality Results

Analyte	Unit	Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Date Sampled		16-Nov-20	17-Nov-20	17-Nov-20	17-Nov-20	18-Nov-20	19-Nov-20	20-Nov-20
Lab Sample ID				20K2042-01	20K2044-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.85	6.85			6.83	6.84	6.85
Temperature - 24 hour average	°C	13.9	13.9			14	14	13.8
pH - when sample collected				6.85	6.85			
Temperature - when sample collected	°C			13.9	13.9			
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L			3.2				
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L			234				
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH				7.82				
Sulphate	mg/L							
Total suspended solids	mg/L			<2.0				
UV transmittance at 254 nm - filtered	%			70.8				
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL				<1			
Fecal coliforms (MPN)	MPN/100 mL				<1			
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L			0.137				
Nitrate (as N)	mg/L			2.84				
Nitrite (as N)	mg/L			0.074				
Total nitrogen	mg/L			4.33				
Total kjeldahl nitrogen	mg/L			1.41				
Total organic nitrogen	mg/L			1.27				
Orthophosphate (dissolved, as P)	mg/L			0.0232				
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L			0.146				
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.114				



## Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	21-Nov-20	22-Nov-20	23-Nov-20	24-Nov-20	24-Nov-20	24-Nov-20	25-Nov-20
		Lab Sample ID					20K2686-01	20K2685-01	
Sample Type	Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only		
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.86	6.87	6.88	6.89			6.87	
Temperature - 24 hour average	°C	13.7	13.7	13.8	13.5			13.4	
pH - when sample collected						6.89	6.89		
Temperature - when sample collected	°C					13.6	13.6		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L					2.8			
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L					48			
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L					<2.0			
UV transmittance at 254 nm - filtered	%					70.7			
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL						<1		
Fecal coliforms (MPN)	MPN/100 mL						<1		
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L					0.241			
Nitrate (as N)	mg/L					2.58			
Nitrite (as N)	mg/L					0.122			
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L					0.036			
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L					0.127			
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		26-Nov-20	27-Nov-20	28-Nov-20	29-Nov-20	30-Nov-20	01-Dec-20	02-Dec-20
Date Sampled								
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.87	6.88	6.87	6.88	6.9	6.89	6.87
Temperature - 24 hour average	°C	13.2	13.1	13.1	13.1	13.1	13.1	12.8
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							



Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	02-Dec-20	02-Dec-20	03-Dec-20	04-Dec-20	05-Dec-20	06-Dec-20	07-Dec-20
		Lab Sample ID	20L0417-01	20L0415-01					
Analyte	Unit	Sample Type	Normal	Normal	Field Only	Field Only	Field Only	Field Only	Field Only
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average					6.88	6.88	6.89	6.91	6.92
Temperature - 24 hour average	°C				12.6	12.5	12.3	12.2	12.1
pH - when sample collected		6.88	6.88						
Temperature - when sample collected	°C	12.6	12.6						
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L	1.8							
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L	28							
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L	<5.0							
UV transmittance at 254 nm - filtered	%	70.7							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<1						
Fecal coliforms (MPN)	MPN/100 mL		<1						
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	0.101							
Nitrate (as N)	mg/L	2.78							
Nitrite (as N)	mg/L	0.079							
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L	<0.0050							
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L	0.1							
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Analyte	Unit	Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	08-Dec-20	09-Dec-20	09-Dec-20	09-Dec-20	10-Dec-20	11-Dec-20	12-Dec-20
		Lab Sample ID			20L1190-01	20L1188-01			
Sample Type		Field Only	Field Only	Normal	Normal	Field Only	Field Only	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		6.91	6.91			6.97	7.04	7.06	
Temperature - 24 hour average	°C	12.3	12.5			12.7	12.7	12.7	
pH - when sample collected				6.90	6.90				
Temperature - when sample collected	°C			12.6	12.6				
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO3)	mg/L								
Alkalinity (carbonate, as CaCO3)	mg/L								
Alkalinity (hydroxide, as CaCO3)	mg/L								
Alkalinity (phenolphthalein, as CaCO3)	mg/L								
Alkalinity (total, as CaCO3)	mg/L								
Biochemical oxygen demand	mg/L			3.3					
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			31					
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO3)	mg/L								
pH				7.86					
Sulphate	mg/L								
Total suspended solids	mg/L			<2.0					
UV transmittance at 254 nm - filtered	%			69					
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<1				
Fecal coliforms (MPN)	MPN/100 mL				<1				
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.145					
Nitrate (as N)	mg/L			1.75					
Nitrite (as N)	mg/L			0.117					
Total nitrogen	mg/L			3.27					
Total kjeldahl nitrogen	mg/L			1.4					
Total organic nitrogen	mg/L			1.26					
Orthophosphate (dissolved, as P)	mg/L			<0.0050					
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.11					
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.081					



## Water Quality Results

		Sampling Location							
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	13-Dec-20	14-Dec-20	15-Dec-20	16-Dec-20	16-Dec-20	16-Dec-20	17-Dec-20
		Lab Sample ID					20L1933-01	20L1932-01	
Analyte	Unit	Field Only	Field Only	Field Only	Field Only	Normal	Normal	Field Only	
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		7.07	7.08	7.07	7.06			7.06	
Temperature - 24 hour average	°C	12.4	12.4	12.2	12.2			12.3	
pH - when sample collected						7.06	7.06		
Temperature - when sample collected	°C					12.2	12.2		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L					4.6			
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L					34			
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L					<2.0			
UV transmittance at 254 nm - filtered	%					68.1			
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL						<1		
Fecal coliforms (MPN)	MPN/100 mL						<1		
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L					0.202			
Nitrate (as N)	mg/L					1.66			
Nitrite (as N)	mg/L					0.122			
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L					0.005			
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L					0.108			
Phosphorus (dissolved, APHA 4500-P)	mg/L								



## Water Quality Results

		Sampling Location						OK Falls AWWTP Treated Effluent	
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	18-Dec-20	19-Dec-20	20-Dec-20	21-Dec-20	22-Dec-20	22-Dec-20	22-Dec-20
		Lab Sample ID						20L2556-01	20L2555-01
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Normal	Normal
Analyte	Unit								
<b>Field Results</b>									
<b>Reading Type: Online Instrument</b>									
pH - 24 hour average		7.05	7.04	7.02	7.01	7.01			
Temperature - 24 hour average	°C	12.2	12.2	12.4	12.4	12			
pH - when sample collected							7.02	7.02	
Temperature - when sample collected	°C						12.0	12.0	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L						1.8		
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L						32		
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH									
Sulphate	mg/L								
Total suspended solids	mg/L						<2.0		
UV transmittance at 254 nm - filtered	%						69		
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL								<1
Fecal coliforms (MPN)	MPN/100 mL								<1
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L						0.369		
Nitrate (as N)	mg/L						0.784		
Nitrite (as N)	mg/L						0.163		
Total nitrogen	mg/L								
Total kjeldahl nitrogen	mg/L								
Total organic nitrogen	mg/L								
Orthophosphate (dissolved, as P)	mg/L						0.0218		
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L						0.121		
Phosphorus (dissolved, APHA 4500-P)	mg/L								



Water Quality Results

Sampling Location		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
		23-Dec-20	24-Dec-20	25-Dec-20	26-Dec-20	27-Dec-20	28-Dec-20	29-Dec-20
Date Sampled								
Lab Sample ID								
Sample Type		Field Only	Field Only	Field Only	Field Only	Field Only	Field Only	Field Only
Analyte	Unit							
<b>Field Results</b>								
<b>Reading Type: Online Instrument</b>								
pH - 24 hour average		6.95	6.93	6.93	6.95	6.94	6.91	6.92
Temperature - 24 hour average	°C	11.7	11.5	11.5	11.6	11.7	11.8	11.7
pH - when sample collected								
Temperature - when sample collected	°C							
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO3)	mg/L							
Alkalinity (carbonate, as CaCO3)	mg/L							
Alkalinity (hydroxide, as CaCO3)	mg/L							
Alkalinity (phenolphthalein, as CaCO3)	mg/L							
Alkalinity (total, as CaCO3)	mg/L							
Biochemical oxygen demand	mg/L							
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L							
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO3)	mg/L							
pH								
Sulphate	mg/L							
Total suspended solids	mg/L							
UV transmittance at 254 nm - filtered	%							
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL							
Fecal coliforms (MPN)	MPN/100 mL							
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L							
Nitrate (as N)	mg/L							
Nitrite (as N)	mg/L							
Total nitrogen	mg/L							
Total kjeldahl nitrogen	mg/L							
Total organic nitrogen	mg/L							
Orthophosphate (dissolved, as P)	mg/L							
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L							
Phosphorus (dissolved, APHA 4500-P)	mg/L							





## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent
Sampling Location					
Date Sampled		29-Dec-20	29-Dec-20	30-Dec-20	31-Dec-20
Lab Sample ID		20L2724-01	20L2722-01		
Sample Type		Normal	Normal	Field Only	Field Only
Analyte	Unit				
<b>Field Results</b>					
<b>Reading Type: Online Instrument</b>					
pH - 24 hour average				6.92	6.91
Temperature - 24 hour average	°C			11.3	11.5
pH - when sample collected		6.91	6.91		
Temperature - when sample collected	°C	11.7	11.7		
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L				
Biochemical oxygen demand	mg/L	3.4			
5-d Carbonaceous BOD	mg/L				
Chemical Oxygen Demand	mg/L	37			
Chloride	mg/L				
Conductivity	µS/cm				
Fluoride	mg/L				
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L				
pH					
Sulphate	mg/L				
Total suspended solids	mg/L	<2.7			
UV transmittance at 254 nm - filtered	%	68.5			
<b>Microbiological</b>					
E. coli (MPN)	MPN/100 mL		<1		
Fecal coliforms (MPN)	MPN/100 mL		<1		
<b>Toxicity</b>					
LC50, 96 hour, Rainbow Trout	%				
<b>Nutrients</b>					
Ammonia (total, as N)	mg/L	0.559			
Nitrate (as N)	mg/L	1.36			
Nitrite (as N)	mg/L	0.198			
Total nitrogen	mg/L				
Total kjeldahl nitrogen	mg/L				
Total organic nitrogen	mg/L				
Orthophosphate (dissolved, as P)	mg/L	0.0231			
Phosphorus (total, by ICPMS/ICPOES)	mg/L				
Phosphorus (total, APHA 4500-P)	mg/L	0.151			
Phosphorus (dissolved, APHA 4500-P)	mg/L				



Water Quality Results

		Sampling Location						
		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
		Date Sampled	21-Jan-20	15-Apr-20	22-Jul-20	22-Jul-20	22-Jul-20	14-Oct-20
		Lab Sample ID	0011328-01	0041194-01	0072255-01	0072255-02	0072255-03	20J1346-01
		Sample Type	Normal	Normal	Normal	Duplicate	Duplicate	Normal
Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L	0.0346	0.02	0.0748	0.0686	0.0714	0.0159	
Antimony (total)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0002	
Arsenic (total)	mg/L	0.00056	0.00341	0.00053	0.00053	0.00054	0.00057	
Barium (total)	mg/L	0.0647	0.0867	0.0552	0.0525	0.0555	0.0472	
Beryllium (total)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Bismuth (total)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Boron (total)	mg/L	0.157	0.181	0.124	0.122	0.125	0.135	
Cadmium (total)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Calcium (total)	mg/L	66.2	78.5	80.4	78.7	81.7	66.3	
Chromium (total)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt (total)	mg/L	0.00016	0.00017	0.00015	0.00015	0.00015	0.0002	
Copper (total)	mg/L	0.00286	0.00452	0.00142	0.00122	0.00132	0.00205	
Iron (total)	mg/L	0.035	0.047	0.02	0.02	0.019	0.016	
Lead (total)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0002	
Lithium (total)	mg/L	0.00712	0.00732	0.00592	0.00581	0.00595	0.00615	
Magnesium (total)	mg/L	13.4	13.4	14.3	14.2	14.8	11.3	
Manganese (total)	mg/L	0.0502	0.0539	0.0475	0.0459	0.0478	0.0267	
Mercury (total)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Molybdenum (total)	mg/L	0.00129	0.00192	0.00118	0.00116	0.00124	0.001	
Nickel (total)	mg/L	0.00089	0.00189	0.00101	0.00098	0.00105	0.00154	
Potassium (total)	mg/L	15.1	18.1	16.7	16.6	17.3	15.9	
Selenium (total)	mg/L	0.00061	<0.00050	<0.00050	0.0005	<0.00050	<0.00050	
Silicon (total, as Si)	mg/L	10.8	10.4	11	11.2	11.5	10.1	
Silver (total)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Sodium (total)	mg/L	84.5	94.2	85	84	87.8	71.1	
Strontium (total)	mg/L	0.7	0.705	0.629	0.611	0.632	0.568	
Sulphur (total)	mg/L	18.1	17.9	17.6	17.3	18.8	15.4	
Tellurium (total)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Thallium (total)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Thorium (total)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Tin (total)	mg/L	0.00034	0.00031	<0.00020	<0.00020	<0.00020	0.00022	
Titanium (total)	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Tungsten (total)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Uranium (total)	mg/L	0.00231	0.00203	0.00226	0.00223	0.00227	0.00276	
Vanadium (total)	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	
Zinc (total)	mg/L	0.0234	0.0228	0.0241	0.0224	0.023	0.0273	
Zirconium (total)	mg/L	0.00013	0.00011	<0.00010	<0.00010	<0.00010	0.0001	



## Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
No Guideline	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<b>No Guideline</b>	Highlighted value exceeds No Guideline
SL Criteria Override	Highlighted value exceeds sampling location criteria override

# **APPENDIX I**

## **Effluent Monitoring 2020 Lab Reports**

## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0010448

**RECEIVED / TEMP** 2020-01-09 12:10 / 3°C

**REPORTED** 2020-01-14 15:11

**COC NUMBER** B86357

### 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.

### Work Order Comments:

Custody Seals Intact: YES

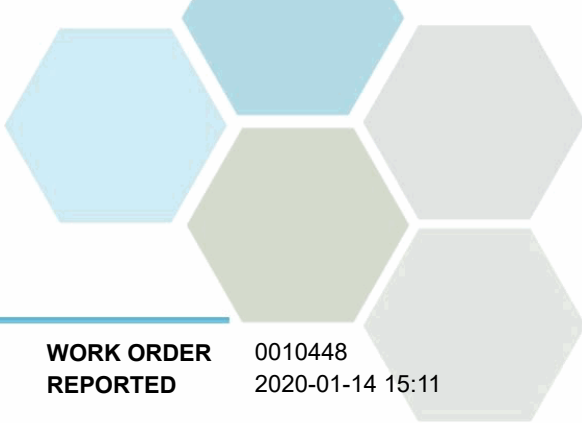
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

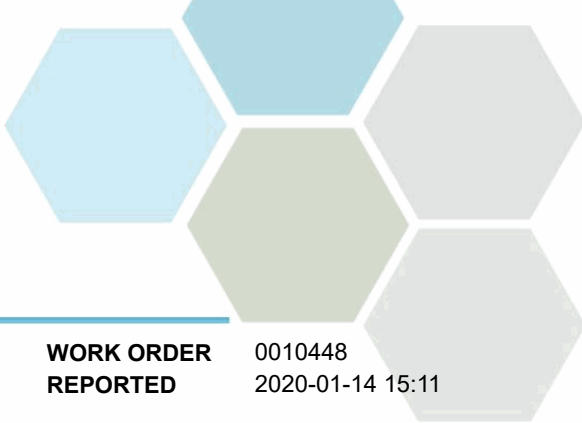


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010448  
2020-01-14 15:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0010448-01)   Matrix: Water   Sampled: 2020-01-08 13:36</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-01-09	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-01-09	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010448  
2020-01-14 15:11

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0010450

**RECEIVED / TEMP REPORTED** 2020-01-09 12:10 / 3°C  
2020-01-15 12:14

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

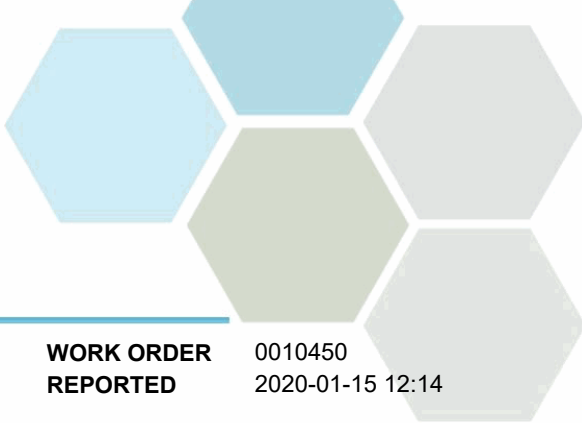
### Authorized By:

Alana Crump  
Team Lead, Client Service

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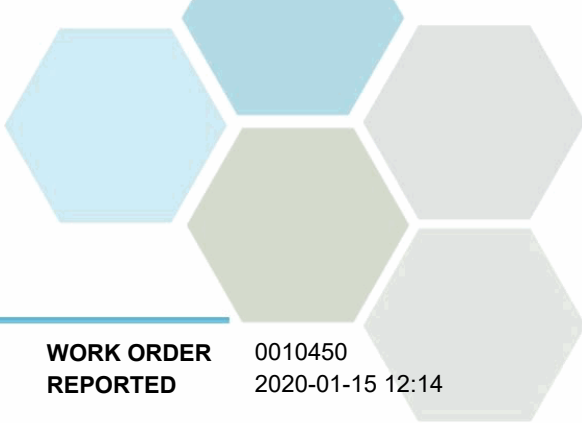


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010450  
2020-01-15 12:14

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0010450-01)   Matrix: Wastewater   Sampled: 2020-01-08 13:36</b>					
<b>Anions</b>					
Nitrate (as N)	2.36	0.010	mg/L	2020-01-09	
Nitrite (as N)	0.027	0.010	mg/L	2020-01-09	
Phosphate (as P)	0.0444	0.0050	mg/L	2020-01-09	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	2.39	0.0100	mg/L	N/A	
Nitrogen, Total	3.98	0.100	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.206	0.020	mg/L	2020-01-10	
Chemical Oxygen Demand	27	20	mg/L	2020-01-14	
Nitrogen, Total Kjeldahl	1.59	0.050	mg/L	2020-01-10	
Phosphorus, Total (as P)	0.134	0.0020	mg/L	2020-01-10	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-01-10	
UV Transmittance @ 254nm	69.3	0.10	% T	2020-01-11	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010450  
2020-01-15 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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0010892

**RECEIVED / TEMP** 2020-01-16 12:40 / 3°C

**REPORTED** 2020-01-23 10:19

**COC NUMBER** B86571

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

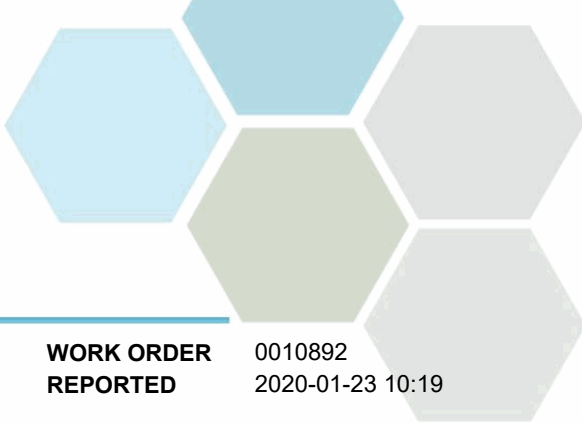
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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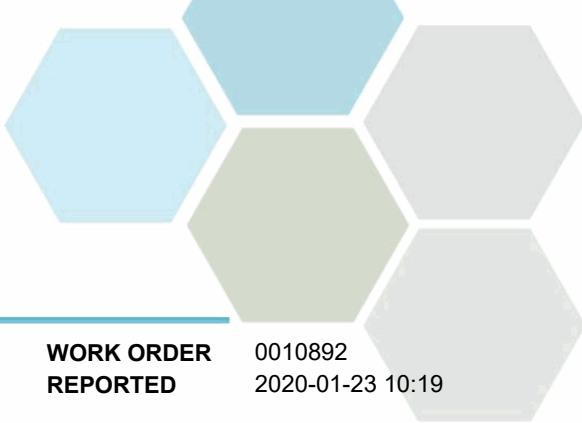


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010892  
2020-01-23 10:19

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0010892-01)   Matrix: Wastewater   Sampled: 2020-01-15 10:48</b>					
<b>Anions</b>					
Nitrate (as N)	2.53	0.010	mg/L	2020-01-16	
Nitrite (as N)	0.059	0.010	mg/L	2020-01-16	
Phosphate (as P)	0.0280	0.0050	mg/L	2020-01-16	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	2.59	0.0100	mg/L	N/A	
Nitrogen, Total	7.21	0.100	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	3.30	0.020	mg/L	2020-01-20	
Chemical Oxygen Demand	25	20	mg/L	2020-01-22	
Nitrogen, Total Kjeldahl	4.62	0.050	mg/L	2020-01-18	
Phosphorus, Total (as P)	0.132	0.0020	mg/L	2020-01-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-01-18	
UV Transmittance @ 254nm	67.6	0.10	% T	2020-01-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010892  
2020-01-23 10:19

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0010893

**RECEIVED / TEMP** 2020-01-16 12:40 / 3°C

**REPORTED** 2020-01-20 16:18

**COC NUMBER** B86571

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

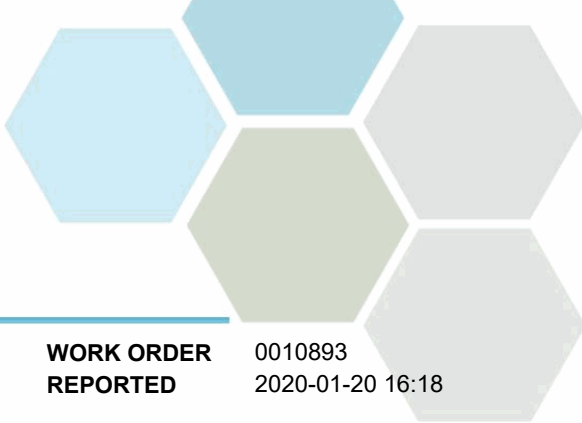
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### Authorized By:

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Team Lead, Client Service

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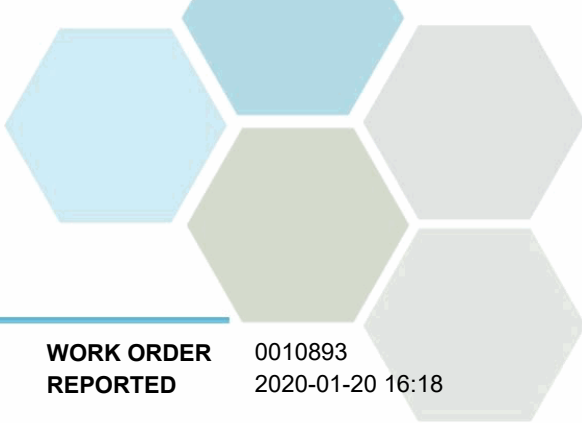


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010893  
2020-01-20 16:18

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0010893-01)   Matrix: Water   Sampled: 2020-01-15 10:48</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-01-16	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-01-16	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0010893  
2020-01-20 16:18

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 0011328

**RECEIVED / TEMP** 2020-01-22 12:10 / 9°C

**REPORTED** 2020-01-30 11:44

**COC NUMBER** B66313

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### Work Order Comments:

Custody Seals Intact: YES

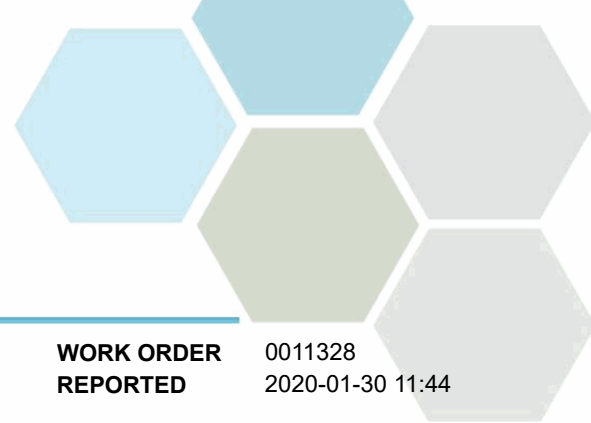
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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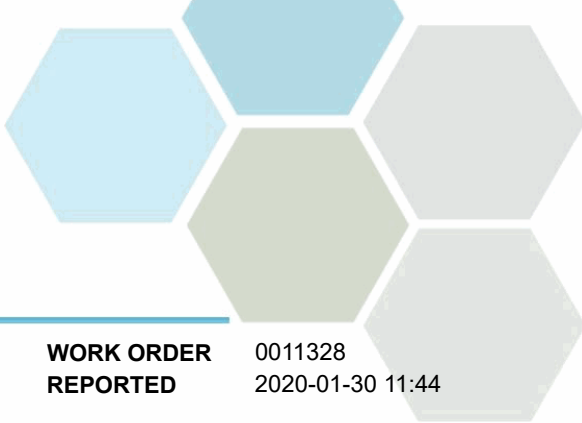


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0011328  
2020-01-30 11:44

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0011328-01)   Matrix: Water   Sampled: 2020-01-21 01:00</b>					
<b>Anions</b>					
Chloride	106	0.10	mg/L	2020-01-24	
Fluoride	0.18	0.10	mg/L	2020-01-24	
Nitrate (as N)	2.42	0.010	mg/L	2020-01-24	
Nitrite (as N)	0.049	0.010	mg/L	2020-01-24	
Phosphate (as P)	0.0265	0.0050	mg/L	2020-01-24	
Sulfate	47.5	1.0	mg/L	2020-01-24	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	221	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	2.46	0.0100	mg/L	N/A	
Nitrogen, Total	5.84	0.100	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	221	1.0	mg/L	2020-01-23	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Bicarbonate (as CaCO3)	221	1.0	mg/L	2020-01-23	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Ammonia, Total (as N)	2.28	0.020	mg/L	2020-01-23	
BOD, 5-day	< 6.2	2.0	mg/L	2020-01-28	
BOD, 5-day Carbonaceous	< 1.1	2.0	mg/L	2020-01-28	
Chemical Oxygen Demand	< 20	20	mg/L	2020-01-26	
Conductivity (EC)	859	2.0	µS/cm	2020-01-23	
Nitrogen, Total Kjeldahl	3.38	0.050	mg/L	2020-01-23	
pH	7.69	0.10	pH units	2020-01-23	HT2
Phosphorus, Total (as P)	0.155	0.0020	mg/L	2020-01-23	
Phosphorus, Total Dissolved	0.118	0.0020	mg/L	2020-01-23	
Solids, Total Suspended	2.8	2.0	mg/L	2020-01-24	
UV Transmittance @ 254nm	68.5	0.10	% T	2020-01-25	HT1
<b>Total Metals</b>					
Aluminum, total	0.0346	0.0050	mg/L	2020-01-29	
Antimony, total	< 0.00020	0.00020	mg/L	2020-01-29	
Arsenic, total	0.00056	0.00050	mg/L	2020-01-29	
Barium, total	0.0647	0.0050	mg/L	2020-01-29	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-01-29	
Boron, total	0.157	0.0050	mg/L	2020-01-29	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-01-29	
Calcium, total	66.2	0.20	mg/L	2020-01-29	
Chromium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Cobalt, total	0.00016	0.00010	mg/L	2020-01-29	
Copper, total	0.00286	0.00040	mg/L	2020-01-29	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0011328  
2020-01-30 11:44

Analyte	Result	RL	Units	Analyzed	Qualifier
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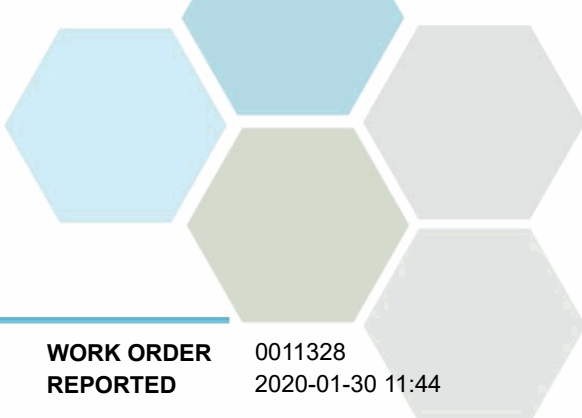
**Effluent Grab (0011328-01) | Matrix: Water | Sampled: 2020-01-21 01:00, Continued**

*Total Metals, Continued*

Iron, total	0.035	0.010	mg/L	2020-01-29	
Lead, total	< 0.00020	0.00020	mg/L	2020-01-29	
Lithium, total	0.00712	0.00010	mg/L	2020-01-29	
Magnesium, total	13.4	0.010	mg/L	2020-01-29	
Manganese, total	0.0502	0.00020	mg/L	2020-01-29	
Mercury, total	< 0.000010	0.000010	mg/L	2020-01-28	
Molybdenum, total	0.00129	0.00010	mg/L	2020-01-29	
Nickel, total	0.00089	0.00040	mg/L	2020-01-29	
Phosphorus, total	0.144	0.050	mg/L	2020-01-29	
Potassium, total	15.1	0.10	mg/L	2020-01-29	
Selenium, total	0.00061	0.00050	mg/L	2020-01-29	
Silicon, total	10.8	1.0	mg/L	2020-01-29	
Silver, total	< 0.000050	0.000050	mg/L	2020-01-29	
Sodium, total	84.5	0.10	mg/L	2020-01-29	
Strontium, total	0.700	0.0010	mg/L	2020-01-29	
Sulfur, total	18.1	3.0	mg/L	2020-01-29	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Thallium, total	< 0.000020	0.000020	mg/L	2020-01-29	
Thorium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Tin, total	0.00034	0.00020	mg/L	2020-01-29	
Titanium, total	< 0.0050	0.0050	mg/L	2020-01-29	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-01-29	
Uranium, total	0.00231	0.000020	mg/L	2020-01-29	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-01-29	
Zinc, total	0.0234	0.0040	mg/L	2020-01-29	
Zirconium, total	0.00013	0.00010	mg/L	2020-01-29	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

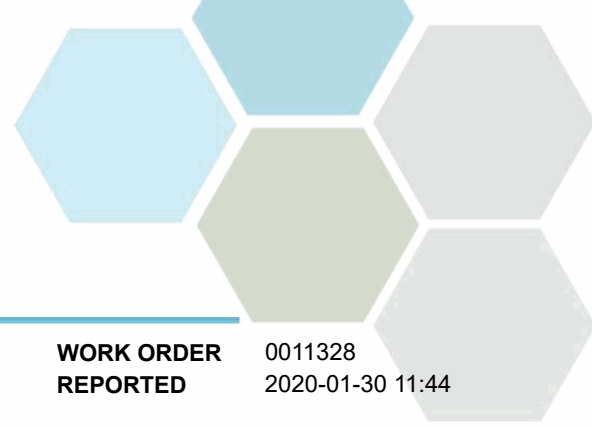
**WORK ORDER REPORTED** 0011328  
2020-01-30 11:44

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
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
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
<	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
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** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP QCE

**WORK ORDER** 0011328  
**REPORTED** 2020-01-30 11:44

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0011329
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-01-22 12:10 / 9°C 2020-01-24 15:12
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B66313
<b>PROJECT</b>	OK Falls WWTP QCE		
<b>PROJECT INFO</b>			

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

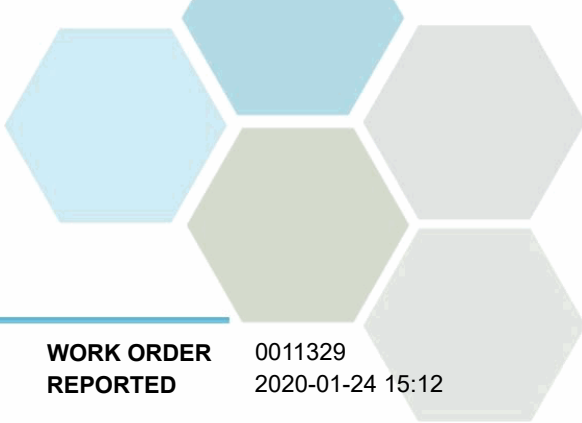
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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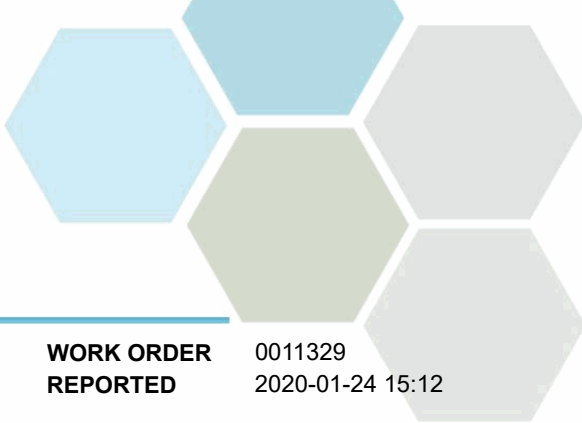


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0011329  
2020-01-24 15:12

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0011329-01)   Matrix: Water   Sampled: 2020-01-21 10:30</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal	< 1.0	1.0	MPN/100 mL	2020-01-22	
E. coli	< 1.0	1.0	MPN/100 mL	2020-01-22	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0011329  
2020-01-24 15:12

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0012030

**RECEIVED / TEMP** 2020-01-30 09:50 / 4°C

**REPORTED** 2020-02-04 14:28

**COC NUMBER** B86398

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

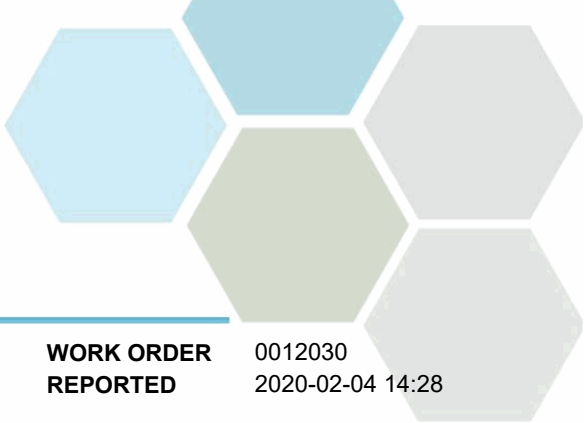
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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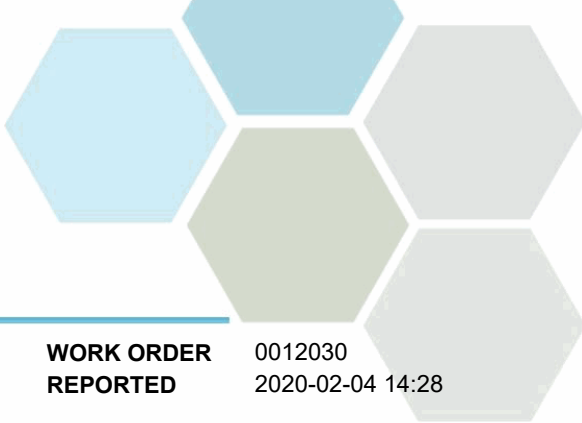


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0012030  
2020-02-04 14:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0012030-01)   Matrix: Water   Sampled: 2020-01-29 10:21</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-01-30	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-01-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0012030  
2020-02-04 14:28

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0012031

**RECEIVED / TEMP** 2020-01-30 09:50 / 4°C

**REPORTED** 2020-02-05 11:15

**COC NUMBER** B86398

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

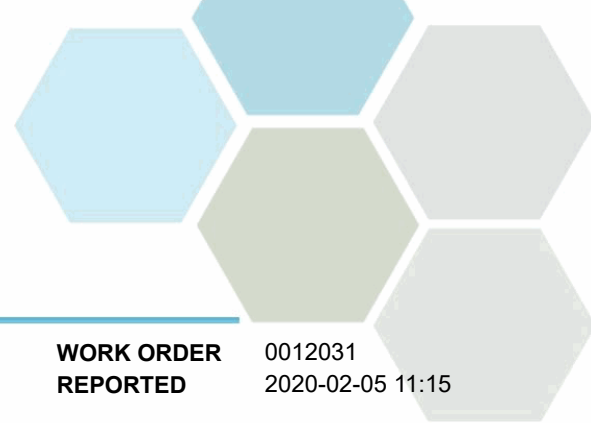
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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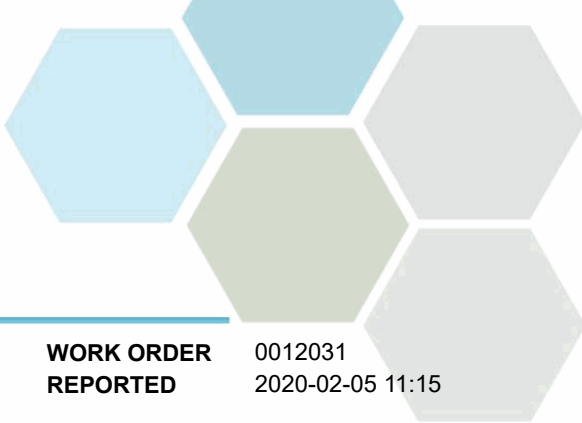


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0012031  
2020-02-05 11:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0012031-01)   Matrix: Wastewater   Sampled: 2020-01-29 10:21</b>					
<i>Anions</i>					
Nitrate (as N)	2.96	0.010	mg/L	2020-01-31	
Nitrite (as N)	0.054	0.010	mg/L	2020-01-31	
Phosphate (as P)	0.0604	0.0050	mg/L	2020-01-31	
<i>General Parameters</i>					
Ammonia, Total (as N)	1.10	0.020	mg/L	2020-02-03	
Chemical Oxygen Demand	26	20	mg/L	2020-02-04	
Phosphorus, Total (as P)	0.115	0.0020	mg/L	2020-02-01	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-02-04	
UV Transmittance @ 254nm	67.6	0.10	% T	2020-01-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0012031  
2020-02-05 11:15

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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mg/L	Milligrams per litre
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0020429

**RECEIVED / TEMP** 2020-02-06 13:00 / 7°C

**REPORTED** 2020-02-11 10:13

**COC NUMBER** B86892

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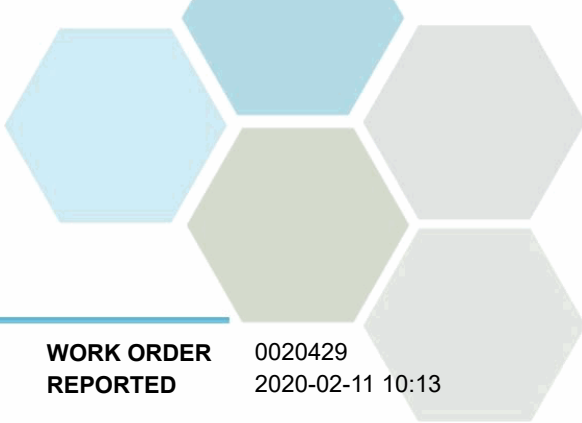
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### Authorized By:

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Team Lead, Client Service

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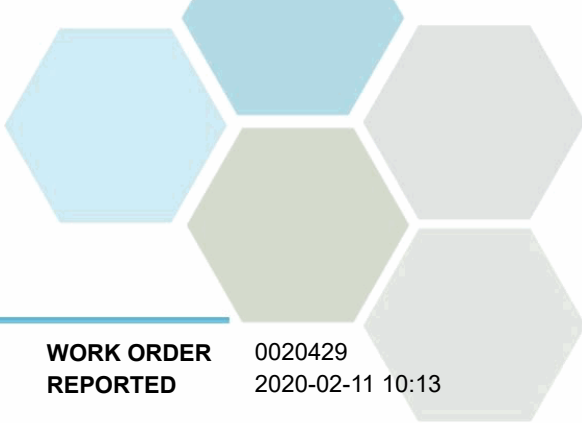
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0020429  
2020-02-11 10:13

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0020429-01)   Matrix: Water   Sampled: 2020-02-05 10:27</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-02-06	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-02-06	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0020429  
2020-02-11 10:13

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0020430

**RECEIVED / TEMP** 2020-02-06 13:00 / 7°C

**REPORTED** 2020-02-12 14:28

**COC NUMBER** B86892

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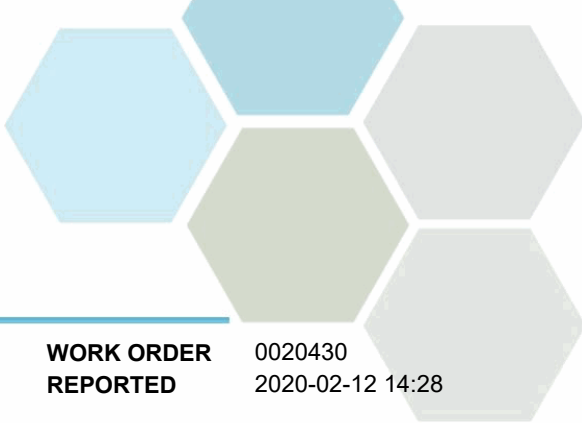
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Team Lead, Client Service

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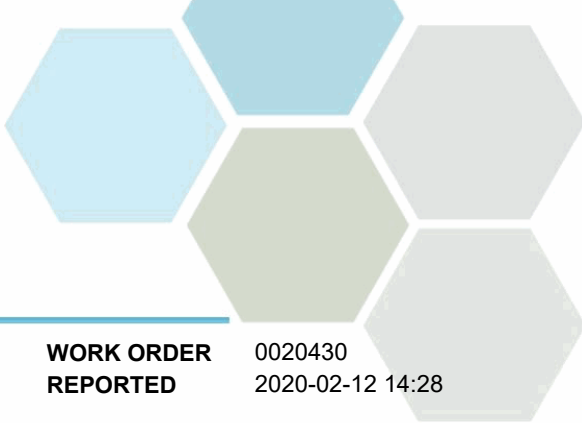


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0020430  
2020-02-12 14:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0020430-01)   Matrix: Wastewater   Sampled: 2020-02-05 10:27</b>					
<b>Anions</b>					
Nitrate (as N)	4.74	0.010	mg/L	2020-02-07	
Nitrite (as N)	0.052	0.010	mg/L	2020-02-07	
Phosphate (as P)	0.0202	0.0050	mg/L	2020-02-07	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.422	0.020	mg/L	2020-02-10	
Chemical Oxygen Demand	27	20	mg/L	2020-02-10	
Phosphorus, Total (as P)	0.0911	0.0020	mg/L	2020-02-11	
Solids, Total Suspended	< 4.0	2.0	mg/L	2020-02-11	
UV Transmittance @ 254nm	69.1	0.10	% T	2020-02-08	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0020430  
2020-02-12 14:28

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0021073

**RECEIVED / TEMP** 2020-02-13 11:50 / 2°C

**REPORTED** 2020-02-14 15:11

**COC NUMBER** B86850

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

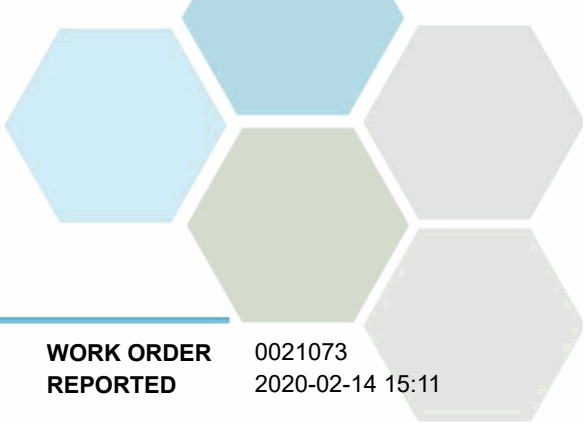
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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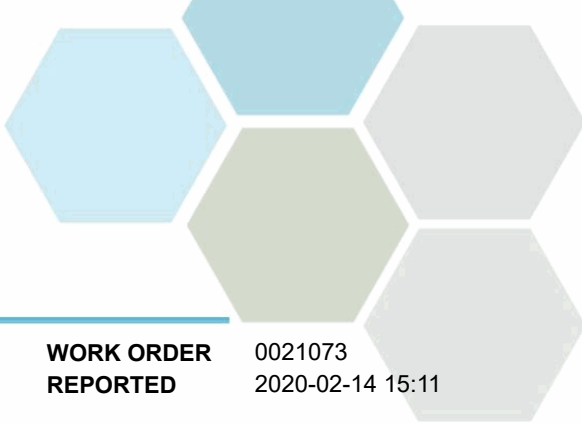


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0021073  
2020-02-14 15:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0021073-01)   Matrix: Water   Sampled: 2020-02-12 10:15</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-02-13	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-02-13	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0021073  
2020-02-14 15:11

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0021075

**RECEIVED / TEMP** 2020-02-13 11:50 / 2°C

**REPORTED** 2020-02-21 15:34

**COC NUMBER** B86850

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

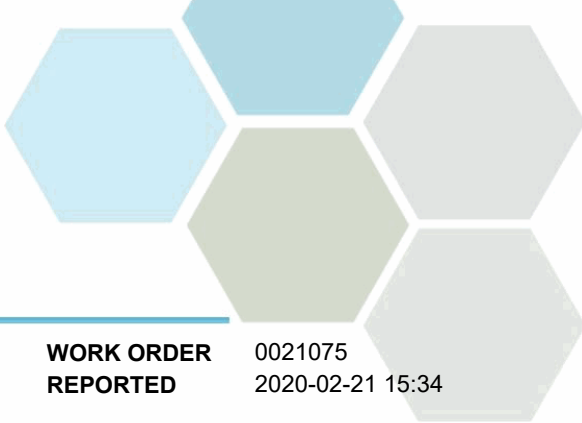
### Authorized By:

Alana Crump  
Team Lead, Client Service

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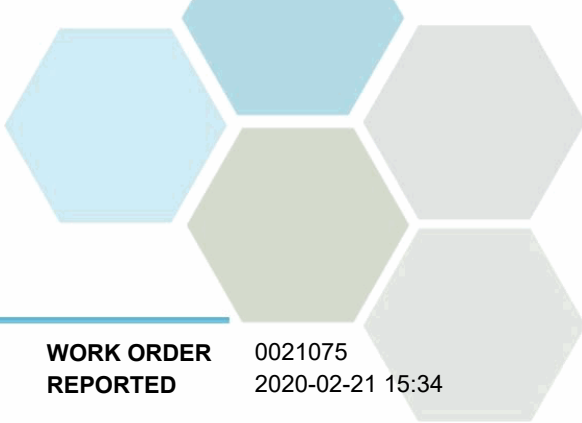


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0021075  
2020-02-21 15:34

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0021075-01)   Matrix: Wastewater   Sampled: 2020-02-12 10:15</b>					
<i>Anions</i>					
Nitrate (as N)	3.33	0.010	mg/L	2020-02-14	
Nitrite (as N)	0.065	0.010	mg/L	2020-02-14	
Phosphate (as P)	0.0145	0.0050	mg/L	2020-02-14	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.241	0.020	mg/L	2020-02-19	
Chemical Oxygen Demand	24	20	mg/L	2020-02-20	
Phosphorus, Total (as P)	0.0939	0.0020	mg/L	2020-02-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-02-19	
UV Transmittance @ 254nm	70.1	0.10	% T	2020-02-14	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0021075  
2020-02-21 15:34

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0021617

**RECEIVED / TEMP** 2020-02-20 12:00 / 3°C

**REPORTED** 2020-02-25 15:14

**COC NUMBER** B78508

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

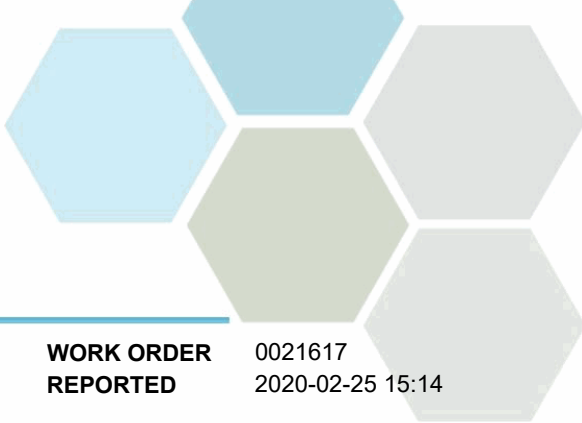
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Team Lead, Client Service

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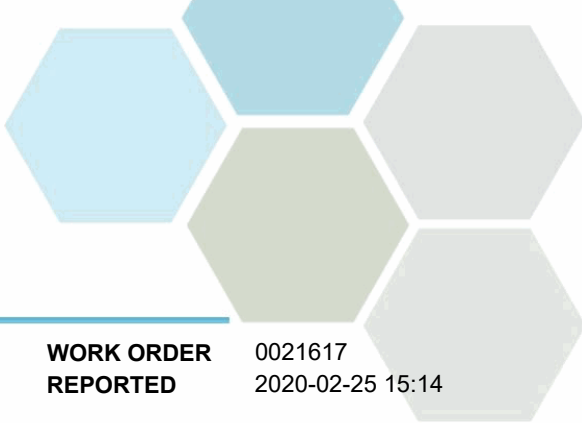


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0021617  
2020-02-25 15:14

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (0021617-01)   Matrix: Water   Sampled: 2020-02-19 11:27</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal	< 1.0	1.0	MPN/100 mL	2020-02-20	
E. coli	< 1.0	1.0	MPN/100 mL	2020-02-20	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0021617  
2020-02-25 15:14

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0021619
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-02-20 12:00 / 3°C 2020-02-27 10:11
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B78508
<b>PROJECT</b>	OK Falls WWTP MCE		
<b>PROJECT INFO</b>			

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

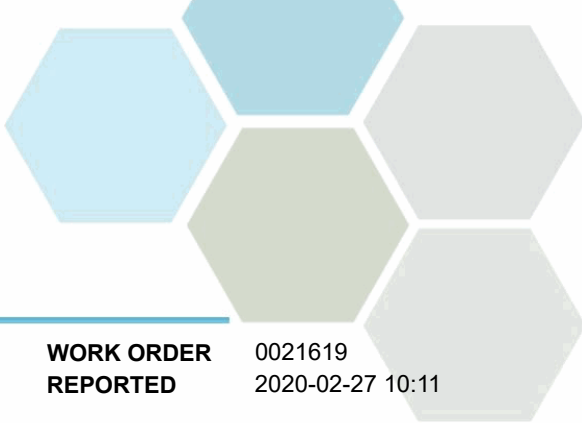
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

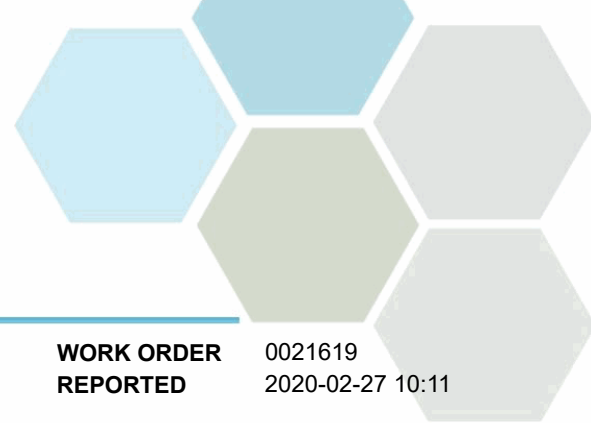
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0021619  
2020-02-27 10:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (0021619-01)   Matrix: Water   Sampled: 2020-02-19 11:27</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	3.15	0.010	mg/L	2020-02-21	
Nitrite (as N)	0.064	0.010	mg/L	2020-02-21	
Phosphate (as P)	0.0153	0.0050	mg/L	2020-02-21	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	3.21	0.0100	mg/L	N/A	
Nitrogen, Total	4.77	0.0500	mg/L	N/A	
Nitrogen, Organic	1.35	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.202	0.020	mg/L	2020-02-20	
BOD, 5-day	8.3	2.0	mg/L	2020-02-26	
Chemical Oxygen Demand	27	20	mg/L	2020-02-26	
Nitrogen, Total Kjeldahl	1.55	0.050	mg/L	2020-02-21	
pH	7.74	0.10	pH units	2020-02-21	HT2
Phosphorus, Total (as P)	0.117	0.0020	mg/L	2020-02-22	
Phosphorus, Total Dissolved	0.0626	0.0020	mg/L	2020-02-22	
Solids, Total Suspended	2.2	2.0	mg/L	2020-02-21	
UV Transmittance @ 254nm	68.2	0.10	% T	2020-02-21	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0021619  
2020-02-27 10:11

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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0022232

**RECEIVED / TEMP** 2020-02-27 12:00 / 3°C

**REPORTED** 2020-02-28 15:43

**COC NUMBER** B86447

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

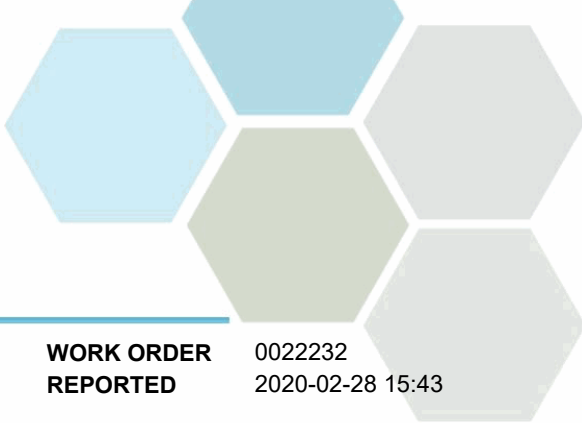
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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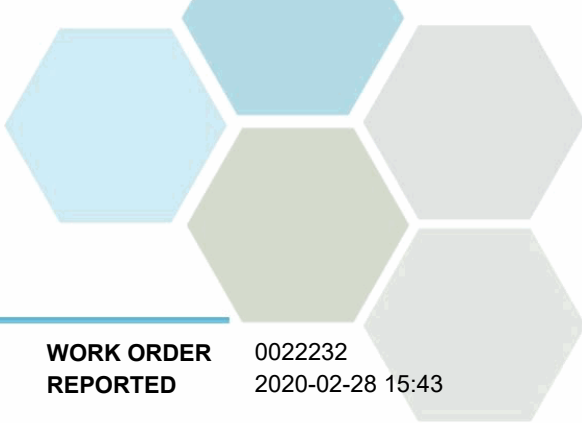


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0022232  
2020-02-28 15:43

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0022232-01)   Matrix: Water   Sampled: 2020-02-26 11:17</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-02-27	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-02-27	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0022232  
2020-02-28 15:43

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0022234

**RECEIVED / TEMP** 2020-02-27 12:00 / 3°C

**REPORTED** 2020-03-05 12:58

**COC NUMBER** B86447

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

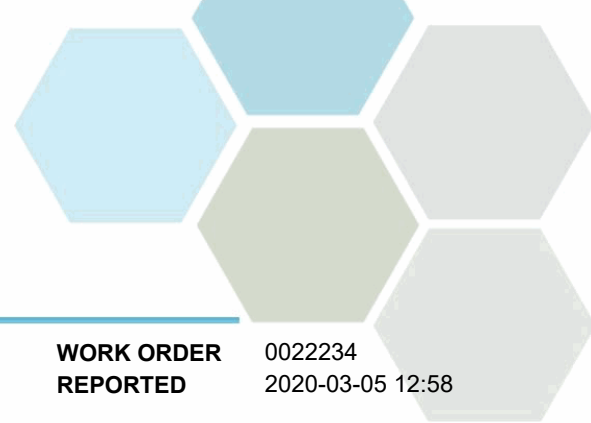
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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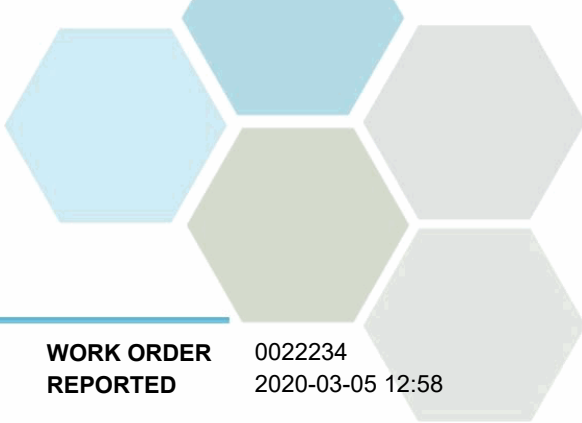


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0022234  
2020-03-05 12:58

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0022234-01)   Matrix: Fresh Water   Sampled: 2020-02-26 11:21</b>					
<i>Anions</i>					
Nitrate (as N)	2.06	0.010	mg/L	2020-02-28	
Nitrite (as N)	0.063	0.010	mg/L	2020-02-28	
Phosphate (as P)	0.0164	0.0050	mg/L	2020-02-28	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.068	0.020	mg/L	2020-03-02	
Chemical Oxygen Demand	37	20	mg/L	2020-03-04	
Phosphorus, Total (as P)	0.104	0.0020	mg/L	2020-02-29	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-03	
UV Transmittance @ 254nm	68.3	0.10	% T	2020-02-28	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0022234  
2020-03-05 12:58

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
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mg/L	Milligrams per litre
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0030436

**RECEIVED / TEMP** 2020-03-05 08:55 / 4°C  
**REPORTED** 2020-03-10 10:56

**COC NUMBER** B86492

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

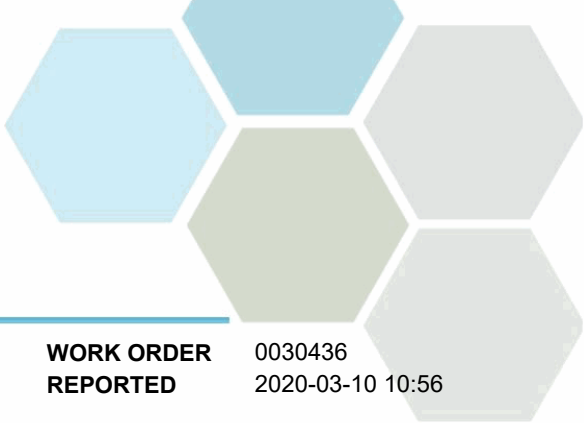
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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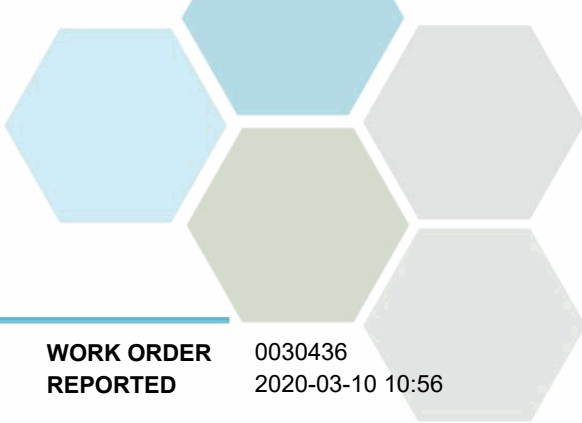
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0030436  
2020-03-10 10:56

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0030436-01)   Matrix: Water   Sampled: 2020-03-04 10:24</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-05	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-05	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0030436  
2020-03-10 10:56

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0030439

**RECEIVED / TEMP** 2020-03-05 08:55 / 4°C

**REPORTED** 2020-03-11 10:15

**COC NUMBER** B86492

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

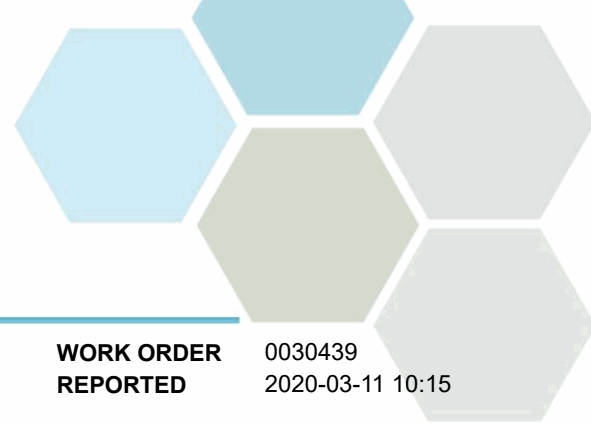
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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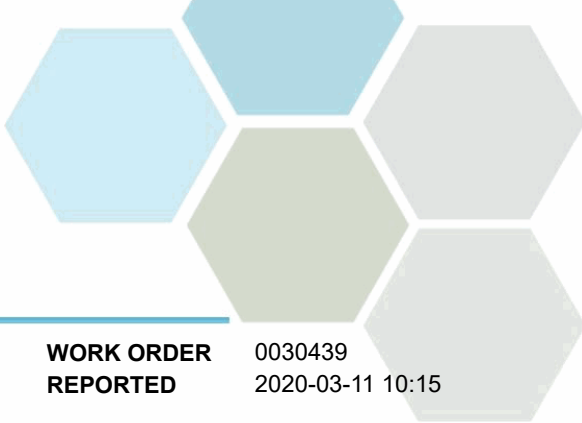


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0030439  
2020-03-11 10:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0030439-01)   Matrix: Fresh Water   Sampled: 2020-03-04 10:24</b>					
<i>Anions</i>					
Nitrate (as N)	2.34	0.010	mg/L	2020-03-06	
Nitrite (as N)	0.021	0.010	mg/L	2020-03-06	
Phosphate (as P)	0.0143	0.0050	mg/L	2020-03-06	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.179	0.020	mg/L	2020-03-06	
Chemical Oxygen Demand	27	20	mg/L	2020-03-10	
Phosphorus, Total (as P)	0.119	0.0020	mg/L	2020-03-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-08	
UV Transmittance @ 254nm	70.3	0.10	% T	2020-03-06	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0030439  
2020-03-11 10:15

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0031054

**RECEIVED / TEMP** 2020-03-12 11:45 / 6°C

**REPORTED** 2020-03-13 16:26

**COC NUMBER** B91434

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

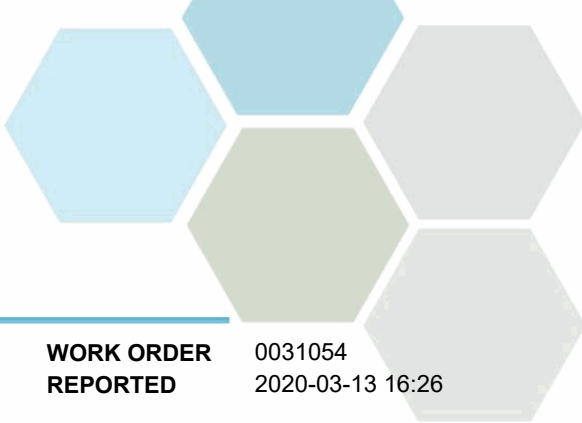
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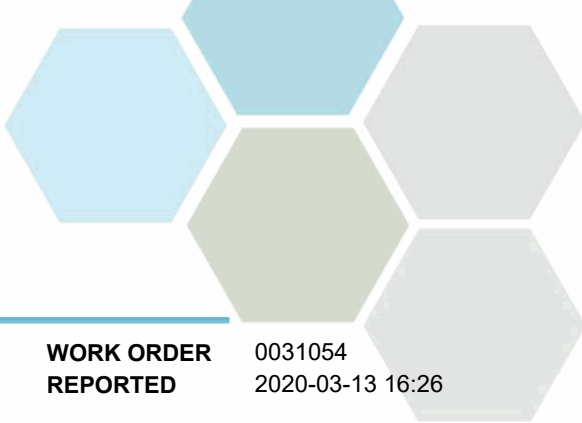


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0031054  
2020-03-13 16:26

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0031054-01)   Matrix: Water   Sampled: 2020-03-11 10:02</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-12	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-12	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0031054  
2020-03-13 16:26

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0031056

**RECEIVED / TEMP** 2020-03-12 11:45 / 6°C

**REPORTED** 2020-03-19 10:05

**COC NUMBER** B91434

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

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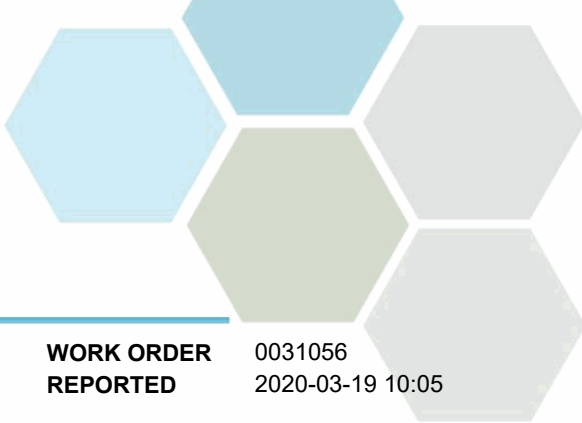
### Authorized By:

Alana Crump  
Team Lead, Client Service

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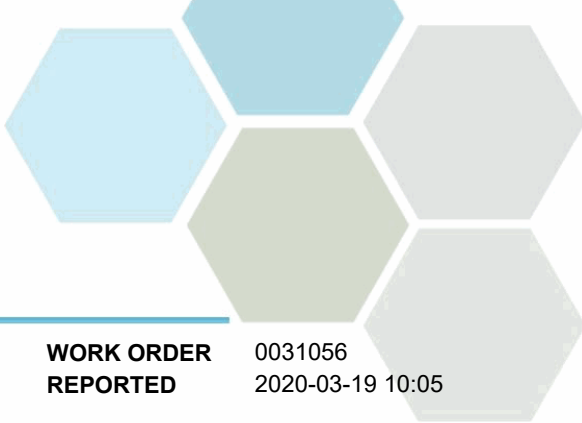


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0031056  
2020-03-19 10:05

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0031056-01)   Matrix: Fresh Water   Sampled: 2020-03-11 10:02</b>					
<b>Anions</b>					
Nitrate (as N)	1.66	0.010	mg/L	2020-03-12	
Nitrite (as N)	0.019	0.010	mg/L	2020-03-12	
Phosphate (as P)	0.0287	0.0050	mg/L	2020-03-12	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.147	0.020	mg/L	2020-03-13	
Chemical Oxygen Demand	25	20	mg/L	2020-03-18	
Phosphorus, Total (as P)	0.107	0.0020	mg/L	2020-03-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-16	
UV Transmittance @ 254nm	68.8	0.10	% T	2020-03-12	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0031056  
2020-03-19 10:05

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0031670
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-03-19 11:50 / 7°C 2020-03-23 11:10
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	No Number
<b>PROJECT</b>	OK Falls WWTP MCE		
<b>PROJECT INFO</b>			

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

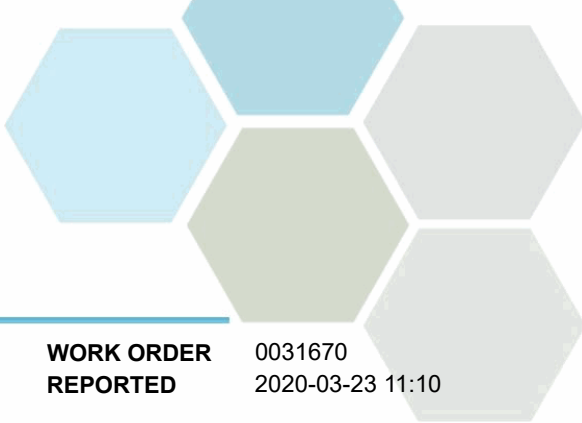
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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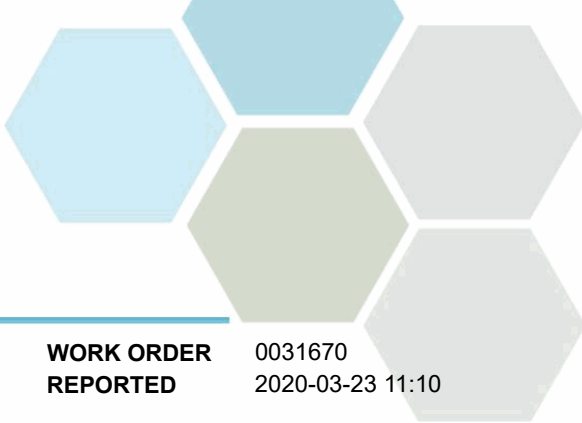


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0031670  
2020-03-23 11:10

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (0031670-01)   Matrix: Water   Sampled: 2020-03-18 12:55</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-19	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-19	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0031670  
2020-03-23 11:10

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0031672

**RECEIVED / TEMP** 2020-03-19 11:50 / 7°C

**REPORTED** 2020-03-26 14:53

**COC NUMBER** B91454

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

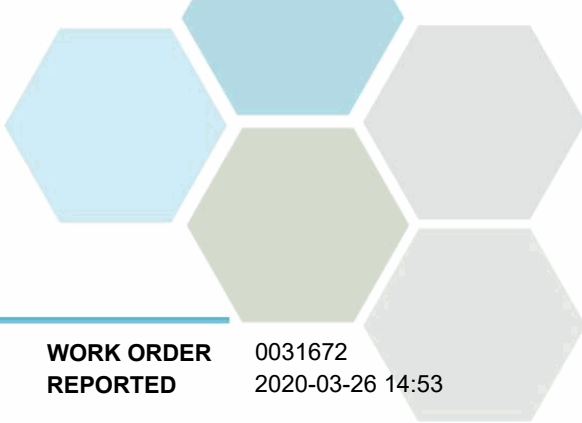
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

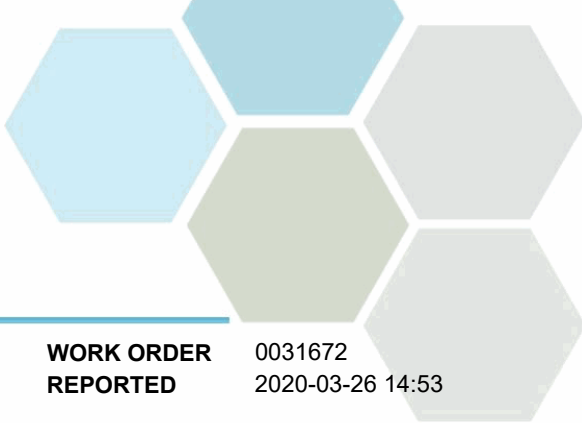
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0031672  
2020-03-26 14:53

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (0031672-01)   Matrix: Water   Sampled: 2020-03-18 12:55</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	2.04	0.010	mg/L	2020-03-20	
Nitrite (as N)	0.081	0.010	mg/L	2020-03-20	
Phosphate (as P)	0.0153	0.0050	mg/L	2020-03-20	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	2.12	0.0100	mg/L	N/A	
Nitrogen, Total	3.72	0.0500	mg/L	N/A	
Nitrogen, Organic	1.40	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.198	0.020	mg/L	2020-03-25	
BOD, 5-day	< 5.5	2.0	mg/L	2020-03-26	
Chemical Oxygen Demand	29	20	mg/L	2020-03-25	
Nitrogen, Total Kjeldahl	1.60	0.050	mg/L	2020-03-24	
pH	7.60	0.10	pH units	2020-03-23	HT2
Phosphorus, Total (as P)	0.109	0.0020	mg/L	2020-03-20	
Phosphorus, Total Dissolved	0.0568	0.0020	mg/L	2020-03-20	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-25	
UV Transmittance @ 254nm	67.8	0.10	% T	2020-03-21	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0031672  
2020-03-26 14:53

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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
<	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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0032162

**RECEIVED / TEMP** 2020-03-26 11:50 / 7°C

**REPORTED** 2020-03-31 15:55

**COC NUMBER** B91453

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

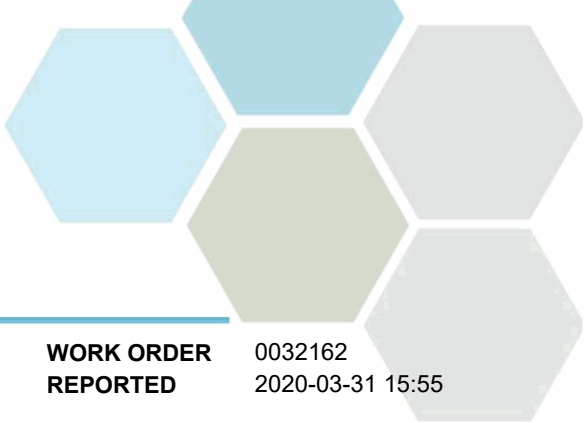
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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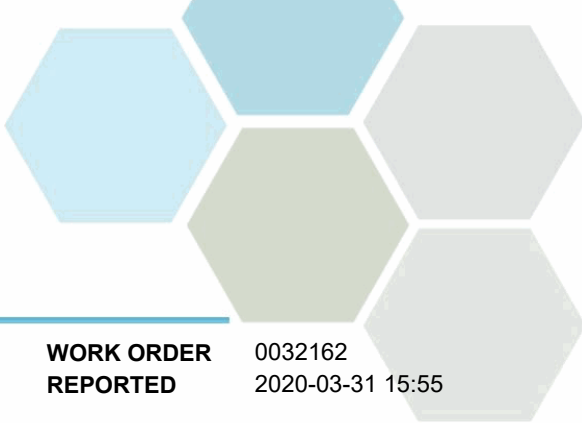


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0032162  
2020-03-31 15:55

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0032162-01)   Matrix: Water   Sampled: 2020-03-25 10:33</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-26	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-26	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0032162  
2020-03-31 15:55

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0032163

**RECEIVED / TEMP** 2020-03-26 11:50 / 7°C

**REPORTED** 2020-04-01 17:15

**COC NUMBER** B91453

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

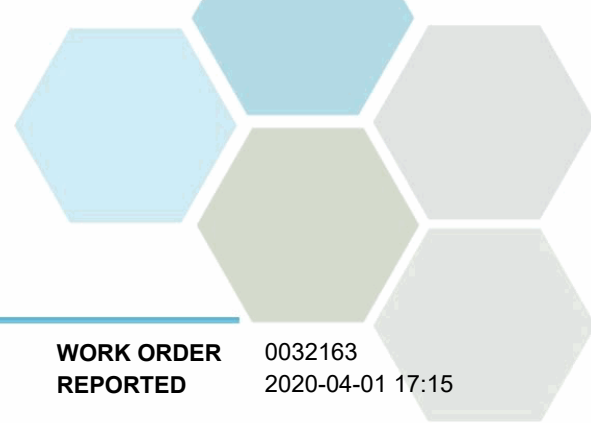
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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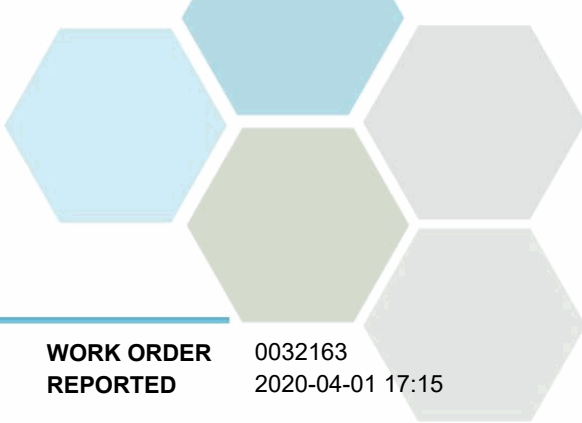


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0032163  
2020-04-01 17:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0032163-01)   Matrix: Fresh Water   Sampled: 2020-03-25 10:33</b>					
<i>Anions</i>					
Nitrate (as N)	2.21	0.010	mg/L	2020-03-26	
Nitrite (as N)	0.147	0.010	mg/L	2020-03-26	
Phosphate (as P)	0.0113	0.0050	mg/L	2020-03-26	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.422	0.050	mg/L	2020-03-31	
Chemical Oxygen Demand	31	20	mg/L	2020-04-01	
Phosphorus, Total (as P)	0.134	0.0020	mg/L	2020-03-27	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-04-01	
UV Transmittance @ 254nm	66.0	0.10	% T	2020-03-26	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0032163  
2020-04-01 17:15

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0040176

**RECEIVED / TEMP** 2020-04-02 11:45 / 7°C

**REPORTED** 2020-04-06 14:24

**COC NUMBER** B91539

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### Work Order Comments:

Custody Seals Intact: YES

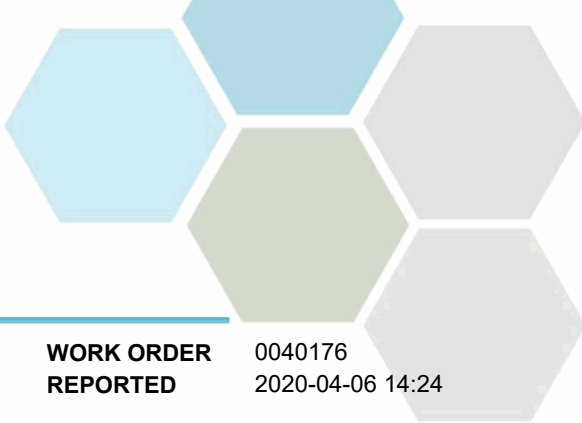
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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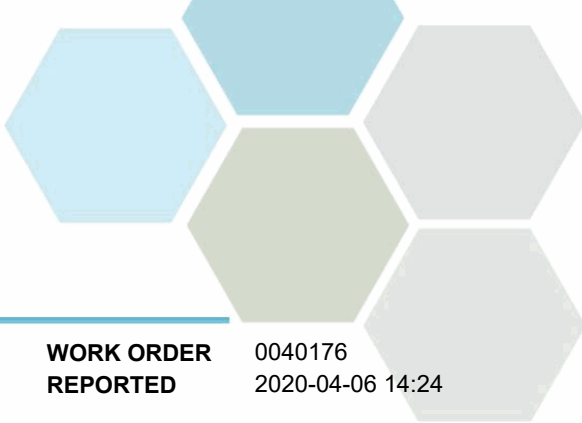
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040176  
2020-04-06 14:24

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0040176-01)   Matrix: Water   Sampled: 2020-04-01 11:20</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-02	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-02	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040176  
2020-04-06 14:24

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0040177

**RECEIVED / TEMP** 2020-04-02 11:45 / 7°C

**REPORTED** 2020-04-08 16:19

**COC NUMBER** B91539

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

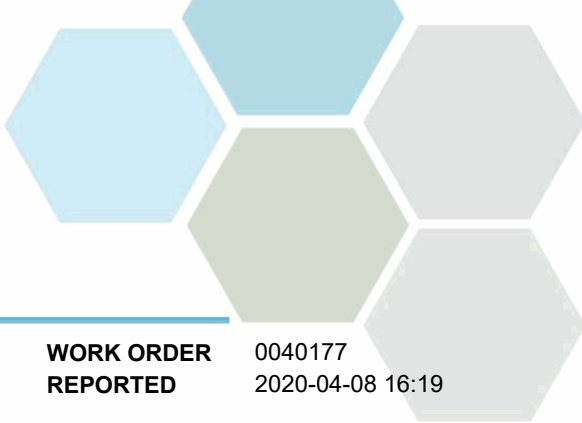
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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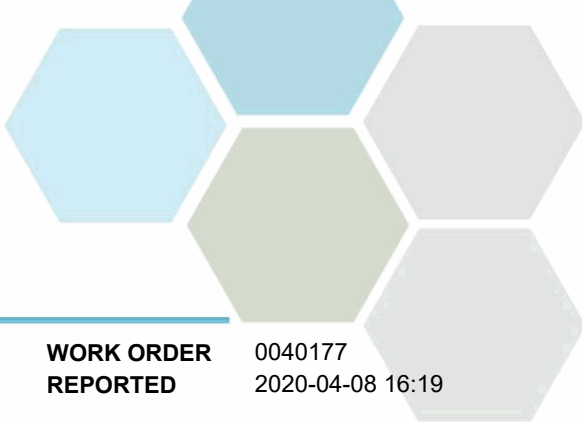


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040177  
2020-04-08 16:19

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0040177-01)   Matrix: Fresh Water   Sampled: 2020-04-01 11:20</b>					
<i>Anions</i>					
Nitrate (as N)	1.99	0.010	mg/L	2020-04-04	
Nitrite (as N)	0.196	0.010	mg/L	2020-04-04	
Phosphate (as P)	0.0144	0.0050	mg/L	2020-04-04	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.306	0.050	mg/L	2020-04-06	
Chemical Oxygen Demand	28	20	mg/L	2020-04-08	
Phosphorus, Total (as P)	0.146	0.0020	mg/L	2020-04-04	
Solids, Total Suspended	2.6	2.0	mg/L	2020-04-07	
UV Transmittance @ 254nm	65.5	0.10	% T	2020-04-03	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040177  
2020-04-08 16:19

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0040778

**RECEIVED / TEMP** 2020-04-09 11:50 / 2°C

**REPORTED** 2020-04-14 17:52

**COC NUMBER** B86470

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

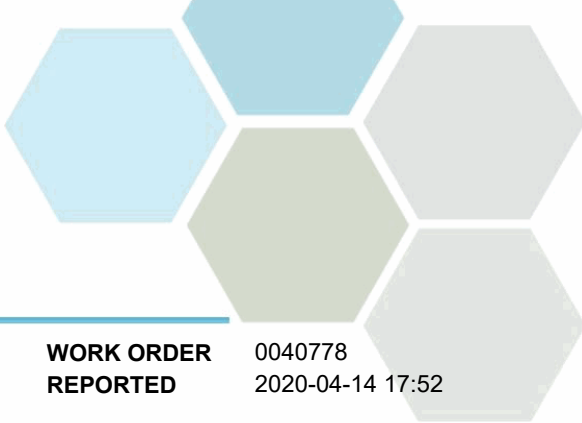
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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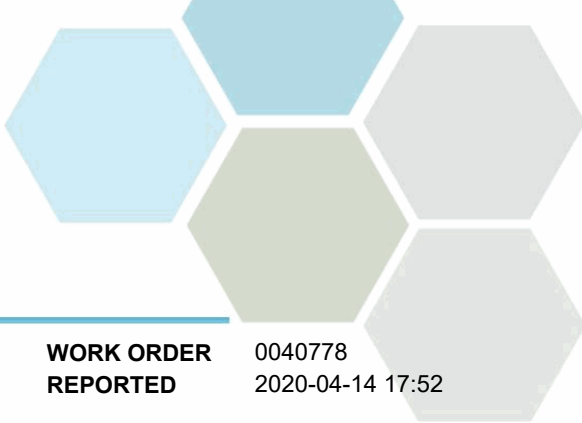


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040778  
2020-04-14 17:52

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0040778-01)   Matrix: Water   Sampled: 2020-04-08 10:45</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-09	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-09	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040778  
2020-04-14 17:52

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0040780

**RECEIVED / TEMP** 2020-04-09 11:50 / 2°C

**REPORTED** 2020-04-20 14:35

**COC NUMBER** B86470

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

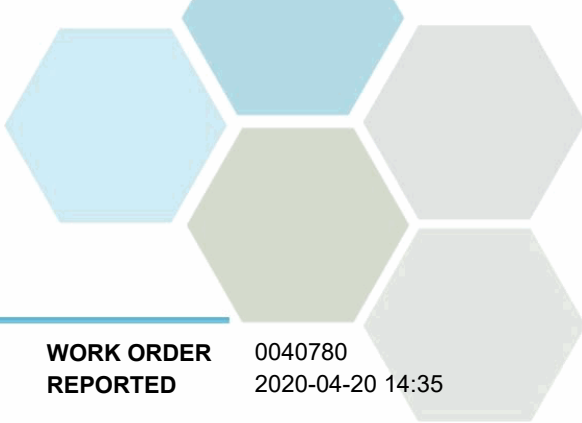
### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

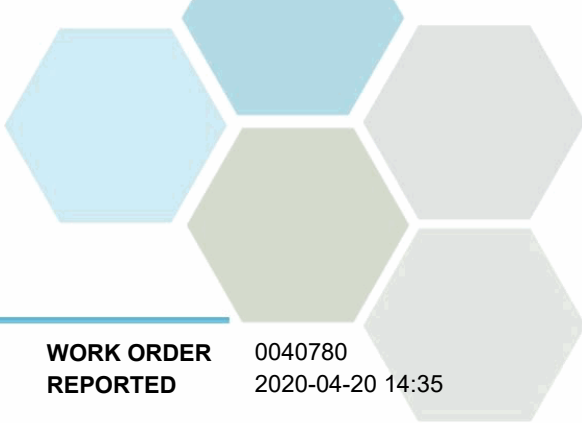
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040780  
2020-04-20 14:35

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0040780-01)   Matrix: Fresh Water   Sampled: 2020-04-08 10:45</b>					
<b>Anions</b>					
Nitrate (as N)	2.27	0.010	mg/L	2020-04-09	
Nitrite (as N)	0.230	0.010	mg/L	2020-04-09	
Phosphate (as P)	0.0077	0.0050	mg/L	2020-04-09	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.276	0.050	mg/L	2020-04-17	
Chemical Oxygen Demand	31	20	mg/L	2020-04-20	
Phosphorus, Total (as P)	0.154	0.0020	mg/L	2020-04-15	
Solids, Total Suspended	3.4	2.0	mg/L	2020-04-16	HT1
UV Transmittance @ 254nm	65.0	0.10	% T	2020-04-10	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0040780  
2020-04-20 14:35

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
mg/L	Milligrams per litre
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 0041193

**RECEIVED / TEMP REPORTED** 2020-04-16 11:30 / 4°C  
2020-04-22 16:15

**COC NUMBER** B866314

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

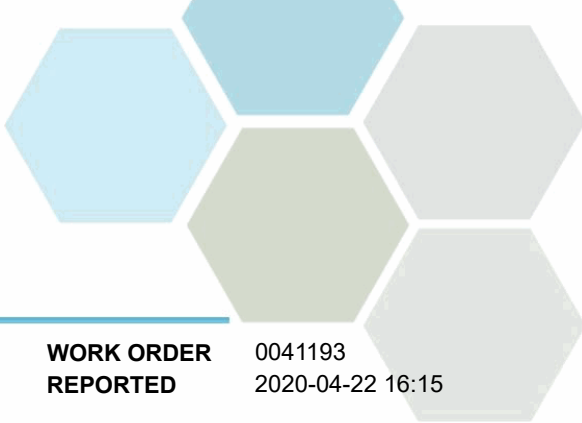
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

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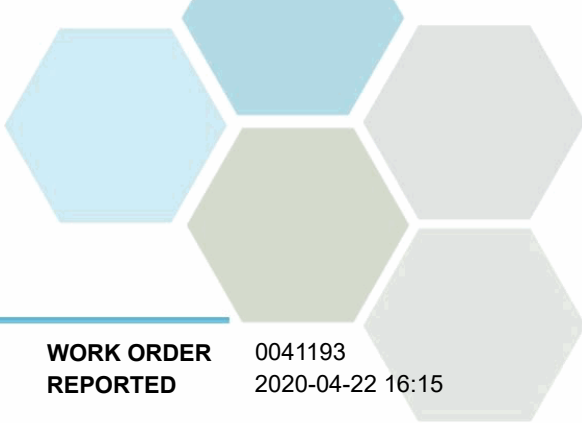


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0041193  
2020-04-22 16:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0041193-01)   Matrix: Water   Sampled: 2020-04-15 13:45</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	
<b>Field Blank Effluent - Bacteria (0041193-02)   Matrix: Water   Sampled: 2020-04-15 14:00</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0041193  
2020-04-22 16:15

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 0041194

**RECEIVED / TEMP** 2020-04-16 11:30 / 4°C  
**REPORTED** 2020-04-23 15:01

**COC NUMBER** B866314

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### Work Order Comments:

Custody Seals Intact: YES

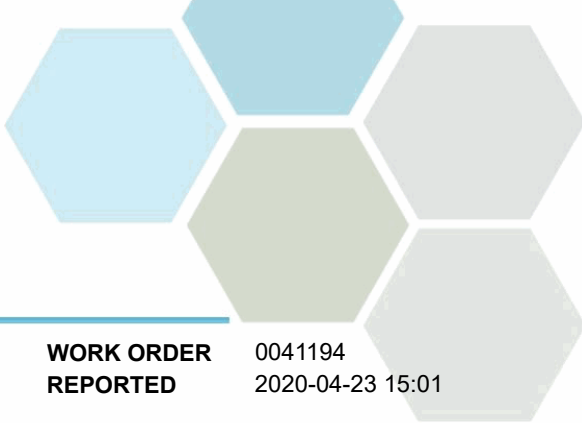
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
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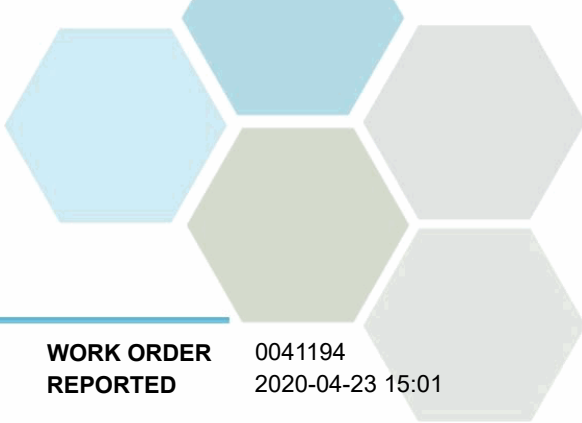


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0041194  
2020-04-23 15:01

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0041194-01)   Matrix: Water   Sampled: 2020-04-15 13:45</b>					FILT, PRES
<b>Anions</b>					
Chloride	124	0.10	mg/L	2020-04-17	
Fluoride	0.20	0.10	mg/L	2020-04-17	
Nitrate (as N)	1.57	0.010	mg/L	2020-04-17	
Nitrite (as N)	0.179	0.010	mg/L	2020-04-17	
Phosphate (as P)	0.0292	0.0050	mg/L	2020-04-17	
Sulfate	51.5	1.0	mg/L	2020-04-17	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	252	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	1.75	0.0100	mg/L	N/A	
Nitrogen, Total	3.59	0.100	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	259	1.0	mg/L	2020-04-21	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Bicarbonate (as CaCO3)	259	1.0	mg/L	2020-04-21	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Ammonia, Total (as N)	0.181	0.050	mg/L	2020-04-21	
BOD, 5-day	4.4	2.0	mg/L	2020-04-22	
BOD, 5-day Carbonaceous	1.8	2.0	mg/L	2020-04-23	
Chemical Oxygen Demand	29	20	mg/L	2020-04-22	
Conductivity (EC)	940	2.0	µS/cm	2020-04-21	
Nitrogen, Total Kjeldahl	1.83	0.050	mg/L	2020-04-17	
pH	7.91	0.10	pH units	2020-04-21	HT2
Phosphorus, Total (as P)	0.169	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	0.0877	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-04-21	
UV Transmittance @ 254nm	65.8	0.10	% T	2020-04-16	
<b>Total Metals</b>					
Aluminum, total	0.0200	0.0050	mg/L	2020-04-21	
Antimony, total	< 0.00020	0.00020	mg/L	2020-04-21	
Arsenic, total	0.00341	0.00050	mg/L	2020-04-21	
Barium, total	0.0867	0.0050	mg/L	2020-04-21	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-04-21	
Boron, total	0.181	0.0050	mg/L	2020-04-21	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-04-21	
Calcium, total	78.5	0.20	mg/L	2020-04-21	
Chromium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Cobalt, total	0.00017	0.00010	mg/L	2020-04-21	
Copper, total	0.00452	0.00040	mg/L	2020-04-21	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0041194  
2020-04-23 15:01

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0041194-01)   Matrix: Water   Sampled: 2020-04-15 13:45, Continued</b>					<b>FILT, PRES</b>

**Total Metals, Continued**

Iron, total	0.047	0.010	mg/L	2020-04-21	
Lead, total	< 0.00020	0.00020	mg/L	2020-04-21	
Lithium, total	0.00732	0.00010	mg/L	2020-04-21	
Magnesium, total	13.4	0.010	mg/L	2020-04-21	
Manganese, total	0.0539	0.00020	mg/L	2020-04-21	
Mercury, total	< 0.000010	0.000010	mg/L	2020-04-20	
Molybdenum, total	0.00192	0.00010	mg/L	2020-04-21	
Nickel, total	0.00189	0.00040	mg/L	2020-04-21	
Phosphorus, total	0.197	0.050	mg/L	2020-04-21	
Potassium, total	18.1	0.10	mg/L	2020-04-21	
Selenium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Silicon, total	10.4	1.0	mg/L	2020-04-21	
Silver, total	< 0.000050	0.000050	mg/L	2020-04-21	
Sodium, total	94.2	0.10	mg/L	2020-04-21	
Strontium, total	0.705	0.0010	mg/L	2020-04-21	
Sulfur, total	17.9	3.0	mg/L	2020-04-21	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Thallium, total	< 0.000020	0.000020	mg/L	2020-04-21	
Thorium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Tin, total	0.00031	0.00020	mg/L	2020-04-21	
Titanium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-04-21	
Uranium, total	0.00203	0.000020	mg/L	2020-04-21	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-04-21	
Zinc, total	0.0228	0.0040	mg/L	2020-04-21	
Zirconium, total	0.00011	0.00010	mg/L	2020-04-21	

**Field Blank Effluent (0041194-02) | Matrix: Water | Sampled: 2020-04-15 14:00**

**FILT, PRES**

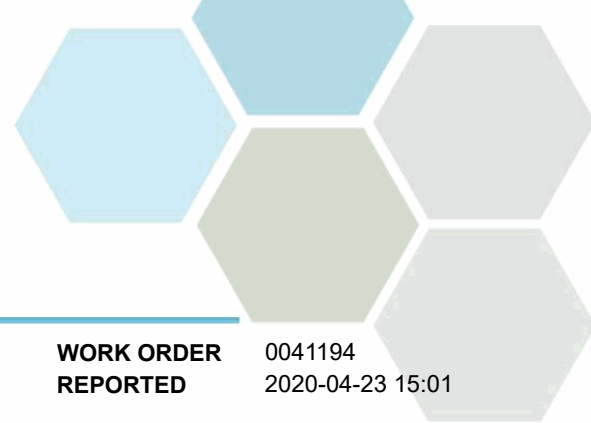
**Anions**

Chloride	< 0.10	0.10	mg/L	2020-04-17	
Fluoride	< 0.10	0.10	mg/L	2020-04-17	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-04-17	
Sulfate	< 1.0	1.0	mg/L	2020-04-17	

**Calculated Parameters**

Hardness, Total (as CaCO3)	< 0.500	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	





# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0041194  
2020-04-23 15:01

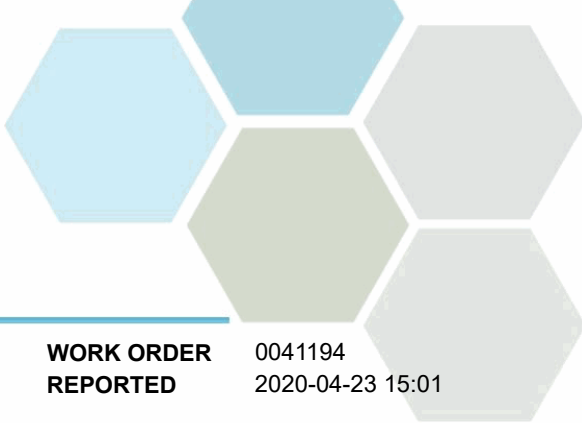
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Field Blank Effluent (0041194-02)   Matrix: Water   Sampled: 2020-04-15 14:00, Continued</b>					<b>FILT, PRES</b>

**General Parameters**

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-04-21	
BOD, 5-day	< 1.0	2.0	mg/L	2020-04-22	
BOD, 5-day Carbonaceous	< 1.2	2.0	mg/L	2020-04-23	
Chemical Oxygen Demand	< 20	20	mg/L	2020-04-22	
Conductivity (EC)	< 2.0	2.0	µS/cm	2020-04-21	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2020-04-17	
pH	<b>5.36</b>	0.10	pH units	2020-04-21	HT2
Phosphorus, Total (as P)	<b>0.0035</b>	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	<b>0.0039</b>	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-04-21	
UV Transmittance @ 254nm	<b>96.7</b>	0.10	% T	2020-04-16	

**Total Metals**

Aluminum, total	< 0.0050	0.0050	mg/L	2020-04-21	
Antimony, total	< 0.00020	0.00020	mg/L	2020-04-21	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-04-21	
Barium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-04-21	
Boron, total	< 0.0050	0.0050	mg/L	2020-04-21	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-04-21	
Calcium, total	< 0.20	0.20	mg/L	2020-04-21	
Chromium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-04-21	
Copper, total	< 0.00040	0.00040	mg/L	2020-04-21	
Iron, total	< 0.010	0.010	mg/L	2020-04-21	
Lead, total	< 0.00020	0.00020	mg/L	2020-04-21	
Lithium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Magnesium, total	< 0.010	0.010	mg/L	2020-04-21	
Manganese, total	< 0.00020	0.00020	mg/L	2020-04-21	
Mercury, total	< 0.000010	0.000010	mg/L	2020-04-20	
Molybdenum, total	< 0.00010	0.00010	mg/L	2020-04-21	
Nickel, total	< 0.00040	0.00040	mg/L	2020-04-21	
Phosphorus, total	< 0.050	0.050	mg/L	2020-04-21	
Potassium, total	< 0.10	0.10	mg/L	2020-04-21	
Selenium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Silicon, total	< 1.0	1.0	mg/L	2020-04-21	



# TEST RESULTS

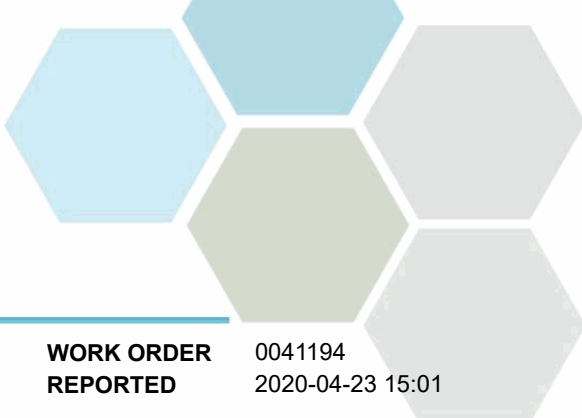
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0041194  
2020-04-23 15:01

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Field Blank Effluent (0041194-02)   Matrix: Water   Sampled: 2020-04-15 14:00, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Silver, total	< 0.000050	0.000050	mg/L	2020-04-21	
Sodium, total	< 0.10	0.10	mg/L	2020-04-21	
Strontium, total	< 0.0010	0.0010	mg/L	2020-04-21	
Sulfur, total	< 3.0	3.0	mg/L	2020-04-21	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Thallium, total	< 0.000020	0.000020	mg/L	2020-04-21	
Thorium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Tin, total	< 0.00020	0.00020	mg/L	2020-04-21	
Titanium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-04-21	
Uranium, total	< 0.000020	0.000020	mg/L	2020-04-21	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-04-21	
Zinc, total	< 0.0040	0.0040	mg/L	2020-04-21	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-04-21	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

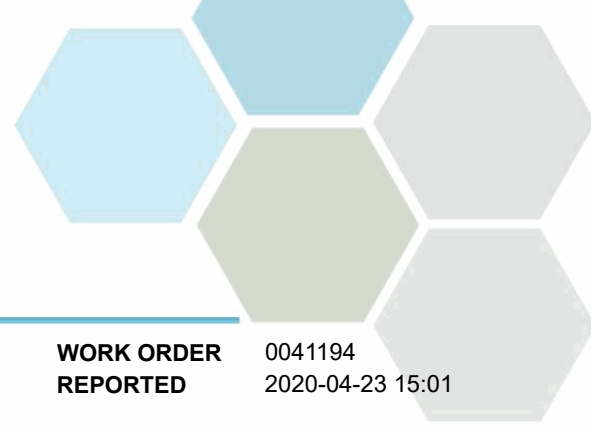
**WORK ORDER REPORTED** 0041194  
2020-04-23 15:01

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
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
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
<	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
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** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP QCE

**WORK ORDER** 0041194  
**REPORTED** 2020-04-23 15:01

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0041755

**RECEIVED / TEMP** 2020-04-23 12:00 / 5°C

**REPORTED** 2020-04-27 14:14

**COC NUMBER** B91631

### 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.

### Work Order Comments:

Custody Seals Intact: YES

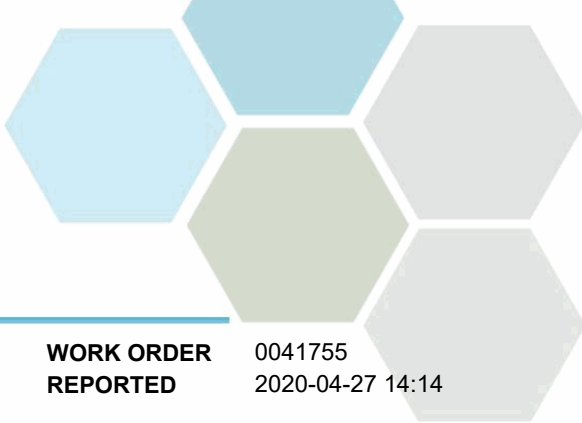
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

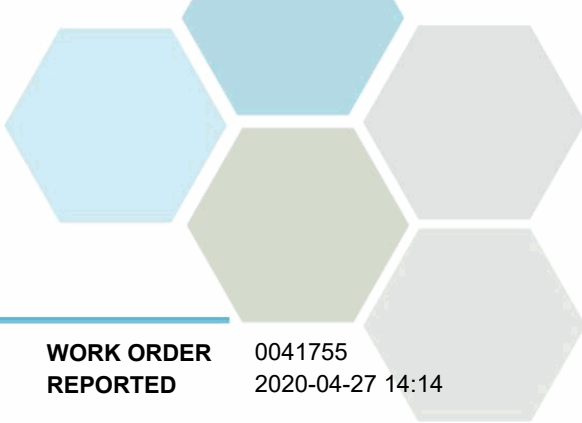


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0041755  
2020-04-27 14:14

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0041755-01)   Matrix: Water   Sampled: 2020-04-22 11:25</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-23	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-23	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0041755  
2020-04-27 14:14

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0041757

**RECEIVED / TEMP** 2020-04-23 12:00 / 5°C

**REPORTED** 2020-04-29 16:32

**COC NUMBER** B91613

### 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.

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

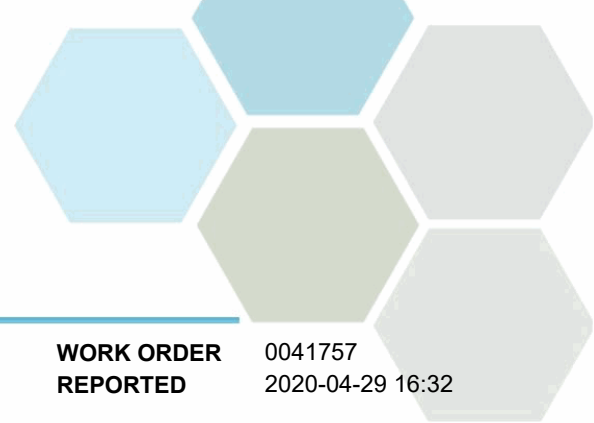
### Authorized By:

Alana Crump  
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



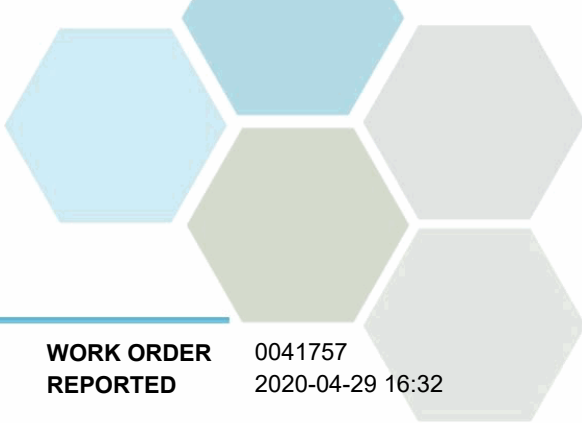


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0041757  
2020-04-29 16:32

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0041757-01)   Matrix: Fresh Water   Sampled: 2020-04-22 11:25</b>					
<b>Anions</b>					
Nitrate (as N)	1.87	0.010	mg/L	2020-04-24	
Nitrite (as N)	0.234	0.010	mg/L	2020-04-24	
Phosphate (as P)	0.0166	0.0050	mg/L	2020-04-24	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.322	0.050	mg/L	2020-04-29	
Chemical Oxygen Demand	26	20	mg/L	2020-04-29	
Phosphorus, Total (as P)	0.138	0.0020	mg/L	2020-04-25	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-04-29	
UV Transmittance @ 254nm	65.1	0.10	% T	2020-04-25	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0041757  
2020-04-29 16:32

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0042317

**RECEIVED / TEMP** 2020-04-30 11:45 / 5°C

**REPORTED** 2020-05-04 14:37

**COC NUMBER** B91701

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

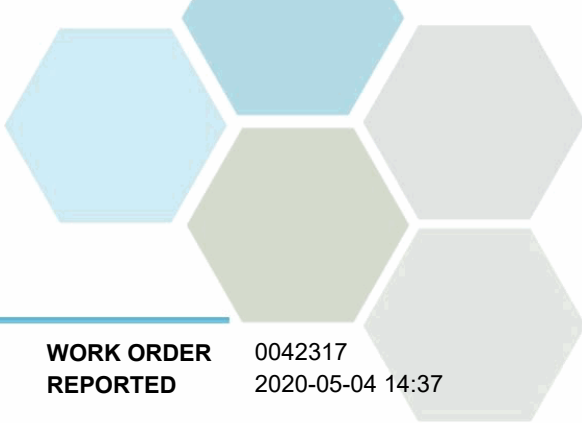
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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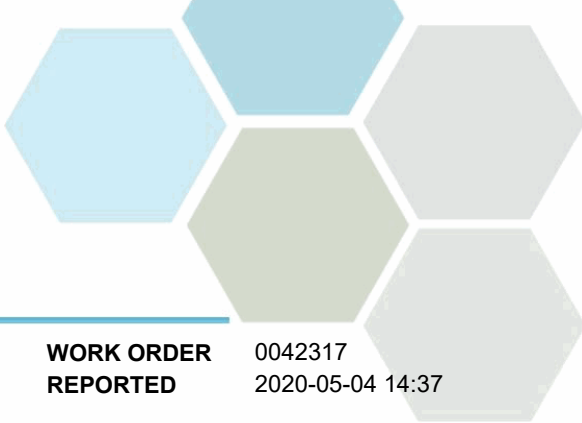


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0042317  
2020-05-04 14:37

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0042317-01)   Matrix: Water   Sampled: 2020-04-29 11:40</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-30	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0042317  
2020-05-04 14:37

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0042318

**RECEIVED / TEMP** 2020-04-30 13:40 / 5°C

**REPORTED** 2020-05-06 12:23

**COC NUMBER** B91701

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

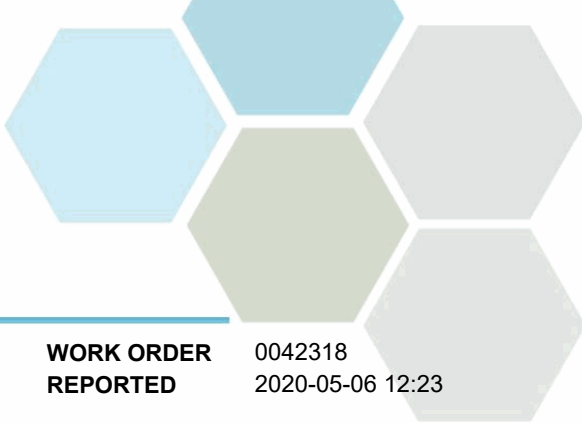
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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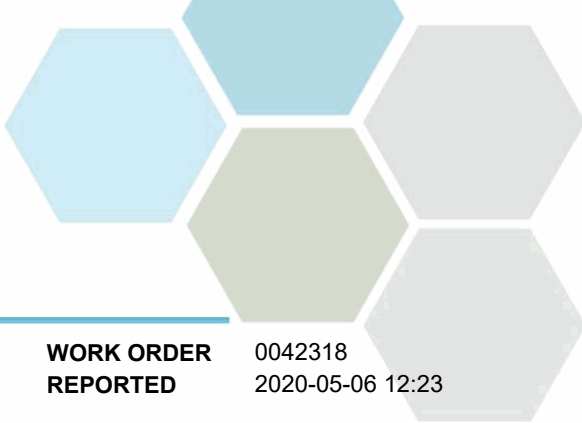


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0042318  
2020-05-06 12:23

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0042318-01)   Matrix: Fresh Water   Sampled: 2020-04-29 11:40</b>					
<i>Anions</i>					
Nitrate (as N)	0.950	0.010	mg/L	2020-05-02	
Nitrite (as N)	0.254	0.010	mg/L	2020-05-02	
Phosphate (as P)	0.0161	0.0050	mg/L	2020-05-02	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.199	0.050	mg/L	2020-05-05	
Chemical Oxygen Demand	28	20	mg/L	2020-05-01	
Phosphorus, Total (as P)	0.134	0.0020	mg/L	2020-05-04	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-05-05	
UV Transmittance @ 254nm	63.7	0.10	% T	2020-05-02	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0042318  
2020-05-06 12:23

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
<	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
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0050604

**RECEIVED / TEMP** 2020-05-07 12:00 / 6°C

**REPORTED** 2020-05-12 10:17

**COC NUMBER** B92181

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

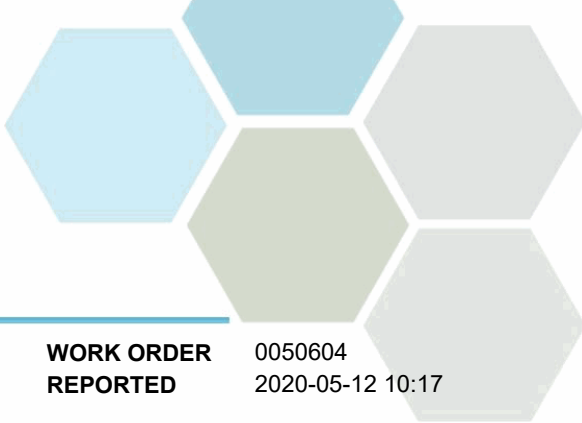
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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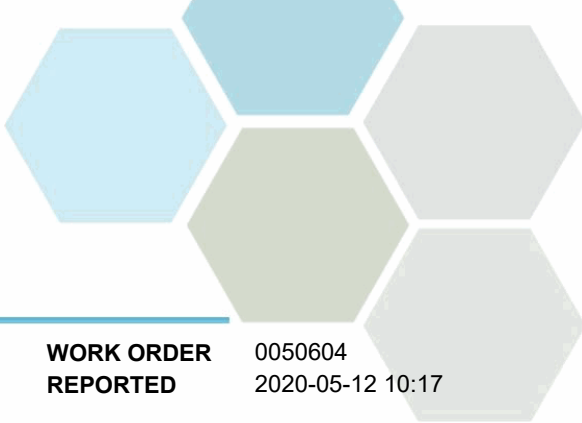


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0050604  
2020-05-12 10:17

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0050604-01)   Matrix: Water   Sampled: 2020-05-06 10:15</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-07	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-07	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0050604  
2020-05-12 10:17

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0050605

**RECEIVED / TEMP** 2020-05-07 12:00 / 6°C

**REPORTED** 2020-05-14 14:17

**COC NUMBER** B92181

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

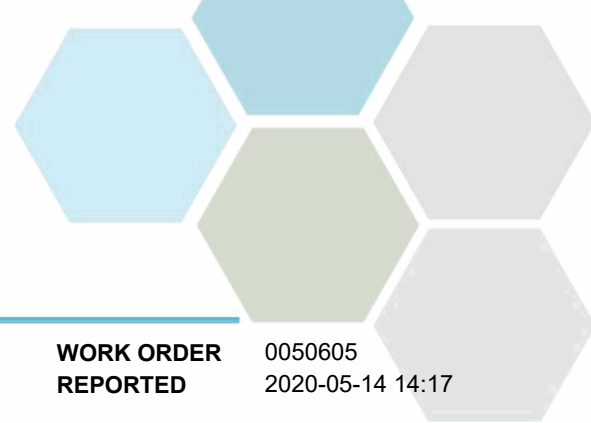
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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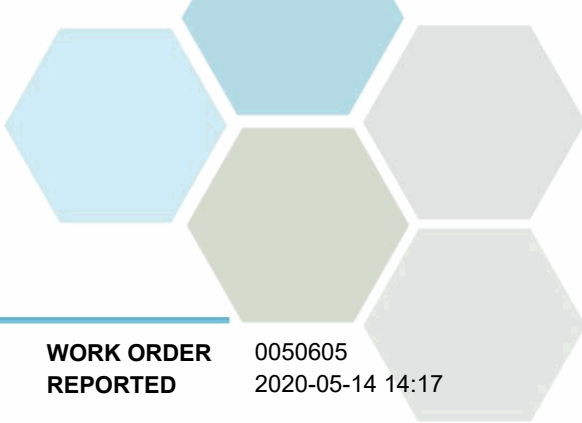


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0050605  
2020-05-14 14:17

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0050605-01)   Matrix: Fresh Water   Sampled: 2020-05-06 10:15</b>					
<i>Anions</i>					
Nitrate (as N)	0.713	0.010	mg/L	2020-05-08	
Nitrite (as N)	0.299	0.010	mg/L	2020-05-08	
Phosphate (as P)	0.0243	0.0050	mg/L	2020-05-08	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.598	0.050	mg/L	2020-05-11	
Chemical Oxygen Demand	36	20	mg/L	2020-05-13	
Phosphorus, Total (as P)	0.195	0.0020	mg/L	2020-05-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-05-12	
UV Transmittance @ 254nm	64.9	0.10	% T	2020-05-09	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0050605  
2020-05-14 14:17

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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mg/L	Milligrams per litre
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0051242

**RECEIVED / TEMP** 2020-05-14 12:15 / 7°C  
**REPORTED** 2020-05-20 15:49

**COC NUMBER** B66315

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

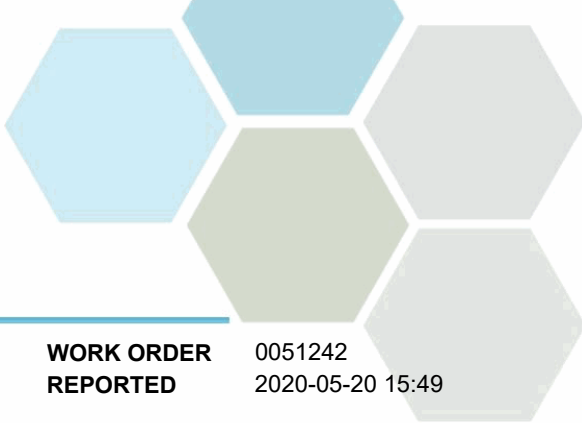
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

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Alana Crump  
Team Lead, Client Service

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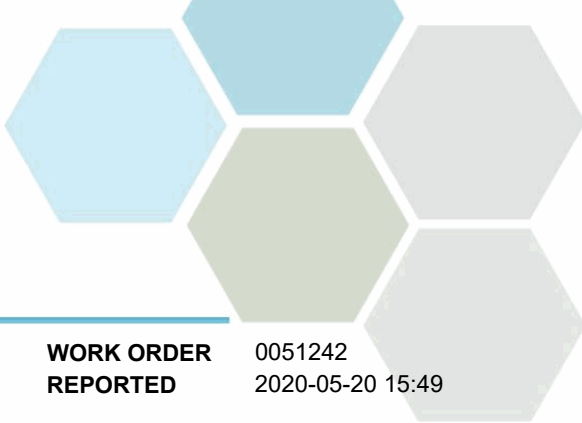
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0051242  
2020-05-20 15:49

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (0051242-01)   Matrix: Water   Sampled: 2020-05-13 10:32</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-14	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-14	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0051242  
2020-05-20 15:49

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0051243

**RECEIVED / TEMP** 2020-05-14 12:15 / 7°C  
**REPORTED** 2020-05-22 14:25

**COC NUMBER** B66315

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

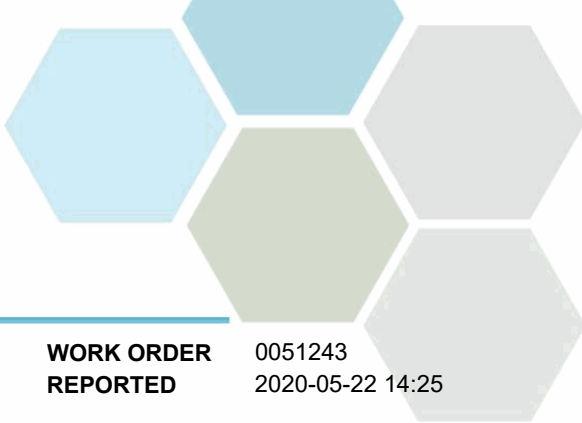
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0051243  
2020-05-22 14:25

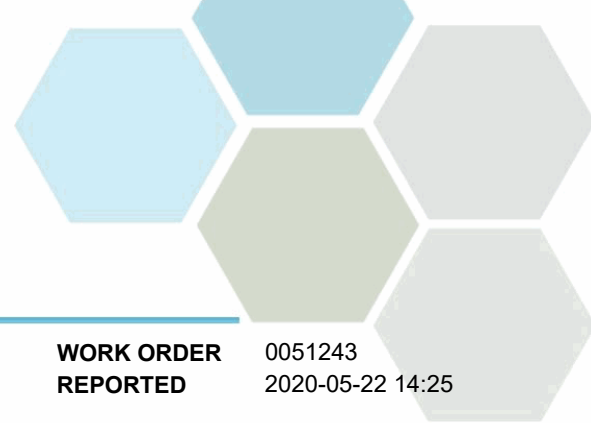
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (0051243-01)   Matrix: Water   Sampled: 2020-05-13 10:32</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	0.619	0.010	mg/L	2020-05-14	
Nitrite (as N)	0.162	0.010	mg/L	2020-05-14	
Phosphate (as P)	0.0200	0.0050	mg/L	2020-05-14	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	0.781	0.0100	mg/L	N/A	
Nitrogen, Total	2.74	0.100	mg/L	N/A	
Nitrogen, Organic	1.51	0.100	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.446	0.050	mg/L	2020-05-20	
BOD, 5-day	< 7.0	2.0	mg/L	2020-05-20	
Chemical Oxygen Demand	35	20	mg/L	2020-05-21	
Nitrogen, Total Kjeldahl	1.96	0.050	mg/L	2020-05-21	
pH	7.73	0.10	pH units	2020-05-19	HT2
Phosphorus, Total (as P)	0.139	0.0020	mg/L	2020-05-20	
Phosphorus, Total Dissolved	0.0913	0.0020	mg/L	2020-05-20	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-05-20	
UV Transmittance @ 254nm	62.8	0.10	% T	2020-05-15	

**Sample Qualifiers:**

FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.

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

PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0051243  
2020-05-22 14:25

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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

*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)
% T	Percent Transmittance
<	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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0051660

**RECEIVED / TEMP** 2020-05-20 09:00 / 7°C

**REPORTED** 2020-05-25 16:01

**COC NUMBER** B91725

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

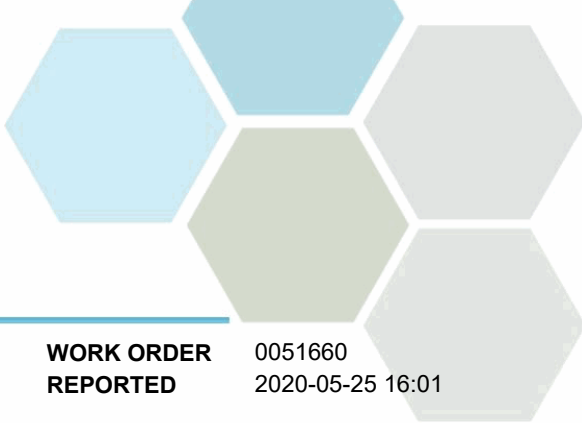
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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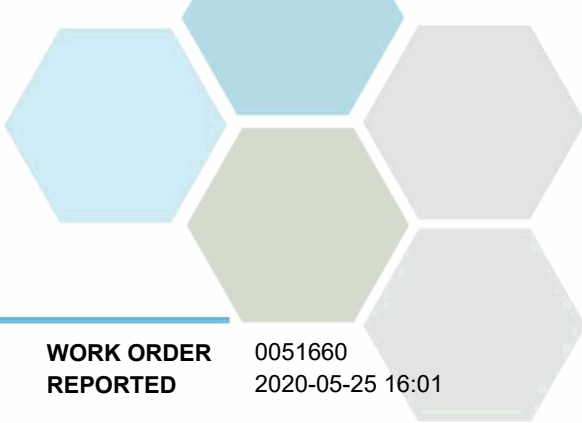


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0051660  
2020-05-25 16:01

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0051660-01)   Matrix: Water   Sampled: 2020-05-20 08:03</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-21	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-21	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0051660  
2020-05-25 16:01

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0051661

**RECEIVED / TEMP** 2020-05-20 09:00 / 7°C  
**REPORTED** 2020-05-27 12:42

**COC NUMBER** B91725

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

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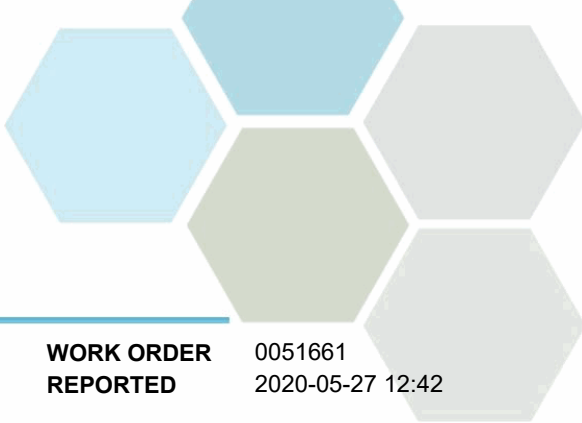
### Authorized By:

Alana Crump  
Team Lead, Client Service

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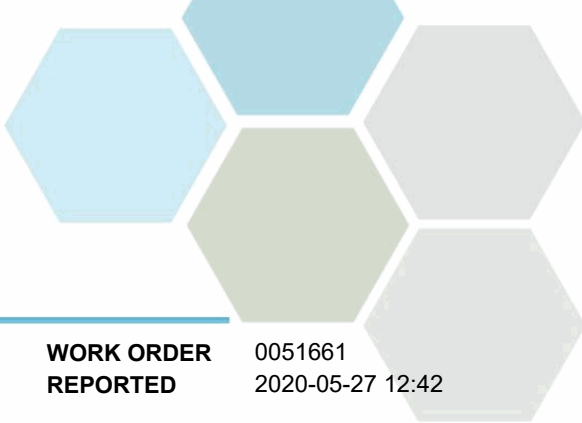


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0051661  
2020-05-27 12:42

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0051661-01)   Matrix: Fresh Water   Sampled: 2020-05-20 08:03</b>					
<b>Anions</b>					
Nitrate (as N)	0.272	0.010	mg/L	2020-05-21	
Nitrite (as N)	0.126	0.010	mg/L	2020-05-21	
Phosphate (as P)	0.0192	0.0050	mg/L	2020-05-21	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.627	0.050	mg/L	2020-05-23	
Chemical Oxygen Demand	37	20	mg/L	2020-05-21	
Phosphorus, Total (as P)	0.136	0.0020	mg/L	2020-05-23	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-05-27	
UV Transmittance @ 254nm	64.4	0.10	% T	2020-05-22	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0051661  
2020-05-27 12:42

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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mg/L	Milligrams per litre
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0052373

**RECEIVED / TEMP** 2020-05-28 12:00 / 5°C

**REPORTED** 2020-06-02 16:10

**COC NUMBER** B92501

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

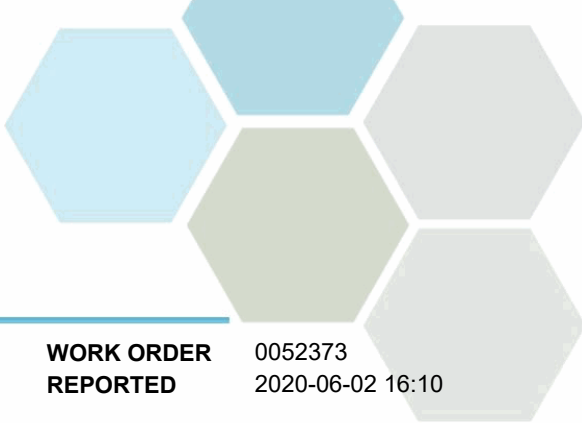
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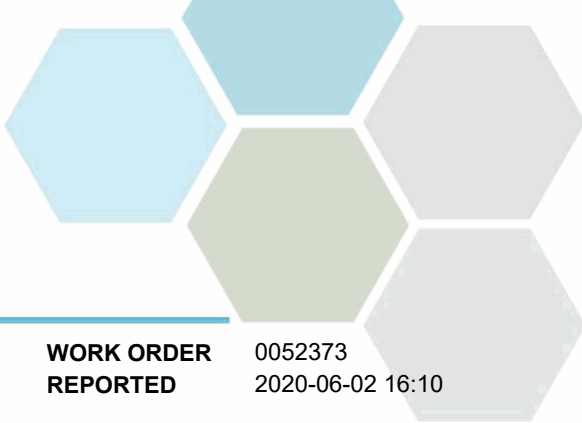


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0052373  
2020-06-02 16:10

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0052373-01)   Matrix: Water   Sampled: 2020-05-27 10:11</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-28	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-05-28	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0052373  
2020-06-02 16:10

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0052374

**RECEIVED / TEMP** 2020-05-28 12:00 / 5°C

**REPORTED** 2020-06-04 14:16

**COC NUMBER** B92501

### Introduction:

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Custody Seals Intact: YES

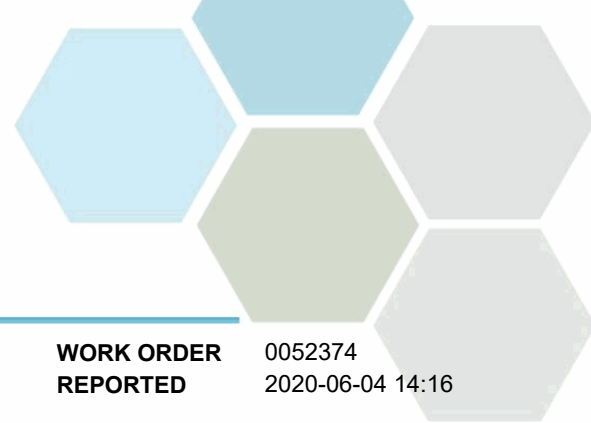
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Team Lead, Client Service

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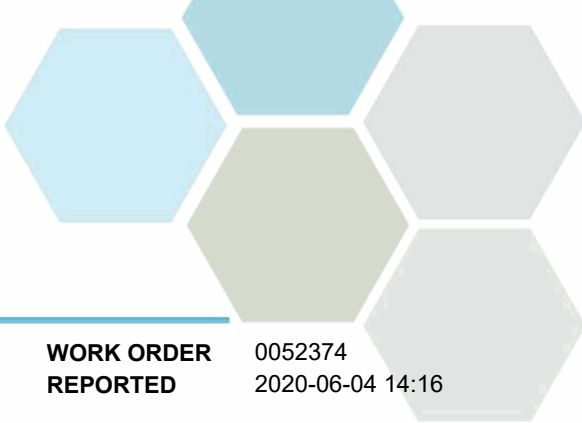


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0052374  
2020-06-04 14:16

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0052374-01)   Matrix: Fresh Water   Sampled: 2020-05-27 10:11</b>					
<i>Anions</i>					
Nitrate (as N)	0.917	0.010	mg/L	2020-05-29	
Nitrite (as N)	0.044	0.010	mg/L	2020-05-29	
Phosphate (as P)	0.0315	0.0050	mg/L	2020-05-29	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.199	0.050	mg/L	2020-06-01	
Chemical Oxygen Demand	30	20	mg/L	2020-06-03	
Phosphorus, Total (as P)	0.136	0.0020	mg/L	2020-06-02	
Solids, Total Suspended	2.6	2.0	mg/L	2020-06-02	
UV Transmittance @ 254nm	66.4	0.10	% T	2020-05-29	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0052374  
2020-06-04 14:16

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
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	Kelowna

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

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RL	Reporting Limit (default)
% T	Percent Transmittance
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0060488

**RECEIVED / TEMP** 2020-06-03 12:30 / 7°C

**REPORTED** 2020-06-08 15:40

**COC NUMBER** B92581

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

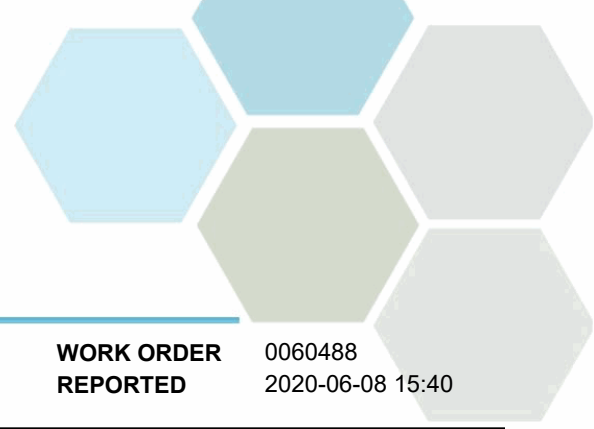
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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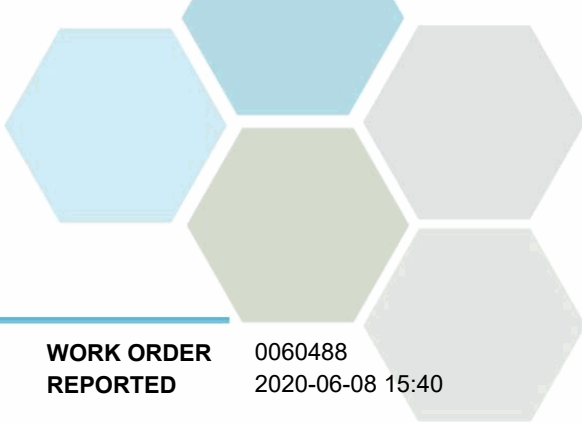


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0060488  
2020-06-08 15:40

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0060488-01)   Matrix: Water   Sampled: 2020-06-03 07:55</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-04	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-04	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0060488  
2020-06-08 15:40

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0060489

**RECEIVED / TEMP** 2020-06-03 12:30 / 7°C

**REPORTED** 2020-06-10 16:38

**COC NUMBER** B92581

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

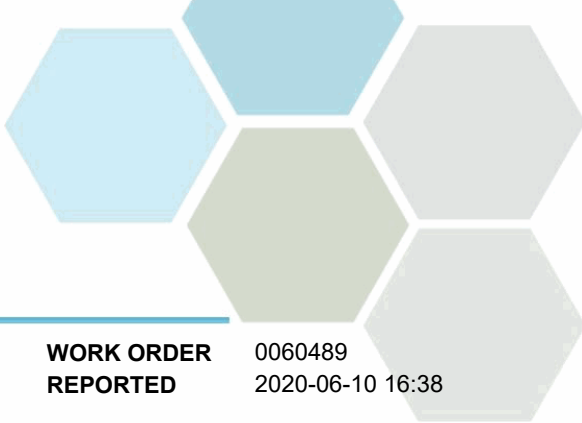
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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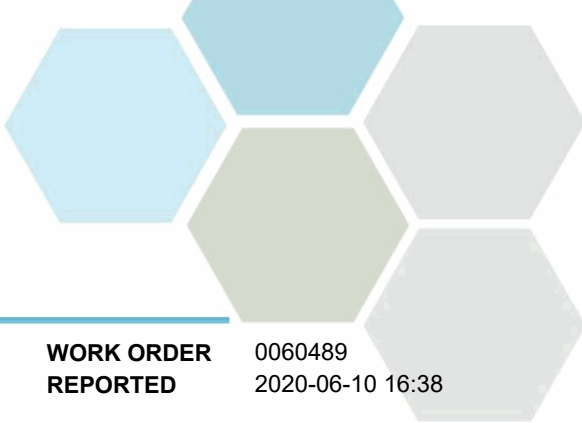


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0060489  
2020-06-10 16:38

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0060489-01)   Matrix: Fresh Water   Sampled: 2020-06-03 07:55</b>					
<i>Anions</i>					
Nitrate (as N)	1.57	0.010	mg/L	2020-06-04	
Nitrite (as N)	0.055	0.010	mg/L	2020-06-04	
Phosphate (as P)	0.0136	0.0050	mg/L	2020-06-04	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.490	0.050	mg/L	2020-06-09	
Chemical Oxygen Demand	36	20	mg/L	2020-06-10	
Phosphorus, Total (as P)	0.123	0.0020	mg/L	2020-06-08	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-06-09	
UV Transmittance @ 254nm	66.0	0.10	% T	2020-06-04	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0060489  
2020-06-10 16:38

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0061236

**RECEIVED / TEMP REPORTED** 2020-06-11 13:48 / 4°C  
2020-06-12 15:26

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

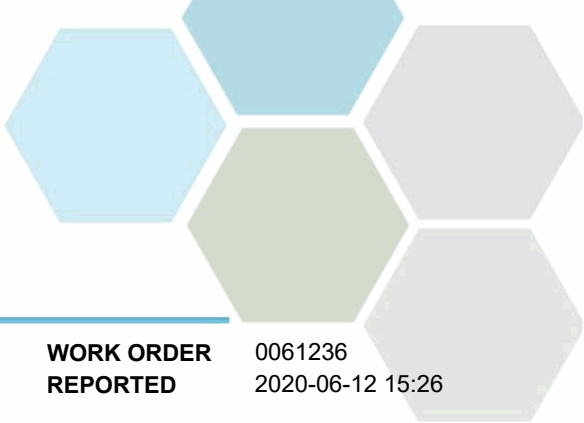
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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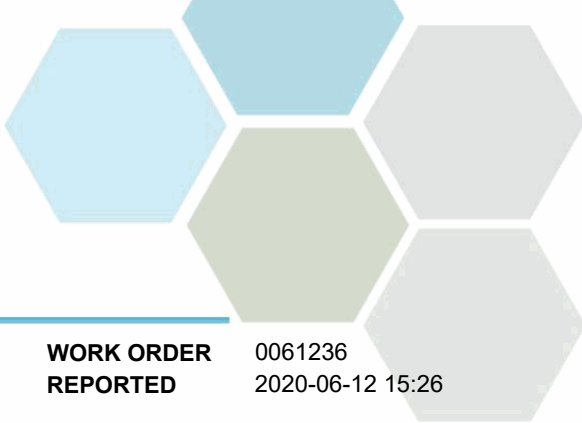
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0061236  
2020-06-12 15:26

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (0061236-01)   Matrix: Water   Sampled: 2020-06-10 13:55</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-11	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0061236  
2020-06-12 15:26

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0061237

**RECEIVED / TEMP** 2020-06-11 12:00 / 4°C

**REPORTED** 2020-06-18 14:41

**COC NUMBER** B92593

### Introduction:

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Custody Seals Intact: YES

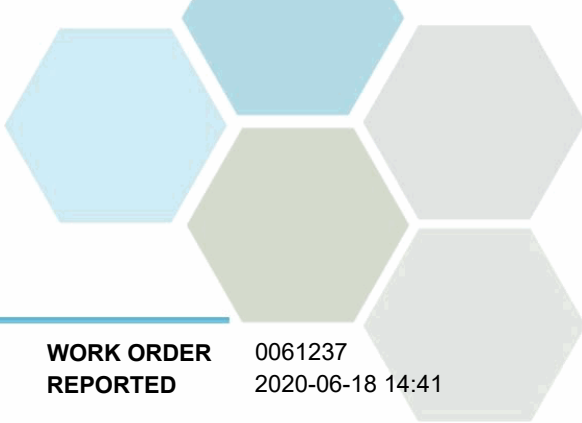
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

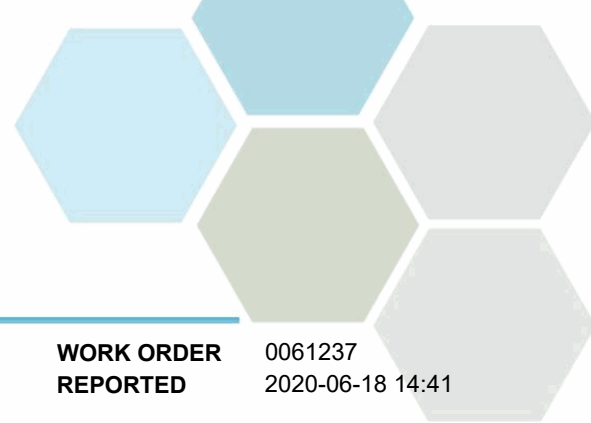
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0061237  
2020-06-18 14:41

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (0061237-01)   Matrix: Water   Sampled: 2020-06-10 13:55</b>					
<b>Anions</b>					
Nitrate (as N)	1.61	0.010	mg/L	2020-06-16	HT1
Nitrite (as N)	0.055	0.010	mg/L	2020-06-16	HT1
Phosphate (as P)	0.0129	0.0050	mg/L	2020-06-16	HT1
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	1.66	0.0100	mg/L	N/A	
Nitrogen, Total	4.02	0.0500	mg/L	N/A	
Nitrogen, Organic	1.50	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.850	0.050	mg/L	2020-06-16	
BOD, 5-day	3.8	2.0	mg/L	2020-06-17	
Chemical Oxygen Demand	27	20	mg/L	2020-06-17	
Nitrogen, Total Kjeldahl	2.35	0.050	mg/L	2020-06-16	
pH	7.42	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	0.118	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	0.0652	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	< 4.0	2.0	mg/L	2020-06-17	
UV Transmittance @ 254nm	66.9	0.10	% T	2020-06-13	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0061237  
2020-06-18 14:41

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0061944

**RECEIVED / TEMP** 2020-06-18 12:00 / 7°C  
**REPORTED** 2020-06-23 16:27

**COC NUMBER** B66316

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

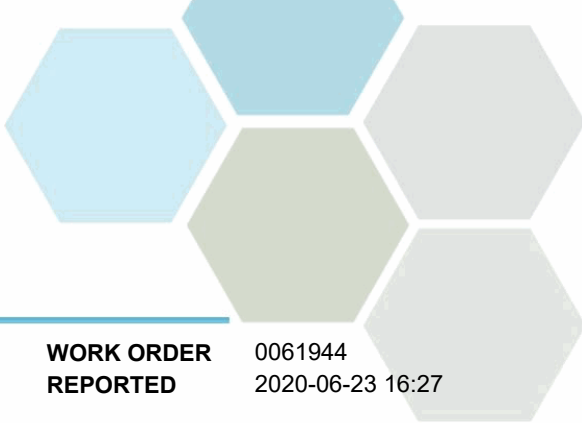
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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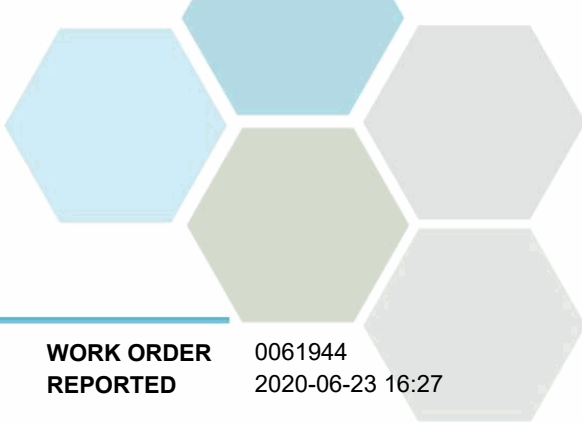


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0061944  
2020-06-23 16:27

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0061944-01)   Matrix: Water   Sampled: 2020-06-17 12:22</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-18	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0061944  
2020-06-23 16:27

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0061953

**RECEIVED / TEMP** 2020-06-18 12:00 / 7°C

**REPORTED** 2020-06-24 16:26

**COC NUMBER** B66316

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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#### *Ahead of the Curve*



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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

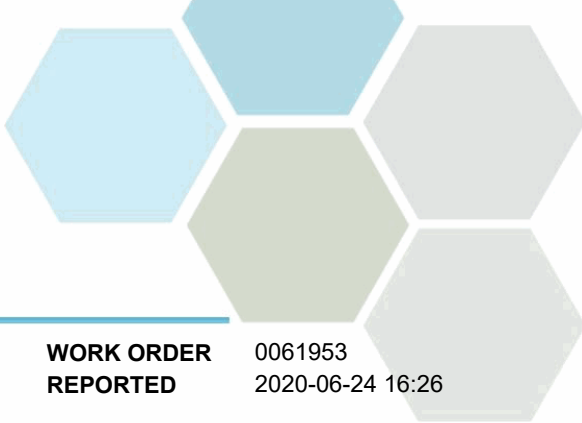
### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

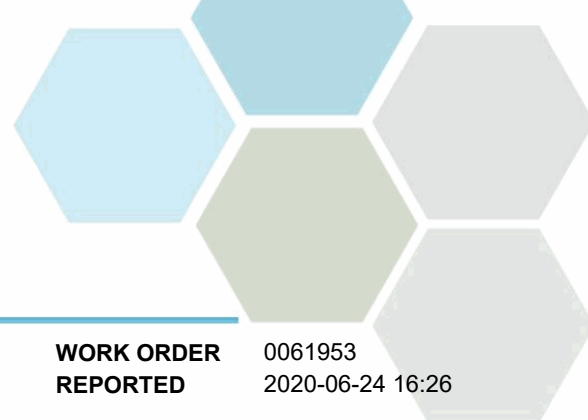
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0061953  
2020-06-24 16:26

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0061953-01)   Matrix: Fresh Water   Sampled: 2020-06-17 12:22</b>					
<b>Anions</b>					
Nitrate (as N)	2.17	0.010	mg/L	2020-06-21	HT1
Nitrite (as N)	0.089	0.010	mg/L	2020-06-21	HT1
Phosphate (as P)	0.0067	0.0050	mg/L	2020-06-21	HT1
<b>General Parameters</b>					
Ammonia, Total (as N)	0.439	0.050	mg/L	2020-06-23	
Chemical Oxygen Demand	33	20	mg/L	2020-06-24	
Phosphorus, Total (as P)	0.108	0.0020	mg/L	2020-06-22	
Solids, Total Suspended	2.2	2.0	mg/L	2020-06-22	
UV Transmittance @ 254nm	66.0	0.10	% T	2020-06-19	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0061953  
2020-06-24 16:26

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0062634

**RECEIVED / TEMP** 2020-06-25 12:30 / 7°C

**REPORTED** 2020-06-26 17:06

**COC NUMBER** B92991

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

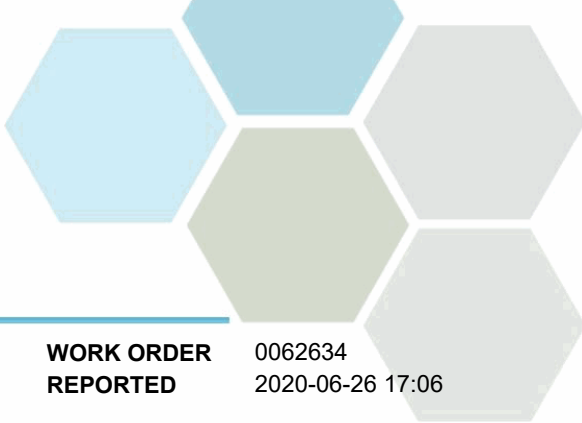
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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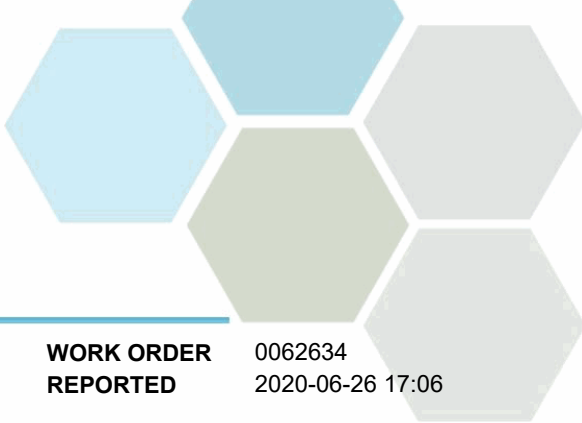


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0062634  
2020-06-26 17:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0062634-01)   Matrix: Water   Sampled: 2020-06-24 10:48</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	1.0	1.0	MPN/100 mL	2020-06-25	
E. coli (Q-Tray)	1.0	1.0	MPN/100 mL	2020-06-25	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0062634  
2020-06-26 17:06

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0062635

**RECEIVED / TEMP** 2020-06-25 14:22 / 7°C

**REPORTED** 2020-07-02 11:57

**COC NUMBER** B92991

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

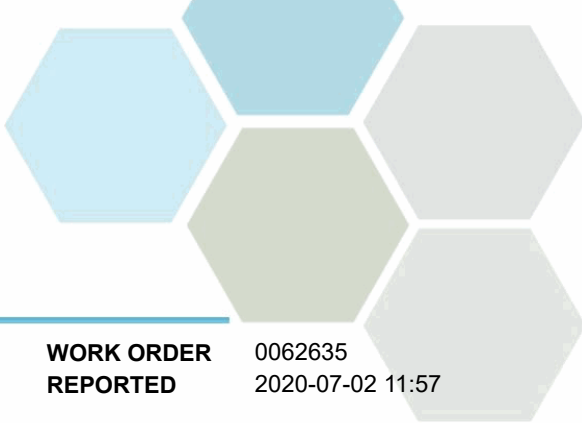
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

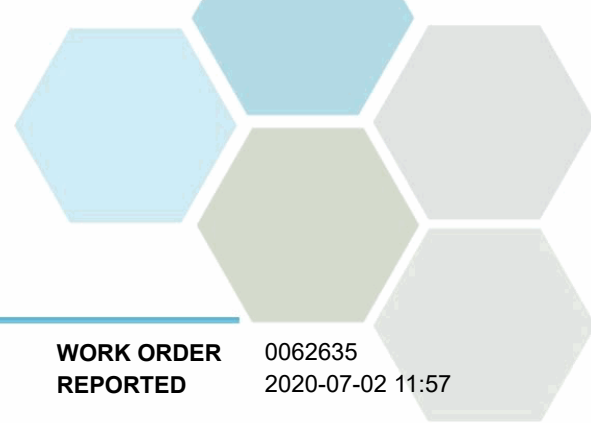
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0062635  
2020-07-02 11:57

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0062635-01)   Matrix: Fresh Water   Sampled: 2020-06-24 10:48</b>					
<b>Anions</b>					
Nitrate (as N)	0.862	0.010	mg/L	2020-06-29	HT1
Nitrite (as N)	0.061	0.010	mg/L	2020-06-29	HT1
Phosphate (as P)	0.0144	0.0050	mg/L	2020-06-29	HT1
<b>General Parameters</b>					
Ammonia, Total (as N)	0.178	0.050	mg/L	2020-06-29	
Chemical Oxygen Demand	20	20	mg/L	2020-06-27	
Phosphorus, Total (as P)	0.0935	0.0020	mg/L	2020-06-30	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-06-30	
UV Transmittance @ 254nm	72.5	0.10	% T	2020-06-27	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0062635  
2020-07-02 11:57

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
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**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0063044

**RECEIVED / TEMP** 2020-06-30 15:00 / 3°C

**REPORTED** 2020-07-02 16:24

**COC NUMBER** B93048

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

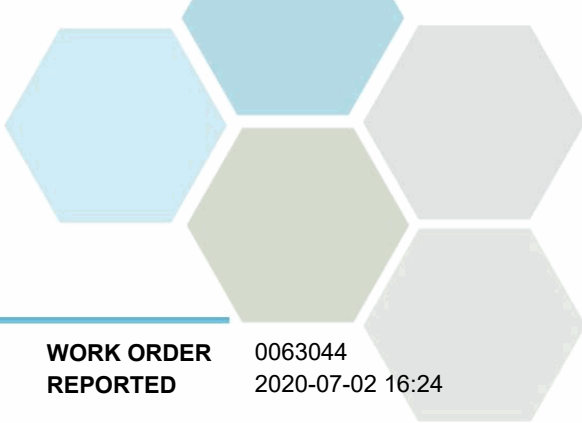
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

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Team Lead, Client Service

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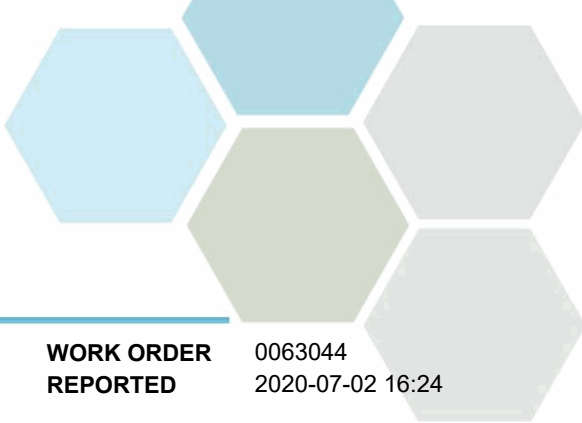


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0063044  
2020-07-02 16:24

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0063044-01)   Matrix: Water   Sampled: 2020-06-29 10:12</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-30	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-06-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0063044  
2020-07-02 16:24

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0063045

**RECEIVED / TEMP** 2020-06-30 15:00 / 3°C  
**REPORTED** 2020-07-08 12:26

**COC NUMBER** B93048

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

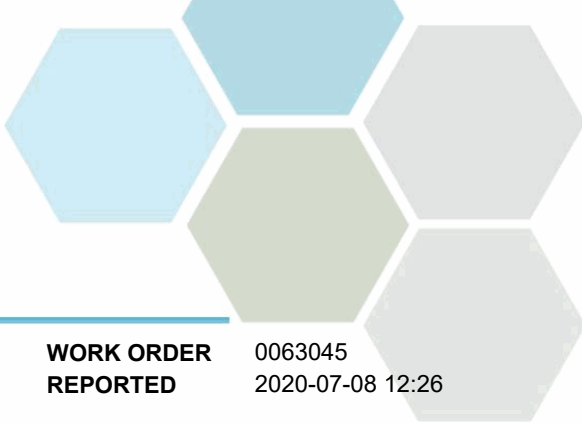
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

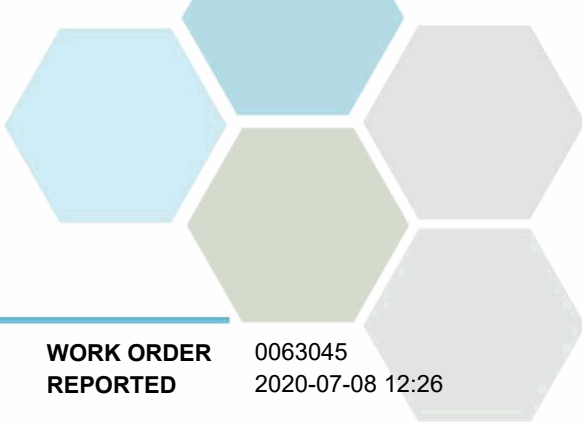
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0063045  
2020-07-08 12:26

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0063045-01)   Matrix: Fresh Water   Sampled: 2020-06-29 10:12</b>					
<b>Anions</b>					
Nitrate (as N)	2.95	0.010	mg/L	2020-07-05	HT1
Nitrite (as N)	0.101	0.010	mg/L	2020-07-05	HT1
Phosphate (as P)	0.0401	0.0050	mg/L	2020-07-05	HT1
<b>General Parameters</b>					
Ammonia, Total (as N)	0.198	0.050	mg/L	2020-07-03	
Chemical Oxygen Demand	27	20	mg/L	2020-07-07	
Phosphorus, Total (as P)	0.184	0.0020	mg/L	2020-07-03	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-07-03	
UV Transmittance @ 254nm	70.3	0.10	% T	2020-07-02	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0063045  
2020-07-08 12:26

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0070848

**RECEIVED / TEMP** 2020-07-09 12:30 / 5°C

**REPORTED** 2020-07-14 15:27

**COC NUMBER** B93110

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

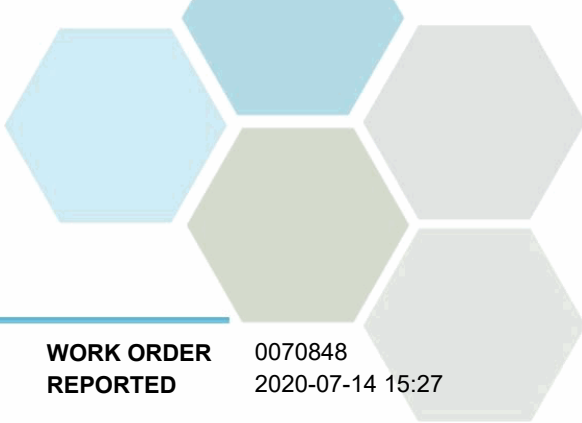
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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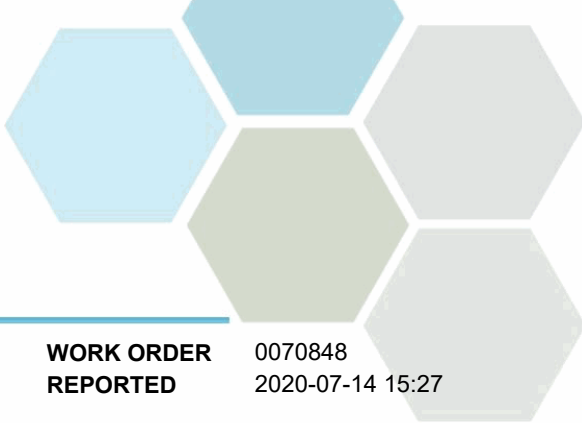
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0070848  
2020-07-14 15:27

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0070848-01)   Matrix: Water   Sampled: 2020-07-08 11:38</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-07-09	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-07-09	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0070848  
2020-07-14 15:27

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0070849

**RECEIVED / TEMP** 2020-07-09 12:30 / 5°C

**REPORTED** 2020-07-15 15:19

**COC NUMBER** B93110

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

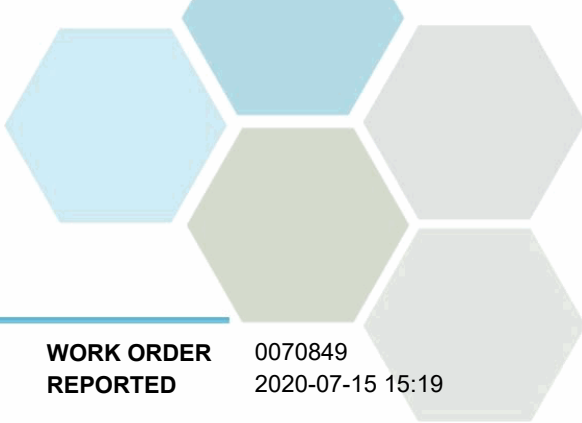
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

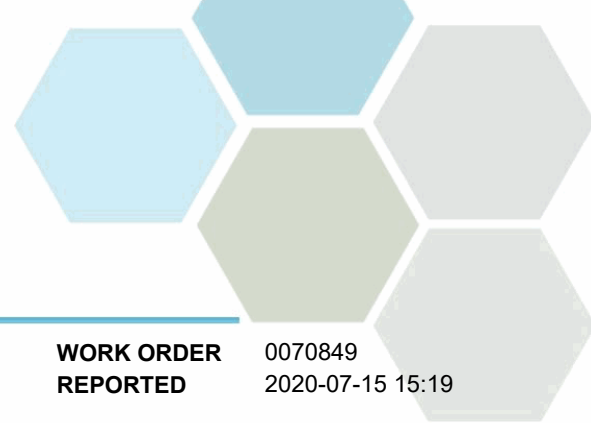
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0070849  
2020-07-15 15:19

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0070849-01)   Matrix: Fresh Water   Sampled: 2020-07-08 11:38</b>					
<b>Anions</b>					
Nitrate (as N)	2.39	0.010	mg/L	2020-07-12	HT1
Nitrite (as N)	0.100	0.010	mg/L	2020-07-12	HT1
Phosphate (as P)	0.0906	0.0050	mg/L	2020-07-12	HT1
<b>General Parameters</b>					
Ammonia, Total (as N)	0.220	0.050	mg/L	2020-07-13	
Chemical Oxygen Demand	22	20	mg/L	2020-07-13	
Phosphorus, Total (as P)	0.303	0.0020	mg/L	2020-07-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-07-14	
UV Transmittance @ 254nm	71.8	0.10	% T	2020-07-10	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0070849  
2020-07-15 15:19

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0071398

**RECEIVED / TEMP** 2020-07-15 12:20 / 9°C  
**REPORTED** 2020-07-20 15:14

**COC NUMBER** B93047

### Introduction:

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### Work Order Comments:

Custody Seals Intact: NO

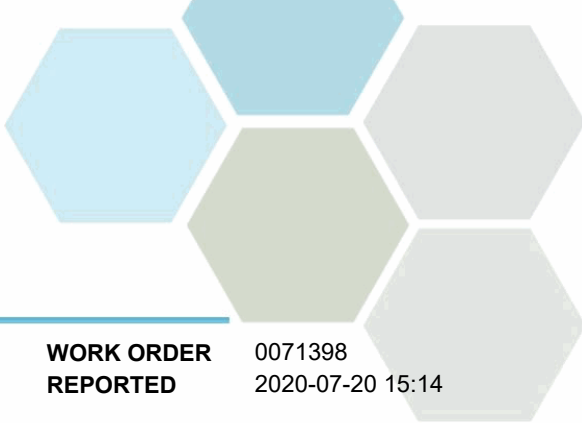
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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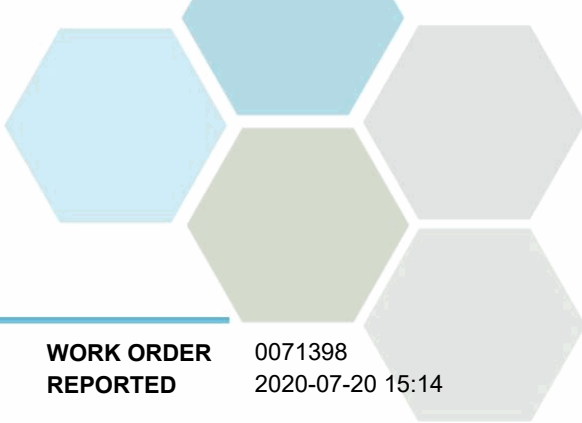


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0071398  
2020-07-20 15:14

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0071398-01)   Matrix: Water   Sampled: 2020-07-15 08:00</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-07-15	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-07-15	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0071398  
2020-07-20 15:14

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0071399

**RECEIVED / TEMP** 2020-07-15 13:29 / 9°C

**REPORTED** 2020-07-24 14:47

**COC NUMBER** B93047

### Introduction:

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### Work Order Comments:

Custody Seals Intact: NO

This is a revised report; please refer to Appendix 3 for details.

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

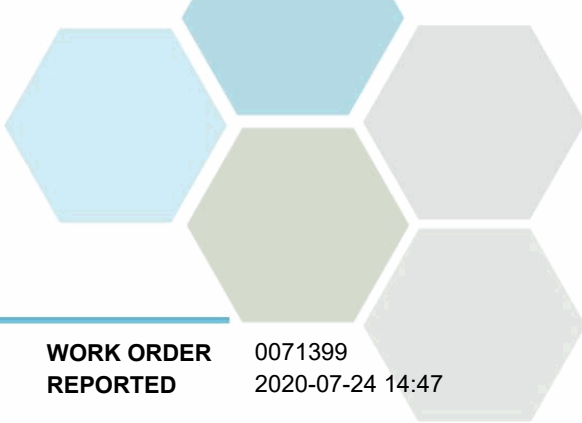
### Authorized By:

Alana Crump  
Team Lead, Client Service

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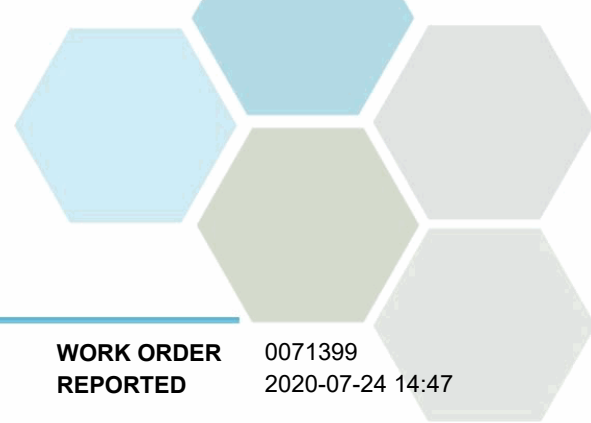


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0071399  
2020-07-24 14:47

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0071399-01)   Matrix: Fresh Water   Sampled: 2020-07-15 08:00</b>					
<b>Anions</b>					
Nitrate (as N)	3.39	0.010	mg/L	2020-07-16	
Nitrite (as N)	0.182	0.010	mg/L	2020-07-16	
Phosphate (as P)	0.0369	0.0050	mg/L	2020-07-16	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.265	0.050	mg/L	2020-07-15	
Chemical Oxygen Demand	22	20	mg/L	2020-07-20	
Phosphorus, Total (as P)	0.112	0.0050	mg/L	2020-07-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-07-20	
UV Transmittance @ 254nm	73.2	0.10	% T	2020-07-16	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0071399  
2020-07-24 14:47

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

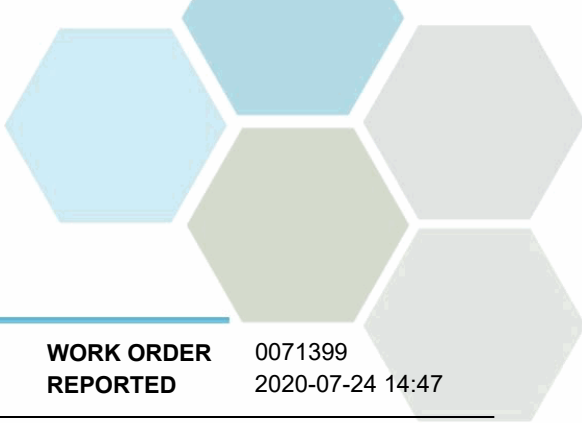
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mg/L	Milligrams per litre
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## APPENDIX 3: REVISION HISTORY

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0071399  
2020-07-24 14:47

Sample ID	Changed	Change	Analysis	Analyte(s)
0071399-01	2020-07-24	Date Sampled	N/A	N/A

**CERTIFICATE OF ANALYSIS**

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 0072254

**RECEIVED / TEMP REPORTED** 2020-07-23 12:00 / 11°C  
2020-07-28 09:45

**COC NUMBER** B67422

**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/IEC 17025:2017 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.

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*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.

**Work Order Comments:**

Custody Seals Intact: YES

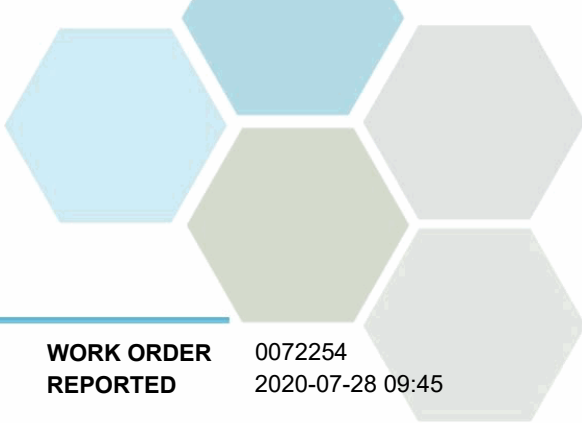
*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

**Authorized By:**

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

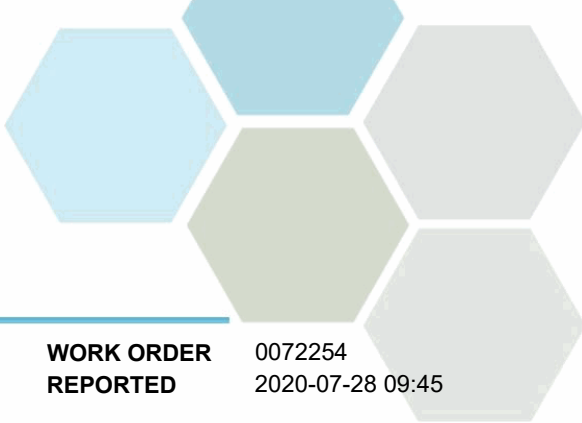


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072254  
2020-07-28 09:45

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0072254-01)   Matrix: Water   Sampled: 2020-07-22 13:10</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-07-23	
<b>Effluent Grab REP #1 - Bacteria (0072254-02)   Matrix: Water   Sampled: 2020-07-22 13:10</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-07-23	
<b>Effluent Grab REP #2 - Bacteria (0072254-03)   Matrix: Water   Sampled: 2020-07-22 13:10</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-07-23	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072254  
2020-07-28 09:45

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 0072255

**RECEIVED / TEMP** 2020-07-23 12:00 / 11°C  
**REPORTED** 2020-07-30 12:28

**COC NUMBER** B67422

### Introduction:

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

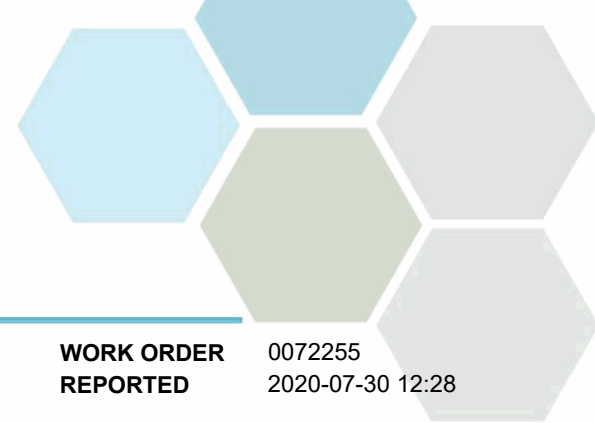
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0072255-01)   Matrix: Water   Sampled: 2020-07-22 13:10</b>					FILT, PRES

**Anions**

Chloride	115	0.10	mg/L	2020-07-24	
Fluoride	0.19	0.10	mg/L	2020-07-24	
Nitrate (as N)	1.84	0.010	mg/L	2020-07-24	
Nitrite (as N)	0.116	0.010	mg/L	2020-07-24	
Phosphate (as P)	0.0336	0.0050	mg/L	2020-07-24	
Sulfate	47.0	1.0	mg/L	2020-07-24	

**Calculated Parameters**

Hardness, Total (as CaCO3)	260	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	1.96	0.0100	mg/L	N/A	
Nitrogen, Total	3.07	0.0500	mg/L	N/A	

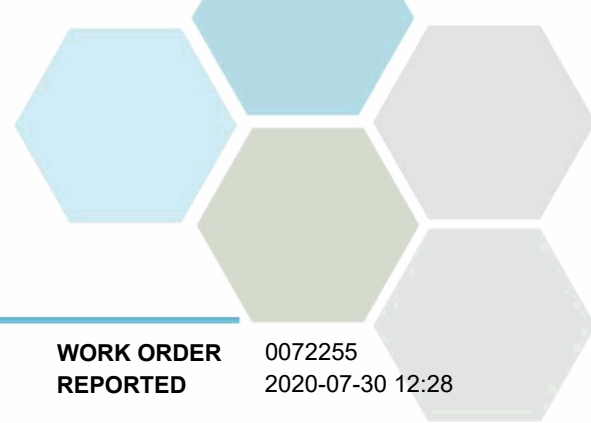
**General Parameters**

Alkalinity, Total (as CaCO3)	228	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Bicarbonate (as CaCO3)	228	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	0.160	0.050	mg/L	2020-07-24	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
BOD, 5-day Carbonaceous	< 2.0	2.0	mg/L	2020-07-30	
Chemical Oxygen Demand	< 20	20	mg/L	2020-07-27	
Conductivity (EC)	868	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	1.11	0.050	mg/L	2020-07-29	
pH	7.83	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	0.132	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	0.0969	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-07-28	
UV Transmittance @ 254nm	76.1	0.10	% T	2020-07-24	

**Total Metals**

Aluminum, total	0.0748	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	0.00053	0.00050	mg/L	2020-07-28	
Barium, total	0.0552	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	0.124	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	80.4	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	0.00015	0.00010	mg/L	2020-07-28	
Copper, total	0.00142	0.00040	mg/L	2020-07-28	
Iron, total	0.020	0.010	mg/L	2020-07-28	





## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0072255-01)   Matrix: Water   Sampled: 2020-07-22 13:10, Continued</b>					<b>FILT, PRES</b>

**Total Metals, Continued**

Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	<b>0.00592</b>	0.00010	mg/L	2020-07-28	
Magnesium, total	<b>14.3</b>	0.010	mg/L	2020-07-28	
Manganese, total	<b>0.0475</b>	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	<b>0.00118</b>	0.00010	mg/L	2020-07-28	
Nickel, total	<b>0.00101</b>	0.00040	mg/L	2020-07-28	
Phosphorus, total	<b>0.138</b>	0.050	mg/L	2020-07-28	
Potassium, total	<b>16.7</b>	0.10	mg/L	2020-07-28	
Selenium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Silicon, total	<b>11.0</b>	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	<b>85.0</b>	0.10	mg/L	2020-07-28	
Strontium, total	<b>0.629</b>	0.0010	mg/L	2020-07-28	
Sulfur, total	<b>17.6</b>	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	<b>0.00226</b>	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	<b>0.0241</b>	0.0040	mg/L	2020-07-28	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-07-28	

**Effluent Grab REP #1 (0072255-02) | Matrix: Water | Sampled: 2020-07-22 13:10**

**FILT, PRES**

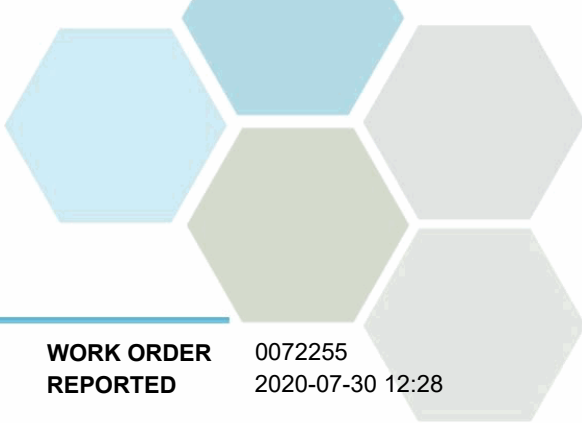
**Anions**

Chloride	<b>114</b>	0.10	mg/L	2020-07-24	
Fluoride	<b>0.18</b>	0.10	mg/L	2020-07-24	
Nitrate (as N)	<b>1.84</b>	0.010	mg/L	2020-07-24	
Nitrite (as N)	<b>0.119</b>	0.010	mg/L	2020-07-24	
Phosphate (as P)	<b>0.0326</b>	0.0050	mg/L	2020-07-24	
Sulfate	<b>47.0</b>	1.0	mg/L	2020-07-24	

**Calculated Parameters**

Hardness, Total (as CaCO3)	<b>255</b>	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	<b>1.96</b>	0.0100	mg/L	N/A	
Nitrogen, Total	<b>3.09</b>	0.0500	mg/L	N/A	

**General Parameters**



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

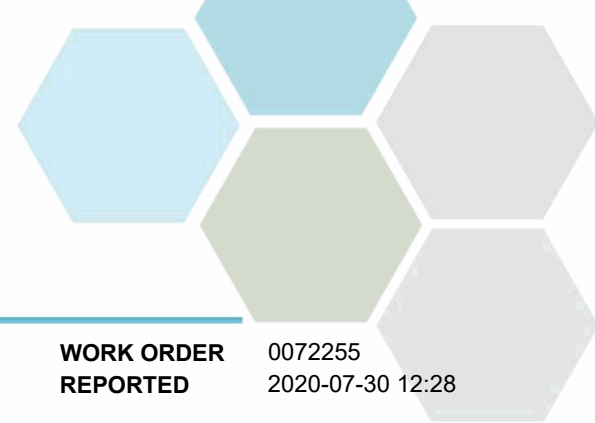
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab REP #1 (0072255-02)   Matrix: Water   Sampled: 2020-07-22 13:10, Continued</b>					FILT, PRES

**General Parameters, Continued**

Alkalinity, Total (as CaCO3)	224	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Bicarbonate (as CaCO3)	224	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	0.164	0.050	mg/L	2020-07-24	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
BOD, 5-day Carbonaceous	< 2.0	2.0	mg/L	2020-07-30	
Chemical Oxygen Demand	< 20	20	mg/L	2020-07-27	
Conductivity (EC)	871	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	1.13	0.050	mg/L	2020-07-29	
pH	7.76	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	0.126	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	0.0939	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-07-28	
UV Transmittance @ 254nm	76.1	0.10	% T	2020-07-24	

**Total Metals**

Aluminum, total	0.0686	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	0.00053	0.00050	mg/L	2020-07-28	
Barium, total	0.0525	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	0.122	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	78.7	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	0.00015	0.00010	mg/L	2020-07-28	
Copper, total	0.00122	0.00040	mg/L	2020-07-28	
Iron, total	0.020	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	0.00581	0.00010	mg/L	2020-07-28	
Magnesium, total	14.2	0.010	mg/L	2020-07-28	
Manganese, total	0.0459	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	0.00116	0.00010	mg/L	2020-07-28	
Nickel, total	0.00098	0.00040	mg/L	2020-07-28	
Phosphorus, total	0.149	0.050	mg/L	2020-07-28	
Potassium, total	16.6	0.10	mg/L	2020-07-28	
Selenium, total	0.00050	0.00050	mg/L	2020-07-28	
Silicon, total	11.2	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab REP #1 (0072255-02)   Matrix: Water   Sampled: 2020-07-22 13:10, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Sodium, total	84.0	0.10	mg/L	2020-07-28	
Strontium, total	0.611	0.0010	mg/L	2020-07-28	
Sulfur, total	17.3	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	0.00223	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	0.0224	0.0040	mg/L	2020-07-28	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-07-28	

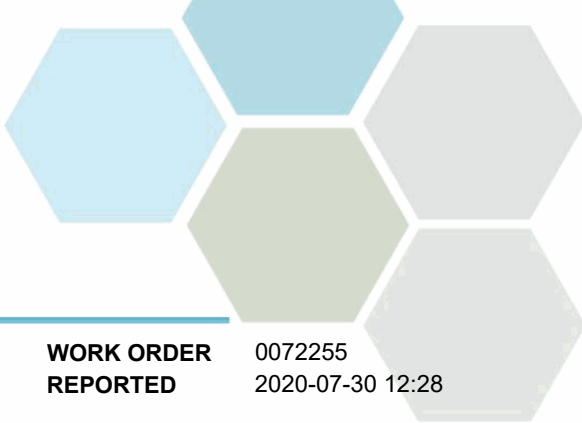
**Effluent Grab REP #2 (0072255-03) | Matrix: Water | Sampled: 2020-07-22 13:10**

FILT,  
PRES

<i>Anions</i>					
Chloride	116	0.10	mg/L	2020-07-24	
Fluoride	0.20	0.10	mg/L	2020-07-24	
Nitrate (as N)	1.80	0.010	mg/L	2020-07-24	
Nitrite (as N)	0.115	0.010	mg/L	2020-07-24	
Phosphate (as P)	0.0353	0.0050	mg/L	2020-07-24	
Sulfate	47.2	1.0	mg/L	2020-07-24	

<i>Calculated Parameters</i>					
Hardness, Total (as CaCO3)	265	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	1.92	0.0100	mg/L	N/A	
Nitrogen, Total	3.07	0.0500	mg/L	N/A	

<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	228	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Bicarbonate (as CaCO3)	228	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	0.158	0.050	mg/L	2020-07-24	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
BOD, 5-day Carbonaceous	< 2.0	2.0	mg/L	2020-07-30	
Chemical Oxygen Demand	< 20	20	mg/L	2020-07-27	
Conductivity (EC)	882	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	1.15	0.050	mg/L	2020-07-29	
pH	7.82	0.10	pH units	2020-07-24	HT2



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

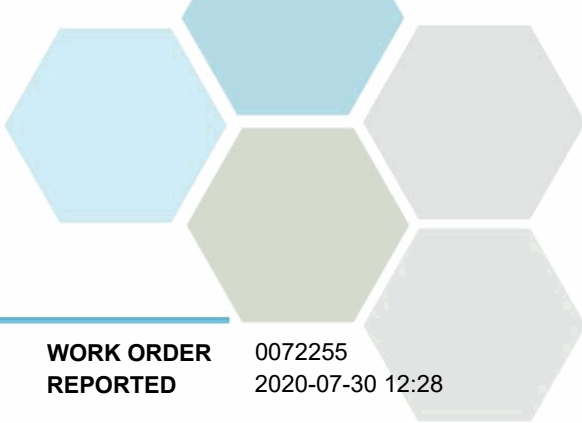
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab REP #2 (0072255-03)   Matrix: Water   Sampled: 2020-07-22 13:10, Continued</b>					<b>FILT, PRES</b>

**General Parameters, Continued**

Phosphorus, Total (as P)	<b>0.129</b>	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	<b>0.0961</b>	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-07-28	
UV Transmittance @ 254nm	<b>76.0</b>	0.10	% T	2020-07-24	

**Total Metals**

Aluminum, total	<b>0.0714</b>	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	<b>0.00054</b>	0.00050	mg/L	2020-07-28	
Barium, total	<b>0.0555</b>	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	<b>0.125</b>	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	<b>81.7</b>	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	<b>0.00015</b>	0.00010	mg/L	2020-07-28	
Copper, total	<b>0.00132</b>	0.00040	mg/L	2020-07-28	
Iron, total	<b>0.019</b>	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	<b>0.00595</b>	0.00010	mg/L	2020-07-28	
Magnesium, total	<b>14.8</b>	0.010	mg/L	2020-07-28	
Manganese, total	<b>0.0478</b>	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	<b>0.00124</b>	0.00010	mg/L	2020-07-28	
Nickel, total	<b>0.00105</b>	0.00040	mg/L	2020-07-28	
Phosphorus, total	<b>0.153</b>	0.050	mg/L	2020-07-28	
Potassium, total	<b>17.3</b>	0.10	mg/L	2020-07-28	
Selenium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Silicon, total	<b>11.5</b>	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	<b>87.8</b>	0.10	mg/L	2020-07-28	
Strontium, total	<b>0.632</b>	0.0010	mg/L	2020-07-28	
Sulfur, total	<b>18.8</b>	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	<b>0.00227</b>	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	<b>0.0230</b>	0.0040	mg/L	2020-07-28	



## TEST RESULTS

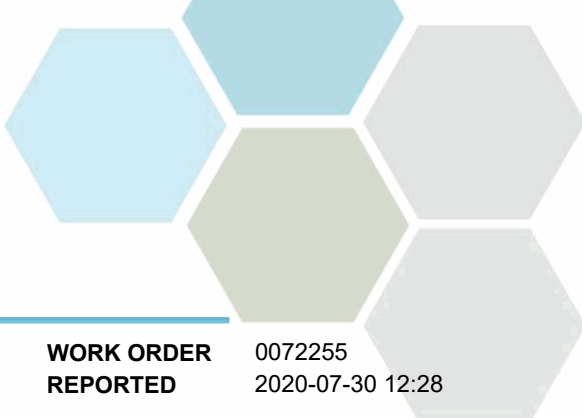
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab REP #2 (0072255-03)   Matrix: Water   Sampled: 2020-07-22 13:10, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Zirconium, total	< 0.00010	0.00010	mg/L	2020-07-28	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
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
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 0072255  
2020-07-30 12:28

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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](mailto:acrump@caro.ca)

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0073034

**RECEIVED / TEMP** 2020-07-30 12:50 / 4°C  
**REPORTED** 2020-08-05 09:47

**COC NUMBER** B67425

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

#### *Big Picture Sidekicks*



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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.

### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

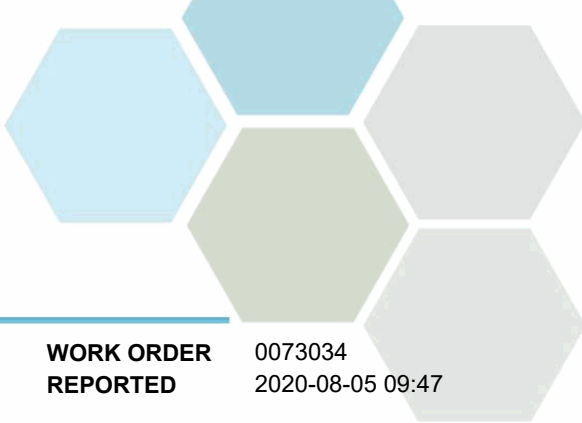
### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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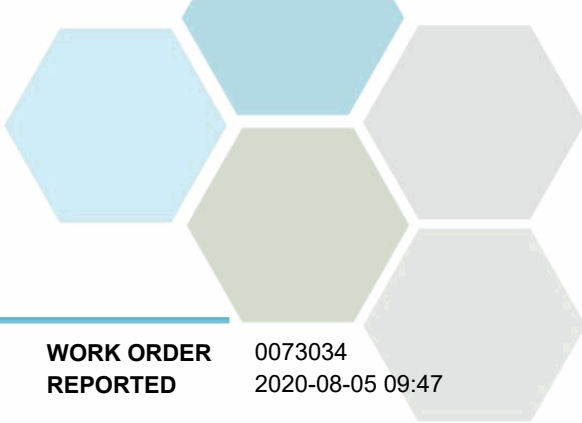


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0073034  
2020-08-05 09:47

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0073034-01)   Matrix: Water   Sampled: 2020-07-29 10:38</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-07-30	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-07-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0073034  
2020-08-05 09:47

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0073035

**RECEIVED / TEMP** 2020-07-30 12:50 / 4°C

**REPORTED** 2020-08-07 11:08

**COC NUMBER** B67425

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

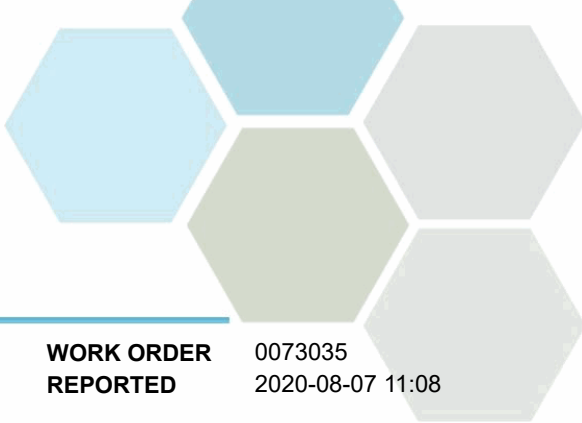
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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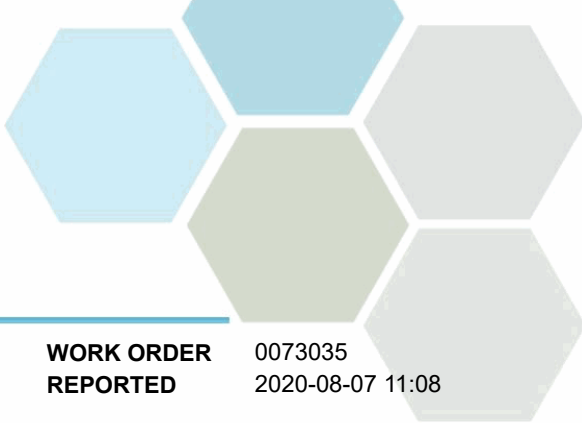


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0073035  
2020-08-07 11:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0073035-01)   Matrix: Fresh Water   Sampled: 2020-07-29 10:38</b>					
<i>Anions</i>					
Nitrate (as N)	1.50	0.010	mg/L	2020-08-01	
Nitrite (as N)	0.054	0.010	mg/L	2020-08-01	
Phosphate (as P)	0.0331	0.0050	mg/L	2020-08-01	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.130	0.050	mg/L	2020-08-05	
Chemical Oxygen Demand	21	20	mg/L	2020-08-06	
Phosphorus, Total (as P)	0.132	0.0050	mg/L	2020-08-06	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-05	
UV Transmittance @ 254nm	73.3	0.10	% T	2020-07-31	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0073035  
2020-08-07 11:08

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0080445

**RECEIVED / TEMP** 2020-08-06 13:12 / 5°C

**REPORTED** 2020-08-11 10:03

**COC NUMBER** B93237

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

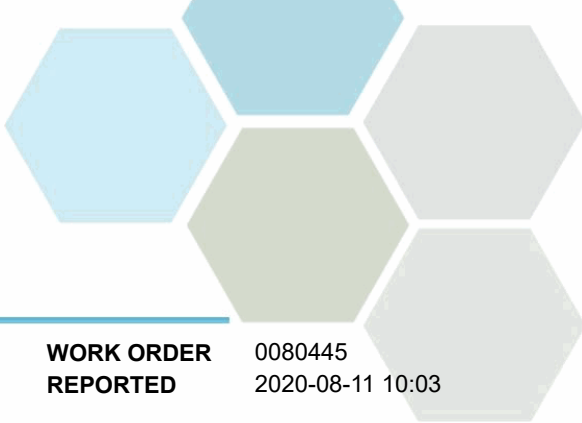
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### Authorized By:

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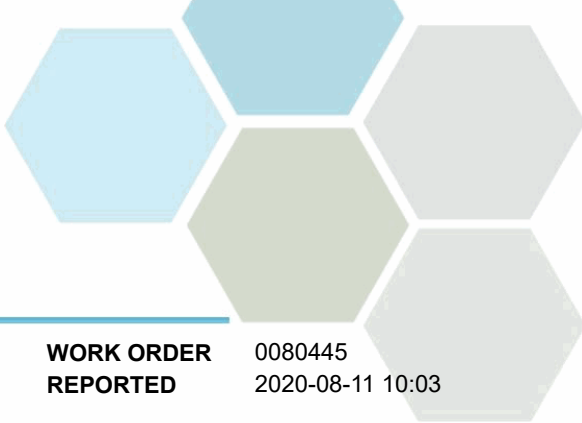


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0080445  
2020-08-11 10:03

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0080445-01)   Matrix: Water   Sampled: 2020-08-05 10:45</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-08-06	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-08-06	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0080445  
2020-08-11 10:03

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0080446

**RECEIVED / TEMP** 2020-08-06 09:00 / 7°C

**REPORTED** 2020-08-12 16:06

**COC NUMBER** B93237

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

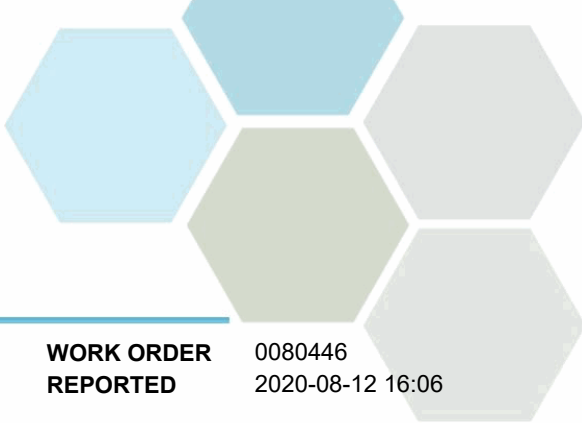
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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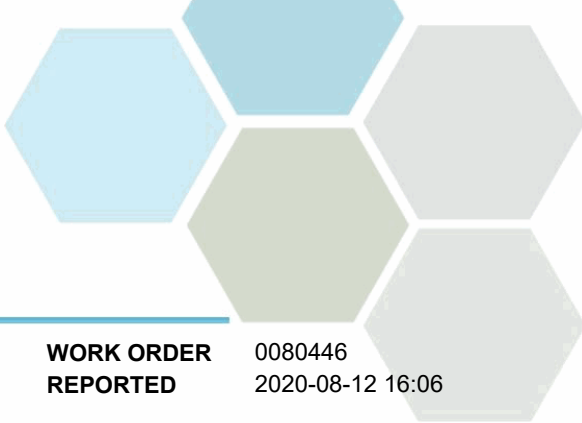


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0080446  
2020-08-12 16:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0080446-01)   Matrix: Fresh Water   Sampled: 2020-08-05 10:45</b>					
<i>Anions</i>					
Nitrate (as N)	0.445	0.010	mg/L	2020-08-07	
Nitrite (as N)	0.033	0.010	mg/L	2020-08-07	
Phosphate (as P)	0.0309	0.0050	mg/L	2020-08-07	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.176	0.050	mg/L	2020-08-07	
Chemical Oxygen Demand	22	20	mg/L	2020-08-11	
Phosphorus, Total (as P)	0.132	0.0050	mg/L	2020-08-11	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-11	
UV Transmittance @ 254nm	73.0	0.10	% T	2020-08-06	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0080446  
2020-08-12 16:06

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0081245
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-08-13 11:20 / 4°C 2020-08-18 14:19
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B674236
<b>PROJECT</b>	OK Falls WWTP WAE		
<b>PROJECT INFO</b>			

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

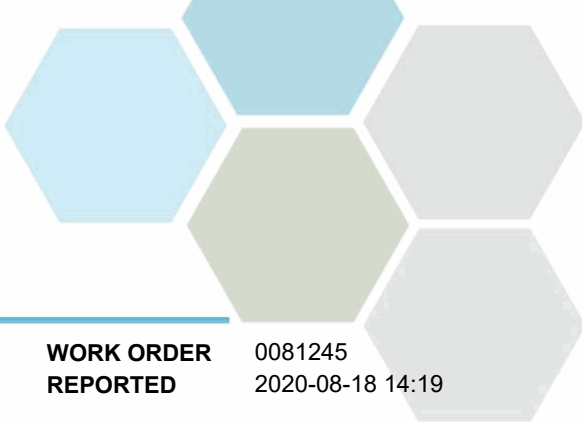
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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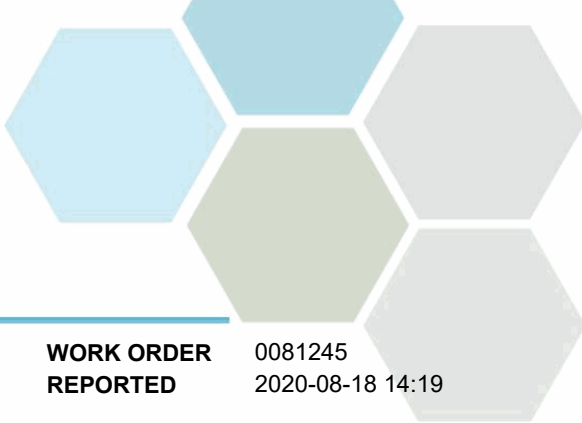


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0081245  
2020-08-18 14:19

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0081245-01)   Matrix: Water   Sampled: 2020-08-12 10:43</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-08-13	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-08-13	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0081245  
2020-08-18 14:19

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0081247

**RECEIVED / TEMP** 2020-08-13 11:20 / 4°C

**REPORTED** 2020-08-20 14:58

**COC NUMBER** B674236

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

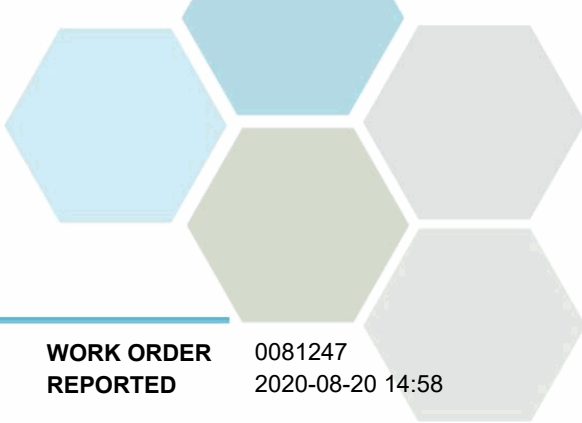
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

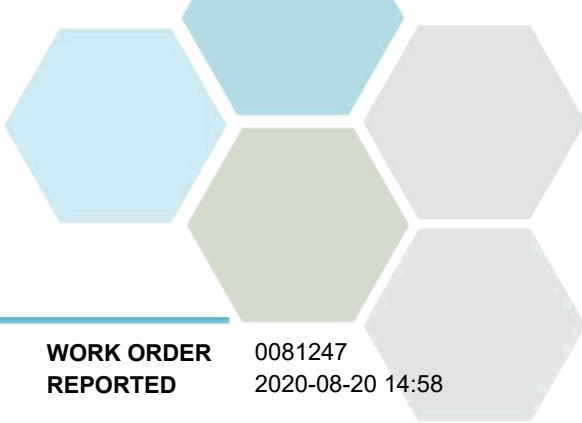
**WORK ORDER REPORTED** 0081247  
2020-08-20 14:58

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0081247-01)   Matrix: Fresh Water   Sampled: 2020-08-12 10:43</b>					
<b>Anions</b>					
Nitrate (as N)	0.484	0.010	mg/L	2020-08-17	HT1
Nitrite (as N)	0.043	0.010	mg/L	2020-08-17	HT1
Phosphate (as P)	0.0298	0.0050	mg/L	2020-08-17	HT1
<b>General Parameters</b>					
Ammonia, Total (as N)	0.243	0.050	mg/L	2020-08-15	
Chemical Oxygen Demand	22	20	mg/L	2020-08-20	
Phosphorus, Total (as P)	0.148	0.0050	mg/L	2020-08-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-18	
UV Transmittance @ 254nm	71.6	0.10	% T	2020-08-15	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0081247  
2020-08-20 14:58

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0081993

**RECEIVED / TEMP** 2020-08-20 12:00 / 5°C  
**REPORTED** 2020-08-25 10:05

**COC NUMBER** B93650

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

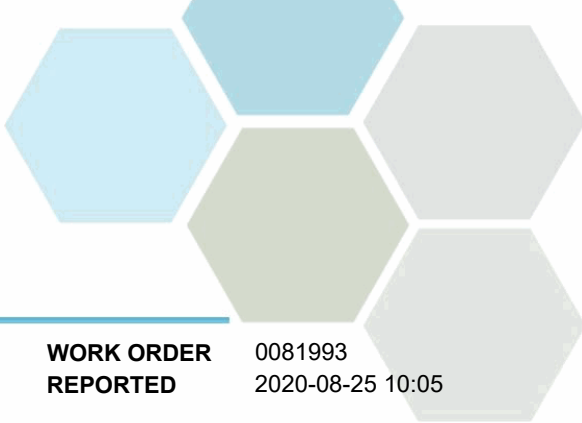
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

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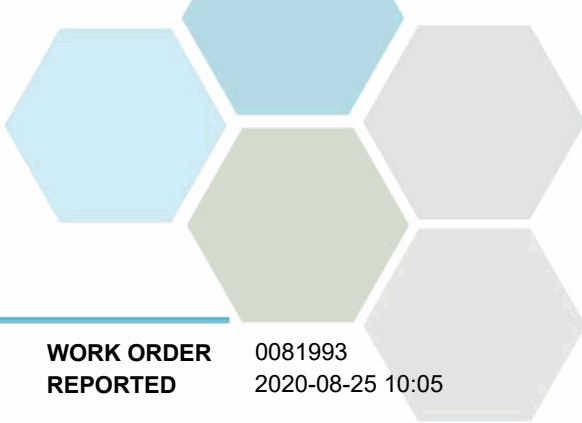


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0081993  
2020-08-25 10:05

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (0081993-01)   Matrix: Water   Sampled: 2020-08-19 13:05</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-08-20	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-08-20	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0081993  
2020-08-25 10:05

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0081996
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-08-20 12:00 / 5°C 2020-08-27 12:11
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B93650
<b>PROJECT</b>	OK Falls WWTP MCE		
<b>PROJECT INFO</b>			

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### Work Order Comments:

Custody Seals Intact: YES

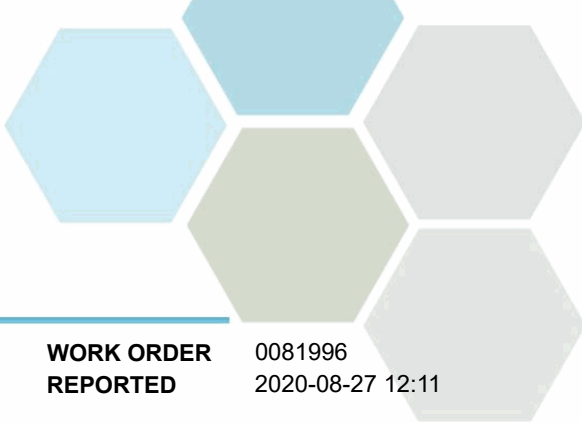
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

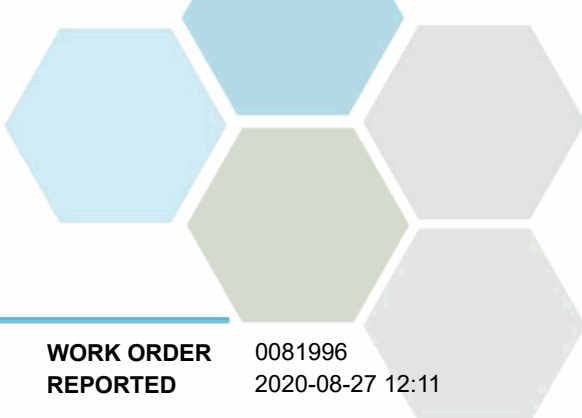
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0081996  
2020-08-27 12:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (0081996-01)   Matrix: Water   Sampled: 2020-08-19 13:05</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	0.333	0.010	mg/L	2020-08-21	
Nitrite (as N)	0.064	0.010	mg/L	2020-08-21	
Phosphate (as P)	0.0597	0.0050	mg/L	2020-08-21	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	0.397	0.0100	mg/L	N/A	
Nitrogen, Total	1.72	0.100	mg/L	N/A	
Nitrogen, Organic	0.949	0.100	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.373	0.050	mg/L	2020-08-24	
BOD, 5-day	< 5.1	2.0	mg/L	2020-08-26	
Chemical Oxygen Demand	22	20	mg/L	2020-08-27	
Nitrogen, Total Kjeldahl	1.32	0.050	mg/L	2020-08-24	
pH	8.02	0.10	pH units	2020-08-24	HT2
Phosphorus, Total (as P)	0.177	0.0050	mg/L	2020-08-24	
Phosphorus, Total Dissolved	0.131	0.0050	mg/L	2020-08-24	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-23	
UV Transmittance @ 254nm	72.3	0.10	% T	2020-08-21	

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0081996  
2020-08-27 12:11

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
<	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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0082634

**RECEIVED / TEMP** 2020-08-26 12:15 / 3°C  
**REPORTED** 2020-08-28 17:33

**COC NUMBER** B67444

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

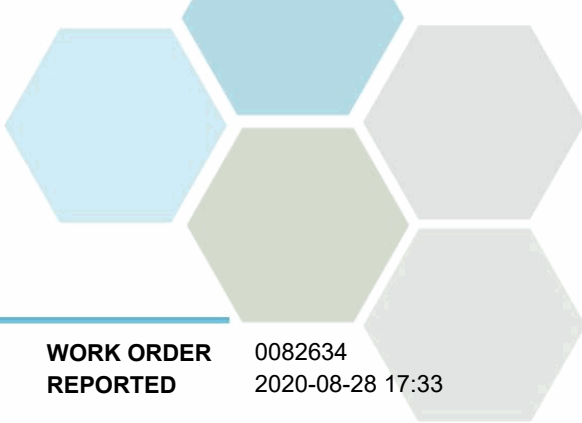
### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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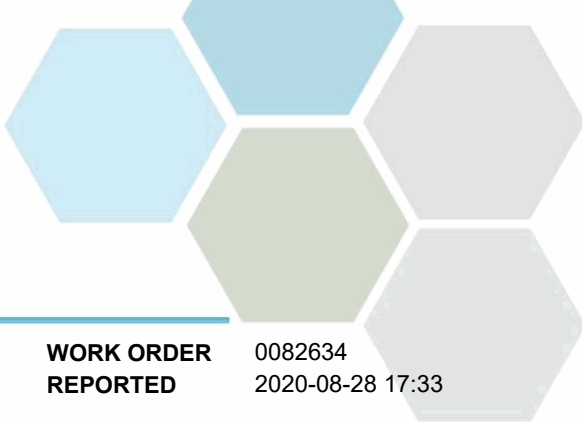


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0082634  
2020-08-28 17:33

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0082634-01)   Matrix: Water   Sampled: 2020-08-26 08:05</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-08-27	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-08-27	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0082634  
2020-08-28 17:33

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0082635

**RECEIVED / TEMP** 2020-08-26 12:15 / 3°C

**REPORTED** 2020-09-02 12:58

**COC NUMBER** B67444

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

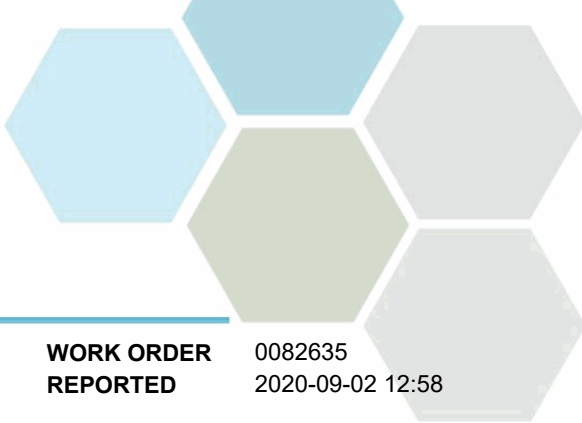
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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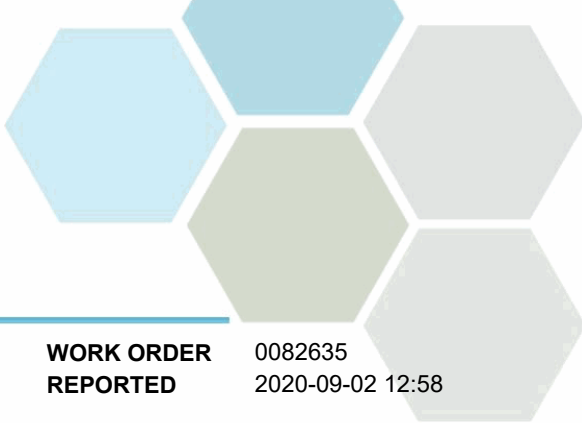


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0082635  
2020-09-02 12:58

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0082635-01)   Matrix: Fresh Water   Sampled: 2020-08-26 08:05</b>					
<i>Anions</i>					
Nitrate (as N)	0.961	0.010	mg/L	2020-08-28	
Nitrite (as N)	0.109	0.010	mg/L	2020-08-28	
Phosphate (as P)	0.126	0.0050	mg/L	2020-08-28	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.257	0.050	mg/L	2020-08-27	
Chemical Oxygen Demand	23	20	mg/L	2020-09-01	
Phosphorus, Total (as P)	0.146	0.0050	mg/L	2020-08-31	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-31	
UV Transmittance @ 254nm	71.1	0.10	% T	2020-08-27	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0082635  
2020-09-02 12:58

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0090445

**RECEIVED / TEMP** 2020-09-03 09:00 / 9°C

**REPORTED** 2020-09-09 09:57

**COC NUMBER** B90280

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

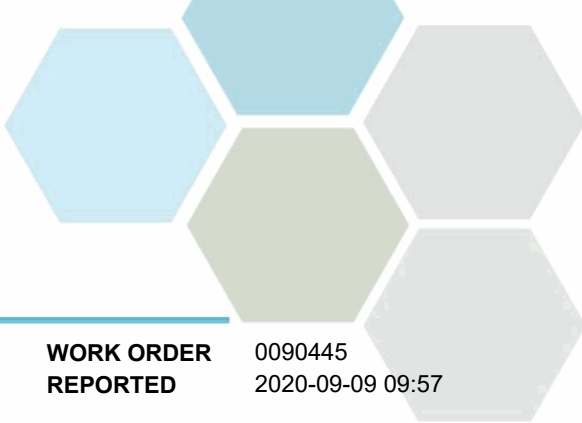
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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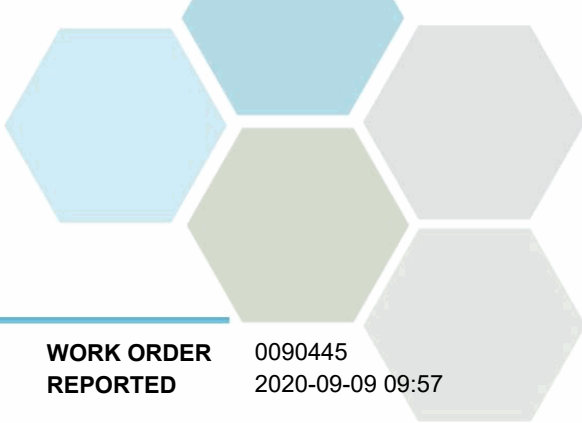


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0090445  
2020-09-09 09:57

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0090445-01)   Matrix: Water   Sampled: 2020-09-02 13:00</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-09-03	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-09-03	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0090445  
2020-09-09 09:57

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0090447

**RECEIVED / TEMP** 2020-09-03 09:00 / 5°C  
**REPORTED** 2020-09-10 15:27

**COC NUMBER** B90280

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

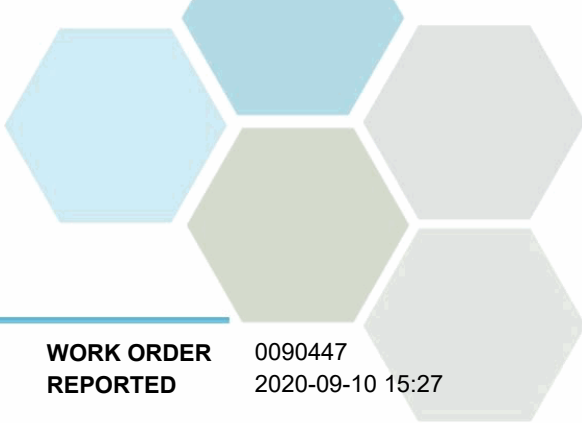
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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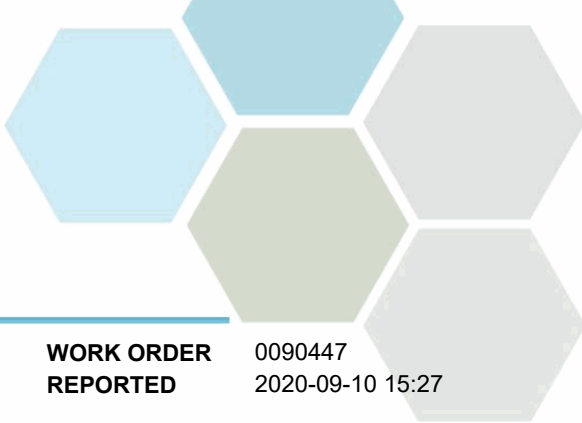


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0090447  
2020-09-10 15:27

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0090447-01)   Matrix: Fresh Water   Sampled: 2020-09-02 13:00</b>					
<i>Anions</i>					
Nitrate (as N)	0.639	0.010	mg/L	2020-09-04	
Nitrite (as N)	0.098	0.010	mg/L	2020-09-04	
Phosphate (as P)	0.0309	0.0050	mg/L	2020-09-04	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.213	0.050	mg/L	2020-09-04	
Chemical Oxygen Demand	24	20	mg/L	2020-09-10	
Phosphorus, Total (as P)	0.118	0.0050	mg/L	2020-09-07	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-08	
UV Transmittance @ 254nm	72.2	0.10	% T	2020-09-05	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0090447  
2020-09-10 15:27

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0091055

**RECEIVED / TEMP** 2020-09-10 09:00 / 9°C  
**REPORTED** 2020-09-11 17:05

**COC NUMBER** B67427

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

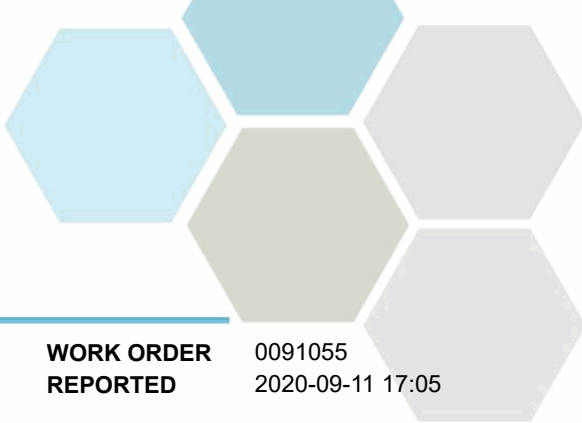
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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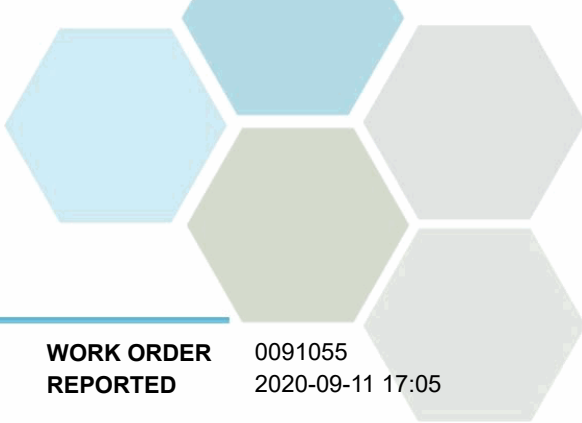


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091055  
2020-09-11 17:05

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0091055-01)   Matrix: Water   Sampled: 2020-09-09 10:30</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-09-10	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-09-10	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091055  
2020-09-11 17:05

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0091056

**RECEIVED / TEMP** 2020-09-10 09:00 / 10°C

**REPORTED** 2020-09-16 13:06

**COC NUMBER** B67427

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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#### *Ahead of the Curve*



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### Work Order Comments:

Custody Seals Intact: YES

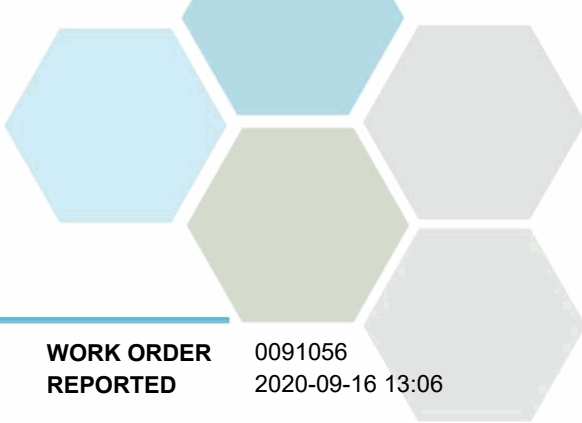
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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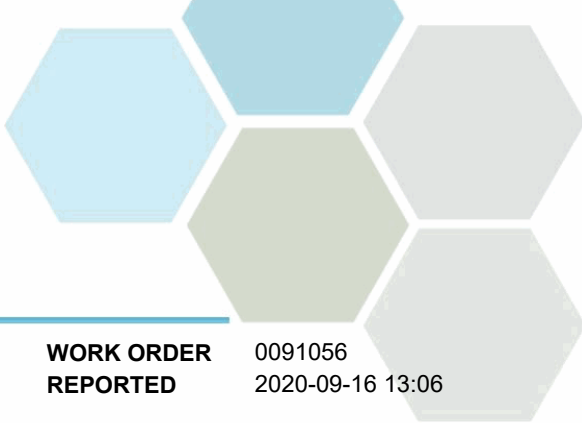
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091056  
2020-09-16 13:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0091056-01)   Matrix: Fresh Water   Sampled: 2020-09-09 10:30</b>					
<i>Anions</i>					
Nitrate (as N)	1.70	0.010	mg/L	2020-09-11	
Nitrite (as N)	0.106	0.010	mg/L	2020-09-11	
Phosphate (as P)	0.0415	0.0050	mg/L	2020-09-11	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.340	0.050	mg/L	2020-09-11	
Chemical Oxygen Demand	25	20	mg/L	2020-09-16	
Phosphorus, Total (as P)	0.142	0.0050	mg/L	2020-09-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-14	
UV Transmittance @ 254nm	70.3	0.10	% T	2020-09-12	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091056  
2020-09-16 13:06

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0091828

**RECEIVED / TEMP** 2020-09-17 12:30 / 3°C  
**REPORTED** 2020-09-21 14:17

**COC NUMBER** B67428

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

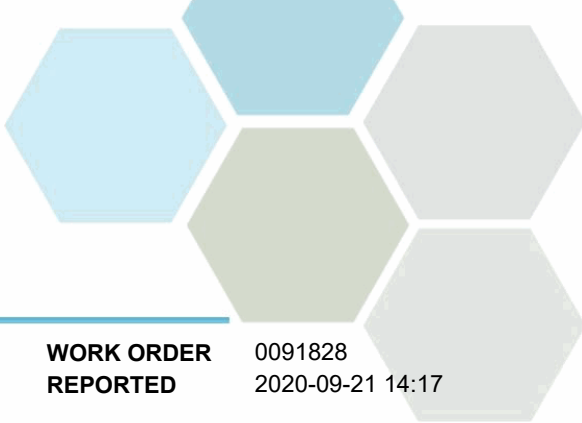
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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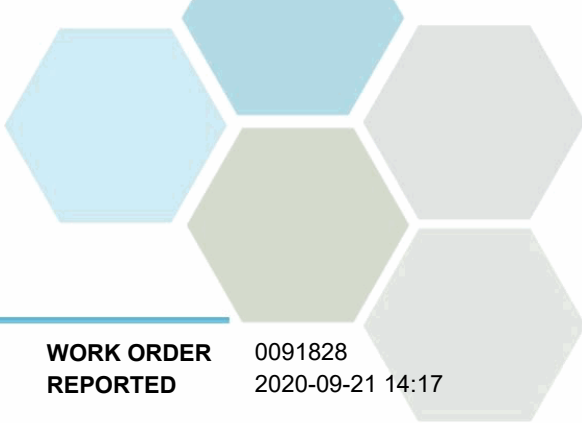


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091828  
2020-09-21 14:17

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0091828-01)   Matrix: Water   Sampled: 2020-09-16 13:25</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-09-17	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-09-17	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091828  
2020-09-21 14:17

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0091829
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-09-17 12:30 / 3°C 2020-09-24 14:08
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B67428
<b>PROJECT</b>	OK Falls WWTP WAE		
<b>PROJECT INFO</b>			

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

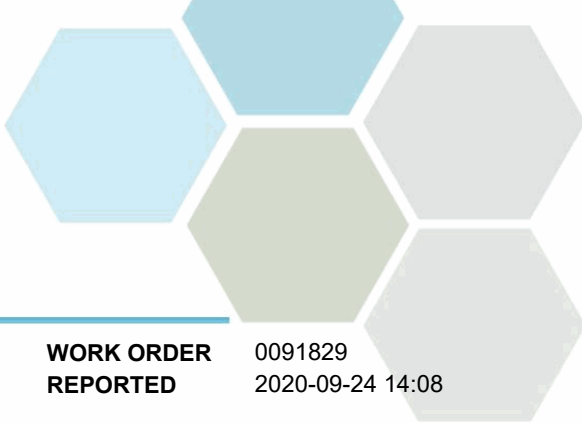
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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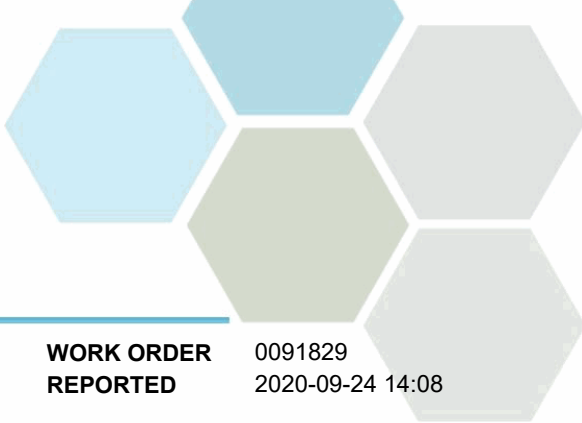


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091829  
2020-09-24 14:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0091829-01)   Matrix: Fresh Water   Sampled: 2020-09-16 13:25</b>					
<i>Anions</i>					
Nitrate (as N)	1.02	0.010	mg/L	2020-09-18	
Nitrite (as N)	0.046	0.010	mg/L	2020-09-18	
Phosphate (as P)	0.0143	0.0050	mg/L	2020-09-18	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.159	0.050	mg/L	2020-09-18	
Chemical Oxygen Demand	20	20	mg/L	2020-09-24	
Phosphorus, Total (as P)	0.127	0.0050	mg/L	2020-09-20	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-23	
UV Transmittance @ 254nm	70.2	0.10	% T	2020-09-19	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0091829  
2020-09-24 14:08

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0092597

**RECEIVED / TEMP** 2020-09-24 09:15 / 7°C

**REPORTED** 2020-09-29 13:34

**COC NUMBER** B90451

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

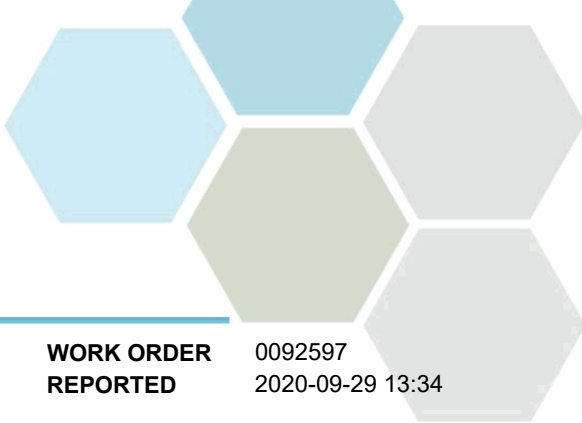
### Authorized By:

Alana Crump  
Team Lead, Client Service

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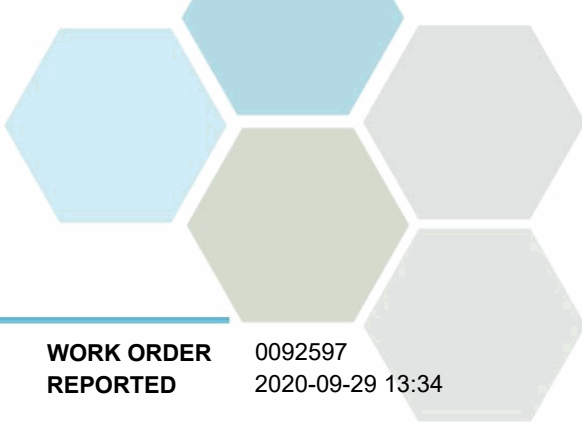


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0092597  
2020-09-29 13:34

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (0092597-01)   Matrix: Water   Sampled: 2020-09-23 11:15</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-09-24	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-09-24	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0092597  
2020-09-29 13:34

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 0092599

**RECEIVED / TEMP** 2020-09-24 09:15 / 7°C

**REPORTED** 2020-10-01 11:13

**COC NUMBER** B90451

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

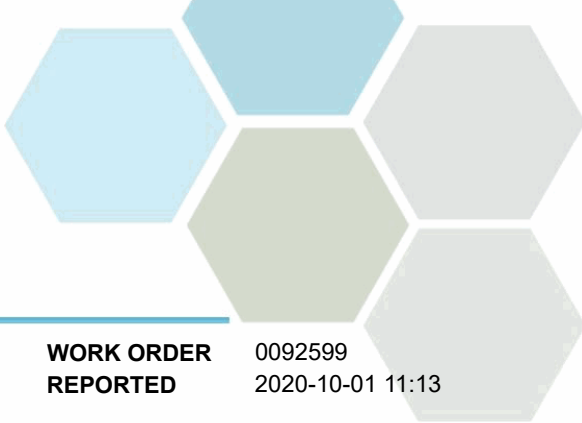
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0092599  
2020-10-01 11:13

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (0092599-01)   Matrix: Water   Sampled: 2020-09-23 11:15</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	1.26	0.010	mg/L	2020-09-26	
Nitrite (as N)	0.063	0.010	mg/L	2020-09-26	
Phosphate (as P)	0.0679	0.0050	mg/L	2020-09-26	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	1.33	0.0100	mg/L	N/A	
Nitrogen, Total	2.65	0.100	mg/L	N/A	
Nitrogen, Organic	1.08	0.100	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.243	0.050	mg/L	2020-09-26	
BOD, 5-day	2.3	2.0	mg/L	2020-10-01	
Chemical Oxygen Demand	18	20	mg/L	2020-09-29	
Nitrogen, Total Kjeldahl	1.33	0.050	mg/L	2020-09-29	
pH	8.04	0.10	pH units	2020-09-28	HT2
Phosphorus, Total (as P)	0.209	0.0050	mg/L	2020-09-30	
Phosphorus, Total Dissolved	0.172	0.0050	mg/L	2020-09-30	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-27	
UV Transmittance @ 254nm	70.2	0.10	% T	2020-09-26	

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 0092599  
2020-10-01 11:13

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0109352

**RECEIVED / TEMP** 2020-10-02 08:30 / 1°C

**REPORTED** 2020-10-05 14:38

**COC NUMBER** B91042

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

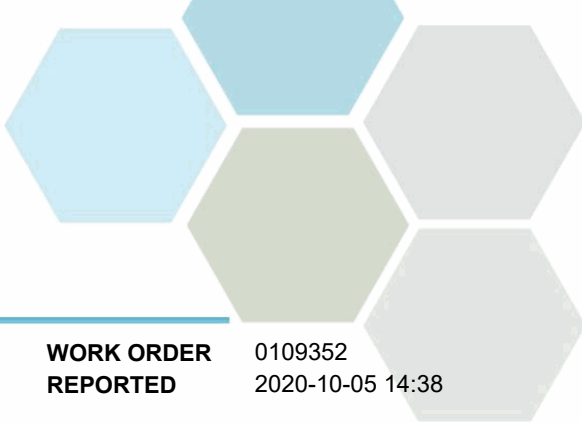
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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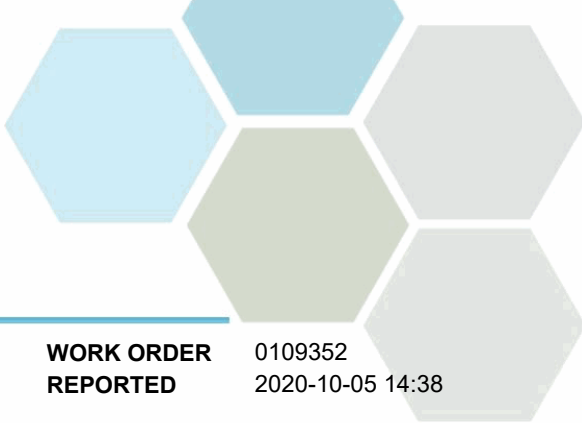


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0109352  
2020-10-05 14:38

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (0109352-01)   Matrix: Water   Sampled: 2020-10-01 10:50</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-10-02	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-10-02	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0109352  
2020-10-05 14:38

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 0109354

**RECEIVED / TEMP** 2020-10-02 08:30 / 1°C

**REPORTED** 2020-10-09 12:07

**COC NUMBER** B91042

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

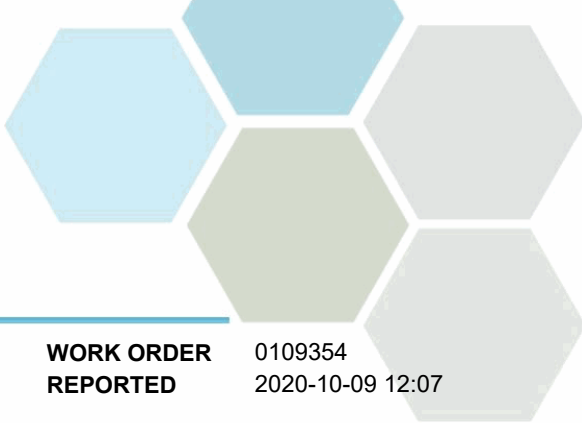
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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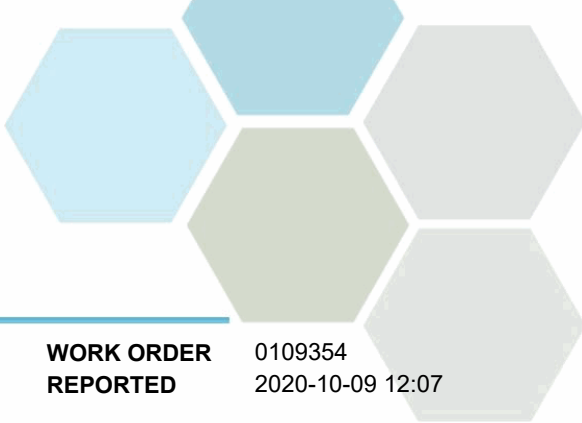


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0109354  
2020-10-09 12:07

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0109354-01)   Matrix: Fresh Water   Sampled: 2020-10-01 10:50</b>					
<i>Anions</i>					
Nitrate (as N)	1.93	0.010	mg/L	2020-10-04	
Nitrite (as N)	0.089	0.010	mg/L	2020-10-04	
Phosphate (as P)	0.0278	0.0050	mg/L	2020-10-04	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.296	0.050	mg/L	2020-10-06	
Chemical Oxygen Demand	22	20	mg/L	2020-10-09	
Phosphorus, Total (as P)	0.147	0.0050	mg/L	2020-10-08	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-06	
UV Transmittance @ 254nm	69.9	0.10	% T	2020-10-03	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 0109354  
2020-10-09 12:07

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20J0456

**RECEIVED / TEMP** 2020-10-07 12:00 / 5°C

**REPORTED** 2020-10-09 10:23

**COC NUMBER** B67442

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

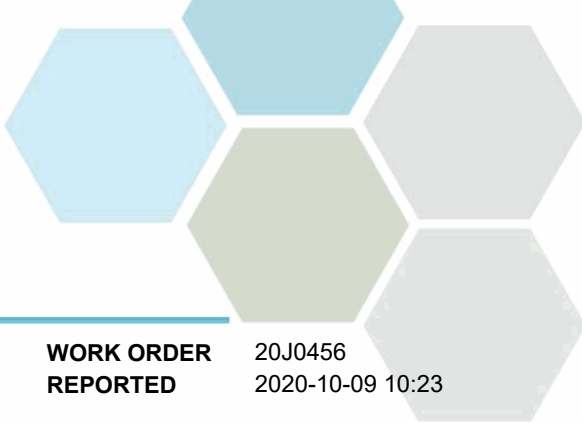
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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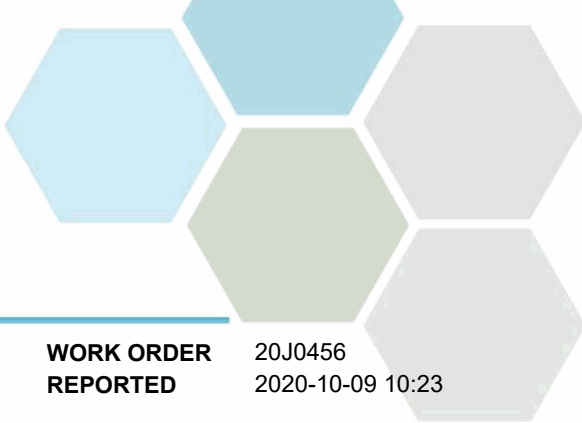


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J0456  
2020-10-09 10:23

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20J0456-01)   Matrix: Water   Sampled: 2020-10-07 08:10</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-10-07	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-10-07	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J0456  
2020-10-09 10:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20J0459

**RECEIVED / TEMP** 2020-10-07 12:00 / 5°C

**REPORTED** 2020-10-15 14:38

**COC NUMBER** B67442

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

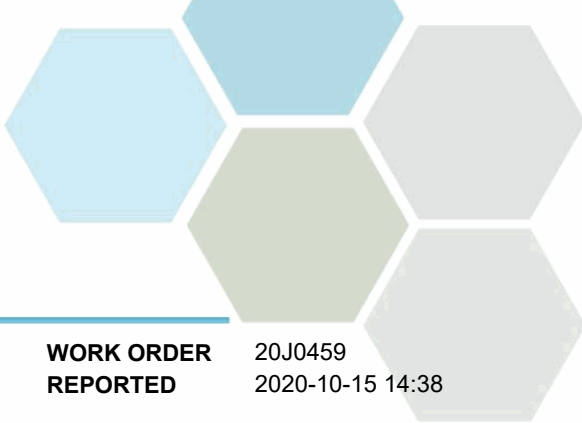
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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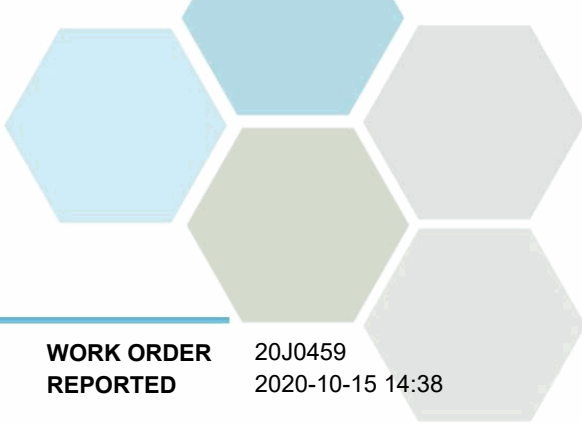
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J0459  
2020-10-15 14:38

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20J0459-01)   Matrix: Fresh Water   Sampled: 2020-10-07 08:10</b>					
<i>Anions</i>					
Nitrate (as N)	3.02	0.010	mg/L	2020-10-08	
Nitrite (as N)	0.061	0.010	mg/L	2020-10-08	
Phosphate (as P)	0.140	0.0050	mg/L	2020-10-08	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.237	0.050	mg/L	2020-10-08	
Chemical Oxygen Demand	33	20	mg/L	2020-10-08	
Phosphorus, Total (as P)	0.306	0.0050	mg/L	2020-10-11	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-13	
UV Transmittance @ 254nm	73.3	0.10	% T	2020-10-10	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J0459  
2020-10-15 14:38

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 20J1344

**RECEIVED / TEMP** 2020-10-15 12:00 / 7°C

**REPORTED** 2020-10-20 11:14

**COC NUMBER** B67433

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

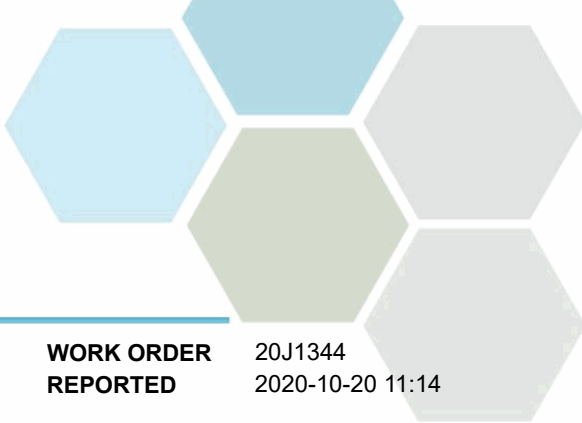
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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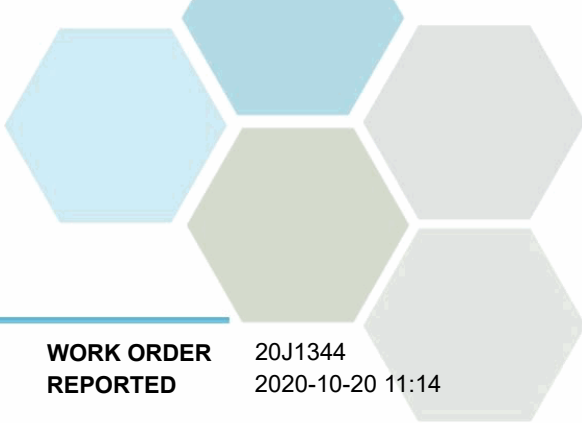


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J1344  
2020-10-20 11:14

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20J1344-01)   Matrix: Water   Sampled: 2020-10-14 11:00</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-10-15	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-10-15	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J1344  
2020-10-20 11:14

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 20J1346

**RECEIVED / TEMP** 2020-10-15 12:00 / 7°C  
**REPORTED** 2020-10-26 11:37

**COC NUMBER** B67433

### Introduction:

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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.

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

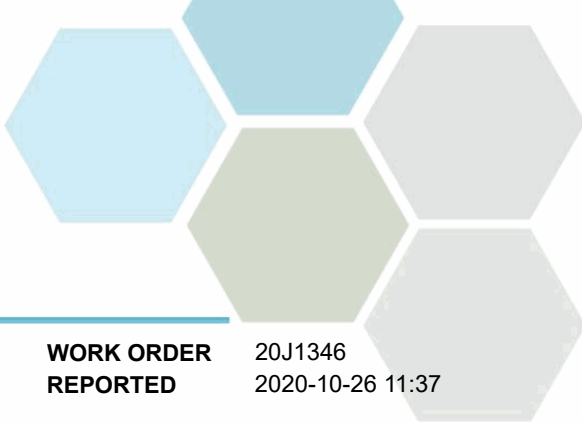
If you have any questions or concerns, please contact me at [acrump2@caro.ca](mailto:acrump2@caro.ca)

### Authorized By:

Alana Crump temp  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J1346  
2020-10-26 11:37

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20J1346-01)   Matrix: Water   Sampled: 2020-10-14 11:00</b>					<b>FILT, PRES</b>

**Anions**

Chloride	91.3	0.10	mg/L	2020-10-16	
Fluoride	0.25	0.10	mg/L	2020-10-16	
Nitrate (as N)	1.38	0.010	mg/L	2020-10-16	
Nitrite (as N)	0.102	0.010	mg/L	2020-10-16	
Phosphate (as P)	0.0508	0.0050	mg/L	2020-10-16	
Sulfate	45.8	1.0	mg/L	2020-10-16	

**Calculated Parameters**

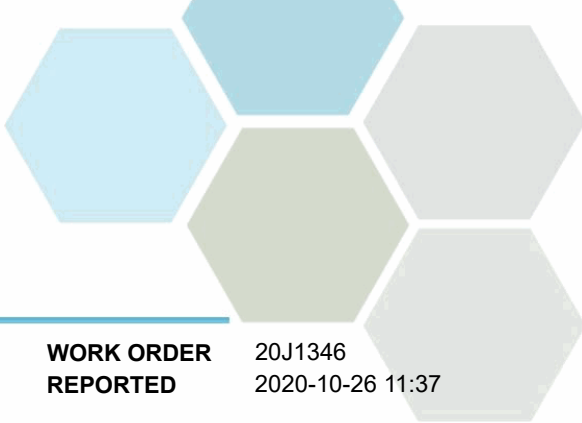
Hardness, Total (as CaCO3)	212	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	1.48	0.0100	mg/L	N/A	
Nitrogen, Total	2.74	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	207	1.0	mg/L	2020-10-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Bicarbonate (as CaCO3)	207	1.0	mg/L	2020-10-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Ammonia, Total (as N)	0.138	0.050	mg/L	2020-10-17	
BOD, 5-day	4.6	2.0	mg/L	2020-10-21	
BOD, 5-day Carbonaceous	< 1.1	2.0	mg/L	2020-10-21	
Chemical Oxygen Demand	30	20	mg/L	2020-10-19	
Conductivity (EC)	837	2.0	µS/cm	2020-10-18	
Nitrogen, Total Kjeldahl	1.27	0.050	mg/L	2020-10-21	
pH	7.82	0.10	pH units	2020-10-18	HT2
Phosphorus, Total (as P)	0.179	0.0050	mg/L	2020-10-20	
Phosphorus, Total Dissolved	0.155	0.0050	mg/L	2020-10-20	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-18	
UV Transmittance @ 254nm	68.3	0.10	% T	2020-10-16	

**Total Metals**

Aluminum, total	0.0159	0.0050	mg/L	2020-10-25	
Antimony, total	0.00020	0.00020	mg/L	2020-10-25	
Arsenic, total	0.00057	0.00050	mg/L	2020-10-25	
Barium, total	0.0472	0.0050	mg/L	2020-10-25	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-25	
Boron, total	0.135	0.0500	mg/L	2020-10-25	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-25	
Calcium, total	66.3	0.20	mg/L	2020-10-25	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Cobalt, total	0.00020	0.00010	mg/L	2020-10-25	
Copper, total	0.00205	0.00040	mg/L	2020-10-25	
Iron, total	0.016	0.010	mg/L	2020-10-25	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J1346  
2020-10-26 11:37

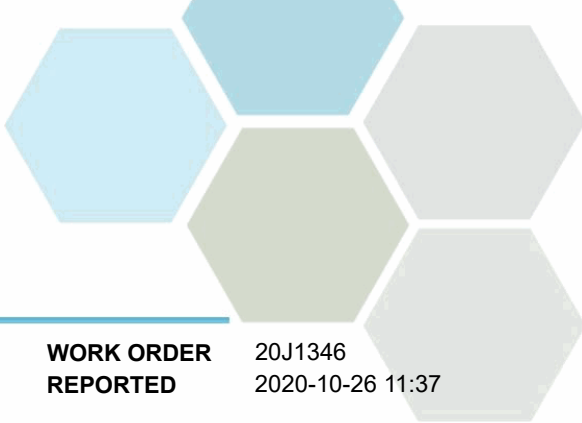
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20J1346-01)   Matrix: Water   Sampled: 2020-10-14 11:00, Continued</b>					FILT, PRES

**Total Metals, Continued**

Lead, total	0.00020	0.00020	mg/L	2020-10-25	
Lithium, total	0.00615	0.00010	mg/L	2020-10-25	
Magnesium, total	11.3	0.010	mg/L	2020-10-25	
Manganese, total	0.0267	0.00020	mg/L	2020-10-25	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-17	
Molybdenum, total	0.00100	0.00010	mg/L	2020-10-25	
Nickel, total	0.00154	0.00040	mg/L	2020-10-25	
Phosphorus, total	0.189	0.050	mg/L	2020-10-25	
Potassium, total	15.9	0.10	mg/L	2020-10-25	
Selenium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Silicon, total	10.1	1.0	mg/L	2020-10-25	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-25	
Sodium, total	71.1	0.10	mg/L	2020-10-25	
Strontium, total	0.568	0.0010	mg/L	2020-10-25	
Sulfur, total	15.4	3.0	mg/L	2020-10-25	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-25	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Tin, total	0.00022	0.00020	mg/L	2020-10-25	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-25	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-25	
Uranium, total	0.00276	0.000020	mg/L	2020-10-25	
Vanadium, total	0.0012	0.0010	mg/L	2020-10-25	
Zinc, total	0.0273	0.0040	mg/L	2020-10-25	
Zirconium, total	0.00010	0.00010	mg/L	2020-10-25	

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J1346  
2020-10-26 11:37

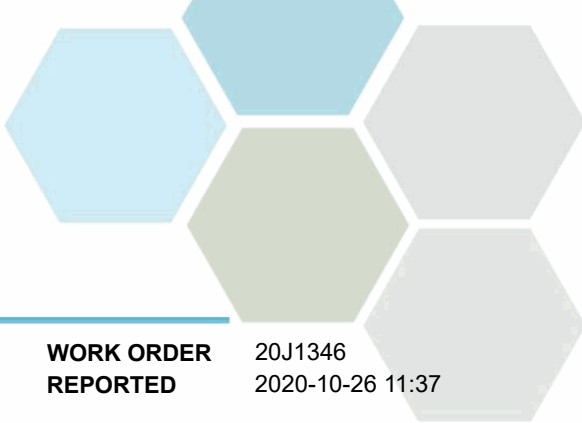
Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J1346  
2020-10-26 11:37

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20J2228

**RECEIVED / TEMP** 2020-10-22 10:45 / 9°C

**REPORTED** 2020-10-29 12:22

**COC NUMBER** B91152

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

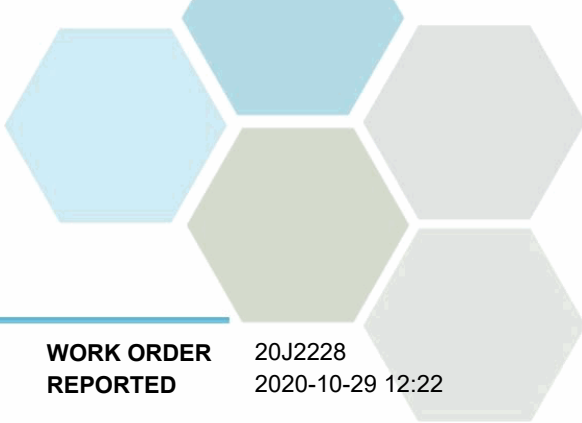
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

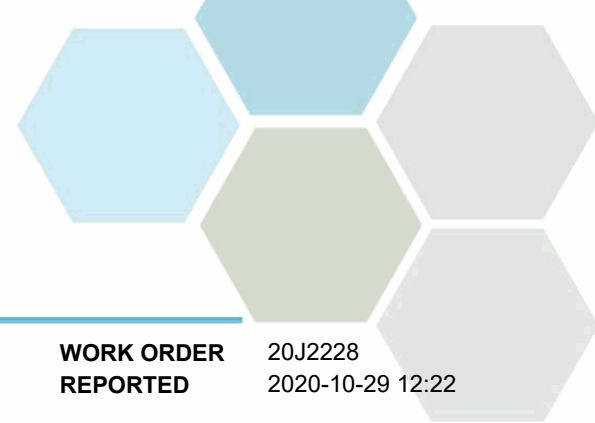
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J2228  
2020-10-29 12:22

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20J2228-01)   Matrix: Fresh Water   Sampled: 2020-10-21 10:50</b>					
<i>Anions</i>					
Nitrate (as N)	2.24	0.010	mg/L	2020-10-23	
Nitrite (as N)	0.090	0.010	mg/L	2020-10-23	
Phosphate (as P)	0.113	0.0050	mg/L	2020-10-23	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.153	0.050	mg/L	2020-10-24	
Chemical Oxygen Demand	40	20	mg/L	2020-10-28	
Phosphorus, Total (as P)	0.277	0.0050	mg/L	2020-10-23	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-25	
UV Transmittance @ 254nm	69.5	0.10	% T	2020-10-23	

**Effluent Grab - Bacteria (20J2228-02) | Matrix: Water | Sampled: 2020-10-21 10:50**

<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-10-22	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-10-22	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J2228  
2020-10-29 12:22

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	20J2976
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-10-29 12:00 / 7°C
<b>PO NUMBER</b>	OK Falls WW	<b>REPORTED</b>	2020-11-04 17:08
<b>PROJECT</b>	OK Falls WWTP WAE	<b>COC NUMBER</b>	B91136
<b>PROJECT INFO</b>			

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### Work Order Comments:

Custody Seals Intact: YES

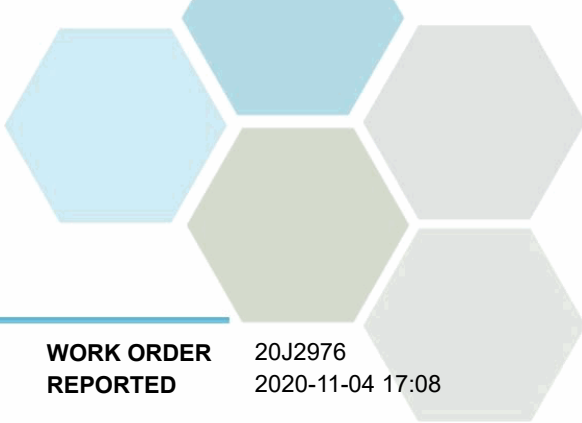
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

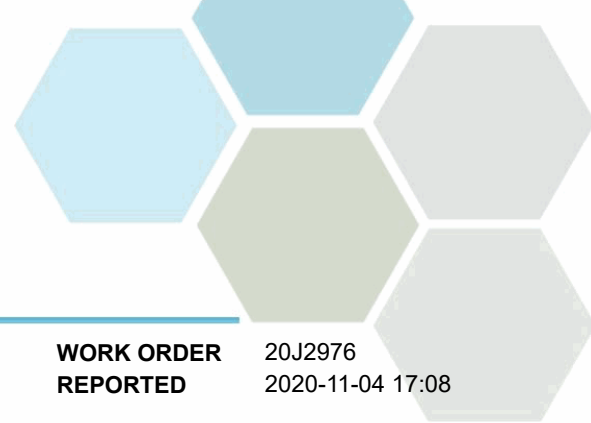
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J2976  
2020-11-04 17:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20J2976-01)   Matrix: Fresh Water   Sampled: 2020-10-28 10:35</b>					
<i>Anions</i>					
Nitrate (as N)	3.30	0.010	mg/L	2020-10-30	
Nitrite (as N)	0.087	0.010	mg/L	2020-10-30	
Phosphate (as P)	0.0522	0.0050	mg/L	2020-10-30	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.150	0.050	mg/L	2020-10-29	
Chemical Oxygen Demand	31	20	mg/L	2020-10-29	
Phosphorus, Total (as P)	0.172	0.0050	mg/L	2020-11-03	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-01	
UV Transmittance @ 254nm	73.9	0.10	% T	2020-10-30	

**Effluent Grab - Bacteria (20J2976-02) | Matrix: Water | Sampled: 2020-10-28 10:35**

<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-10-29	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-10-29	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20J2976  
2020-11-04 17:08

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20K0603

**RECEIVED / TEMP** 2020-11-05 13:05 / 4°C

**REPORTED** 2020-11-06 15:07

**COC NUMBER** B67437

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

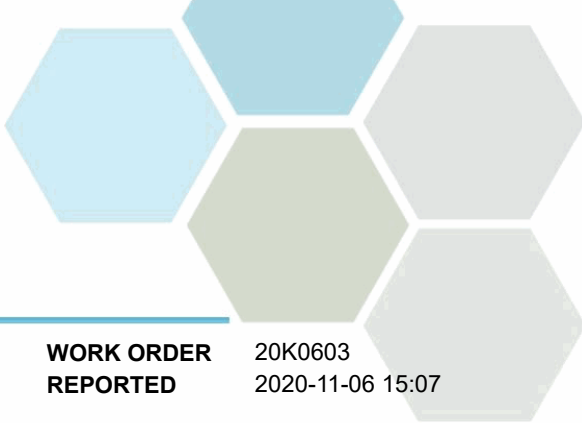
### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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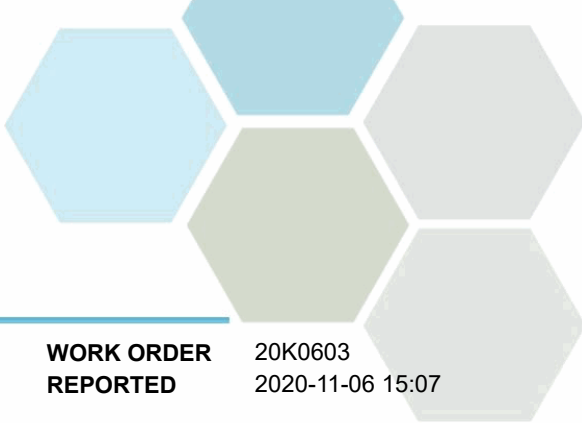


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K0603  
2020-11-06 15:07

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20K0603-01)   Matrix: Water   Sampled: 2020-11-04 12:40</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-11-05	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-11-05	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K0603  
2020-11-06 15:07

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20K0605

**RECEIVED / TEMP** 2020-11-05 13:05 / 4°C

**REPORTED** 2020-11-12 16:52

**COC NUMBER** B67437

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

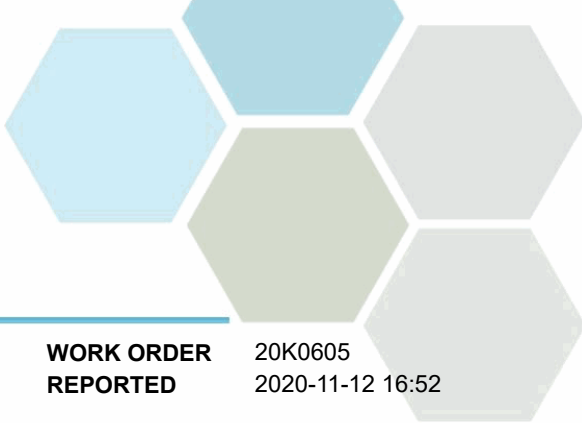
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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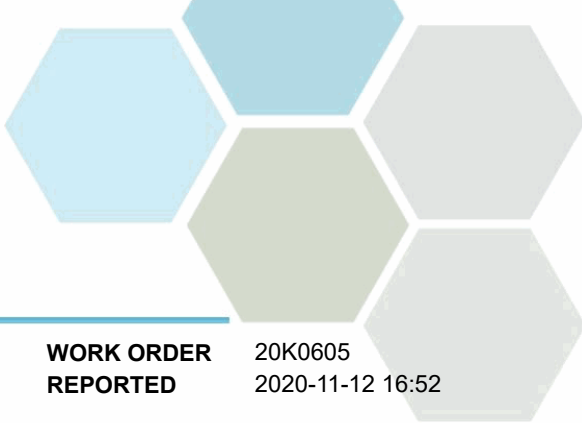


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K0605  
2020-11-12 16:52

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20K0605-01)   Matrix: Fresh Water   Sampled: 2020-11-04 12:50</b>					
<i>Anions</i>					
Nitrate (as N)	3.63	0.010	mg/L	2020-11-07	
Nitrite (as N)	0.081	0.010	mg/L	2020-11-07	
Phosphate (as P)	0.181	0.0050	mg/L	2020-11-07	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.170	0.050	mg/L	2020-11-09	
Chemical Oxygen Demand	16	20	mg/L	2020-11-09	
Phosphorus, Total (as P)	0.353	0.0050	mg/L	2020-11-12	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-09	
UV Transmittance @ 254nm	71.0	0.10	% T	2020-11-07	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K0605  
2020-11-12 16:52

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20K1114

**RECEIVED / TEMP** 2020-11-10 10:00 / 2°C

**REPORTED** 2020-11-12 13:05

**COC NUMBER** Nop 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

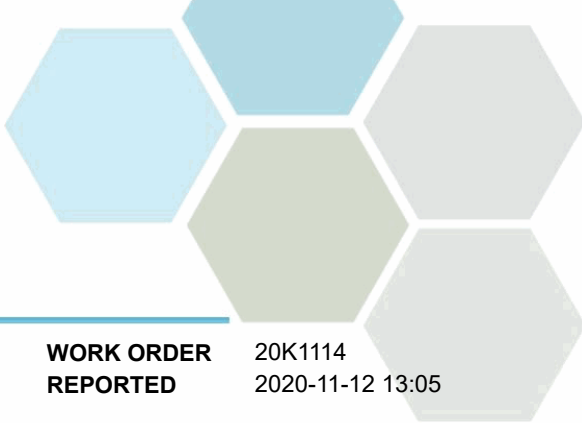
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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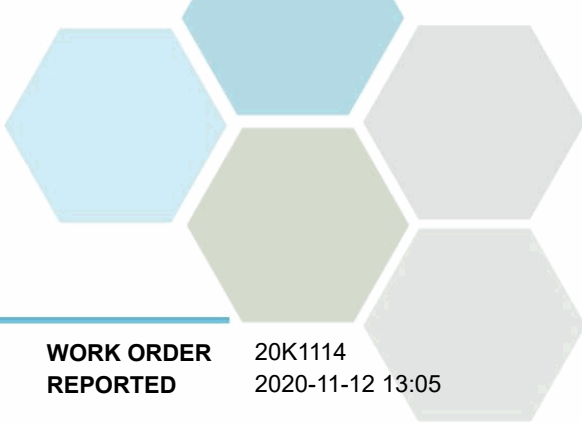


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K1114  
2020-11-12 13:05

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20K1114-01)   Matrix: Water   Sampled: 2020-11-09 09:40</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-11-10	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-11-10	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K1114  
2020-11-12 13:05

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20K1116

**RECEIVED / TEMP** 2020-11-10 10:00 / 2°C

**REPORTED** 2020-11-19 17:48

**COC NUMBER** No Number

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

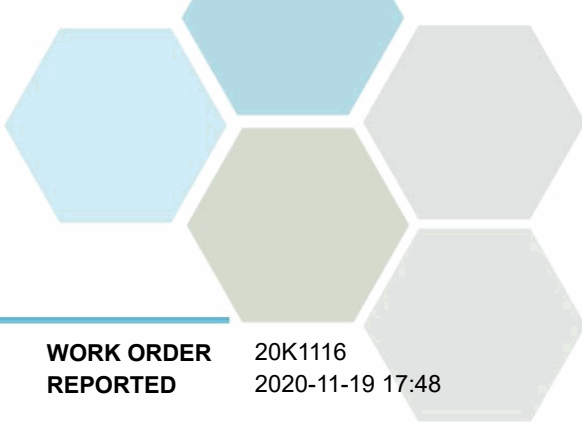
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

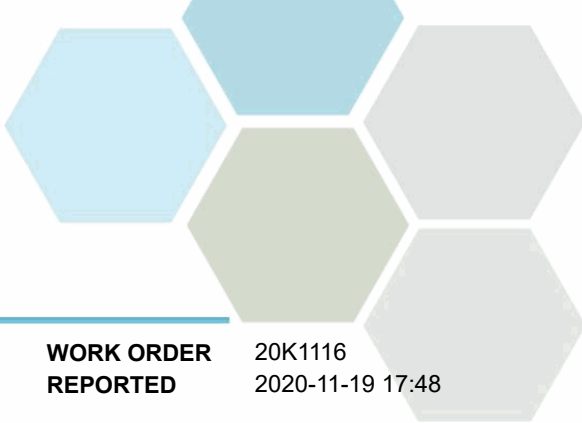
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K1116  
2020-11-19 17:48

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20K1116-01)   Matrix: Fresh Water   Sampled: 2020-11-09 09:40</b>					
<b>Anions</b>					
Nitrate (as N)	4.09	0.010	mg/L	2020-11-12	
Nitrite (as N)	0.093	0.010	mg/L	2020-11-12	
Phosphate (as P)	0.0242	0.0050	mg/L	2020-11-12	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.307	0.050	mg/L	2020-11-12	
Chemical Oxygen Demand	22	20	mg/L	2020-11-16	
Phosphorus, Total (as P)	0.139	0.0050	mg/L	2020-11-16	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-13	
UV Transmittance @ 254nm	70.0	0.10	% T	2020-11-12	HT1

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K1116  
2020-11-19 17:48

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 20K2042

**RECEIVED / TEMP** 2020-11-18 13:30 / 4°C  
**REPORTED** 2020-11-25 15:06

**COC NUMBER** B104513

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### Work Order Comments:

Custody Seals Intact: YES

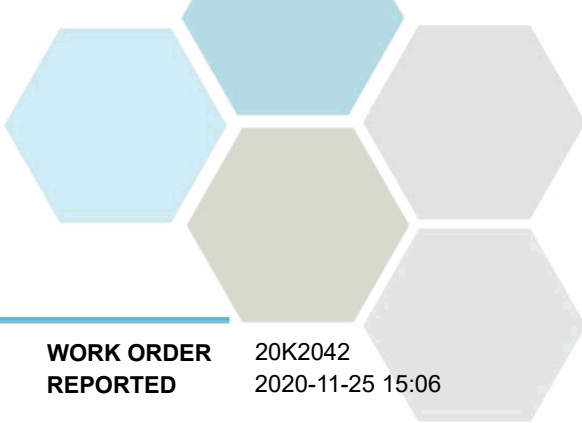
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

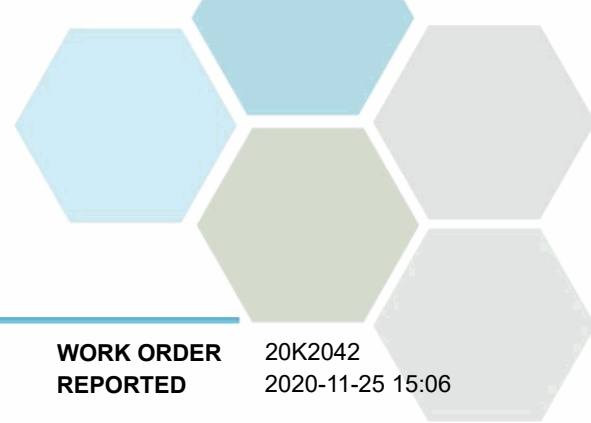
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20K2042  
2020-11-25 15:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (20K2042-01)   Matrix: Water   Sampled: 2020-11-17 13:12</b>					
<i>Anions</i>					
Nitrate (as N)	2.84	0.010	mg/L	2020-11-19	
Nitrite (as N)	0.074	0.010	mg/L	2020-11-19	
Phosphate (as P)	0.0232	0.0050	mg/L	2020-11-19	
<i>Calculated Parameters</i>					
Nitrate+Nitrite (as N)	2.92	0.0100	mg/L	N/A	
Nitrogen, Total	4.33	0.100	mg/L	N/A	
Nitrogen, Organic	1.27	0.100	mg/L	N/A	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.137	0.050	mg/L	2020-11-20	
BOD, 5-day	3.2	2.0	mg/L	2020-11-24	
Chemical Oxygen Demand	234	20	mg/L	2020-11-25	
Nitrogen, Total Kjeldahl	1.41	0.050	mg/L	2020-11-23	
pH	7.82	0.10	pH units	2020-11-22	HT2
Phosphorus, Total (as P)	0.146	0.0050	mg/L	2020-11-24	
Phosphorus, Total Dissolved	0.114	0.0050	mg/L	2020-11-24	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-19	
UV Transmittance @ 254nm	70.8	0.10	% T	2020-11-19	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20K2042  
2020-11-25 15:06

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	20K2044
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-11-18 13:30 / 4°C 2020-11-19 16:28
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B104513
<b>PROJECT</b>	OK Falls WWTP MCE		
<b>PROJECT INFO</b>			

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

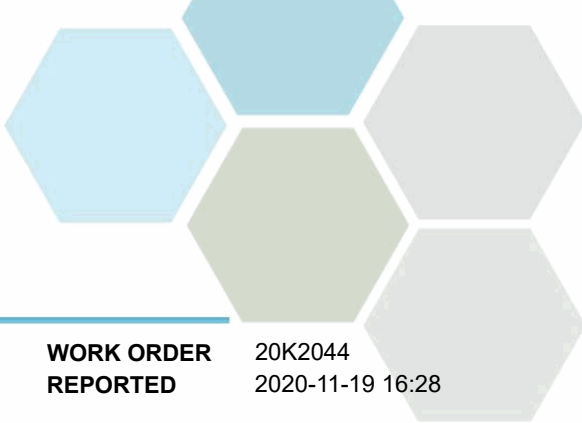
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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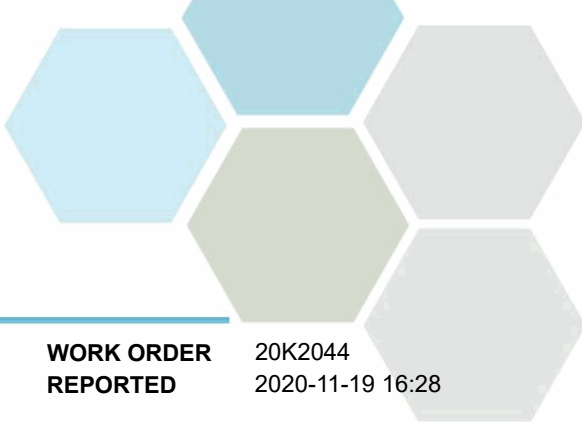
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20K2044  
2020-11-19 16:28

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (20K2044-01)   Matrix: Water   Sampled: 2020-11-17 13:12</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-11-18	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-11-18	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20K2044  
2020-11-19 16:28

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20K2685

**RECEIVED / TEMP** 2020-11-25 08:15 / 4°C  
**REPORTED** 2020-11-26 11:20

**COC NUMBER** B104515

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

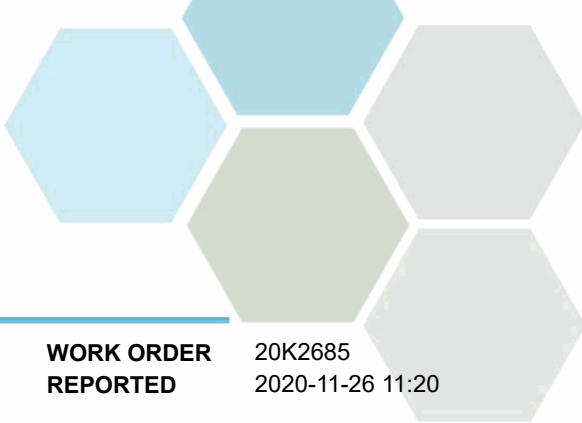
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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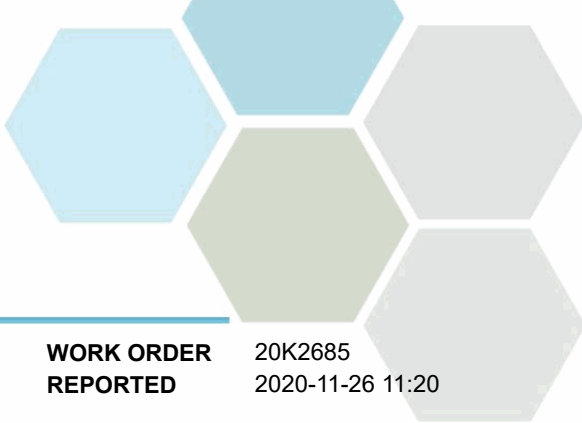


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K2685  
2020-11-26 11:20

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20K2685-01)   Matrix: Water   Sampled: 2020-11-24 10:05</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-11-25	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-11-25	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K2685  
2020-11-26 11:20

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20K2686

**RECEIVED / TEMP** 2020-11-25 08:15 / 4°C

**REPORTED** 2020-12-01 13:18

**COC NUMBER** B104515

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

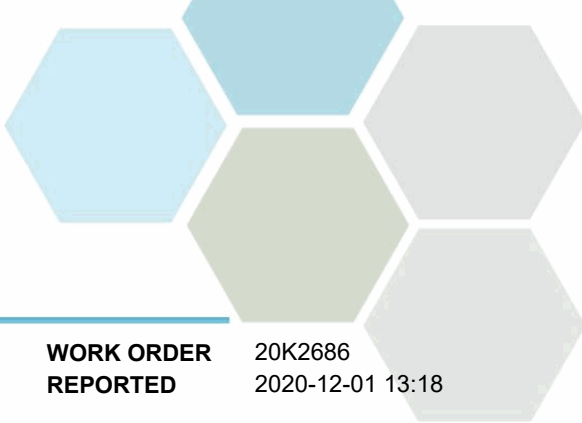
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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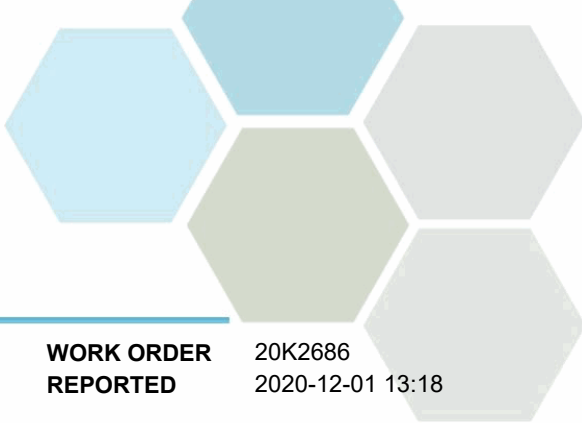


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K2686  
2020-12-01 13:18

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20K2686-01)   Matrix: Fresh Water   Sampled: 2020-11-24 10:05</b>					
<i>Anions</i>					
Nitrate (as N)	2.58	0.010	mg/L	2020-11-25	
Nitrite (as N)	0.122	0.010	mg/L	2020-11-25	
Phosphate (as P)	0.0360	0.0050	mg/L	2020-11-25	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.241	0.050	mg/L	2020-11-26	
BOD, 5-day	2.8	2.0	mg/L	2020-12-01	
Chemical Oxygen Demand	48	20	mg/L	2020-11-26	
Phosphorus, Total (as P)	0.127	0.0050	mg/L	2020-11-27	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-26	
UV Transmittance @ 254nm	70.7	0.10	% T	2020-11-27	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20K2686  
2020-12-01 13:18

Analysis Description	Method Ref.	Technique	Accredited	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
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L0415

**RECEIVED / TEMP** 2020-12-03 12:00 / 3°C

**REPORTED** 2020-12-07 15:58

**COC NUMBER** B104681

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

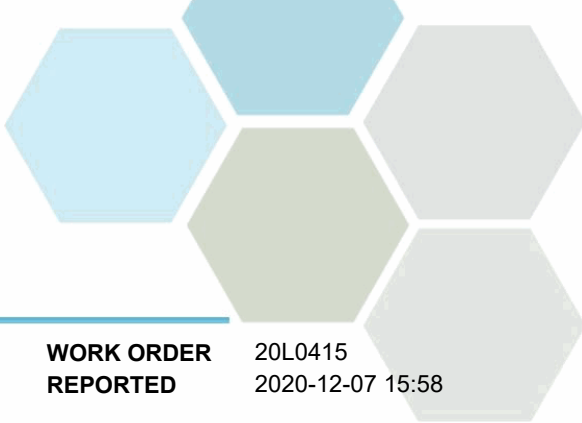
### Authorized By:

Alana Crump  
Team Lead, Client Service

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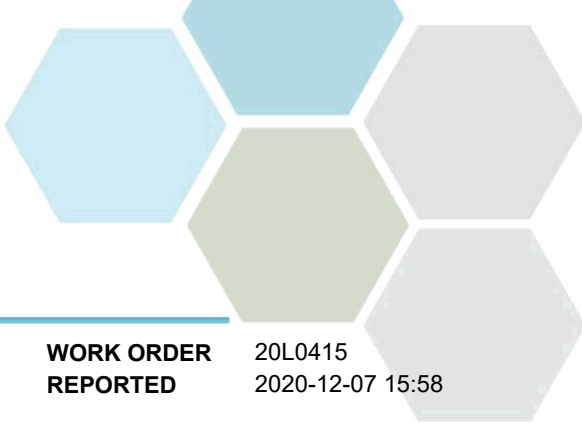


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L0415  
2020-12-07 15:58

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20L0415-01)   Matrix: Water   Sampled: 2020-12-02 10:45</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-12-03	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-12-03	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L0415  
2020-12-07 15:58

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L0417

**RECEIVED / TEMP** 2020-12-03 12:00 / 3°C

**REPORTED** 2020-12-09 14:10

**COC NUMBER** B104681

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

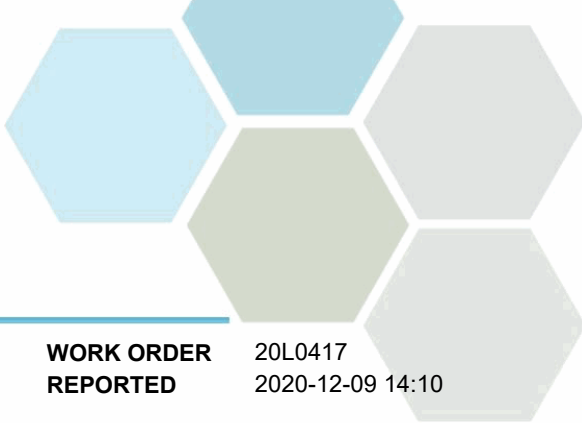
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

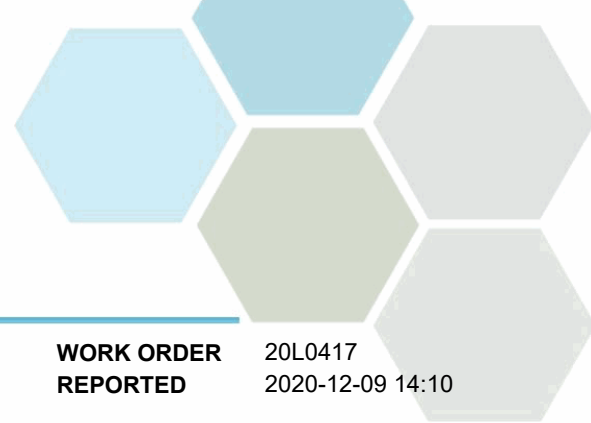
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L0417  
2020-12-09 14:10

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20L0417-01)   Matrix: Fresh Water   Sampled: 2020-12-02 10:45</b>					
<i>Anions</i>					
Nitrate (as N)	2.78	0.010	mg/L	2020-12-04	
Nitrite (as N)	0.079	0.010	mg/L	2020-12-04	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-12-04	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.101	0.050	mg/L	2020-12-04	
BOD, 5-day	1.8	2.0	mg/L	2020-12-09	
Chemical Oxygen Demand	28	20	mg/L	2020-12-03	
Phosphorus, Total (as P)	0.100	0.0050	mg/L	2020-12-04	
Solids, Total Suspended	< 5.0	2.0	mg/L	2020-12-06	
UV Transmittance @ 254nm	70.7	0.10	% T	2020-12-09	HT1

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L0417  
2020-12-09 14:10

Analysis Description	Method Ref.	Technique	Accredited	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
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 20L1188

**RECEIVED / TEMP** 2020-12-10 12:10 / 5°C

**REPORTED** 2020-12-11 14:58

**COC NUMBER** B104660

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

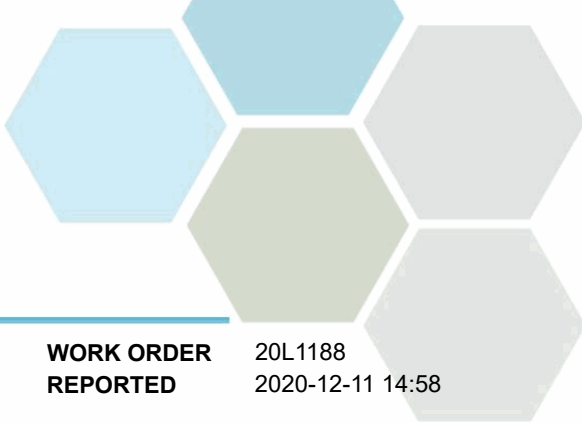
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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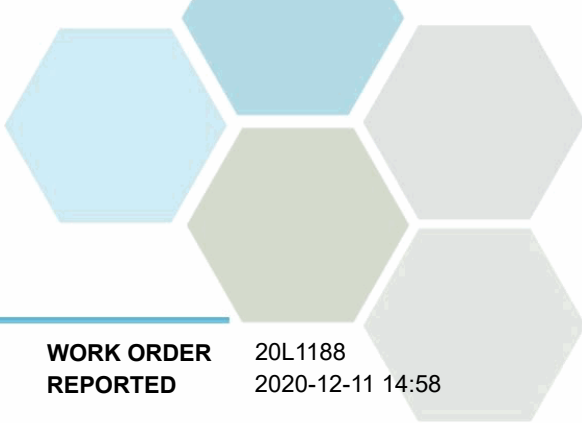


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20L1188  
2020-12-11 14:58

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE Bacterial (20L1188-01)   Matrix: Water   Sampled: 2020-12-09 11:05</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-12-10	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-12-10	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20L1188  
2020-12-11 14:58

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCE

**PROJECT INFO**

**WORK ORDER** 20L1190

**RECEIVED / TEMP** 2020-12-10 12:10 / 5°C  
**REPORTED** 2020-12-17 11:00

**COC NUMBER** B104660

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

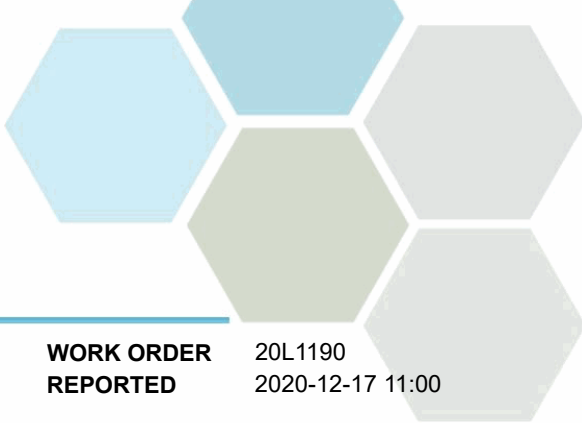
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

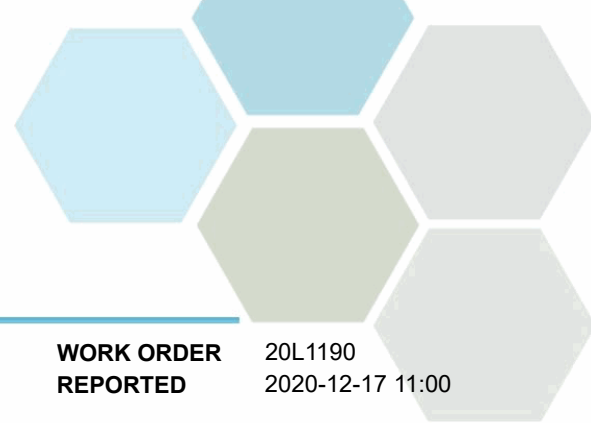
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20L1190  
2020-12-17 11:00

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - MCE (20L1190-01)   Matrix: Water   Sampled: 2020-12-09 11:05</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	1.75	0.010	mg/L	2020-12-11	
Nitrite (as N)	0.117	0.010	mg/L	2020-12-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-12-11	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	1.86	0.0100	mg/L	N/A	
Nitrogen, Total	3.27	0.0500	mg/L	N/A	
Nitrogen, Organic	1.26	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	0.145	0.050	mg/L	2020-12-12	
BOD, 5-day	3.3	2.0	mg/L	2020-12-16	
Chemical Oxygen Demand	31	20	mg/L	2020-12-14	
Nitrogen, Total Kjeldahl	1.40	0.050	mg/L	2020-12-15	
pH	7.86	0.10	pH units	2020-12-16	HT2
Phosphorus, Total (as P)	0.110	0.0050	mg/L	2020-12-14	
Phosphorus, Total Dissolved	0.0810	0.0050	mg/L	2020-12-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-12-11	
UV Transmittance @ 254nm	69.0	0.10	% T	2020-12-11	

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCE

**WORK ORDER REPORTED** 20L1190  
2020-12-17 11:00

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L1932

**RECEIVED / TEMP** 2020-12-17 09:00 / 7°C

**REPORTED** 2020-12-18 16:11

**COC NUMBER** B104707

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

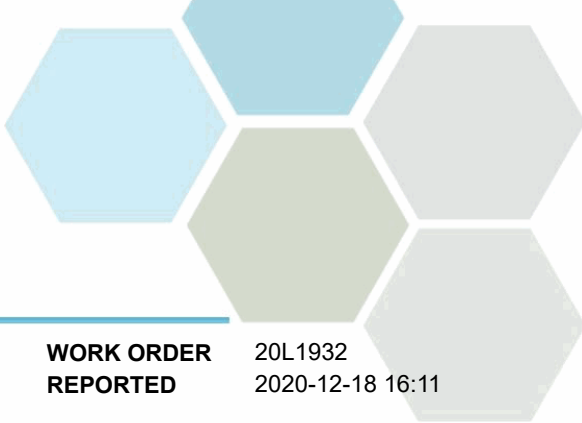
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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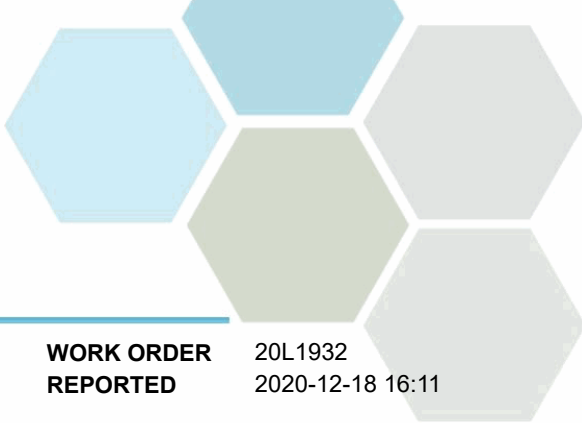


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L1932  
2020-12-18 16:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20L1932-01)   Matrix: Water   Sampled: 2020-12-16 10:45</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-12-17	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-12-17	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L1932  
2020-12-18 16:11

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L1933

**RECEIVED / TEMP** 2020-12-17 09:00 / 7°C  
**REPORTED** 2020-12-22 16:46

**COC NUMBER** B104707

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

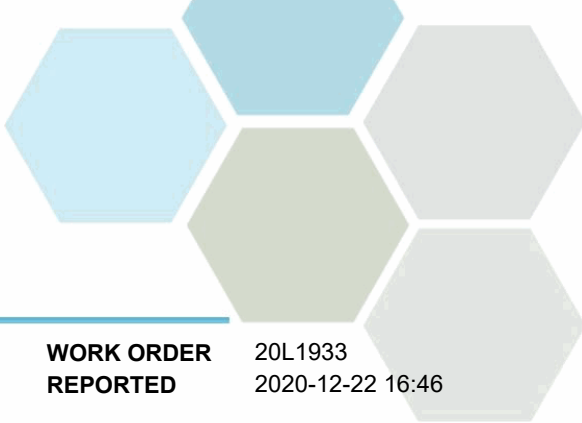
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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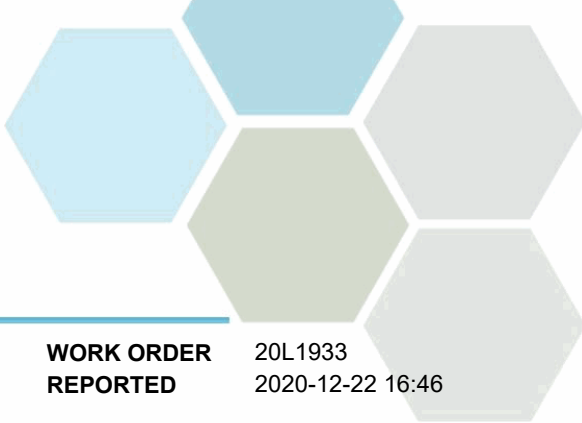
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L1933  
2020-12-22 16:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20L1933-01)   Matrix: Fresh Water   Sampled: 2020-12-16 10:23</b>					
<i>Anions</i>					
Nitrate (as N)	1.66	0.010	mg/L	2020-12-19	
Nitrite (as N)	0.122	0.010	mg/L	2020-12-19	
Phosphate (as P)	0.0050	0.0050	mg/L	2020-12-19	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.202	0.050	mg/L	2020-12-21	
BOD, 5-day	4.6	2.0	mg/L	2020-12-22	
Chemical Oxygen Demand	34	20	mg/L	2020-12-21	
Phosphorus, Total (as P)	0.108	0.0050	mg/L	2020-12-21	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-12-17	
UV Transmittance @ 254nm	68.1	0.10	% T	2020-12-19	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L1933  
2020-12-22 16:46

Analysis Description	Method Ref.	Technique	Accredited	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
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

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% T	Percent Transmittance
<	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L2555

**RECEIVED / TEMP** 2020-12-22 14:55 / 8°C

**REPORTED** 2020-12-24 13:27

**COC NUMBER** B104517

### Introduction:

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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.

### Work Order Comments:

Custody Seals Intact: YES

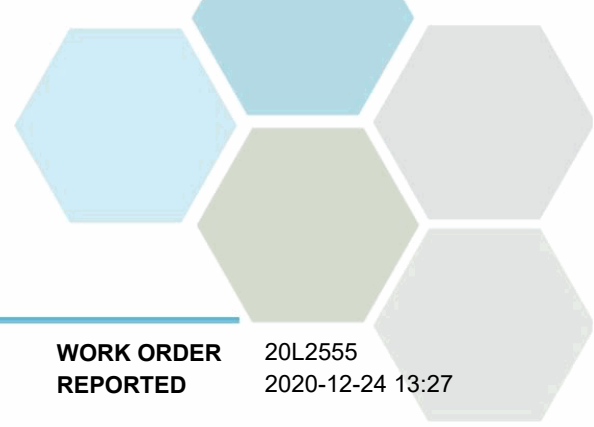
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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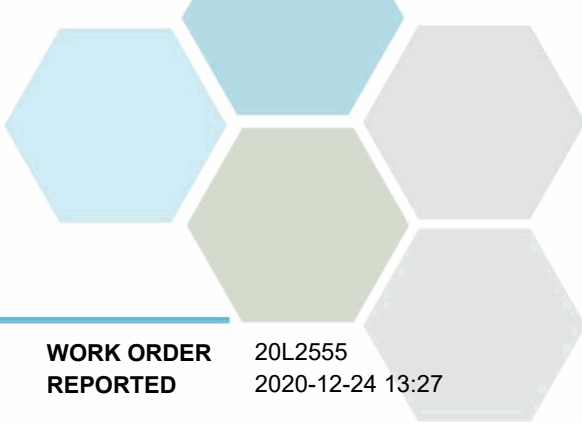


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2555  
2020-12-24 13:27

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20L2555-01)   Matrix: Water   Sampled: 2020-12-22 10:10</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-12-23	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-12-23	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2555  
2020-12-24 13:27

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L2556

**RECEIVED / TEMP** 2020-12-22 14:55 / 8°C

**REPORTED** 2020-12-31 09:06

**COC NUMBER** B104517

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

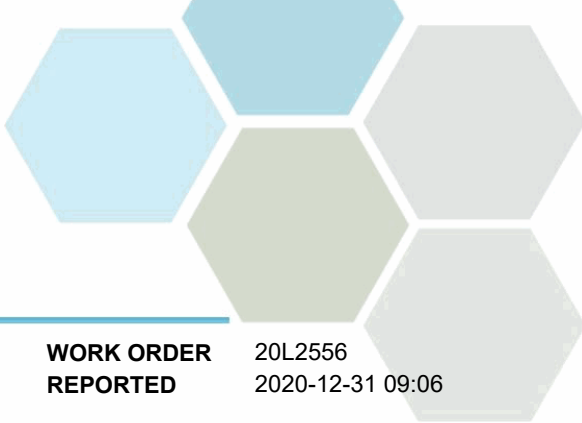
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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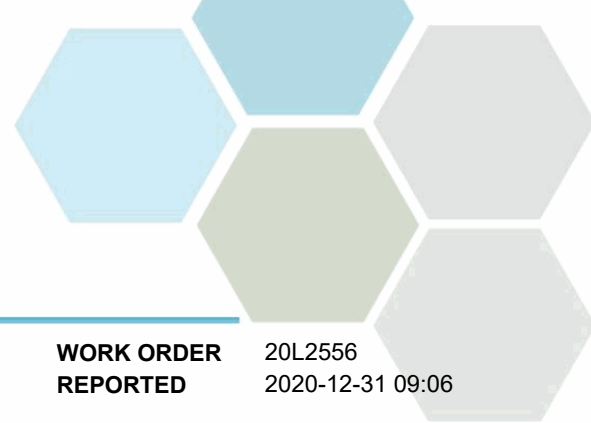


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2556  
2020-12-31 09:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20L2556-01)   Matrix: Fresh Water   Sampled: 2020-12-22 10:10</b>					
<i>Anions</i>					
Nitrate (as N)	0.784	0.010	mg/L	2020-12-23	
Nitrite (as N)	0.163	0.010	mg/L	2020-12-23	
Phosphate (as P)	0.0218	0.0050	mg/L	2020-12-23	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.369	0.050	mg/L	2020-12-24	
BOD, 5-day	1.8	2.0	mg/L	2020-12-29	
Chemical Oxygen Demand	32	20	mg/L	2020-12-30	
Phosphorus, Total (as P)	0.121	0.0050	mg/L	2020-12-29	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-12-24	
UV Transmittance @ 254nm	69.0	0.10	% T	2020-12-24	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2556  
2020-12-31 09:06

Analysis Description	Method Ref.	Technique	Accredited	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
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

### Glossary of Terms:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L2722

**RECEIVED / TEMP** 2020-12-29 14:40 / 3°C

**REPORTED** 2020-12-31 14:35

**COC NUMBER** B103771

### Introduction:

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### Work Order Comments:

Custody Seals Intact: N/A

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

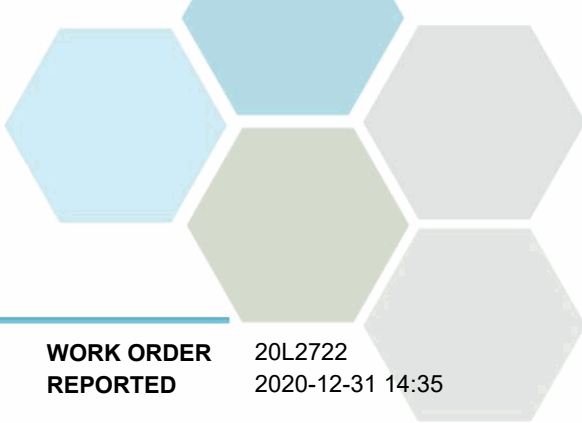
### Authorized By:

Alana Crump  
Team Lead, Client Service

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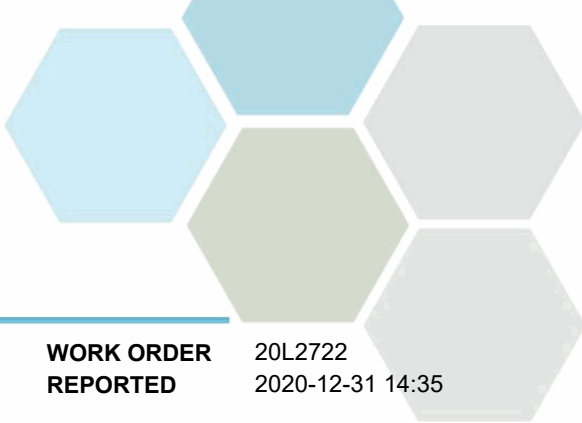


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2722  
2020-12-31 14:35

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab - Bacteria (20L2722-01)   Matrix: Water   Sampled: 2020-12-29 09:25</b>					
<i>Microbiological Parameters</i>					
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2020-12-30	
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2020-12-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2722  
2020-12-31 14:35

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP WAE

**PROJECT INFO**

**WORK ORDER** 20L2724

**RECEIVED / TEMP** 2020-12-29 14:40 / 3°C

**REPORTED** 2021-01-05 16:38

**COC NUMBER** B103771

### Introduction:

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### Work Order Comments:

Custody Seals Intact: N/A

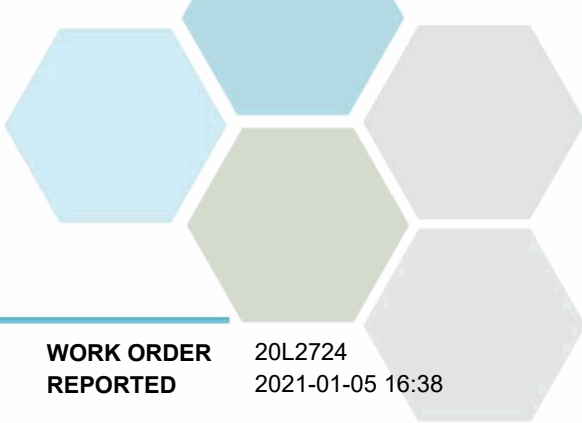
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

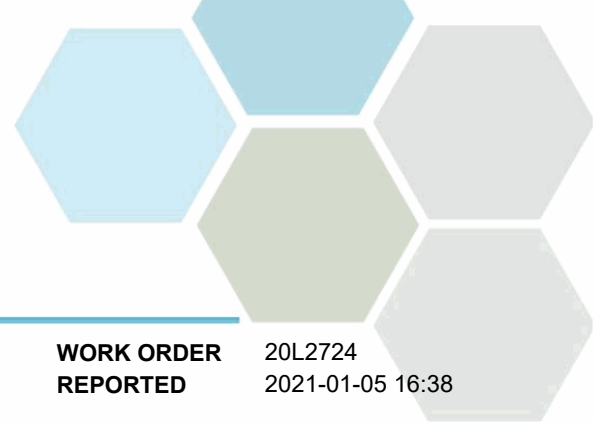
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2724  
2021-01-05 16:38

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (20L2724-01)   Matrix: Fresh Water   Sampled: 2020-12-29 09:25</b>					
<i>Anions</i>					
Nitrate (as N)	1.36	0.010	mg/L	2020-12-30	
Nitrite (as N)	0.198	0.010	mg/L	2020-12-30	
Phosphate (as P)	0.0231	0.0050	mg/L	2020-12-30	
<i>General Parameters</i>					
Ammonia, Total (as N)	0.559	0.050	mg/L	2020-12-30	
BOD, 5-day	3.4	2.0	mg/L	2021-01-05	
Chemical Oxygen Demand	37	20	mg/L	2020-12-30	
Phosphorus, Total (as P)	0.151	0.0050	mg/L	2021-01-04	
Solids, Total Suspended	< 2.7	2.0	mg/L	2021-01-04	RS2
UV Transmittance @ 254nm	68.5	0.10	% T	2020-12-30	

**Sample Qualifiers:**

RS2 The Reporting Limits for this sample have been raised due to limited sample volume.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP WAE

**WORK ORDER REPORTED** 20L2724  
2021-01-05 16:38

Analysis Description	Method Ref.	Technique	Accredited	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
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

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

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# **APPENDIX J**

## **Quality Control Samples Database Summary 2020**

## Okanagan Falls Advanced Wastewater Treatment Facility - Blanks

## Water Quality Results

Analyte	Unit	Sampling Location	Field Blank - Influent	Field Blank - Effluent	Field Blank - OK River 100m Downstream
		Date Sampled	16-Apr-20 0041271-02	15-Apr-20 0041194-02 0041193-02	15-Apr-20 0041204-04 0041203-04
Lab Sample ID for analyses except bacteriological		Sample Type	Field Blank	Field Blank	Field Blank
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L			<1.0	<1.0
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L			<1.0	<1.0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L			<1.0	<1.0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L			<1.0	<1.0
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L			<1.0	<1.0
Biochemical oxygen demand	mg/L		<5.9	<1.0	<5.8
5-d Carbonaceous BOD	mg/L			<1.2	
Chemical Oxygen Demand	mg/L			<20	<5
Chloride	mg/L			<0.10	<0.10
Conductivity	µS/cm			<2.0	<2.0
Fluoride	mg/L			<0.10	<0.10
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L			<0.500	<0.500
pH			4.36	5.36	5.17
Sulphate	mg/L			<1.0	<1.0
Total suspended solids	mg/L			<2.0	<2.0
UV transmittance at 254 nm - filtered	%			96.7	
<b>Microbiological</b>					
E. coli (MPN)	MPN/100 mL			<1	<1
Fecal coliforms (MPN)	MPN/100 mL			<1	<1
<b>Nutrients</b>					
Ammonia (total, as N)	mg/L		<0.050	<0.050	<0.050
Nitrate (as N)	mg/L		<0.010	<0.010	<0.010
Nitrite (as N)	mg/L		<0.010	<0.010	<0.010
Total nitrogen	mg/L		<0.0500	<0.0500	<0.0500
Total kjeldahl nitrogen	mg/L		<0.050	<0.050	<0.050
Orthophosphate (dissolved, as P)	mg/L		<0.0050	<0.0050	<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L			<0.050	<0.050
Phosphorus (total, APHA 4500-P)	mg/L		<0.0020	0.0035	0.0039
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0039	0.0033
Potassium (total)	mg/L			<0.10	<0.10

## Water Quality Results

Analyte	Unit	Sampling Location	Field Blank - Influent	Field Blank - Effluent	Field Blank - OK River 100m Downstream
		Date Sampled	16-Apr-20	15-Apr-20	15-Apr-20
		Lab Sample ID for analyses except bacteriological	0041271-02	0041194-02	0041204-04
		Lab Sample ID for bacteriological samples		0041193-02	0041203-04
Sample Type		Field Blank	Field Blank	Field Blank	
<b>Total Metals</b>					
Aluminum (total)	mg/L		<0.0050	<0.0050	<0.0050
Antimony (total)	mg/L		<0.00020	<0.00020	<0.00020
Arsenic (total)	mg/L		<0.00050	<0.00050	<0.00050
Barium (total)	mg/L		<0.0050	<0.0050	<0.0050
Beryllium (total)	mg/L		<0.00010	<0.00010	<0.00010
Bismuth (total)	mg/L		<0.00010	<0.00010	<0.00010
Boron (total)	mg/L		<0.0050	<0.0050	<0.0050
Cadmium (total)	mg/L		<0.000010	<0.000010	<0.000010
Calcium (total)	mg/L		<0.20	<0.20	<0.20
Chromium (total)	mg/L		<0.00050	<0.00050	<0.00050
Cobalt (total)	mg/L		<0.00010	<0.00010	<0.00010
Copper (total)	mg/L		<0.00040	<0.00040	<0.00040
Iron (total)	mg/L		<0.010	<0.010	<0.010
Lead (total)	mg/L		<0.00020	<0.00020	<0.00020
Lithium (total)	mg/L		<0.00010	<0.00010	<0.00010
Magnesium (total)	mg/L		<0.010	<0.010	<0.010
Manganese (total)	mg/L		<0.00020	<0.00020	<0.00020
Mercury (total)	mg/L		<0.000010	<0.000010	<0.000010
Molybdenum (total)	mg/L		<0.00010	<0.00010	<0.00010
Nickel (total)	mg/L		<0.00040	<0.00040	<0.00040
Selenium (total)	mg/L		<0.00050	<0.00050	<0.00050
Silicon (total, as Si)	mg/L		<1.0	<1.0	<1.0
Silver (total)	mg/L		<0.000050	<0.000050	<0.000050
Sodium (total)	mg/L		<0.10	<0.10	3.34
Strontium (total)	mg/L		<0.0010	<0.0010	<0.0010
Sulphur (total)	mg/L		<3.0	<3.0	4
Tellurium (total)	mg/L		<0.00050	<0.00050	<0.00050
Thallium (total)	mg/L		<0.000020	<0.000020	<0.000020
Thorium (total)	mg/L		<0.00010	<0.00010	<0.00010
Tin (total)	mg/L		<0.00020	<0.00020	<0.00020
Titanium (total)	mg/L		<0.0050	<0.0050	<0.0050
Tungsten (total)	mg/L		<0.0010	<0.0010	<0.0010
Uranium (total)	mg/L		<0.000020	<0.000020	<0.000020
Vanadium (total)	mg/L		<0.0010	<0.0010	<0.0010
Zinc (total)	mg/L		<0.0040	<0.0040	<0.0040
Zirconium (total)	mg/L		<0.00010	<0.00010	<0.00010





## Okanagan Falls Advanced Wastewater Treatment Facility

## Duplicate Water Samples Report

		Sampling Location	Influent	Influent	Influent	Relative Standard Deviation
		Date Sampled	22-Jul-20	22-Jul-20	22-Jul-20	
		Lab Sample ID	0072401-01	0072401-02	0072401-03	
		Sample Type	Normal	Duplicate	Duplicate	
Analyte	Unit					
<b>Lab Results</b>						
<b>General</b>						
Biochemical oxygen demand	mg/L		239	225	256	6.5%
pH			6.67	6.63	6.62	0.4%
<b>Nutrients</b>						
Ammonia (total, as N)	mg/L		35	35.7	31.6	6.4%
Nitrate (as N)	mg/L		<0.010	<0.010	<0.010	
Nitrite (as N)	mg/L		<0.010	<0.010	<0.010	
Total nitrogen	mg/L		68.7	65.8	69.2	2.7%
Total kjeldahl nitrogen	mg/L		68.7	65.8	69.2	2.7%
Orthophosphate (dissolved, as P)	mg/L		4.6	4.63	4.56	0.8%
Phosphorus (total, APHA 4500-P)	mg/L		7.8	7.71	7.81	0.7%



## Okanagan Falls Advanced Wastewater Treatment Facility

## Duplicate Soil Samples Report

Sampling Location		Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)	Fermented Primary Sludge (FPS)		Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	Thickened Waste Activated Sludge (TWAS)	
Date Sampled		23-Jul-20	23-Jul-20	23-Jul-20		22-Jul-20	22-Jul-20	22-Jul-20	
Lab Sample ID		0072398-04	0072398-05	0072398-06		0072398-01	0072398-02	0072398-03	
Sample Type		Normal	Duplicate	Duplicate	<b>Relative Standard Deviation</b>	Normal	Duplicate	Duplicate	<b>Relative Standard Deviation</b>
Analyte	Unit								
<b>Lab Results</b>									
<b>General</b>									
Percent solids	% wet	5.2	5.4	6.2	9.4%	2.8	2.8	2.7	2.1%
Total volatile solids (percent)	% dry	88.6	89.5	90.4	1.0%	79.6	78.7	78.4	0.8%
<b>Metals</b>									
Arsenic	µg/g	3.09	3.21	3.36	4.2%	3.11	3.33	3.33	3.9%
Cadmium	µg/g	0.867	1	0.973	7.4%	0.786	0.79	0.838	3.6%
Chromium	µg/g	21.4	15.1	16.1	19.3%	7.7	7.1	6.7	7.0%
Cobalt	µg/g	0.91	0.91	0.89	1.3%	1.11	1.16	1.17	2.8%
Copper	µg/g	221	221	223	0.5%	237	249	244	2.5%
Lead	µg/g	8.38	8.49	9.59	7.6%	5.37	5.74	5.55	3.3%
Mercury	µg/g	0.390	0.500	0.376	16.1%	0.163	0.160	0.171	3.5%
Molybdenum	µg/g	6.39	6.61	6.78	3.0%	7.85	8.1	8.14	2.0%
Nickel	µg/g	8.11	8.23	7.93	1.9%	6.16	5.84	6.11	2.9%
Selenium	µg/g	4.35	4.25	4.74	5.8%	5.95	6.42	5.89	4.8%
Zinc	µg/g	706	706	736	2.4%	540	569	563	2.7%



## Duplicate Water Samples Report

		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
Sampling Location					
Date Sampled		22-Jul-20	22-Jul-20	22-Jul-20	
Lab Sample ID for analyses except bacteriological		0072255-01	0072255-02	0072255-03	
Lab Sample ID for Bacteriological samples		0072254-01	0072254-02	0072254-03	
Sample Type		Normal	Duplicate	Duplicate	Relative Standard Deviation
Analyte	Unit				
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	228	224	228	1.0%
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0	
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0	
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0	
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	228	224	228	1.0%
Biochemical oxygen demand	mg/L	<2.0	<2.0	<2.0	
5-d Carbonaceous BOD	mg/L	<2.0	<2.0	<2.0	
Chemical Oxygen Demand	mg/L	<20	<20	<20	
Chloride	mg/L	115	114	116	0.9%
Conductivity	µS/cm	868	871	882	0.8%
Fluoride	mg/L	0.19	0.18	0.2	5.3%
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	260	255	265	1.9%
pH		7.83	7.76	7.82	0.5%
Sulphate	mg/L	47	47	47.2	0.2%
Total suspended solids	mg/L	<2.0	<2.0	<2.0	
UV transmittance at 254 nm - filtered	%	76.1	76.1	76	0.1%
<b>Microbiological</b>					
E. coli (MPN)	MPN/100 mL	<1	<1	<1	
Fecal coliforms (MPN)	MPN/100 mL	<1	<1	<1	
<b>Nutrients</b>					
Ammonia (total, as N)	mg/L	0.16	0.164	0.158	1.9%
Nitrate (as N)	mg/L	1.84	1.84	1.8	1.3%
Nitrite (as N)	mg/L	0.116	0.119	0.115	1.8%
Total nitrogen	mg/L	3.07	3.09	3.07	0.4%
Total kjeldahl nitrogen	mg/L	1.11	1.13	1.15	1.8%
Orthophosphate (dissolved, as P)	mg/L	0.0336	0.0326	0.0353	4.0%
Phosphorus (total, by ICPMS/ICPOES)	mg/L	0.138	0.149	0.153	5.3%
Phosphorus (total, APHA 4500-P)	mg/L	0.132	0.126	0.129	2.3%
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0969	0.0939	0.0961	1.6%
Potassium (total)	mg/L	16.7	16.6	17.3	2.2%

Duplicate Water Samples Report

		OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	OK Falls AWWTP Treated Effluent	
Sampling Location					
Date Sampled		22-Jul-20	22-Jul-20	22-Jul-20	
Lab Sample ID for analyses except bacteriological		0072255-01	0072255-02	0072255-03	
Lab Sample ID for Bacteriological samples		0072254-01	0072254-02	0072254-03	
Sample Type		Normal	Duplicate	Duplicate	Relative Standard Deviation
Analyte	Unit				
<b>Total Metals</b>					
Aluminum (total)	mg/L	0.0748	0.0686	0.0714	4.3%
Antimony (total)	mg/L	<0.00020	<0.00020	<0.00020	
Arsenic (total)	mg/L	0.00053	0.00053	0.00054	1.1%
Barium (total)	mg/L	0.0552	0.0525	0.0555	3.0%
Beryllium (total)	mg/L	<0.00010	<0.00010	<0.00010	
Bismuth (total)	mg/L	<0.00010	<0.00010	<0.00010	
Boron (total)	mg/L	0.124	0.122	0.125	1.2%
Cadmium (total)	mg/L	<0.000010	<0.000010	<0.000010	
Calcium (total)	mg/L	80.4	78.7	81.7	1.9%
Chromium (total)	mg/L	<0.00050	<0.00050	<0.00050	
Cobalt (total)	mg/L	0.00015	0.00015	0.00015	0.0%
Copper (total)	mg/L	0.00142	0.00122	0.00132	7.6%
Iron (total)	mg/L	0.02	0.02	0.019	2.9%
Lead (total)	mg/L	<0.00020	<0.00020	<0.00020	
Lithium (total)	mg/L	0.00592	0.00581	0.00595	1.3%
Magnesium (total)	mg/L	14.3	14.2	14.8	2.2%
Manganese (total)	mg/L	0.0475	0.0459	0.0478	2.2%
Mercury (total)	mg/L	<0.000010	<0.000010	<0.000010	
Molybdenum (total)	mg/L	0.00118	0.00116	0.00124	3.5%
Nickel (total)	mg/L	0.00101	0.00098	0.00105	3.5%
Selenium (total)	mg/L	<0.00050	0.0005	<0.00050	
Silicon (total, as Si)	mg/L	11	11.2	11.5	2.2%
Silver (total)	mg/L	<0.000050	<0.000050	<0.000050	
Sodium (total)	mg/L	85	84	87.8	2.3%
Strontium (total)	mg/L	0.629	0.611	0.632	1.8%
Sulphur (total)	mg/L	17.6	17.3	18.8	4.4%
Tellurium (total)	mg/L	<0.00050	<0.00050	<0.00050	
Thallium (total)	mg/L	<0.000020	<0.000020	<0.000020	
Thorium (total)	mg/L	<0.00010	<0.00010	<0.00010	
Tin (total)	mg/L	<0.00020	<0.00020	<0.00020	
Titanium (total)	mg/L	<0.0050	<0.0050	<0.0050	
Tungsten (total)	mg/L	<0.0010	<0.0010	<0.0010	
Uranium (total)	mg/L	0.00226	0.00223	0.00227	0.9%
Vanadium (total)	mg/L	<0.0010	<0.0010	<0.0010	
Zinc (total)	mg/L	0.0241	0.0224	0.023	3.7%
Zirconium (total)	mg/L	<0.00010	<0.00010	<0.00010	



## Duplicate Water Samples Report

Analyte		Sampling Location			Relative Standard Deviation
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	
Unit		Date Sampled	Date Sampled	Date Sampled	
		Lab Sample ID for analyses except bacteriological	Lab Sample ID for analyses except bacteriological	Lab Sample ID for analyses except bacteriological	
		Lab Sample ID for Bacteriological samples	Lab Sample ID for Bacteriological samples	Lab Sample ID for Bacteriological samples	
		Sample Type	Sample Type	Sample Type	
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	108	120	104	7.5%
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0	
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0	
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0	
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	108	120	104	7.5%
Biochemical oxygen demand	mg/L	<2.0	<2.0	<2.0	
Chemical Oxygen Demand	mg/L	19	16	18	8.6%
Chloride	mg/L	5.2	5.11	5.24	1.3%
Conductivity	µS/cm	252	251	245	1.5%
Fluoride	mg/L	0.13	0.13	0.13	0.0%
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	121	119	117	1.7%
pH		8.16	8.17	8.13	0.3%
Sulphate	mg/L	27.3	27.4	27.2	0.4%
Total suspended solids	mg/L	<4.0	<4.0		
<b>Microbiological</b>					
E. coli (MPN)	MPN/100 mL	36	34	34	3.3%
Fecal coliforms (MPN)	MPN/100 mL	38	34	34	6.5%
<b>Nutrients</b>					
Ammonia (total, as N)	mg/L	<0.050	<0.050	<0.050	
Nitrate (as N)	mg/L	<0.010	<0.010	<0.010	
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	
Total nitrogen	mg/L	0.252	0.233	0.220	6.8%
Total kjeldahl nitrogen	mg/L	0.252	0.233	0.220	6.8%
Orthophosphate (dissolved, as P)	mg/L	<0.0050	<0.0050	<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L	<0.050	<0.050	<0.050	
Phosphorus (total, APHA 4500-P)	mg/L	0.0108	0.0134	0.0114	11.5%
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0052	<0.0050	<0.0050	
Potassium (total)	mg/L	2.49	2.46	2.49	0.7%

## Duplicate Water Samples Report

Analyte		Sampling Location			Relative Standard Deviation
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	
Unit		Date Sampled	Date Sampled	Date Sampled	
		Lab Sample ID for analyses except bacteriological	Lab Sample ID for analyses except bacteriological	Lab Sample ID for analyses except bacteriological	
		Lab Sample ID for Bacteriological samples	Lab Sample ID for Bacteriological samples	Lab Sample ID for Bacteriological samples	
		Sample Type	Sample Type	Sample Type	
<b>Total Metals</b>					
Aluminum (total)	mg/L	0.0103	0.0098	0.0109	5.3%
Antimony (total)	mg/L	<0.00020	<0.00020	<0.00020	
Arsenic (total)	mg/L	<0.00050	0.00051	<0.00050	
Barium (total)	mg/L	0.0222	0.0213	0.0222	2.4%
Beryllium (total)	mg/L	<0.00010	<0.00010	<0.00010	
Bismuth (total)	mg/L	<0.00010	<0.00010	<0.00010	
Boron (total)	mg/L	<0.0500	<0.0500	<0.0500	
Cadmium (total)	mg/L	<0.000010	<0.000010	<0.000010	
Calcium (total)	mg/L	32.3	31.8	30.8	2.4%
Chromium (total)	mg/L	<0.00050	<0.00050	<0.00050	
Cobalt (total)	mg/L	<0.00010	<0.00010	<0.00010	
Copper (total)	mg/L	0.00081	0.00077	0.0007	7.3%
Iron (total)	mg/L	0.018	0.015	0.015	10.8%
Lead (total)	mg/L	<0.00020	<0.00020	<0.00020	
Lithium (total)	mg/L	0.00267	0.00269	0.00294	5.4%
Magnesium (total)	mg/L	9.64	9.5	9.68	1.0%
Manganese (total)	mg/L	0.00326	0.00319	0.00322	1.1%
Mercury (total)	mg/L	<0.000010	<0.000010	<0.000010	
Molybdenum (total)	mg/L	0.00313	0.00311	0.00315	0.6%
Nickel (total)	mg/L	0.00047	<0.00040	<0.00040	
Selenium (total)	mg/L	0.00051	0.00056	0.00056	5.3%
Silicon (total, as Si)	mg/L	3.8	3.7	3.9	2.6%
Silver (total)	mg/L	<0.000050	<0.000050	<0.000050	
Sodium (total)	mg/L	11.1	10.9	11.1	1.0%
Strontium (total)	mg/L	0.264	0.256	0.261	1.6%
Sulphur (total)	mg/L	10.8	10.4	10.7	2.0%
Tellurium (total)	mg/L	<0.00050	<0.00050	<0.00050	
Thallium (total)	mg/L	<0.000020	<0.000020	<0.000020	
Thorium (total)	mg/L	<0.00010	<0.00010	<0.00010	
Tin (total)	mg/L	<0.00020	<0.00020	<0.00020	
Titanium (total)	mg/L	<0.0050	<0.0050	<0.0050	
Tungsten (total)	mg/L	<0.0010	<0.0010	<0.0010	
Uranium (total)	mg/L	0.00236	0.00227	0.00235	2.1%
Vanadium (total)	mg/L	<0.0010	<0.0010	<0.0010	
Zinc (total)	mg/L	<0.0040	<0.0040	<0.0040	
Zirconium (total)	mg/L	0.0001	0.00011	0.00013	13.5%



## Okanagan Falls Advanced Wastewater Treatment Facility

## Duplicate Water Samples Report



Analyte	Unit	Sampling Location	Vaseux Lake 1, 5, 10 m composite	Vaseux Lake 1, 5, 10 m composite	Vaseux Lake 1, 5, 10 m composite	Relative Standard Deviation	Vaseux Lake 20, 22, 24 m composite	Vaseux Lake 20, 22, 24 m composite	Vaseux Lake 20, 22, 24 m composite	Relative Standard Deviation
		Date Sampled	02-Jul-20	02-Jul-20	02-Jul-20		02-Jul-20	02-Jul-20	02-Jul-20	
Lab Sample ID	Sample Type		0070167-01 Normal	0070167-03 Duplicate	0070167-04 Duplicate		0070167-02 Normal	0070167-05 Duplicate	0070167-06 Duplicate	
<b>Lab Results</b>										
<b>General</b>										
Chloride	mg/L		4.99	5.04	4.97	0.7%	5.66	5.83	5.73	1.5%
Chlorophyll a	mg/L		0.00213				0.00049			
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L		105	105	106	0.5%	120	113	115	3.1%
Sulphate	mg/L		26.3	26.5	26.2	0.6%	27.1	27.6	27.2	1.0%
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L		<0.050	<0.050	<0.050		0.063	0.076	0.076	10.5%
Nitrate (as N)	mg/L		<0.010	<0.010	<0.010		0.013	0.012	0.012	4.7%
Nitrite (as N)	mg/L		<0.010	<0.010	<0.010		<0.010	0.01	<0.010	
Total nitrogen	mg/L		0.212	0.197	0.206	3.7%	0.281	0.31	0.296	4.9%
Total kjeldahl nitrogen	mg/L		0.212	0.197	0.206	3.7%	0.268	0.288	0.285	3.8%
Total organic nitrogen	mg/L		0.212	0.197	0.206	3.7%	0.205	0.212	0.209	1.7%
Orthophosphate (dissolved, as P)	mg/L		<0.0100	<0.0100	<0.0100		<0.0100	<0.0100	<0.0100	
Phosphorus (total, by ICPMS/ICPOES)	mg/L		<0.050	<0.050	<0.050		<0.050	<0.050	<0.050	
Phosphorus (total, APHA 4500-P)	mg/L		0.0124	0.0114	0.0112	5.5%	0.0349	0.0336	0.0399	9.2%
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0057	0.006	0.0076	15.9%	0.0204	0.0194	0.0193	3.1%
Potassium (total)	mg/L		2.22	2.2	2.24	0.9%	2.64	2.4	2.43	5.3%

Okanagan Falls Advanced Wastewater Treatment Facility

Duplicate Water Samples Report



Sampling Location

Date Sampled  
Lab Sample ID  
Sample Type

Analyte	Unit	Vaseux Lake 1, 5, 10 m composite	Vaseux Lake 1, 5, 10 m composite	Vaseux Lake 1, 5, 10 m composite	Relative Standard Deviation	Vaseux Lake 20, 22, 24 m composite	Vaseux Lake 20, 22, 24 m composite	Vaseux Lake 20, 22, 24 m composite	Relative Standard Deviation
		02-Jul-20 0070167-01 Normal	02-Jul-20 0070167-03 Duplicate	02-Jul-20 0070167-04 Duplicate		02-Jul-20 0070167-02 Normal	02-Jul-20 0070167-05 Duplicate	02-Jul-20 0070167-06 Duplicate	
<b>Total Metals</b>									
Aluminum (total)	mg/L	0.0226	0.0212	0.0232	4.6%	0.0391	0.0376	0.036	4.1%
Antimony (total)	mg/L	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	
Arsenic (total)	mg/L	<0.00050	<0.00050	0.00051		0.00069	0.00065	0.00067	3.0%
Barium (total)	mg/L	0.0218	0.0211	0.0221	2.4%	0.0272	0.0249	0.0261	4.4%
Beryllium (total)	mg/L	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	
Bismuth (total)	mg/L	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	
Boron (total)	mg/L	<0.0500	<0.0500	<0.0500		<0.0500	<0.0500	<0.0500	
Cadmium (total)	mg/L	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	
Calcium (total)	mg/L	27.8	27.7	27.9	0.4%	31.6	30.1	30.5	2.5%
Chromium (total)	mg/L	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	
Cobalt (total)	mg/L	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	
Copper (total)	mg/L	0.0012	0.00088	0.00122	17.3%	0.00081	0.00066	0.00077	10.4%
Iron (total)	mg/L	0.027	0.026	0.028	3.7%	0.224	0.202	0.208	5.4%
Lead (total)	mg/L	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	
Lithium (total)	mg/L	0.00318	0.00313	0.00319	1.0%	0.00351	0.00339	0.00343	1.8%
Magnesium (total)	mg/L	8.64	8.58	8.67	0.5%	9.88	9.06	9.3	4.5%
Manganese (total)	mg/L	0.00622	0.00618	0.00633	1.2%	0.192	0.176	0.179	4.7%
Molybdenum (total)	mg/L	0.0031	0.00309	0.00315	1.0%	0.00336	0.00304	0.00309	5.4%
Nickel (total)	mg/L	0.00049	0.00043	0.00042	8.5%	0.00072	0.00047	0.00048	25.4%
Selenium (total)	mg/L	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	
Silicon (total, as Si)	mg/L	3.3	3.2	3.3	1.8%	4.4	4	4	5.6%
Silver (total)	mg/L	<0.000050	<0.000050	<0.000050		<0.000050	<0.000050	<0.000050	
Sodium (total)	mg/L	10.8	10.8	10.9	0.5%	12.6	11.6	11.7	4.6%
Strontium (total)	mg/L	0.264	0.259	0.268	1.7%	0.315	0.287	0.296	4.8%
Sulphur (total)	mg/L	9.8	8.1	8.8	9.6%	10.7	9.1	8.8	10.7%
Tellurium (total)	mg/L	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	
Thallium (total)	mg/L	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	
Thorium (total)	mg/L	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	
Tin (total)	mg/L	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	
Titanium (total)	mg/L	<0.0050	<0.0050	<0.0050		<0.0050	<0.0050	<0.0050	
Tungsten (total)	mg/L	<0.0010	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	
Uranium (total)	mg/L	0.00232	0.00232	0.00235	0.7%	0.0024	0.00233	0.00235	1.5%
Vanadium (total)	mg/L	<0.0010	<0.0010	<0.0010		0.0013	<0.0010	<0.0010	
Zinc (total)	mg/L	<0.0040	<0.0040	<0.0040		<0.0040	<0.0040	<0.0040	
Zirconium (total)	mg/L	0.00014	0.00013	0.00015	7.1%	<0.00010	<0.00010	<0.00010	



**Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results**

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
m asl	metres above sea level
ND	Non-detect. Result is less than lower detection limit.
NR	No Result
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
TNTC	Too numerous to count

# **APPENDIX K**

## **Effluent Annual Bioassay 2020**



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0072601
<b>ATTENTION</b>	Rob Palmer	<b>RECEIVED / TEMP REPORTED</b>	2020-07-28 09:00 / 23°C 2020-08-12 09:47
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B67424
<b>PROJECT</b>	OK Falls WW		
<b>PROJECT INFO</b>			

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

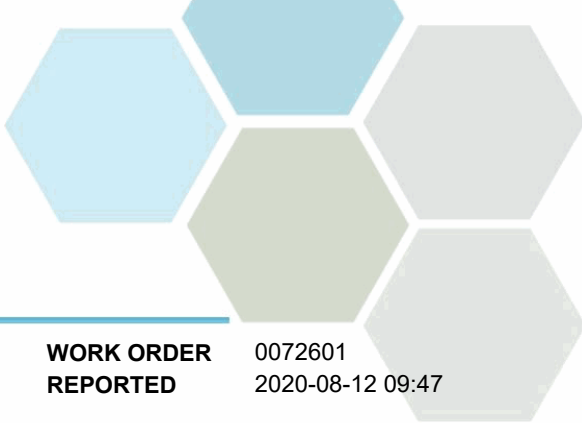
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

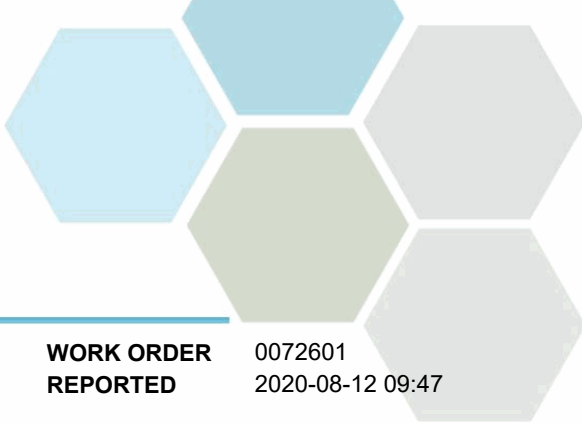
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WW

**WORK ORDER REPORTED** 0072601  
2020-08-12 09:47

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Effluent Grab (0072601-01)   Matrix: Water   Sampled: 2020-07-27 11:35</b>						
<i>Oncorhynchus mykiss Bioassay</i>						
LC50, 96 h Trout	> 100	N/A	1.0	% v/v	2020-08-01	TOX

**Sample Qualifiers:**

TOX Please refer to the Appendix for the full Toxicity Report



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WW

**WORK ORDER REPORTED** 0072601  
2020-08-12 09:47

Analysis Description	Method Ref.	Technique	Accredited	Location
Trout LC50 in Water	EPS 1/RM/13 B	Rainbow Trout Acute Lethality: Multi-concentration	✓	Edmonton

### Glossary of Terms:

RL	Reporting Limit (default)
% v/v	Percent volume per volume
>	Greater than the specified Result
EPS	Environment Canada Biological Test Methods

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*

Work Order: 0072601

Client: Regional District of Okanagan Similkameen  
 Project: OK Falls WW  
 Attention: Rob Palmer

**1. SAMPLE INFORMATION**

Sample Origin: Regional District of Okanagan Similkameen  
Penticton, BC  
 Sample Type: Effluent  
 Sample Description: Effluent Grab  
 Sampling Date and Time: July 27, 2020 @ 11:35 hrs  
 Sampling Method: Grab  
 Sampled by: Karen Moore

**2. TEST INFORMATION**

Laboratory Name / Location: CARO Analytical Services (Edmonton)  
 Laboratory Address: 17225 109 Avenue NW  
Edmonton, AB T5S 1H7

Test Organism: *Oncorhynchus mykiss*  
 Test Description: Acute, 96-hour, static, Multi-concentration (LC50)  
 Lab Test Method ID: CE-TM-027  
 Reference Method: Biological Test method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 2000. Environment Canada, EPS 1/RM/13, 2nd Ed. , (including May 2007 ammendments)

Analyst Name: Travis Briggeman  
 Start of Test Date: July 28, 2020  
 Holding/Dilution Water: Dechlorinated City of Edmonton tap water, acclimated to test conditions

Test Container Description: 25 L, Disposable polyethylene liner  
 Test Solution Volume: 20 L  
 Test Solution Depth: 33 cm  
 Number of Test Organisms/Container: 10 (1 organism per 2 L)  
 Aeration of test solutions: 6.5 ± 1 mL/min per L  
 pH Adjustment: The sample was not pH adjusted  
 Lighting: Full spectrum fluorescent lights; 100-500 lux at surface  
 Photoperiod: 16 h light : 8 h dark  
 Deviations from Reference Method: None

Work Order: 0072601

**3. RECEIPT CONDITION**

Container Description: 20 L HDPE carboy Qty: 3 Volume (L): 60  
 Receipt Date and Time: July 28, 2020 @ 9:00 hrs  
 Transit Irregularities: None  
 Observations: Colour: Yellow  
 Odour: Mild Organic  
 Turbidity: Low  
 Settleable Solids: Low  
 Measured Parameters: Temperature: 21.7 °C  
 pH: 7.24  
 Conductivity: 860 µmhos/cm  
 Dissolved Oxygen: 6.84 mg/L

**4. PRE-AERATION**

Duration at 6.5 ± 1 mL/min per L: 30 min

Sample Test Concentration (V/V):	<u>100%</u>	<u>0%</u>	
Before Pre-Aeration	Dissolved Oxygen: <u>6.61</u>	<u>8.76</u>	mg/L
	Air Saturation: <u>74</u>	<u>98</u>	%
After Pre-Aeration	Dissolved Oxygen: <u>7.42</u>	<u>8.87</u>	mg/L
	Air Saturation: <u>83</u>	<u>99</u>	%

**5. TEST ORGANISM DATA**

Lot Number: 200624  
 Weekly Mortality Preceding Test: 0.15 %  
 Number of fish per test solution: 10  
 Loading Density: 0.21 g/L

Fish #	Wet Weight (g)	Fork Length (cm)
1	<u>0.59</u>	<u>4.1</u>
2	<u>0.34</u>	<u>3.6</u>
3	<u>0.31</u>	<u>3.5</u>
4	<u>0.54</u>	<u>4.0</u>
5	<u>0.27</u>	<u>3.3</u>
6	<u>0.58</u>	<u>4.1</u>
7	<u>0.29</u>	<u>3.4</u>
8	<u>0.41</u>	<u>3.8</u>
9	<u>0.45</u>	<u>3.9</u>
10	<u>0.38</u>	<u>3.7</u>
Average	<u>0.42</u>	<u>3.7</u>
StDev	<u>0.12</u>	<u>0.3</u>

**6. TEST DATA**

Sample Concentration (% V/V)	100	80	60	40	20	0
------------------------------	-----	----	----	----	----	---

**0 hours**      Time:    16:20

Temperature (°C)	15.8	15.8	15.8	15.8	15.8	15.8
pH	7.64	7.60	7.68	7.77	7.79	7.88
Conductivity @ 25°C (µmhos/cm):	862	785	703	620	539	458
Dissolved Oxygen (mg/L):	7.42	7.65	7.99	8.23	8.61	8.87

**24 hours**      Time:    15:40

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	15.1	15.0	15.0	14.9	14.9	14.9
pH	8.29	8.29	8.27	8.19	8.17	8.09
Conductivity @ 25°C (µmhos/cm):	850	773	694	614	532	458
Dissolved Oxygen (mg/L):	9.19	9.23	9.22	9.07	9.20	9.22

**48 hours**      Time:    15:25

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	15.3	15.2	15.2	15.3	15.1	15.1
pH	8.34	8.31	8.28	8.19	8.23	8.14
Conductivity @ 25°C (µmhos/cm):	851	773	693	614	533	459
Dissolved Oxygen (mg/L):	9.02	9.04	9.07	8.88	9.05	9.13

**72 hours**      Time:    15:25

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	14.9	14.8	14.8	15.0	14.7	14.8
pH	8.26	8.20	8.09	8.05	8.06	8.00
Conductivity @ 25°C (µmhos/cm):	852	775	695	616	534	462
Dissolved Oxygen (mg/L):	9.07	8.93	8.82	8.69	9.17	9.23

**96 hours**      Time:    14:00

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	14.8	14.7	14.7	14.9	14.7	14.7
pH	8.41	8.27	8.23	8.18	8.26	8.22
Conductivity @ 25°C (µmhos/cm):	853	775	695	615	535	462
Dissolved Oxygen (mg/L):	9.07	8.96	9.03	8.85	9.19	9.28



Work Order: 0072601

**7. SUBLETHAL BIOLOGICAL EFFECTS**

Sample Conc (%)	Time(s) Observed (h)	Effect(s) Observed

**8. OBSERVATIONS / COMMENTS**

N/A

**9. RESULTS**

96-hour LC<sub>50</sub> v/v (%) >100  
 95% Lower Confidence Interval v/v (%) N/A  
 95% Upper Confidence Interval v/v (%) N/A  
 Method of Calculation: N/A  
 Confirmed by Graph: N/A

**10. REFERENCE TOXICANT DATA**

Toxicant: Phenol  
 Test Starting Date: July 16, 2020  
 96-hour LC<sub>50</sub> (mg/L) 10.95  
 95% Lower Confidence Interval v/v (%) 10.34  
 95% Upper Confidence Interval v/v (%) 11.60  
 Method of Calculation: Binomial  
 Confirmed by Graph: Yes  
 Historic Geometric Mean LC<sub>50</sub> (mg/L) 9.95  
 95% Lower Confidence Interval v/v (%) 8.23  
 95% Upper Confidence Interval v/v (%) 12.04

Data reviewed by: Aynura Rakhmangulova

Signature: \_\_\_\_\_



# **APPENDIX L**

## **Effluent 2020 Lab and RDOS Process Monitoring Data**





DATE	TIME (24HR)	* DAILY/WEEKLY/ MONTHLY/QUARTERLY/RE-SAMPLE	TEMP (HACH) or In-situ	pH Grab (RDO5) In-situ online probe	pH Grab (CARO)	TOTAL SUSPENDED SOLIDS (RDO5)	TOTAL SUSPENDED SOLIDS (CARO)	TOTAL SUSPENDED SOLIDS MAC	FECAL COLIFORMS (CARO)	E. COLI (CARO)	E. COLI MAC (Apr 15-Oct 15)	E. COLI MAC (Oct 16-Apr 14)
dd/mm/yr	HR:MIN	D/W/M/Q	°C			mg/L	mg/L	mg/L	MPN/100ml	MPN/100ml	CFU/100ml	CFU/100ml
08-Jan-20	13:36	W	11.6	6.86		1.6	<2	10	<1	<1		50
15-Jan-20	10:48	W	8.5	6.87		1.3	<2	10	<1	<1		50
21-Jan-20	10:30	Q	10.4	6.84	7.7	1	2.8	10	<1	<1		50
29-Jan-20	10:21	W	10.9	7.13		1.2	<2	10	<1	<1		50
05-Feb-20	10:27	W	9.8	7.15		<1	<4	10	<1	<1		50
12-Feb-20	10:15	W	10.5	7.13		<1	<2	10	<1	<1		50
19-Feb-20	11:27	M	10.0	7.13	7.7	<1	2.2	10	<1	<1		50
26-Feb-20	11:17	W	10.6	7.12		1.3	<2	10	<1	<1		50
04-Mar-20	10:24	W	11.1	7.05		1.8	<2	10	<1	<1		50
11-Mar-20	10:02	W	11.2	7.01		1.6	<2	10	<1	<1		50
18-Mar-20	12:55	M	10.5	7.01	7.6	2	<2	10	<1	<1		50
25-Mar-20	10:33	W	11.5	6.95		1.3	<2	10	<1	<1		50
01-Apr-20	11:20	W	11.9	6.94			2.6	10	<1	<1		50
08-Apr-20	10:45	W	12.5	6.93			3.4	10	<1	<1		50
15-Apr-20	13:45	Q	13.4	6.97	7.9		<2	10	<1	<1	2.2	
22-Apr-20	11:25	W	11.0	6.92			<2	10	<1	<1	2.2	
29-Apr-20	11:40	W	15.1	6.92			<2	10	<1	<1	2.2	
06-May-20	10:15	W	15.4	6.88		2.2	<2	10	<1	<1	2.2	
13-May-20	10:32	M	16.6	6.94	7.7		<2	10	<1	<1	2.2	
20-May-20	8:03	W	17.0	6.89		<1	<2	10	<1	<1	2.2	
27-May-20	10:11	W	17.4	6.89		1.1	2.6	10	<1	<1	2.2	
03-Jun-20	7:55	W	17.6	6.9		<1	<2	10	<1	<1	2.2	
10-Jun-20	13:55	M	18.3	6.84	7.4	1.6	<4.0	10	<1	<1	2.2	
17-Jun-20	12:22	W	18.4	6.85		<1	2.2	10	<1	<1	2.2	
24-Jun-20	10:48	W	19.6	6.91		<1	<2.0	10	1	1	2.2	
29-Jun-20	10:12	W	19.4	6.91		1.2	<2.0	10	<1	<1	2.2	
08-Jul-20	11:38	W	20.0	6.91			<2.0	10	<1	<1	2.2	
13-Jul-20	8:40	D	19.6	7				10			2.2	
15-Jul-20	8:00	W	19.8	6.95		<1	<2.0	10	<1	<1	2.2	
20-Jul-20	9:30	D	20.3	6.92				10			2.2	
22-Jul-20	13:10	Q	22.1	6.89	7.8	<1	<2.0	10	<1	<1	2.2	
27-Jul-20	11:35	D	21.5	6.97				10			2.2	
29-Jul-20	11:38	W	21.7	7		<1	<2.0	10	<1	<1	2.2	
05-Aug-20	10:15	W	21.9	6.95			<2.0	10	<1	<1	2.2	
12-Aug-20	10:43	W	21.6	6.87			<2.0	10	<1	<1	2.2	
19-Aug-20	13:05	M	22.7	6.86	8.0	<1	<2.0	10	<1	<1	2.2	
26-Aug-20	8:05	W	21.3	6.92		<1	<2.0	10	<1	<1	2.2	
02-Sep-20	13:00	W	21.7	6.93		<1	<2.0	10	<1	<1	2.2	
09-Sep-20	10:30	W	21.0	6.95		<1	<2.0	10	<1	<1	2.2	
16-Sep-20	13:25	W	21.6	6.94		<1	<2.0	10	<1	<1	2.2	
23-Sep-20	11:15	M	20.8	6.92	8.0	<1	<2.0	10	<1	<1	2.2	
01-Oct-20	10:50	W	19.7	6.93		<1	<2.0	10	<1	<1	2.2	
07-Oct-20	8:10	W	19.7	6.9		<1	<2.0	10	<1	<1	2.2	
14-Oct-20	11:00	Q	18.3	6.85	7.8	<1	<2.0	10	<1	<1	2.2	
21-Oct-20	10:50	W	17.7	6.88		1	<2.0	10	<1	<1		50
28-Oct-20	10:35	W	15.4	6.85		1	<2.0	10	<1	<1		50
04-Nov-20	12:40	W	15.7	6.88		<1	<2.0	10	<1	<1		50
09-Nov-20	9:40	W	14.2	6.89		1.2	<2.0	10	<1	<1		50
17-Nov-20	13:12	M	13.9	6.85	7.8	1.6	<2.0	10	<1	<1		50
24-Nov-20	10:05	W	13.6	6.89		<1	<2.0	10	<1	<1		50
02-Dec-20	10:45	W	12.6	6.88		1.1	<5.0	10	<1	<1		50
09-Dec-20	11:05	M	12.6	6.9	7.9	1.7	<2.0	10	<1	<1		50
16-Dec-20	10:45	W	12.2	7.06		1.7	<2.0	10	<1	<1		50
22-Dec-20	10:10	W	12.0	7.02		1.2	<2.0	10	<1	<1		50
29-Dec-20	9:25	W	11.7	6.91		1.7	<2.7	10	<1	<1		50
<b>Average</b>			15.9	6.94	7.79	1.2	1.3		<1	<1		
<b>n</b>			55	55	14	43	54		52	52		
<b>Std. Dev.</b>			4.3	0.08	0.16	0.3	0.6		0	0		
<b>Min</b>			8.5	6.84	7.42	<1	<2		<1	<1		
<b>Max</b>			22.7	7.15	8.04	2.2	3.4		1.0	1.0		

<b>Total Loadings From WWTP, kg/yr</b>						259	280					
<b>Loadings From WWTP To River, kg/yr</b>						235	254					
<b>Loadings to Wetland, kg/yr</b>						24	26					
<b>Loadings From Wetland to River, kg/yr</b>						3.2	5.8					
<b>Total Loadings to River, kg/yr</b>						238	260					
<b>Reduction in Loadings to River, kg/yr</b>						21	20					

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
01-Jan-20	74.15	91.9	0.05	2.40	1.25	11.7	6.81
02-Jan-20	73.24	91.7	0.05	2.24	1.05	11.8	6.81
03-Jan-20	72.21	90.8	0.06	1.99	0.76	11.9	6.82
04-Jan-20	71.53	91.2	0.05	1.94	0.68	11.9	6.81
05-Jan-20	76.38	93.7	0.05	1.73	0.53	11.7	6.79
06-Jan-20	75.01	93.7	0.07	2.90	0.83	11.7	6.80
07-Jan-20	73.89	92.9	0.06	2.07	0.83	11.8	6.82
08-Jan-20	72.52	93.1	0.06	3.01	0.54	11.7	6.86
09-Jan-20	72.61	93.0	0.07	3.43	0.52	11.4	6.84
10-Jan-20	72.16	92.0	0.07	3.00	0.57	11.0	6.87
11-Jan-20	71.53	94.1	0.06	3.46	0.96	11.2	6.86
12-Jan-20	71.20	93.1	0.06	2.82	1.48	11.0	6.88
13-Jan-20	71.30	92.9	0.05	3.34	1.60	9.4	6.91
14-Jan-20	71.74	92.3	0.05	3.70	2.29	8.7	6.88
15-Jan-20	71.54	92.1	0.05	2.44	3.85	8.5	6.88
16-Jan-20	72.68	91.9	0.05	2.03	4.21	8.2	6.90
17-Jan-20	72.66	92.1	0.05	2.55	3.38	8.7	6.88
18-Jan-20	71.98	92.7	0.05	2.97	3.34	9.2	6.86
19-Jan-20	71.86	93.0	0.05	2.42	4.49	9.9	6.88
20-Jan-20	72.21	93.0	0.09	2.14	4.11	10.4	6.89
21-Jan-20	72.08	93.3	0.05	2.23	2.93	10.5	6.87
22-Jan-20	72.07	93.2	0.06	2.47	2.49	10.7	6.85
23-Jan-20	71.91	92.6	0.05	2.72	2.67	10.9	6.84
24-Jan-20	71.83	92.9	0.07	2.85	2.51	11.0	6.84
25-Jan-20	70.48	93.2	0.05	2.85	2.53	11.1	6.84
26-Jan-20	70.53	93.5	0.06	3.10	2.89	11.1	6.86
27-Jan-20	69.71	92.3	0.06	2.34	3.27	11.2	6.88
28-Jan-20	70.76	92.0	0.06	1.95	2.98	11.2	7.02
29-Jan-20	71.14	92.7	0.06	3.12	1.65	10.8	7.14
30-Jan-20	71.68	93.0	0.05	3.19	1.21	10.6	7.14
31-Jan-20	72.00	93.0	0.05	3.21	1.17	10.6	7.14
01-Feb-20	71.34	93.1	0.05	3.14	1.14	10.7	7.17
02-Feb-20	70.78	93.1	0.05	3.14	1.62	10.6	7.15
03-Feb-20	71.83	93.1	0.05	2.83	1.57	10.5	7.17
04-Feb-20	71.63	93.1	0.05	3.47	1.14	10.0	7.16
05-Feb-20	71.68	93.6	0.06	4.67	0.99	9.8	7.16
06-Feb-20	71.90	93.4	0.06	4.10	1.16	9.8	7.15
07-Feb-20	72.20	92.9	0.05	3.82	1.29	10.0	7.15
08-Feb-20	72.17	93.0	0.05	3.51	1.40	10.1	7.15
09-Feb-20	72.30	93.4	0.05	3.50	1.37	10.2	7.14
10-Feb-20	72.49	93.5	0.05	3.48	1.26	10.5	7.15
11-Feb-20	71.91	94.1	0.05	3.79	0.89	10.5	7.15
12-Feb-20	73.04	92.9	0.06	3.52	0.78	10.4	7.14
13-Feb-20	72.70	92.1	0.05	3.38	0.80	10.1	7.14
14-Feb-20	71.31	92.2	0.06	3.18	0.98	10.0	7.14
15-Feb-20	71.74	94.2	0.05	3.72	1.27	10.0	7.15
16-Feb-20	71.80	93.7	0.05	3.76	1.55	10.1	7.14
17-Feb-20	71.00	91.9	0.05	3.15	1.61	10.2	7.14
18-Feb-20	71.74	92.7	0.06	3.18	1.21	10.2	7.15
19-Feb-20	71.65	92.6	0.06	3.49	0.76	9.9	7.13

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
20-Feb-20	72.07	92.1	0.06	3.11	0.82	9.8	7.13
21-Feb-20	71.91	92.3	0.06	2.90	0.78	10.0	7.13
22-Feb-20	72.46	93.4	0.06	2.89	0.65	10.2	7.12
23-Feb-20	72.15	94.1	0.07	2.94	0.91	10.4	7.11
24-Feb-20	72.11	92.9	0.07	2.65	0.77	10.6	7.12
25-Feb-20	71.92	93.0	0.07	3.00	0.56	10.6	7.09
26-Feb-20	71.89	91.2	0.07	2.01	0.52	10.6	7.09
27-Feb-20	71.55	92.0	0.07	2.37	0.59	10.8	7.09
28-Feb-20	71.37	92.9	0.08	3.34	0.42	10.8	7.07
29-Feb-20	71.11	93.0	0.08	3.10	0.57	10.8	7.07
01-Mar-20	72.20	93.2	0.20	3.56	1.36	10.9	7.05
02-Mar-20	75.56	93.5	0.05	3.60	1.85	11.0	7.05
03-Mar-20	74.75	92.8	0.07	2.37	0.67	11.1	7.07
04-Mar-20	73.27	92.6	0.06	2.59	0.41	11.1	7.04
05-Mar-20	73.17	93.3	0.05	2.84	0.39	11.0	7.04
06-Mar-20	73.26	91.6	0.05	1.91	0.42	11.2	7.03
07-Mar-20	73.04	91.6	0.05	1.95	0.57	11.4	7.03
08-Mar-20	72.56	93.6	0.05	2.88	0.91	11.4	7.02
09-Mar-20	72.53	93.6	0.05	2.93	0.95	11.3	7.03
10-Mar-20	72.88	92.1	0.05	2.41	0.58	11.2	7.02
11-Mar-20	72.93	93.0	0.05	2.25	0.55	11.3	7.01
12-Mar-20	72.76	91.7	0.05	2.32	0.58	11.4	7.01
13-Mar-20	72.60	92.2	0.05	2.81	0.57	11.1	7.02
14-Mar-20	72.40	91.9	0.05	2.73	0.85	10.4	7.05
15-Mar-20	72.27	91.8	0.05	2.65	1.34	9.9	7.05
16-Mar-20	72.14	91.9	0.05	2.57	1.37	9.9	7.04
17-Mar-20	72.02	90.1	0.05	1.71	0.94	10.3	7.00
18-Mar-20	70.49	92.7	0.05	2.69	0.72	10.5	6.99
19-Mar-20	71.14	90.7	0.05	2.89	0.99	10.6	6.98
20-Mar-20	70.12	92.6	0.05	3.14	1.01	10.9	6.97
21-Mar-20	70.83	91.5	0.05	3.15	0.92	11.0	6.97
22-Mar-20	70.59	91.3	0.05	2.69	1.08	11.2	6.98
23-Mar-20	69.88	92.5	0.05	2.79	1.19	11.4	6.97
24-Mar-20	69.55	91.7	0.05	2.59	1.09	11.5	6.96
25-Mar-20	69.73	89.8	0.05	2.09	1.24	11.5	6.96
26-Mar-20	69.13	91.4	0.05	3.03	1.18	11.6	6.95
27-Mar-20	69.16	91.0	0.05	2.85	1.13	11.8	6.93
28-Mar-20	69.53	90.9	0.05	2.56	1.15	12.0	6.93
29-Mar-20	69.66	90.8	0.05	2.03	1.46	12.3	6.95
30-Mar-20	69.20	90.6	0.05	1.69	1.29	12.4	6.96
31-Mar-20	68.33	91.5	0.05	2.13	1.01	12.3	6.92
01-Apr-20	69.02	91.9	0.05	2.50	1.22	11.8	6.95
02-Apr-20	69.49	91.1	0.05	2.36	1.49	11.7	6.94
03-Apr-20	69.95	91.3	0.05	2.68	1.35	11.7	6.94
04-Apr-20	69.98	91.2	0.05	2.60	1.71	11.5	6.94
05-Apr-20	70.35	91.1	0.05	2.35	1.89	11.7	6.95
06-Apr-20	70.72	91.3	0.06	2.44	1.23	12.0	6.94
07-Apr-20	70.53	91.2	0.06	2.76	0.76	12.3	6.93
08-Apr-20	70.22	92.4	0.06	2.97	0.73	12.5	6.92
09-Apr-20	70.04	92.0	0.07	3.21	0.78	12.6	6.92

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
10-Apr-20	70.09	92.1	0.07	3.22	0.75	12.9	6.94
11-Apr-20	69.70	91.8	0.07	3.09	1.03	12.8	6.97
12-Apr-20	69.75	92.0	0.05	2.87	1.18	12.6	6.97
13-Apr-20	69.78	91.8	0.05	2.61	1.09	12.6	6.96
14-Apr-20	69.36	92.2	0.05	2.71	0.67	12.9	6.94
15-Apr-20	69.19	92.6	0.05	2.80	0.45	13.2	6.95
16-Apr-20	69.37	91.4	0.05	2.43	0.44	13.3	6.93
17-Apr-20	68.64	91.3	0.06	2.48	0.43	13.4	6.93
18-Apr-20	68.64	91.9	0.07	2.95	0.54	13.6	6.93
19-Apr-20	67.81	92.6	0.05	3.00	0.69	13.8	6.92
20-Apr-20	68.21	91.7	0.05	2.32	0.78	14.1	6.92
21-Apr-20	68.37	91.6	0.05	2.15	0.54	14.4	6.93
22-Apr-20	68.22	91.5	0.05	2.62	0.60	14.5	6.92
23-Apr-20	68.03	91.2	0.05	2.44	0.45	14.4	6.91
24-Apr-20	68.53	91.5	0.06	2.27	0.34	14.5	6.92
25-Apr-20	69.39					14.7	6.91
26-Apr-20	70.61	91.2	0.07		0.53	14.7	6.92
27-Apr-20	69.24	91.3	0.06		0.83	14.9	6.93
28-Apr-20	68.71	91.5	0.06		0.78	15.0	6.92
29-Apr-20	68.76	91.8	0.05		0.23	15.0	6.92
30-Apr-20	68.47	91.9	0.05		0.24	15.1	6.92
01-May-20	68.40		0.05		0.40	15.1	6.91
02-May-20	68.58	91.0	0.05	1.90	0.78	15.2	6.92
03-May-20	68.44	92.3	0.05	2.16	1.24	15.2	6.92
04-May-20	68.82	92.3	0.05	1.71	1.06	15.1	6.93
05-May-20	68.77	92.4	0.06	1.61	0.88	15.3	6.91
06-May-20	68.57	92.3	0.06	1.35	1.13	15.4	6.92
07-May-20	68.33	92.5	0.06	1.31	1.52	15.4	6.93
08-May-20	68.85	91.4	0.06	1.06	1.14	15.6	6.93
09-May-20	69.52	92.2	0.07	1.06	1.00	15.8	6.93
10-May-20	70.02	92.4	0.06	0.90	1.44	16.1	6.94
11-May-20	69.99	92.4	0.06	0.72	2.11	16.4	6.95
12-May-20	69.87	92.5	0.05	0.64	1.96	16.6	6.95
13-May-20	69.71	92.4	0.05	1.05	0.91	16.6	6.93
14-May-20	69.56	92.0	0.05	0.98	0.95	16.7	6.93
15-May-20	69.06	92.1	0.06	1.22	1.15	16.7	6.91
16-May-20	69.26	92.7	0.05	1.25	1.16	16.7	6.91
17-May-20	69.17	92.2	0.05	1.22	1.20	16.7	6.90
18-May-20	69.01	92.3	0.06	1.07	1.44	16.8	6.89
19-May-20	69.28	91.8	0.06	0.40	1.12	17.0	6.91
20-May-20	69.32	92.0	0.06	0.50	0.90	17.3	6.89
21-May-20	69.81	91.5	0.07	0.71	0.72	17.1	6.88
22-May-20	70.71	92.0	0.07	0.82	0.75	16.9	6.86
23-May-20	70.70	91.3	0.07	0.71	0.62	16.9	6.86
24-May-20	70.60	92.7	0.07	0.90	0.71	17.1	6.84
25-May-20	71.06	92.0	0.05	0.99	0.45	17.3	6.84
26-May-20	71.35	92.0	0.05	1.07	0.30	17.4	6.85
27-May-20	71.48	92.6	0.05	1.61	0.47	17.5	6.85
28-May-20	71.63	91.5	0.05	1.36	0.80	17.6	6.83
29-May-20	71.51	90.5	0.05	1.19	0.87	17.9	6.83



## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
30-May-20	71.19	91.8	0.06	1.98	0.68	18.1	6.84
31-May-20	71.15	91.1	0.05	1.70	0.63	18.1	6.85
01-Jun-20	71.28	92.2	0.05	2.01	0.71	17.9	6.87
02-Jun-20	71.48	91.8	0.05	1.98	0.68	17.8	6.89
03-Jun-20	71.59	92.5	0.05	2.35	0.64	17.8	6.90
04-Jun-20	71.62	91.8	0.06	2.21	0.66	17.9	6.88
05-Jun-20	71.90	91.5	0.05	1.96	0.80	18.0	6.86
06-Jun-20	71.95	91.8	0.06	2.07	0.81	17.9	6.85
07-Jun-20	72.42	92.5	0.06	1.90	0.96	17.8	6.86
08-Jun-20	72.39	92.6	0.06	2.22	1.03	17.8	6.86
09-Jun-20	72.22	92.3	0.05	2.24	0.76	17.7	6.85
10-Jun-20	72.55	92.8	0.05	2.46	1.21	17.9	6.83
11-Jun-20	72.78	92.1	0.05	2.01	1.21	18.2	6.84
12-Jun-20	72.45	92.2	0.05	1.91	1.43	18.4	6.85
13-Jun-20	72.50	92.5	0.05	2.01	1.36	18.0	6.87
14-Jun-20	71.97	92.2	0.06	2.36	1.33	17.9	6.85
15-Jun-20	72.12	92.4	0.05	2.20	1.30	17.8	6.86
16-Jun-20	72.84	93.9	0.05	2.73	0.87	18.0	6.85
17-Jun-20	72.73	94.1	0.06	3.20	1.28	18.1	6.84
18-Jun-20	72.95	91.8	0.07	2.71	2.12	18.3	6.84
19-Jun-20	75.44	93.4	0.06	3.49	1.35	18.7	6.84
20-Jun-20	76.56	93.9	0.06	3.53	1.25	19.0	6.87
21-Jun-20	77.09	94.1	0.06	3.22	1.22	19.1	6.87
22-Jun-20	77.88	94.4	0.08	2.27	1.08	19.2	6.88
23-Jun-20	78.39	94.5	0.07	2.44	0.70	19.4	6.87
24-Jun-20	78.62	94.4	0.07	2.66	0.70	19.5	6.88
25-Jun-20	78.12	94.3	0.09	3.01	0.69	19.7	6.88
26-Jun-20	79.87	94.4	0.10	3.01	0.72	19.8	6.89
27-Jun-20	80.37	94.9	0.11	3.29	0.86	19.7	6.91
28-Jun-20	79.43	94.6	0.09	4.26	0.80	19.4	6.91
29-Jun-20	78.26	93.6	0.12	3.87	0.94	19.6	6.94
30-Jun-20	79.57	93.9	0.09	3.50	0.70	19.7	6.96
01-Jul-20	78.80	94.8	0.09	4.74	0.57	19.5	6.95
02-Jul-20	78.72	94.5	0.09	4.65	0.58	19.5	6.94
03-Jul-20	77.78	94.4	0.08	4.48	0.46	19.3	6.94
04-Jul-20	78.47	93.6	0.07	3.55	0.71	19.4	6.94
05-Jul-20	79.44	93.7	0.09	3.31	0.75	19.6	6.93
06-Jul-20	79.54	93.8	0.09	3.39	0.38	20.0	6.93
07-Jul-20	79.92	94.0	0.10	2.94	0.31	19.9	6.97
08-Jul-20	80.12	94.1	0.11	3.71	0.55	19.9	6.91
09-Jul-20	80.70	94.4	0.07	2.94	0.29	19.8	6.91
10-Jul-20	79.57	94.2	0.11	3.24	0.26	20.2	6.93
11-Jul-20	80.76	94.3	0.13	3.91	0.48	20.1	6.95
12-Jul-20	80.89	94.5	0.13	3.96	0.50	19.9	6.95
13-Jul-20	80.84	94.2	0.10	4.25	0.42	19.9	6.95
14-Jul-20	76.36	93.9	0.13	3.59	0.53	20.0	6.93
15-Jul-20	80.88	94.1	0.11	3.46	0.36	20.2	6.92
16-Jul-20	80.90	94.4	0.13	2.98	0.28	20.6	6.95
17-Jul-20	80.90	95.1	0.23	3.27	0.48	20.8	6.94
18-Jul-20	80.90	95.0	0.14	3.44	0.50	20.9	6.90

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
19-Jul-20	80.88	95.0	0.13	3.42	0.47	20.9	6.90
20-Jul-20	80.79	95.3	0.12	3.09	0.31	21.1	6.92
21-Jul-20	80.69	95.1	0.13	3.33	0.33	21.5	6.90
22-Jul-20	80.90	95.3	0.13	3.07	0.27	21.7	6.89
23-Jul-20	80.89	95.2	0.12	3.26	0.25	21.7	6.91
24-Jul-20	80.79	95.1	0.09	3.77	0.32	21.4	6.92
25-Jul-20	80.74	94.3	0.10	4.25	0.51	21.2	6.94
26-Jul-20	80.85	94.1	0.08	4.55	0.63	21.2	6.95
27-Jul-20	80.61	94.0	0.08	4.74	0.41	21.4	6.97
28-Jul-20	80.67	93.9	0.08	3.25	0.24	21.6	6.96
29-Jul-20	80.71	94.1	0.08	2.90	0.33	21.8	6.97
30-Jul-20	80.89	94.0	0.10	2.84	0.41	22.0	6.96
31-Jul-20	80.88	93.9	0.09	2.28	0.49	22.1	6.95
01-Aug-20	80.56	93.5	0.10	2.39	0.97	22.1	6.96
02-Aug-20	80.40	94.6	0.08	3.16	0.75	22.1	6.93
03-Aug-20	80.08	94.4	0.08	2.69	0.51	22.0	6.93
04-Aug-20	79.99	93.7	0.13	2.07	0.33	22.0	6.95
05-Aug-20	80.44	94.0	0.11	1.94	0.31	22.0	6.96
06-Aug-20	80.59	93.9	0.12	1.82	0.27	22.0	6.99
07-Aug-20	78.27	93.8	0.10	2.37	0.60	21.8	6.92
08-Aug-20	77.67	94.3	0.09	2.51	0.68	21.7	6.82
09-Aug-20	77.85	94.2	0.09	2.46	0.79	21.6	6.85
10-Aug-20	77.98	94.2	0.10	2.21	0.57	21.7	6.85
11-Aug-20	78.08	94.3	0.10	2.14	0.42	21.8	6.86
12-Aug-20	77.85	94.3	0.10	2.47	0.46	21.6	6.87
13-Aug-20	78.15	94.3	0.09	2.60	0.57	21.5	6.86
14-Aug-20	78.17	94.3	0.09	2.64	0.73	21.5	6.85
15-Aug-20	78.11	94.3	0.11	2.37	0.82	21.7	6.87
16-Aug-20	78.24	95.3	0.12	2.27	1.16	22.0	6.87
17-Aug-20	78.17	95.4	0.13	1.82	0.97	22.3	6.88
18-Aug-20	78.53	94.7	0.14	1.62	0.76	22.5	6.87
19-Aug-20	78.34	93.9	0.13	1.32	0.61	22.4	6.86
20-Aug-20	77.97	93.7	0.11	1.82	0.41	22.4	6.87
21-Aug-20	77.86	94.7	0.12	2.33	0.41	22.4	6.88
22-Aug-20	77.61	94.7	0.13	2.18	0.80	22.2	6.89
23-Aug-20	77.54	94.7	0.11	2.31	0.73	22.0	6.88
24-Aug-20	77.38	94.8	0.09	2.09	0.38	21.7	6.90
25-Aug-20	76.70	95.0	0.10	2.26	0.35	21.5	6.90
26-Aug-20	76.70	94.9	0.10	2.47	0.46	21.6	6.89
27-Aug-20	77.50	94.8	0.09	2.41	0.41	21.5	6.89
28-Aug-20	77.42	94.3	0.10	2.34	0.73	21.6	6.89
29-Aug-20	77.77	94.7	0.11	2.38	0.73	21.5	6.90
30-Aug-20	77.24	94.5	0.10	2.43	1.18	21.3	6.90
31-Aug-20	77.00	93.7	0.09	1.59	1.10	21.3	6.91
01-Sep-20	77.03	93.6	0.09	1.37	0.64	21.4	6.89
02-Sep-20	78.21	95.0	0.10	1.86	0.37	21.7	6.91
03-Sep-20	77.79	94.7	0.11	2.20	0.51	21.7	6.91
04-Sep-20	77.76	94.2	0.11	2.21	0.92	21.7	6.92
05-Sep-20	77.97	94.1	0.12	2.20	0.91	21.7	6.92
06-Sep-20	78.11	93.9	0.10	2.04	0.94	21.7	6.89

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
07-Sep-20	78.62	93.6	0.09	1.56	0.76	21.5	6.92
08-Sep-20	77.21	93.3	0.09	2.04	0.54	21.3	6.92
09-Sep-20	77.13	94.1	0.08	2.66	0.42	21.1	6.92
10-Sep-20	77.23	94.0	0.10	2.30	0.34	21.1	6.88
11-Sep-20	76.52	93.0	0.11	2.19	0.45	21.2	6.89
12-Sep-20	77.08	93.6	0.08	1.90	0.44	21.3	6.93
13-Sep-20	77.82	94.2	0.10	1.84	0.46	21.3	6.93
14-Sep-20	77.45	94.1	0.09	1.94	0.40	21.2	6.93
15-Sep-20	77.32	94.0	0.08	2.06	0.38	21.4	6.93
16-Sep-20	77.15	94.1	0.07	2.29	0.30	21.5	6.92
17-Sep-20	77.39	94.2	0.08	2.41	0.35	21.4	6.94
18-Sep-20	77.30	93.7	0.08	2.62	0.36	21.3	6.94
19-Sep-20	77.11	93.4	0.10	2.51	0.39	21.3	6.92
20-Sep-20	77.26	93.3	0.08	2.17	0.49	21.1	6.94
21-Sep-20	77.79	93.9	0.07	1.56	0.34	20.9	6.95
22-Sep-20	77.52	94.5	0.08	1.84	0.32	20.8	6.94
23-Sep-20	77.30	94.2	0.08	2.39	0.34	20.8	6.93
24-Sep-20	77.22	93.2	0.09	2.38	0.32	20.6	6.92
25-Sep-20	76.99	93.9	0.07	2.89	0.33	20.2	6.93
26-Sep-20	77.13	93.8	0.06	2.88	0.31	19.8	6.92
27-Sep-20	77.36	93.9	0.06	2.71	0.36	19.7	6.90
28-Sep-20	77.15	93.9	0.06	2.55	0.38	19.8	6.92
29-Sep-20	77.14	94.0	0.08	2.20	0.32	19.8	6.91
30-Sep-20	77.29	94.2	0.11	2.50	0.33	19.8	6.92
01-Oct-20	77.81	94.2	0.06	2.56	0.32	19.8	6.92
02-Oct-20	77.82	94.4	0.08	2.00	0.46	19.7	6.91
03-Oct-20	77.32	93.8	0.09	2.72	0.44	19.7	6.90
04-Oct-20	77.31	94.0	0.10	3.04	0.42	19.7	6.90
05-Oct-20	77.42	94.1	0.13	3.10	0.44	19.7	6.91
06-Oct-20	78.07	94.2	0.32	3.46	0.44	19.8	6.90
07-Oct-20	78.52	93.9	0.32	3.13	0.49	19.9	6.88
08-Oct-20	77.90	93.8	0.21	3.42	0.41	19.9	6.90
09-Oct-20	77.38	93.5	0.27	3.28	0.59	19.8	6.85
10-Oct-20	76.81	93.0	0.10	2.60	0.63	19.6	6.84
11-Oct-20	76.91	93.2	0.10	2.74	0.36	19.3	6.82
12-Oct-20	76.84	93.1	0.07	2.88	0.43	18.9	6.84
13-Oct-20	77.02	93.2	0.06	2.80	0.26	18.5	6.87
14-Oct-20	76.81	93.2	0.07	3.00	0.19	18.3	6.86
15-Oct-20	76.74	93.4	0.09	3.60	0.23	18.3	6.85
16-Oct-20	76.65	93.0	0.10	3.83	0.21	18.1	6.87
17-Oct-20	76.31	92.7	0.16	4.07	0.26	17.9	6.87
18-Oct-20	75.86	92.5	0.09	3.73	0.39	17.8	6.87
19-Oct-20	76.27	92.8	0.08	3.21	0.33	17.7	6.87
20-Oct-20	77.35	93.1	0.06	2.64	0.23	17.7	6.87
21-Oct-20	77.22	93.2	0.08	3.38	0.27	17.3	6.87
22-Oct-20	77.26	92.7	0.07	3.66	0.27	16.9	6.85
23-Oct-20	77.76	92.6	0.08	5.42	0.37	16.6	6.97
24-Oct-20	78.14	93.0	0.14	4.54	0.68	16.0	6.86
25-Oct-20	78.37	93.7	0.06	4.07	0.51	15.5	6.84
26-Oct-20	78.62	93.8	0.06	4.15	0.68	15.4	6.85

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
27-Oct-20	79.22	93.8	0.06	3.76	0.79	15.3	6.85
28-Oct-20	79.61	94.0	0.06	4.57	0.39	15.4	6.85
29-Oct-20	79.58	94.2	0.10	4.52	0.40	15.5	6.84
30-Oct-20	79.49	94.1	0.08	4.16	0.42	15.8	6.86
31-Oct-20	79.30	94.6	0.13	4.09	0.46	15.8	6.85
01-Nov-20	79.64	94.5	0.09	3.83	0.52	15.7	6.87
02-Nov-20	79.93	94.4	0.08	3.61	0.47	15.6	6.88
03-Nov-20	79.78	94.3	0.06	3.82	0.45	15.6	6.88
04-Nov-20	79.90	94.4	0.06	4.60	0.47	15.7	6.87
05-Nov-20	79.74	94.4	0.22	4.46	0.46	16.0	6.87
06-Nov-20	79.68	94.0	0.15	4.62	0.33	15.6	6.89
07-Nov-20	79.38	93.8	0.05	4.82	0.28	15.0	6.89
08-Nov-20	79.17	93.8	0.06	4.82	0.28	14.3	6.91
09-Nov-20	78.69	93.8	0.06	4.82	0.28	14.1	6.90
10-Nov-20	78.80	93.8	0.06	4.82	0.28	14.2	6.88
11-Nov-20	78.69	93.8	0.07	4.82	0.28	14.3	6.87
12-Nov-20	78.53	93.8	0.07	4.82	0.28	14.3	6.88
13-Nov-20	78.37	92.9	0.07	4.57	0.52	13.8	6.89
14-Nov-20	78.56	92.3	0.08	3.87	0.68	13.9	6.88
15-Nov-20	78.83	93.3	0.08	4.00	0.87	13.8	6.88
16-Nov-20	78.65	93.5	0.05	3.93	0.75	13.9	6.85
17-Nov-20	79.14	93.6	0.05	3.93	0.48	13.9	6.85
18-Nov-20	79.62	93.7	0.06	4.04	0.46	14.0	6.83
19-Nov-20	79.02	93.5	0.06	4.18	0.53	14.0	6.84
20-Nov-20	79.01	93.5	0.06	4.80	0.52	13.8	6.85
21-Nov-20	79.48	93.6	0.07	4.56	0.71	13.7	6.86
22-Nov-20	78.93	93.6	0.06	4.52	0.87	13.7	6.87
23-Nov-20	78.64	93.4	0.05	4.08	0.69	13.8	6.88
24-Nov-20	78.84	93.6	0.05	3.96	0.45	13.5	6.89
25-Nov-20	78.73	93.7	0.05	4.31	0.45	13.4	6.87
26-Nov-20	79.13	93.8	0.05	4.49	0.50	13.2	6.87
27-Nov-20	79.28	93.3	0.05	4.23	0.49	13.1	6.88
28-Nov-20	79.30	92.8	0.05	3.51	0.61	13.1	6.87
29-Nov-20	79.26	92.8	0.05	3.55	0.99	13.1	6.88
30-Nov-20	79.09	92.9	0.05	3.16	0.74	13.1	6.90
01-Dec-20	79.00	93.0	0.05	3.16	0.46	13.1	6.89
02-Dec-20	79.33	93.1	0.05	3.55	0.53	12.8	6.87
03-Dec-20	79.56	93.1	0.05	3.56	0.63	12.6	6.88
04-Dec-20	79.52	93.0	0.05	4.05	0.77	12.5	6.88
05-Dec-20	79.63	92.9	0.05	4.44	0.80	12.3	6.89
06-Dec-20	79.05	92.7	0.05	3.97	1.05	12.2	6.91
07-Dec-20	78.55	92.9	0.05	3.38	0.88	12.1	6.92
08-Dec-20	78.12	92.5	0.05	3.23	0.42	12.3	6.91
09-Dec-20	78.24	92.5	0.05	3.48	0.39	12.5	6.91
10-Dec-20	78.43	92.5	0.05	3.57	0.44	12.7	6.97
11-Dec-20	78.00	92.6	0.05	3.10	0.55	12.7	7.04
12-Dec-20	77.44	92.6	0.05	2.61	0.71	12.7	7.06
13-Dec-20	77.60	92.8	0.05	2.83	0.96	12.4	7.07
14-Dec-20	77.74	93.1	0.05	2.42	0.87	12.4	7.08
15-Dec-20	77.47	93.1	0.05	2.49	0.65	12.2	7.07

## 24 hour Averages from 0:00 hrs to 24:00 hrs

DATE	WEDECO	CHEMSCAN			HACH		
	TRANSMITTANCE @ 254 nm	TRANSMITTANCE @ 440 nm	ORTHOPHOSPHATE as P	NITRATE + NITRITE as N	AMMONIUM as N	TEMPERATURE	pH
dd/mm/yr	% [1cm]	%UVT	mg/L	mg/L	mg/L	°C	
16-Dec-20	77.15	92.5	0.05	2.57	0.59	12.2	7.06
17-Dec-20	77.42	92.0	0.05	1.91	0.66	12.3	7.06
18-Dec-20	77.10	92.2	0.05	2.26	0.75	12.2	7.05
19-Dec-20	76.89	92.3	0.05	2.28	0.82	12.2	7.04
20-Dec-20	76.57	92.2	0.05	1.98	0.89	12.4	7.02
21-Dec-20	76.54	92.3	0.05	1.62	1.02	12.4	7.01
22-Dec-20	76.87	92.2	0.05	1.27	0.85	12.0	7.01
23-Dec-20	76.98	92.3	0.05	2.28	0.77	11.7	6.95
24-Dec-20	76.81	93.4	0.05	2.46	1.28	11.5	6.93
25-Dec-20	77.03	92.9	0.05	1.84	1.39	11.5	6.93
26-Dec-20	76.37	92.0	0.05	1.29	1.72	11.6	6.95
27-Dec-20	75.00	91.3	0.05	1.31	2.21	11.7	6.94
28-Dec-20	74.88	90.7	0.05	1.84	1.99	11.8	6.91
29-Dec-20	75.25	91.0	0.05	2.06	1.20	11.7	6.92
30-Dec-20	75.16	90.8	0.05	2.17	1.10	11.3	6.92
31-Dec-20	75.31	90.4	0.05	1.97	1.01	11.5	6.91
<b>Average</b>	74.96	93.05	0.07	2.78	0.85	15.7	6.93
<b>n</b>	366	364	365	359	365	366.0	366
<b>Std. Dev.</b>	3.93	1.13	0.03	0.94	0.63	4.2	0.08
<b>Min</b>	67.81	89.81	0.05	0.40	0.19	8.2	6.79
<b>Max</b>	80.90	95.39	0.32	5.42	4.49	22.5	7.17
<b>Total Loadings From WWTP, kg/yr</b>			16	600	184		
<b>Loadings From WWTP To River, kg/yr</b>			14	544	167		
<b>Loadings to Wetland, kg/yr</b>			1	56	17		
<b>Total Loadings to River, kg/yr</b>			16	600	184		
<b>Reduction in Loadings to River, kg/yr</b>			1	56	17		

DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
02-Jan-20	01-Jan-20	KM	0.08	0.177	0.177	0.20	0.010	0.97	2.68	0.059	1.65	5.36	5.36	10.0	6.0	7.58
03-Jan-20	02-Jan-20	KM	0.11	0.166	0.172	0.20	0.010	0.81				4.46	4.91	10.0	6.0	7.48
06-Jan-20	03-Jan-20	KM	0.12	0.164	0.169	0.20	0.010	0.51				4.35	4.72	10.0	6.0	7.50
06-Jan-20	04-Jan-20	KM	0.08	0.255	0.191	0.20	0.010	0.23				4.50	4.67	10.0	6.0	7.51
06-Jan-20	05-Jan-20	KM	0.1	0.177	0.188	0.20	0.010	0.44				4.50	4.63	10.0	6.0	7.51
07-Jan-20	06-Jan-20	KM	0.1	0.169	0.185	0.20	0.010	0.74	3.15	0.047	1.33	5.27	4.74	10.0	6.0	7.42
08-Jan-20	07-Jan-20	KM	0.11	0.160	0.181	0.20	0.010	0.47	2.66	0.044	1.23	4.41	4.69	10.0	6.0	7.48
09-Jan-20	08-Jan-20	KM	0.09	0.133	0.175	0.20	0.010	0.39				4.99	4.73	10.0	6.0	7.41
14-Jan-20	09-Jan-20	KM	0.11	0.142	0.171	0.20	0.010	0.50				5.34	4.80	10.0	6.0	7.44
14-Jan-20	10-Jan-20	KM	0.1	0.131	0.167	0.20	0.010	0.61				5.34	4.85	10.0	6.0	7.43
14-Jan-20	11-Jan-20	KM	0.11	0.141	0.165	0.20	0.010	1.29				5.46	4.91	10.0	6.0	7.48
14-Jan-20	12-Jan-20	KM	0.11	0.169	0.165	0.20	0.010	1.69				6.02	5.00	10.0	6.0	7.55
14-Jan-20	13-Jan-20	KM	0.09	0.114	0.161	0.20	0.010	1.55				6.55	5.12	10.0	6.0	7.51
15-Jan-20	14-Jan-20	KM	0.08	0.174	0.162	0.20	0.010	3.72	2.96	0.069	1.09	7.84	5.31	10.0	6.0	7.42
17-Jan-20	15-Jan-20	KM	0.09	0.117	0.159	0.20	0.010	4.65				7.99	5.49	10.0	6.0	7.42
17-Jan-20	16-Jan-20	KM	0.07	0.121	0.157	0.20	0.010	4.40				7.69	5.63	10.0	6.0	7.48
20-Jan-20	17-Jan-20	KM	0.07	0.127	0.155	0.20	0.010	3.28				8.33	5.79	10.0	6.0	7.42
20-Jan-20	18-Jan-20	KM	0.09	0.151	0.155	0.20	0.010	3.80				7.73	5.90	10.0	6.0	7.46
20-Jan-20	19-Jan-20	KM	0.08	0.165	0.155	0.20	0.010	5.16				7.91	6.00	10.0	6.0	7.50
21-Jan-20	20-Jan-20	KM	0.11	0.164	0.156	0.20	0.010	3.67	2.27	0.124	0.73	6.79	6.04	10.0	6.0	7.41
23-Jan-20	21-Jan-20	KM	0.09	0.145	0.155	0.20	0.010	2.73				6.44	6.06	10.0	6.0	7.46
23-Jan-20	22-Jan-20	KM	0.1	0.137	0.155	0.20	0.010	2.74				6.32	6.07	10.0	6.0	7.49
24-Jan-20	23-Jan-20	KM	0.12	0.140	0.154	0.20	0.010	2.66				6.37	6.09	10.0	6.0	7.39
27-Jan-20	24-Jan-20	KM	0.08	0.144	0.153	0.20	0.010	2.62				6.38	6.10	10.0	6.0	7.39
27-Jan-20	25-Jan-20	KM	0.08	0.135	0.153	0.20	0.010	2.77				6.47	6.11	10.0	6.0	7.50
27-Jan-20	26-Jan-20	KM	0.1	0.166	0.153	0.20	0.010	3.09				7.01	6.15	10.0	6.0	7.51
31-Jan-20	27-Jan-20	KM	0.12	0.130	0.152	0.20	0.010	3.29				6.78	6.17	10.0	6.0	7.62
31-Jan-20	28-Jan-20	KM	0.12	0.159	0.153	0.20	0.010	2.40				6.56	6.18	10.0	6.0	7.58
31-Jan-20	29-Jan-20	KM	0.08	0.112	0.151	0.20	0.010	1.35				5.75	6.17	10.0	6.0	7.57
31-Jan-20	30-Jan-20	KM	0.06	0.128	0.150	0.20	0.010	1.29	3.34	0.078	0.93	5.64	6.15	10.0	6.0	7.53
04-Feb-20	31-Jan-20	KM	0.08	0.122	0.150	0.20	0.010	0.60				5.34	6.13	10.0	6.0	7.60
04-Feb-20	01-Feb-20	KM	0.08	0.104	0.148	0.20	0.010	1.32				4.50	6.07	10.0	6.0	7.60
04-Feb-20	02-Feb-20	KM	0.06	0.104	0.147	0.20	0.010	1.69				4.75	6.03	10.0	6.0	7.57
04-Feb-20	03-Feb-20	KM	0.05	0.124	0.146	0.20	0.010	1.20				4.54	5.99	10.0	6.0	7.54
07-Feb-20	04-Feb-20	KM	0.08	0.101	0.145	0.20	0.010	1.12				5.79	5.98	10.0	6.0	7.62
07-Feb-20	05-Feb-20	KM	0.1	0.100	0.144	0.20	0.010	0.66				6.62	6.00	10.0	6.0	7.57
07-Feb-20	06-Feb-20	KM	0.08	0.109	0.143	0.20	0.010	1.22	3.81	0.097	1.05	6.18	6.01	10.0	6.0	7.50
10-Feb-20	07-Feb-20	KM	0.06	0.105	0.142	0.20	0.010	1.24				6.32	6.02	10.0	6.0	7.78
10-Feb-20	08-Feb-20	KM	0.08	0.108	0.141	0.20	0.010	1.24				6.04	6.02	10.0	6.0	7.65
10-Feb-20	09-Feb-20	KM	0.07	0.108	0.140	0.20	0.010	1.46				6.22	6.02	10.0	6.0	7.55
12-Feb-20	10-Feb-20	KM	0.07	0.102	0.139	0.20	0.010	0.90				5.87	6.02	10.0	6.0	7.56
12-Feb-20	11-Feb-20	KM	0.08	0.114	0.138	0.20	0.010	0.50	3.69	0.109	1.23	5.53	6.01	10.0	6.0	7.44
14-Feb-20	12-Feb-20	KM	0.08	0.112	0.138	0.20	0.010	0.29				5.36	5.99	10.0	6.0	7.58
18-Feb-20	13-Feb-20	KM	0.08	0.114	0.137	0.20	0.010	0.57				5.57	5.98	10.0	6.0	7.55
18-Feb-20	14-Feb-20	KM	0.05	0.096	0.136	0.20	0.010	0.68				5.57	5.97	10.0	6.0	7.65
18-Feb-20	15-Feb-20	KM	0.09	0.121	0.136	0.20	0.010	1.34				5.90	5.97	10.0	6.0	7.63
18-Feb-20	16-Feb-20	KM	0.07	0.117	0.136	0.20	0.010	1.39				6.25	5.98	10.0	6.0	7.57
19-Feb-20	17-Feb-20	KM	0.06	0.121	0.135	0.20	0.010	1.32				6.32	5.98	10.0	6.0	7.60
19-Feb-20	18-Feb-20	KM	0.06	0.113	0.135	0.20	0.010	0.70	3.53	0.130	1.21	5.57	5.98	10.0	6.0	7.45

DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
21-Feb-20	19-Feb-20	KM	0.05	0.107	0.134	0.20	0.010	0.57				5.49	5.97	10.0	6.0	7.53
21-Feb-20	20-Feb-20	KM	0.04	0.103	0.134	0.20	0.010	0.58				7.01	5.99	10.0	6.0	7.54
24-Feb-20	21-Feb-20	KM	0.06	0.096	0.133	0.20	0.010	0.40				4.67	5.96	10.0	6.0	7.60
24-Feb-20	22-Feb-20	KM	0.06	0.107	0.132	0.20	0.010	0.52				4.71	5.94	10.0	6.0	7.59
24-Feb-20	23-Feb-20	KM	0.05	0.114	0.132	0.20	0.010	0.81				4.87	5.92	10.0	6.0	7.55
26-Feb-20	24-Feb-20	KM	0.06	0.102	0.132	0.20	0.010	0.53				4.59	5.89	10.0	6.0	7.66
26-Feb-20	25-Feb-20	KM	0.06	0.098	0.131	0.20	0.010	0.19	3.13	0.150	1.34	4.81	5.87	10.0	6.0	7.55
28-Feb-20	26-Feb-20	KM	0.05	0.118	0.131	0.20	0.010	0.58				4.24	5.85	10.0	6.0	7.53
28-Feb-20	27-Feb-20	KM	0.07	0.110	0.130	0.20	0.010	0.20				4.34	5.82	10.0	6.0	7.54
02-Mar-20	28-Feb-20	KM	0.06	0.123	0.130	0.20	0.010	0.27				4.86	5.80	10.0	6.0	7.62
02-Mar-20	29-Feb-20	KM	0.07	0.131	0.130	0.20	0.010	0.50				4.75	5.79	10.0	6.0	7.64
02-Mar-20	01-Mar-20	KM	0.2	0.266	0.133	0.20	0.010	2.00				6.69	5.80	10.0	6.0	7.54
04-Mar-20	02-Mar-20	KM	0.06	0.101	0.132	0.20	0.010	1.01				6.49	5.81	10.0	6.0	7.48
04-Mar-20	03-Mar-20	KM	0.07	0.138	0.132	0.20	0.010	0.31	2.94	0.050	1.31	4.61	5.79	10.0	6.0	7.47
06-Mar-20	04-Mar-20	KM	0.06	0.111	0.132	0.20	0.010	0.15				5.06	5.78	10.0	6.0	7.47
06-Mar-20	05-Mar-20	KM	0.05	0.112	0.131	0.20	0.010	0.20				4.60	5.76	10.0	6.0	7.46
09-Mar-20	06-Mar-20	KM	0.06	0.110	0.131	0.20	0.010	0.23				4.40	5.74	10.0	6.0	7.66
09-Mar-20	07-Mar-20	KM	0.07	0.115	0.131	0.20	0.010	0.52				4.26	5.72	10.0	6.0	7.61
09-Mar-20	08-Mar-20	KM	0.05	0.110	0.131	0.20	0.010	0.97				4.85	5.71	10.0	6.0	7.57
11-Mar-20	09-Mar-20	KM	0.05	0.103	0.130	0.20	0.010	0.50				4.81	5.69	10.0	6.0	7.50
11-Mar-20	10-Mar-20	KM	0.06	0.104	0.130	0.20	0.010	0.33	2.75	0.048	1.28	4.40	5.68	10.0	6.0	7.49
13-Mar-20	11-Mar-20	KM	0.04	0.113	0.130	0.20	0.010	0.40				4.45	5.66	10.0	6.0	7.46
13-Mar-20	12-Mar-20	KM	0.04	0.106	0.129	0.20	0.010	0.33				4.61	5.64	10.0	6.0	7.44
16-Mar-20	13-Mar-20	KM	0.07	0.105	0.129	0.20	0.010	0.46				4.78	5.63	10.0	6.0	7.66
16-Mar-20	14-Mar-20	KM	0.05	0.103	0.129	0.20	0.010	0.93				5.16	5.63	10.0	6.0	7.64
16-Mar-20	15-Mar-20	KM	0.08	0.127	0.129	0.20	0.010	1.35				5.85	5.63	10.0	6.0	7.56
18-Mar-20	16-Mar-20	KM	0.04	0.107	0.128	0.20	0.010	0.97				5.86	5.63	10.0	6.0	7.48
18-Mar-20	17-Mar-20	KM	0.04	0.112	0.128	0.20	0.010	0.68	2.47	0.150	2.12	5.42	5.63	10.0	6.0	7.46
20-Mar-20	18-Mar-20	KM	0.05	0.111	0.128	0.20	0.010	0.61				5.17	5.62	10.0	6.0	7.44
20-Mar-20	19-Mar-20	KM	0.08	0.117	0.128	0.20	0.010	0.99				5.65	5.62	10.0	6.0	7.50
23-Mar-20	20-Mar-20	KM	0.05	0.119	0.128	0.20	0.010	0.91				5.30	5.62	10.0	6.0	7.62
23-Mar-20	21-Mar-20	KM	0.1	0.115	0.127	0.20	0.010	0.72				5.25	5.61	10.0	6.0	7.62
23-Mar-20	22-Mar-20	KM	0.07	0.133	0.128	0.20	0.010	1.09				5.66	5.62	10.0	6.0	7.56
25-Mar-20	23-Mar-20	KM	0.07	0.132	0.128	0.20	0.010	1.07				5.62	5.62	10.0	6.0	7.55
25-Mar-20	24-Mar-20	KM	0.08	0.132	0.128	0.20	0.010	0.95	2.76	0.243	1.15	5.26	5.61	10.0	6.0	7.54
27-Mar-20	25-Mar-20	KM	0.09	0.151	0.128	0.20	0.010	1.11				5.24	5.61	10.0	6.0	7.58
27-Mar-20	26-Mar-20	KM	0.07	0.146	0.128	0.20	0.010	0.77				5.27	5.60	10.0	6.0	7.41
30-Mar-20	27-Mar-20	KM	0.1	0.143	0.128	0.20	0.010	0.75				5.40	5.60	10.0	6.0	7.55
30-Mar-20	28-Mar-20	KM	0.08	0.156	0.129	0.20	0.010	0.96				5.52	5.60	10.0	6.0	7.62
30-Mar-20	29-Mar-20	KM	0.06	0.160	0.129	0.20	0.010	1.19				5.19	5.60	10.0	6.0	7.57
01-Apr-20	30-Mar-20	KM	0.08	0.156	0.129	0.20	0.010	0.82				4.77	5.59	10.0	6.0	7.55
01-Apr-20	31-Mar-20	KM	0.08	0.170	0.130	0.20	0.010	0.69	2.43	0.297	1.40	4.81	5.58	10.0	6.0	7.54
03-Apr-20	01-Apr-20	KM	0.11	0.150	0.130	0.20	0.010	1.13				5.40	5.58	10.0	6.0	7.45
03-Apr-20	02-Apr-20	KM	0.07	0.130	0.130	0.20	0.010	1.21				5.53	5.57	10.0	6.0	7.51
06-Apr-20	03-Apr-20	KM	0.08	0.138	0.130	0.20	0.010	1.03				5.81	5.58	10.0	6.0	7.76
06-Apr-20	04-Apr-20	KM	0.08	0.156	0.130	0.20	0.010	1.70				6.10	5.58	10.0	6.0	7.66
06-Apr-20	05-Apr-20	KM	0.06	0.151	0.130	0.20	0.010	1.49				5.82	5.59	10.0	6.0	7.61
08-Apr-20	06-Apr-20	KM	0.07	0.142	0.131	0.20	0.010	0.69				5.09	5.58	10.0	6.0	7.53
08-Apr-20	07-Apr-20	KM	0.09	0.153	0.131	0.20	0.010	0.50	2.94	0.313	1.03	4.79	5.57	10.0	6.0	7.49

DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
09-Apr-20	08-Apr-20	KM	0.08	0.147	0.131	0.20	0.010	0.52				5.05	5.57	10.0	6.0	7.38
14-Apr-20	09-Apr-20	RS	0.09	0.141	0.131	0.20	0.010	0.36				5.20	5.56	10.0	6.0	7.57
14-Apr-20	10-Apr-20	RS	0.07	0.150	0.131	0.20	0.010	0.76				4.91	5.56	10.0	6.0	7.63
14-Apr-20	11-Apr-20	RS	0.08	0.141	0.131	0.20	0.010	1.17				5.53	5.56	10.0	6.0	7.74
14-Apr-20	12-Apr-20	RS	0.06	0.130	0.131	0.20	0.010	1.26				5.29	5.55	10.0	6.0	7.72
14-Apr-20	13-Apr-20	RS	0.05	0.148	0.132	0.20	0.010	0.80				4.93	5.55	10.0	6.0	7.62
15-Apr-20	14-Apr-20	KM	0.08	0.148	0.132	0.20	0.010	0.42	2.64	0.313	1.63	5.00	5.54	10.0	6.0	7.45
20-Apr-20	15-Apr-20	KM	0.09	0.137	0.132	0.20	0.010	0.38				4.29	5.53	10.0	6.0	7.71
20-Apr-20	16-Apr-20	KM	0.11	0.136	0.132	0.20	0.010	0.29				3.76	5.51	10.0	6.0	7.65
20-Apr-20	17-Apr-20	KM	0.1	0.147	0.132	0.20	0.010	0.44				4.88	5.51	10.0	6.0	7.75
20-Apr-20	18-Apr-20	KM	0.12	0.152	0.132	0.20	0.010	0.45				4.76	5.50	10.0	6.0	7.71
20-Apr-20	19-Apr-20	KM	0.08	0.195	0.133	0.20	0.010	0.76				4.85	5.50	10.0	6.0	7.64
22-Apr-20	20-Apr-20	KM	0.07	0.147	0.133	0.20	0.010	0.50				4.64	5.49	10.0	6.0	7.63
22-Apr-20	21-Apr-20	KM	0.08	0.158	0.133	0.20	0.010	0.47	2.41	0.308	1.19	4.37	5.48	10.0	6.0	7.62
24-Apr-20	22-Apr-20	KM	0.11	0.141	0.133	0.20	0.010	0.52				5.01	5.47	10.0	6.0	7.61
24-Apr-20	23-Apr-20	KM	0.09	0.149	0.133	0.20	0.010	0.25				4.47	5.47	10.0	6.0	7.55
27-Apr-20	24-Apr-20	KM	0.09	0.134	0.133	0.20	0.010	0.16				4.40	5.46	10.0	6.0	7.63
27-Apr-20	25-Apr-20	KM	0.07	0.160	0.133	0.20	0.010	0.64				3.87	5.44	10.0	6.0	7.63
27-Apr-20	26-Apr-20	KM	0.07	0.150	0.134	0.20	0.010	0.78				4.99	5.44	10.0	6.0	7.60
29-Apr-20	27-Apr-20	KM	0.08	0.163	0.134	0.20	0.010	1.07				4.73	5.43	10.0	6.0	7.62
29-Apr-20	28-Apr-20	KM	0.07	0.152	0.134	0.20	0.010	0.33	1.81	0.354	1.29	3.79	5.42	10.0	6.0	7.64
01-May-20	29-Apr-20	KM	0.09	0.149	0.134	0.20	0.010	0.30				4.31	5.41	10.0	6.0	7.53
01-May-20	30-Apr-20	KM	0.08	0.139	0.134	0.20	0.010	0.33				4.33	5.40	10.0	6.0	7.60
04-May-20	01-May-20	KM	0.1	0.152	0.134	0.20	0.010	0.53				4.02	5.39	10.0	6.0	7.41
04-May-20	02-May-20	KM	0.1	0.155	0.134	0.20	0.010	1.15				4.41	5.38	10.0	6.0	7.53
04-May-20	03-May-20	KM	0.05	0.179	0.135	0.20	0.010	1.32				4.70	5.38	10.0	6.0	7.53
06-May-20	04-May-20	KM	0.05	0.162	0.135	0.20	0.010	0.91				3.92	5.36	10.0	6.0	7.35
06-May-20	05-May-20	KM	0.09	0.149	0.135	0.20	0.010	0.89	1.42	0.409	1.62	4.34	5.36	10.0	6.0	7.43
08-May-20	06-May-20	KM	0.08	0.185	0.136	0.20	0.010	1.60				4.44	5.35	10.0	6.0	7.51
08-May-20	07-May-20	KM	0.07	0.153	0.136	0.20	0.010	1.35				4.46	5.34	10.0	6.0	7.53
11-May-20	08-May-20	KM	0.05	0.146	0.136	0.20	0.010	1.03				3.90	5.33	10.0	6.0	7.59
11-May-20	09-May-20	KM	0.1	0.137	0.136	0.20	0.010	1.11				4.50	5.32	10.0	6.0	7.65
11-May-20	10-May-20	KM	0.05	0.145	0.136	0.20	0.010	1.62				4.07	5.31	10.0	6.0	7.63
13-May-20	11-May-20	KM	0.08	0.169	0.136	0.20	0.010	2.26				4.94	5.31	10.0	6.0	7.61
13-May-20	12-May-20	KM	0.07	0.138	0.136	0.20	0.010	1.03	1.01	0.207	1.34	3.59	5.30	10.0	6.0	7.59
14-May-20	13-May-20	KM	0.07	0.146	0.136	0.20	0.010	0.74				4.06	5.29	10.0	6.0	7.49
19-May-20	14-May-20	KM	0.05	0.127	0.136	0.20	0.010	0.72				3.49	5.28	10.0	6.0	7.45
19-May-20	15-May-20	KM	0.08	0.131	0.136	0.20	0.010	1.11				3.76	5.27	10.0	6.0	7.66
19-May-20	16-May-20	KM	0.05	0.122	0.136	0.20	0.010	0.93				3.58	5.25	10.0	6.0	7.67
19-May-20	17-May-20	KM	0.07	0.151	0.136	0.20	0.010	1.25				4.09	5.24	10.0	6.0	7.63
20-May-20	18-May-20	KM	0.05	0.160	0.136	0.20	0.010	1.21				3.60	5.23	10.0	6.0	7.79
20-May-20	19-May-20	KM	0.06	0.150	0.136	0.20	0.010	0.88	0.559	0.141	1.26	2.84	5.22	10.0	6.0	7.67
22-May-20	20-May-20	KM	0.07	0.134	0.136	0.20	0.010	0.69				2.98	5.20	10.0	6.0	7.61
22-May-20	21-May-20	KM	0.07	0.180	0.137	0.20	0.010	0.64				3.12	5.18	10.0	6.0	7.58
25-May-20	22-May-20	KM	0.05	0.126	0.137	0.20	0.010	0.57				3.05	5.17	10.0	6.0	7.73
25-May-20	23-May-20	KM	0.07	0.122	0.136	0.20	0.010	0.52				3.23	5.16	10.0	6.0	7.71
25-May-20	24-May-20	KM	0.03	0.126	0.136	0.20	0.010	0.61				3.17	5.14	10.0	6.0	7.66
27-May-20	25-May-20	KM	0.06	0.145	0.136	0.20	0.010	0.28				2.96	5.13	10.0	6.0	7.73
27-May-20	26-May-20	KM	0.04	0.132	0.136	0.20	0.010	0.23	1.36	0.092	1.03	2.72	5.11	10.0	6.0	7.50



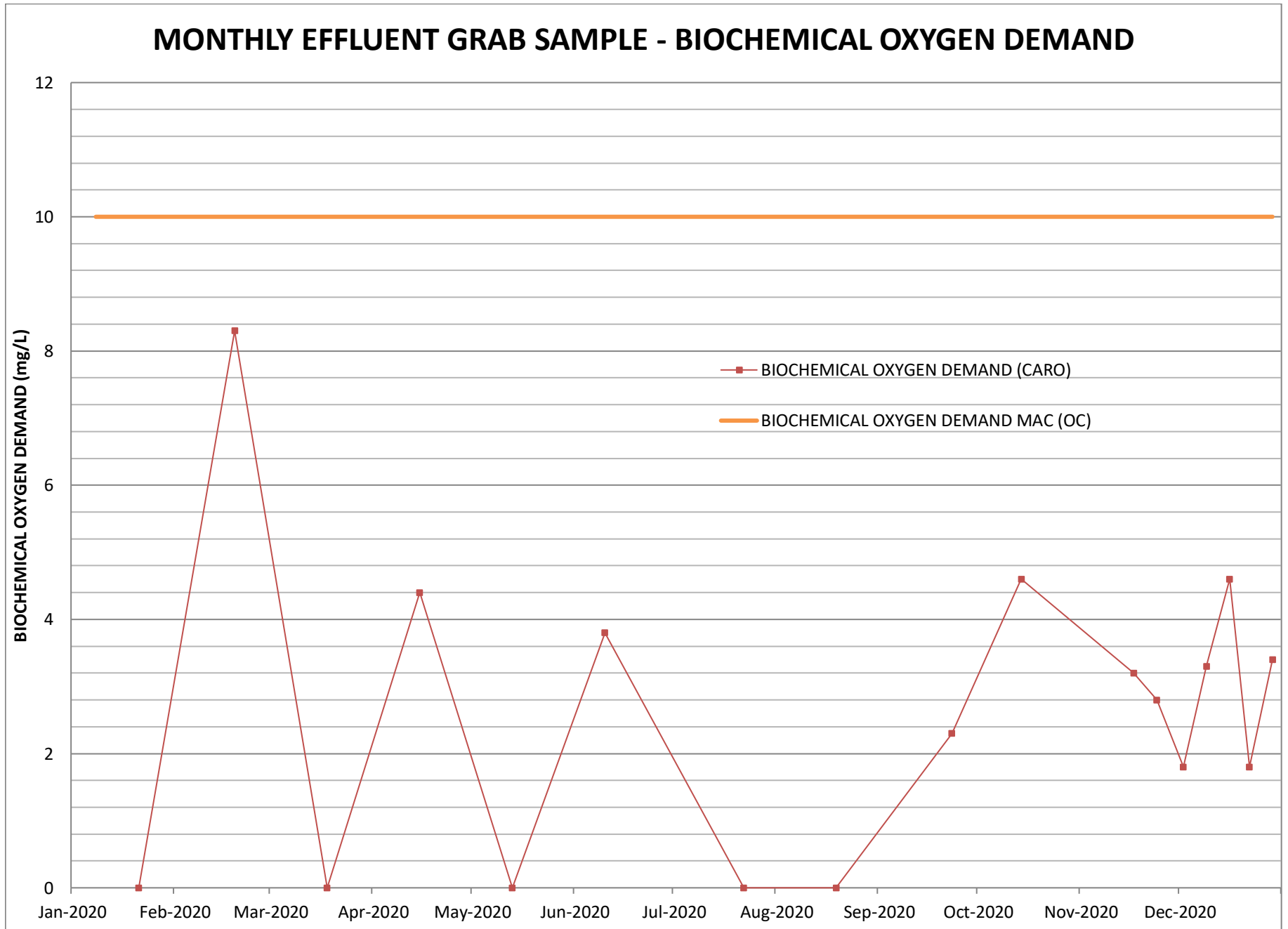
DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
29-May-20	27-May-20	KM	0.05	0.130	0.136	0.20	0.010	0.59				3.81	5.10	10.0	6.0	7.58
29-May-20	28-May-20	KM	0.09	0.142	0.136	0.20	0.010	0.58				4.31	5.10	10.0	6.0	7.58
01-Jun-20	29-May-20	KM	0.07	0.175	0.137	0.20	0.010	0.86				4.24	5.09	10.0	6.0	7.70
01-Jun-20	30-May-20	KM	0.07	0.148	0.137	0.20	0.010	0.60				3.75	5.08	10.0	6.0	7.67
01-Jun-20	31-May-20	KM	0.04	0.129	0.137	0.20	0.010	0.71				3.89	5.07	10.0	6.0	7.64
03-Jun-20	01-Jun-20	KM	0.09	0.133	0.137	0.20	0.010	0.65				3.89	5.07	10.0	6.0	7.54
03-Jun-20	02-Jun-20	KM	0.03	0.138	0.137	0.20	0.010	0.81	1.94	0.092	1.08	3.92	5.06	10.0	6.0	7.37
05-Jun-20	03-Jun-20	KM	0.06	0.139	0.137	0.20	0.010	0.56				3.96	5.05	10.0	6.0	7.65
05-Jun-20	04-Jun-20	KM	0.05	0.143	0.137	0.20	0.010	0.88				4.55	5.05	10.0	6.0	7.57
08-Jun-20	05-Jun-20	KM	0.09	0.143	0.137	0.20	0.010	0.87				4.08	5.04	10.0	6.0	7.61
08-Jun-20	06-Jun-20	KM	0.09	0.209	0.137	0.20	0.010	0.86				4.10	5.04	10.0	6.0	7.67
08-Jun-20	07-Jun-20	KM	0.07	0.146	0.137	0.20	0.010	1.12				4.40	5.03	10.0	6.0	7.59
10-Jun-20	08-Jun-20	KM	0.09	0.135	0.137	0.20	0.010	0.91				4.37	5.03	10.0	6.0	7.55
10-Jun-20	09-Jun-20	KM	0.07	0.120	0.137	0.20	0.010	0.82	2.11	0.128	1.24	4.30	5.02	10.0	6.0	7.59
12-Jun-20	10-Jun-20	KM	0.06	0.146	0.137	0.20	0.010	1.35				5.11	5.03	10.0	6.0	7.53
12-Jun-20	11-Jun-20	KM	0.06	0.147	0.137	0.20	0.010	1.26				4.97	5.02	10.0	6.0	7.46
15-Jun-20	12-Jun-20	KM	0.07	0.137	0.137	0.20	0.010	1.54				4.08	5.02	10.0	6.0	7.70
15-Jun-20	13-Jun-20	KM	0.07	0.140	0.137	0.20	0.010	1.38				5.11	5.02	10.0	6.0	7.68
15-Jun-20	14-Jun-20	KM	0.06	0.137	0.137	0.20	0.010	1.37				5.47	5.02	10.0	6.0	7.62
17-Jun-20	15-Jun-20	KM	0.08	0.119	0.137	0.20	0.010	1.16				4.99	5.02	10.0	6.0	7.57
17-Jun-20	16-Jun-20	KM	0.09	0.120	0.137	0.20	0.010	0.73	2.52	0.211	1.46	4.92	5.02	10.0	6.0	7.56
19-Jun-20	17-Jun-20	KM	0.06	0.121	0.137	0.20	0.010	1.36				5.24	5.02	10.0	6.0	7.55
19-Jun-20	18-Jun-20	KM	0.09	0.137	0.137	0.20	0.010	1.71				5.64	5.03	10.0	6.0	7.56
22-Jun-20	19-Jun-20	KM	0.06	0.111	0.137	0.20	0.010	0.94				5.38	5.03	10.0	6.0	7.64
22-Jun-20	20-Jun-20	KM	0.05	0.100	0.137	0.20	0.010	0.97				5.29	5.03	10.0	6.0	7.62
22-Jun-20	21-Jun-20	KM	0.06	0.099	0.136	0.20	0.010	0.92				5.10	5.03	10.0	6.0	7.58
24-Jun-20	22-Jun-20	KM	0.05	0.110	0.136	0.20	0.010	0.79				4.22	5.03	10.0	6.0	7.55
24-Jun-20	23-Jun-20	KM	0.04	0.095	0.136	0.20	0.010	0.38	2.6	0.209	0.96	4.15	5.02	10.0	6.0	7.57
26-Jun-20	24-Jun-20	KM	0.05	0.100	0.136	0.20	0.010	0.52				4.15	5.02	10.0	6.0	7.53
26-Jun-20	25-Jun-20	KM	0.07	0.098	0.136	0.20	0.010	0.55				4.68	5.01	10.0	6.0	7.59
29-Jun-20	26-Jun-20	KM	0.07	0.110	0.135	0.20	0.010	0.56				4.57	5.01	10.0	6.0	7.87
29-Jun-20	27-Jun-20	KM	0.09	0.123	0.135	0.20	0.010	0.74				5.03	5.01	10.0	6.0	7.87
29-Jun-20	28-Jun-20	KM	0.1	0.119	0.135	0.20	0.010	0.75	3.92	0.367	0.81	5.85	5.02	10.0	6.0	7.81
30-Jun-20	29-Jun-20	KM	0.12	0.175	0.136	0.20	0.010	1.10				6.01	5.02	10.0	6.0	7.51
03-Jul-20	30-Jun-20	RS	0.06	0.117	0.135	0.20	0.010	0.39				5.03	5.02	10.0	6.0	7.72
03-Jul-20	01-Jul-20	RS	0.08	0.114	0.135	0.20	0.010	0.56				5.61	5.02	10.0	6.0	7.71
03-Jul-20	02-Jul-20	RS	0.08	0.115	0.135	0.20	0.010	0.50				5.52	5.03	10.0	6.0	7.60
06-Jul-20	03-Jul-20	RS	0.05	0.109	0.135	0.20	0.010	0.35				5.33	5.03	10.0	6.0	7.73
06-Jul-20	04-Jul-20	RS	0.04	0.096	0.135	0.20	0.010	0.75				5.51	5.03	10.0	6.0	7.72
06-Jul-20	05-Jul-20	RS	0.05	0.109	0.135	0.20	0.010	0.73				5.62	5.03	10.0	6.0	7.61
08-Jul-20	06-Jul-20	RS	0.06	0.105	0.135	0.20	0.010	0.21				4.98	5.03	10.0	6.0	7.57
08-Jul-20	07-Jul-20	RS	0.05	0.113	0.134	0.20	0.010	0.24				4.77	5.03	10.0	6.0	7.59
09-Jul-20	08-Jul-20	RS	0.08	0.144	0.134	0.20	0.010	0.52				5.26	5.03	10.0	6.0	7.43
15-Jul-20	09-Jul-20	KM	0.1	0.130	0.134	0.20	0.010	0.15				4.60	5.03	10.0	6.0	7.77
13-Jul-20	10-Jul-20	CH	0.1	0.149	0.135	0.20	0.010	0.42				5.32	5.03	10.0	6.0	7.79
13-Jul-20	11-Jul-20	CH	0.11	0.142	0.135	0.20	0.010	0.36				5.35	5.04	10.0	6.0	7.71
13-Jul-20	12-Jul-20	CH	0.04	0.109	0.134	0.20	0.010	0.13				3.87	5.03	10.0	6.0	7.60
15-Jul-20	13-Jul-20	KM	0.07	0.136	0.134	0.20	0.010	0.24				5.10	5.03	10.0	6.0	7.71
15-Jul-20	14-Jul-20	KM	0.09	0.199	0.135	0.20	0.010	0.49	3.66	0.359	1.22	5.73	5.03	10.0	6.0	7.63

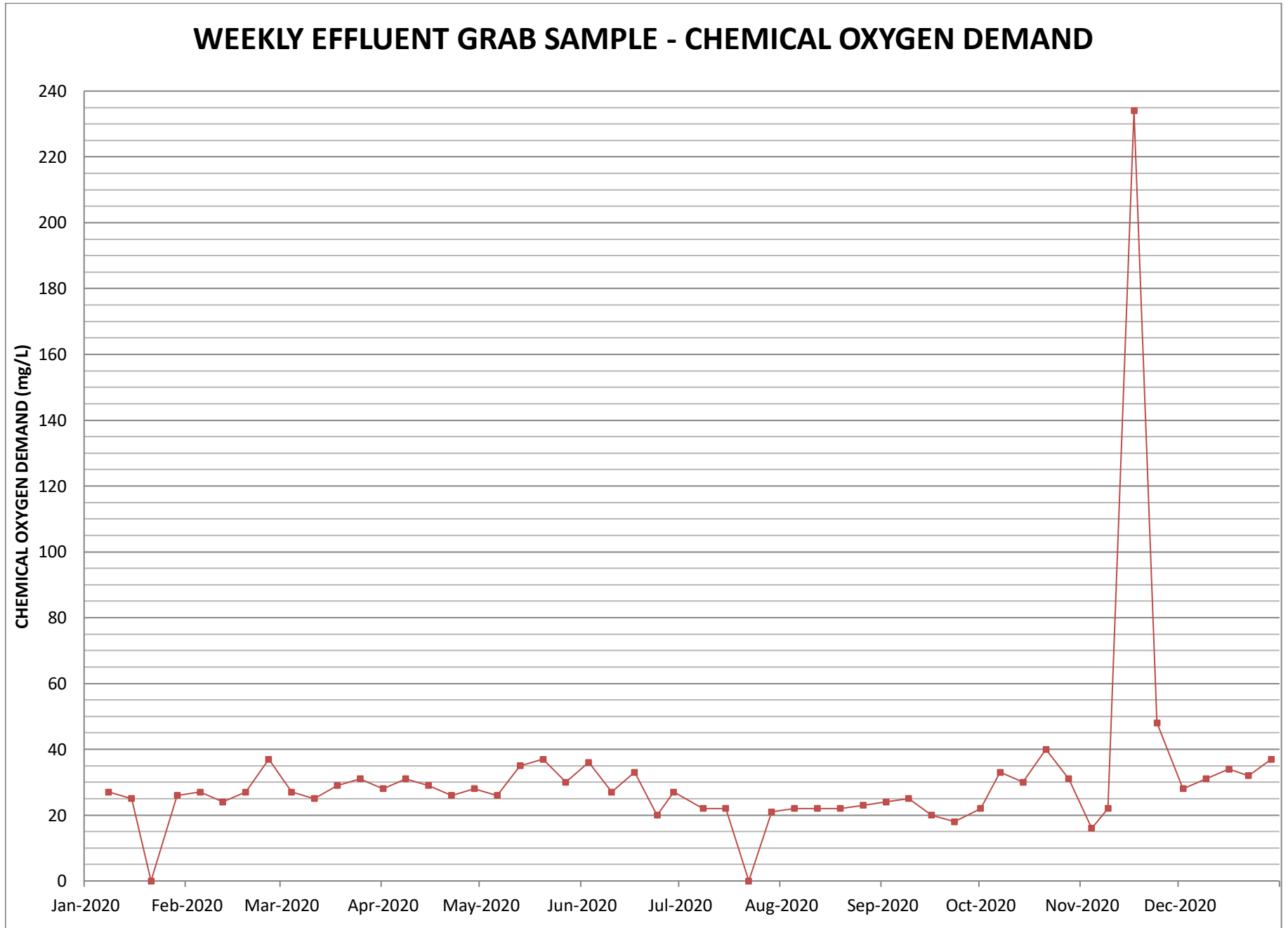
DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
17-Jul-20	15-Jul-20	KM	0.06	0.126	0.135	0.20	0.010	0.18				5.27	5.03	10.0	6.0	7.70
17-Jul-20	16-Jul-20	KM	0.1	0.142	0.135	0.20	0.010	0.14				4.71	5.03	10.0	6.0	7.69
20-Jul-20	17-Jul-20	KM	0.15	0.246	0.135	0.20	0.010	0.39				4.59	5.03	10.0	6.0	7.83
20-Jul-20	18-Jul-20	KM	0.08	0.126	0.135	0.20	0.010	0.38				4.93	5.03	10.0	6.0	7.80
20-Jul-20	19-Jul-20	KM	0.06	0.126	0.135	0.20	0.010	0.30				4.99	5.03	10.0	6.0	7.71
22-Jul-20	20-Jul-20	KM	0.06	0.111	0.135	0.20	0.010	0.12				4.51	5.03	10.0	6.0	7.79
22-Jul-20	21-Jul-20	KM	0.06	0.101	0.135	0.20	0.010	0.19	3.38	0.356	1.23	5.16	5.03	10.0	6.0	7.75
24-Jul-20	22-Jul-20	KM	0.05	0.106	0.135	0.20	0.010	0.12				4.66	5.03	10.0	6.0	7.77
24-Jul-20	23-Jul-20	KM	0.06	0.093	0.135	0.20	0.010	0.14				4.81	5.03	10.0	6.0	7.72
27-Jul-20	24-Jul-20	KM	0.06	0.117	0.135	0.20	0.010	0.27				5.17	5.03	10.0	6.0	7.77
27-Jul-20	25-Jul-20	KM	0.12	0.136	0.135	0.20	0.010	0.57				5.89	5.03	10.0	6.0	7.83
27-Jul-20	26-Jul-20	KM	0.07	0.134	0.135	0.20	0.010	0.62				6.49	5.04	10.0	6.0	7.79
29-Jul-20	27-Jul-20	KM	0.05	0.139	0.135	0.20	0.010	0.30				5.80	5.04	10.0	6.0	7.77
29-Jul-20	28-Jul-20	KM	0.08	0.121	0.134	0.20	0.010	0.17	2.99	0.243	1.29	4.70	5.04	10.0	6.0	7.79
30-Jul-20	29-Jul-20	KM	0.07	0.121	0.134	0.20	0.010	0.20				4.54	5.04	10.0	6.0	7.64
04-Aug-20	30-Jul-20	RS	0.07	0.125	0.134	0.20	0.010	0.25				4.31	5.03	10.0	6.0	7.85
04-Aug-20	31-Jul-20	RS	0.08	0.129	0.134	0.20	0.010	0.59				3.67	5.03	10.0	6.0	7.81
04-Aug-20	01-Aug-20	RS	0.07	0.122	0.134	0.20	0.010	1.00				5.08	5.03	10.0	6.0	7.75
04-Aug-20	02-Aug-20	RS	0.06	0.121	0.134	0.20	0.010	0.68				4.67	5.03	10.0	6.0	7.83
04-Aug-20	03-Aug-20	RS	0.06	0.124	0.134	0.20	0.010	0.48				4.44	5.02	10.0	6.0	7.76
06-Aug-20	04-Aug-20	RS	0.12	0.188	0.134	0.20	0.010	0.26				2.93	5.01	10.0	6.0	7.31
06-Aug-20	05-Aug-20	RS	0.07	0.139	0.134	0.20	0.010	0.26				2.98	5.00	10.0	6.0	7.36
10-Aug-20	06-Aug-20	CH	0.13	0.167	0.135	0.20	0.010	0.21				3.05	4.99	10.0	6.0	7.73
10-Aug-20	07-Aug-20	CH	0.09	0.152	0.135	0.20	0.010	0.66				3.79	4.99	10.0	6.0	7.95
10-Aug-20	08-Aug-20	CH	0.09	0.138	0.135	0.20	0.010	0.64				3.57	4.98	10.0	6.0	7.83
10-Aug-20	09-Aug-20	CH	0.07	0.146	0.135	0.20	0.010	0.91				4.14	4.98	10.0	6.0	7.74
12-Aug-20	10-Aug-20	RS	0.08	0.143	0.135	0.20	0.010	0.41				3.14	4.97	10.0	6.0	7.77
12-Aug-20	11-Aug-20	RS	0.08	0.140	0.135	0.20	0.010	0.41				3.09	4.96	10.0	6.0	7.67
14-Aug-20	12-Aug-20	RS	0.08	0.142	0.135	0.20	0.010	0.41				3.36	4.96	10.0	6.0	7.88
14-Aug-20	13-Aug-20	RS	0.06	0.138	0.135	0.20	0.010	0.57				3.49	4.95	10.0	6.0	7.72
17-Aug-20	14-Aug-20	KM	0.08	0.136	0.135	0.20	0.010	0.76				3.59	4.94	10.0	6.0	7.95
17-Aug-20	15-Aug-20	KM	0.09	0.177	0.135	0.20	0.010	0.85				3.82	4.94	10.0	6.0	7.86
17-Aug-20	16-Aug-20	KM	0.08	0.146	0.135	0.20	0.010	1.26				3.44	4.93	10.0	6.0	7.76
19-Aug-20	17-Aug-20	KM	0.1	0.164	0.135	0.20	0.010	0.92				3.11	4.92	10.0	6.0	7.63
19-Aug-20	18-Aug-20	KM	0.09	0.155	0.135	0.20	0.010	0.66	1.45	0.147	0.73	2.98	4.92	10.0	6.0	7.66
20-Aug-20	19-Aug-20	KM	0.08	0.148	0.135	0.20	0.010	0.56				3.86	4.91	10.0	6.0	7.62
24-Aug-20	20-Aug-20	KM	0.09	0.137	0.135	0.20	0.010	0.38				3.29	4.90	10.0	6.0	7.60
24-Aug-20	21-Aug-20	KM	0.11	0.154	0.135	0.20	0.010	0.40				3.48	4.90	10.0	6.0	7.83
24-Aug-20	22-Aug-20	KM	0.12	0.150	0.136	0.20	0.010	0.91				3.75	4.89	10.0	6.0	7.86
24-Aug-20	23-Aug-20	KM	0.09	0.154	0.136	0.20	0.010	0.62				3.30	4.89	10.0	6.0	7.77
27-Aug-20	24-Aug-20	KM	0.05	0.131	0.136	0.20	0.010	0.28				2.86	4.88	10.0	6.0	7.74
27-Aug-20	25-Aug-20	KM	0.1	0.142	0.136	0.20	0.010	0.36	1.77	0.229	0.72	3.07	4.87	10.0	6.0	7.73
28-Aug-20	26-Aug-20	KM	0.09	0.134	0.136	0.20	0.010	0.44				3.24	4.86	10.0	6.0	7.78
28-Aug-20	27-Aug-20	KM	0.09	0.133	0.136	0.20	0.010	0.32				3.23	4.86	10.0	6.0	7.76
31-Aug-20	28-Aug-20	KM	0.09	0.150	0.136	0.20	0.010	0.88				4.18	4.85	10.0	6.0	7.88
31-Aug-20	29-Aug-20	KM	0.09	0.149	0.136	0.20	0.010	0.67				3.94	4.85	10.0	6.0	7.84
31-Aug-20	30-Aug-20	KM	0.09	0.157	0.136	0.20	0.010	1.50				4.48	4.85	10.0	6.0	7.75
02-Sep-20	31-Aug-20	KM	0.11	0.147	0.136	0.20	0.010	0.83				3.63	4.84	10.0	6.0	7.76
02-Sep-20	01-Sep-20	KM	0.08	0.141	0.136	0.20	0.010	0.53	1.65	0.309	0.52	3.00	4.84	10.0	6.0	7.74

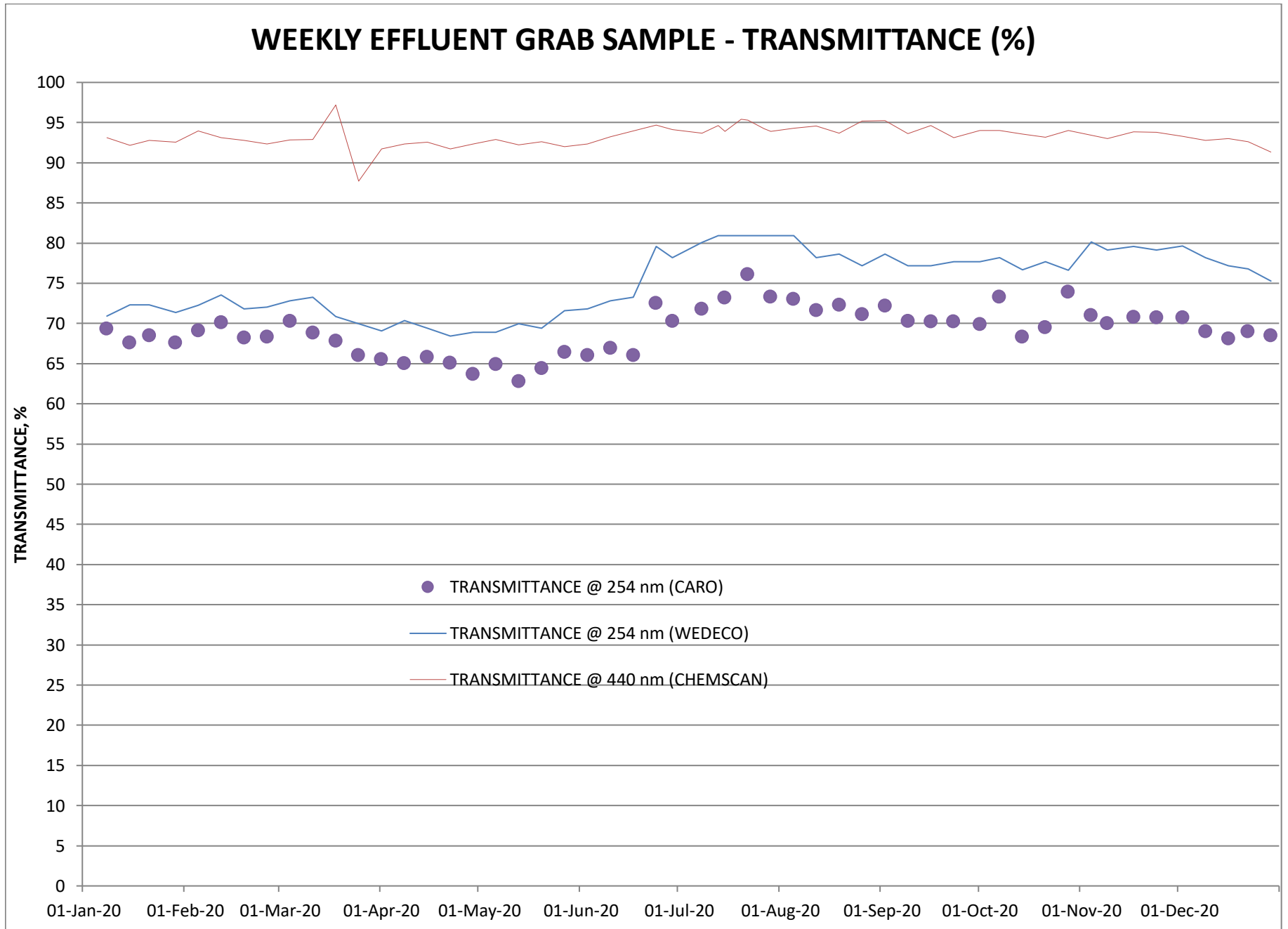
DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
04-Sep-20	02-Sep-20	KM	0.08	0.147	0.136	0.20	0.010	0.22				3.00	4.83	10.0	6.0	7.74
04-Sep-20	03-Sep-20	KM	0.11	0.152	0.136	0.20	0.010	0.49				3.62	4.82	10.0	6.0	7.72
08-Sep-20	04-Sep-20	KM	0.08	0.153	0.136	0.20	0.010	0.99				4.15	4.82	10.0	6.0	7.79
08-Sep-20	05-Sep-20	KM	0.1	0.160	0.136	0.20	0.010	0.79				4.31	4.82	10.0	6.0	7.74
08-Sep-20	06-Sep-20	KM	0.08	0.155	0.136	0.20	0.010	0.85				4.10	4.82	10.0	6.0	7.65
08-Sep-20	07-Sep-20	KM	0.08	0.156	0.136	0.20	0.010	0.62				3.95	4.81	10.0	6.0	7.62
09-Sep-20	08-Sep-20	KM	0.11	0.146	0.136	0.20	0.010	0.36	2.33	0.250	1.94	4.88	4.81	10.0	6.0	7.57
10-Sep-20	09-Sep-20	KM	0.09	0.152	0.136	0.20	0.010	0.30				5.03	4.81	10.0	6.0	7.66
14-Sep-20	10-Sep-20	KM	0.11	0.183	0.137	0.20	0.010	0.23				3.57	4.81	10.0	6.0	7.59
14-Sep-20	11-Sep-20	KM	0.09	0.158	0.137	0.20	0.010	0.36				3.95	4.80	10.0	6.0	7.75
14-Sep-20	12-Sep-20	KM	0.08	0.156	0.137	0.20	0.010	0.34				3.76	4.80	10.0	6.0	7.74
14-Sep-20	13-Sep-20	KM	0.09	0.175	0.137	0.20	0.010	0.35				3.62	4.80	10.0	6.0	7.67
16-Sep-20	14-Sep-20	KM	0.1	0.193	0.137	0.20	0.010	0.29				3.67	4.79	10.0	6.0	7.61
16-Sep-20	15-Sep-20	KM	0.07	0.148	0.137	0.20	0.010	0.22	2.38	0.130	0.88	3.61	4.79	10.0	6.0	7.64
18-Sep-20	16-Sep-20	KM	0.1	0.138	0.137	0.20	0.010	0.16				3.51	4.78	10.0	6.0	7.62
18-Sep-20	17-Sep-20	KM	0.1	0.187	0.137	0.20	0.010	0.25				3.63	4.78	10.0	6.0	7.63
21-Sep-20	18-Sep-20	KM	0.08	0.152	0.137	0.20	0.010	0.26				3.76	4.77	10.0	6.0	7.64
21-Sep-20	19-Sep-20	KM	0.09	0.169	0.137	0.20	0.010	0.31				3.74	4.77	10.0	6.0	7.68
21-Sep-20	20-Sep-20	KM	0.07	0.140	0.138	0.20	0.010	0.39				3.43	4.77	10.0	6.0	7.70
25-Sep-20	21-Sep-20	KM	0.09	0.145	0.138	0.20	0.010	0.20				3.20	4.76	10.0	6.0	7.67
25-Sep-20	22-Sep-20	KM	0.09	0.158	0.138	0.20	0.010	0.25				3.26	4.75	10.0	6.0	7.63
25-Sep-20	23-Sep-20	KM	0.08	0.156	0.138	0.20	0.010	0.21				3.93	4.75	10.0	6.0	7.67
25-Sep-20	24-Sep-20	KM	0.1	0.159	0.138	0.20	0.010	0.23	2.76	0.163	0.94	4.09	4.75	10.0	6.0	7.62
28-Sep-20	25-Sep-20	KM	0.08	0.141	0.138	0.20	0.010	0.20				4.11	4.75	10.0	6.0	7.80
28-Sep-20	26-Sep-20	KM	0.08	0.146	0.138	0.20	0.010	0.22				3.90	4.74	10.0	6.0	7.66
28-Sep-20	27-Sep-20	KM	0.08	0.149	0.138	0.20	0.010	0.26				3.90	4.74	10.0	6.0	7.59
01-Oct-20	28-Sep-20	KM	0.1	0.150	0.138	0.20	0.010	0.27				3.55	4.74	10.0	6.0	7.68
01-Oct-20	29-Sep-20	KM	0.11	0.171	0.138	0.20	0.010	0.19				2.60	4.73	10.0	6.0	7.63
01-Oct-20	30-Sep-20	KM	0.14	0.225	0.138	0.20	0.010	0.20	2.09	0.171	0.66	3.12	4.72	10.0	6.0	7.64
05-Oct-20	01-Oct-20	KM	0.1	0.158	0.138	0.20	0.010	0.21				3.59	4.72	10.0	6.0	7.57
05-Oct-20	02-Oct-20	KM	0.11	0.164	0.138	0.20	0.010	0.37				3.37	4.71	10.0	6.0	7.77
05-Oct-20	03-Oct-20	KM	0.11	0.193	0.139	0.20	0.010	0.31				4.55	4.71	10.0	6.0	7.75
05-Oct-20	04-Oct-20	KM	0.1	0.181	0.139	0.20	0.010	0.32				4.05	4.71	10.0	6.0	7.66
07-Oct-20	05-Oct-20	KM	0.18	0.256	0.139	0.20	0.010	0.38				4.32	4.71	10.0	6.0	7.62
07-Oct-20	06-Oct-20	KM	0.31	0.371	0.140	0.20	0.010	0.32	3.08	0.124	0.83	4.35	4.71	10.0	6.0	7.55
09-Oct-20	07-Oct-20	KM	0.36	0.481	0.141	0.20	0.010	0.49				4.53	4.71	10.0	6.0	7.66
09-Oct-20	08-Oct-20	KM	0.21	0.267	0.142	0.20	0.010	0.24				4.54	4.71	10.0	6.0	7.59
13-Oct-20	09-Oct-20	SC	0.25	0.369	0.143	0.20	0.010	0.73				4.64	4.71	10.0	6.0	7.52
13-Oct-20	10-Oct-20	SC	0.13	0.211	0.143	0.20	0.010	0.46				4.40	4.70	10.0	6.0	7.68
13-Oct-20	11-Oct-20	SC	0.1	0.173	0.143	0.20	0.010	0.42				3.97	4.70	10.0	6.0	7.64
13-Oct-20	12-Oct-20	SC	0.1	0.294	0.143	0.20	0.010	0.30				3.38	4.70	10.0	6.0	7.57
14-Oct-20	13-Oct-20	KM	0.08	0.166	0.144	0.20	0.010	0.17	2.57	0.182	1.02	3.94	4.69	10.0	6.0	7.58
16-Oct-20	14-Oct-20	SC/KM	0.1	0.155	0.144	0.20	0.010	0.16				4.06	4.69	10.0	6.0	7.71
19-Oct-20	15-Oct-20	SC/KM	0.03	0.172	0.144	0.20	0.010	0.18				4.72	4.69	10.0	6.0	7.60
19-Oct-20	16-Oct-20	KM	0.13	0.218	0.144	0.20	0.010	0.16				5.07	4.69	10.0	6.0	7.84
19-Oct-20	17-Oct-20	KM	0.19	0.286	0.144	0.20	0.010	0.19				5.39	4.70	10.0	6.0	7.75
21-Oct-20	18-Oct-20	KM	0.1	0.199	0.145	0.20	0.010	0.36				4.97	4.70	10.0	6.0	7.68
21-Oct-20	19-Oct-20	KM	0.16	0.236	0.145	0.20	0.010	0.23				4.32	4.70	10.0	6.0	7.67
23-Oct-20	20-Oct-20	KM	0.07	0.151	0.145	0.20	0.010	0.15	2.9	0.148	1.18	4.37	4.69	10.0	6.0	7.63

DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
23-Oct-20	21-Oct-20	KM	0.14	0.202	0.145	0.20	0.010	0.14				4.80	4.69	10.0	6.0	7.69
26-Oct-20	22-Oct-20	KM	0.1	0.145	0.145	0.20	0.010	0.12				5.21	4.70	10.0	6.0	7.65
26-Oct-20	23-Oct-20	KM	0.15	0.189	0.145	0.20	0.010	0.48				6.82	4.70	10.0	6.0	7.84
26-Oct-20	24-Oct-20	KM	0.22	0.272	0.146	0.20	0.010	0.46				5.61	4.71	10.0	6.0	7.77
26-Oct-20	25-Oct-20	KM	0.11	0.160	0.146	0.20	0.010	0.70				5.58	4.71	10.0	6.0	7.64
28-Oct-20	26-Oct-20	KM	0.13	0.158	0.146	0.20	0.010	0.31				5.29	4.71	10.0	6.0	7.69
28-Oct-20	27-Oct-20	KM	0.12	0.170	0.146	0.20	0.010	0.25	3.89	0.155	0.91	5.20	4.71	10.0	6.0	7.66
30-Oct-20	28-Oct-20	KM	0.1	0.183	0.146	0.20	0.010	0.21				5.62	4.72	10.0	6.0	7.67
30-Oct-20	29-Oct-20	KM	0.16	0.237	0.146	0.20	0.010	0.15				5.68	4.72	10.0	6.0	7.61
02-Nov-20	30-Oct-20	KM	0.13	0.198	0.146	0.20	0.010	0.12				5.22	4.72	10.0	6.0	7.75
02-Nov-20	31-Oct-20	KM	0.2	0.244	0.147	0.20	0.010	0.22				5.51	4.72	10.0	6.0	7.67
02-Nov-20	01-Nov-20	KM	0.16	0.200	0.147	0.20	0.010	0.35	3.86	0.136	1.00	5.34	4.73	10.0	6.0	7.67
04-Nov-20	02-Nov-20	KM	0.11	0.187	0.147	0.20	0.010	0.19				5.37	4.73	10.0	6.0	7.79
04-Nov-20	03-Nov-20	KM	0.12	0.193	0.147	0.20	0.010	0.22	4.03	0.134	1.13	5.51	4.73	10.0	6.0	7.69
06-Nov-20	04-Nov-20	KM	0.2	0.244	0.148	0.20	0.010	0.18				5.86	4.73	10.0	6.0	7.77
06-Nov-20	05-Nov-20	KM	0.19	0.258	0.148	0.20	0.010	0.17				6.21	4.74	10.0	6.0	7.67
09-Nov-20	06-Nov-20	KM	0.16	0.238	0.148	0.20	0.010	0.32				6.31	4.74	10.0	6.0	7.71
09-Nov-20	07-Nov-20	KM	0.19	0.263	0.149	0.20	0.010	0.42				6.27	4.75	10.0	6.0	7.80
09-Nov-20	08-Nov-20	KM	0.14	0.204	0.149	0.20	0.010	0.68	4.55	0.147	0.94	6.32	4.75	10.0	6.0	7.69
13-Nov-20	09-Nov-20	KM	0.09	0.141	0.149	0.20	0.010	0.50	4.25	0.176	1.12	6.05	4.76	10.0	6.0	7.85
13-Nov-20	10-Nov-20	KM	0.11	0.165	0.149	0.20	0.010	0.42	4.14	0.157	0.82	5.54	4.76	10.0	6.0	7.77
13-Nov-20	11-Nov-20	KM	0.1	0.171	0.149	0.20	0.010	0.57	4.07	0.172	0.89	5.70	4.76	10.0	6.0	7.71
13-Nov-20	12-Nov-20	KM	0.09	0.160	0.149	0.20	0.010	0.39				5.75	4.77	10.0	6.0	7.69
17-Nov-20	13-Nov-20	KM	0.07	0.145	0.149	0.20	0.010	0.45				5.80	4.77	10.0	6.0	7.89
17-Nov-20	14-Nov-20	KM	0.11	0.166	0.149	0.20	0.010	0.57				5.91	4.77	10.0	6.0	7.77
17-Nov-20	15-Nov-20	KM	0.1	0.175	0.149	0.20	0.010	0.74				6.29	4.78	10.0	6.0	7.70
17-Nov-20	16-Nov-20	KM	0.07	0.141	0.149	0.20	0.010	0.47	3.79	0.171	2.22	6.65	4.78	10.0	6.0	7.67
20-Nov-20	17-Nov-20	KM	0.08	0.127	0.149	0.20	0.010	0.25				5.79	4.79	10.0	6.0	7.62
20-Nov-20	18-Nov-20	KM	0.07	0.145	0.149	0.20	0.010	0.31				5.66	4.79	10.0	6.0	7.65
20-Nov-20	19-Nov-20	KM	0.09	0.145	0.149	0.20	0.010	0.30				6.15	4.79	10.0	6.0	7.63
24-Nov-20	20-Nov-20	KM	0.08	0.161	0.149	0.20	0.010	0.32				6.31	4.80	10.0	6.0	7.84
24-Nov-20	21-Nov-20	KM	0.11	0.140	0.149	0.20	0.010	0.67				6.27	4.80	10.0	6.0	7.80
24-Nov-20	22-Nov-20	KM	0.12	0.159	0.149	0.20	0.010	0.67				6.18	4.81	10.0	6.0	7.66
24-Nov-20	23-Nov-20	KM	0.08	0.136	0.149	0.20	0.010	0.42	3.52	0.209	1.30	5.45	4.81	10.0	6.0	7.68
27-Nov-20	24-Nov-20	KM	0.09	0.126	0.149	0.20	0.010	0.23				5.34	4.81	10.0	6.0	7.83
27-Nov-20	25-Nov-20	KM	0.06	0.122	0.149	0.20	0.010	0.26				5.58	4.81	10.0	6.0	7.78
27-Nov-20	26-Nov-20	KM	0.09	0.131	0.149	0.20	0.010	0.31				5.86	4.82	10.0	6.0	7.66
30-Nov-20	27-Nov-20	KM	0.06	0.131	0.149	0.20	0.010	0.29				6.25	4.82	10.0	6.0	7.45
30-Nov-20	28-Nov-20	KM	0.06	0.124	0.149	0.20	0.010	0.54				5.66	4.82	10.0	6.0	7.63
30-Nov-20	29-Nov-20	KM	0.05	0.121	0.148	0.20	0.010	0.76				6.73	4.83	10.0	6.0	7.55
02-Dec-20	30-Nov-20	KM	0.06	0.124	0.148	0.20	0.010	0.40				4.74	4.83	10.0	6.0	7.58
02-Dec-20	01-Dec-20	KM	0.06	0.117	0.148	0.20	0.010	0.22	3.24	0.173	0.90	4.54	4.83	10.0	6.0	7.56
04-Dec-20	02-Dec-20	KM	0.06	0.114	0.148	0.20	0.010	0.34				5.38	4.83	10.0	6.0	7.60
04-Dec-20	03-Dec-20	KM	0.06	0.114	0.148	0.20	0.010	0.49				5.33	4.83	10.0	6.0	7.45
07-Dec-20	04-Dec-20	KM	0.08	0.123	0.148	0.20	0.010	0.62				6.05	4.83	10.0	6.0	7.60
07-Dec-20	05-Dec-20	KM	0.08	0.133	0.148	0.20	0.010	0.78				5.94	4.84	10.0	6.0	7.57
07-Dec-20	06-Dec-20	KM	0.06	0.116	0.148	0.20	0.010	0.99				5.90	4.84	10.0	6.0	7.52
09-Dec-20	07-Dec-20	KM	0.07	0.124	0.148	0.20	0.010	0.61				4.91	4.84	10.0	6.0	7.49
09-Dec-20	08-Dec-20	KM	0.07	0.113	0.148	0.20	0.010	0.23	2.88	0.200	1.97	5.28	4.84	10.0	6.0	7.57

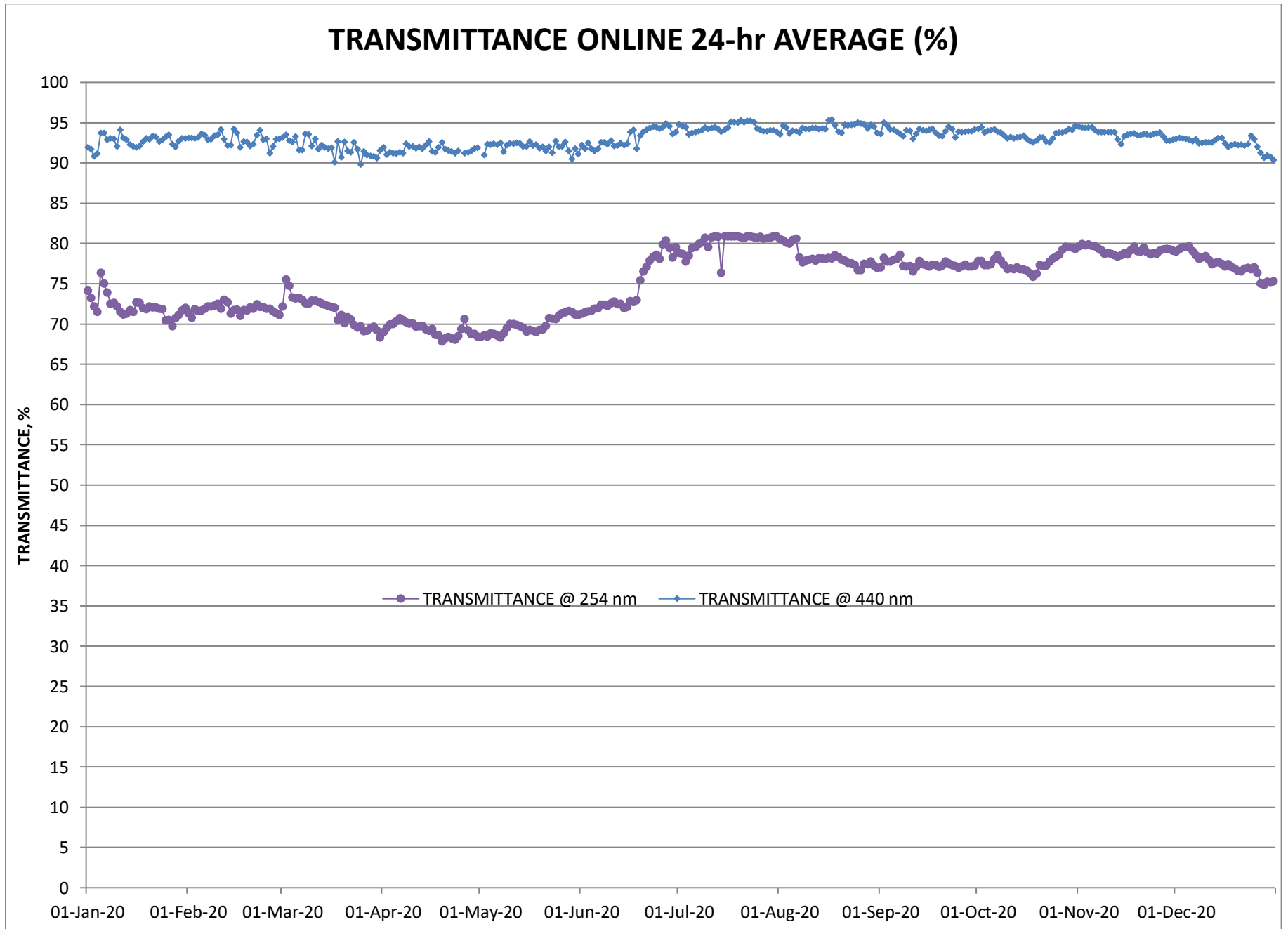
DATE ANALYZED	DATE COMPOSITE STARTED	LAB TESTER'S INITIALS	REACTIVE ORTHOPHOSPHATE as P (RDOS)	TOTAL PHOSPHORUS (RDOS)	TOTAL PHOSPHORUS (RDOS) ROLLING ANNUAL AVERAGE	TOTAL PHOSPHORUS MAXIMUM ANNUAL AVERAGE (OC)	TOTAL PHOSPHORUS TARGET 0.01 mg/L P ANNUAL AVERAGE (OC)	AMMONIA as N (RDOS)	NITRATE as N (RDOS)	NITRITE as N (RDOS)	ORGANIC NITROGEN, CALCULATED (RDOS)	TOTAL NITROGEN (RDOS)	TOTAL NITROGEN (RDOS) ROLLING ANNUAL AVERAGE	TOTAL NITROGEN MAXIMUM (OC)	TOTAL NITROGEN MAXIMUM ANNUAL AVERAGE (OC)	pH Composite (RDOS)
dd-mm-yr	dd-mm-yr		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
11-Dec-20	09-Dec-20	KM	0.06	0.126	0.148	0.20	0.010	0.22				4.53	4.84	10.0	6.0	7.45
11-Dec-20	10-Dec-20	KM	0.06	0.124	0.148	0.20	0.010	0.34				4.55	4.84	10.0	6.0	7.48
14-Dec-20	11-Dec-20	KM	0.07	0.124	0.147	0.20	0.010	0.50				4.75	4.84	10.0	6.0	7.76
14-Dec-20	12-Dec-20	KM	0.08	0.129	0.147	0.20	0.010	0.72				4.65	4.84	10.0	6.0	7.69
14-Dec-20	13-Dec-20	KM	0.05	0.132	0.147	0.20	0.010	1.02				4.82	4.84	10.0	6.0	7.57
16-Dec-20	14-Dec-20	KM	0.05	0.123	0.147	0.20	0.010	0.67				3.95	4.84	10.0	6.0	7.80
16-Dec-20	15-Dec-20	KM	0.06	0.111	0.147	0.20	0.010	0.46	2.02	0.238	1.20	3.92	4.83	10.0	6.0	7.66
18-Dec-20	16-Dec-20	KM	0.07	0.118	0.147	0.20	0.010	0.53				4.32	4.83	10.0	6.0	7.65
18-Dec-20	17-Dec-20	KM	0.04	0.119	0.147	0.20	0.010	0.52				4.22	4.83	10.0	6.0	7.59
21-Dec-20	18-Dec-20	KM	0.07	0.128	0.147	0.20	0.010	0.62				4.31	4.83	10.0	6.0	7.75
21-Dec-20	19-Dec-20	KM	0.05	0.119	0.147	0.20	0.010	0.77				4.28	4.83	10.0	6.0	7.73
21-Dec-20	20-Dec-20	KM	0.07	0.140	0.147	0.20	0.010	0.78				3.95	4.83	10.0	6.0	7.62
23-Dec-20	21-Dec-20	KM	0.07	0.134	0.147	0.20	0.010	0.91				3.95	4.82	10.0	6.0	7.62
23-Dec-20	22-Dec-20	KM	0.05	0.119	0.147	0.20	0.010	0.59	1.68	0.242	1.08	3.59	4.82	10.0	6.0	7.61
29-Dec-20	23-Dec-20	KM	0.03	0.117	0.147	0.20	0.010	0.70				4.45	4.82	10.0	6.0	7.81
29-Dec-20	24-Dec-20	KM	0.04	0.131	0.147	0.20	0.010	1.40				4.73	4.82	10.0	6.0	7.73
29-Dec-20	25-Dec-20	KM	0.05	0.120	0.147	0.20	0.010	1.33				4.17	4.82	10.0	6.0	7.59
29-Dec-20	26-Dec-20	KM	0.07	0.164	0.147	0.20	0.010	1.92				4.78	4.82	10.0	6.0	7.80
29-Dec-20	27-Dec-20	KM	0.05	0.161	0.147	0.20	0.010	2.21				5.66	4.82	10.0	6.0	7.77
29-Dec-20	28-Dec-20	KM	0.05	0.172	0.147	0.20	0.010	1.72	1.97	0.308	2.10	6.10	4.82	10.0	6.0	7.63
31-Dec-20	29-Dec-20	KM	0.04	0.159	0.147	0.20	0.010	1.05				4.63	4.82	10.0	6.0	7.55
31-Dec-20	30-Dec-20	KM	0.04	0.168	0.147	0.20	0.010	1.04				4.90	4.82	10.0	6.0	7.52
04-Jan-20	31-Dec-20	KM	0.06	0.156	0.147	0.20	0.010	0.89					4.82	10.0	6.0	7.59
<b>Average</b>			0.08	0.147				0.756	2.78	0.187	1.19	4.82				7.63
<b>n</b>			366	366				366	55	55	59	365				366
<b>Std. Dev.</b>			0.04	0.041				0.696	0.88	0.092	0.37	1.02				0.12
<b>Min</b>			0.03	0.093				0.118	0.56	0.044	0.52	2.60				7.31
<b>Max</b>			0.36	0.481				5.16	4.55	0.409	2.22	8.33				7.95
<b>Total Loadings From WWTP, kg/yr</b>			18	32				163	599	40	258	1040				
<b>Loadings From WWTP To River, kg/yr</b>			16	29				148	543	37	234	943				
<b>Loadings to Wetland, kg/yr</b>			2	3				15	56	4	24	97				
<b>Total Loadings to River, kg/yr</b>			18	32				163	599	40	258	1040				
<b>Reduction in Loadings to River, kg/yr</b>			2	3				15	56	4	24	97				

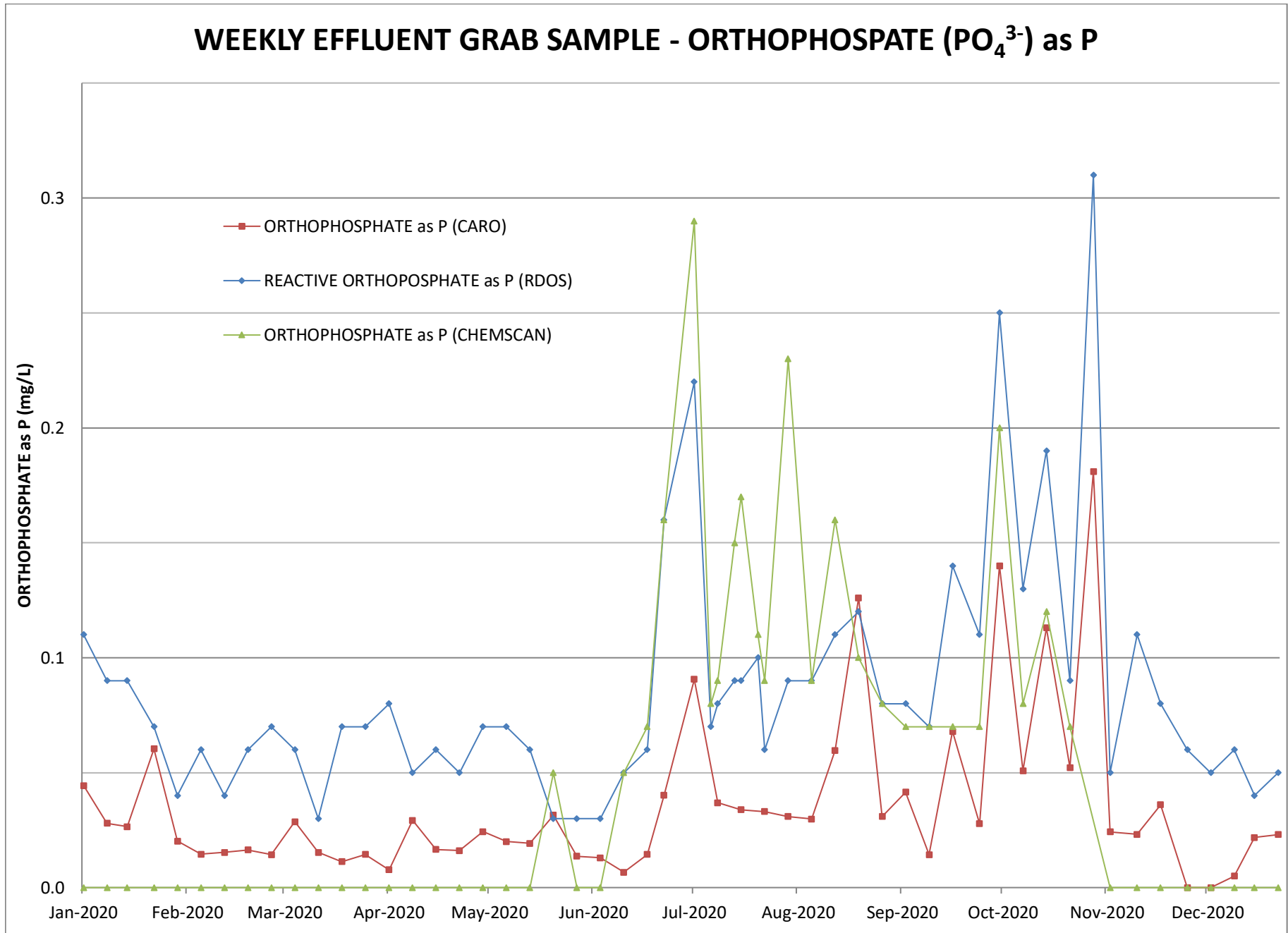




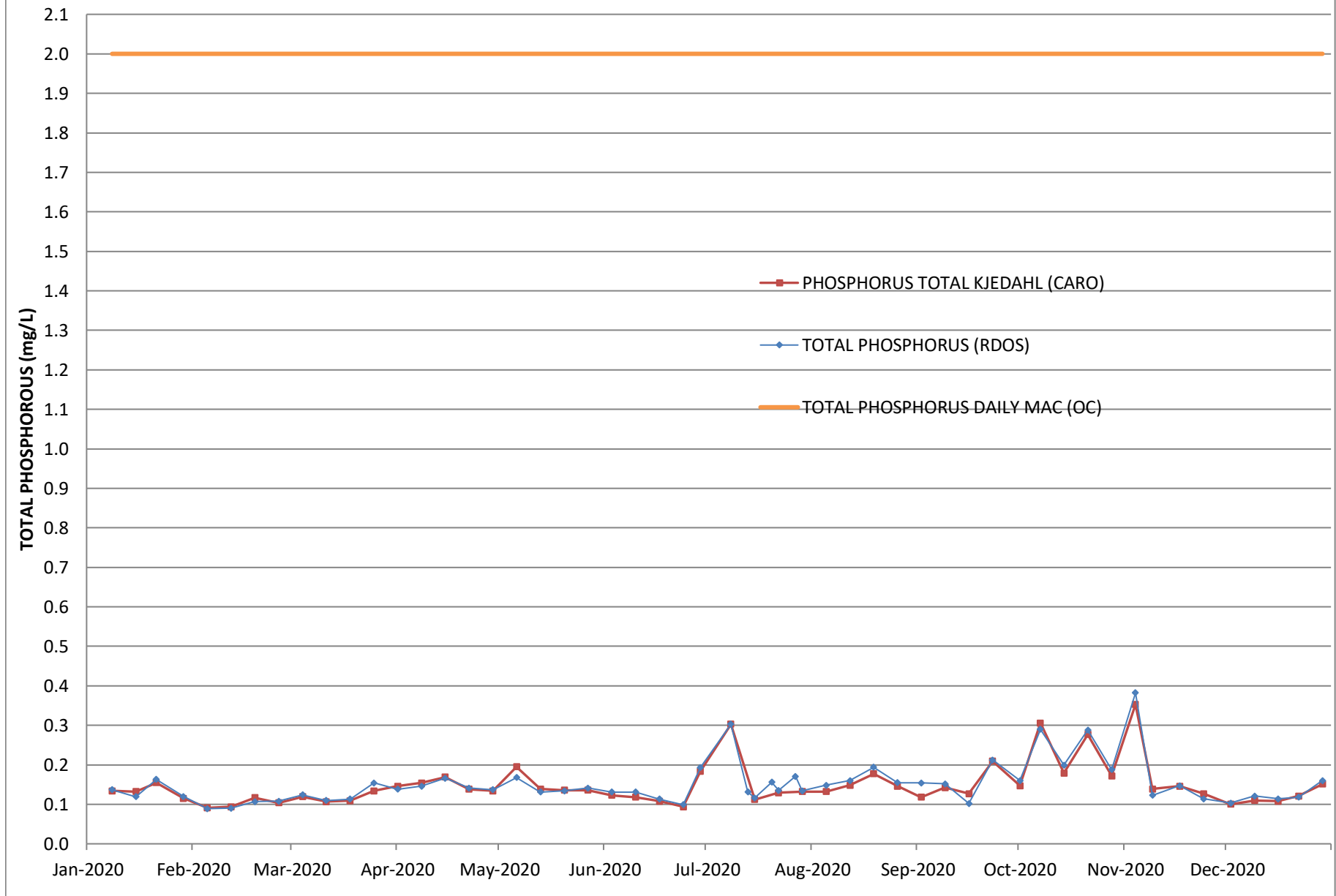


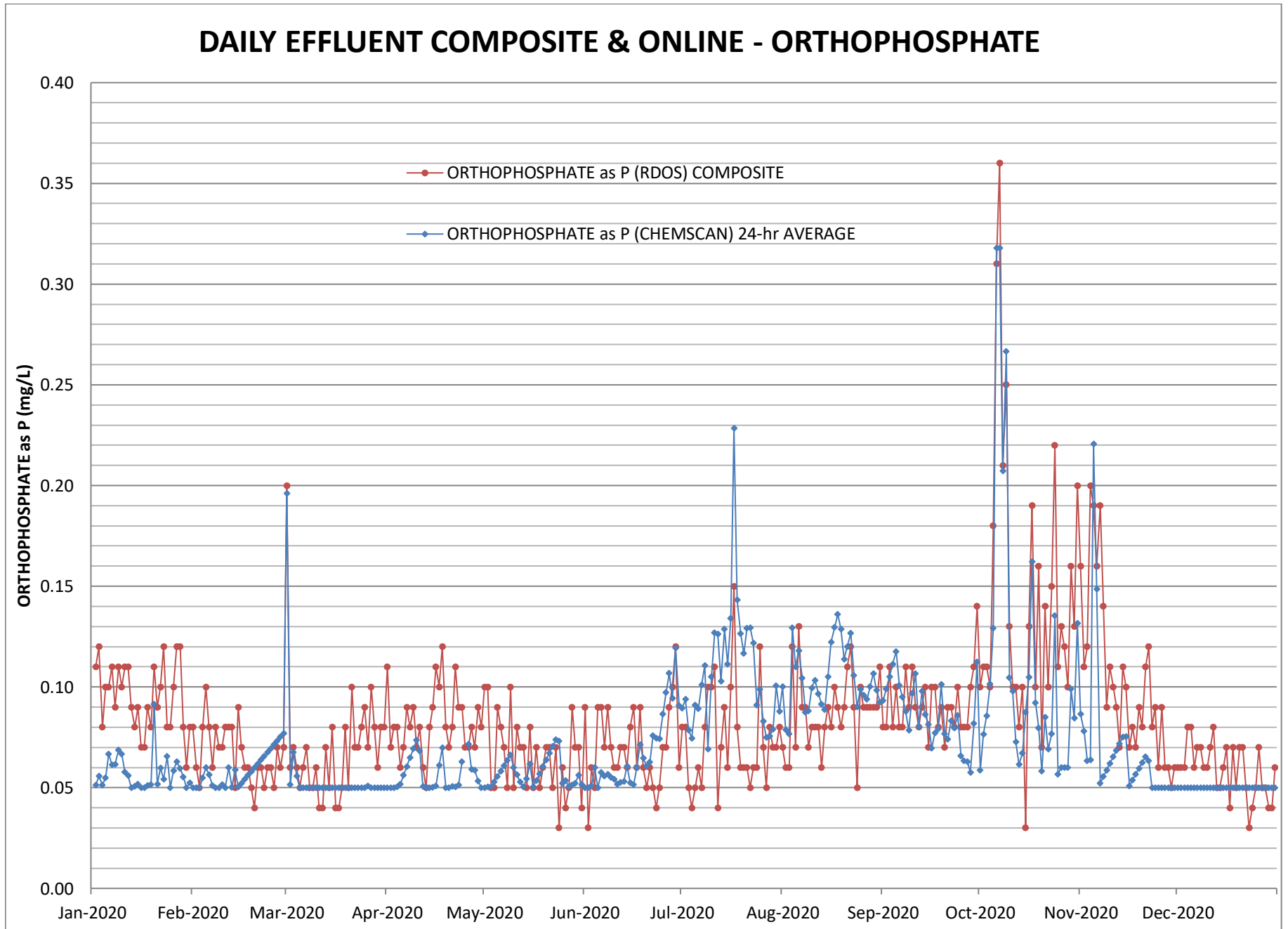


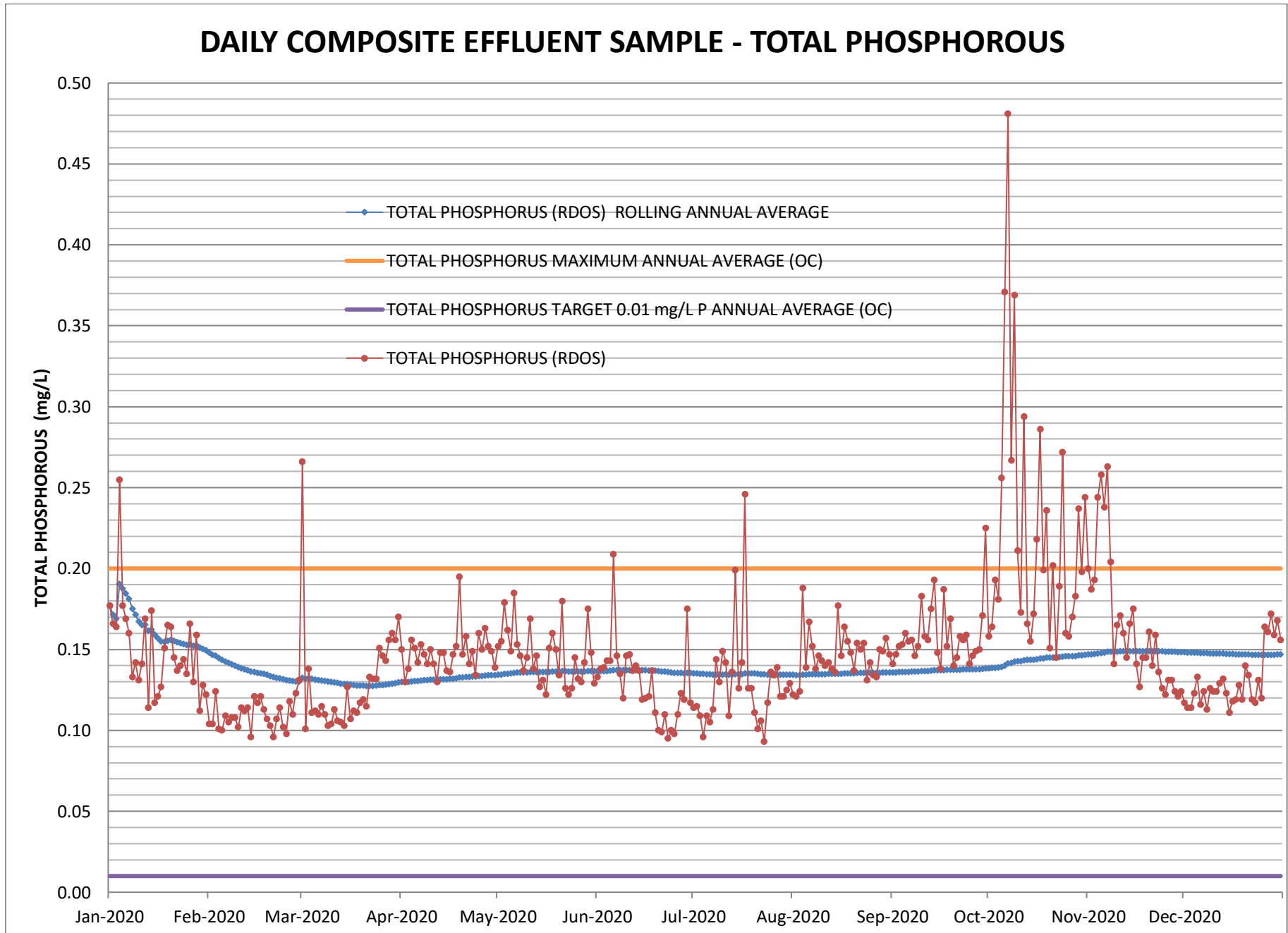


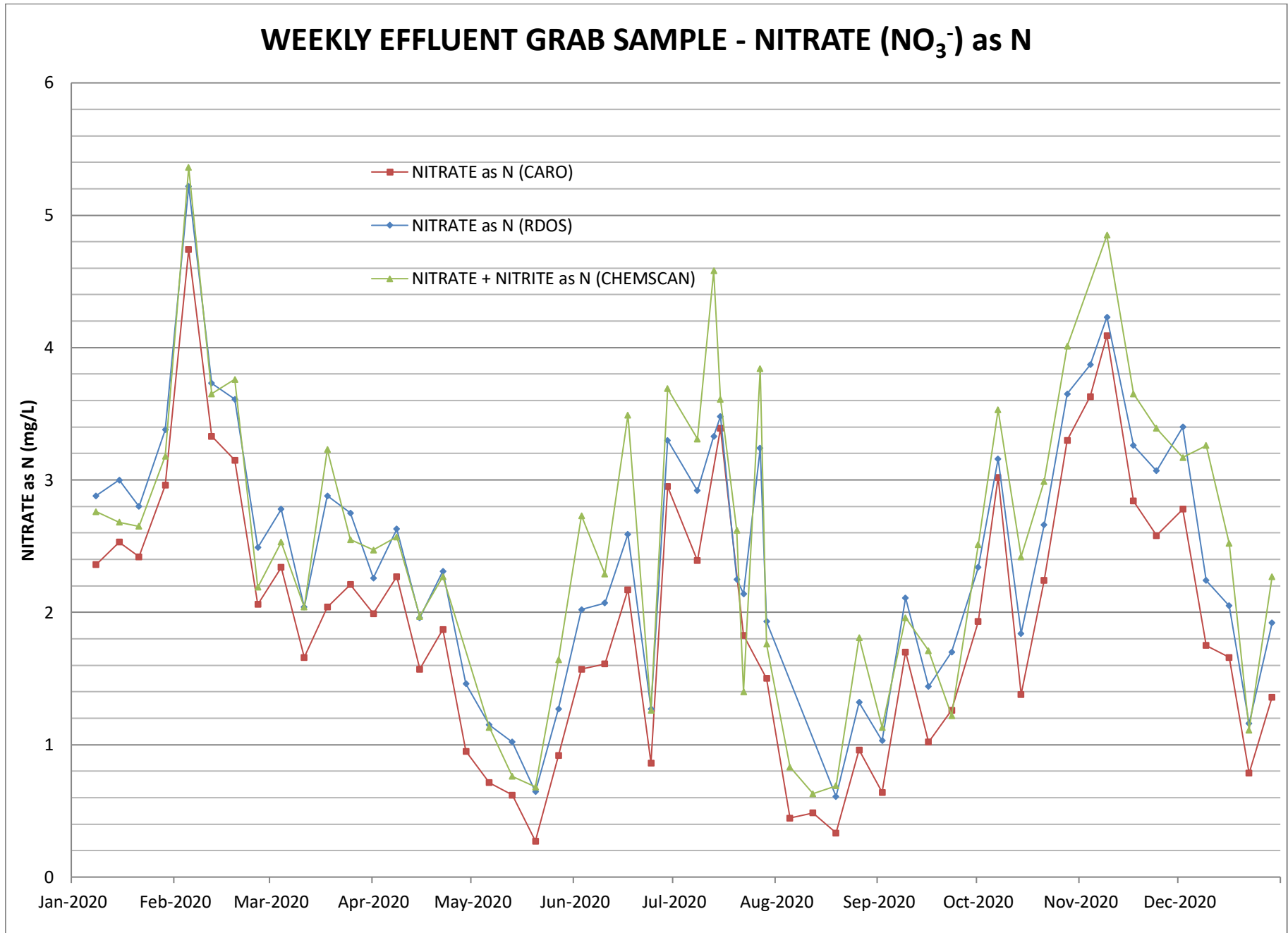


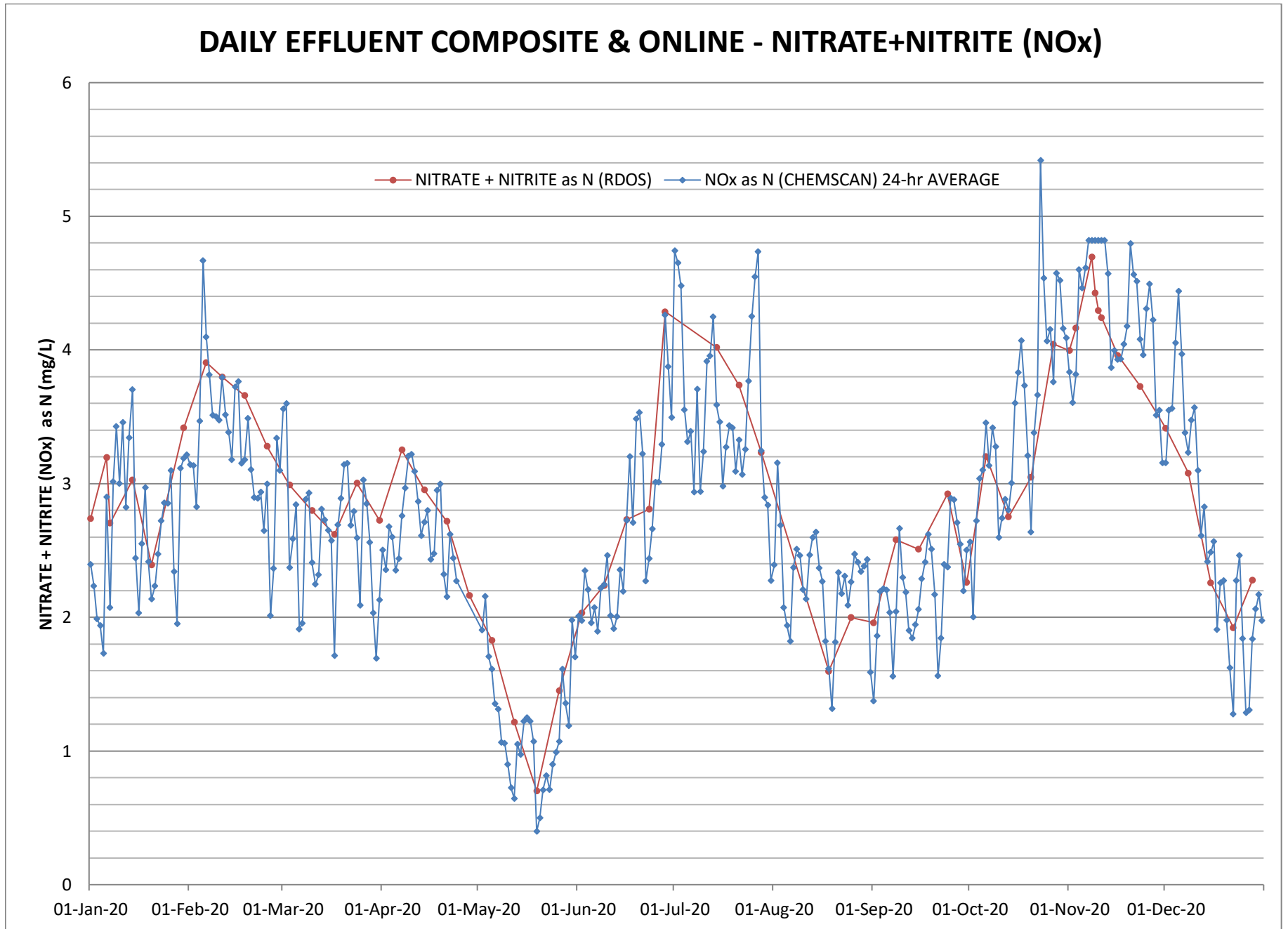
### WEEKLY EFFLUENT GRAB SAMPLE - TOTAL PHOSPHOROUS

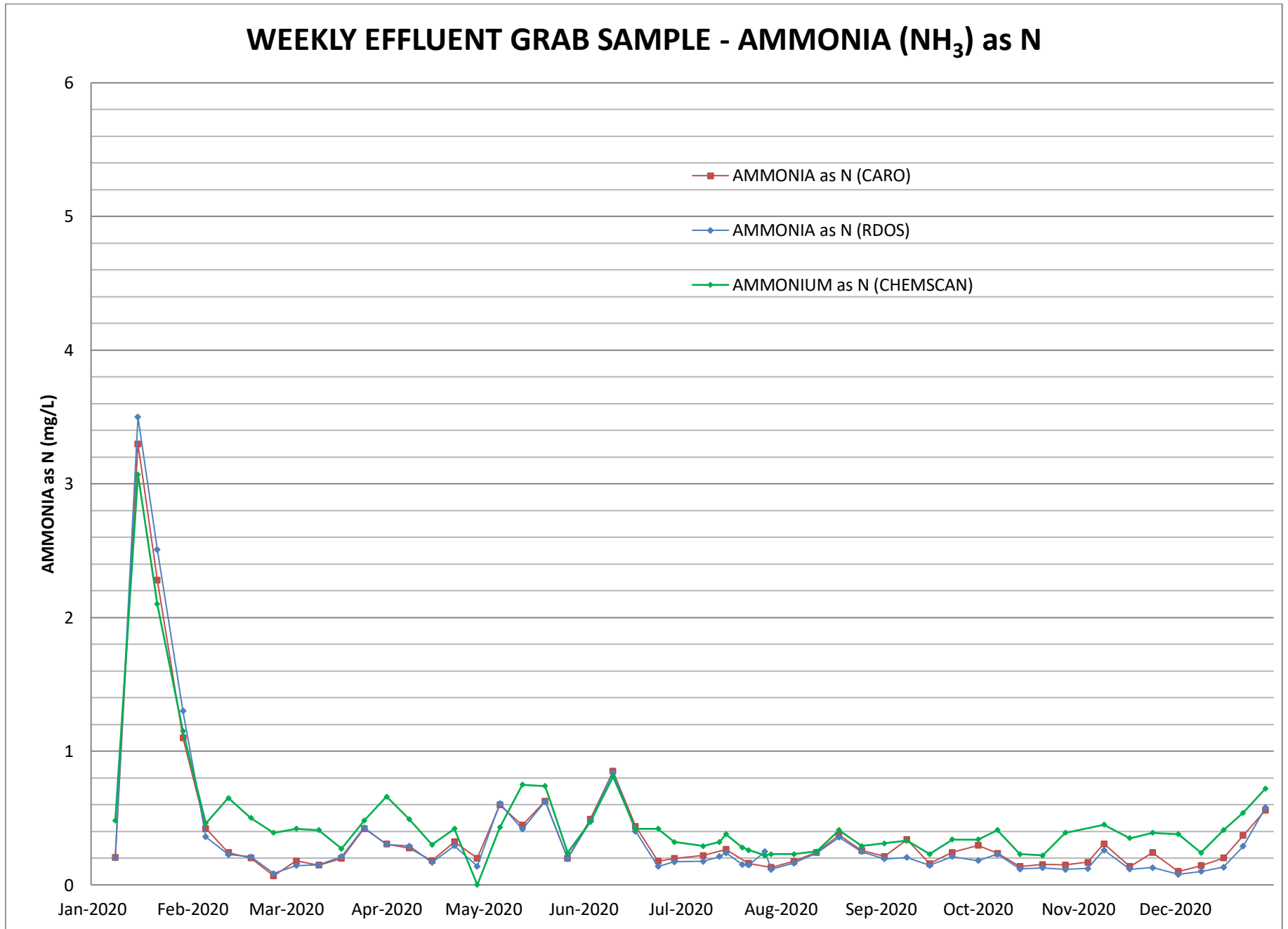




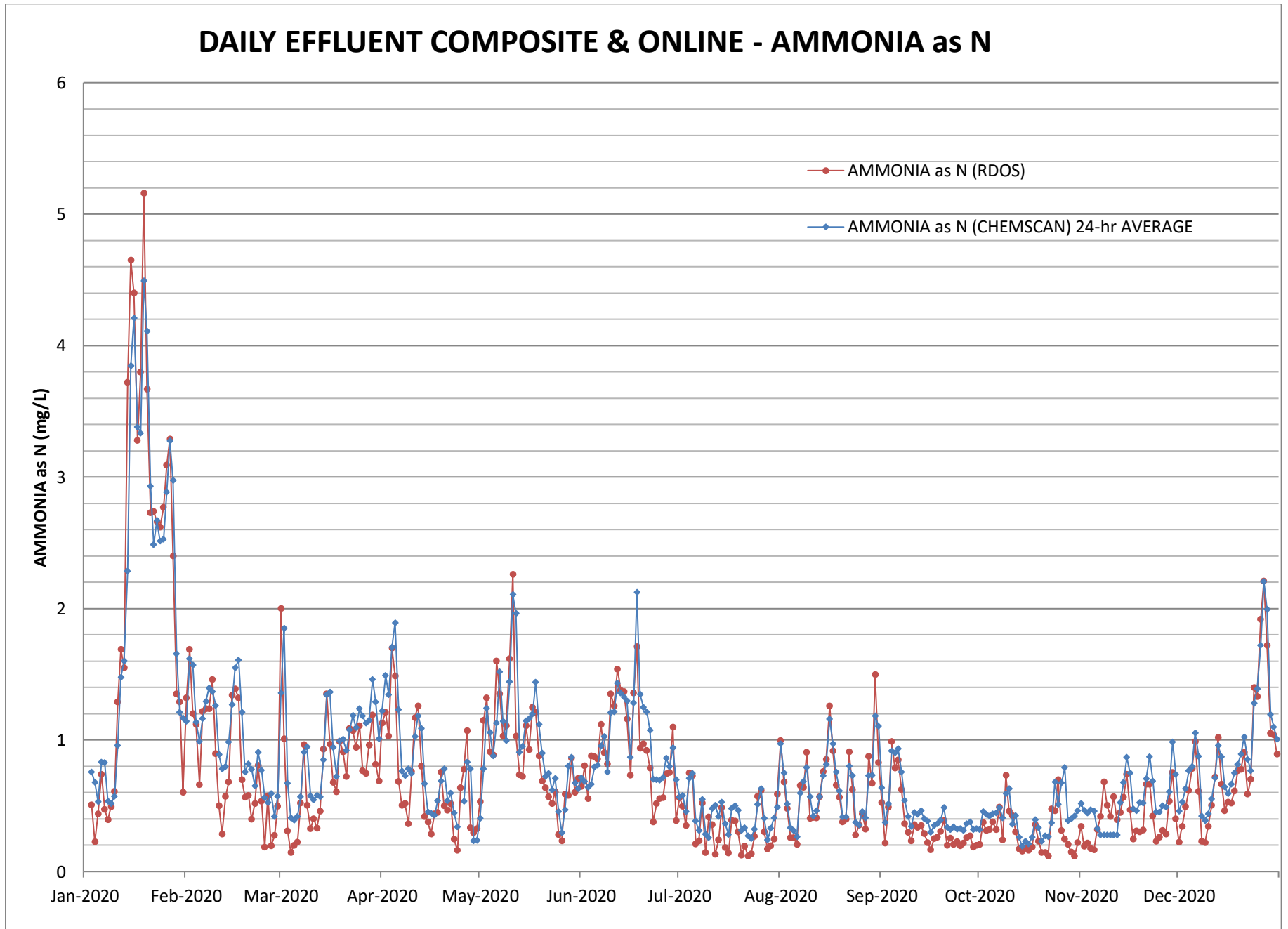




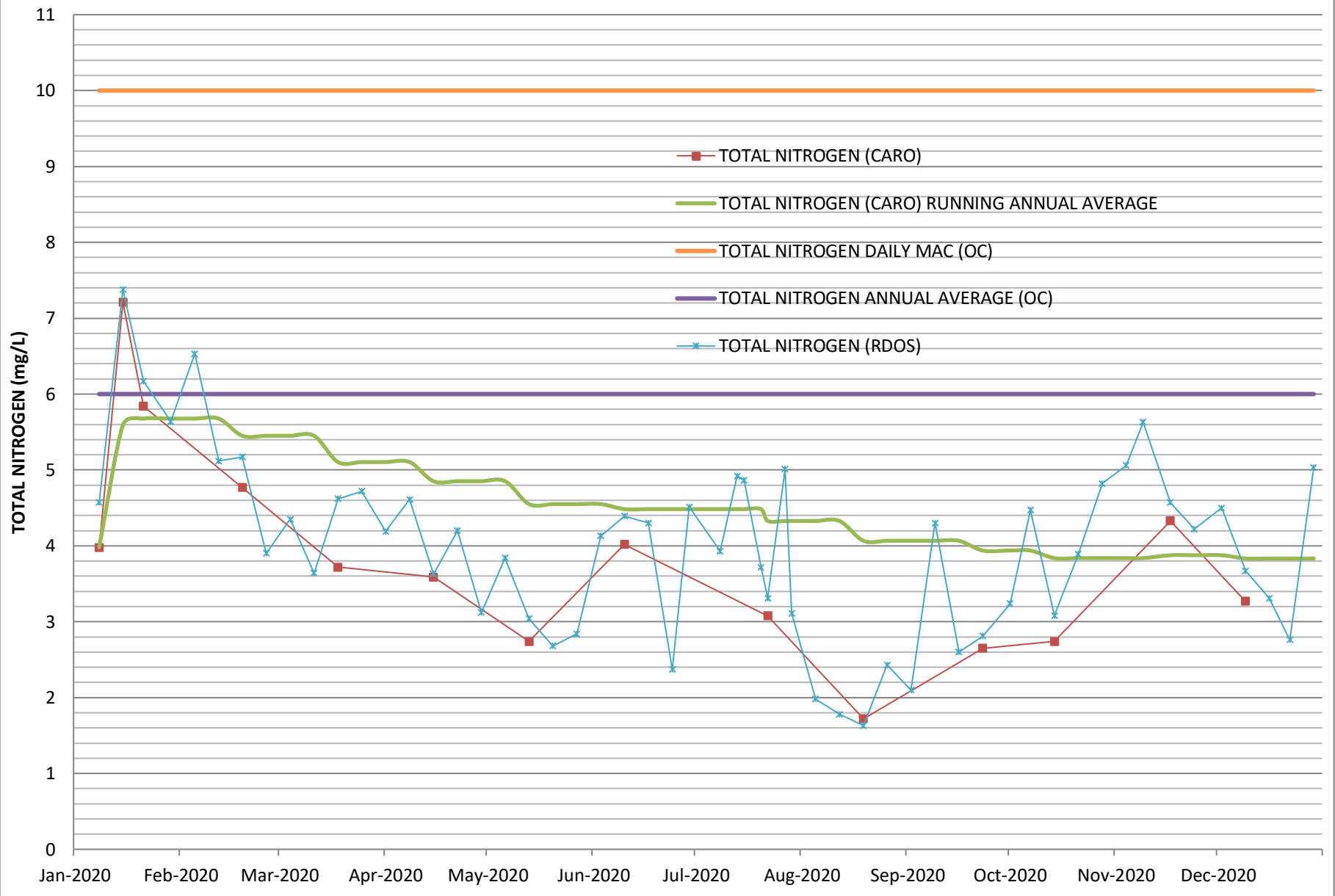


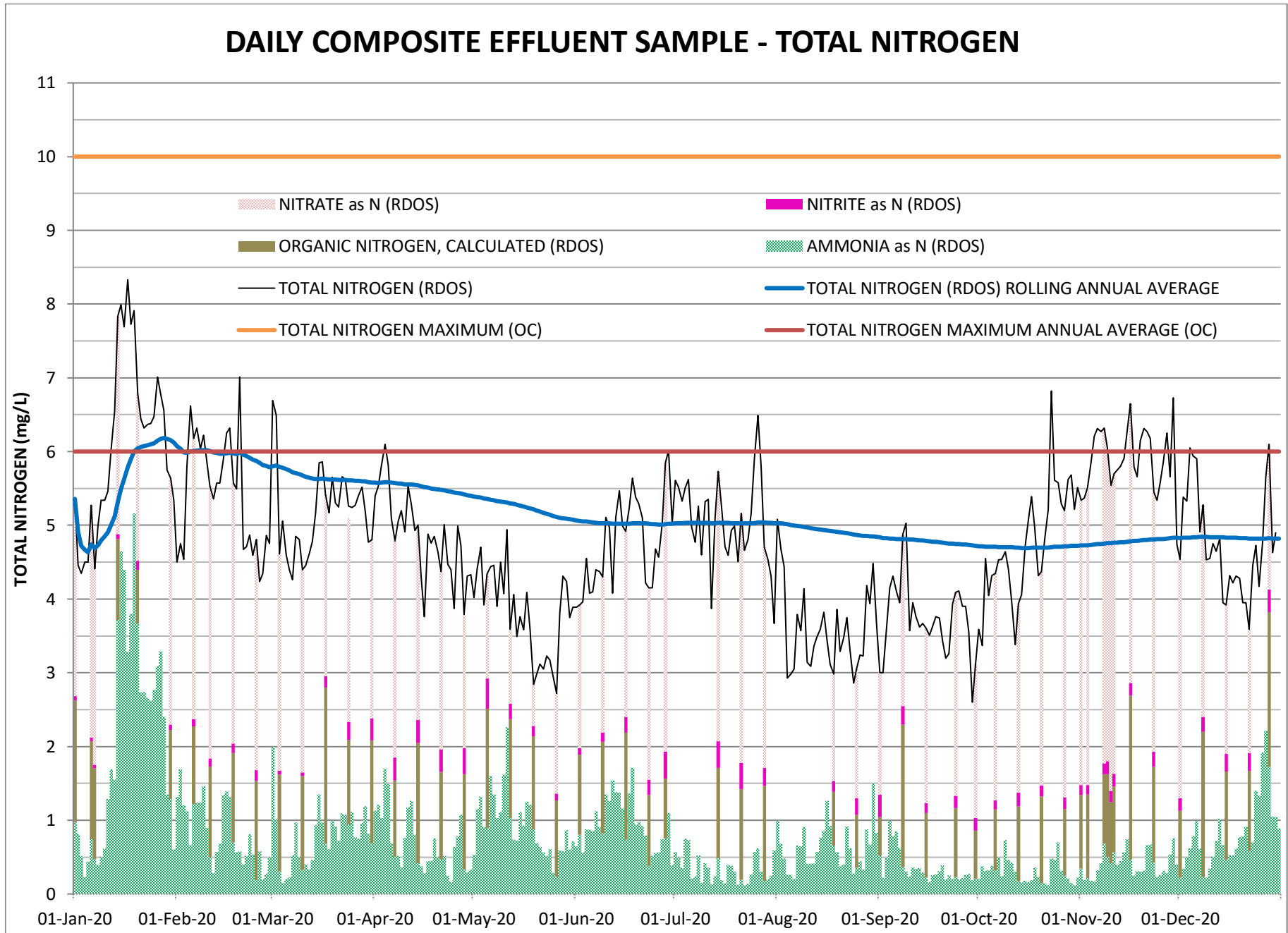


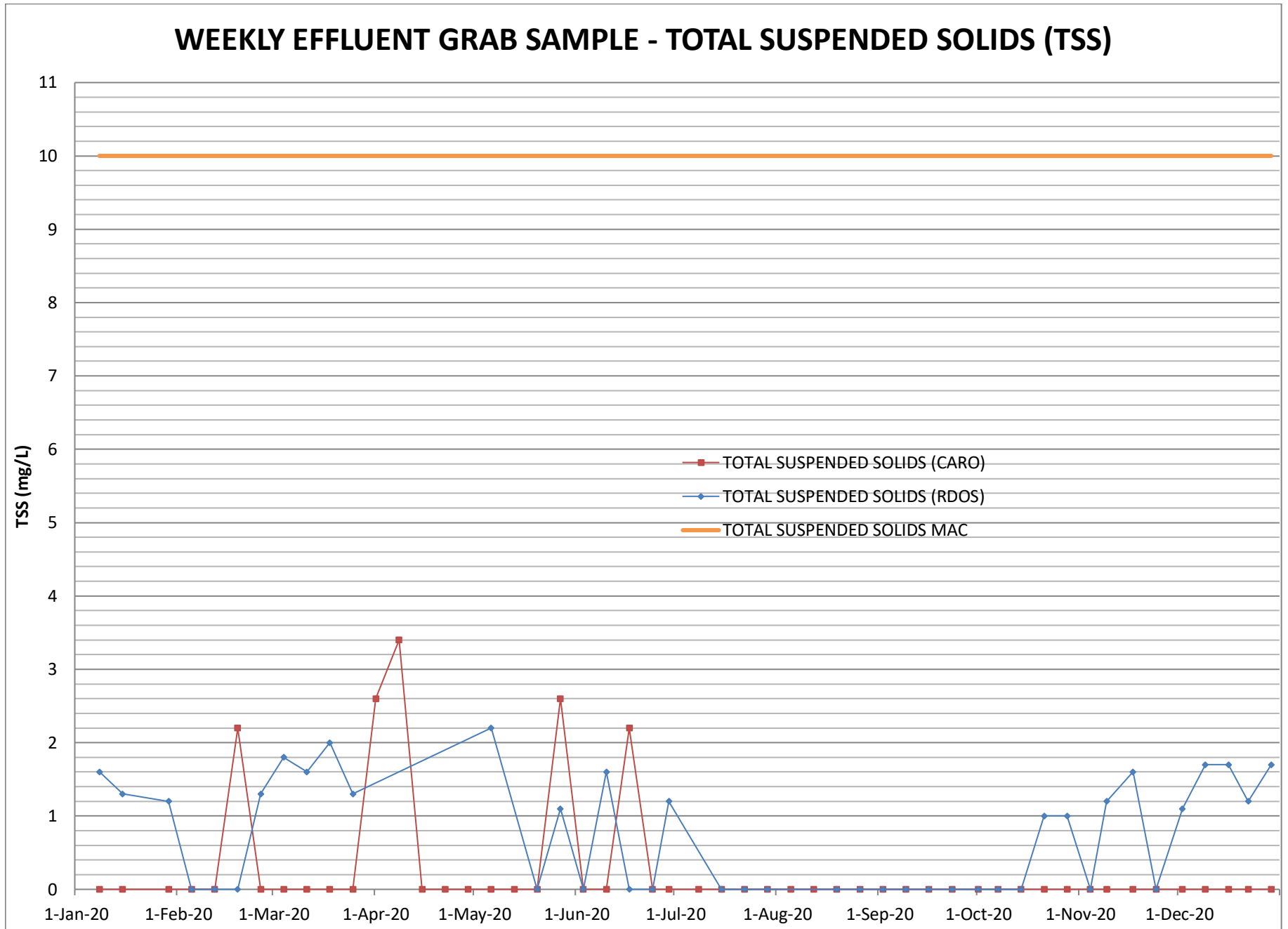


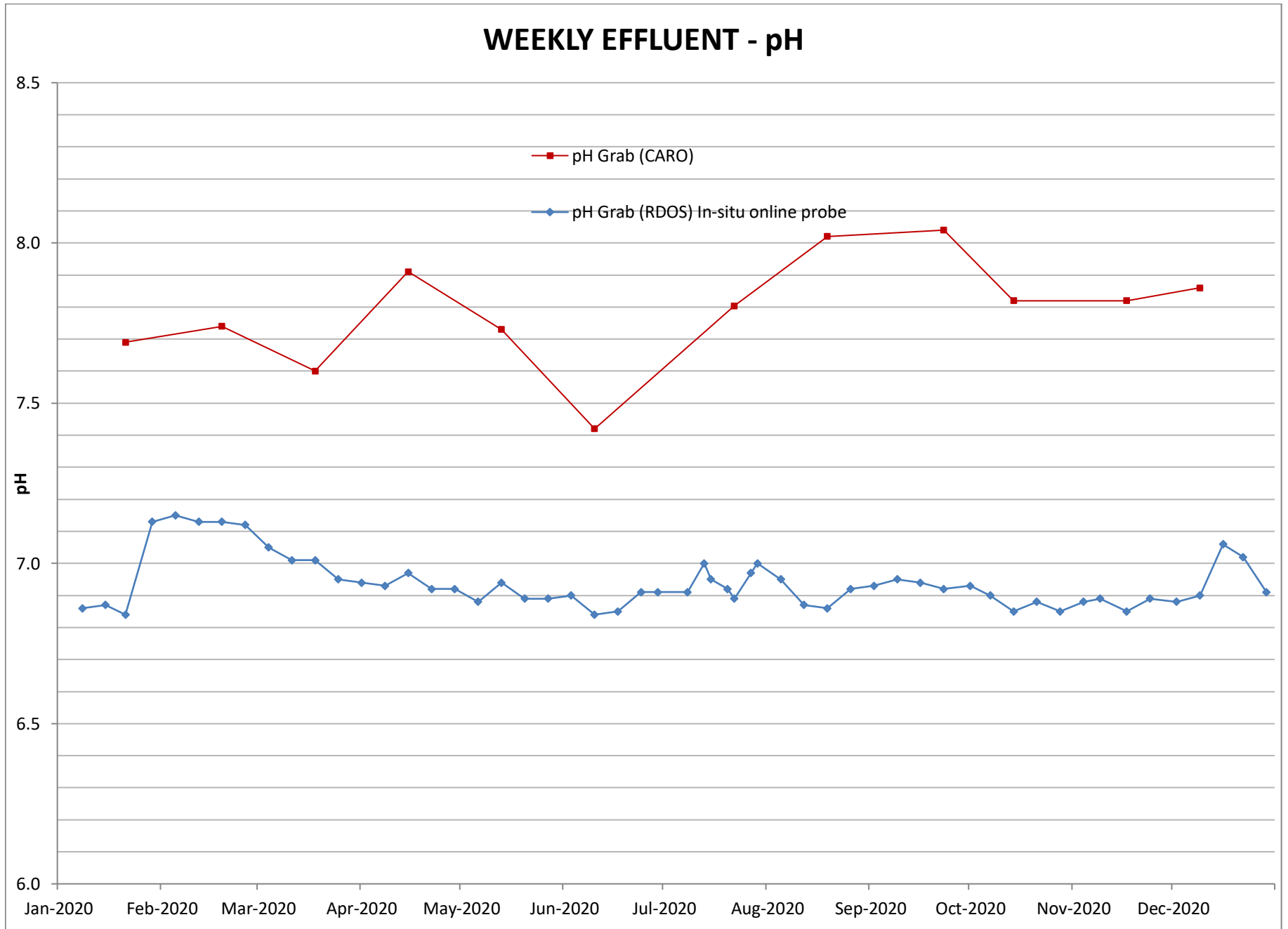


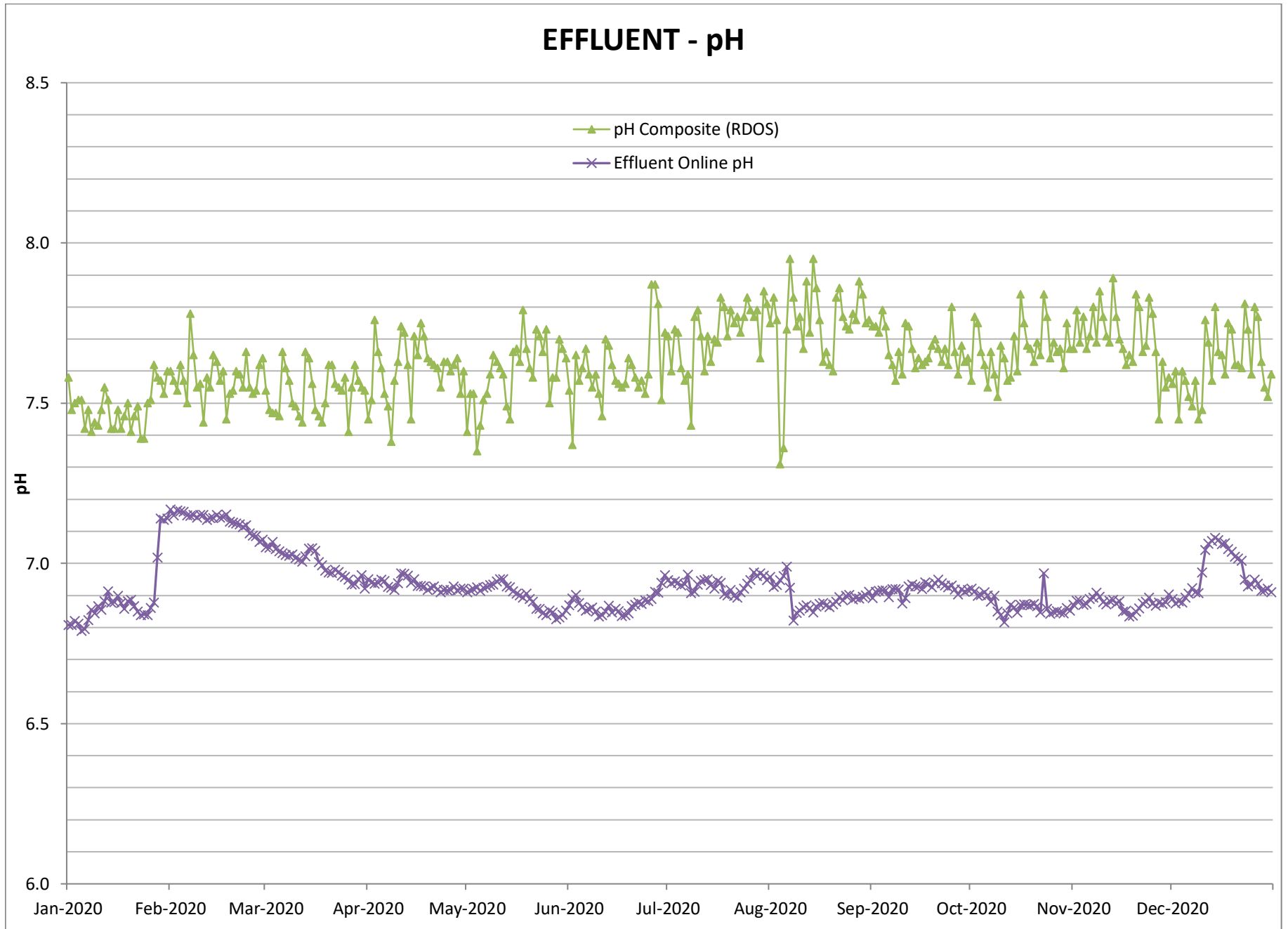
### WEEKLY EFFLUENT GRAB SAMPLE - TOTAL NITROGEN



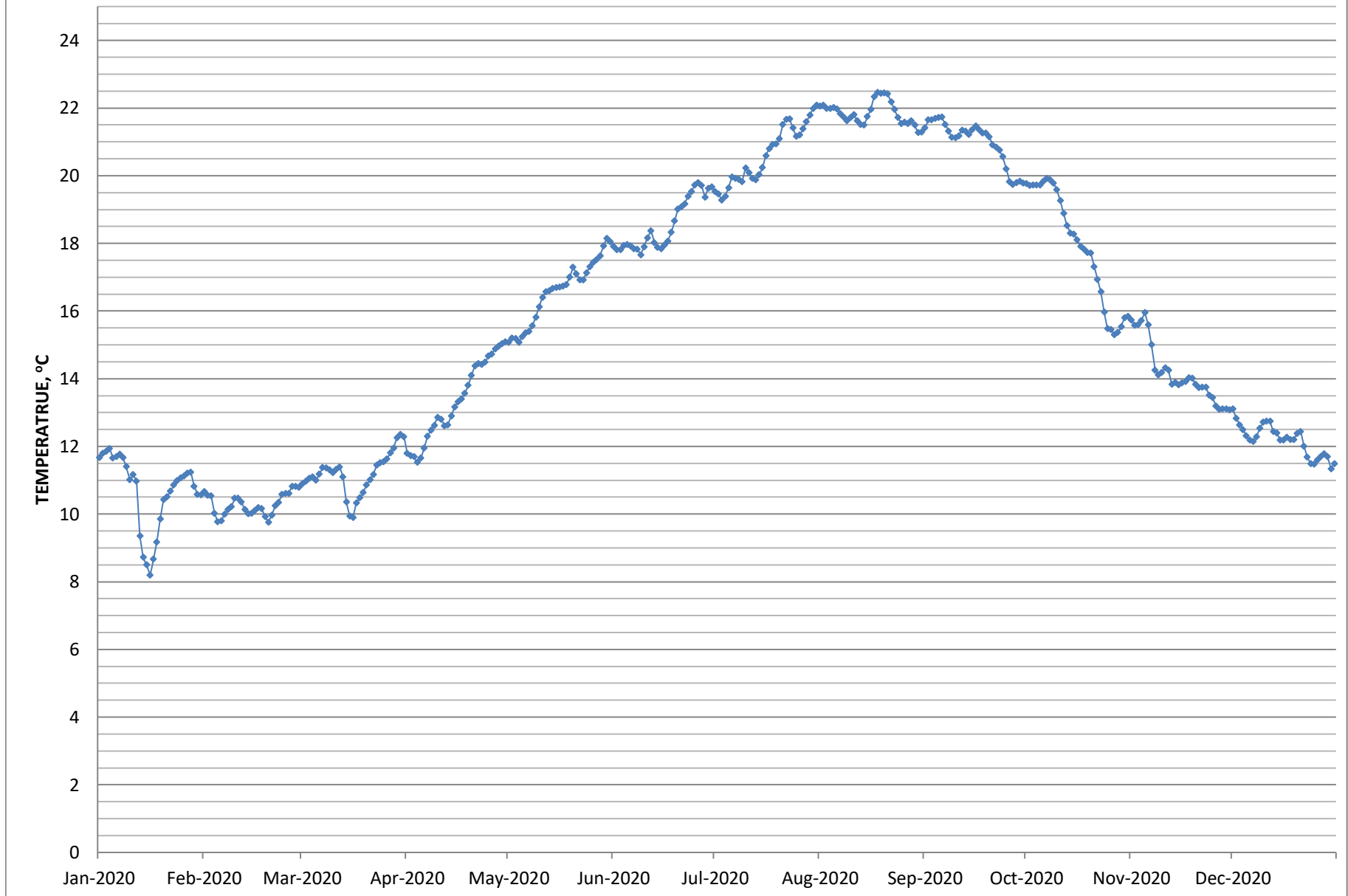


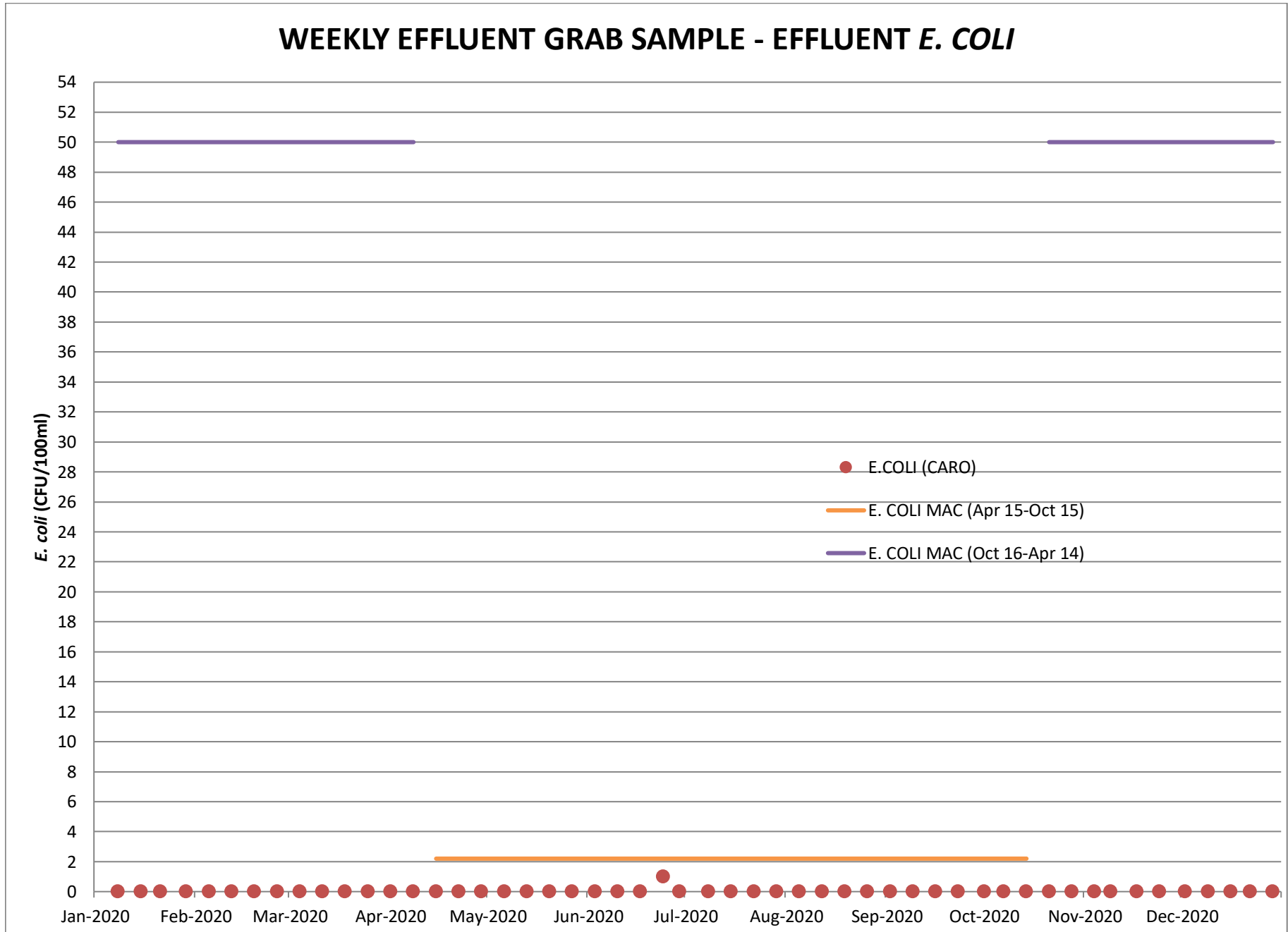






### DAILY EFFLUENT TEMPERATURE - 24-HR AVERAGE







# **APPENDIX M**

## **Wetland Water Quality Monitoring Database Summary 2020**

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
<b>Field Results</b>								
Conductivity	Cross Ditch by sandfilter	µS/cm	1023	691	1186	153	14	14
	South Ditch	µS/cm	813	694	922	86	7	7
	Wetland Outlet	µS/cm	888	888	888		1	1
Dissolved oxygen	Cross Ditch by sandfilter	mg/L	8.42	4.84	12.59	2.52	14	14
	South Ditch	mg/L	9.26	3.29	19.53	5.46	7	7
	Wetland Outlet	mg/L	3.54	3.54	3.54		1	1
Oxidation reduction potential	Cross Ditch by sandfilter	mV	75.5	51.2	103.2	20.6	14	14
	South Ditch	mV	89.4	26.8	124.8	30.7	7	7
	Wetland Outlet	mV	82.5	82.5	82.5		1	1
pH	Cross Ditch by sandfilter		8.04	7.42	8.45	0.28	14	14
	South Ditch		7.93	7.55	8.39	0.3	7	7
	Wetland Outlet		7.25	7.25	7.25		1	1
Temperature	Cross Ditch by sandfilter	°C	13.7	1.9	24.8	7	14	14
	South Ditch	°C	12.1	3.5	18.4	6.4	7	7
	Wetland Outlet	°C	14	14	14		1	1
Total dissolved solids	Cross Ditch by sandfilter	mg/L	664.4	449.1	773.5	99.8	14	14
	South Ditch	mg/L	534	473.2	598	49	7	7
	Wetland Outlet	mg/L	578.5	578.5	578.5		1	1
Turbidity	Cross Ditch by sandfilter	NTU	13.9	1.84	56.9	18.5	13	13
	South Ditch	NTU	5.65	2.26	14.2	4.65	7	7
	Wetland Outlet	NTU					0	0
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L	339	339	339		1	1
Alkalinity (carbonate, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L					1	0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L					1	0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L					1	0
Alkalinity (total, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L	339	339	339		1	1
Biochemical oxygen demand	Cross Ditch by sandfilter	mg/L	5.2	1.1	19.7	6.5	7	6
	South Ditch	mg/L	6.8	3	12.1	4.5	4	4
	Wetland Outlet	mg/L	2.6	2.6	2.6		1	1
5-d Carbonaceous BOD	Cross Ditch by sandfilter	mg/L					1	0
Chemical Oxygen Demand	Cross Ditch by sandfilter	mg/L	58	33	75	15	7	7
	South Ditch	mg/L	73	56	84	12	4	4
	Wetland Outlet	mg/L	37	37	37		1	1
Chloride	Cross Ditch by sandfilter	mg/L	126	126	126		1	1
Conductivity	Cross Ditch by sandfilter	µS/cm	1080	1080	1080		1	1
Fluoride	Cross Ditch by sandfilter	mg/L					1	0
Hardness, Total (total as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L	357	357	357		1	1
pH	Cross Ditch by sandfilter		8.11	7.9	8.34	0.16	7	7
	South Ditch		7.91	7.43	8.09	0.32	4	4
	Wetland Outlet		7.93	7.93	7.93		1	1

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
Sulphate	Cross Ditch by sandfilter	mg/L	38.5	38.5	38.5		1	1
Total suspended solids	Cross Ditch by sandfilter	mg/L	11.6	<2.0	38.8	15.6	7	4
	South Ditch	mg/L	19.8	2.8	69.7	33.3	4	4
	Wetland Outlet	mg/L					1	0
<b>Microbiological</b>								
E. coli (MPN)	Cross Ditch by sandfilter	MPN/100 mL	45.7	<1.0	276	84.7	11	10
	South Ditch	MPN/100 mL	36	<1.0	90.8	39.1	4	3
	Wetland Outlet	MPN/100 mL					1	0
Fecal coliforms (MPN)	Cross Ditch by sandfilter	MPN/100 mL	51.6	<1.0	291	91.7	11	10
	South Ditch	MPN/100 mL	36.4	<1.0	90.8	39	4	3
	Wetland Outlet	MPN/100 mL					1	0
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	Cross Ditch by sandfilter	%					1	0
<b>Nutrients</b>								
Ammonia (total, as N)	Cross Ditch by sandfilter	mg/L	0.147	<0.050	0.51	0.163	7	6
	South Ditch	mg/L	0.071	0.039	0.093	0.023	4	4
	Wetland Outlet	mg/L	0.165	0.165	0.165		1	1
Nitrate (as N)	Cross Ditch by sandfilter	mg/L	0.127	<0.010	0.851	0.319	7	2
	South Ditch	mg/L					4	0
	Wetland Outlet	mg/L	2.01	2.01	2.01		1	1
Nitrate + Nitrite (as N)	Cross Ditch by sandfilter	mg/L	0.1389	<0.0100	0.936	0.3515	7	2
	South Ditch	mg/L					4	0
	Wetland Outlet	mg/L	2.05	2.05	2.05		1	1
Nitrite (as N)	Cross Ditch by sandfilter	mg/L	0.017	<0.010	0.086	0.031	7	1
	South Ditch	mg/L					4	0
	Wetland Outlet	mg/L	0.036	0.036	0.036		1	1
Total nitrogen	Cross Ditch by sandfilter	mg/L	1.80	1.06	2.73	0.58	7	7
	South Ditch	mg/L	1.65	1.28	1.94	0.27	4	4
	Wetland Outlet	mg/L	3.60	3.60	3.60		1	1
Total kjeldahl nitrogen	Cross Ditch by sandfilter	mg/L	1.67	1.06	2.21	0.41	7	7
	South Ditch	mg/L	1.65	1.28	1.94	0.27	4	4
	Wetland Outlet	mg/L	1.55	1.55	1.55		1	1
Total organic nitrogen	Cross Ditch by sandfilter	mg/L	1.52	0.96	2.00	0.342	7	7
	South Ditch	mg/L	1.58	1.19	1.9	0.29	4	4
	Wetland Outlet	mg/L	1.38	1.38	1.38		1	1
Orthophosphate (dissolved, as P)	Cross Ditch by sandfilter	mg/L	0.0037	<0.0050	0.011	0.0032	7	1
	South Ditch	mg/L	0.0058	<0.0050	0.0158	0.0067	4	1
	Wetland Outlet	mg/L	0.0492	0.0492	0.0492		1	1
Phosphorus (total, by ICPMS/ICPOES)	Cross Ditch by sandfilter	mg/L	0.065	0.065	0.065		1	1
Phosphorus (total, APHA 4500-P)	Cross Ditch by sandfilter	mg/L	0.061	0.0404	0.109	0.023	9	9
	South Ditch	mg/L	0.075	0.0366	0.123	0.04	4	4
	Wetland Outlet	mg/L	0.117	0.117	0.117		1	1

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
Phosphorus (dissolved, APHA 4500-P)	Cross Ditch by sandfilter	mg/L	0.0282	0.0171	0.0423	0.0079	7	7
	South Ditch	mg/L	0.0268	0.0124	0.055	0.0195	4	4
	Wetland Outlet	mg/L	0.0917	0.0917	0.0917		1	1
Potassium (total)	Cross Ditch by sandfilter	mg/L	15.3	15.3	15.3		1	1
<b>Total Metals</b>								
Aluminum (total)	Cross Ditch by sandfilter	mg/L	0.072	0.072	0.072		1	1
Antimony (total)	Cross Ditch by sandfilter	mg/L					1	0
Arsenic (total)	Cross Ditch by sandfilter	mg/L	0.00106	0.00106	0.00106		1	1
Barium (total)	Cross Ditch by sandfilter	mg/L	0.108	0.108	0.108		1	1
Beryllium (total)	Cross Ditch by sandfilter	mg/L					1	0
Bismuth (total)	Cross Ditch by sandfilter	mg/L					1	0
Boron (total)	Cross Ditch by sandfilter	mg/L	0.126	0.126	0.126		1	1
Cadmium (total)	Cross Ditch by sandfilter	mg/L					1	0
Calcium (total)	Cross Ditch by sandfilter	mg/L	104	104	104		1	1
Chromium (total)	Cross Ditch by sandfilter	mg/L					1	0
Cobalt (total)	Cross Ditch by sandfilter	mg/L	0.00017	0.00017	0.00017		1	1
Copper (total)	Cross Ditch by sandfilter	mg/L	0.00483	0.00483	0.00483		1	1
Iron (total)	Cross Ditch by sandfilter	mg/L	0.116	0.116	0.116		1	1
Lead (total)	Cross Ditch by sandfilter	mg/L	0.00032	0.00032	0.00032		1	1
Lithium (total)	Cross Ditch by sandfilter	mg/L	0.00732	0.00732	0.00732		1	1
Magnesium (total)	Cross Ditch by sandfilter	mg/L	23.7	23.7	23.7		1	1
Manganese (total)	Cross Ditch by sandfilter	mg/L	0.0405	0.0405	0.0405		1	1
Mercury (total)	Cross Ditch by sandfilter	mg/L					1	0
Molybdenum (total)	Cross Ditch by sandfilter	mg/L	0.00888	0.00888	0.00888		1	1
Nickel (total)	Cross Ditch by sandfilter	mg/L	0.00207	0.00207	0.00207		1	1
Selenium (total)	Cross Ditch by sandfilter	mg/L					1	0
Silicon (total, as Si)	Cross Ditch by sandfilter	mg/L	4.6	4.6	4.6		1	1
Silver (total)	Cross Ditch by sandfilter	mg/L					1	0
Sodium (total)	Cross Ditch by sandfilter	mg/L	87.4	87.4	87.4		1	1
Strontium (total)	Cross Ditch by sandfilter	mg/L	1.05	1.05	1.05		1	1
Sulphur (total)	Cross Ditch by sandfilter	mg/L	13.1	13.1	13.1		1	1
Tellurium (total)	Cross Ditch by sandfilter	mg/L					1	0
Thallium (total)	Cross Ditch by sandfilter	mg/L					1	0
Thorium (total)	Cross Ditch by sandfilter	mg/L					1	0
Tin (total)	Cross Ditch by sandfilter	mg/L					1	0
Titanium (total)	Cross Ditch by sandfilter	mg/L					1	0
Tungsten (total)	Cross Ditch by sandfilter	mg/L					1	0
Uranium (total)	Cross Ditch by sandfilter	mg/L	0.0175	0.0175	0.0175		1	1
Vanadium (total)	Cross Ditch by sandfilter	mg/L	0.0014	0.0014	0.0014		1	1
Zinc (total)	Cross Ditch by sandfilter	mg/L	0.0044	0.0044	0.0044		1	1
Zirconium (total)	Cross Ditch by sandfilter	mg/L	0.00016	0.00016	0.00016		1	1

## Water Quality Results

Analyte	Unit	Sampling Location	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	
		Date Sampled	18-Mar-20	18-Mar-20	01-Apr-20	15-Apr-20	15-Apr-20	29-Apr-20	13-May-20	13-May-20
		Lab Sample ID	0031667-01	0031666-01		0041208-02	0041207-02		0051250-01	0051249-01
		Sample Type	Normal	Normal	Field Only	Normal	Normal	Field Only	Normal	Normal
<b>Field Results</b>										
Conductivity	µS/cm		691.1		802	880		901	1003	
Dissolved oxygen	mg/L		10.64		12.59	10.22		10.63	6.39	
Oxidation reduction potential	mV		88.4		97.2	103.1		102.5	91	
pH			8.36		8.3	8.23		8.45	8.04	
Temperature	°C		4.2		5.7	13		12.7	18.5	
Total dissolved solids	mg/L		449.1		520	572		585	650	
Turbidity	NTU		49.7		56.9	23.5		6.51	10.3	
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L									
Biochemical oxygen demand	mg/L		2.4			19.7			1.9	
5-d Carbonaceous BOD	mg/L									
Chemical Oxygen Demand	mg/L		71			44			57	
Chloride	mg/L									
Conductivity	µS/cm									
Fluoride	mg/L									
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L									
pH			8.02			7.93			8.22	
Sulphate	mg/L									
Total suspended solids	mg/L		38.8			29			6.2	
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL			<1.0			3.1			2
Fecal coliforms (MPN)	MPN/100 mL			<1.0			3.1			5.2
<b>Toxicity</b>										
LC50, 96 hour, Rainbow Trout	%									
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L		0.095			0.118			0.51	
Nitrate (as N)	mg/L		<0.010			0.851			0.011	
Nitrate + Nitrite (as N)	mg/L		<0.0100			0.936			0.0113	
Nitrate + Nitrite (as N) (calculated)	mg/L		<0.014			0.937			<0.014	
Nitrite (as N)	mg/L		<0.010			0.086			<0.010	
Total nitrogen	mg/L		1.44			2.73			2.22	
Total kjeldahl nitrogen	mg/L		1.44			1.79			2.21	
Total organic nitrogen	mg/L		1.34			1.67			1.7	
Orthophosphate (dissolved, as P)	mg/L		0.011			<0.0050			<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L									
Phosphorus (total, APHA 4500-P)	mg/L		0.0864			0.109			0.0663	
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0171			0.025			0.0326	



## Water Quality Results

Analyte	Unit	Sampling Location	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	
		Date Sampled	27-May-20	10-Jun-20	10-Jun-20	17-Jun-20	24-Jun-20	29-Jun-20	25-Aug-20
		Lab Sample ID	Field Only	0061232-02	0061231-02	0061945-02	0062646-01	0063048-01	0082605-01
		Sample Type	Field Only	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm		1051	1112			1141		1164
Dissolved oxygen	mg/L		6.83	7.7			4.84		6.37
Oxidation reduction potential	mV		103.2	60.2			67.2		55.2
pH			8.14	8.27			7.99		7.8
Temperature	°C		17.8	19			24.8		21
Total dissolved solids	mg/L		682.5	721.5			741		754
Turbidity	NTU		9.53	5					2.64
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L			3.6					1.1
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			75					68
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH				8.34					8.19
Sulphate	mg/L								
Total suspended solids	mg/L			3.4					<3.3
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				276	37.9	18.9	127	
Fecal coliforms (MPN)	MPN/100 mL				291	41.4	21.6	161	
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.074					0.102
Nitrate (as N)	mg/L			<0.010					<0.010
Nitrate + Nitrite (as N)	mg/L			<0.0100					<0.0100
Nitrate + Nitrite (as N) (calculated)	mg/L			<0.014					<0.014
Nitrite (as N)	mg/L			<0.010					<0.010
Total nitrogen	mg/L			2.07					1.78
Total kjeldahl nitrogen	mg/L			2.07					1.78
Total organic nitrogen	mg/L			2					1.68
Orthophosphate (dissolved, as P)	mg/L			<0.0050					<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.0578					0.0474
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0247					0.0256



## Water Quality Results

Analyte	Unit	Sampling Location	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	
		Date Sampled	25-Aug-20	09-Sep-20	23-Sep-20	07-Oct-20	03-Nov-20	03-Nov-20	10-Nov-20	17-Nov-20
		Lab Sample ID	0082603-01	0092595-01	0092595-01	0092595-01	20K0304-01	20K0350-01	20K1352-01	20K2039-01
		Sample Type	Normal	Field Only	Normal	Field Only	Normal	Normal	Normal	Normal
<b>Field Results</b>										
Conductivity	µS/cm			1159	1186	1163		1080	993	987
Dissolved oxygen	mg/L			5.51	6.47	7.57		10.45	11.66	10.57
Oxidation reduction potential	mV			51.2	53.1	62.5		64.3	58.2	73.5
pH				7.78	8.13	7.79		7.42	7.92	7.76
Temperature	°C			17.1	15	16		5.1	1.9	4
Total dissolved solids	mg/L			754	773.5	754		702	643.5	643.5
Turbidity	NTU			1.84	4.79	2.35		2.37	5.3	4.6
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							339		
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							<1.0		
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							<1.0		
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							<1.0		
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							339		
Biochemical oxygen demand	mg/L				4.2			<7.1		
5-d Carbonaceous BOD	mg/L							<5.8		
Chemical Oxygen Demand	mg/L				60			33		
Chloride	mg/L							126		
Conductivity	µS/cm							1080		
Fluoride	mg/L							<0.10		
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							357		
pH					8.17			7.9		
Sulphate	mg/L							38.5		
Total suspended solids	mg/L				<2.0			<2.0		
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL		4		21			2		10
Fecal coliforms (MPN)	MPN/100 mL		9		21			2		12
<b>Toxicity</b>										
LC50, 96 hour, Rainbow Trout	%							>100		
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L				<0.050			0.105		
Nitrate (as N)	mg/L				<0.010			<0.010		
Nitrate + Nitrite (as N)	mg/L				<0.0100			<0.0100		
Nitrate + Nitrite (as N) (calculated)	mg/L				<0.014			<0.014		
Nitrite (as N)	mg/L				<0.010			<0.010		
Total nitrogen	mg/L				1.31			1.06		
Total kjeldahl nitrogen	mg/L				1.31			1.06		
Total organic nitrogen	mg/L				1.31			0.959		
Orthophosphate (dissolved, as P)	mg/L				<0.0050			<0.0050		
Phosphorus (total, by ICPMS/ICPOES)	mg/L							0.065		
Phosphorus (total, APHA 4500-P)	mg/L				0.043			0.0547	0.0404	0.044
Phosphorus (dissolved, APHA 4500-P)	mg/L				0.0299			0.0423		



## Water Quality Results

Analyte	Unit	Wetland Outlet		South Ditch		South Ditch	South Ditch	South Ditch
		10-Jun-20 0061232-03 Normal	10-Jun-20 0061231-03 Normal	18-Mar-20 0031667-02 Normal	18-Mar-20 0031666-02 Normal	01-Apr-20 Field Only	15-Apr-20 0041208-01 Normal	15-Apr-20 0041207-01 Normal
<b>Field Results</b>								
Conductivity	µS/cm	888		728.2		803.1	849	
Dissolved oxygen	mg/L	3.54		19.53		11.95	10.45	
Oxidation reduction potential	mV	82.5		91.2		124.8	92.1	
pH		7.25		8.39		8.08	7.96	
Temperature	°C	14		3.5		3.5	12.3	
Total dissolved solids	mg/L	578.5		473.2		521.9	552.5	
Turbidity	NTU			14.2		5.68	2.26	
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L	2.6		9			12.1	
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L	37		72			56	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH		7.93		8.09			7.43	
Sulphate	mg/L							
Total suspended solids	mg/L	<2.0		69.7			2.8	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL		<1.0		<1.0			18.4
Fecal coliforms (MPN)	MPN/100 mL		<1.0		<1.0			18.4
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L	0.165		0.039			0.093	
Nitrate (as N)	mg/L	2.01		<0.010			<0.010	
Nitrate + Nitrite (as N)	mg/L	2.05		<0.0100			<0.0100	
Nitrate + Nitrite (as N) (calculated)	mg/L	2.05		<0.014			<0.014	
Nitrite (as N)	mg/L	0.036		<0.010			<0.010	
Total nitrogen	mg/L	3.6		1.94			1.28	
Total kjeldahl nitrogen	mg/L	1.55		1.94			1.28	
Total organic nitrogen	mg/L	1.38		1.9			1.19	
Orthophosphate (dissolved, as P)	mg/L	0.0492		<0.0050			<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L	0.117		0.123			0.0366	
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0917		0.0124			0.0156	





## Water Quality Results

Analyte	Unit	South Ditch	South Ditch	South Ditch	South Ditch	South Ditch	South Ditch
		29-Apr-20 Field Only	13-May-20 0051250-02 Normal	13-May-20 0051249-02 Normal	27-May-20 Field Only	10-Jun-20 0061232-01 Normal	10-Jun-20 0061231-01 Normal
<b>Field Results</b>							
Conductivity	µS/cm	910	922		787	694	
Dissolved oxygen	mg/L	8.27	6.66		3.29	4.66	
Oxidation reduction potential	mV	110.8	26.8		89.7	90.4	
pH		8.15	7.76		7.65	7.55	
Temperature	°C	12	18.4		16.6	18.3	
Total dissolved solids	mg/L	591.5	598		513.5	485	
Turbidity	NTU	9.71	2.57		2.84	2.32	
<b>Lab Results</b>							
<b>General</b>							
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L						
Biochemical oxygen demand	mg/L		3			3.2	
5-d Carbonaceous BOD	mg/L						
Chemical Oxygen Demand	mg/L		80			84	
Chloride	mg/L						
Conductivity	µS/cm						
Fluoride	mg/L						
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L						
pH			8.09			8.01	
Sulphate	mg/L						
Total suspended solids	mg/L		3			3.7	
<b>Microbiological</b>							
E. coli (MPN)	MPN/100 mL			90.8			34.1
Fecal coliforms (MPN)	MPN/100 mL			90.8			35.9
<b>Toxicity</b>							
LC50, 96 hour, Rainbow Trout	%						
<b>Nutrients</b>							
Ammonia (total, as N)	mg/L		0.07			0.082	
Nitrate (as N)	mg/L		<0.010			<0.010	
Nitrate + Nitrite (as N)	mg/L		<0.0100			<0.0100	
Nitrate + Nitrite (as N) (calculated)	mg/L		<0.014			<0.014	
Nitrite (as N)	mg/L		<0.010			<0.010	
Total nitrogen	mg/L		1.7			1.67	
Total kjeldahl nitrogen	mg/L		1.7			1.67	
Total organic nitrogen	mg/L		1.63			1.58	
Orthophosphate (dissolved, as P)	mg/L		<0.0050			0.0158	
Phosphorus (total, by ICPMS/ICPOES)	mg/L						
Phosphorus (total, APHA 4500-P)	mg/L		0.048			0.0922	
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0241			0.055	



## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

		Sampling Location	Cross Ditch by sandfilter
		Date Sampled	03-Nov-20
		Lab Sample ID	20K0350-01
		Sample Type	Normal
Analyte	Unit		
<b>Total Metals</b>			
Aluminum (total)	mg/L	0.072	
Antimony (total)	mg/L	<0.00020	
Arsenic (total)	mg/L	0.00106	
Barium (total)	mg/L	0.108	
Beryllium (total)	mg/L	<0.00010	
Bismuth (total)	mg/L	<0.00010	
Boron (total)	mg/L	0.126	
Cadmium (total)	mg/L	<0.000010	
Calcium (total)	mg/L	104	
Chromium (total)	mg/L	<0.00050	
Cobalt (total)	mg/L	0.00017	
Copper (total)	mg/L	0.00483	
Iron (total)	mg/L	0.116	
Lead (total)	mg/L	0.00032	
Lithium (total)	mg/L	0.00732	
Magnesium (total)	mg/L	23.7	
Manganese (total)	mg/L	0.0405	
Mercury (total)	mg/L	<0.000010	
Molybdenum (total)	mg/L	0.00888	
Nickel (total)	mg/L	0.00207	
Potassium (total)	mg/L	15.3	
Selenium (total)	mg/L	<0.00050	
Silicon (total, as Si)	mg/L	4.6	
Silver (total)	mg/L	<0.000050	
Sodium (total)	mg/L	87.4	
Strontium (total)	mg/L	1.05	
Sulphur (total)	mg/L	13.1	
Tellurium (total)	mg/L	<0.00050	
Thallium (total)	mg/L	<0.000020	
Thorium (total)	mg/L	<0.00010	
Tin (total)	mg/L	<0.00020	
Titanium (total)	mg/L	<0.0050	
Tungsten (total)	mg/L	<0.0010	
Uranium (total)	mg/L	0.0175	
Vanadium (total)	mg/L	0.0014	
Zinc (total)	mg/L	0.0044	
Zirconium (total)	mg/L	0.00016	



## Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
No Guideline	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<b>No Guideline</b>	Highlighted value exceeds No Guideline
SL Criteria Override	Highlighted value exceeds sampling location criteria override

# **APPENDIX N**

## **Wetland Monitoring 2020 Lab Reports**



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW  
**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0031666

**RECEIVED / TEMP** 2020-03-19 11:50 / 7°C  
**REPORTED** 2020-03-23 11:09

**COC NUMBER** B91454

### 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.

### Work Order Comments:

Custody Seals Intact: YES

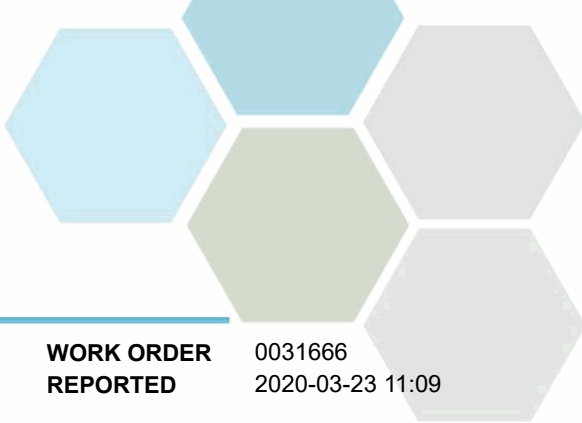
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

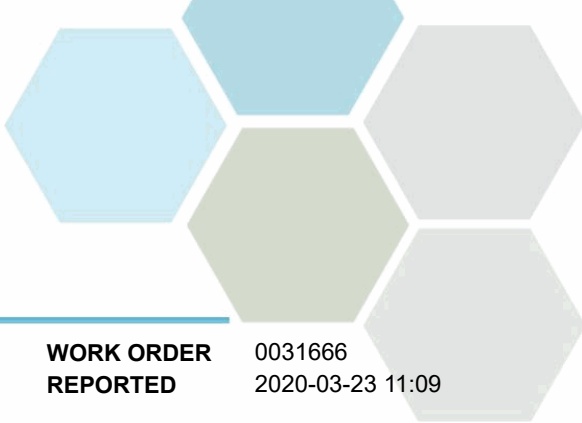


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0031666  
2020-03-23 11:09

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Cross Ditch by Sand Filter - Bacteria (0031666-01)   Matrix: Water   Sampled: 2020-03-18 10:20</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal	< 1.0	N/A	1.0	MPN/100 mL	2020-03-19	
E. coli (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-03-19	
<b>South Ditch - Bacteria (0031666-02)   Matrix: Water   Sampled: 2020-03-18 10:40</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal	< 1.0	N/A	1.0	MPN/100 mL	2020-03-19	
E. coli (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-03-19	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0031666  
2020-03-23 11:09

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)



**CERTIFICATE OF ANALYSIS**

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0031667
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-03-19 11:50 / 7°C 2020-03-26 14:49
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	No Number
<b>PROJECT</b>	OK Falls WWTP		
<b>PROJECT INFO</b>			

**Introduction:**

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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.

**Work Order Comments:**

Custody Seals Intact: YES

*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

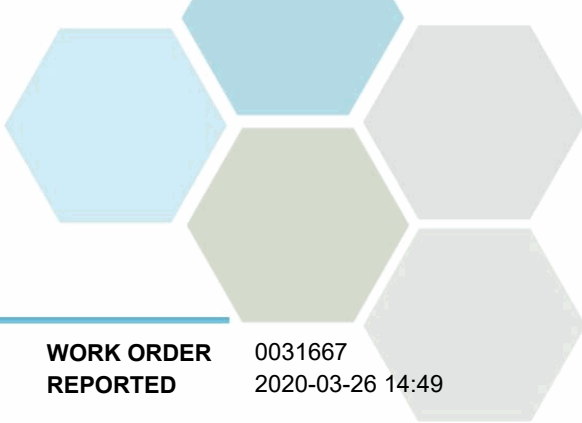
**Authorized By:**

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7





# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0031667  
2020-03-26 14:49

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Cross Ditch by Sand Filter (0031667-01)   Matrix: Water   Sampled: 2020-03-18 10:20</b>						<b>FILT, PRES</b>

**Anions**

Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-03-19	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-03-19	
Phosphate (as P)	<b>0.0110</b>	N/A	0.0050	mg/L	2020-03-19	

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>1.44</b>	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	<b>1.34</b>	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.095</b>	None Required	0.020	mg/L	2020-03-25	
BOD, 5-day	<b>2.4</b>	N/A	2.0	mg/L	2020-03-25	
Chemical Oxygen Demand	<b>71</b>	N/A	20	mg/L	2020-03-20	
Nitrogen, Total Kjeldahl	<b>1.44</b>	N/A	0.050	mg/L	2020-03-20	
pH	<b>8.02</b>	7.0-10.5	0.10	pH units	2020-03-23	HT2
Phosphorus, Total (as P)	<b>0.0864</b>	N/A	0.0020	mg/L	2020-03-20	
Phosphorus, Total Dissolved	<b>0.0171</b>	N/A	0.0020	mg/L	2020-03-20	
Solids, Total Suspended	<b>38.8</b>	N/A	2.0	mg/L	2020-03-25	

**South Ditch (0031667-02) | Matrix: Water | Sampled: 2020-03-18 10:40**

**FILT, PRES**

**Anions**

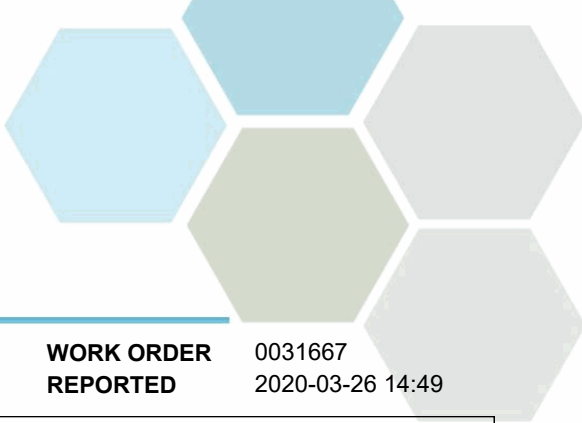
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-03-19	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-03-19	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2020-03-19	

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>1.94</b>	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	<b>1.90</b>	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.039</b>	None Required	0.020	mg/L	2020-03-25	
BOD, 5-day	<b>9.0</b>	N/A	2.0	mg/L	2020-03-25	
Chemical Oxygen Demand	<b>72</b>	N/A	20	mg/L	2020-03-20	
Nitrogen, Total Kjeldahl	<b>1.94</b>	N/A	0.050	mg/L	2020-03-20	
pH	<b>8.09</b>	7.0-10.5	0.10	pH units	2020-03-23	HT2
Phosphorus, Total (as P)	<b>0.123</b>	N/A	0.0020	mg/L	2020-03-20	
Phosphorus, Total Dissolved	<b>0.0124</b>	N/A	0.0020	mg/L	2020-03-20	
Solids, Total Suspended	<b>69.7</b>	N/A	2.0	mg/L	2020-03-25	



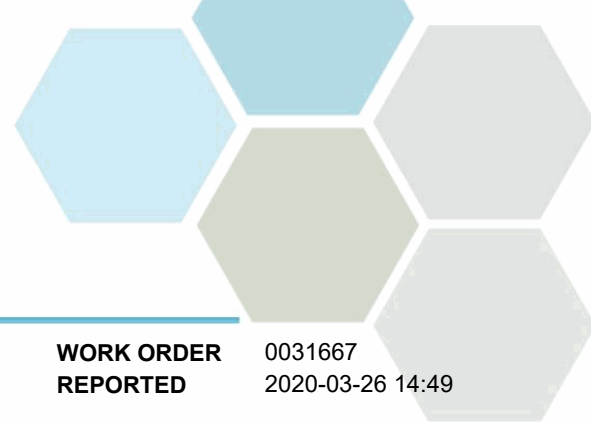
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP

**WORK ORDER** 0031667  
**REPORTED** 2020-03-26 14:49

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0031667  
2020-03-26 14:49

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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna

*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
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0041207

**RECEIVED / TEMP** 2020-04-16 11:30 / 6°C

**REPORTED** 2020-04-23 13:24

**COC NUMBER** B91612

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

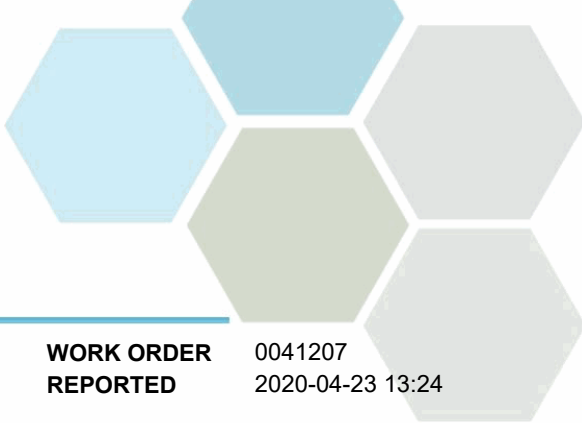
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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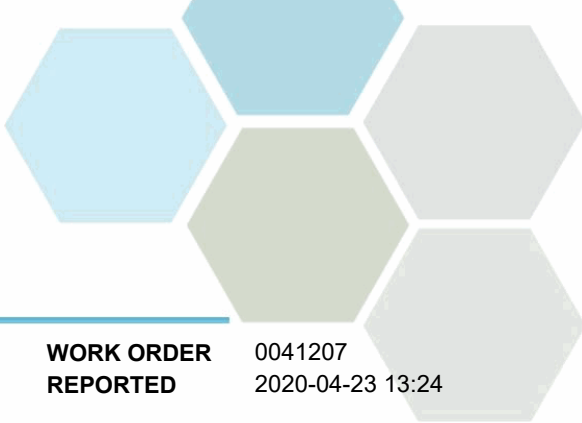


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0041207  
2020-04-23 13:24

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>South Ditch - Bacteria (0041207-01)   Matrix: Surface Water   Sampled: 2020-04-15 12:10</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal	18.4	N/A	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	18.4	N/A	1.0	MPN/100 mL	2020-04-16	
<b>Cross Ditch - Bacteria (0041207-02)   Matrix: Surface Water   Sampled: 2020-04-15 12:20</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal	3.1	N/A	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	3.1	N/A	1.0	MPN/100 mL	2020-04-16	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0041207  
2020-04-23 13:24

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW  
**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0041208

**RECEIVED / TEMP** 2020-04-16 11:30 / 6°C  
**REPORTED** 2020-04-23 12:47

**COC NUMBER** B91612

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

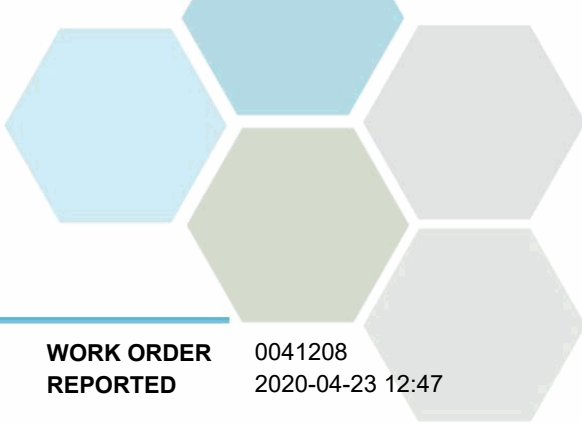
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0041208  
2020-04-23 12:47

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>South Ditch (0041208-01)   Matrix: Surface Water   Sampled: 2020-04-15 12:10</b>						<b>FILT, PRES</b>

**Anions**

Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2020-04-17	

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>1.28</b>	N/A	0.100	mg/L	N/A	
Nitrogen, Organic	<b>1.19</b>	N/A	0.100	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.093</b>	None Required	0.050	mg/L	2020-04-21	
BOD, 5-day	<b>12.1</b>	N/A	2.0	mg/L	2020-04-22	
Chemical Oxygen Demand	<b>56</b>	N/A	20	mg/L	2020-04-20	
Nitrogen, Total Kjeldahl	<b>1.28</b>	N/A	0.050	mg/L	2020-04-20	
pH	<b>7.43</b>	7.0-10.5	0.10	pH units	2020-04-17	HT2
Phosphorus, Total (as P)	<b>0.0366</b>	N/A	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	<b>0.0156</b>	N/A	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	<b>2.8</b>	N/A	2.0	mg/L	2020-04-21	

**Cross Ditch (0041208-02) | Matrix: Water | Sampled: 2020-04-15 12:20**

**FILT, PRES**

**Anions**

Nitrate (as N)	<b>0.851</b>	MAC = 10	0.010	mg/L	2020-04-17	
Nitrite (as N)	<b>0.086</b>	MAC = 1	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2020-04-17	

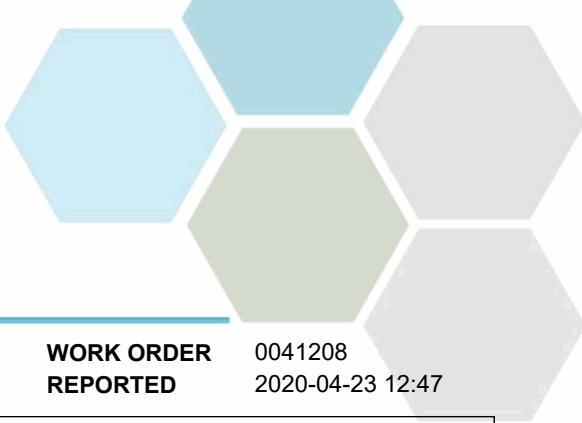
**Calculated Parameters**

Nitrate+Nitrite (as N)	<b>0.936</b>	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>2.73</b>	N/A	0.100	mg/L	N/A	
Nitrogen, Organic	<b>1.67</b>	N/A	0.100	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.118</b>	None Required	0.050	mg/L	2020-04-21	
BOD, 5-day	<b>19.7</b>	N/A	2.0	mg/L	2020-04-22	
Chemical Oxygen Demand	<b>44</b>	N/A	20	mg/L	2020-04-20	
Nitrogen, Total Kjeldahl	<b>1.79</b>	N/A	0.050	mg/L	2020-04-20	
pH	<b>7.93</b>	7.0-10.5	0.10	pH units	2020-04-17	HT2
Phosphorus, Total (as P)	<b>0.109</b>	N/A	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	<b>0.0250</b>	N/A	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	<b>29.0</b>	N/A	2.0	mg/L	2020-04-21	





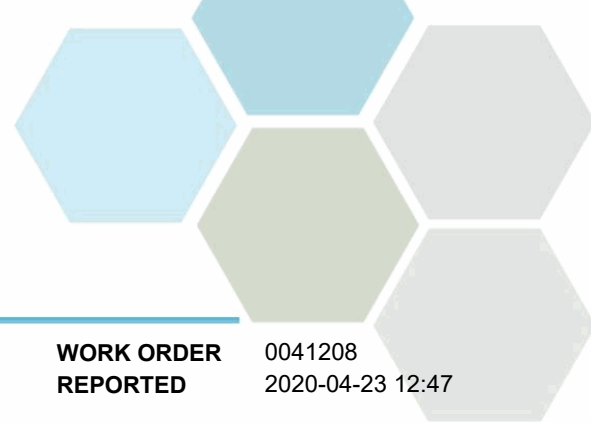
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP

**WORK ORDER** 0041208  
**REPORTED** 2020-04-23 12:47

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0041208  
2020-04-23 12:47

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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna

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

### Glossary of Terms:

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MAC	Maximum Acceptable Concentration (health based)
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0051249

**RECEIVED / TEMP** 2020-05-14 13:21 / 7°C

**REPORTED** 2020-05-21 15:09

**COC NUMBER** B66315

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### Work Order Comments:

Custody Seals Intact: YES

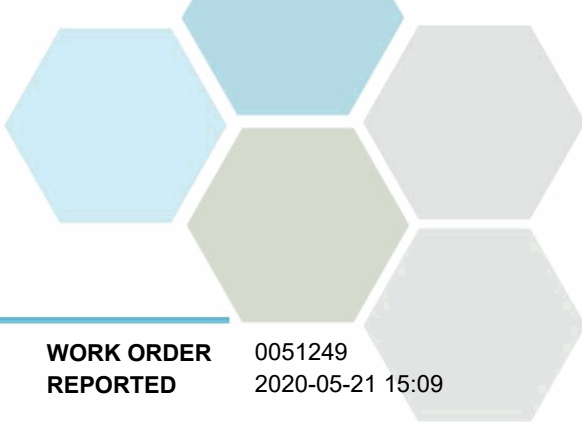
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0051249  
2020-05-21 15:09

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**Cross Ditch - Bacteria (0051249-01) | Matrix: Surface Water | Sampled: 2020-05-13 14:35**

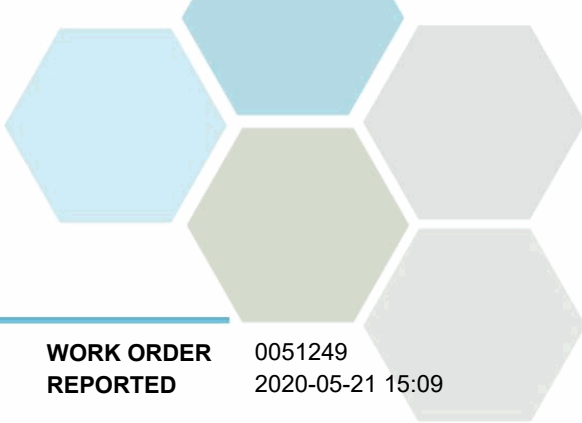
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	5.2	N/A	1.0	MPN/100 mL	2020-05-14	
E. coli (Q-Tray)	2.0	N/A	1.0	MPN/100 mL	2020-05-14	

**South Ditch - Bacteria (0051249-02) | Matrix: Surface Water | Sampled: 2020-05-13 14:45**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	90.8	N/A	1.0	MPN/100 mL	2020-05-14	
E. coli (Q-Tray)	90.8	N/A	1.0	MPN/100 mL	2020-05-14	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0051249  
2020-05-21 15:09

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0051250
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-05-14 13:28 / 7°C 2020-05-22 14:14
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B66315
<b>PROJECT</b>	OK Falls WWTP		
<b>PROJECT INFO</b>			

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### Work Order Comments:

Custody Seals Intact: YES

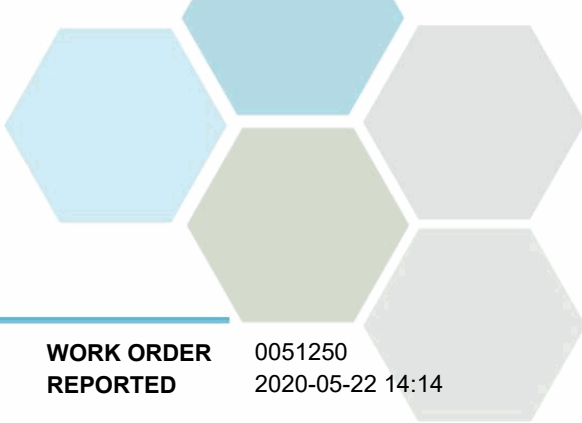
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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0051250  
2020-05-22 14:14

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Cross Ditch (0051250-01)   Matrix: Water   Sampled: 2020-05-13 14:35</b>						<b>FILT, PRES</b>

**Anions**

Nitrate (as N)	0.011	MAC = 10	0.010	mg/L	2020-05-14	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-05-14	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2020-05-14	

**Calculated Parameters**

Nitrate+Nitrite (as N)	0.0113	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	2.22	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	1.70	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.510	None Required	0.050	mg/L	2020-05-20	
BOD, 5-day	1.9	N/A	2.0	mg/L	2020-05-20	
Chemical Oxygen Demand	57	N/A	20	mg/L	2020-05-19	
Nitrogen, Total Kjeldahl	2.21	N/A	0.050	mg/L	2020-05-22	
pH	8.22	7.0-10.5	0.10	pH units	2020-05-19	HT2
Phosphorus, Total (as P)	0.0663	N/A	0.0020	mg/L	2020-05-20	
Phosphorus, Total Dissolved	0.0326	N/A	0.0020	mg/L	2020-05-20	
Solids, Total Suspended	6.2	N/A	2.0	mg/L	2020-05-20	

**South Ditch (0051250-02) | Matrix: Surface Water | Sampled: 2020-05-13 14:45**

**FILT, PRES**

**Anions**

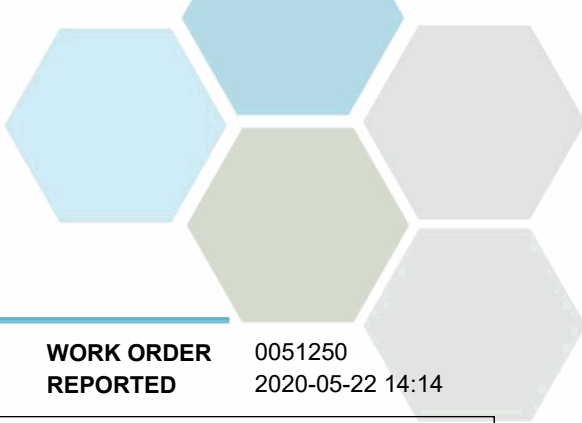
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-05-14	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-05-14	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2020-05-14	

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	1.70	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	1.63	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.070	None Required	0.050	mg/L	2020-05-20	
BOD, 5-day	3.0	N/A	2.0	mg/L	2020-05-20	
Chemical Oxygen Demand	80	N/A	20	mg/L	2020-05-19	
Nitrogen, Total Kjeldahl	1.70	N/A	0.050	mg/L	2020-05-22	
pH	8.09	7.0-10.5	0.10	pH units	2020-05-19	HT2
Phosphorus, Total (as P)	0.0480	N/A	0.0020	mg/L	2020-05-20	
Phosphorus, Total Dissolved	0.0241	N/A	0.0020	mg/L	2020-05-20	
Solids, Total Suspended	3.0	N/A	2.0	mg/L	2020-05-20	



## TEST RESULTS

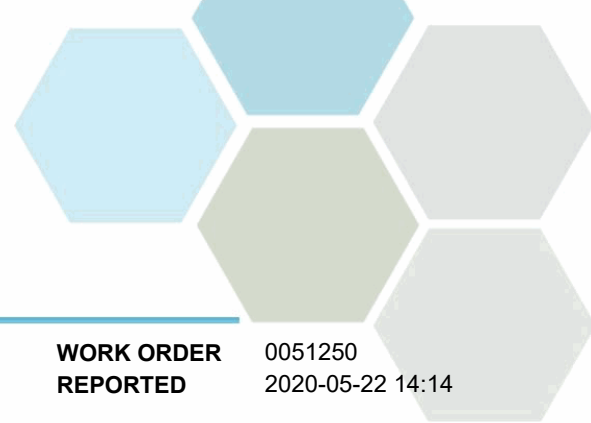
**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP

**WORK ORDER** 0051250  
**REPORTED** 2020-05-22 14:14

**Sample Qualifiers:**

FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.  
HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0051250  
2020-05-22 14:14

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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	Kelowna

*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
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0061231

**RECEIVED / TEMP** 2020-06-11 12:00 / 4°C

**REPORTED** 2020-06-16 09:44

**COC NUMBER** B92593

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

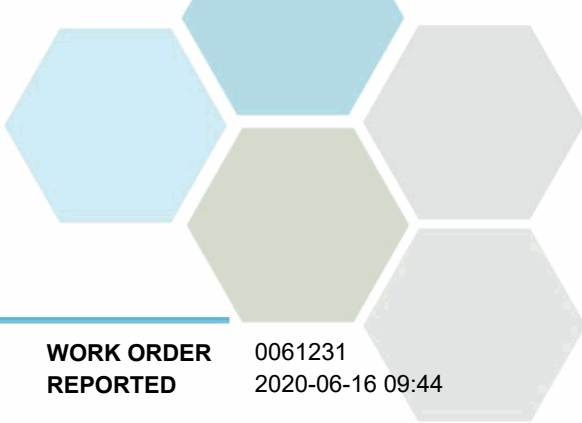
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061231  
2020-06-16 09:44

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**South Ditch - Bacteria (0061231-01) | Matrix: Surface Water | Sampled: 2020-06-10 11:30**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	35.9	N/A	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	34.1	N/A	1.0	MPN/100 mL	2020-06-11	

**Northwest Cross Ditch - Bacteria (0061231-02) | Matrix: Surface Water | Sampled: 2020-06-10 11:40**

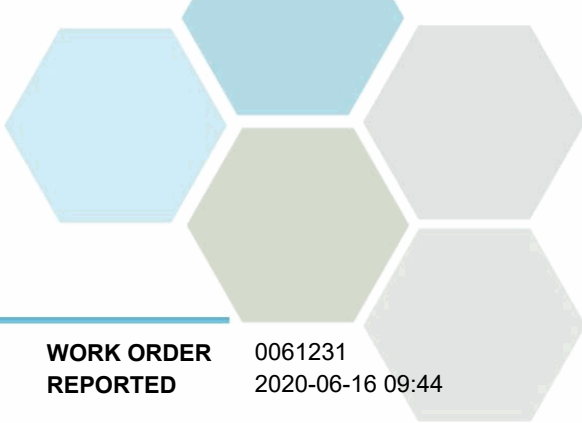
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	291	N/A	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	276	N/A	1.0	MPN/100 mL	2020-06-11	

**Wetland Outlet - Bacteria (0061231-03) | Matrix: Surface Water | Sampled: 2020-06-10 12:45**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-06-11	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061231  
2020-06-16 09:44

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW  
**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0061232

**RECEIVED / TEMP** 2020-06-11 12:00 / 4°C  
**REPORTED** 2020-06-18 17:26

**COC NUMBER** B92593

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

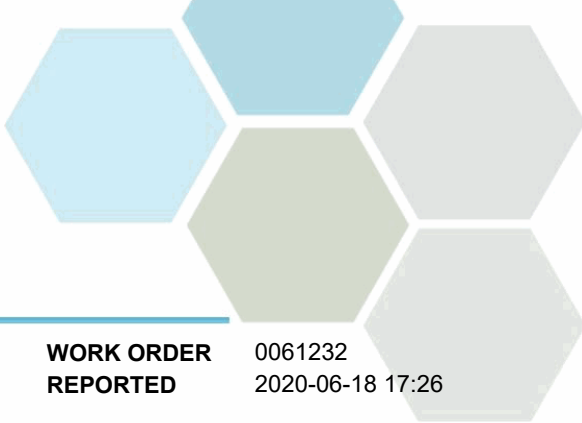
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061232  
2020-06-18 17:26

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>South Ditch (0061232-01)   Matrix: Surface Water   Sampled: 2020-06-10 11:30</b>						<b>FILT, PRES</b>

**Anions**

Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-06-15	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-06-15	HT1
Phosphate (as P)	<b>0.0158</b>	N/A	0.0050	mg/L	2020-06-15	HT1

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>1.67</b>	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	<b>1.58</b>	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.082</b>	None Required	0.050	mg/L	2020-06-16	
BOD, 5-day	<b>3.2</b>	N/A	2.0	mg/L	2020-06-17	
Chemical Oxygen Demand	<b>84</b>	N/A	20	mg/L	2020-06-16	
Nitrogen, Total Kjeldahl	<b>1.67</b>	N/A	0.050	mg/L	2020-06-16	
pH	<b>8.01</b>	7.0-10.5	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	<b>0.0922</b>	N/A	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	<b>0.0550</b>	N/A	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	<b>3.7</b>	N/A	2.0	mg/L	2020-06-17	

**Northwest Cross Ditch (0061232-02) | Matrix: Surface Water | Sampled: 2020-06-10 11:40**

**FILT, PRES**

**Anions**

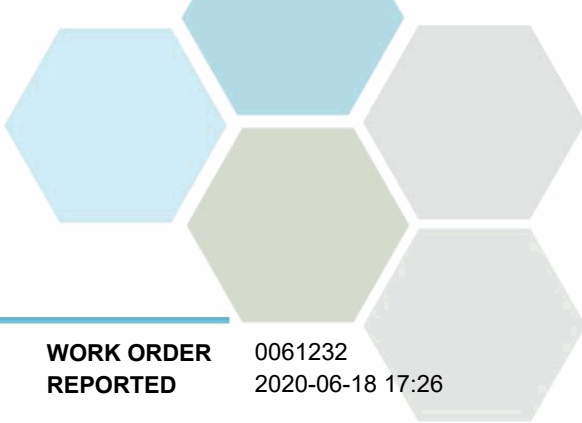
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-06-15	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-06-15	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2020-06-15	HT1

**Calculated Parameters**

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>2.07</b>	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	<b>2.00</b>	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.074</b>	None Required	0.050	mg/L	2020-06-16	
BOD, 5-day	<b>3.6</b>	N/A	2.0	mg/L	2020-06-17	
Chemical Oxygen Demand	<b>75</b>	N/A	20	mg/L	2020-06-16	
Nitrogen, Total Kjeldahl	<b>2.07</b>	N/A	0.050	mg/L	2020-06-16	
pH	<b>8.34</b>	7.0-10.5	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	<b>0.0578</b>	N/A	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	<b>0.0247</b>	N/A	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	<b>3.4</b>	N/A	2.0	mg/L	2020-06-17	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061232  
2020-06-18 17:26

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Wetland Outlet (0061232-03)   Matrix: Surface Water   Sampled: 2020-06-10 12:45</b>						<b>FILT, PRES</b>

**Anions**

Nitrate (as N)	<b>2.01</b>	MAC = 10	0.010	mg/L	2020-06-15	HT1
Nitrite (as N)	<b>0.036</b>	MAC = 1	0.010	mg/L	2020-06-15	HT1
Phosphate (as P)	<b>0.0492</b>	N/A	0.0050	mg/L	2020-06-15	HT1

**Calculated Parameters**

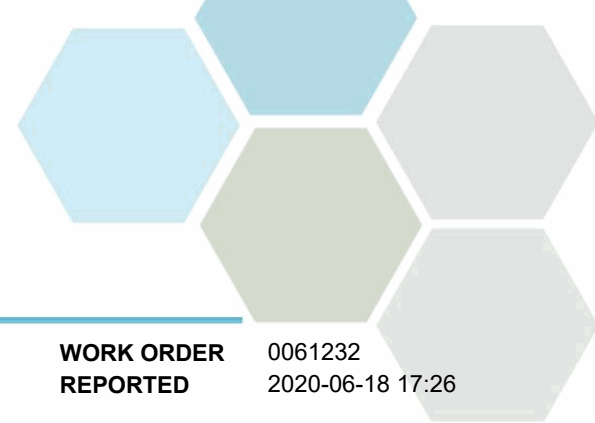
Nitrate+Nitrite (as N)	<b>2.05</b>	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	<b>3.60</b>	N/A	0.0500	mg/L	N/A	
Nitrogen, Organic	<b>1.38</b>	N/A	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	<b>0.165</b>	None Required	0.050	mg/L	2020-06-16	
BOD, 5-day	<b>2.6</b>	N/A	2.0	mg/L	2020-06-17	
Chemical Oxygen Demand	<b>37</b>	N/A	20	mg/L	2020-06-16	
Nitrogen, Total Kjeldahl	<b>1.55</b>	N/A	0.050	mg/L	2020-06-16	
pH	<b>7.93</b>	7.0-10.5	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	<b>0.117</b>	N/A	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	<b>0.0917</b>	N/A	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	<b>&lt; 2.0</b>	N/A	2.0	mg/L	2020-06-17	

**Sample Qualifiers:**

- FILT** The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- 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.
- PRES** Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061232  
2020-06-18 17:26

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna

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

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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0061945
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-06-18 12:00 / 7°C
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B66316
<b>PROJECT</b>	OK Falls WWTP		
<b>PROJECT INFO</b>			

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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.

### Work Order Comments:

Custody Seals Intact: YES

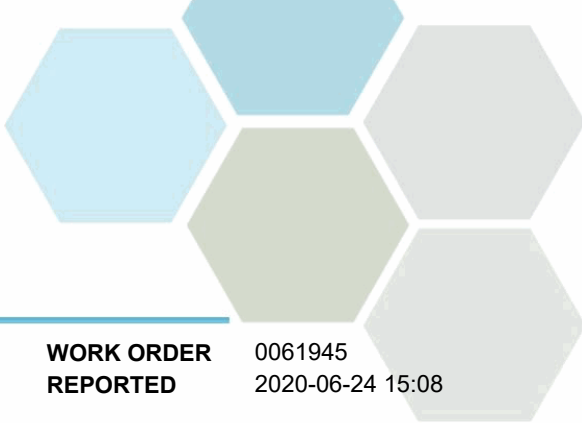
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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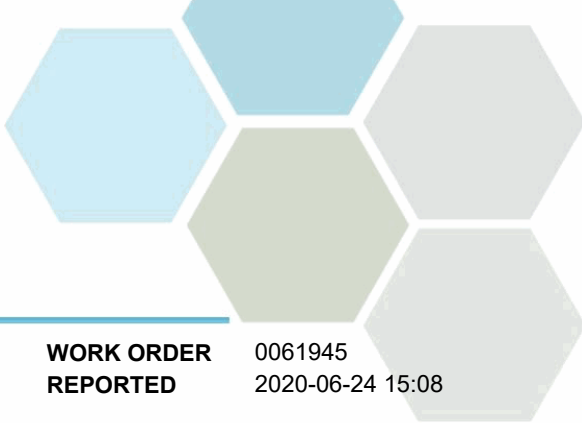


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061945  
2020-06-24 15:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Domestic Well (0061945-01)   Matrix: Water   Sampled: 2020-06-17 12:35</b>						
<i>Microbiological Parameters</i>						
Coliforms, Total (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-06-18	
E. coli (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-06-18	
<b>Northwest Cross Ditch - Bacteria (0061945-02)   Matrix: Surface Water   Sampled: 2020-06-17 13:23</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal (Q-Tray)	<b>41.4</b>	N/A	1.0	MPN/100 mL	2020-06-18	
E. coli (Q-Tray)	<b>37.9</b>	N/A	1.0	MPN/100 mL	2020-06-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0061945  
2020-06-24 15:08

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Coliforms, Total in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0062646

**RECEIVED / TEMP** 2020-06-25 12:30 / 7°C

**REPORTED** 2020-06-26 17:10

**COC NUMBER** B92991

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

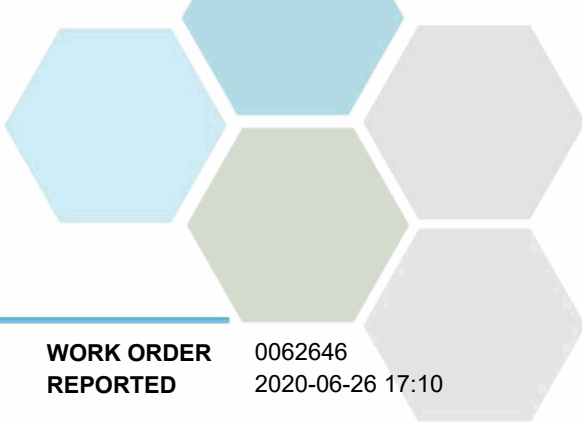
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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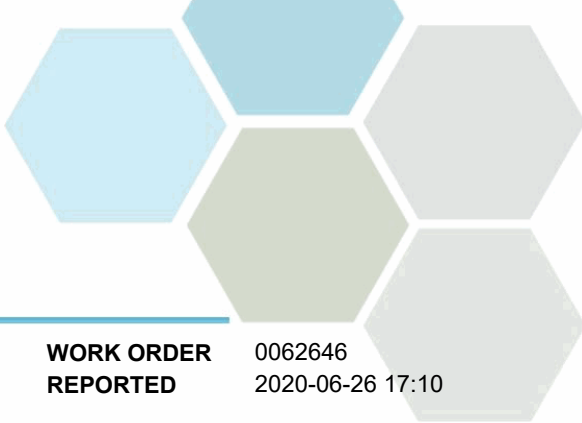


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0062646  
2020-06-26 17:10

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Cross Ditch - Bacteria (0062646-01)   Matrix: Surface Water   Sampled: 2020-06-24 12:07</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal (Q-Tray)	21.6	N/A	1.0	MPN/100 mL	2020-06-25	
E. coli (Q-Tray)	18.9	N/A	1.0	MPN/100 mL	2020-06-25	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0062646  
2020-06-26 17:10

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0063048

**RECEIVED / TEMP** 2020-06-30 15:00 / 3°C

**REPORTED** 2020-07-02 16:16

**COC NUMBER** B93048

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

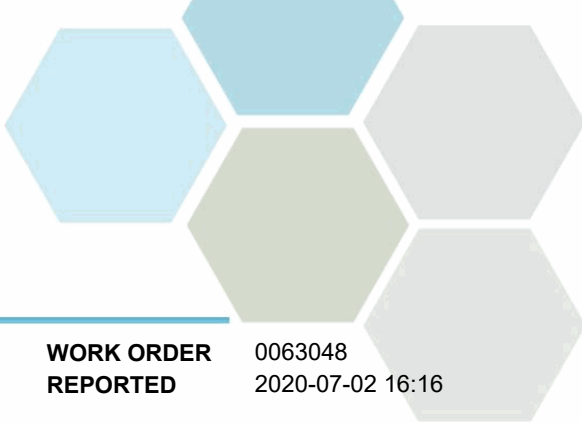
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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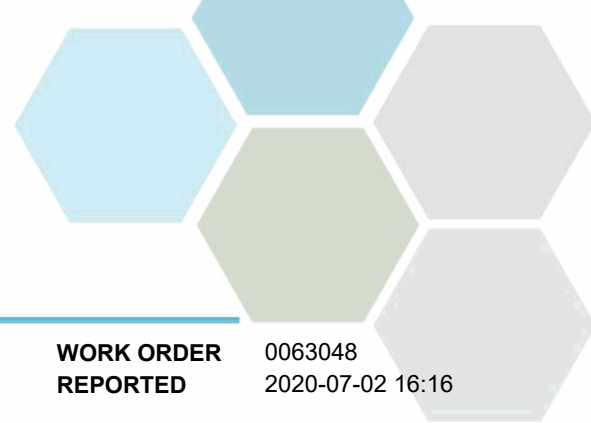
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0063048  
2020-07-02 16:16

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Northwest Cross Ditch - Bacteria (0063048-01)   Matrix: Surface Water   Sampled: 2020-06-29 11:20</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal (Q-Tray)	161	N/A	1.0	MPN/100 mL	2020-06-30	
E. coli (Q-Tray)	127	N/A	1.0	MPN/100 mL	2020-06-30	
<b>Domestic Well (0063048-02)   Matrix: Water   Sampled: 2020-06-29 10:24</b>						
<i>Microbiological Parameters</i>						
Coliforms, Total (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-06-30	
E. coli (Q-Tray)	< 1.0	N/A	1.0	MPN/100 mL	2020-06-30	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0063048  
2020-07-02 16:16

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Coliforms, Total in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0082603

**RECEIVED / TEMP** 2020-08-26 12:15 / 6°C

**REPORTED** 2020-08-28 17:35

**COC NUMBER** B93644

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

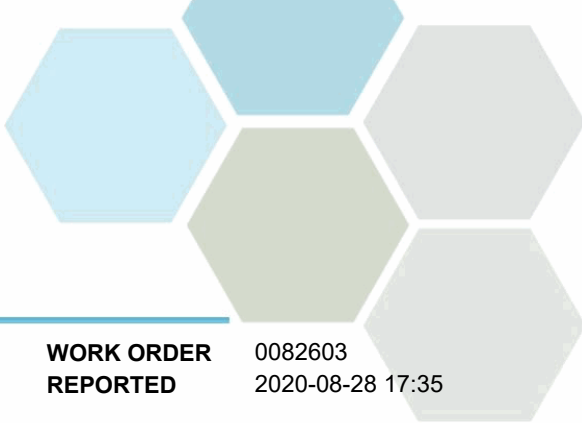
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### Authorized By:

Alana Crump  
Team Lead, Client Service

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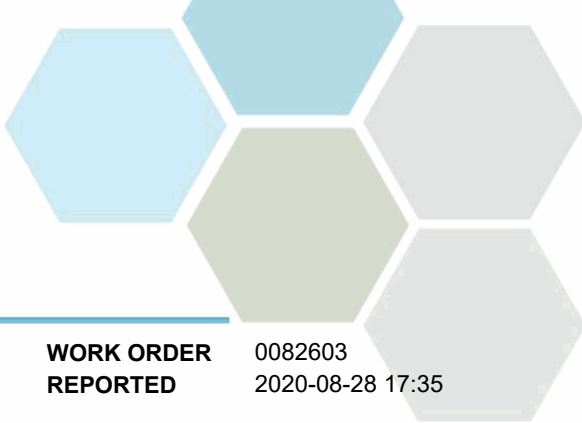


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0082603  
2020-08-28 17:35

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Cross Ditch - Bacteria (0082603-01)   Matrix: Surface Water   Sampled: 2020-08-25 13:40</b>						
<i>Microbiological Parameters</i>						
Coliforms, Fecal (Q-Tray)	9	N/A	1	MPN/100 mL	2020-08-26	
E. coli (Q-Tray)	4	N/A	1	MPN/100 mL	2020-08-26	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0082603  
2020-08-28 17:35

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

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**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0082605

**RECEIVED / TEMP** 2020-08-26 12:15 / 6°C

**REPORTED** 2020-09-02 13:00

**COC NUMBER** B93644

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

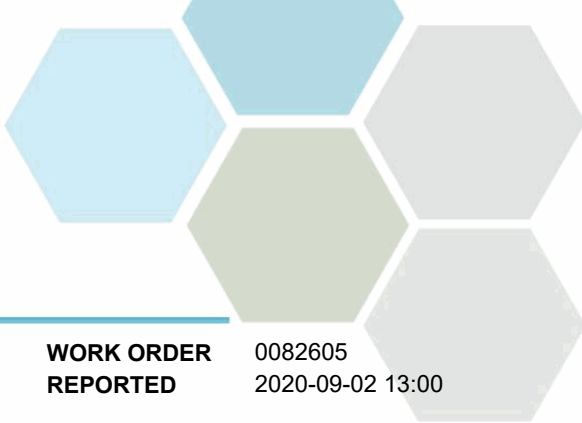
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

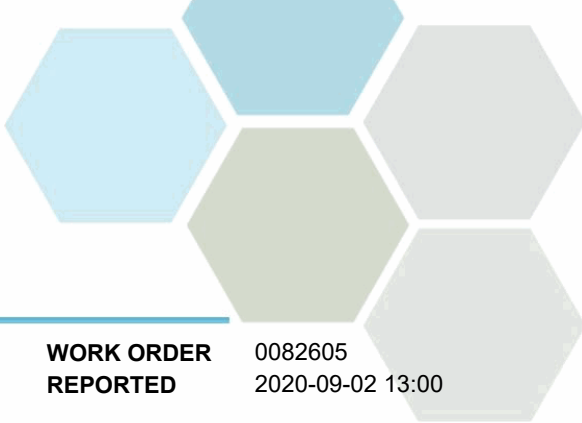
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0082605  
2020-09-02 13:00

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Cross Ditch (0082605-01)   Matrix: Water   Sampled: 2020-08-25 13:40</b>					
<b>Anions</b>					
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-08-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-08-28	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-08-28	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>1.78</b>	N/A	0.100 mg/L	N/A	
Nitrogen, Organic	<b>1.68</b>	N/A	0.100 mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	<b>0.102</b>	None Required	0.050 mg/L	2020-08-27	
BOD, 5-day	<b>1.1</b>	N/A	2.0 mg/L	2020-09-01	
Chemical Oxygen Demand	<b>68</b>	N/A	20 mg/L	2020-08-31	
Nitrogen, Total Kjeldahl	<b>1.78</b>	N/A	0.050 mg/L	2020-08-27	
pH	<b>8.19</b>	7.0-10.5	0.10 pH units	2020-08-27	HT2
Phosphorus, Total (as P)	<b>0.0474</b>	N/A	0.0050 mg/L	2020-08-31	
Phosphorus, Total Dissolved	<b>0.0256</b>	N/A	0.0050 mg/L	2020-08-31	
Solids, Total Suspended	< 3.3	N/A	2.0 mg/L	2020-08-28	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0082605  
2020-09-02 13:00

Analysis Description	Method Ref.	Technique	Accredited	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
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna

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

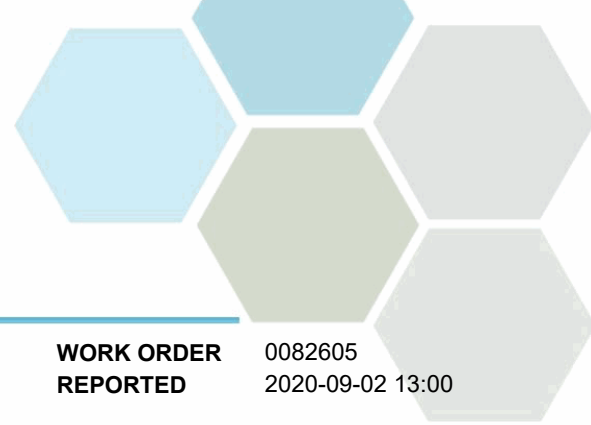
### Glossary of Terms:

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
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

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## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0082605  
2020-09-02 13:00

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 0092595

**RECEIVED / TEMP** 2020-09-24 09:15 / 7°C

**REPORTED** 2020-09-30 15:53

**COC NUMBER** B90451

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

#### *Big Picture Sidekicks*



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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

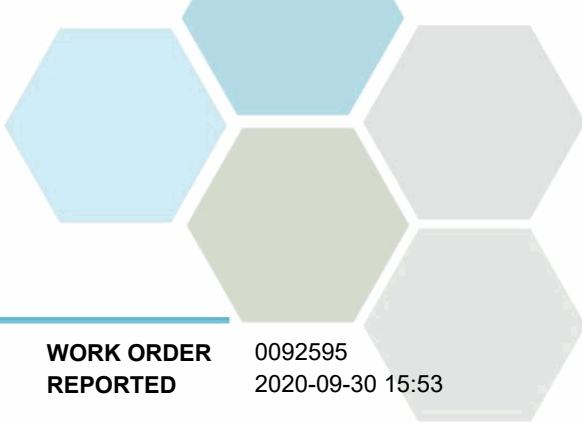
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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# TEST RESULTS

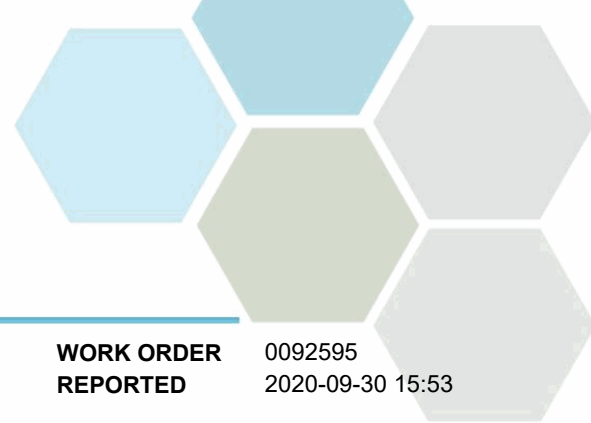
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0092595  
2020-09-30 15:53

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>NW Cross Ditch (0092595-01)   Matrix: Water   Sampled: 2020-09-23 10:40</b>					FILT, PRES
<b>Anions</b>					
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-09-26	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-09-26	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-09-26	
<b>Calculated Parameters</b>					
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>1.31</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>1.31</b>	N/A	0.0500 mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-09-25	
BOD, 5-day	<b>4.2</b>	N/A	2.0 mg/L	2020-09-30	
Chemical Oxygen Demand	<b>60</b>	N/A	20 mg/L	2020-09-28	
Nitrogen, Total Kjeldahl	<b>1.31</b>	N/A	0.050 mg/L	2020-09-29	
pH	<b>8.17</b>	7.0-10.5	0.10 pH units	2020-09-28	HT2
Phosphorus, Total (as P)	<b>0.0430</b>	N/A	0.0050 mg/L	2020-09-30	
Phosphorus, Total Dissolved	<b>0.0299</b>	N/A	0.0050 mg/L	2020-09-30	
Solids, Total Suspended	< 2.0	N/A	2.0 mg/L	2020-09-25	
<b>Microbiological Parameters</b>					
Coliforms, Fecal (Q-Tray)	<b>21</b>	N/A	1 MPN/100 mL	2020-09-24	
E. coli (Q-Tray)	<b>21</b>	N/A	1 MPN/100 mL	2020-09-24	

**Sample Qualifiers:**

FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.  
 HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
 PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0092595  
2020-09-30 15:53

Analysis Description	Method Ref.	Technique	Accredited	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, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna

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

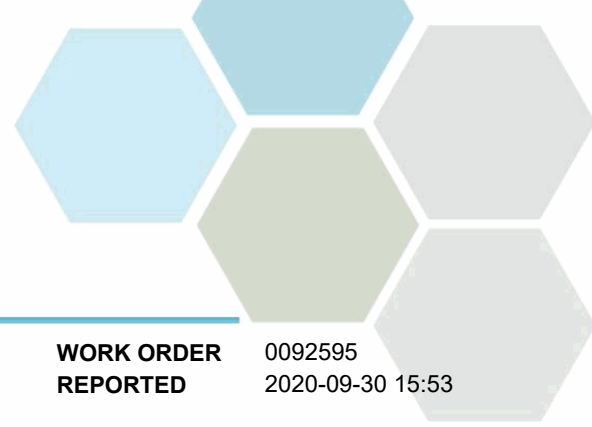
### Glossary of Terms:

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
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
pH units	pH < 7 = acidic, pH > 7 = basic
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 0092595  
2020-09-30 15:53

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MCW

**PROJECT INFO**

**WORK ORDER** 20K0350

**RECEIVED / TEMP REPORTED** 2020-11-04 09:20 / 4°C  
2020-11-12 16:22

**COC NUMBER** B91210

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

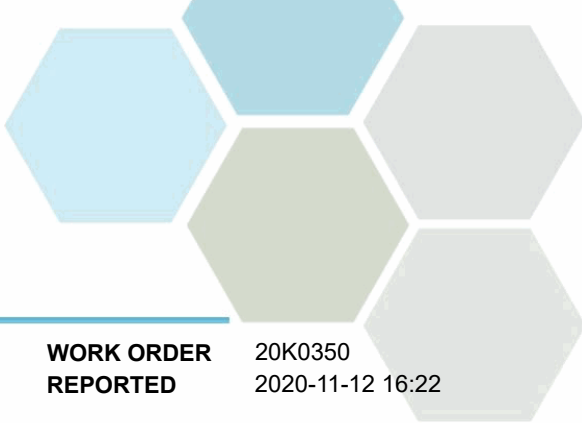
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCW

**WORK ORDER REPORTED** 20K0350  
2020-11-12 16:22

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>NW Cross Ditch (20K0350-01)   Matrix: Water   Sampled: 2020-11-03 09:40</b>					<b>FILT, PRES</b>

**Anions**

Chloride	126	0.10	mg/L	2020-11-05	
Fluoride	< 0.10	0.10	mg/L	2020-11-05	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-11-05	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-11-05	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-11-05	
Sulfate	38.5	1.0	mg/L	2020-11-05	

**Calculated Parameters**

Hardness, Total (as CaCO3)	357	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	1.06	0.0500	mg/L	N/A	
Nitrogen, Organic	0.959	0.0500	mg/L	N/A	

**General Parameters**

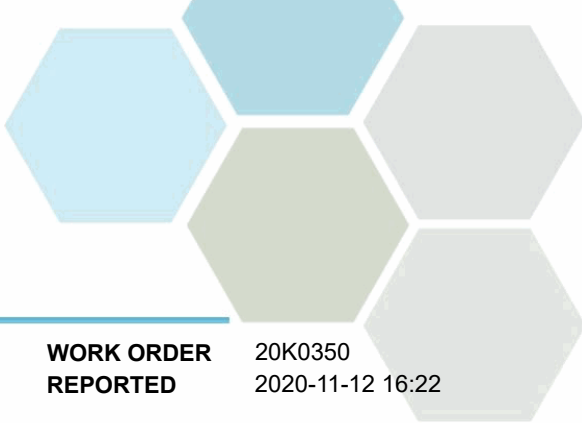
Alkalinity, Total (as CaCO3)	339	1.0	mg/L	2020-11-05	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-11-05	
Alkalinity, Bicarbonate (as CaCO3)	339	1.0	mg/L	2020-11-05	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-11-05	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-11-05	
Ammonia, Total (as N)	0.105	0.050	mg/L	2020-11-04	
BOD, 5-day	< 7.1	2.0	mg/L	2020-11-10	
BOD, 5-day Carbonaceous	< 5.8	2.0	mg/L	2020-11-10	
Chemical Oxygen Demand	33	20	mg/L	2020-11-09	
Conductivity (EC)	1080	2.0	µS/cm	2020-11-05	
Nitrogen, Total Kjeldahl	1.06	0.050	mg/L	2020-11-10	
pH	7.90	0.10	pH units	2020-11-05	HT2
Phosphorus, Total (as P)	0.0547	0.0050	mg/L	2020-11-05	
Phosphorus, Total Dissolved	0.0423	0.0050	mg/L	2020-11-05	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-06	

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	2	1	MPN/100 mL	2020-11-04	
E. coli (Q-Tray)	2	1	MPN/100 mL	2020-11-04	

**Total Metals**

Aluminum, total	0.0720	0.0050	mg/L	2020-11-10	
Antimony, total	< 0.00020	0.00020	mg/L	2020-11-10	
Arsenic, total	0.00106	0.00050	mg/L	2020-11-10	
Barium, total	0.108	0.0050	mg/L	2020-11-10	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-11-10	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-11-10	
Boron, total	0.126	0.0500	mg/L	2020-11-10	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-11-10	
Calcium, total	104	0.20	mg/L	2020-11-10	



# TEST RESULTS

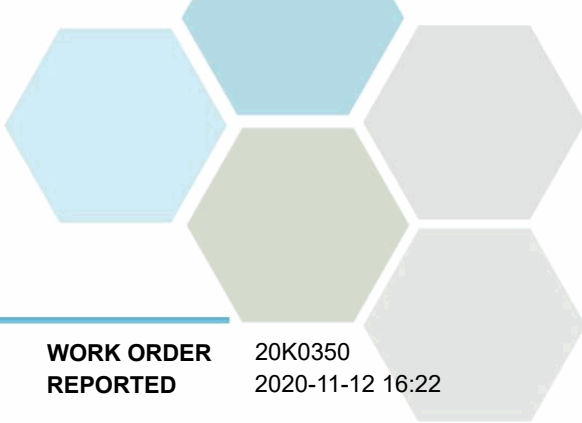
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCW

**WORK ORDER REPORTED** 20K0350  
2020-11-12 16:22

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>NW Cross Ditch (20K0350-01)   Matrix: Water   Sampled: 2020-11-03 09:40, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Chromium, total	< 0.00050	0.00050	mg/L	2020-11-10	
Cobalt, total	<b>0.00017</b>	0.00010	mg/L	2020-11-10	
Copper, total	<b>0.00483</b>	0.00040	mg/L	2020-11-10	
Iron, total	<b>0.116</b>	0.010	mg/L	2020-11-10	
Lead, total	<b>0.00032</b>	0.00020	mg/L	2020-11-10	
Lithium, total	<b>0.00732</b>	0.00010	mg/L	2020-11-10	
Magnesium, total	<b>23.7</b>	0.010	mg/L	2020-11-10	
Manganese, total	<b>0.0405</b>	0.00020	mg/L	2020-11-10	
Mercury, total	< 0.000010	0.000010	mg/L	2020-11-06	
Molybdenum, total	<b>0.00888</b>	0.00010	mg/L	2020-11-10	
Nickel, total	<b>0.00207</b>	0.00040	mg/L	2020-11-10	
Phosphorus, total	<b>0.065</b>	0.050	mg/L	2020-11-10	
Potassium, total	<b>15.3</b>	0.10	mg/L	2020-11-10	
Selenium, total	< 0.00050	0.00050	mg/L	2020-11-10	
Silicon, total	<b>4.6</b>	1.0	mg/L	2020-11-10	
Silver, total	< 0.000050	0.000050	mg/L	2020-11-10	
Sodium, total	<b>87.4</b>	0.10	mg/L	2020-11-10	
Strontium, total	<b>1.05</b>	0.0010	mg/L	2020-11-10	
Sulfur, total	<b>13.1</b>	3.0	mg/L	2020-11-10	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-11-10	
Thallium, total	< 0.000020	0.000020	mg/L	2020-11-10	
Thorium, total	< 0.00010	0.00010	mg/L	2020-11-10	
Tin, total	< 0.00020	0.00020	mg/L	2020-11-10	
Titanium, total	< 0.0050	0.0050	mg/L	2020-11-10	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-11-10	
Uranium, total	<b>0.0175</b>	0.000020	mg/L	2020-11-10	
Vanadium, total	<b>0.0014</b>	0.0010	mg/L	2020-11-10	
Zinc, total	<b>0.0044</b>	0.0040	mg/L	2020-11-10	
Zirconium, total	<b>0.00016</b>	0.00010	mg/L	2020-11-10	

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCW

**WORK ORDER REPORTED** 20K0350  
2020-11-12 16:22

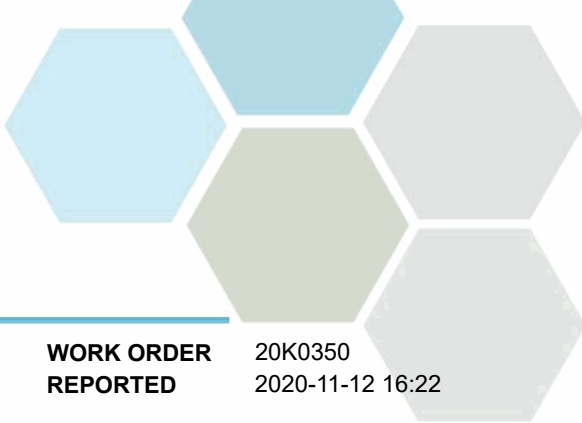
Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
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 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MCW

**WORK ORDER REPORTED** 20K0350  
2020-11-12 16:22

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 20K1352

**RECEIVED / TEMP** 2020-11-12 12:30 / 13°C

**REPORTED** 2020-11-19 15:23

**COC NUMBER** No Number

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

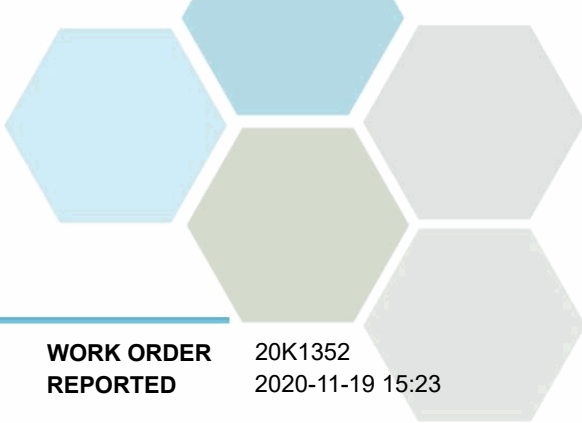
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 20K1352  
2020-11-19 15:23

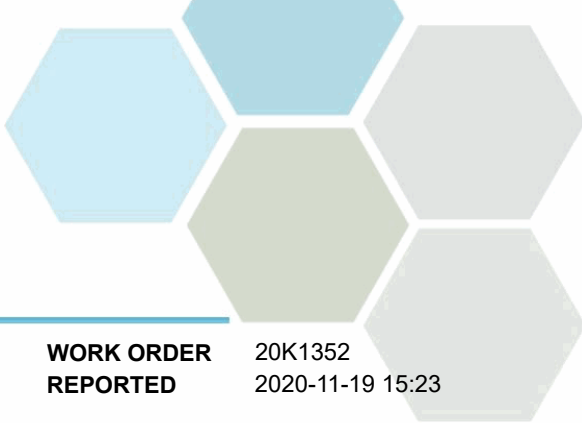
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>NW Cross Ditch (20K1352-01)   Matrix: Water   Sampled: 2020-11-10 15:30</b>						<b>PRES</b>

**General Parameters**

Phosphorus, Total (as P)	<b>0.0404</b>	N/A	0.0050	mg/L	2020-11-18	
--------------------------	---------------	-----	--------	------	------------	--

**Sample Qualifiers:**

PRES Sample has been preserved for TP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 20K1352  
2020-11-19 15:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna

*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)
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### General Comments:

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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](mailto:acrump@caro.ca)

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**CERTIFICATE OF ANALYSIS**

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW  
**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 20K2039

**RECEIVED / TEMP** 2020-11-18 13:30 / 4°C  
**REPORTED** 2020-12-08 15:18

**COC NUMBER** B104513

**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/IEC 17025:2017 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.

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*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.

**Work Order Comments:**

Custody Seals Intact: YES

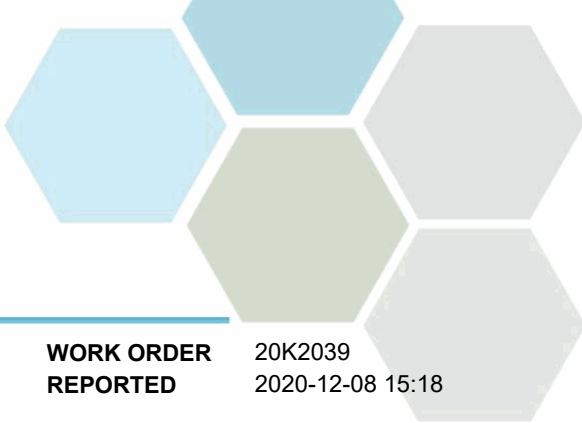
*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

**Authorized By:**

Alana Crump  
Team Lead, Client Service

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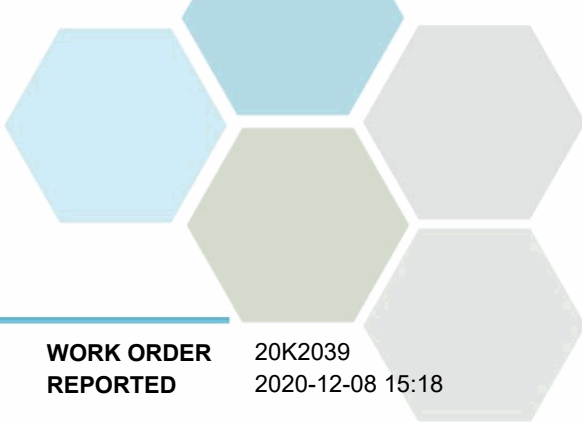


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 20K2039  
2020-12-08 15:18

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>NW Cross Ditch (20K2039-01)   Matrix: Water   Sampled: 2020-11-17 11:45</b>						
<i>General Parameters</i>						
Phosphorus, Total (as P)	0.0440	N/A	0.0050	mg/L	2020-11-24	
<i>Microbiological Parameters</i>						
Coliforms, Fecal (Q-Tray)	12	N/A	1	MPN/100 mL	2020-11-18	
E. coli (Q-Tray)	10	N/A	1	MPN/100 mL	2020-11-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 20K2039  
2020-12-08 15:18

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna

*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)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

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# **APPENDIX O**

## **Wetland Annual Bioassay 2020**



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rob Palmer

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WW

**PROJECT INFO**

**WORK ORDER** 20K0304

**RECEIVED / TEMP** 2020-11-04 08:30 / 10°C  
**REPORTED** 2020-11-17 14:07

**COC NUMBER** B67439

### Introduction:

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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.

### Work Order Comments:

Custody Seals Intact: YES

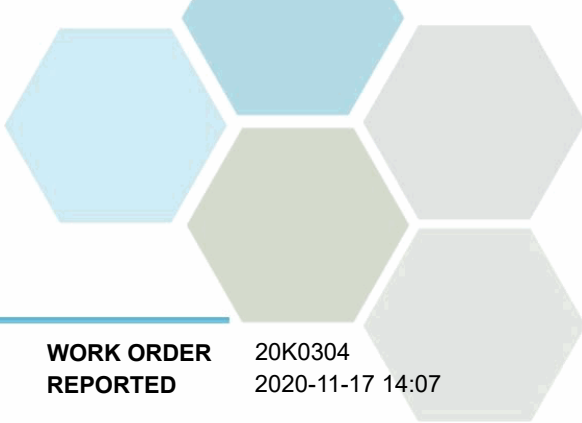
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

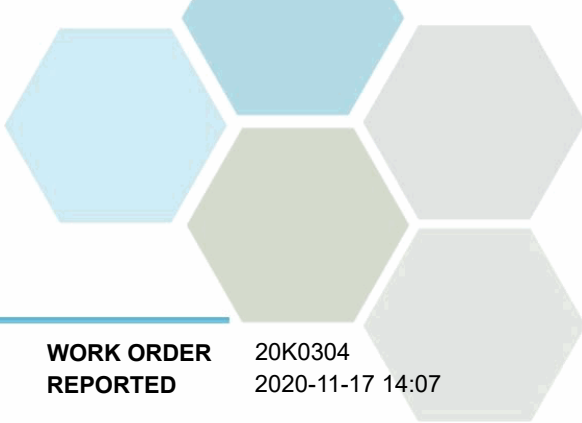
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WW

**WORK ORDER REPORTED** 20K0304  
2020-11-17 14:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>NW Cross Ditch (20K0304-01)   Matrix: Water   Sampled: 2020-11-03 08:45</b>						
<i>Oncorhynchus mykiss Bioassay</i>						
LC50, 96 h Trout	>100	N/A	1.0	% v/v	2020-11-08	TOX

**Sample Qualifiers:**

TOX Please refer to the Appendix for the full Toxicity Report



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WW

**WORK ORDER REPORTED** 20K0304  
2020-11-17 14:07

Analysis Description	Method Ref.	Technique	Accredited	Location
Trout LC50 in Water	EPS 1/RM/13 B	Rainbow Trout Acute Lethality: Multi-concentration	✓	Edmonton

### Glossary of Terms:

RL	Reporting Limit (default)
% v/v	Percent volume per volume
>1	Greater than the specified Result
EPS	Environment Canada Biological Test Methods

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

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Work Order: 20K0304

Client: Regional District of Okanagan Similkameen  
 Project: OK Falls WW  
 Attention: Rob Palmer

**1. SAMPLE INFORMATION**

Sample Origin: Regional District of Okanagan Similkameen  
Penticton, BC  
 Sample Type: Effluent  
 Sample Description: NW Cross Ditch  
 Sampling Date and Time: November 3, 2020 @ 8:45 hrs  
 Sampling Method: Grab  
 Sampled by: Karen Moore

**2. TEST INFORMATION**

Laboratory Name / Location: CARO Analytical Services (Edmonton)  
 Laboratory Address: 17225 109 Avenue NW  
Edmonton, AB T5S 1H7

Test Organism: *Oncorhynchus mykiss*  
 Test Description: Acute, 96-hour, static, Multi-concentration (LC50)  
 Lab Test Method ID: CE-TM-027  
 Reference Method: Biological Test method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout, 2000. Environment Canada, EPS 1/RM/13, 2nd Ed. , (including May 2007 ammendments)

Analyst Name: Travis Briggeman  
 Start of Test Date: November 4, 2020  
 Holding/Dilution Water: Dechlorinated City of Edmonton tap water, acclimated to test conditions

Test Container Description: 25 L, Disposable polyethylene liner  
 Test Solution Volume: 20 L  
 Test Solution Depth: 33 cm  
 Number of Test Organisms/Container: 10 (1 organism per 2 L)  
 Aeration of test solutions: 6.5 ± 1 mL/min per L  
 pH Adjustment: The sample was not pH adjusted  
 Lighting: Full spectrum fluorescent lights; 100-500 lux at surface  
 Photoperiod: 16 h light : 8 h dark  
 Deviations from Reference Method: None

Work Order: 20K0304

**3. RECEIPT CONDITION**

Container Description: 20 L HDPE carboy Qty: 3 Volume (L): 60  
 Receipt Date and Time: November 4, 2020 @ 8:30 hrs  
 Transit Irregularities: None  
 Observations: Colour: Yellow  
 Odour: None  
 Turbidity: Low  
 Settleable Solids: Low  
 Measured Parameters: Temperature: 14.7 °C  
 pH: 7.72  
 Conductivity: 1035 μmhos/cm  
 Dissolved Oxygen: 9.62 mg/L

**4. PRE-AERATION**

Duration at 6.5 ± 1 mL/min per L: 90 min  
 Sample Test Concentration (V/V): 100% 0%  
 Before Pre-Aeration Dissolved Oxygen: 9.69 9.23 mg/L  
 Air Saturation: 102 98 %  
 After Pre-Aeration Dissolved Oxygen: 9.51 9.26 mg/L  
 Air Saturation: 101 99 %

**5. TEST ORGANISM DATA**

Lot Number: 201014  
 Weekly Mortality Preceding Test: 0 %  
 Number of fish per test solution: 10  
 Loading Density: 0.24 g/L

Fish #	Wet Weight (g)	Fork Length (cm)
1	0.47	4.0
2	0.44	3.9
3	0.39	3.8
4	0.50	4.1
5	0.29	3.5
6	0.56	4.3
7	0.51	4.0
8	0.43	3.9
9	0.34	3.8
10	0.82	4.6
Average	0.48	4.0
StDev	0.15	0.3

**6. TEST DATA**

Sample Concentration (% V/V)	100	80	60	40	20	0
------------------------------	-----	----	----	----	----	---

**0 hours**      Time:      16:10

Temperature (°C)	14.3	14.4	14.5	14.4	14.5	14.6
pH	8.03	7.90	7.95	7.96	8.01	8.00
Conductivity @ 25°C (µmhos/cm):	1048	912	769	625	482	334
Dissolved Oxygen (mg/L):	9.51	9.50	9.42	9.38	9.31	9.26

**24 hours**      Time:      16:55

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	14.5	14.6	14.6	14.6	14.5	14.7
pH	8.42	8.36	8.35	8.28	8.23	8.05
Conductivity @ 25°C (µmhos/cm):	1029	900	759	619	479	335
Dissolved Oxygen (mg/L):	9.12	9.10	9.19	9.09	9.04	9.01

**48 hours**      Time:      15:15

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	14.5	14.6	14.6	14.5	14.5	14.6
pH	8.50	8.44	8.43	8.36	8.27	8.14
Conductivity @ 25°C (µmhos/cm):	1028	900	761	621	482	336
Dissolved Oxygen (mg/L):	9.19	9.16	9.19	9.11	9.07	8.96

**72 hours**      Time:      14:45

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	14.5	14.6	14.6	14.5	14.6	14.6
pH	8.44	8.38	8.35	8.27	8.18	8.07
Conductivity @ 25°C (µmhos/cm):	1033	904	764	625	486	339
Dissolved Oxygen (mg/L):	9.11	9.09	9.15	9.08	9.00	8.94

**96 hours**      Time:      14:10

Stressed (Qty)	0	0	0	0	0	0
Mortality (Qty)	0	0	0	0	0	0
Temperature (°C)	14.5	14.5	14.6	14.5	14.5	14.5
pH	8.40	8.33	8.32	8.23	8.11	8.02
Conductivity @ 25°C (µmhos/cm):	1033	904	766	624	485	338
Dissolved Oxygen (mg/L):	9.29	9.30	9.30	9.22	9.16	9.14

Work Order: 20K0304

**7. SUBLETHAL BIOLOGICAL EFFECTS**

Sample Conc (%)	Time(s) Observed (h)	Effect(s) Observed
		None

**8. OBSERVATIONS / COMMENTS**

None


**9. RESULTS**

96-hour LC<sub>50</sub> v/v (%) >100  
 95% Lower Confidence Interval v/v (%): N/A  
 95% Upper Confidence Interval v/v (%): N/A  
 Method of Calculation: N/A  
 Confirmed by Graph: N/A

**10. REFERENCE TOXICANT DATA**

Toxicant: Phenol  
 Test Starting Date: November 4, 2020  
 96-hour LC<sub>50</sub> (mg/L) 8.74  
 95% Lower Confidence Interval v/v (%): 7.73  
 95% Upper Confidence Interval v/v (%): 9.88  
 Method of Calculation: Spearman-Kärber  
 Confirmed by Graph: Yes  
 Historic Geometric Mean LC<sub>50</sub> (mg/L) 10.07  
 95% Lower Confidence Interval v/v (%): 8.10  
 95% Upper Confidence Interval v/v (%): 12.52

Data reviewed by: Jesse Dang

Signature: 

## **APPENDIX P**

### **Offsite Wells along Hwy 97 Water Quality Monitoring Database Summary 2020**



## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Sampling Location	1998 Hwy 97	2126 Hwy 97	2150 Hwy 97	2150 Hwy 97
Date Sampled	07-Apr-20	17-Mar-20	17-Mar-20	17-Sep-20
Lab Sample ID	0040639-01	0031567-01	0031569-01	0091963-01
Sample Type	Normal	Normal	Normal	Normal

Analyte	Unit	Guideline				1998 Hwy 97	2126 Hwy 97	2150 Hwy 97	2150 Hwy 97
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO				
<b>Field Results</b>									
Conductivity	µS/cm	NG	NG	NG	NG	1113	767	720	735
Dissolved oxygen	mg/L	NG	NG	NG	NG	1.08	0.18	0.26	0.11
Oxidation reduction potential	mV	NG	NG	NG	NG	126.7	-34.9	-47.7	-21.9
pH		NG	7.0 - 10.5 <sup>2.1</sup>	NG	NG	7.99	8.02	7.58	7.64
Temperature	°C	NG	15	NG	15	13.3	12.4	11.3	12.7
Total dissolved solids	mg/L	NG	500	NG	NG	<b>721.5</b>	500.5	468	474.5
Turbidity	NTU	N <sup>1.1</sup>	NG	N <sup>3.1</sup>	NG	2.12	0.96	22.4	0.41
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	149	178	249	225
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	<1.0	<1.0	<1.0	<1.0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	<1.0	<1.0	<1.0	<1.0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	<1.0	<1.0	<1.0	<1.0
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	149	178	249	225
Bicarbonate Alkalinity (as HCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	182	218	304	274
Carbonate Alkalinity (as CO <sub>3</sub> )	mg/L	NG	NG	NG	NG	<0.600	<0.600	<0.600	<0.600
Hydroxide Alkalinity (as OH)	mg/L	NG	NG	NG	NG	<0.340	<0.340	<0.340	<0.340
Bromide	mg/L	NG	NG	NG	NG	0.22	<0.10	<0.10	<0.10
Chemical Oxygen Demand	mg/L	NG	NG	NG	NG	<20	<5	<5	22
Chloride	mg/L	NG	250	NG	250	134	75.3	42	43.4
Conductivity	µS/cm	NG	NG	NG	NG	1080	726	683	723
Fluoride	mg/L	1.5	NG	1.5	NG	<b>2.97</b>	<b>2.17</b>	0.37	0.49
Hardness, Total (dissolved as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	128	274	323	346
pH		NG	7.0 - 10.5 <sup>2.4</sup>	NG	NG	8.13	8.01	8.04	8.08
Sulphate	mg/L	NG	500 <sup>2.5</sup>	NG	500	172	102	81.4	82.6
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	0 <sup>1.9</sup>	NG	10 <sup>3.3</sup>	NG	<1.0	<1.0	<1.0	
Total coliforms (MPN)	MPN/100 mL	0 <sup>1.10</sup>	NG	NG	NG	<1.0	<1.0	<1.0	
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	NG	NG	NG	NG	<0.050	<0.020	0.136	0.113
Nitrate (as N)	mg/L	10	NG	10	NG	0.494	0.578	0.054	<0.010
Nitrite (as N)	mg/L	1	NG	1.0	NG	0.06	0.024	<0.010	<0.010
Phosphorus (dissolved, by ICPMS/ICPOES)	mg/L	NG	NG	NG	N <sup>4.1</sup>	<0.050	<0.050	<0.050	<0.050
Phosphorus (total, by ICPMS/ICPOES)	mg/L	NG	NG	NG	N <sup>4.2</sup>	<0.050	<0.050	<0.050	
Potassium (dissolved)	mg/L	NG	NG	NG	NG	2.08	4.79	4	4.5
Potassium (total)	mg/L	NG	NG	NG	NG	2.03	4.99	4.34	

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Sampling Location	1998 Hwy 97	2126 Hwy 97	2150 Hwy 97	2150 Hwy 97
Date Sampled	07-Apr-20	17-Mar-20	17-Mar-20	17-Sep-20
Lab Sample ID	0040639-01	0031567-01	0031569-01	0091963-01
Sample Type	Normal	Normal	Normal	Normal

Analyte	Unit	Guideline				1998 Hwy 97	2126 Hwy 97	2150 Hwy 97	2150 Hwy 97
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO				
<b>Dissolved Metals</b>									
Aluminum (dissolved)	mg/L	NG	N <sup>2.2</sup>	9.5	NG	<0.0050	<0.0050	<0.0050	0.0075
Antimony (dissolved)	mg/L	0.006	NG	0.006	NG	<0.00020	<0.00020	<0.00020	<0.00020
Arsenic (dissolved)	mg/L	0.010 <sup>1.2</sup>	NG	0.01	NG	<b>0.0464</b>	<0.00050	0.00099	0.00157
Barium (dissolved)	mg/L	2.0 <sup>1.3</sup>	NG	NG	NG	0.0157	0.0262	0.195	0.198
Beryllium (dissolved)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (dissolved)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	<0.00010
Boron (dissolved)	mg/L	5	NG	5.0	NG	0.329	0.159	0.0777	<0.0500
Cadmium (dissolved)	mg/L	0.007 <sup>1.4</sup>	NG	0.005	NG	<0.000010	<0.000010	<0.000010	0.000015
Calcium (dissolved)	mg/L	NG	NG	NG	NG	29.6	51.5	100	105
Chromium (dissolved)	mg/L	0.05	NG	0.05	NG	<0.00050	<0.00050	<0.00050	0.00127
Cobalt (dissolved)	mg/L	NG	NG	0.001	NG	<0.00010	0.00012	<0.00010	<0.00010
Copper (dissolved)	mg/L	2 <sup>1.5</sup>	1	2.0 <sup>3.2</sup>	1.0	0.0008	<0.00040	<0.00040	0.00057
Iron (dissolved)	mg/L	NG	0.3	NG	0.3	<0.010	0.068	0.095	0.06
Lead (dissolved)	mg/L	0.005 <sup>1.6</sup>	NG	0.005	NG	<0.00020	<0.00020	<0.00020	0.00024
Lithium (dissolved)	mg/L	NG	NG	NG	NG	0.0647	0.0118	0.00771	0.00709
Magnesium (dissolved)	mg/L	NG	NG	NG	NG	13.1	35.2	17.7	20.2
Manganese (dissolved)	mg/L	0.12 <sup>1.7</sup>	0.02 <sup>2.3</sup>	0.12	0.02	0.0015	<b>0.0774</b>	<b>0.0561</b>	0.00946
Mercury (dissolved)	mg/L	0.001	NG	0.001	NG	<0.000010	<0.000010	<0.000010	
Molybdenum (dissolved)	mg/L	NG	NG	0.088	NG	0.01	0.0184	0.00183	0.0017
Nickel (dissolved)	mg/L	NG	NG	0.08	NG	<0.00040	<0.00040	0.00222	0.00235
Selenium (dissolved)	mg/L	0.05	NG	0.01	NG	0.00365	0.00822	0.00092	<0.00050
Silicon (dissolved, as Si)	mg/L	NG	NG	NG	NG	7.7	8.6	10	9.7
Silver (dissolved)	mg/L	NG	NG	NG	NG	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (dissolved)	mg/L	NG	200	NG	NG	179	41.2	16.1	18.7
Strontium (dissolved)	mg/L	7.0 <sup>1.8</sup>	NG	7.0	NG	1.15	1.26	0.873	0.832
Sulphur (dissolved)	mg/L	NG	NG	NG	NG	65.2	36	28	29.5
Tellurium (dissolved)	mg/L	NG	NG	NG	NG	<0.00050	<0.00050	<0.00050	<0.00050
Thallium (dissolved)	mg/L	NG	NG	NG	NG	<0.000020	<0.000020	<0.000020	<0.000020
Thorium (dissolved)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	<0.00010
Tin (dissolved)	mg/L	NG	NG	NG	NG	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (dissolved)	mg/L	NG	NG	NG	NG	<0.0050	<0.0050	<0.0050	<0.0050
Tungsten (dissolved)	mg/L	NG	NG	NG	NG	<0.0010	<0.0010	<0.0010	<0.0010
Uranium (dissolved)	mg/L	0.02	NG	0.02	NG	0.00456	0.00473	0.00539	0.0051
Vanadium (dissolved)	mg/L	NG	NG	NG	NG	<0.0010	<0.0010	<0.0010	<0.0010
Zinc (dissolved)	mg/L	NG	5.0	3.0	5.0	<0.0040	0.0066	0.0086	0.0145
Zirconium (dissolved)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	<0.00010

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Sampling Location	1998 Hwy 97	2126 Hwy 97	2150 Hwy 97	2150 Hwy 97
Date Sampled	07-Apr-20	17-Mar-20	17-Mar-20	17-Sep-20
Lab Sample ID	0040639-01	0031567-01	0031569-01	0091963-01
Sample Type	Normal	Normal	Normal	Normal

Analyte	Unit	Guideline				1998 Hwy 97	2126 Hwy 97	2150 Hwy 97	2150 Hwy 97
		GCDWQ MAC	GCDWQ AO	BC SDWQG MAC	BC SDWQG AO				
<b>Total Metals</b>									
Aluminum (total)	mg/L	NG	N <sup>2.6</sup>	9.5	NG	0.0419	<0.0050	0.0086	
Antimony (total)	mg/L	0.006	NG	0.006	NG	0.00024	<0.00020	<0.00020	
Arsenic (total)	mg/L	0.010 <sup>1.13</sup>	NG	0.01	NG	<b>0.0449</b>	0.00062	0.00294	
Barium (total)	mg/L	2.0 <sup>1.14</sup>	NG	NG	NG	0.0139	0.0297	0.216	
Beryllium (total)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	
Bismuth (total)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	
Boron (total)	mg/L	5	NG	5.0	NG	0.345	0.247	0.18	
Cadmium (total)	mg/L	0.007 <sup>1.15</sup>	NG	0.005	NG	<0.000010	<0.000010	0.000026	
Calcium (total)	mg/L	NG	NG	NG	NG	28.4	51.9	106	
Chromium (total)	mg/L	0.05	NG	0.05	NG	<0.00050	<0.00050	0.00068	
Cobalt (total)	mg/L	NG	NG	0.001	NG	<0.00010	0.00012	0.00011	
Copper (total)	mg/L	2 <sup>1.16</sup>	1	2.0 <sup>3.4</sup>	1.0	0.00111	0.00096	0.00151	
Iron (total)	mg/L	NG	0.3	NG	0.3	0.108	<b>0.351</b>	<b>5.04</b>	
Lead (total)	mg/L	0.005 <sup>1.17</sup>	NG	0.005	NG	<0.00020	<0.00020	<b>0.00629</b>	
Lithium (total)	mg/L	NG	NG	NG	NG	0.0574	0.0114	0.00898	
Magnesium (total)	mg/L	NG	NG	NG	NG	12.5	35.1	19.2	
Manganese (total)	mg/L	0.12 <sup>1.18</sup>	0.02 <sup>2.7</sup>	0.12	0.02	0.00254	<b>0.0822</b>	<b>0.097</b>	
Mercury (total)	mg/L	0.001	NG	0.001	NG	<0.000010	<0.000010	<0.000010	
Molybdenum (total)	mg/L	NG	NG	0.088	NG	0.00972	0.0199	0.00156	
Nickel (total)	mg/L	NG	NG	0.08	NG	<0.00040	0.00055	0.00268	
Selenium (total)	mg/L	0.05	NG	0.01	NG	0.00341	0.00813	0.00114	
Silicon (total, as Si)	mg/L	NG	NG	NG	NG	5.9	9.8	10.6	
Silver (total)	mg/L	NG	NG	NG	NG	<0.000050	<0.000050	<0.000050	
Sodium (total)	mg/L	NG	200	NG	NG	172	41.3	17.6	
Strontium (total)	mg/L	7.0 <sup>1.19</sup>	NG	7.0	NG	1.1	1.37	0.94	
Sulphur (total)	mg/L	NG	NG	NG	NG	61.2	40.4	31.8	
Tellurium (total)	mg/L	NG	NG	NG	NG	<0.00050	<0.00050	<0.00050	
Thallium (total)	mg/L	NG	NG	NG	NG	<0.000020	<0.000020	<0.000020	
Thorium (total)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	
Tin (total)	mg/L	NG	NG	NG	NG	<0.00020	<0.00020	<0.00020	
Titanium (total)	mg/L	NG	NG	NG	NG	<0.0050	<0.0050	<0.0050	
Tungsten (total)	mg/L	NG	NG	NG	NG	<0.0010	<0.0010	<0.0010	
Uranium (total)	mg/L	0.02	NG	0.02	NG	0.00427	0.00497	0.00583	
Vanadium (total)	mg/L	NG	NG	NG	NG	0.0018	<0.0010	<0.0010	
Zinc (total)	mg/L	NG	5.0	3.0	5.0	<0.0040	0.0078	0.358	
Zirconium (total)	mg/L	NG	NG	NG	NG	<0.00010	<0.00010	<0.00010	

## Exceedances by Location

Sampling Location	Guideline	Exceedances
1998 Hwy 97	GCDWQ MAC	Arsenic (dissolved), Arsenic (total), Fluoride
	GCDWQ AO	Total dissolved solids [F]
	BC SDWQG MAC	Arsenic (dissolved), Arsenic (total), Fluoride
2126 Hwy 97	GCDWQ MAC	Fluoride
	GCDWQ AO	Iron (total), Manganese (dissolved), Manganese (total)
	BC SDWQG MAC	Fluoride
	BC SDWQG AO	Iron (total), Manganese (dissolved), Manganese (total)
2150 Hwy 97	GCDWQ MAC	Lead (total)
	GCDWQ AO	Iron (total), Manganese (dissolved), Manganese (total)
	BC SDWQG MAC	Lead (total)
	BC SDWQG AO	Iron (total), Manganese (dissolved), Manganese (total)

[F] = Field Result(s)

## Exceedances by Analyte

	1998 Hwy 97	2126 Hwy 97	2150 Hwy 97
<b>Field Results</b>			
Total dissolved solids	X		
<b>Lab Results</b>			
<b>Dissolved Metals</b>			
Arsenic (dissolved)	X		
Manganese (dissolved)		X	X
<b>General</b>			
Fluoride	X	X	
<b>Total Metals</b>			
Arsenic (total)	X		
Iron (total)		X	X
Lead (total)			X
Manganese (total)		X	X

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

### 1. Notes for Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations (GCDWQ MAC)

**Note 1.1 for Turbidity:**

Waterworks systems that use a surface water source or a groundwater source under the direct influence of surface water should filter the source water to meet health-based turbidity limits, as defined for specific treatment technologies. Where possible, filtration systems should be designed and operated to reduce turbidity levels as low as possible, with a treated water turbidity target of less than 0.1 NTU at all times. Where this is not achievable, the treated water turbidity levels from individual filters should meet the requirements described in GCDWQ. For systems that use groundwater that is not under the direct influence of surface water, which are considered less vulnerable to faecal contamination, turbidity should generally be below 1.0 NTU.

For effective operation of the distribution system, it is good practice to ensure that water entering the distribution system has turbidity levels below 1.0 NTU.

**Note 1.2 for Arsenic (dissolved):**

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

**Note 1.3 for Barium (dissolved):**

Update January 24, 2020. The MAC was revised from 1.0 mg/L to 2.0 mg/L.

**Note 1.4 for Cadmium (dissolved):**

A maximum acceptable concentration (MAC) of 0.007 mg/L (7 µg/L) is established for total cadmium in drinking water, based on a sample of water taken at the tap. (Update July 14, 2020)

**Note 1.5 for Copper (dissolved):**

A maximum acceptable concentration (MAC) of 2 mg/L is established for total copper in drinking water, based on a sample of water taken at the tap. Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 1.6 for Lead (dissolved):**

The maximum acceptable concentration (MAC) for total lead in drinking water is 0.005 mg/L (5 µg/L), based on a sample of water taken at the tap and using the appropriate protocol for the type of building being sampled. Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable (or ALARA). (GCDWQ: Guideline Technical Document; March, 2019)

**Note 1.7 for Manganese (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 1.8 for Strontium (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on strontium, May 2019.

**Note 1.9 for E. coli (MPN):**

MAC is none detectable per 100 mL

**Note 1.10 for Total coliforms (MPN):**

The maximum acceptable concentration (MAC) of total coliforms in water leaving a treatment plant and in non-disinfected groundwater leaving the well is none detectable per 100 mL.

Total coliforms should be monitored in the distribution system because they are used to indicate changes in water quality. Detection of total coliforms from consecutive samples from the same site or from more than 10% of the samples collected in a given sampling period should be investigated.

**Note 1.11 for Nitrate + Nitrite (as N):**

The MAC for Nitrate (as N) is 10 mg/L

**Note 1.12 for Nitrate + Nitrite (as N) (calculated):**

The MAC for Nitrate (as N) is 10 mg/L

**Note 1.13 for Arsenic (total):**

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

**Note 1.14 for Barium (total):**

Update January 24, 2020. The MAC was revised from 1.0 mg/L to 2.0 mg/L.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 1.15 for Cadmium (total):**

A maximum acceptable concentration (MAC) of 0.007 mg/L (7 µg/L) is established for total cadmium in drinking water, based on a sample of water taken at the tap. (Update July 14, 2020)

**Note 1.16 for Copper (total):**

A maximum acceptable concentration (MAC) of 2 mg/L is established for total copper in drinking water, based on a sample of water taken at the tap. Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 1.17 for Lead (total):**

The maximum acceptable concentration (MAC) for total lead in drinking water is 0.005 mg/L (5 µg/L), based on a sample of water taken at the tap and using the appropriate protocol for the type of building being sampled. Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable (or ALARA). (GCDWQ: Guideline Technical Document; March, 2019)

**Note 1.18 for Manganese (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 1.19 for Strontium (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on strontium, May 2019.

### 2. Notes for Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives (GCDWQ AO)

**Note 2.1 for pH:**

The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

**Note 2.2 for Aluminum (dissolved):**

This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

**Note 2.3 for Manganese (dissolved):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 2.4 for pH:**

The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

**Note 2.5 for Sulphate:**

There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L. Health authorities should be notified of drinking water sources containing above 500 mg/L.

**Note 2.6 for Aluminum (total):**

This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

**Note 2.7 for Manganese (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

### 3. Notes for BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2020 and updates) (BC SDWQG MAC)

**General Notes:**

The source drinking water quality guidelines presented in this document apply to the ambient water before it is treated and distributed for domestic use. The guidelines apply to drinking water sources from surface water and

**Note 3.1 for Turbidity:**

For raw drinking water without treatment for particulates the guideline is: ≤ 1 NTU of turbidity.

For raw drinking water with treatment for particulates the guideline is:

Natural background turbidity is ≤ 50 NTU: Change from background should not exceed 5 NTU.

Natural background turbidity is > 50 NTU: Change from background should not exceed 10% of the background

**Note 3.2 for Copper (dissolved):**

Includes short-term and long-term exposure.

**Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results****Note 3.3 for E. coli (MPN):**

The MAC is  $\leq 10$  E. coli /100 mL; 90th percentile (minimum of 5 samples).

**Note 3.4 for Copper (total):**

Includes short-term and long-term exposure.

**4. Notes for BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2020 and updates) (BC SDWQG AO)****General Notes:**

The source drinking water quality guidelines presented in this document apply to the ambient water before it is treated and distributed for domestic use. The guidelines apply to drinking water sources from surface water and

**Note 4.1 for Phosphorus (dissolved, by ICPMS/ICPOES):**

The AO for lakes is 0.01 mg/L. For lakes with residence time > 6 months, measure total P during spring overturn.

For lakes with residence time < 6 months, measure mean epilimnetic total P during the growing season (ENV

**Note 4.2 for Phosphorus (total, by ICPMS/ICPOES):**

The AO for lakes is 0.01 mg/L. For lakes with residence time > 6 months, measure total P during spring overturn.

For lakes with residence time < 6 months, measure mean epilimnetic total P during the growing season (ENV

## Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
BC SDWQG AO	BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2020 and updates)
BC SDWQG MAC	BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2020 and updates)
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
GCDWQ AO	Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives
GCDWQ MAC	Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<u>BC SDWQG AO</u>	Highlighted value exceeds BC SDWQG AO
<u>BC SDWQG MAC</u>	Highlighted value exceeds BC SDWQG MAC
<b>GCDWQ AO</b>	Highlighted value exceeds GCDWQ AO
<b>GCDWQ MAC</b>	Highlighted value exceeds GCDWQ MAC
SL Criteria Override	Highlighted value exceeds sampling location criteria override



## **APPENDIX Q**

### **Offsite Wells along Hwy97 Water Quality Monitoring 2020 Lab Reports**



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0031567
<b>ATTENTION</b>	Rob Palmer	<b>RECEIVED / TEMP REPORTED</b>	2020-03-18 12:00 / 5°C 2020-03-25 10:41
<b>PO NUMBER</b>	Typical Landfill Drinking Water	<b>COC NUMBER</b>	B86440
<b>PROJECT</b>	OK Falls - TLDW		
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: YES

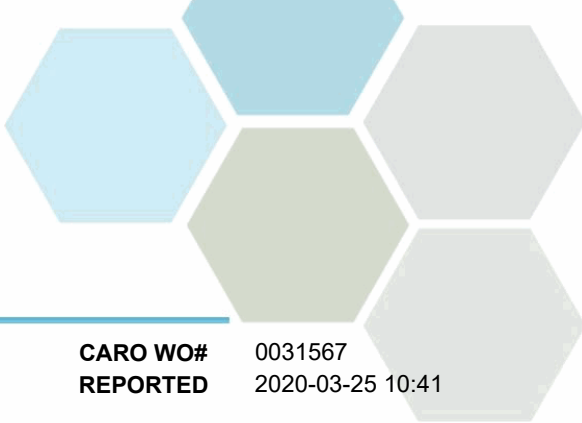
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

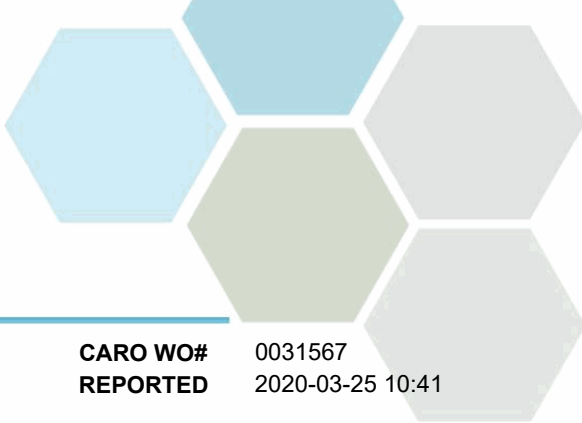


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>2126 Hwy 97 (0031567-01)   Matrix: Water   Sampled: 2020-03-17 12:40</b>					
<b>Anions</b>					
Bromide	< 0.10	N/A	0.10 mg/L	2020-03-19	
Chloride	<b>75.3</b>	AO ≤ 250	0.10 mg/L	2020-03-19	
Fluoride	<b>2.17</b>	MAC = 1.5	0.10 mg/L	2020-03-19	
Nitrate (as N)	<b>0.578</b>	MAC = 10	0.010 mg/L	2020-03-19	
Nitrite (as N)	<b>0.024</b>	MAC = 1	0.010 mg/L	2020-03-19	
Sulfate	<b>102</b>	AO ≤ 500	1.0 mg/L	2020-03-19	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	<b>274</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	<b>0.603</b>	N/A	0.0200 mg/L	N/A	
<b>Dissolved Metals</b>					
Lithium, dissolved	<b>0.0118</b>	N/A	0.00010 mg/L	2020-03-23	
Aluminum, dissolved	< 0.0050	N/A	0.0050 mg/L	2020-03-23	
Antimony, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-03-23	
Arsenic, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Barium, dissolved	<b>0.0262</b>	N/A	0.0050 mg/L	2020-03-23	
Beryllium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Bismuth, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Boron, dissolved	<b>0.159</b>	N/A	0.0050 mg/L	2020-03-23	
Cadmium, dissolved	< 0.000010	N/A	0.000010 mg/L	2020-03-23	
Calcium, dissolved	<b>51.5</b>	N/A	0.20 mg/L	2020-03-23	
Chromium, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Cobalt, dissolved	<b>0.00012</b>	N/A	0.00010 mg/L	2020-03-23	
Copper, dissolved	< 0.00040	N/A	0.00040 mg/L	2020-03-23	
Iron, dissolved	<b>0.068</b>	N/A	0.010 mg/L	2020-03-23	
Lead, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-03-23	
Magnesium, dissolved	<b>35.2</b>	N/A	0.010 mg/L	2020-03-23	
Manganese, dissolved	<b>0.0774</b>	N/A	0.00020 mg/L	2020-03-23	
Mercury, dissolved	< 0.000010	N/A	0.000010 mg/L	2020-03-24	
Molybdenum, dissolved	<b>0.0184</b>	N/A	0.00010 mg/L	2020-03-23	
Nickel, dissolved	< 0.00040	N/A	0.00040 mg/L	2020-03-23	
Phosphorus, dissolved	< 0.050	N/A	0.050 mg/L	2020-03-23	
Potassium, dissolved	<b>4.79</b>	N/A	0.10 mg/L	2020-03-23	
Selenium, dissolved	<b>0.00822</b>	N/A	0.00050 mg/L	2020-03-23	
Silicon, dissolved	<b>8.6</b>	N/A	1.0 mg/L	2020-03-23	
Silver, dissolved	< 0.000050	N/A	0.000050 mg/L	2020-03-23	
Sodium, dissolved	<b>41.2</b>	N/A	0.10 mg/L	2020-03-23	
Strontium, dissolved	<b>1.26</b>	N/A	0.0010 mg/L	2020-03-23	
Sulfur, dissolved	<b>36.0</b>	N/A	3.0 mg/L	2020-03-23	
Tellurium, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Thallium, dissolved	< 0.000020	N/A	0.000020 mg/L	2020-03-23	
Thorium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Tin, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-03-23	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**2126 Hwy 97 (0031567-01) | Matrix: Water | Sampled: 2020-03-17 12:40, Continued**

**Dissolved Metals, Continued**

Titanium, dissolved	< 0.0050	N/A	0.0050	mg/L	2020-03-23	
Tungsten, dissolved	< 0.0010	N/A	0.0010	mg/L	2020-03-23	
Uranium, dissolved	<b>0.00473</b>	N/A	0.000020	mg/L	2020-03-23	
Vanadium, dissolved	< 0.0010	N/A	0.0010	mg/L	2020-03-23	
Zinc, dissolved	<b>0.0066</b>	N/A	0.0040	mg/L	2020-03-23	
Zirconium, dissolved	< 0.00010	N/A	0.00010	mg/L	2020-03-23	

**General Parameters**

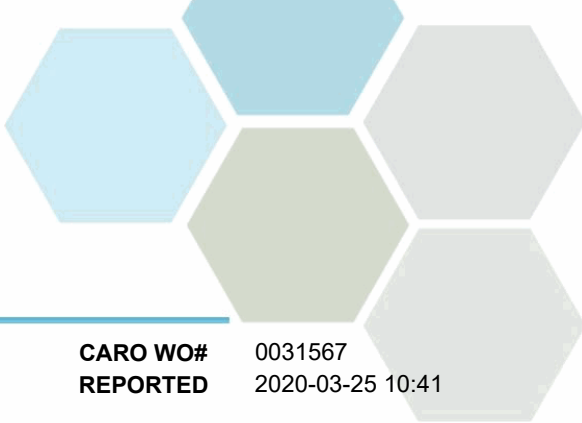
Alkalinity, Total (as CaCO3)	<b>178</b>	N/A	1.0	mg/L	2020-03-20	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2020-03-20	
Alkalinity, Bicarbonate (as CaCO3)	<b>178</b>	N/A	1.0	mg/L	2020-03-20	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2020-03-20	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2020-03-20	
Bicarbonate (HCO3)	<b>218</b>	N/A	1.22	mg/L	N/A	
Carbonate (CO3)	< 0.600	N/A	0.600	mg/L	N/A	
Hydroxide (OH)	< 0.340	N/A	0.340	mg/L	N/A	
Ammonia, Total (as N)	< 0.020	None Required	0.020	mg/L	2020-03-19	
Chemical Oxygen Demand	< 5	N/A	20	mg/L	2020-03-18	
Conductivity (EC)	<b>726</b>	N/A	2.0	µS/cm	2020-03-20	
pH	<b>8.01</b>	7.0-10.5	0.10	pH units	2020-03-20	HT2

**Microbiological Parameters**

Coliforms, Total	< 1.0	N/A	1.0	MPN/100 mL	2020-03-18	
E. coli	< 1.0	N/A	1.0	MPN/100 mL	2020-03-18	

**Total Metals**

Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2020-03-23	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2020-03-23	
Arsenic, total	<b>0.00062</b>	MAC = 0.01	0.00050	mg/L	2020-03-23	
Barium, total	<b>0.0297</b>	MAC = 2	0.0050	mg/L	2020-03-23	
Beryllium, total	< 0.00010	N/A	0.00010	mg/L	2020-03-23	
Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2020-03-23	
Boron, total	<b>0.247</b>	MAC = 5	0.0050	mg/L	2020-03-23	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2020-03-23	
Calcium, total	<b>51.9</b>	None Required	0.20	mg/L	2020-03-23	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-03-23	
Cobalt, total	<b>0.00012</b>	N/A	0.00010	mg/L	2020-03-23	
Copper, total	<b>0.00096</b>	MAC = 2	0.00040	mg/L	2020-03-23	
Iron, total	<b>0.351</b>	AO ≤ 0.3	0.010	mg/L	2020-03-23	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-03-23	
Lithium, total	<b>0.0114</b>	N/A	0.00010	mg/L	2020-03-23	
Magnesium, total	<b>35.1</b>	None Required	0.010	mg/L	2020-03-23	
Manganese, total	<b>0.0822</b>	MAC = 0.12	0.00020	mg/L	2020-03-23	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2020-03-24	



## TEST RESULTS

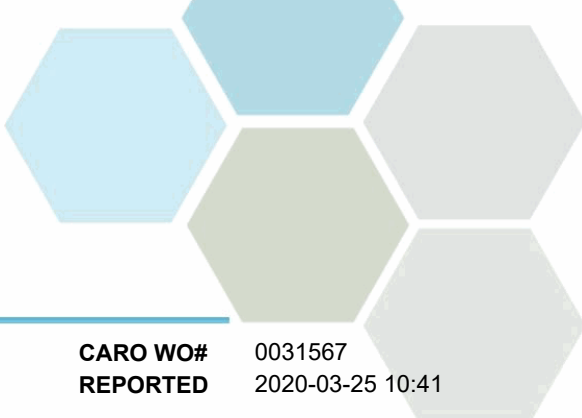
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>2126 Hwy 97 (0031567-01)   Matrix: Water   Sampled: 2020-03-17 12:40, Continued</b>					
<i>Total Metals, Continued</i>					
Molybdenum, total	0.0199	N/A	0.00010 mg/L	2020-03-23	
Nickel, total	0.00055	N/A	0.00040 mg/L	2020-03-23	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-03-23	
Potassium, total	4.99	N/A	0.10 mg/L	2020-03-23	
Selenium, total	0.00813	MAC = 0.05	0.00050 mg/L	2020-03-23	
Silicon, total	9.8	N/A	1.0 mg/L	2020-03-23	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-03-23	
Sodium, total	41.3	AO ≤ 200	0.10 mg/L	2020-03-23	
Strontium, total	1.37	7	0.0010 mg/L	2020-03-23	
Sulfur, total	40.4	N/A	3.0 mg/L	2020-03-23	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-03-23	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-03-23	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-03-23	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-03-23	
Uranium, total	0.00497	MAC = 0.02	0.000020 mg/L	2020-03-23	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-03-23	
Zinc, total	0.0078	AO ≤ 5	0.0040 mg/L	2020-03-23	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-23	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
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Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	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
pH in Water	SM 4500-H+ B (2017)	Electrometry	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
OG	Operational Guideline (treated water)
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

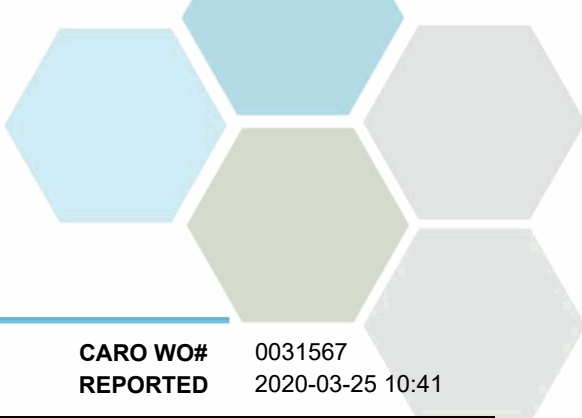
### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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.



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

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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:

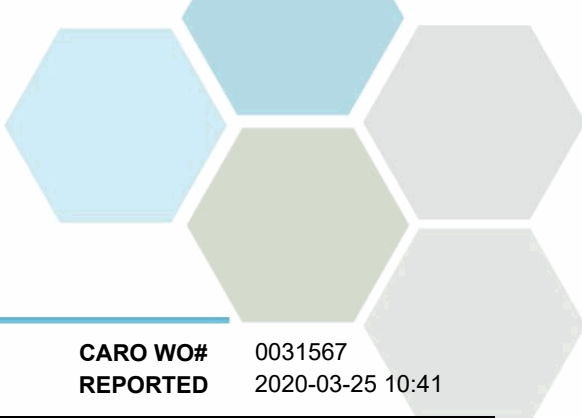
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected 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	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Anions, Batch B0C1595</b>									
<b>Blank (B0C1595-BLK1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0C1595-BLK2)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0C1595-BS1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	3.98	0.10 mg/L	4.00		100	85-115			
Chloride	16.1	0.10 mg/L	16.0		100	90-110			
Fluoride	4.06	0.10 mg/L	4.00		102	88-108			
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0C1595-BS2)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	4.00	0.10 mg/L	4.00		100	85-115			
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.09	0.10 mg/L	4.00		102	88-108			
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.95	0.010 mg/L	2.00		97	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			

### Dissolved Metals, Batch B0C1949

<b>Blank (B0C1949-BLK1)</b>			Prepared: 2020-03-23, Analyzed: 2020-03-23						
Lithium, dissolved	< 0.00010	0.00010 mg/L							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
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Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
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**Dissolved Metals, Batch B0C1949, Continued**

**Blank (B0C1949-BLK1), Continued**

Prepared: 2020-03-23, Analyzed: 2020-03-23

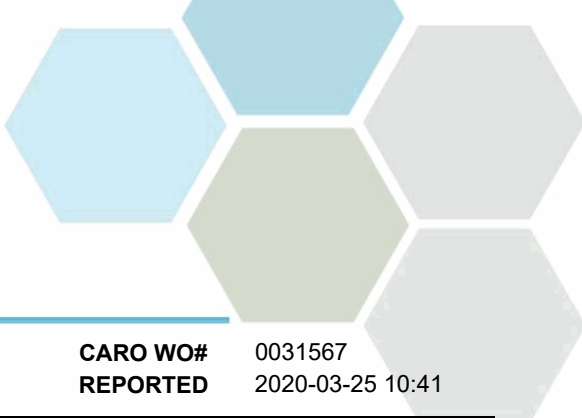
Aluminum, dissolved	< 0.0050	0.0050 mg/L							
Antimony, dissolved	< 0.00020	0.00020 mg/L							
Arsenic, dissolved	< 0.00050	0.00050 mg/L							
Barium, dissolved	< 0.0050	0.0050 mg/L							
Beryllium, dissolved	< 0.00010	0.00010 mg/L							
Bismuth, dissolved	< 0.00010	0.00010 mg/L							
Boron, dissolved	< 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 (B0C1949-BS1)**

Prepared: 2020-03-23, Analyzed: 2020-03-23

Lithium, dissolved	0.0201	0.00010 mg/L	0.0200		101	80-120			
Aluminum, dissolved	0.0204	0.0050 mg/L	0.0199		102	80-120			
Antimony, dissolved	0.0196	0.00020 mg/L	0.0200		98	80-120			
Arsenic, dissolved	0.0198	0.00050 mg/L	0.0200		99	80-120			
Barium, dissolved	0.0194	0.0050 mg/L	0.0198		98	80-120			
Beryllium, dissolved	0.0205	0.00010 mg/L	0.0198		104	80-120			
Bismuth, dissolved	0.0209	0.00010 mg/L	0.0200		105	80-120			
Boron, dissolved	0.0163	0.0050 mg/L	0.0200		82	80-120			
Cadmium, dissolved	0.0198	0.000010 mg/L	0.0199		100	80-120			
Calcium, dissolved	2.28	0.20 mg/L	2.02		113	80-120			
Chromium, dissolved	0.0197	0.00050 mg/L	0.0198		100	80-120			
Cobalt, dissolved	0.0200	0.00010 mg/L	0.0199		100	80-120			
Copper, dissolved	0.0205	0.00040 mg/L	0.0200		103	80-120			
Iron, dissolved	1.88	0.010 mg/L	2.02		93	80-120			
Lead, dissolved	0.0202	0.00020 mg/L	0.0199		101	80-120			
Magnesium, dissolved	1.89	0.010 mg/L	2.02		94	80-120			
Manganese, dissolved	0.0195	0.00020 mg/L	0.0199		98	80-120			
Molybdenum, dissolved	0.0196	0.00010 mg/L	0.0200		98	80-120			





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

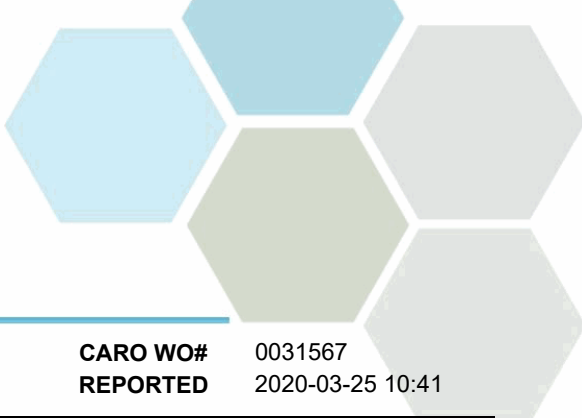
**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Dissolved Metals, Batch B0C1949, Continued</b>									
<b>LCS (B0C1949-BS1), Continued</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Nickel, dissolved	0.0201	0.00040 mg/L	0.0200		100	80-120			
Phosphorus, dissolved	1.93	0.050 mg/L	2.00		97	80-120			
Potassium, dissolved	1.89	0.10 mg/L	2.02		94	80-120			
Selenium, dissolved	0.0186	0.00050 mg/L	0.0200		93	80-120			
Silicon, dissolved	1.9	1.0 mg/L	2.00		96	80-120			
Silver, dissolved	0.0199	0.000050 mg/L	0.0200		99	80-120			
Sodium, dissolved	1.92	0.10 mg/L	2.02		95	80-120			
Strontium, dissolved	0.0192	0.0010 mg/L	0.0200		96	80-120			
Sulfur, dissolved	4.1	3.0 mg/L	5.00		82	80-120			
Tellurium, dissolved	0.0200	0.00050 mg/L	0.0200		100	80-120			
Thallium, dissolved	0.0208	0.000020 mg/L	0.0199		104	80-120			
Thorium, dissolved	0.0204	0.00010 mg/L	0.0200		102	80-120			
Tin, dissolved	0.0203	0.00020 mg/L	0.0200		101	80-120			
Titanium, dissolved	0.0204	0.0050 mg/L	0.0200		102	80-120			
Tungsten, dissolved	0.0204	0.0010 mg/L	0.0200		102	80-120			
Uranium, dissolved	0.0207	0.000020 mg/L	0.0200		104	80-120			
Vanadium, dissolved	0.0196	0.0010 mg/L	0.0200		98	80-120			
Zinc, dissolved	0.0205	0.0040 mg/L	0.0200		103	80-120			
Zirconium, dissolved	0.0196	0.00010 mg/L	0.0200		98	80-120			

<b>Reference (B0C1949-SRM1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Lithium, dissolved	0.101	0.00010 mg/L	0.100		101	77-127			
Aluminum, dissolved	0.216	0.0050 mg/L	0.235		92	79-114			
Antimony, dissolved	0.0458	0.00020 mg/L	0.0431		106	89-123			
Arsenic, dissolved	0.445	0.00050 mg/L	0.423		105	87-113			
Barium, dissolved	2.99	0.0050 mg/L	3.30		91	85-114			
Beryllium, dissolved	0.222	0.00010 mg/L	0.209		106	79-122			
Boron, dissolved	1.43	0.0050 mg/L	1.65		87	79-117			
Cadmium, dissolved	0.223	0.000010 mg/L	0.221		101	89-112			
Calcium, dissolved	7.75	0.20 mg/L	7.72		100	85-120			
Chromium, dissolved	0.434	0.00050 mg/L	0.434		100	87-113			
Cobalt, dissolved	0.127	0.00010 mg/L	0.124		102	90-117			
Copper, dissolved	0.845	0.00040 mg/L	0.815		104	90-115			
Iron, dissolved	1.23	0.010 mg/L	1.27		97	86-112			
Lead, dissolved	0.114	0.00020 mg/L	0.110		104	90-113			
Magnesium, dissolved	6.51	0.010 mg/L	6.59		99	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	0.848	0.00040 mg/L	0.835		102	90-114			
Phosphorus, dissolved	0.496	0.050 mg/L	0.499		99	74-119			
Potassium, dissolved	2.86	0.10 mg/L	2.88		99	78-119			
Selenium, dissolved	0.0326	0.00050 mg/L	0.0324		101	89-123			
Sodium, dissolved	17.2	0.10 mg/L	18.0		96	81-117			
Strontium, dissolved	0.900	0.0010 mg/L	0.935		96	82-111			
Thallium, dissolved	0.0406	0.000020 mg/L	0.0385		106	90-113			
Uranium, dissolved	0.255	0.000020 mg/L	0.258		99	87-113			
Vanadium, dissolved	0.848	0.0010 mg/L	0.873		97	85-110			
Zinc, dissolved	0.886	0.0040 mg/L	0.848		105	88-114			

**Dissolved Metals, Batch B0C1980**

<b>Blank (B0C1980-BLK1)</b>					Prepared: 2020-03-24, Analyzed: 2020-03-24				
Mercury, dissolved	< 0.000010	0.000010 mg/L							

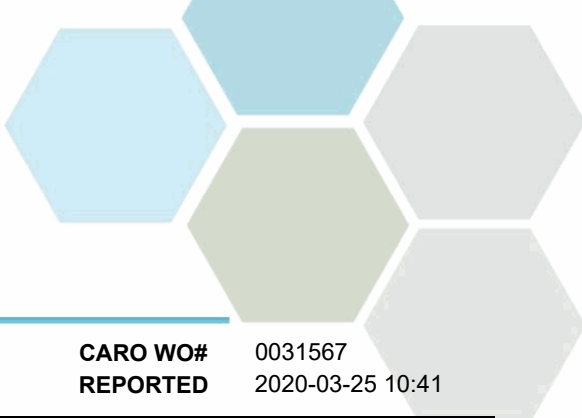


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Dissolved Metals, Batch B0C1980, Continued</b>									
<b>Reference (B0C1980-SRM1)</b>			Prepared: 2020-03-24, Analyzed: 2020-03-24						
Mercury, dissolved	0.00508	0.000010 mg/L	0.00489		104	80-120			
<b>General Parameters, Batch B0C1599</b>									
<b>Blank (B0C1599-BLK1)</b>			Prepared: 2020-03-18, Analyzed: 2020-03-18						
Chemical Oxygen Demand	< 5	5 mg/L							
<b>LCS (B0C1599-BS1)</b>			Prepared: 2020-03-18, Analyzed: 2020-03-18						
Chemical Oxygen Demand	51	5 mg/L	50.0		103	89-115			
<b>General Parameters, Batch B0C1606</b>									
<b>Blank (B0C1606-BLK1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>LCS (B0C1606-BS1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Ammonia, Total (as N)	0.909	0.020 mg/L	1.00		91	90-115			
<b>Duplicate (B0C1606-DUP1)</b>			<b>Source: 0031567-01</b>		Prepared: 2020-03-19, Analyzed: 2020-03-19				
Ammonia, Total (as N)	< 0.020	0.020 mg/L		< 0.020				15	
<b>Matrix Spike (B0C1606-MS1)</b>			<b>Source: 0031567-01</b>		Prepared: 2020-03-19, Analyzed: 2020-03-19				
Ammonia, Total (as N)	0.259	0.020 mg/L	0.250	< 0.020	104	75-125			
<b>General Parameters, Batch B0C1769</b>									
<b>Blank (B0C1769-BLK1)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B0C1769-BLK2)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>LCS (B0C1769-BS1)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	103	1.0 mg/L	100		103	80-120			
<b>LCS (B0C1769-BS2)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	108	1.0 mg/L	100		108	80-120			
<b>LCS (B0C1769-BS3)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Conductivity (EC)	1410	2.0 µS/cm	1410		100	95-104			
<b>LCS (B0C1769-BS4)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Conductivity (EC)	1380	2.0 µS/cm	1410		98	95-104			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
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### General Parameters, Batch B0C1769, Continued

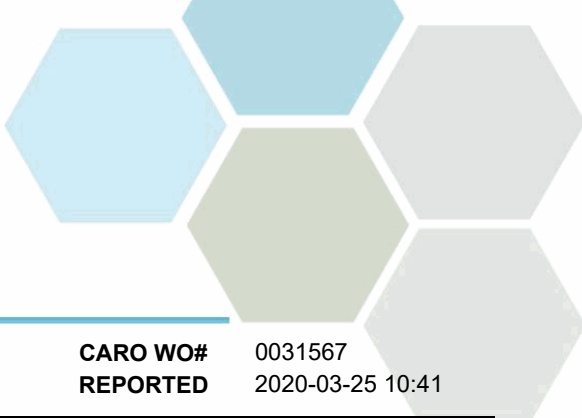
Reference (B0C1769-SRM1)			Prepared: 2020-03-20, Analyzed: 2020-03-20						
pH	6.95	0.10 pH units	7.01		99	98-102			
Reference (B0C1769-SRM2)			Prepared: 2020-03-20, Analyzed: 2020-03-20						
pH	6.95	0.10 pH units	7.01		99	98-102			

### Microbiological Parameters, Batch B0C1547

Blank (B0C1547-BLK1)			Prepared: 2020-03-18, Analyzed: 2020-03-18						
Coliforms, Total	< 1.0	1.0 MPN/100 mL							
E. coli	< 1.0	1.0 MPN/100 mL							
Blank (B0C1547-BLK2)			Prepared: 2020-03-18, Analyzed: 2020-03-18						
E. coli	< 1.0	1.0 MPN/100 mL							
Blank (B0C1547-BLK3)			Prepared: 2020-03-18, Analyzed: 2020-03-18						
Coliforms, Total	< 1.0	1.0 MPN/100 mL							
E. coli	< 1.0	1.0 MPN/100 mL							

### Total Metals, Batch B0C1924

Blank (B0C1924-BLK1)			Prepared: 2020-03-23, Analyzed: 2020-03-23						
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							

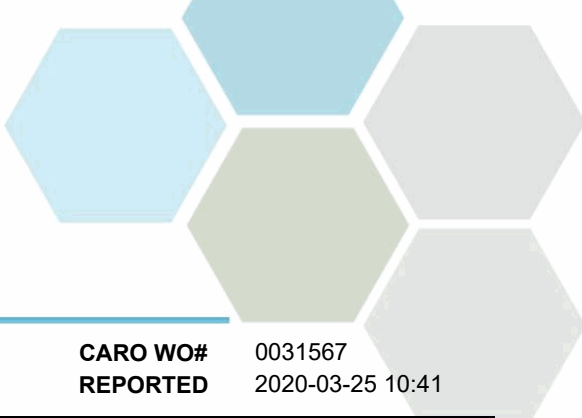


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Total Metals, Batch B0C1924, Continued</b>									
<b>Blank (B0C1924-BLK1), Continued</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Vanadium, total	< 0.0010	0.0010 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							
Zirconium, total	< 0.00010	0.00010 mg/L							
<b>LCS (B0C1924-BS1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Aluminum, total	0.0215	0.0050 mg/L	0.0199		108	80-120			
Antimony, total	0.0215	0.00020 mg/L	0.0200		108	80-120			
Arsenic, total	0.0215	0.00050 mg/L	0.0200		108	80-120			
Barium, total	0.0208	0.0050 mg/L	0.0198		105	80-120			
Beryllium, total	0.0212	0.00010 mg/L	0.0198		107	80-120			
Bismuth, total	0.0221	0.00010 mg/L	0.0200		110	80-120			
Boron, total	0.0196	0.0050 mg/L	0.0200		98	80-120			
Cadmium, total	0.0211	0.000010 mg/L	0.0199		106	80-120			
Calcium, total	2.32	0.20 mg/L	2.02		115	80-120			
Chromium, total	0.0211	0.00050 mg/L	0.0198		106	80-120			
Cobalt, total	0.0210	0.00010 mg/L	0.0199		106	80-120			
Copper, total	0.0218	0.00040 mg/L	0.0200		109	80-120			
Iron, total	2.00	0.010 mg/L	2.02		99	80-120			
Lead, total	0.0214	0.00020 mg/L	0.0199		107	80-120			
Lithium, total	0.0212	0.00010 mg/L	0.0200		106	80-120			
Magnesium, total	1.97	0.010 mg/L	2.02		97	80-120			
Manganese, total	0.0206	0.00020 mg/L	0.0199		104	80-120			
Molybdenum, total	0.0208	0.00010 mg/L	0.0200		104	80-120			
Nickel, total	0.0213	0.00040 mg/L	0.0200		107	80-120			
Phosphorus, total	2.04	0.050 mg/L	2.00		102	80-120			
Potassium, total	2.00	0.10 mg/L	2.02		99	80-120			
Selenium, total	0.0215	0.00050 mg/L	0.0200		107	80-120			
Silicon, total	1.8	1.0 mg/L	2.00		92	80-120			
Silver, total	0.0211	0.000050 mg/L	0.0200		106	80-120			
Sodium, total	2.03	0.10 mg/L	2.02		100	80-120			
Strontium, total	0.0208	0.0010 mg/L	0.0200		104	80-120			
Sulfur, total	5.3	3.0 mg/L	5.00		106	80-120			
Tellurium, total	0.0208	0.00050 mg/L	0.0200		104	80-120			
Thallium, total	0.0220	0.000020 mg/L	0.0199		110	80-120			
Thorium, total	0.0216	0.00010 mg/L	0.0200		108	80-120			
Tin, total	0.0213	0.00020 mg/L	0.0200		106	80-120			
Titanium, total	0.0217	0.0050 mg/L	0.0200		108	80-120			
Tungsten, total	0.0218	0.0010 mg/L	0.0200		109	80-120			
Uranium, total	0.0219	0.000020 mg/L	0.0200		109	80-120			
Vanadium, total	0.0208	0.0010 mg/L	0.0200		104	80-120			
Zinc, total	0.0221	0.0040 mg/L	0.0200		111	80-120			
Zirconium, total	0.0208	0.00010 mg/L	0.0200		104	80-120			
<b>Reference (B0C1924-SRM1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
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	0.129	0.00050 mg/L	0.118		109	88-111			
Barium, total	0.824	0.0050 mg/L	0.823		100	83-110			
Beryllium, total	0.0509	0.00010 mg/L	0.0496		103	80-119			
Boron, total	3.47	0.0050 mg/L	3.45		100	80-118			
Cadmium, total	0.0519	0.000010 mg/L	0.0495		105	90-110			
Calcium, total	10.7	0.20 mg/L	11.6		92	85-113			
Chromium, total	0.264	0.00050 mg/L	0.250		106	88-111			
Cobalt, total	0.0409	0.00010 mg/L	0.0377		108	90-114			
Copper, total	0.537	0.00040 mg/L	0.486		111	90-117			
Iron, total	0.509	0.010 mg/L	0.488		104	90-116			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031567  
2020-03-25 10:41

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Total Metals, Batch B0C1924, Continued</b>									
<b>Reference (B0C1924-SRM1), Continued</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Lead, total	0.208	0.00020 mg/L	0.204		102	90-110			
Lithium, total	0.397	0.00010 mg/L	0.403		99	79-118			
Magnesium, total	3.79	0.010 mg/L	3.79		100	88-116			
Manganese, total	0.110	0.00020 mg/L	0.109		101	88-108			
Molybdenum, total	0.207	0.00010 mg/L	0.198		104	88-110			
Nickel, total	0.264	0.00040 mg/L	0.249		106	90-112			
Phosphorus, total	0.210	0.050 mg/L	0.227		92	72-118			
Potassium, total	7.16	0.10 mg/L	7.21		99	87-116			
Selenium, total	0.128	0.00050 mg/L	0.121		106	90-122			
Sodium, total	7.29	0.10 mg/L	7.54		97	86-118			
Strontium, total	0.391	0.0010 mg/L	0.375		104	86-110			
Thallium, total	0.0850	0.000020 mg/L	0.0805		106	90-113			
Uranium, total	0.0315	0.000020 mg/L	0.0306		103	88-112			
Vanadium, total	0.406	0.0010 mg/L	0.386		105	87-110			
Zinc, total	2.65	0.0040 mg/L	2.49		107	90-113			

**Total Metals, Batch B0C1982**

<b>Blank (B0C1982-BLK1)</b>					Prepared: 2020-03-24, Analyzed: 2020-03-24				
Mercury, total	< 0.000010	0.000010 mg/L							
<b>Reference (B0C1982-SRM1)</b>					Prepared: 2020-03-24, Analyzed: 2020-03-24				
Mercury, total	0.00484	0.000010 mg/L	0.00489		99	80-120			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0031569
<b>ATTENTION</b>	Rob Palmer	<b>RECEIVED / TEMP REPORTED</b>	2020-03-18 12:00 / 5°C 2020-03-25 10:42
<b>PO NUMBER</b>	Typical Landfill Drinking Water	<b>COC NUMBER</b>	B86440
<b>PROJECT</b>	OK Falls - TLDW		
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: YES

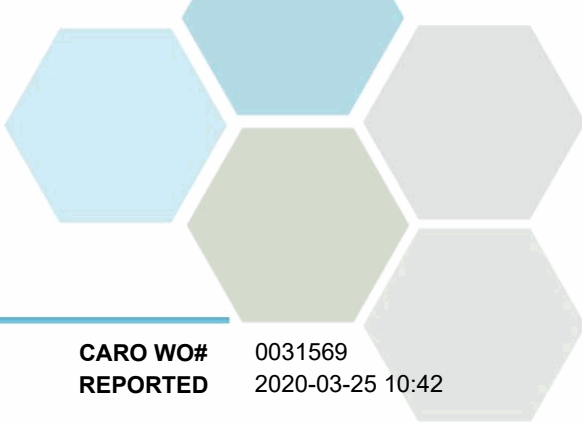
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

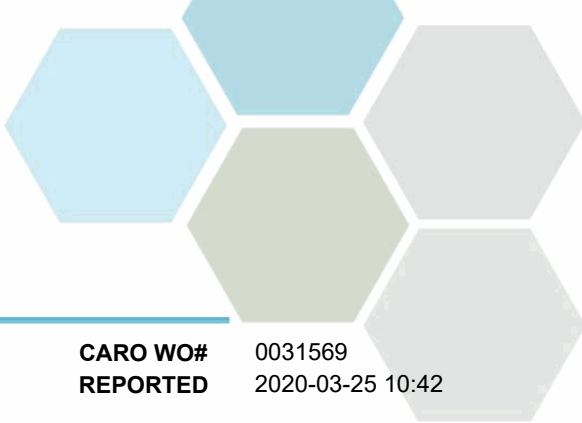


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>2150 Hwy 97 (0031569-01)   Matrix: Water   Sampled: 2020-03-17 13:50</b>					
<b>Anions</b>					
Bromide	< 0.10	N/A	0.10 mg/L	2020-03-19	
Chloride	<b>42.0</b>	AO ≤ 250	0.10 mg/L	2020-03-19	
Fluoride	<b>0.37</b>	MAC = 1.5	0.10 mg/L	2020-03-19	
Nitrate (as N)	<b>0.054</b>	MAC = 10	0.010 mg/L	2020-03-19	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-03-19	
Sulfate	<b>81.4</b>	AO ≤ 500	1.0 mg/L	2020-03-19	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	<b>323</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	<b>0.0540</b>	N/A	0.0200 mg/L	N/A	
<b>Dissolved Metals</b>					
Lithium, dissolved	<b>0.00771</b>	N/A	0.00010 mg/L	2020-03-23	
Aluminum, dissolved	< 0.0050	N/A	0.0050 mg/L	2020-03-23	
Antimony, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-03-23	
Arsenic, dissolved	<b>0.00099</b>	N/A	0.00050 mg/L	2020-03-23	
Barium, dissolved	<b>0.195</b>	N/A	0.0050 mg/L	2020-03-23	
Beryllium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Bismuth, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Boron, dissolved	<b>0.0777</b>	N/A	0.0050 mg/L	2020-03-23	
Cadmium, dissolved	< 0.000010	N/A	0.000010 mg/L	2020-03-23	
Calcium, dissolved	<b>100</b>	N/A	0.20 mg/L	2020-03-23	
Chromium, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Cobalt, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Copper, dissolved	< 0.00040	N/A	0.00040 mg/L	2020-03-23	
Iron, dissolved	<b>0.095</b>	N/A	0.010 mg/L	2020-03-23	
Lead, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-03-23	
Magnesium, dissolved	<b>17.7</b>	N/A	0.010 mg/L	2020-03-23	
Manganese, dissolved	<b>0.0561</b>	N/A	0.00020 mg/L	2020-03-23	
Mercury, dissolved	< 0.000010	N/A	0.000010 mg/L	2020-03-24	
Molybdenum, dissolved	<b>0.00183</b>	N/A	0.00010 mg/L	2020-03-23	
Nickel, dissolved	<b>0.00222</b>	N/A	0.00040 mg/L	2020-03-23	
Phosphorus, dissolved	< 0.050	N/A	0.050 mg/L	2020-03-23	
Potassium, dissolved	<b>4.00</b>	N/A	0.10 mg/L	2020-03-23	
Selenium, dissolved	<b>0.00092</b>	N/A	0.00050 mg/L	2020-03-23	
Silicon, dissolved	<b>10.0</b>	N/A	1.0 mg/L	2020-03-23	
Silver, dissolved	< 0.000050	N/A	0.000050 mg/L	2020-03-23	
Sodium, dissolved	<b>16.1</b>	N/A	0.10 mg/L	2020-03-23	
Strontium, dissolved	<b>0.873</b>	N/A	0.0010 mg/L	2020-03-23	
Sulfur, dissolved	<b>28.0</b>	N/A	3.0 mg/L	2020-03-23	
Tellurium, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Thallium, dissolved	< 0.000020	N/A	0.000020 mg/L	2020-03-23	
Thorium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Tin, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-03-23	



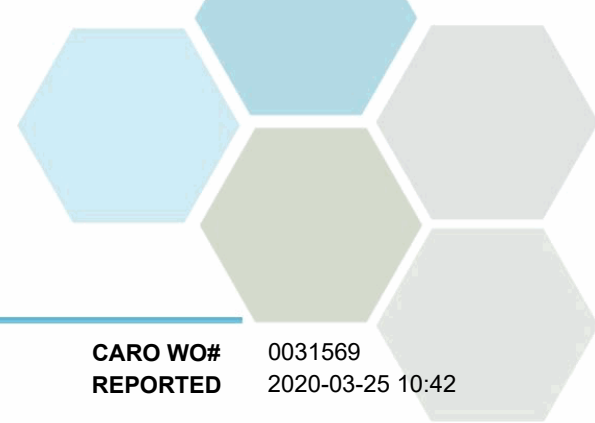
# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>2150 Hwy 97 (0031569-01)   Matrix: Water   Sampled: 2020-03-17 13:50, Continued</b>					
<i>Dissolved Metals, Continued</i>					
Titanium, dissolved	< 0.0050	N/A	0.0050 mg/L	2020-03-23	
Tungsten, dissolved	< 0.0010	N/A	0.0010 mg/L	2020-03-23	
Uranium, dissolved	<b>0.00539</b>	N/A	0.000020 mg/L	2020-03-23	
Vanadium, dissolved	< 0.0010	N/A	0.0010 mg/L	2020-03-23	
Zinc, dissolved	<b>0.0086</b>	N/A	0.0040 mg/L	2020-03-23	
Zirconium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	<b>249</b>	N/A	1.0 mg/L	2020-03-20	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-03-20	
Alkalinity, Bicarbonate (as CaCO3)	<b>249</b>	N/A	1.0 mg/L	2020-03-20	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-03-20	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-03-20	
Bicarbonate (HCO3)	<b>304</b>	N/A	1.22 mg/L	N/A	
Carbonate (CO3)	< 0.600	N/A	0.600 mg/L	N/A	
Hydroxide (OH)	< 0.340	N/A	0.340 mg/L	N/A	
Ammonia, Total (as N)	<b>0.136</b>	None Required	0.020 mg/L	2020-03-19	
Chemical Oxygen Demand	< 5	N/A	20 mg/L	2020-03-18	
Conductivity (EC)	<b>683</b>	N/A	2.0 µS/cm	2020-03-20	
pH	<b>8.04</b>	7.0-10.5	0.10 pH units	2020-03-20	HT2
<i>Microbiological Parameters</i>					
Coliforms, Total	< 1.0	N/A	1.0 MPN/100 mL	2020-03-18	
E. coli	< 1.0	N/A	1.0 MPN/100 mL	2020-03-18	
<i>Total Metals</i>					
Aluminum, total	<b>0.0086</b>	OG < 0.1	0.0050 mg/L	2020-03-23	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-03-23	
Arsenic, total	<b>0.00294</b>	MAC = 0.01	0.00050 mg/L	2020-03-23	
Barium, total	<b>0.216</b>	MAC = 2	0.0050 mg/L	2020-03-23	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Boron, total	<b>0.180</b>	MAC = 5	0.0050 mg/L	2020-03-23	
Cadmium, total	<b>0.000026</b>	MAC = 0.005	0.000010 mg/L	2020-03-23	
Calcium, total	<b>106</b>	None Required	0.20 mg/L	2020-03-23	
Chromium, total	<b>0.00068</b>	MAC = 0.05	0.00050 mg/L	2020-03-23	
Cobalt, total	<b>0.00011</b>	N/A	0.00010 mg/L	2020-03-23	
Copper, total	<b>0.00151</b>	MAC = 2	0.00040 mg/L	2020-03-23	
Iron, total	<b>5.04</b>	AO ≤ 0.3	0.010 mg/L	2020-03-23	
Lead, total	<b>0.00629</b>	MAC = 0.005	0.00020 mg/L	2020-03-23	
Lithium, total	<b>0.00898</b>	N/A	0.00010 mg/L	2020-03-23	
Magnesium, total	<b>19.2</b>	None Required	0.010 mg/L	2020-03-23	
Manganese, total	<b>0.0970</b>	MAC = 0.12	0.00020 mg/L	2020-03-23	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2020-03-24	





## TEST RESULTS

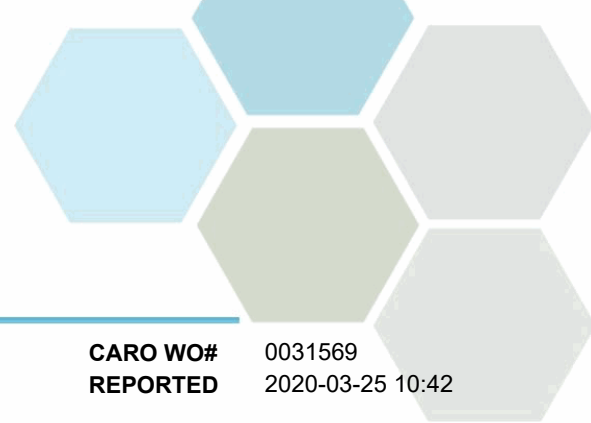
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>2150 Hwy 97 (0031569-01)   Matrix: Water   Sampled: 2020-03-17 13:50, Continued</b>					
<i>Total Metals, Continued</i>					
Molybdenum, total	<b>0.00156</b>	N/A	0.00010 mg/L	2020-03-23	
Nickel, total	<b>0.00268</b>	N/A	0.00040 mg/L	2020-03-23	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-03-23	
Potassium, total	<b>4.34</b>	N/A	0.10 mg/L	2020-03-23	
Selenium, total	<b>0.00114</b>	MAC = 0.05	0.00050 mg/L	2020-03-23	
Silicon, total	<b>10.6</b>	N/A	1.0 mg/L	2020-03-23	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-03-23	
Sodium, total	<b>17.6</b>	AO ≤ 200	0.10 mg/L	2020-03-23	
Strontium, total	<b>0.940</b>	7	0.0010 mg/L	2020-03-23	
Sulfur, total	<b>31.8</b>	N/A	3.0 mg/L	2020-03-23	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-03-23	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-03-23	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-23	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-03-23	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-03-23	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-03-23	
Uranium, total	<b>0.00583</b>	MAC = 0.02	0.000020 mg/L	2020-03-23	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-03-23	
Zinc, total	<b>0.358</b>	AO ≤ 5	0.0040 mg/L	2020-03-23	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-23	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	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
pH in Water	SM 4500-H+ B (2017)	Electrometry	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
OG	Operational Guideline (treated water)
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

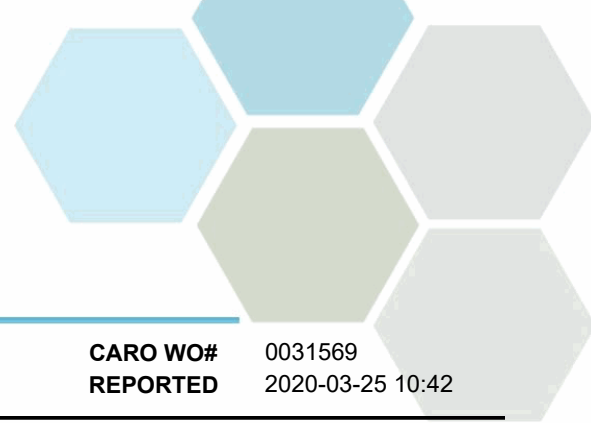
### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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.



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

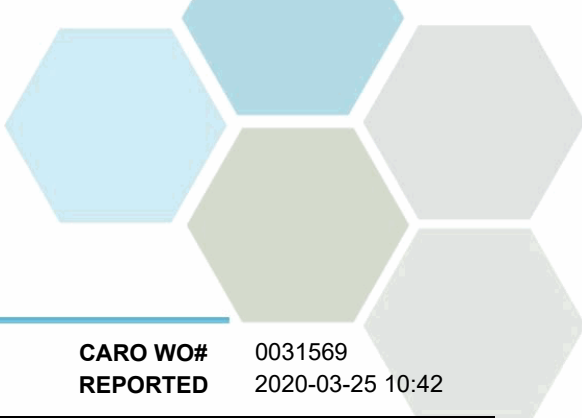
**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

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	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Anions, Batch B0C1595</b>									
<b>Blank (B0C1595-BLK1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0C1595-BLK2)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0C1595-BS1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	3.98	0.10 mg/L	4.00		100	85-115			
Chloride	16.1	0.10 mg/L	16.0		100	90-110			
Fluoride	4.06	0.10 mg/L	4.00		102	88-108			
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0C1595-BS2)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Bromide	4.00	0.10 mg/L	4.00		100	85-115			
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.09	0.10 mg/L	4.00		102	88-108			
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.95	0.010 mg/L	2.00		97	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>Dissolved Metals, Batch B0C1949</b>									
<b>Blank (B0C1949-BLK1)</b>			Prepared: 2020-03-23, Analyzed: 2020-03-23						
Lithium, dissolved	< 0.00010	0.00010 mg/L							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
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**Dissolved Metals, Batch B0C1949, Continued**

**Blank (B0C1949-BLK1), Continued**

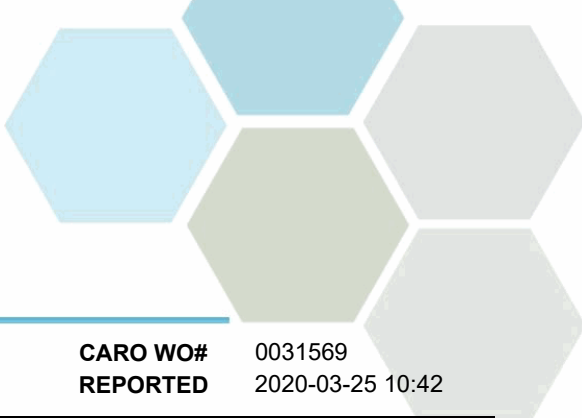
Prepared: 2020-03-23, Analyzed: 2020-03-23

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 (B0C1949-BS1)**

Prepared: 2020-03-23, Analyzed: 2020-03-23

Lithium, dissolved	0.0201	0.00010 mg/L	0.0200		101	80-120			
Aluminum, dissolved	0.0204	0.0050 mg/L	0.0199		102	80-120			
Antimony, dissolved	0.0196	0.00020 mg/L	0.0200		98	80-120			
Arsenic, dissolved	0.0198	0.00050 mg/L	0.0200		99	80-120			
Barium, dissolved	0.0194	0.0050 mg/L	0.0198		98	80-120			
Beryllium, dissolved	0.0205	0.00010 mg/L	0.0198		104	80-120			
Bismuth, dissolved	0.0209	0.00010 mg/L	0.0200		105	80-120			
Boron, dissolved	0.0163	0.0050 mg/L	0.0200		82	80-120			
Cadmium, dissolved	0.0198	0.000010 mg/L	0.0199		100	80-120			
Calcium, dissolved	2.28	0.20 mg/L	2.02		113	80-120			
Chromium, dissolved	0.0197	0.00050 mg/L	0.0198		100	80-120			
Cobalt, dissolved	0.0200	0.00010 mg/L	0.0199		100	80-120			
Copper, dissolved	0.0205	0.00040 mg/L	0.0200		103	80-120			
Iron, dissolved	1.88	0.010 mg/L	2.02		93	80-120			
Lead, dissolved	0.0202	0.00020 mg/L	0.0199		101	80-120			
Magnesium, dissolved	1.89	0.010 mg/L	2.02		94	80-120			
Manganese, dissolved	0.0195	0.00020 mg/L	0.0199		98	80-120			
Molybdenum, dissolved	0.0196	0.00010 mg/L	0.0200		98	80-120			

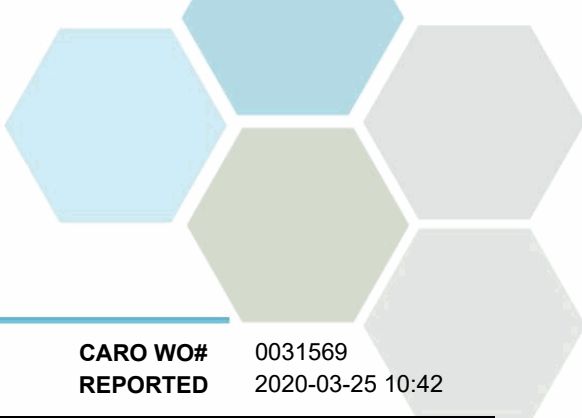


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Dissolved Metals, Batch B0C1949, Continued</b>									
<b>LCS (B0C1949-BS1), Continued</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Nickel, dissolved	0.0201	0.00040 mg/L	0.0200		100	80-120			
Phosphorus, dissolved	1.93	0.050 mg/L	2.00		97	80-120			
Potassium, dissolved	1.89	0.10 mg/L	2.02		94	80-120			
Selenium, dissolved	0.0186	0.00050 mg/L	0.0200		93	80-120			
Silicon, dissolved	1.9	1.0 mg/L	2.00		96	80-120			
Silver, dissolved	0.0199	0.000050 mg/L	0.0200		99	80-120			
Sodium, dissolved	1.92	0.10 mg/L	2.02		95	80-120			
Strontium, dissolved	0.0192	0.0010 mg/L	0.0200		96	80-120			
Sulfur, dissolved	4.1	3.0 mg/L	5.00		82	80-120			
Tellurium, dissolved	0.0200	0.00050 mg/L	0.0200		100	80-120			
Thallium, dissolved	0.0208	0.000020 mg/L	0.0199		104	80-120			
Thorium, dissolved	0.0204	0.00010 mg/L	0.0200		102	80-120			
Tin, dissolved	0.0203	0.00020 mg/L	0.0200		101	80-120			
Titanium, dissolved	0.0204	0.0050 mg/L	0.0200		102	80-120			
Tungsten, dissolved	0.0204	0.0010 mg/L	0.0200		102	80-120			
Uranium, dissolved	0.0207	0.000020 mg/L	0.0200		104	80-120			
Vanadium, dissolved	0.0196	0.0010 mg/L	0.0200		98	80-120			
Zinc, dissolved	0.0205	0.0040 mg/L	0.0200		103	80-120			
Zirconium, dissolved	0.0196	0.00010 mg/L	0.0200		98	80-120			
<b>Reference (B0C1949-SRM1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Lithium, dissolved	0.101	0.00010 mg/L	0.100		101	77-127			
Aluminum, dissolved	0.216	0.0050 mg/L	0.235		92	79-114			
Antimony, dissolved	0.0458	0.00020 mg/L	0.0431		106	89-123			
Arsenic, dissolved	0.445	0.00050 mg/L	0.423		105	87-113			
Barium, dissolved	2.99	0.0050 mg/L	3.30		91	85-114			
Beryllium, dissolved	0.222	0.00010 mg/L	0.209		106	79-122			
Boron, dissolved	1.43	0.0050 mg/L	1.65		87	79-117			
Cadmium, dissolved	0.223	0.000010 mg/L	0.221		101	89-112			
Calcium, dissolved	7.75	0.20 mg/L	7.72		100	85-120			
Chromium, dissolved	0.434	0.00050 mg/L	0.434		100	87-113			
Cobalt, dissolved	0.127	0.00010 mg/L	0.124		102	90-117			
Copper, dissolved	0.845	0.00040 mg/L	0.815		104	90-115			
Iron, dissolved	1.23	0.010 mg/L	1.27		97	86-112			
Lead, dissolved	0.114	0.00020 mg/L	0.110		104	90-113			
Magnesium, dissolved	6.51	0.010 mg/L	6.59		99	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	0.848	0.00040 mg/L	0.835		102	90-114			
Phosphorus, dissolved	0.496	0.050 mg/L	0.499		99	74-119			
Potassium, dissolved	2.86	0.10 mg/L	2.88		99	78-119			
Selenium, dissolved	0.0326	0.00050 mg/L	0.0324		101	89-123			
Sodium, dissolved	17.2	0.10 mg/L	18.0		96	81-117			
Strontium, dissolved	0.900	0.0010 mg/L	0.935		96	82-111			
Thallium, dissolved	0.0406	0.000020 mg/L	0.0385		106	90-113			
Uranium, dissolved	0.255	0.000020 mg/L	0.258		99	87-113			
Vanadium, dissolved	0.848	0.0010 mg/L	0.873		97	85-110			
Zinc, dissolved	0.886	0.0040 mg/L	0.848		105	88-114			
<b>Dissolved Metals, Batch B0C1980</b>									
<b>Blank (B0C1980-BLK1)</b>					Prepared: 2020-03-24, Analyzed: 2020-03-24				
Mercury, dissolved	< 0.000010	0.000010 mg/L							

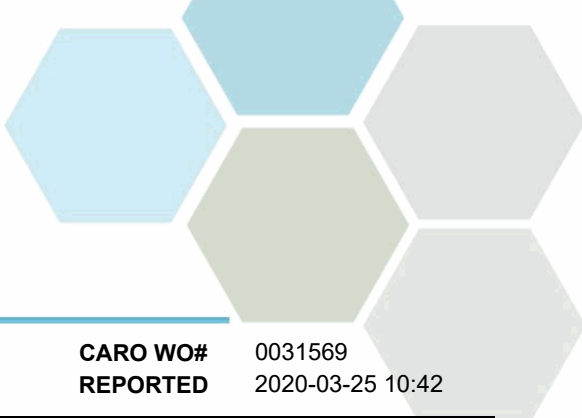


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Dissolved Metals, Batch B0C1980, Continued</b>									
<b>Reference (B0C1980-SRM1)</b>			Prepared: 2020-03-24, Analyzed: 2020-03-24						
Mercury, dissolved	0.00508	0.000010 mg/L	0.00489		104	80-120			
<b>General Parameters, Batch B0C1599</b>									
<b>Blank (B0C1599-BLK1)</b>			Prepared: 2020-03-18, Analyzed: 2020-03-18						
Chemical Oxygen Demand	< 5	5 mg/L							
<b>LCS (B0C1599-BS1)</b>			Prepared: 2020-03-18, Analyzed: 2020-03-18						
Chemical Oxygen Demand	51	5 mg/L	50.0		103	89-115			
<b>General Parameters, Batch B0C1606</b>									
<b>Blank (B0C1606-BLK1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>LCS (B0C1606-BS1)</b>			Prepared: 2020-03-19, Analyzed: 2020-03-19						
Ammonia, Total (as N)	0.909	0.020 mg/L	1.00		91	90-115			
<b>General Parameters, Batch B0C1769</b>									
<b>Blank (B0C1769-BLK1)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B0C1769-BLK2)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>LCS (B0C1769-BS1)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	103	1.0 mg/L	100		103	80-120			
<b>LCS (B0C1769-BS2)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Alkalinity, Total (as CaCO3)	108	1.0 mg/L	100		108	80-120			
<b>LCS (B0C1769-BS3)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Conductivity (EC)	1410	2.0 µS/cm	1410		100	95-104			
<b>LCS (B0C1769-BS4)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
Conductivity (EC)	1380	2.0 µS/cm	1410		98	95-104			
<b>Reference (B0C1769-SRM1)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
pH	6.95	0.10 pH units	7.01		99	98-102			
<b>Reference (B0C1769-SRM2)</b>			Prepared: 2020-03-20, Analyzed: 2020-03-20						
pH	6.95	0.10 pH units	7.01		99	98-102			

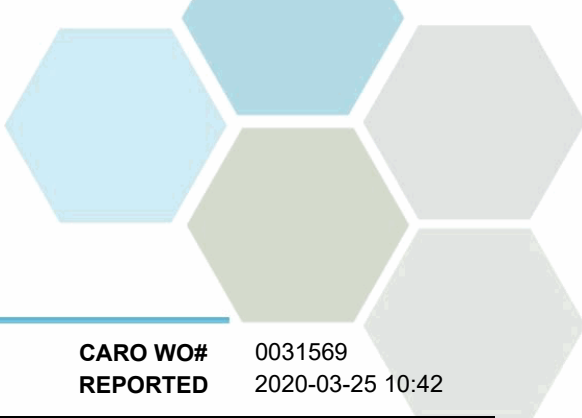


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Microbiological Parameters, Batch B0C1547</b>									
<b>Blank (B0C1547-BLK1)</b>					Prepared: 2020-03-18, Analyzed: 2020-03-18				
Coliforms, Total	< 1.0	1.0 MPN/100 mL							
E. coli	< 1.0	1.0 MPN/100 mL							
<b>Blank (B0C1547-BLK2)</b>					Prepared: 2020-03-18, Analyzed: 2020-03-18				
E. coli	< 1.0	1.0 MPN/100 mL							
<b>Blank (B0C1547-BLK3)</b>					Prepared: 2020-03-18, Analyzed: 2020-03-18				
Coliforms, Total	< 1.0	1.0 MPN/100 mL							
E. coli	< 1.0	1.0 MPN/100 mL							
<b>Total Metals, Batch B0C1924</b>									
<b>Blank (B0C1924-BLK1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
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							
<b>LCS (B0C1924-BS1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Aluminum, total	0.0215	0.0050 mg/L	0.0199		108	80-120			
Antimony, total	0.0215	0.00020 mg/L	0.0200		108	80-120			
Arsenic, total	0.0215	0.00050 mg/L	0.0200		108	80-120			



## APPENDIX 2: QUALITY CONTROL RESULTS

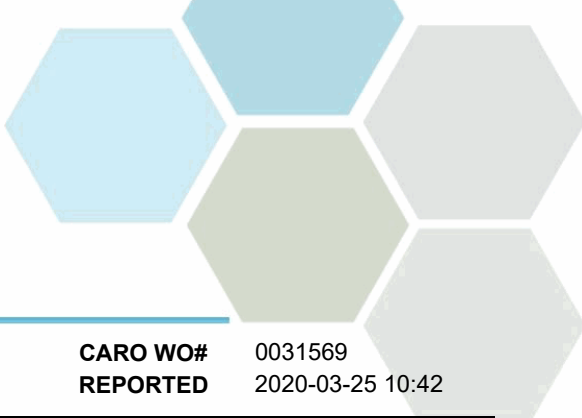
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Total Metals, Batch B0C1924, Continued</b>									
<b>LCS (B0C1924-BS1), Continued</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Barium, total	0.0208	0.0050 mg/L	0.0198		105	80-120			
Beryllium, total	0.0212	0.00010 mg/L	0.0198		107	80-120			
Bismuth, total	0.0221	0.00010 mg/L	0.0200		110	80-120			
Boron, total	0.0196	0.0050 mg/L	0.0200		98	80-120			
Cadmium, total	0.0211	0.000010 mg/L	0.0199		106	80-120			
Calcium, total	2.32	0.20 mg/L	2.02		115	80-120			
Chromium, total	0.0211	0.00050 mg/L	0.0198		106	80-120			
Cobalt, total	0.0210	0.00010 mg/L	0.0199		106	80-120			
Copper, total	0.0218	0.00040 mg/L	0.0200		109	80-120			
Iron, total	2.00	0.010 mg/L	2.02		99	80-120			
Lead, total	0.0214	0.00020 mg/L	0.0199		107	80-120			
Lithium, total	0.0212	0.00010 mg/L	0.0200		106	80-120			
Magnesium, total	1.97	0.010 mg/L	2.02		97	80-120			
Manganese, total	0.0206	0.00020 mg/L	0.0199		104	80-120			
Molybdenum, total	0.0208	0.00010 mg/L	0.0200		104	80-120			
Nickel, total	0.0213	0.00040 mg/L	0.0200		107	80-120			
Phosphorus, total	2.04	0.050 mg/L	2.00		102	80-120			
Potassium, total	2.00	0.10 mg/L	2.02		99	80-120			
Selenium, total	0.0215	0.00050 mg/L	0.0200		107	80-120			
Silicon, total	1.8	1.0 mg/L	2.00		92	80-120			
Silver, total	0.0211	0.000050 mg/L	0.0200		106	80-120			
Sodium, total	2.03	0.10 mg/L	2.02		100	80-120			
Strontium, total	0.0208	0.0010 mg/L	0.0200		104	80-120			
Sulfur, total	5.3	3.0 mg/L	5.00		106	80-120			
Tellurium, total	0.0208	0.00050 mg/L	0.0200		104	80-120			
Thallium, total	0.0220	0.000020 mg/L	0.0199		110	80-120			
Thorium, total	0.0216	0.00010 mg/L	0.0200		108	80-120			
Tin, total	0.0213	0.00020 mg/L	0.0200		106	80-120			
Titanium, total	0.0217	0.0050 mg/L	0.0200		108	80-120			
Tungsten, total	0.0218	0.0010 mg/L	0.0200		109	80-120			
Uranium, total	0.0219	0.000020 mg/L	0.0200		109	80-120			
Vanadium, total	0.0208	0.0010 mg/L	0.0200		104	80-120			
Zinc, total	0.0221	0.0040 mg/L	0.0200		111	80-120			
Zirconium, total	0.0208	0.00010 mg/L	0.0200		104	80-120			

<b>Reference (B0C1924-SRM1)</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
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	0.129	0.00050 mg/L	0.118		109	88-111			
Barium, total	0.824	0.0050 mg/L	0.823		100	83-110			
Beryllium, total	0.0509	0.00010 mg/L	0.0496		103	80-119			
Boron, total	3.47	0.0050 mg/L	3.45		100	80-118			
Cadmium, total	0.0519	0.000010 mg/L	0.0495		105	90-110			
Calcium, total	10.7	0.20 mg/L	11.6		92	85-113			
Chromium, total	0.264	0.00050 mg/L	0.250		106	88-111			
Cobalt, total	0.0409	0.00010 mg/L	0.0377		108	90-114			
Copper, total	0.537	0.00040 mg/L	0.486		111	90-117			
Iron, total	0.509	0.010 mg/L	0.488		104	90-116			
Lead, total	0.208	0.00020 mg/L	0.204		102	90-110			
Lithium, total	0.397	0.00010 mg/L	0.403		99	79-118			
Magnesium, total	3.79	0.010 mg/L	3.79		100	88-116			
Manganese, total	0.110	0.00020 mg/L	0.109		101	88-108			
Molybdenum, total	0.207	0.00010 mg/L	0.198		104	88-110			
Nickel, total	0.264	0.00040 mg/L	0.249		106	90-112			
Phosphorus, total	0.210	0.050 mg/L	0.227		92	72-118			
Potassium, total	7.16	0.10 mg/L	7.21		99	87-116			





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0031569  
2020-03-25 10:42

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Total Metals, Batch B0C1924, Continued</b>									
<b>Reference (B0C1924-SRM1), Continued</b>					Prepared: 2020-03-23, Analyzed: 2020-03-23				
Selenium, total	0.128	0.00050 mg/L	0.121		106	90-122			
Sodium, total	7.29	0.10 mg/L	7.54		97	86-118			
Strontium, total	0.391	0.0010 mg/L	0.375		104	86-110			
Thallium, total	0.0850	0.000020 mg/L	0.0805		106	90-113			
Uranium, total	0.0315	0.000020 mg/L	0.0306		103	88-112			
Vanadium, total	0.406	0.0010 mg/L	0.386		105	87-110			
Zinc, total	2.65	0.0040 mg/L	2.49		107	90-113			

**Total Metals, Batch B0C1982**

<b>Blank (B0C1982-BLK1)</b>					Prepared: 2020-03-24, Analyzed: 2020-03-24				
Mercury, total	< 0.000010	0.000010 mg/L							
<b>Reference (B0C1982-SRM1)</b>					Prepared: 2020-03-24, Analyzed: 2020-03-24				
Mercury, total	0.00484	0.000010 mg/L	0.00489		99	80-120			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0040639
<b>ATTENTION</b>	Rob Palmer	<b>RECEIVED / TEMP REPORTED</b>	2020-04-08 12:00 / 4°C 2020-04-17 17:15
<b>PO NUMBER</b>	Typical Landfill Drinking Water	<b>COC NUMBER</b>	B86441
<b>PROJECT</b>	OK Falls - TLDW		
<b>PROJECT INFO</b>	1998 Hwy 97		

### 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.

### Work Order Comments:

Custody Seals Intact: YES

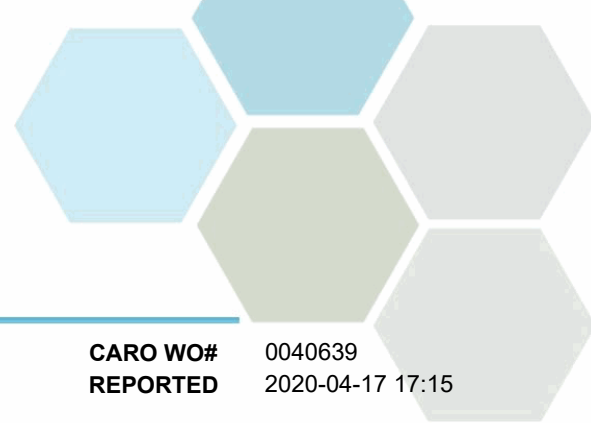
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

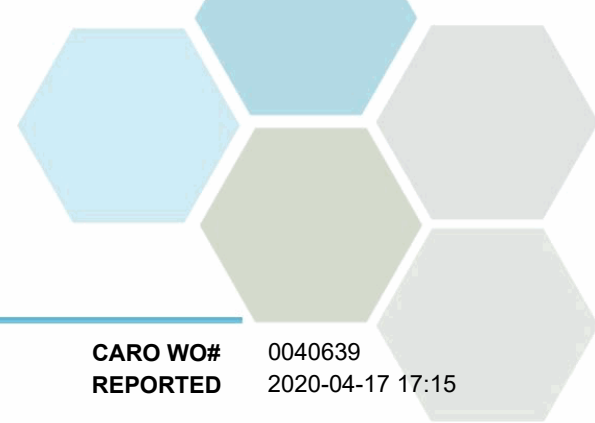


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>1998 Hwy 97 (0040639-01)   Matrix: Water   Sampled: 2020-04-07 12:00</b>					
<b>Anions</b>					
Bromide	0.22	N/A	0.10 mg/L	2020-04-08	
Chloride	134	AO ≤ 250	0.10 mg/L	2020-04-08	
Fluoride	2.97	MAC = 1.5	0.10 mg/L	2020-04-08	
Nitrate (as N)	0.494	MAC = 10	0.010 mg/L	2020-04-08	
Nitrite (as N)	0.060	MAC = 1	0.010 mg/L	2020-04-08	
Sulfate	172	AO ≤ 500	1.0 mg/L	2020-04-08	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	128	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	0.553	N/A	0.0200 mg/L	N/A	
<b>Dissolved Metals</b>					
Lithium, dissolved	0.0647	N/A	0.00010 mg/L	2020-04-12	
Aluminum, dissolved	< 0.0050	N/A	0.0050 mg/L	2020-04-12	
Antimony, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-04-12	
Arsenic, dissolved	0.0464	N/A	0.00050 mg/L	2020-04-12	
Barium, dissolved	0.0157	N/A	0.0050 mg/L	2020-04-12	
Beryllium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Bismuth, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Boron, dissolved	0.329	N/A	0.0050 mg/L	2020-04-12	
Cadmium, dissolved	< 0.000010	N/A	0.000010 mg/L	2020-04-12	
Calcium, dissolved	29.6	N/A	0.20 mg/L	2020-04-12	
Chromium, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-04-12	
Cobalt, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Copper, dissolved	0.00080	N/A	0.00040 mg/L	2020-04-12	
Iron, dissolved	< 0.010	N/A	0.010 mg/L	2020-04-12	
Lead, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-04-12	
Magnesium, dissolved	13.1	N/A	0.010 mg/L	2020-04-12	
Manganese, dissolved	0.00150	N/A	0.00020 mg/L	2020-04-12	
Mercury, dissolved	< 0.000010	N/A	0.000010 mg/L	2020-04-11	
Molybdenum, dissolved	0.0100	N/A	0.00010 mg/L	2020-04-12	
Nickel, dissolved	< 0.00040	N/A	0.00040 mg/L	2020-04-12	
Phosphorus, dissolved	< 0.050	N/A	0.050 mg/L	2020-04-12	
Potassium, dissolved	2.08	N/A	0.10 mg/L	2020-04-12	
Selenium, dissolved	0.00365	N/A	0.00050 mg/L	2020-04-12	
Silicon, dissolved	7.7	N/A	1.0 mg/L	2020-04-12	
Silver, dissolved	< 0.000050	N/A	0.000050 mg/L	2020-04-12	
Sodium, dissolved	179	N/A	0.10 mg/L	2020-04-12	
Strontium, dissolved	1.15	N/A	0.0010 mg/L	2020-04-12	
Sulfur, dissolved	65.2	N/A	3.0 mg/L	2020-04-12	
Tellurium, dissolved	< 0.00050	N/A	0.00050 mg/L	2020-04-12	
Thallium, dissolved	< 0.000020	N/A	0.000020 mg/L	2020-04-12	
Thorium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Tin, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-04-12	

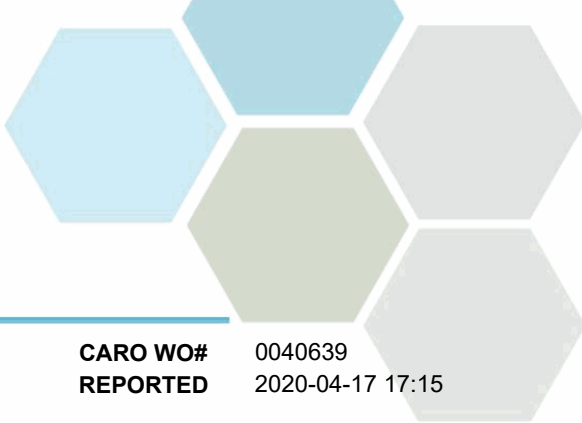


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>1998 Hwy 97 (0040639-01)   Matrix: Water   Sampled: 2020-04-07 12:00, Continued</b>					
<i>Dissolved Metals, Continued</i>					
Titanium, dissolved	< 0.0050	N/A	0.0050 mg/L	2020-04-12	
Tungsten, dissolved	< 0.0010	N/A	0.0010 mg/L	2020-04-12	
Uranium, dissolved	<b>0.00456</b>	N/A	0.000020 mg/L	2020-04-12	
Vanadium, dissolved	< 0.0010	N/A	0.0010 mg/L	2020-04-12	
Zinc, dissolved	< 0.0040	N/A	0.0040 mg/L	2020-04-12	
Zirconium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	<b>149</b>	N/A	1.0 mg/L	2020-04-10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-04-10	
Alkalinity, Bicarbonate (as CaCO3)	<b>149</b>	N/A	1.0 mg/L	2020-04-10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-04-10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-04-10	
Bicarbonate (HCO3)	<b>182</b>	N/A	1.22 mg/L	N/A	
Carbonate (CO3)	< 0.600	N/A	0.600 mg/L	N/A	
Hydroxide (OH)	< 0.340	N/A	0.340 mg/L	N/A	
Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-04-14	
Chemical Oxygen Demand	< 20	N/A	20 mg/L	2020-04-14	
Conductivity (EC)	<b>1080</b>	N/A	2.0 µS/cm	2020-04-10	
pH	<b>8.13</b>	7.0-10.5	0.10 pH units	2020-04-10	HT2
<i>Microbiological Parameters</i>					
Coliforms, Total	< 1.0	N/A	1.0 MPN/100 mL	2020-04-08	
E. coli	< 1.0	N/A	1.0 MPN/100 mL	2020-04-08	
<i>Total Metals</i>					
Aluminum, total	<b>0.0419</b>	OG < 0.1	0.0050 mg/L	2020-04-12	
Antimony, total	<b>0.00024</b>	MAC = 0.006	0.00020 mg/L	2020-04-12	
Arsenic, total	<b>0.0449</b>	MAC = 0.01	0.00050 mg/L	2020-04-12	
Barium, total	<b>0.0139</b>	MAC = 2	0.0050 mg/L	2020-04-12	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Boron, total	<b>0.345</b>	MAC = 5	0.0050 mg/L	2020-04-12	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-04-12	
Calcium, total	<b>28.4</b>	None Required	0.20 mg/L	2020-04-12	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-04-12	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Copper, total	<b>0.00111</b>	MAC = 2	0.00040 mg/L	2020-04-12	
Iron, total	<b>0.108</b>	AO ≤ 0.3	0.010 mg/L	2020-04-12	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-04-12	
Lithium, total	<b>0.0574</b>	N/A	0.00010 mg/L	2020-04-12	
Magnesium, total	<b>12.5</b>	None Required	0.010 mg/L	2020-04-12	
Manganese, total	<b>0.00254</b>	MAC = 0.12	0.00020 mg/L	2020-04-12	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2020-04-14	



# TEST RESULTS

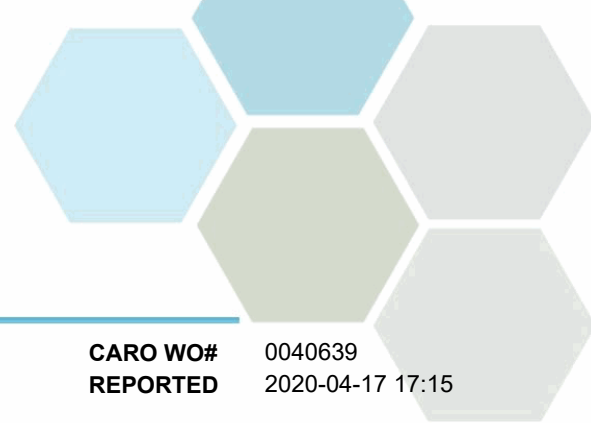
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>1998 Hwy 97 (0040639-01)   Matrix: Water   Sampled: 2020-04-07 12:00, Continued</b>					
<i>Total Metals, Continued</i>					
Molybdenum, total	<b>0.00972</b>	N/A	0.00010 mg/L	2020-04-12	
Nickel, total	< 0.00040	N/A	0.00040 mg/L	2020-04-12	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-04-12	
Potassium, total	<b>2.03</b>	N/A	0.10 mg/L	2020-04-12	
Selenium, total	<b>0.00341</b>	MAC = 0.05	0.00050 mg/L	2020-04-12	
Silicon, total	<b>5.9</b>	N/A	1.0 mg/L	2020-04-12	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-04-12	
Sodium, total	<b>172</b>	AO ≤ 200	0.10 mg/L	2020-04-12	
Strontium, total	<b>1.10</b>	7	0.0010 mg/L	2020-04-12	
Sulfur, total	<b>61.2</b>	N/A	3.0 mg/L	2020-04-12	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-04-12	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-04-12	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-12	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-04-12	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-04-12	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-04-12	
Uranium, total	<b>0.00427</b>	MAC = 0.02	0.000020 mg/L	2020-04-12	
Vanadium, total	<b>0.0018</b>	N/A	0.0010 mg/L	2020-04-12	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-04-12	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-12	

**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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

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Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	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
pH in Water	SM 4500-H+ B (2017)	Electrometry	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
OG	Operational Guideline (treated water)
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

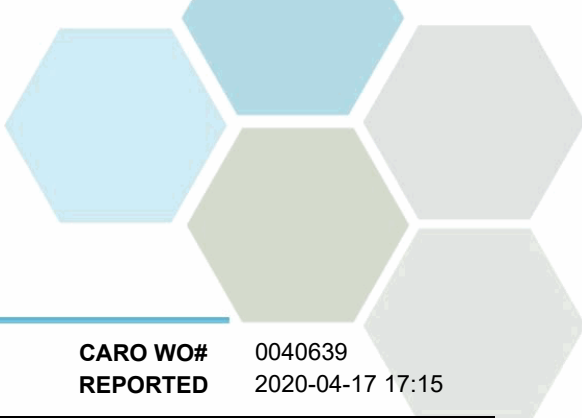
### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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.



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

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2020-04-17 17:15

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:

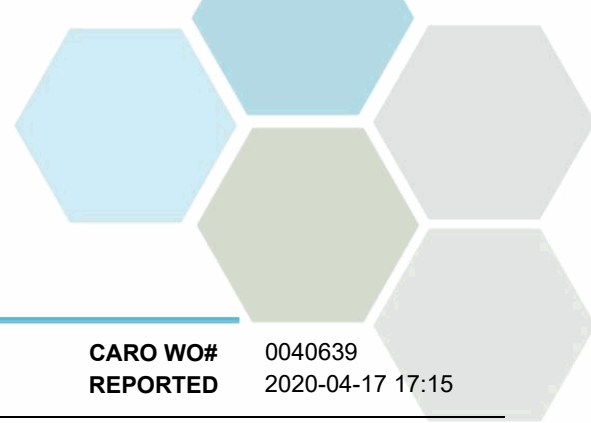
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected 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	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Anions, Batch B0D0558</b>									
<b>Blank (B0D0558-BLK1)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0D0558-BLK2)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0D0558-BS1)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
Bromide	4.01	0.10 mg/L	4.00		100	85-115			
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.00	0.10 mg/L	4.00		100	88-108			
Nitrate (as N)	3.92	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.00	0.010 mg/L	2.00		100	85-115			
Sulfate	15.8	1.0 mg/L	16.0		99	90-110			
<b>LCS (B0D0558-BS2)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
Bromide	4.00	0.10 mg/L	4.00		100	85-115			
Chloride	16.1	0.10 mg/L	16.0		101	90-110			
Fluoride	4.01	0.10 mg/L	4.00		100	88-108			
Nitrate (as N)	3.91	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.00	0.010 mg/L	2.00		100	85-115			
Sulfate	15.8	1.0 mg/L	16.0		99	90-110			

### Dissolved Metals, Batch B0D0742

<b>Blank (B0D0742-BLK1)</b>			Prepared: 2020-04-11, Analyzed: 2020-04-11						
Mercury, dissolved	< 0.000010	0.000010 mg/L							



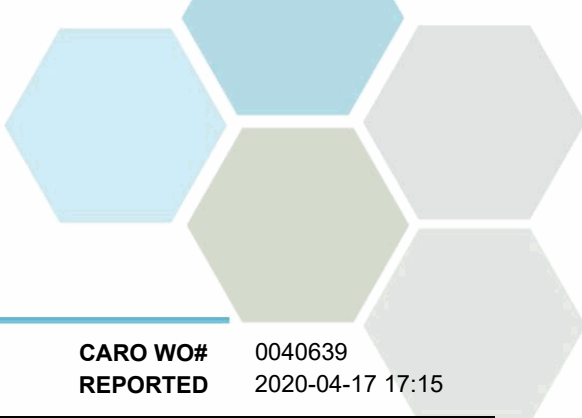
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
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Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Dissolved Metals, Batch B0D0742, Continued</b>									
<b>Blank (B0D0742-BLK2)</b>			Prepared: 2020-04-11, Analyzed: 2020-04-11						
Mercury, dissolved	< 0.000010	0.000010 mg/L							
<b>Reference (B0D0742-SRM1)</b>			Prepared: 2020-04-11, Analyzed: 2020-04-11						
Mercury, dissolved	0.00458	0.000010 mg/L	0.00489		94	80-120			
<b>Reference (B0D0742-SRM2)</b>			Prepared: 2020-04-11, Analyzed: 2020-04-11						
Mercury, dissolved	0.00423	0.000010 mg/L	0.00489		86	80-120			
<b>Dissolved Metals, Batch B0D0761</b>									
<b>Blank (B0D0761-BLK1)</b>			Prepared: 2020-04-12, Analyzed: 2020-04-12						
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							
<b>LCS (B0D0761-BS1)</b>			Prepared: 2020-04-12, Analyzed: 2020-04-12						
Lithium, dissolved	0.0229	0.00010 mg/L	0.0200		114	80-120			
Aluminum, dissolved	0.0205	0.0050 mg/L	0.0199		103	80-120			
Antimony, dissolved	0.0182	0.00020 mg/L	0.0200		91	80-120			
Arsenic, dissolved	0.0193	0.00050 mg/L	0.0200		96	80-120			
Barium, dissolved	0.0195	0.0050 mg/L	0.0198		99	80-120			





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

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Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
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**Dissolved Metals, Batch B0D0761, Continued**

**LCS (B0D0761-BS1), Continued**

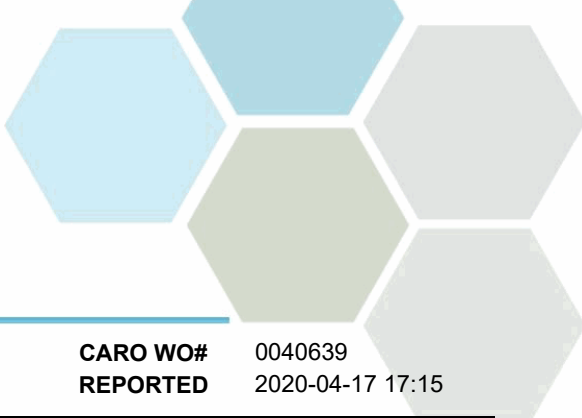
Prepared: 2020-04-12, Analyzed: 2020-04-12

Beryllium, dissolved	0.0220	0.00010 mg/L	0.0198		111	80-120			
Bismuth, dissolved	0.0196	0.00010 mg/L	0.0200		98	80-120			
Boron, dissolved	0.0187	0.0050 mg/L	0.0200		93	80-120			
Cadmium, dissolved	0.0199	0.000010 mg/L	0.0199		100	80-120			
Calcium, dissolved	1.84	0.20 mg/L	2.02		91	80-120			
Chromium, dissolved	0.0188	0.00050 mg/L	0.0198		95	80-120			
Cobalt, dissolved	0.0196	0.00010 mg/L	0.0199		98	80-120			
Copper, dissolved	0.0199	0.00040 mg/L	0.0200		99	80-120			
Iron, dissolved	1.91	0.010 mg/L	2.02		94	80-120			
Lead, dissolved	0.0191	0.00020 mg/L	0.0199		96	80-120			
Magnesium, dissolved	1.93	0.010 mg/L	2.02		95	80-120			
Manganese, dissolved	0.0197	0.00020 mg/L	0.0199		99	80-120			
Molybdenum, dissolved	0.0184	0.00010 mg/L	0.0200		92	80-120			
Nickel, dissolved	0.0197	0.00040 mg/L	0.0200		98	80-120			
Phosphorus, dissolved	1.93	0.050 mg/L	2.00		96	80-120			
Potassium, dissolved	1.78	0.10 mg/L	2.02		88	80-120			
Selenium, dissolved	0.0196	0.00050 mg/L	0.0200		98	80-120			
Silicon, dissolved	1.9	1.0 mg/L	2.00		97	80-120			
Silver, dissolved	0.0198	0.000050 mg/L	0.0200		99	80-120			
Sodium, dissolved	2.32	0.10 mg/L	2.02		115	80-120			
Strontium, dissolved	0.0198	0.0010 mg/L	0.0200		99	80-120			
Sulfur, dissolved	4.8	3.0 mg/L	5.00		97	80-120			
Tellurium, dissolved	0.0189	0.00050 mg/L	0.0200		95	80-120			
Thallium, dissolved	0.0196	0.000020 mg/L	0.0199		99	80-120			
Thorium, dissolved	0.0184	0.00010 mg/L	0.0200		92	80-120			
Tin, dissolved	0.0197	0.00020 mg/L	0.0200		99	80-120			
Titanium, dissolved	0.0187	0.0050 mg/L	0.0200		93	80-120			
Tungsten, dissolved	0.0195	0.0010 mg/L	0.0200		98	80-120			
Uranium, dissolved	0.0192	0.000020 mg/L	0.0200		96	80-120			
Vanadium, dissolved	0.0187	0.0010 mg/L	0.0200		94	80-120			
Zinc, dissolved	0.0203	0.0040 mg/L	0.0200		102	80-120			
Zirconium, dissolved	0.0185	0.00010 mg/L	0.0200		93	80-120			

**Reference (B0D0761-SRM1)**

Prepared: 2020-04-12, Analyzed: 2020-04-12

Lithium, dissolved	0.122	0.00010 mg/L	0.100		122	77-127			
Aluminum, dissolved	0.217	0.0050 mg/L	0.235		92	79-114			
Antimony, dissolved	0.0457	0.00020 mg/L	0.0431		106	89-123			
Arsenic, dissolved	0.436	0.00050 mg/L	0.423		103	87-113			
Barium, dissolved	3.18	0.0050 mg/L	3.30		96	85-114			
Beryllium, dissolved	0.238	0.00010 mg/L	0.209		114	79-122			
Boron, dissolved	1.43	0.0050 mg/L	1.65		86	79-117			
Cadmium, dissolved	0.227	0.000010 mg/L	0.221		103	89-112			
Calcium, dissolved	7.10	0.20 mg/L	7.72		92	85-120			
Chromium, dissolved	0.439	0.00050 mg/L	0.434		101	87-113			
Cobalt, dissolved	0.126	0.00010 mg/L	0.124		102	90-117			
Copper, dissolved	0.843	0.00040 mg/L	0.815		103	90-115			
Iron, dissolved	1.27	0.010 mg/L	1.27		100	86-112			
Lead, dissolved	0.113	0.00020 mg/L	0.110		103	90-113			
Magnesium, dissolved	6.61	0.010 mg/L	6.59		100	84-116			
Manganese, dissolved	0.336	0.00020 mg/L	0.342		98	85-113			
Molybdenum, dissolved	0.402	0.00010 mg/L	0.404		100	87-112			
Nickel, dissolved	0.833	0.00040 mg/L	0.835		100	90-114			
Phosphorus, dissolved	0.496	0.050 mg/L	0.499		99	74-119			
Potassium, dissolved	2.73	0.10 mg/L	2.88		95	78-119			
Selenium, dissolved	0.0348	0.00050 mg/L	0.0324		107	89-123			
Sodium, dissolved	17.7	0.10 mg/L	18.0		98	81-117			

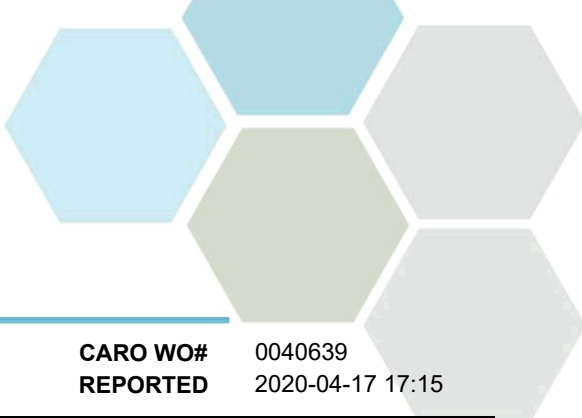


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Dissolved Metals, Batch B0D0761, Continued</b>									
<b>Reference (B0D0761-SRM1), Continued</b>					Prepared: 2020-04-12, Analyzed: 2020-04-12				
Strontium, dissolved	0.951	0.0010 mg/L	0.935		102	82-111			
Thallium, dissolved	0.0396	0.000020 mg/L	0.0385		103	90-113			
Uranium, dissolved	0.255	0.000020 mg/L	0.258		99	87-113			
Vanadium, dissolved	0.851	0.0010 mg/L	0.873		97	85-110			
Zinc, dissolved	0.910	0.0040 mg/L	0.848		107	88-114			
<b>General Parameters, Batch B0D0714</b>									
<b>Blank (B0D0714-BLK1)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B0D0714-BLK2)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>Blank (B0D0714-BLK3)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
<b>LCS (B0D0714-BS1)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
<b>LCS (B0D0714-BS2)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
<b>LCS (B0D0714-BS3)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Alkalinity, Total (as CaCO3)	93.7	1.0 mg/L	100		94	80-120			
<b>LCS (B0D0714-BS4)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Conductivity (EC)	1380	2.0 µS/cm	1410		98	95-104			
<b>LCS (B0D0714-BS5)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Conductivity (EC)	1380	2.0 µS/cm	1410		98	95-104			
<b>LCS (B0D0714-BS6)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
Conductivity (EC)	1390	2.0 µS/cm	1410		99	95-104			
<b>Reference (B0D0714-SRM1)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
pH	6.99	0.10 pH units	7.01		100	98-102			
<b>Reference (B0D0714-SRM2)</b>					Prepared: 2020-04-10, Analyzed: 2020-04-10				
pH	6.96	0.10 pH units	7.01		99	98-102			



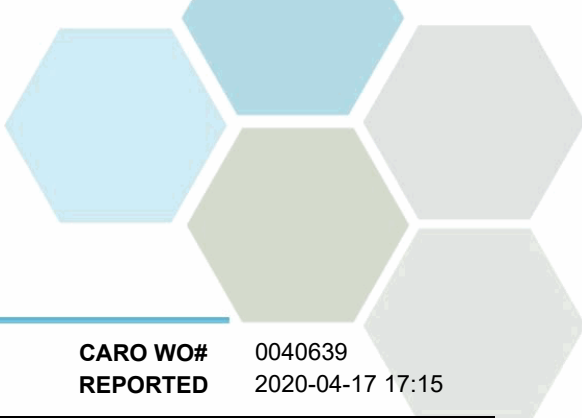
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>General Parameters, Batch B0D0714, Continued</b>									
<b>Reference (B0D0714-SRM3)</b>			Prepared: 2020-04-10, Analyzed: 2020-04-10						
pH	6.98	0.10 pH units	7.01		100	98-102			
<b>General Parameters, Batch B0D0784</b>									
<b>Blank (B0D0784-BLK1)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0D0784-BLK2)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0D0784-BLK3)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>LCS (B0D0784-BS1)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Ammonia, Total (as N)	0.982	0.050 mg/L	1.00		98	90-115			
<b>LCS (B0D0784-BS2)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Ammonia, Total (as N)	0.947	0.050 mg/L	1.00		95	90-115			
<b>LCS (B0D0784-BS3)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Ammonia, Total (as N)	0.930	0.050 mg/L	1.00		93	90-115			
<b>General Parameters, Batch B0D0789</b>									
<b>Blank (B0D0789-BLK1)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Chemical Oxygen Demand	< 20	20 mg/L							
<b>Blank (B0D0789-BLK2)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Chemical Oxygen Demand	< 20	20 mg/L							
<b>LCS (B0D0789-BS1)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Chemical Oxygen Demand	502	20 mg/L	500		100	89-115			
<b>LCS (B0D0789-BS2)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-14						
Chemical Oxygen Demand	500	20 mg/L	500		100	89-115			
<b>Microbiological Parameters, Batch B0D0521</b>									
<b>Blank (B0D0521-BLK1)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
E. coli	< 1.0	1.0 MPN/100 mL							
<b>Blank (B0D0521-BLK2)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
Coliforms, Total	< 1.0	1.0 MPN/100 mL							
E. coli	< 1.0	1.0 MPN/100 mL							
<b>Blank (B0D0521-BLK3)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
E. coli	< 1.0	1.0 MPN/100 mL							
<b>Blank (B0D0521-BLK4)</b>			Prepared: 2020-04-08, Analyzed: 2020-04-08						
Coliforms, Total	< 1.0	1.0 MPN/100 mL							
E. coli	< 1.0	1.0 MPN/100 mL							

**Total Metals, Batch B0D0746**



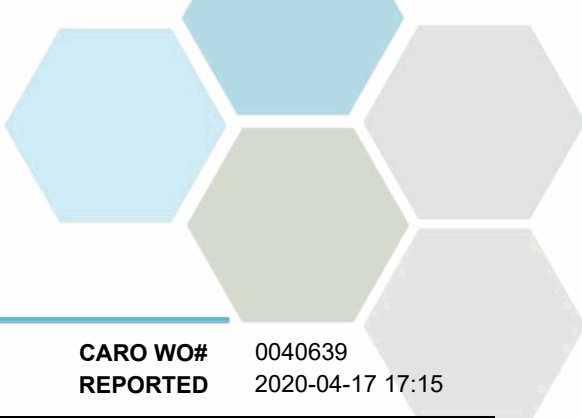
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Total Metals, Batch B0D0746, Continued</b>									
<b>Blank (B0D0746-BLK1)</b>					Prepared: 2020-04-11, Analyzed: 2020-04-12				
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							

<b>LCS (B0D0746-BS1)</b>					Prepared: 2020-04-11, Analyzed: 2020-04-12				
Aluminum, total	0.0205	0.0050 mg/L	0.0199		103	80-120			
Antimony, total	0.0200	0.00020 mg/L	0.0200		100	80-120			
Arsenic, total	0.0201	0.00050 mg/L	0.0200		100	80-120			
Barium, total	0.0194	0.0050 mg/L	0.0198		98	80-120			
Beryllium, total	0.0212	0.00010 mg/L	0.0198		107	80-120			
Bismuth, total	0.0206	0.00010 mg/L	0.0200		103	80-120			
Boron, total	0.0184	0.0050 mg/L	0.0200		92	80-120			
Cadmium, total	0.0199	0.000010 mg/L	0.0199		100	80-120			
Calcium, total	2.08	0.20 mg/L	2.02		103	80-120			
Chromium, total	0.0203	0.00050 mg/L	0.0198		102	80-120			
Cobalt, total	0.0206	0.00010 mg/L	0.0199		104	80-120			
Copper, total	0.0211	0.00040 mg/L	0.0200		106	80-120			
Iron, total	2.01	0.010 mg/L	2.02		99	80-120			
Lead, total	0.0200	0.00020 mg/L	0.0199		101	80-120			
Lithium, total	0.0215	0.00010 mg/L	0.0200		108	80-120			
Magnesium, total	1.97	0.010 mg/L	2.02		97	80-120			
Manganese, total	0.0200	0.00020 mg/L	0.0199		101	80-120			

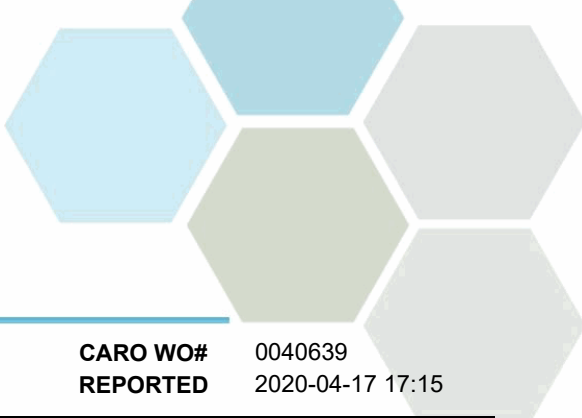


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
<b>Total Metals, Batch B0D0746, Continued</b>									
<b>LCS (B0D0746-BS1), Continued</b>					Prepared: 2020-04-11, Analyzed: 2020-04-12				
Molybdenum, total	0.0194	0.00010 mg/L	0.0200		97	80-120			
Nickel, total	0.0207	0.00040 mg/L	0.0200		103	80-120			
Phosphorus, total	1.99	0.050 mg/L	2.00		100	80-120			
Potassium, total	1.90	0.10 mg/L	2.02		94	80-120			
Selenium, total	0.0203	0.00050 mg/L	0.0200		102	80-120			
Silicon, total	2.2	1.0 mg/L	2.00		109	80-120			
Silver, total	0.0204	0.000050 mg/L	0.0200		102	80-120			
Sodium, total	2.07	0.10 mg/L	2.02		102	80-120			
Strontium, total	0.0201	0.0010 mg/L	0.0200		100	80-120			
Sulfur, total	5.5	3.0 mg/L	5.00		111	80-120			
Tellurium, total	0.0191	0.00050 mg/L	0.0200		95	80-120			
Thallium, total	0.0202	0.000020 mg/L	0.0199		102	80-120			
Thorium, total	0.0193	0.00010 mg/L	0.0200		97	80-120			
Tin, total	0.0197	0.00020 mg/L	0.0200		98	80-120			
Titanium, total	0.0193	0.0050 mg/L	0.0200		96	80-120			
Tungsten, total	0.0197	0.0010 mg/L	0.0200		98	80-120			
Uranium, total	0.0202	0.000020 mg/L	0.0200		101	80-120			
Vanadium, total	0.0207	0.0010 mg/L	0.0200		104	80-120			
Zinc, total	0.0215	0.0040 mg/L	0.0200		108	80-120			
Zirconium, total	0.0189	0.00010 mg/L	0.0200		95	80-120			
<b>Duplicate (B0D0746-DUP1)</b>					Source: 0040639-01 Prepared: 2020-04-11, Analyzed: 2020-04-12				
Aluminum, total	0.0445	0.0050 mg/L		0.0419			6	20	
Antimony, total	0.00031	0.00020 mg/L		0.00024				20	
Arsenic, total	0.0464	0.00050 mg/L		0.0449			3	15	
Barium, total	0.0146	0.0050 mg/L		0.0139				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	0.298	0.0050 mg/L		0.345			14	20	
Cadmium, total	< 0.000010	0.000010 mg/L		< 0.000010				20	
Calcium, total	29.5	0.20 mg/L		28.4			4	12	
Chromium, total	< 0.00050	0.00050 mg/L		< 0.00050				12	
Cobalt, total	< 0.00010	0.00010 mg/L		< 0.00010				13	
Copper, total	0.00120	0.00040 mg/L		0.00111				20	
Iron, total	0.113	0.010 mg/L		0.108			4	18	
Lead, total	< 0.00020	0.00020 mg/L		< 0.00020				20	
Lithium, total	0.0598	0.00010 mg/L		0.0574			4	19	
Magnesium, total	13.0	0.010 mg/L		12.5			4	10	
Manganese, total	0.00276	0.00020 mg/L		0.00254			8	13	
Molybdenum, total	0.00987	0.00010 mg/L		0.00972			2	20	
Nickel, total	< 0.00040	0.00040 mg/L		< 0.00040				20	
Phosphorus, total	< 0.050	0.050 mg/L		< 0.050				20	
Potassium, total	2.14	0.10 mg/L		2.03			5	13	
Selenium, total	0.00353	0.00050 mg/L		0.00341			3	20	
Silicon, total	6.2	1.0 mg/L		5.9			4	11	
Silver, total	< 0.000050	0.000050 mg/L		< 0.000050				18	
Sodium, total	179	0.10 mg/L		172			4	10	
Strontium, total	1.13	0.0010 mg/L		1.10			2	9	
Sulfur, total	63.9	3.0 mg/L		61.2			4	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	



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls - TLDW

**CARO WO# REPORTED** 0040639  
2020-04-17 17:15

Analyte	Result	MRL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Notes
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**Total Metals, Batch B0D0746, Continued**

Duplicate (B0D0746-DUP1), Continued		Source: 0040639-01		Prepared: 2020-04-11, Analyzed: 2020-04-12					
Titanium, total	< 0.0050	0.0050 mg/L		< 0.0050					20
Tungsten, total	< 0.0010	0.0010 mg/L		< 0.0010					20
Uranium, total	0.00444	0.000020 mg/L		0.00427			4		14
Vanadium, total	0.0018	0.0010 mg/L		0.0018					17
Zinc, total	< 0.0040	0.0040 mg/L		< 0.0040					8
Zirconium, total	< 0.00010	0.00010 mg/L		< 0.00010					20

Reference (B0D0746-SRM1)		Prepared: 2020-04-11, Analyzed: 2020-04-12							
Aluminum, total	0.290	0.0050 mg/L		0.303	96	82-114			
Antimony, total	0.0508	0.00020 mg/L		0.0511	99	88-115			
Arsenic, total	0.121	0.00050 mg/L		0.118	102	88-111			
Barium, total	0.783	0.0050 mg/L		0.823	95	83-110			
Beryllium, total	0.0533	0.00010 mg/L		0.0496	108	80-119			
Boron, total	2.76	0.0050 mg/L		3.45	80	80-118			
Cadmium, total	0.0492	0.000010 mg/L		0.0495	99	90-110			
Calcium, total	10.7	0.20 mg/L		11.6	92	85-113			
Chromium, total	0.255	0.00050 mg/L		0.250	102	88-111			
Cobalt, total	0.0399	0.00010 mg/L		0.0377	106	90-114			
Copper, total	0.524	0.00040 mg/L		0.486	108	90-117			
Iron, total	0.513	0.010 mg/L		0.488	105	90-116			
Lead, total	0.205	0.00020 mg/L		0.204	101	90-110			
Lithium, total	0.444	0.00010 mg/L		0.403	110	79-118			
Magnesium, total	3.87	0.010 mg/L		3.79	102	88-116			
Manganese, total	0.108	0.00020 mg/L		0.109	99	88-108			
Molybdenum, total	0.193	0.00010 mg/L		0.198	97	88-110			
Nickel, total	0.256	0.00040 mg/L		0.249	103	90-112			
Phosphorus, total	0.227	0.050 mg/L		0.227	100	72-118			
Potassium, total	7.24	0.10 mg/L		7.21	100	87-116			
Selenium, total	0.124	0.00050 mg/L		0.121	103	90-122			
Sodium, total	7.53	0.10 mg/L		7.54	100	86-118			
Strontium, total	0.379	0.0010 mg/L		0.375	101	86-110			
Thallium, total	0.0846	0.000020 mg/L		0.0805	105	90-113			
Uranium, total	0.0304	0.000020 mg/L		0.0306	99	88-112			
Vanadium, total	0.390	0.0010 mg/L		0.386	101	87-110			
Zinc, total	2.68	0.0040 mg/L		2.49	108	90-113			

**Total Metals, Batch B0D0818**

Blank (B0D0818-BLK1)		Prepared: 2020-04-14, Analyzed: 2020-04-14							
Mercury, total	< 0.000010	0.000010 mg/L							
Blank (B0D0818-BLK2)		Prepared: 2020-04-14, Analyzed: 2020-04-14							
Mercury, total	< 0.000010	0.000010 mg/L							
Reference (B0D0818-SRM1)		Prepared: 2020-04-14, Analyzed: 2020-04-14							
Mercury, total	0.00477	0.000010 mg/L		0.00489	98	80-120			
Reference (B0D0818-SRM2)		Prepared: 2020-04-14, Analyzed: 2020-04-14							
Mercury, total	0.00453	0.000010 mg/L		0.00489	93	80-120			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0091963
<b>ATTENTION</b>	Rob Palmer	<b>RECEIVED / TEMP REPORTED</b>	2020-09-18 12:00 / 4°C 2020-09-28 14:49
<b>PO NUMBER</b>	Typical Landfill Groundwater	<b>COC NUMBER</b>	B90435
<b>PROJECT</b>	Ok Falls - TLGW		
<b>PROJECT INFO</b>			

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

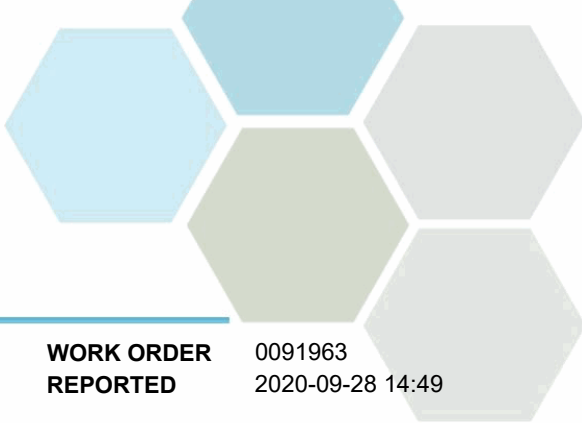
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**2150 Hwy 97N (0091963-01) | Matrix: Water | Sampled: 2020-09-17 13:50**

**Anions**

Bromide	< 0.10	N/A	0.10 mg/L	2020-09-19	
Chloride	<b>43.4</b>	AO ≤ 250	0.10 mg/L	2020-09-19	
Fluoride	<b>0.49</b>	MAC = 1.5	0.10 mg/L	2020-09-19	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-09-19	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-09-19	
Sulfate	<b>82.6</b>	AO ≤ 500	1.0 mg/L	2020-09-19	

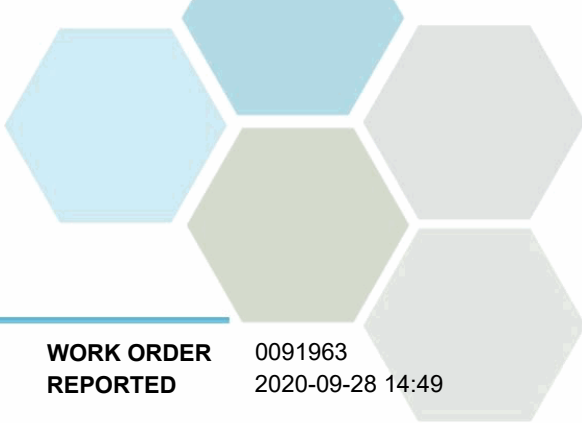
**Calculated Parameters**

Hardness, Total (as CaCO3)	<b>346</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0200	N/A	0.0200 mg/L	N/A	

**Dissolved Metals**

Lithium, dissolved	<b>0.00709</b>	N/A	0.00010 mg/L	2020-09-24	
Aluminum, dissolved	<b>0.0075</b>	N/A	0.0050 mg/L	2020-09-24	
Antimony, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-09-24	
Arsenic, dissolved	<b>0.00157</b>	N/A	0.00050 mg/L	2020-09-24	
Barium, dissolved	<b>0.198</b>	N/A	0.0050 mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-09-24	
Boron, dissolved	< 0.0500	N/A	0.0500 mg/L	2020-09-24	
Cadmium, dissolved	<b>0.000015</b>	N/A	0.000010 mg/L	2020-09-24	
Calcium, dissolved	<b>105</b>	N/A	0.20 mg/L	2020-09-24	
Chromium, dissolved	<b>0.00127</b>	N/A	0.00050 mg/L	2020-09-24	
Cobalt, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-09-24	
Copper, dissolved	<b>0.00057</b>	N/A	0.00040 mg/L	2020-09-24	
Iron, dissolved	<b>0.060</b>	N/A	0.010 mg/L	2020-09-24	
Lead, dissolved	<b>0.00024</b>	N/A	0.00020 mg/L	2020-09-24	
Magnesium, dissolved	<b>20.2</b>	N/A	0.010 mg/L	2020-09-24	
Manganese, dissolved	<b>0.00946</b>	N/A	0.00020 mg/L	2020-09-24	
Molybdenum, dissolved	<b>0.00170</b>	N/A	0.00010 mg/L	2020-09-24	
Nickel, dissolved	<b>0.00235</b>	N/A	0.00040 mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	N/A	0.050 mg/L	2020-09-24	
Potassium, dissolved	<b>4.50</b>	N/A	0.10 mg/L	2020-09-24	
Selenium, dissolved	< 0.000050	N/A	0.000050 mg/L	2020-09-24	
Silicon, dissolved	<b>9.7</b>	N/A	1.0 mg/L	2020-09-24	
Silver, dissolved	< 0.000050	N/A	0.000050 mg/L	2020-09-24	
Sodium, dissolved	<b>18.7</b>	N/A	0.10 mg/L	2020-09-24	
Strontium, dissolved	<b>0.832</b>	N/A	0.0010 mg/L	2020-09-24	
Sulfur, dissolved	<b>29.5</b>	N/A	3.0 mg/L	2020-09-24	
Tellurium, dissolved	< 0.000050	N/A	0.000050 mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	N/A	0.000020 mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-09-24	
Tin, dissolved	< 0.00020	N/A	0.00020 mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	N/A	0.0050 mg/L	2020-09-24	





# TEST RESULTS

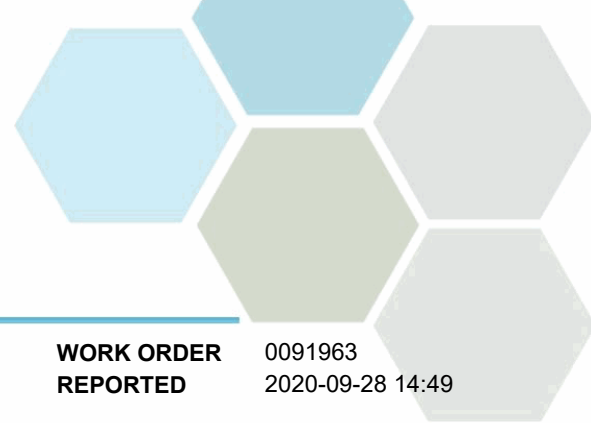
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>2150 Hwy 97N (0091963-01)   Matrix: Water   Sampled: 2020-09-17 13:50, Continued</b>					
<i>Dissolved Metals, Continued</i>					
Tungsten, dissolved	< 0.0010	N/A	0.0010 mg/L	2020-09-24	
Uranium, dissolved	<b>0.00510</b>	N/A	0.000020 mg/L	2020-09-24	
Vanadium, dissolved	< 0.0010	N/A	0.0010 mg/L	2020-09-24	
Zinc, dissolved	<b>0.0145</b>	N/A	0.0040 mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	N/A	0.00010 mg/L	2020-09-24	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	<b>225</b>	N/A	1.0 mg/L	2020-09-22	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-09-22	
Alkalinity, Bicarbonate (as CaCO3)	<b>225</b>	N/A	1.0 mg/L	2020-09-22	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-09-22	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2020-09-22	
Bicarbonate (HCO3)	<b>274</b>	N/A	1.22 mg/L	N/A	
Carbonate (CO3)	< 0.600	N/A	0.600 mg/L	N/A	
Hydroxide (OH)	< 0.340	N/A	0.340 mg/L	N/A	
Ammonia, Total (as N)	<b>0.113</b>	None Required	0.050 mg/L	2020-09-22	
Chemical Oxygen Demand	<b>22</b>	N/A	20 mg/L	2020-09-21	
Conductivity (EC)	<b>723</b>	N/A	2.0 µS/cm	2020-09-22	
pH	<b>8.08</b>	7.0-10.5	0.10 pH units	2020-09-22	HT2

**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 PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	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
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna

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

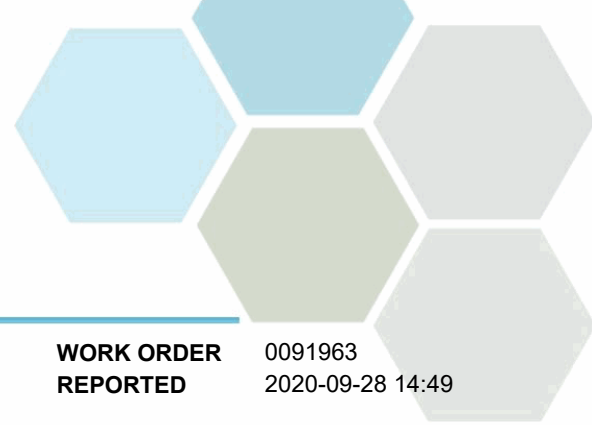
### Glossary of Terms:

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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
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

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** Ok Falls - TLGW

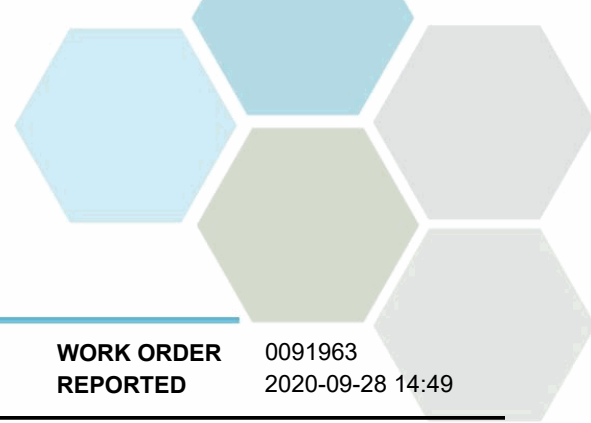
**WORK ORDER** 0091963  
**REPORTED** 2020-09-28 14:49

### 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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

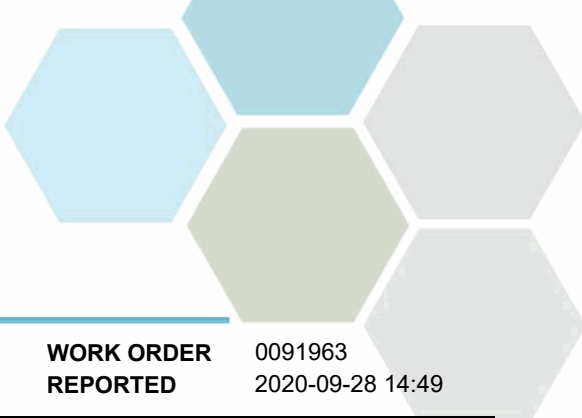
**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

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
<b>Anions, Batch B01728</b>									
<b>Blank (B01728-BLK1)</b>			Prepared: 2020-09-19, Analyzed: 2020-09-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B01728-BLK2)</b>			Prepared: 2020-09-19, Analyzed: 2020-09-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B01728-BLK3)</b>			Prepared: 2020-09-19, Analyzed: 2020-09-19						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B01728-BS1)</b>			Prepared: 2020-09-19, Analyzed: 2020-09-19						
Bromide	3.90	0.10 mg/L	4.00		97	85-115			
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.01	0.10 mg/L	4.00		100	88-108			
Nitrate (as N)	4.06	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.79	0.010 mg/L	2.00		89	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>LCS (B01728-BS2)</b>			Prepared: 2020-09-19, Analyzed: 2020-09-19						
Bromide	3.98	0.10 mg/L	4.00		100	85-115			
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.01	0.10 mg/L	4.00		100	88-108			
Nitrate (as N)	3.99	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	1.90	0.010 mg/L	2.00		95	85-115			



## APPENDIX 2: QUALITY CONTROL RESULTS

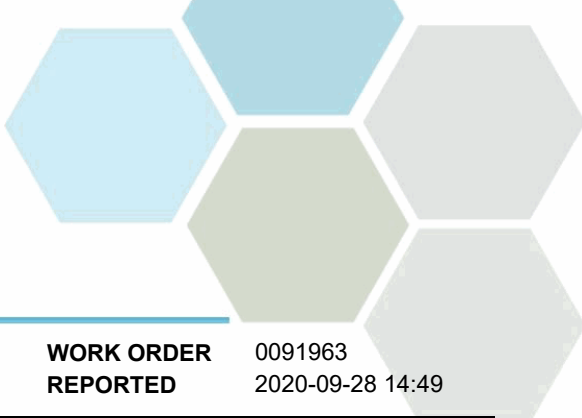
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Anions, Batch B01728, Continued</b>									
<b>LCS (B01728-BS2), Continued</b>					Prepared: 2020-09-19, Analyzed: 2020-09-19				
Sulfate	16.1	1.0 mg/L	16.0		101	90-110			
<b>LCS (B01728-BS3)</b>					Prepared: 2020-09-19, Analyzed: 2020-09-19				
Bromide	3.84	0.10 mg/L	4.00		96	85-115			
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.05	0.10 mg/L	4.00		101	88-108			
Nitrate (as N)	4.02	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.97	0.010 mg/L	2.00		99	85-115			
Sulfate	15.9	1.0 mg/L	16.0		99	90-110			

**Dissolved Metals, Batch B012246**

<b>Blank (B012246-BLK1)</b>			Prepared: 2020-09-24, Analyzed: 2020-09-24						
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	< 0.0500	0.0500 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							
<b>LCS (B012246-BS1)</b>			Prepared: 2020-09-24, Analyzed: 2020-09-24						
Lithium, dissolved	0.0179	0.00010 mg/L	0.0200		90	80-120			
Aluminum, dissolved	0.0224	0.0050 mg/L	0.0199		113	80-120			
Antimony, dissolved	0.0203	0.00020 mg/L	0.0200		101	80-120			
Arsenic, dissolved	0.0202	0.00050 mg/L	0.0200		101	80-120			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

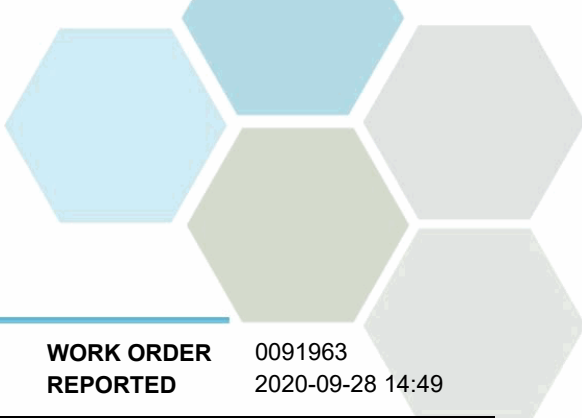
**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Dissolved Metals, Batch B012246, Continued**

<b>LCS (B012246-BS1), Continued</b>				Prepared: 2020-09-24, Analyzed: 2020-09-24					
Barium, dissolved	0.0196	0.0050 mg/L	0.0198	99	80-120				
Beryllium, dissolved	0.0184	0.00010 mg/L	0.0198	93	80-120				
Bismuth, dissolved	0.0202	0.00010 mg/L	0.0200	101	80-120				
Boron, dissolved	< 0.0500	0.0500 mg/L	0.0200	94	80-120				
Cadmium, dissolved	0.0198	0.000010 mg/L	0.0199	100	80-120				
Calcium, dissolved	2.08	0.20 mg/L	2.02	103	80-120				
Chromium, dissolved	0.0183	0.00050 mg/L	0.0198	92	80-120				
Cobalt, dissolved	0.0192	0.00010 mg/L	0.0199	97	80-120				
Copper, dissolved	0.0196	0.00040 mg/L	0.0200	98	80-120				
Iron, dissolved	1.99	0.010 mg/L	2.02	99	80-120				
Lead, dissolved	0.0202	0.00020 mg/L	0.0199	102	80-120				
Magnesium, dissolved	2.19	0.010 mg/L	2.02	109	80-120				
Manganese, dissolved	0.0189	0.00020 mg/L	0.0199	95	80-120				
Molybdenum, dissolved	0.0189	0.00010 mg/L	0.0200	94	80-120				
Nickel, dissolved	0.0194	0.00040 mg/L	0.0200	97	80-120				
Phosphorus, dissolved	1.73	0.050 mg/L	2.00	86	80-120				
Potassium, dissolved	2.06	0.10 mg/L	2.02	102	80-120				
Selenium, dissolved	0.0199	0.00050 mg/L	0.0200	99	80-120				
Silicon, dissolved	2.2	1.0 mg/L	2.00	111	80-120				
Silver, dissolved	0.0197	0.000050 mg/L	0.0200	99	80-120				
Sodium, dissolved	2.24	0.10 mg/L	2.02	111	80-120				
Strontium, dissolved	0.0183	0.0010 mg/L	0.0200	92	80-120				
Sulfur, dissolved	4.5	3.0 mg/L	5.00	91	80-120				
Tellurium, dissolved	0.0196	0.00050 mg/L	0.0200	98	80-120				
Thallium, dissolved	0.0196	0.000020 mg/L	0.0199	99	80-120				
Thorium, dissolved	0.0190	0.00010 mg/L	0.0200	95	80-120				
Tin, dissolved	0.0229	0.00020 mg/L	0.0200	114	80-120				
Titanium, dissolved	0.0218	0.0050 mg/L	0.0200	109	80-120				
Tungsten, dissolved	0.0217	0.0010 mg/L	0.0200	108	80-120				
Uranium, dissolved	0.0193	0.000020 mg/L	0.0200	96	80-120				
Vanadium, dissolved	0.0206	0.0010 mg/L	0.0200	103	80-120				
Zinc, dissolved	0.0222	0.0040 mg/L	0.0200	111	80-120				
Zirconium, dissolved	0.0189	0.00010 mg/L	0.0200	94	80-120				

<b>Reference (B012246-SRM1)</b>				Prepared: 2020-09-24, Analyzed: 2020-09-24					
Lithium, dissolved	0.0879	0.00010 mg/L	0.100	88	70-130				
Aluminum, dissolved	0.216	0.0050 mg/L	0.235	92	70-130				
Antimony, dissolved	0.0449	0.00020 mg/L	0.0431	104	70-130				
Arsenic, dissolved	0.428	0.00050 mg/L	0.423	101	70-130				
Barium, dissolved	2.97	0.0050 mg/L	3.30	90	70-130				
Beryllium, dissolved	0.193	0.00010 mg/L	0.209	93	70-130				
Boron, dissolved	1.45	0.0500 mg/L	1.65	88	70-130				
Cadmium, dissolved	0.211	0.000010 mg/L	0.221	95	70-130				
Calcium, dissolved	7.92	0.20 mg/L	7.72	103	70-130				
Chromium, dissolved	0.393	0.00050 mg/L	0.434	91	70-130				
Cobalt, dissolved	0.116	0.00010 mg/L	0.124	94	70-130				
Copper, dissolved	0.768	0.00040 mg/L	0.815	94	70-130				
Iron, dissolved	1.25	0.010 mg/L	1.27	98	70-130				
Lead, dissolved	0.108	0.00020 mg/L	0.110	98	70-130				
Magnesium, dissolved	7.19	0.010 mg/L	6.59	109	70-130				
Manganese, dissolved	0.307	0.00020 mg/L	0.342	90	70-130				
Molybdenum, dissolved	0.388	0.00010 mg/L	0.404	96	70-130				
Nickel, dissolved	0.786	0.00040 mg/L	0.835	94	70-130				
Phosphorus, dissolved	0.396	0.050 mg/L	0.499	79	70-130				
Potassium, dissolved	3.07	0.10 mg/L	2.88	107	70-130				
Selenium, dissolved	0.0349	0.00050 mg/L	0.0324	108	70-130				



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Dissolved Metals, Batch B0I2246, Continued**

Reference (B0I2246-SRM1), Continued			Prepared: 2020-09-24, Analyzed: 2020-09-24						
Sodium, dissolved	18.3	0.10 mg/L	18.0		102	70-130			
Strontium, dissolved	0.820	0.0010 mg/L	0.935		88	70-130			
Thallium, dissolved	0.0372	0.000020 mg/L	0.0385		97	70-130			
Uranium, dissolved	0.239	0.000020 mg/L	0.258		93	70-130			
Vanadium, dissolved	0.778	0.0010 mg/L	0.873		89	70-130			
Zinc, dissolved	0.814	0.0040 mg/L	0.848		96	70-130			

**General Parameters, Batch B0I1824**

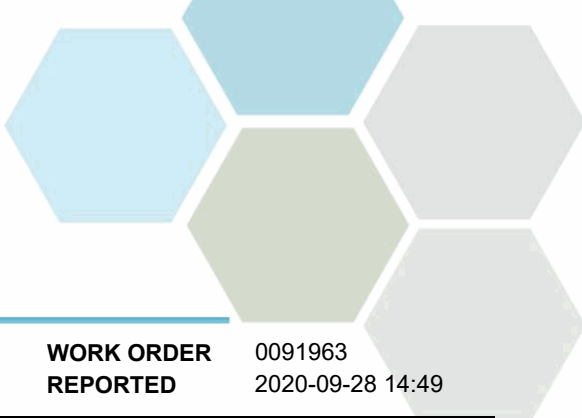
Blank (B0I1824-BLK1)			Prepared: 2020-09-21, Analyzed: 2020-09-21						
Chemical Oxygen Demand	< 20	20 mg/L							
LCS (B0I1824-BS1)			Prepared: 2020-09-21, Analyzed: 2020-09-21						
Chemical Oxygen Demand	519	20 mg/L	500		104	89-115			

**General Parameters, Batch B0I1931**

Blank (B0I1931-BLK1)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B0I1931-BLK2)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B0I1931-BS1)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Alkalinity, Total (as CaCO3)	103	1.0 mg/L	100		103	80-120			
LCS (B0I1931-BS2)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
LCS (B0I1931-BS3)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Conductivity (EC)	1390	2.0 µS/cm	1410		99	95-104			
LCS (B0I1931-BS4)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Conductivity (EC)	1400	2.0 µS/cm	1410		100	95-104			
Reference (B0I1931-SRM1)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
pH	6.97	0.10 pH units	7.01		99	98-102			
Reference (B0I1931-SRM2)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
pH	6.96	0.10 pH units	7.01		99	98-102			

**General Parameters, Batch B0I1958**

Blank (B0I1958-BLK1)			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
Ok Falls - TLGW

**WORK ORDER REPORTED** 0091963  
2020-09-28 14:49

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B011958, Continued</b>									
<b>Blank (B011958-BLK2)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B011958-BLK3)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B011958-BLK4)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>LCS (B011958-BS1)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	1.04	0.050 mg/L	1.00		104	90-115			
<b>LCS (B011958-BS2)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	1.04	0.050 mg/L	1.00		104	90-115			
<b>LCS (B011958-BS3)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	1.02	0.050 mg/L	1.00		102	90-115			
<b>LCS (B011958-BS4)</b>			Prepared: 2020-09-22, Analyzed: 2020-09-22						
Ammonia, Total (as N)	1.02	0.050 mg/L	1.00		102	90-115			



## **APPENDIX R**

### **Okanagan River Channel Water Quality Monitoring Database Summary 2020**

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
<b>Field Results</b>									
Conductivity	Okanagan River Channel 100m Upstream	µS/cm	288.8	243.2	320.3	22.7	12	12	0
	Okanagan River Channel 100m Downstream	µS/cm	282.9	249.7	306.5	17.5	12	12	0
	Okanagan River Channel 500m Downstream	µS/cm	281.2	251.8	298.6	15.9	12	12	0
Dissolved oxygen	Okanagan River Channel 100m Upstream	mg/L	12.00	6.75	17.24	3.64	12	12	2
	Okanagan River Channel 100m Downstream	mg/L	11.17	6.89	15.39	2.59	12	12	2
	Okanagan River Channel 500m Downstream	mg/L	11.09	6.93	14.29	2.31	12	12	1
Oxidation reduction potential	Okanagan River Channel 100m Upstream	mV	92.5	33.0	145.9	41.2	12	12	0
	Okanagan River Channel 100m Downstream	mV	88.1	47.7	136.2	32.6	12	12	0
	Okanagan River Channel 500m Downstream	mV	87.2	48.3	138.6	32.8	12	12	0
pH	Okanagan River Channel 100m Upstream		8.29	7.93	8.70	0.22	12	12	0
	Okanagan River Channel 100m Downstream		8.24	7.92	8.49	0.16	12	12	0
	Okanagan River Channel 500m Downstream		8.25	7.97	8.51	0.16	12	12	0
Temperature	Okanagan River Channel 100m Upstream	°C	11.7	2.7	23.2	7.4	12	12	4
	Okanagan River Channel 100m Downstream	°C	11.2	2.0	23.0	7.7	12	12	4
	Okanagan River Channel 500m Downstream	°C	11.1	2.0	22.9	7.7	12	12	3
Total dissolved solids	Okanagan River Channel 100m Upstream	mg/L	187	158	208.0	15.6	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	184.7	162.5	198.9	11.96	12	12	0
	Okanagan River Channel 500m Downstream	mg/L	182.7	163.8	194.3	10.3	12	12	0
Turbidity	Okanagan River Channel 100m Upstream	NTU	1.63	0.46	10.6	2.83	12	12	0
	Okanagan River Channel 100m Downstream	NTU	1.47	0.60	8.57	2.25	12	12	0
	Okanagan River Channel 500m Downstream	NTU	1.38	0.52	7.03	1.80	12	12	0
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	Okanagan River Channel 100m Upstream	mg/L	112	107	119	5	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	113	104	121	7	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	115	108	121	5	4	4	0
Alkalinity (carbonate, as CaCO <sub>3</sub> )	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Alkalinity (total, as CaCO <sub>3</sub> )	Okanagan River Channel 100m Upstream	mg/L	112	107	119	5	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	113	104	121	7	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	115	108	121	5	4	4	0
Biochemical oxygen demand	Okanagan River Channel 100m Upstream	mg/L	2.8	<2.0	4.0	1.3	4	1	0
	Okanagan River Channel 100m Downstream	mg/L	2.3	<2.0	5.0	1.6	6	1	0
	Okanagan River Channel 500m Downstream	mg/L	2.8	<2.0	4.3	1.4	4	1	0

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
Chemical Oxygen Demand	Okanagan River Channel 100m Upstream	mg/L	17	13	20	3	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	16	10	23	5	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	15	11	19	4	4	4	0
Chloride	Okanagan River Channel 100m Upstream	mg/L	5.56	4.43	6.53	0.63	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	5.61	4.81	6.64	0.57	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	5.67	4.78	6.40	0.53	12	12	0
Conductivity	Okanagan River Channel 100m Upstream	µS/cm	263	222	286	20	12	12	0
	Okanagan River Channel 100m Downstream	µS/cm	265	232	287	19	14	14	0
	Okanagan River Channel 500m Downstream	µS/cm	265	231	285	17	12	12	0
Fluoride	Okanagan River Channel 100m Upstream	mg/L	0.14	0.14	0.14	0.00	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.14	0.13	0.16	0.01	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.15	0.14	0.16	0.01	4	4	0
Hardness, Total (total as CaCO <sub>3</sub> )	Okanagan River Channel 100m Upstream	mg/L	120	101	136	12	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	121.9	99.5	146	12.4	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	123	102	143	13	12	12	0
pH	Okanagan River Channel 100m Upstream		8.14	7.76	8.44	0.16	12	12	0
	Okanagan River Channel 100m Downstream		8.18	8.07	8.47	0.11	14	14	0
	Okanagan River Channel 500m Downstream		8.19	8.06	8.52	0.14	12	12	0
Sulphate	Okanagan River Channel 100m Upstream	mg/L	28.1	22.9	30.8	2.2	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	28.4	24.4	31.3	2.0	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	28.1	24.8	30.5	1.8	12	12	0
Total suspended solids	Okanagan River Channel 100m Upstream	mg/L	3.1	2.0	22.0	6.0	12	3	0
	Okanagan River Channel 100m Downstream	mg/L	2.7	<2.0	15.2	3.9	13	3	0
	Okanagan River Channel 500m Downstream	mg/L	2.5	<2.0	12.0	3.1	12	4	0
<b>Microbiological</b>									
E. coli (MPN)	Okanagan River Channel 100m Upstream	MPN/100 mL	9.1	<1	23	6.1	29	27	27
	Okanagan River Channel 100m Downstream	MPN/100 mL	9.6	1	36	9.8	29	29	29
	Okanagan River Channel 500m Downstream	MPN/100 mL	8.5	1	37	7.5	28	26	26
Fecal coliforms (MPN)	Okanagan River Channel 100m Upstream	MPN/100 mL	10.7	<1	36	8.0	29	27	27
	Okanagan River Channel 100m Downstream	MPN/100 mL	10.8	1	38	10.4	29	29	29
	Okanagan River Channel 500m Downstream	MPN/100 mL	9.3	1	37	7.6	28	27	27
<b>Nutrients</b>									
Ammonia (total, as N)	Okanagan River Channel 100m Upstream	mg/L					12	0	0
	Okanagan River Channel 100m Downstream	mg/L					14	0	0
	Okanagan River Channel 500m Downstream	mg/L	0.022	0.020	0.020	0.006	12	1	0
Nitrate (as N)	Okanagan River Channel 100m Upstream	mg/L					12	0	0
	Okanagan River Channel 100m Downstream	mg/L					14	0	0
	Okanagan River Channel 500m Downstream	mg/L					12	0	0

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
Nitrite (as N)	Okanagan River Channel 100m Upstream	mg/L					12	0	0
	Okanagan River Channel 100m Downstream	mg/L					14	0	0
	Okanagan River Channel 500m Downstream	mg/L					12	0	0
Total nitrogen	Okanagan River Channel 100m Upstream	mg/L	0.245	0.204	0.322	0.031	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	0.238	0.186	0.268	0.020	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	0.267	0.143	0.338	0.055	12	12	0
Total kjeldahl nitrogen	Okanagan River Channel 100m Upstream	mg/L	0.245	0.204	0.322	0.031	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	0.238	0.186	0.268	0.020	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	0.267	0.143	0.338	0.055	12	12	0
Orthophosphate (dissolved, as P)	Okanagan River Channel 100m Upstream	mg/L					12	0	0
	Okanagan River Channel 100m Downstream	mg/L					14	0	0
	Okanagan River Channel 500m Downstream	mg/L					12	0	0
Phosphorus (total, by ICPMS/ICPOES)	Okanagan River Channel 100m Upstream	mg/L	0.033	<0.050	0.058	0.017	4	1	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Phosphorus (total, APHA 4500-P)	Okanagan River Channel 100m Upstream	mg/L	0.0139	0.0066	0.0273	0.0067	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	0.0139	0.0056	0.0342	0.0074	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	0.0146	0.0061	0.0297	0.0074	12	12	0
Phosphorus (dissolved, APHA 4500-P)	Okanagan River Channel 100m Upstream	mg/L	0.0060	0.0040	0.0181	0.0041	12	10	0
	Okanagan River Channel 100m Downstream	mg/L	0.0052	0.0034	0.0190	0.0042	14	10	0
	Okanagan River Channel 500m Downstream	mg/L	0.0054	0.0036	0.0164	0.0038	12	9	0
Potassium (total)	Okanagan River Channel 100m Upstream	mg/L	2.52	2.18	2.89	0.22	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	2.54	2.23	2.96	0.22	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	2.57	2.20	2.97	0.24	12	12	0
<b>Total Metals</b>									
Aluminum (total)	Okanagan River Channel 100m Upstream	mg/L	0.0115	0.0105	0.0127	0.0009	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.0108	0.0098	0.0133	0.0013	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.0096	0.0055	0.0120	0.0029	4	4	0
Antimony (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Arsenic (total)	Okanagan River Channel 100m Upstream	mg/L	0.00079	<0.00050	0.00176	0.00067	4	3	0
	Okanagan River Channel 100m Downstream	mg/L	0.00061	<0.00050	0.00148	0.00045	6	4	0
	Okanagan River Channel 500m Downstream	mg/L	0.00077	<0.00050	0.00165	0.00061	4	3	0
Barium (total)	Okanagan River Channel 100m Upstream	mg/L	0.0232	0.0213	0.0253	0.0017	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.0233	0.0213	0.0267	0.0020	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.0233	0.0218	0.0254	0.0016	4	4	0

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
Beryllium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L	0.00013	<0.00010	0.00054	0.00020	6	1	1
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Bismuth (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Boron (total)	Okanagan River Channel 100m Upstream	mg/L	0.0299	0.0263	0.0434	0.0090	4	2	0
	Okanagan River Channel 100m Downstream	mg/L	0.0235	0.0199	0.0209	0.0024	6	2	0
	Okanagan River Channel 500m Downstream	mg/L	0.0235	0.0182	0.0257	0.0035	4	2	0
Cadmium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Calcium (total)	Okanagan River Channel 100m Upstream	mg/L	32.4	27.0	36.2	3.0	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	32.9	27.1	39.2	3.1	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	33.3	27.6	38.2	3.3	12	12	0
Chromium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Cobalt (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L	0.00006	0.00010	0.00010	0.00002	6	1	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Copper (total)	Okanagan River Channel 100m Upstream	mg/L	0.00079	<0.00040	0.00130	0.00045	4	3	0
	Okanagan River Channel 100m Downstream	mg/L	0.00526	<0.00040	0.0284	0.01134	6	5	0
	Okanagan River Channel 500m Downstream	mg/L	0.00049	<0.00040	0.00093	0.00036	4	2	0
Iron (total)	Okanagan River Channel 100m Upstream	mg/L	0.015	<0.010	0.020	0.007	4	3	0
	Okanagan River Channel 100m Downstream	mg/L	0.016	<0.010	0.028	0.007	6	5	0
	Okanagan River Channel 500m Downstream	mg/L	0.019	<0.010	0.025	0.009	4	3	0
Lead (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Lithium (total)	Okanagan River Channel 100m Upstream	mg/L	0.00331	0.00265	0.00375	0.00049	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.00315	0.00267	0.00377	0.00048	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.00338	0.00269	0.00388	0.00053	4	4	0
Magnesium (total)	Okanagan River Channel 100m Upstream	mg/L	9.48	7.61	11.0	1.04	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	9.61	7.70	11.6	1.13	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	9.68	7.96	11.6	1.13	12	12	0
Manganese (total)	Okanagan River Channel 100m Upstream	mg/L	0.00512	0.00290	0.00593	0.00148	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.00452	0.00319	0.00660	0.00151	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.00543	0.00446	0.00680	0.00112	4	4	0
Mercury (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
Molybdenum (total)	Okanagan River Channel 100m Upstream	mg/L	0.00335	0.00313	0.00354	0.00017	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.00340	0.00311	0.00414	0.00040	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.00339	0.00317	0.00361	0.00018	4	4	0
Nickel (total)	Okanagan River Channel 100m Upstream	mg/L	0.00027	<0.00040	0.00049	0.00014	4	1	0
	Okanagan River Channel 100m Downstream	mg/L	0.00029	<0.00040	0.00049	0.00014	6	2	0
	Okanagan River Channel 500m Downstream	mg/L	0.00026	<0.00040	0.00042	0.00011	4	1	0
Selenium (total)	Okanagan River Channel 100m Upstream	mg/L	0.00032	<0.00050	0.00053	0.00014	4	1	0
	Okanagan River Channel 100m Downstream	mg/L	0.00040	<0.00050	0.00056	0.00016	6	3	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Silicon (total, as Si)	Okanagan River Channel 100m Upstream	mg/L	3.2	2.7	3.8	0.5	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	3.4	2.7	3.9	0.5	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	3.2	2.7	3.9	0.6	4	4	0
Silver (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Sodium (total)	Okanagan River Channel 100m Upstream	mg/L	11.91	9.67	14.1	1.41	12	12	0
	Okanagan River Channel 100m Downstream	mg/L	11.94	9.72	14.9	1.64	14	14	0
	Okanagan River Channel 500m Downstream	mg/L	12.1	10.1	14.5	1.5	12	12	0
Strontium (total)	Okanagan River Channel 100m Upstream	mg/L	0.306	0.258	0.346	0.041	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.294	0.256	0.355	0.043	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.308	0.263	0.346	0.040	4	4	0
Sulphur (total)	Okanagan River Channel 100m Upstream	mg/L	10.5	9.6	11.4	0.7	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	10.6	9.9	12.0	0.8	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	10.7	10.1	11.2	0.5	4	4	0
Tellurium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Thallium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Thorium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Tin (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Titanium (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Tungsten (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results	Number of Results with Exceedances
Uranium (total)	Okanagan River Channel 100m Upstream	mg/L	0.00255	0.00230	0.00284	0.00023	4	4	0
	Okanagan River Channel 100m Downstream	mg/L	0.00250	0.00227	0.00285	0.00022	6	6	0
	Okanagan River Channel 500m Downstream	mg/L	0.00255	0.00225	0.00278	0.00024	4	4	0
Vanadium (total)	Okanagan River Channel 100m Upstream	mg/L	0.0006	0.0010	0.0010	0.0003	4	1	0
	Okanagan River Channel 100m Downstream	mg/L	0.0007	<0.0010	0.0019	0.0006	6	1	0
	Okanagan River Channel 500m Downstream	mg/L	0.0010	0.0010	0.0020	0.0007	4	2	0
Zinc (total)	Okanagan River Channel 100m Upstream	mg/L					4	0	0
	Okanagan River Channel 100m Downstream	mg/L					6	0	0
	Okanagan River Channel 500m Downstream	mg/L					4	0	0
Zirconium (total)	Okanagan River Channel 100m Upstream	mg/L	0.00011	<0.00010	0.00022	0.00008	4	2	0
	Okanagan River Channel 100m Downstream	mg/L	0.00008	0.00010	0.00013	0.00004	6	3	0
	Okanagan River Channel 500m Downstream	mg/L	0.00007	<0.00010	0.00011	0.00003	4	1	0

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream
		Date Sampled	21-Jan-20	21-Jan-20	11-Feb-20	11-Feb-20	10-Mar-20	10-Mar-20	15-Apr-20
		Lab Sample ID	0011331-01	0011330-01	0020951-01	0020953-01	0030940-01	0030939-01	0041203-01
		Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm		311.0			314.6	293.5		302.9
Dissolved oxygen	mg/L		16.96			17.24	16.73		10.74
Oxidation reduction potential	mV		121.7			145.9	137.5		127.6
pH			8.39			8.02	8.47		8.70
Temperature	°C		2.7			3.3	4.0		11.4
Total dissolved solids	mg/L		202.1			204.7	190.5		200.02
Turbidity	NTU		1.05			0.90	0.62		0.78
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L		114						119
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L		<1.0						<1.0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L		<1.0						<1.0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L		<1.0						<1.0
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L		114						119
Biochemical oxygen demand	mg/L		<6.2						<5.8
Chemical Oxygen Demand	mg/L		20						13
Chloride	mg/L		6.53			6.21	6.15		6.17
Conductivity	µS/cm		274			274	274		271
Fluoride	mg/L		0.14						0.14
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L		125			120	136		127
pH			8.16			8.03	8.17		8.13
Sulphate	mg/L		30.5			30.1	29.7		30.8
Total suspended solids	mg/L		<2.0			<2.0	<2.0		2.0
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL			<1	<b>9.8</b>			<1.0	<b>4</b>
Fecal coliforms (MPN)	MPN/100 mL			<1	<b>9.8</b>			<1.0	<b>4</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L		<0.020			<0.020	<0.020		<0.050
Nitrate (as N)	mg/L		<0.010			<0.010	<0.010		<0.010
Nitrite (as N)	mg/L		<0.010			<0.010	<0.010		<0.010
Total nitrogen	mg/L		0.229			0.230	0.230		0.254
Total kjeldahl nitrogen	mg/L		0.229			0.230	0.230		0.254
Orthophosphate (dissolved, as P)	mg/L		<0.0050			<0.0050	<0.0050		<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L		<0.050						<0.050
Phosphorus (total, APHA 4500-P)	mg/L		0.0160			0.0099	0.0093		0.0105
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0046			0.0043	0.0040		0.0047
Potassium (total)	mg/L		2.57			2.48	2.77		2.59



## Okanagan Falls Advanced Wastewater Treatment Facility


## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream
		Date Sampled	21-Jan-20	21-Jan-20	11-Feb-20	11-Feb-20	10-Mar-20	10-Mar-20	15-Apr-20
Lab Sample ID		0011331-01	0011330-01	0020951-01	0020953-01	0030940-01	0030939-01	0041203-01	0041204-01
Sample Type		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Total Metals</b>									
Aluminum (total)	mg/L	0.0114							0.0113
Antimony (total)	mg/L	<0.00020							<0.00020
Arsenic (total)	mg/L	0.00055							0.00176
Barium (total)	mg/L	0.0253							0.0236
Beryllium (total)	mg/L	<0.00010							<0.00010
Bismuth (total)	mg/L	<0.00010							<0.00010
Boron (total)	mg/L	0.0263							0.0434
Cadmium (total)	mg/L	<0.000010							<0.000010
Calcium (total)	mg/L	33.3			32.5	36.2			34.6
Chromium (total)	mg/L	<0.00050							<0.00050
Cobalt (total)	mg/L	<0.00010							<0.00010
Copper (total)	mg/L	<0.00040							0.00079
Iron (total)	mg/L	0.019							0.020
Lead (total)	mg/L	<0.00020							<0.00020
Lithium (total)	mg/L	0.00375							0.00362
Magnesium (total)	mg/L	10.1			9.36	10.9			9.71
Manganese (total)	mg/L	0.00577							0.00593
Mercury (total)	mg/L	<0.000010							<0.000010
Molybdenum (total)	mg/L	0.00354							0.00338
Nickel (total)	mg/L	<0.00040							<0.00040
Selenium (total)	mg/L	<0.00050							<0.00050
Silicon (total, as Si)	mg/L	2.7							2.7
Silver (total)	mg/L	<0.000050							<0.000050
Sodium (total)	mg/L	12.8			11.9	13.2			12.4
Strontium (total)	mg/L	0.346							0.333
Sulphur (total)	mg/L	11.4							9.6
Tellurium (total)	mg/L	<0.00050							<0.00050
Thallium (total)	mg/L	<0.000020							<0.000020
Thorium (total)	mg/L	<0.00010							<0.00010
Tin (total)	mg/L	<0.00020							<0.00020
Titanium (total)	mg/L	<0.0050							<0.0050
Tungsten (total)	mg/L	<0.0010							<0.0010
Uranium (total)	mg/L	0.00284							0.00259
Vanadium (total)	mg/L	<0.0010							<0.0010
Zinc (total)	mg/L	<0.0040							<0.0040
Zirconium (total)	mg/L	<0.00010							<0.00010

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Okanagan River Channel 100m Upstream		Okanagan River Channel 100m Upstream		Okanagan River Channel 100m Upstream		Okanagan River Channel 100m Upstream	
		07-May-20 0050716-01 Normal	13-May-20 0051246-01 Normal	13-May-20 0051247-01 Normal	20-May-20 0051658-01 Normal	26-May-20 0052255-01 Normal	03-Jun-20 0060487-01 Normal	10-Jun-20 0061228-01 Normal	10-Jun-20 0061229-01 Normal
<b>Field Results</b>									
Conductivity	µS/cm		243.2						266.7
Dissolved oxygen	mg/L		11.56						10.16
Oxidation reduction potential	mV		71.0						137.2
pH			8.28						8.32
Temperature	°C		11.0						<b>15.4</b>
Total dissolved solids	mg/L		158						167.0
Turbidity	NTU		10.6						1.11
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
Chemical Oxygen Demand	mg/L								
Chloride	mg/L			4.43					4.75
Conductivity	µS/cm			222					228
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L			101					101
pH				7.76					8.05
Sulphate	mg/L			22.9					25.9
Total suspended solids	mg/L			22.0					<3.3
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<b>3.1</b>	<b>2.0</b>		<b>12.1</b>	<b>3.1</b>	<b>17.1</b>	<b>13.5</b>	
Fecal coliforms (MPN)	MPN/100 mL	<b>3.1</b>	<b>2.0</b>		<b>17.3</b>	<b>3.1</b>	<b>17.1</b>	<b>14.8</b>	
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			<0.050					<0.050
Nitrate (as N)	mg/L			<0.010					<0.010
Nitrite (as N)	mg/L			<0.010					<0.010
Total nitrogen	mg/L			0.280					0.231
Total kjeldahl nitrogen	mg/L			0.280					0.231
Orthophosphate (dissolved, as P)	mg/L			<0.0050					<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.0272					0.0119
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0067					0.0053
Potassium (total)	mg/L			2.18					2.26

Okanagan Falls Advanced Wastewater Treatment Facility

Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID

Sample Type

Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream
Date Sampled	07-May-20	13-May-20	13-May-20	20-May-20	26-May-20	03-Jun-20	10-Jun-20	10-Jun-20
Lab Sample ID	0050716-01	0051246-01	0051247-01	0051658-01	0052255-01	0060487-01	0061228-01	0061229-01
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L							
Antimony (total)	mg/L							
Arsenic (total)	mg/L							
Barium (total)	mg/L							
Beryllium (total)	mg/L							
Bismuth (total)	mg/L							
Boron (total)	mg/L							
Cadmium (total)	mg/L							
Calcium (total)	mg/L			27.8				27.0
Chromium (total)	mg/L							
Cobalt (total)	mg/L							
Copper (total)	mg/L							
Iron (total)	mg/L							
Lead (total)	mg/L							
Lithium (total)	mg/L							
Magnesium (total)	mg/L			7.61				8.23
Manganese (total)	mg/L							
Mercury (total)	mg/L							
Molybdenum (total)	mg/L							
Nickel (total)	mg/L							
Selenium (total)	mg/L							
Silicon (total, as Si)	mg/L							
Silver (total)	mg/L							
Sodium (total)	mg/L			9.67				9.75
Strontium (total)	mg/L							
Sulphur (total)	mg/L							
Tellurium (total)	mg/L							
Thallium (total)	mg/L							
Thorium (total)	mg/L							
Tin (total)	mg/L							
Titanium (total)	mg/L							
Tungsten (total)	mg/L							
Uranium (total)	mg/L							
Vanadium (total)	mg/L							
Zinc (total)	mg/L							
Zirconium (total)	mg/L							

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location							
		Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream
Date Sampled	Lab Sample ID	17-Jun-20	24-Jun-20	29-Jun-20	08-Jul-20	15-Jul-20	15-Jul-20	22-Jul-20	22-Jul-20
Sample Type		0061948-01	0062636-01	0063046-01	0070850-01	0071397-01	0071397-02	0072258-01	0072260-01
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm							271.8	
Dissolved oxygen	mg/L							<b>6.75</b>	
Oxidation reduction potential	mV							58.6	
pH								8.37	
Temperature	°C							<b>23.2</b>	
Total dissolved solids	mg/L							176.8	
Turbidity	NTU							0.83	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								107
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								<1.0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								<1.0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								<1.0
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								107
Biochemical oxygen demand	mg/L								<2.0
Chemical Oxygen Demand	mg/L								18
Chloride	mg/L								5.07
Conductivity	µS/cm								253
Fluoride	mg/L								0.14
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								120
pH									8.18
Sulphate	mg/L								27.5
Total suspended solids	mg/L								<4.0
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<b>6.3</b>	<b>10.9</b>	<b>20.3</b>	<b>8.6</b>	<b>13</b>	<b>7</b>	<b>7</b>	
Fecal coliforms (MPN)	MPN/100 mL	<b>7.4</b>	<b>15.8</b>	<b>21.8</b>	<b>8.6</b>	<b>16</b>	<b>7</b>	<b>7</b>	
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L								<0.050
Nitrate (as N)	mg/L								<0.010
Nitrite (as N)	mg/L								<0.010
Total nitrogen	mg/L								0.262
Total kjeldahl nitrogen	mg/L								0.262
Orthophosphate (dissolved, as P)	mg/L								<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L								<0.050
Phosphorus (total, APHA 4500-P)	mg/L								0.0098
Phosphorus (dissolved, APHA 4500-P)	mg/L								<0.0050
Potassium (total)	mg/L								2.49

## Okanagan Falls Advanced Wastewater Treatment Facility


## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	
		Date Sampled	17-Jun-20	24-Jun-20	29-Jun-20	08-Jul-20	15-Jul-20	15-Jul-20	22-Jul-20	22-Jul-20
		Lab Sample ID	0061948-01	0062636-01	0063046-01	0070850-01	0071397-01	0071397-02	0072258-01	0072260-01
		Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Total Metals</b>										
Aluminum (total)	mg/L									0.0127
Antimony (total)	mg/L									<0.00020
Arsenic (total)	mg/L									<0.00050
Barium (total)	mg/L									0.0213
Beryllium (total)	mg/L									<0.00010
Bismuth (total)	mg/L									<0.00010
Boron (total)	mg/L									<0.0500
Cadmium (total)	mg/L									<0.000010
Calcium (total)	mg/L									32.3
Chromium (total)	mg/L									<0.00050
Cobalt (total)	mg/L									<0.00010
Copper (total)	mg/L									0.00086
Iron (total)	mg/L									0.015
Lead (total)	mg/L									<0.00020
Lithium (total)	mg/L									0.00265
Magnesium (total)	mg/L									9.62
Manganese (total)	mg/L									0.00290
Mercury (total)	mg/L									<0.000010
Molybdenum (total)	mg/L									0.00313
Nickel (total)	mg/L									<0.00040
Selenium (total)	mg/L									0.00053
Silicon (total, as Si)	mg/L									3.8
Silver (total)	mg/L									<0.000050
Sodium (total)	mg/L									11.1
Strontium (total)	mg/L									0.258
Sulphur (total)	mg/L									10.4
Tellurium (total)	mg/L									<0.00050
Thallium (total)	mg/L									<0.000020
Thorium (total)	mg/L									<0.00010
Tin (total)	mg/L									<0.00020
Titanium (total)	mg/L									<0.0050
Tungsten (total)	mg/L									<0.0010
Uranium (total)	mg/L									0.00230
Vanadium (total)	mg/L									<0.0010
Zinc (total)	mg/L									<0.0040
Zirconium (total)	mg/L									0.00012

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location								
		Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	
Date Sampled	Lab Sample ID	29-Jul-20	06-Aug-20	12-Aug-20	19-Aug-20	19-Aug-20	25-Aug-20	02-Sep-20	09-Sep-20	
Sample Type		0073036-01	0080566-01	0081249-01	0081992-01	0081994-01	0082601-01	0090448-01	0091052-01	
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	
<b>Field Results</b>										
Conductivity	µS/cm				276.6					280.6
Dissolved oxygen	mg/L				<b>7.93</b>					9.50
Oxidation reduction potential	mV				47.3					53.8
pH					7.93					8.20
Temperature	°C				<b>22.6</b>					<b>20.1</b>
Total dissolved solids	mg/L				180.1					182.0
Turbidity	NTU				0.69					0.62
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L									
Biochemical oxygen demand	mg/L									
Chemical Oxygen Demand	mg/L									
Chloride	mg/L					5.35				5.43
Conductivity	µS/cm					257				266
Fluoride	mg/L									
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L					108				126
pH						8.33				8.44
Sulphate	mg/L					27.8				28.7
Total suspended solids	mg/L					<2.0				<2.0
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL	<b>20</b>	<b>6</b>	<b>10</b>	<b>10</b>			<b>17</b>	<b>8</b>	
Fecal coliforms (MPN)	MPN/100 mL	<b>22</b>	<b>6</b>	<b>13</b>	<b>10</b>			<b>17</b>	<b>8</b>	
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L					<0.050				<0.050
Nitrate (as N)	mg/L					<0.010				<0.010
Nitrite (as N)	mg/L					<0.010				<0.010
Total nitrogen	mg/L					0.204				0.322
Total kjeldahl nitrogen	mg/L					0.204				0.322
Orthophosphate (dissolved, as P)	mg/L					<0.0050				<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L									
Phosphorus (total, APHA 4500-P)	mg/L					0.0066				0.0118
Phosphorus (dissolved, APHA 4500-P)	mg/L					<0.0050				0.0061
Potassium (total)	mg/L					2.21				2.67

## Okanagan Falls Advanced Wastewater Treatment Facility


## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	
		Date Sampled	29-Jul-20	06-Aug-20	12-Aug-20	19-Aug-20	19-Aug-20	25-Aug-20	02-Sep-20	09-Sep-20
		Lab Sample ID	0073036-01	0080566-01	0081249-01	0081992-01	0081994-01	0082601-01	0090448-01	0091052-01
		Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Total Metals</b>										
Aluminum (total)	mg/L									
Antimony (total)	mg/L									
Arsenic (total)	mg/L									
Barium (total)	mg/L									
Beryllium (total)	mg/L									
Bismuth (total)	mg/L									
Boron (total)	mg/L									
Cadmium (total)	mg/L									
Calcium (total)	mg/L					29.4				34.0
Chromium (total)	mg/L									
Cobalt (total)	mg/L									
Copper (total)	mg/L									
Iron (total)	mg/L									
Lead (total)	mg/L									
Lithium (total)	mg/L									
Magnesium (total)	mg/L					8.38				10.0
Manganese (total)	mg/L									
Mercury (total)	mg/L									
Molybdenum (total)	mg/L									
Nickel (total)	mg/L									
Selenium (total)	mg/L									
Silicon (total, as Si)	mg/L									
Silver (total)	mg/L									
Sodium (total)	mg/L					10.4				12.9
Strontium (total)	mg/L									
Sulphur (total)	mg/L									
Tellurium (total)	mg/L									
Thallium (total)	mg/L									
Thorium (total)	mg/L									
Tin (total)	mg/L									
Titanium (total)	mg/L									
Tungsten (total)	mg/L									
Uranium (total)	mg/L									
Vanadium (total)	mg/L									
Zinc (total)	mg/L									
Zirconium (total)	mg/L									

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location		Date Sampled		Lab Sample ID		Sample Type	
		Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream
		09-Sep-20	17-Sep-20	23-Sep-20	14-Oct-20	14-Oct-20	17-Nov-20	17-Nov-20	09-Dec-20
		0091051-01	0091958-01	0092589-01	20J1348-01	20J1347-01	20K2032-01	20K2037-01	20L1194-01
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm				282.6		320.3		301.8
Dissolved oxygen	mg/L				9.79		11.45		15.22
Oxidation reduction potential	mV				65.7		33.0		110.7
pH					8.05		8.54		8.24
Temperature	°C				13.8		7.0		5.7
Total dissolved solids	mg/L				183.9		208.0		196.3
Turbidity	NTU				0.46		0.90		1.03
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L				109				
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L				<1.0				
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L				<1.0				
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L				<1.0				
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L				109				
Biochemical oxygen demand	mg/L				4.0				
Chemical Oxygen Demand	mg/L				16				
Chloride	mg/L				5.60		5.51		5.57
Conductivity	µS/cm				273		286		274
Fluoride	mg/L				0.14				
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L				120		136		122
pH					8.14		8.14		8.13
Sulphate	mg/L				28.0		28.7		26.6
Total suspended solids	mg/L				<3.6		<2.0		2.0
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<b>5</b>	<b>8</b>	<b><u>23</u></b>		<b><u>13</u></b>		<b>3</b>	
Fecal coliforms (MPN)	MPN/100 mL	<b>5</b>	<b><u>17</u></b>	<b><u>36</u></b>		<b><u>14</u></b>		<b>4</b>	
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L				<0.050		<0.050		<0.050
Nitrate (as N)	mg/L				<0.010		<0.010		<0.010
Nitrite (as N)	mg/L				<0.010		<0.010		<0.010
Total nitrogen	mg/L				0.231		0.224		0.241
Total kjeldahl nitrogen	mg/L				0.231		0.224		0.241
Orthophosphate (dissolved, as P)	mg/L				<0.0050		<0.0050		<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L				0.058				
Phosphorus (total, APHA 4500-P)	mg/L				0.0114		0.0273		0.0147
Phosphorus (dissolved, APHA 4500-P)	mg/L				0.0070		0.0181		0.0067
Potassium (total)	mg/L				2.47		2.89		2.61



## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Upstream	
		Date Sampled	09-Sep-20	17-Sep-20	23-Sep-20	14-Oct-20	14-Oct-20	17-Nov-20	17-Nov-20	09-Dec-20
		Lab Sample ID	0091051-01	0091958-01	0092589-01	20J1348-01	20J1347-01	20K2032-01	20K2037-01	20L1194-01
		Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Total Metals</b>										
Aluminum (total)	mg/L					0.0105				
Antimony (total)	mg/L					<0.00020				
Arsenic (total)	mg/L					0.00059				
Barium (total)	mg/L					0.0224				
Beryllium (total)	mg/L					<0.00010				
Bismuth (total)	mg/L					<0.00010				
Boron (total)	mg/L					<0.0500				
Cadmium (total)	mg/L					<0.000010				
Calcium (total)	mg/L					33.4		36.0		32.6
Chromium (total)	mg/L					<0.00050				
Cobalt (total)	mg/L					<0.00010				
Copper (total)	mg/L					0.00130				
Iron (total)	mg/L					<0.010				
Lead (total)	mg/L					<0.00020				
Lithium (total)	mg/L					0.00323				
Magnesium (total)	mg/L					8.90		11.0		9.91
Manganese (total)	mg/L					0.00587				
Mercury (total)	mg/L					<0.000010				
Molybdenum (total)	mg/L					0.00334				
Nickel (total)	mg/L					0.00049				
Selenium (total)	mg/L					<0.00050				
Silicon (total, as Si)	mg/L					3.4				
Silver (total)	mg/L					<0.000050				
Sodium (total)	mg/L					11.9		14.1		12.8
Strontium (total)	mg/L					0.285				
Sulphur (total)	mg/L					10.4				
Tellurium (total)	mg/L					<0.00050				
Thallium (total)	mg/L					<0.000020				
Thorium (total)	mg/L					<0.00010				
Tin (total)	mg/L					<0.00020				
Titanium (total)	mg/L					<0.0050				
Tungsten (total)	mg/L					<0.0010				
Uranium (total)	mg/L					0.00247				
Vanadium (total)	mg/L					0.0010				
Zinc (total)	mg/L					<0.0040				
Zirconium (total)	mg/L					0.00022				

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
		Date Sampled	09-Dec-20	21-Jan-20	21-Jan-20	11-Feb-20	11-Feb-20	10-Mar-20	10-Mar-20
Lab Sample ID		20L1193-01	0011331-02	0011330-02	0020953-02	0020951-02	0030940-02	0030939-02	0041203-03
Sample Type		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm		302.3		306.5		297.8		
Dissolved oxygen	mg/L		14.29		15.39		13.62		
Oxidation reduction potential	mV		124.3		136.2		127.2		
pH			8.12		8.29		8.42		
Temperature	°C		2.0		3.2		3.5		
Total dissolved solids	mg/L		196.3		198.9		193.7		
Turbidity	NTU		0.87		1.20		0.71		
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L		116						
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L		<1.0						
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L		<1.0						
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L		<1.0						
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L		116						
Biochemical oxygen demand	mg/L		<6.2						
Chemical Oxygen Demand	mg/L		23						
Chloride	mg/L		6.64		6.32		6.23		
Conductivity	µS/cm		285		282		287		
Fluoride	mg/L		0.16						
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L		128		125		146		
pH			8.17		8.07		8.22		
Sulphate	mg/L		31.1		31.3		30.3		
Total suspended solids	mg/L		2.2		4.2		<2.0		
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<b>2</b>		<b>1</b>		<b>3.1</b>		<b>1.0</b>
Fecal coliforms (MPN)	MPN/100 mL		<b>2</b>		<b>1</b>		<b>3.1</b>		<b>1.0</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L		<0.020		<0.020		<0.020		
Nitrate (as N)	mg/L		<0.010		<0.010		<0.010		
Nitrite (as N)	mg/L		<0.010		<0.010		<0.010		
Total nitrogen	mg/L		0.232		0.247		0.250		
Total kjeldahl nitrogen	mg/L		0.232		0.247		0.250		
Orthophosphate (dissolved, as P)	mg/L		<0.0050		<0.0050		<0.0050		
Phosphorus (total, by ICPMS/ICPOES)	mg/L		<0.050						
Phosphorus (total, APHA 4500-P)	mg/L		0.0149		0.0086		0.0094		
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0034		0.0036		0.0037		
Potassium (total)	mg/L		2.62		2.53		2.92		

## Okanagan Falls Advanced Wastewater Treatment Facility


## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	
		Date Sampled	09-Dec-20	21-Jan-20	21-Jan-20	11-Feb-20	11-Feb-20	10-Mar-20	10-Mar-20	15-Apr-20
Lab Sample ID	Sample Type		20L1193-01	0011331-02	0011330-02	0020953-02	0020951-02	0030940-02	0030939-02	0041203-03
			Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Total Metals</b>										
Aluminum (total)	mg/L			0.0133						
Antimony (total)	mg/L			<0.00020						
Arsenic (total)	mg/L			0.00056						
Barium (total)	mg/L			0.0267						
Beryllium (total)	mg/L			<0.00010						
Bismuth (total)	mg/L			<0.00010						
Boron (total)	mg/L			0.0209						
Cadmium (total)	mg/L			<0.000010						
Calcium (total)	mg/L			34.1		34.3		39.2		
Chromium (total)	mg/L			<0.00050						
Cobalt (total)	mg/L			<0.00010						
Copper (total)	mg/L			<0.00040						
Iron (total)	mg/L			0.028						
Lead (total)	mg/L			<0.00020						
Lithium (total)	mg/L			0.00377						
Magnesium (total)	mg/L			10.4		9.59		11.6		
Manganese (total)	mg/L			0.00660						
Mercury (total)	mg/L			<0.000010						
Molybdenum (total)	mg/L			0.00357						
Nickel (total)	mg/L			<0.00040						
Selenium (total)	mg/L			<0.00050						
Silicon (total, as Si)	mg/L			2.9						
Silver (total)	mg/L			<0.000050						
Sodium (total)	mg/L			13.0		12.1		13.8		
Strontium (total)	mg/L			0.355						
Sulphur (total)	mg/L			12.0						
Tellurium (total)	mg/L			<0.00050						
Thallium (total)	mg/L			<0.000020						
Thorium (total)	mg/L			<0.00010						
Tin (total)	mg/L			<0.00020						
Titanium (total)	mg/L			<0.0050						
Tungsten (total)	mg/L			<0.0010						
Uranium (total)	mg/L			0.00285						
Vanadium (total)	mg/L			<0.0010						
Zinc (total)	mg/L			<0.0040						
Zirconium (total)	mg/L			<0.00010						

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location							
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
		15-Apr-20	07-May-20	13-May-20	13-May-20	20-May-20	26-May-20	03-Jun-20	10-Jun-20
		0041204-03	0050716-02	0051246-02	0051247-02	0051658-02	0052255-02	0060487-02	0061228-02
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm	298.9		249.7					258.1
Dissolved oxygen	mg/L	12.37		10.34					9.53
Oxidation reduction potential	mV	113.8		74.0					104.7
pH		8.35		8.23					8.26
Temperature	°C	7.6		10.7					<b>15.1</b>
Total dissolved solids	mg/L	194.3		162.5					167.7
Turbidity	NTU	0.60		8.57					1.15
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	121							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	<1.0							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	<1.0							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	<1.0							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	121							
Biochemical oxygen demand	mg/L	<5.8							
Chemical Oxygen Demand	mg/L	12							
Chloride	mg/L	6.33			4.98				
Conductivity	µS/cm	275			239				
Fluoride	mg/L	0.14							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	127			104				
pH		8.16			8.07				
Sulphate	mg/L	30.8			24.4				
Total suspended solids	mg/L	<2.0			15.2				
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<b>1.0</b>	<b>3.1</b>		<b>17.3</b>	<b>3.1</b>	<b>10.9</b>	<b>7.5</b>
Fecal coliforms (MPN)	MPN/100 mL		<b>1.0</b>	<b>3.1</b>		<b>21.6</b>	<b>3.1</b>	<b>13.2</b>	<b>7.5</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	<0.050			<0.050				
Nitrate (as N)	mg/L	<0.010			<0.010				
Nitrite (as N)	mg/L	<0.010			<0.010				
Total nitrogen	mg/L	0.218			0.268				
Total kjeldahl nitrogen	mg/L	0.218			0.268				
Orthophosphate (dissolved, as P)	mg/L	<0.0050			<0.0050				
Phosphorus (total, by ICPMS/ICPOES)	mg/L	<0.050							
Phosphorus (total, APHA 4500-P)	mg/L	0.0092			0.0342				
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0055			0.0052				
Potassium (total)	mg/L	2.57			2.25				

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID


Sample Type

Sampling Location	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
Date Sampled	15-Apr-20	07-May-20	13-May-20	13-May-20	20-May-20	26-May-20	03-Jun-20	10-Jun-20
Lab Sample ID	0041204-03	0050716-02	0051246-02	0051247-02	0051658-02	0052255-02	0060487-02	0061228-02
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L	0.0098						
Antimony (total)	mg/L	<0.00020						
Arsenic (total)	mg/L	0.00148						
Barium (total)	mg/L	0.0247						
Beryllium (total)	mg/L	<0.00010						
Bismuth (total)	mg/L	<0.00010						
Boron (total)	mg/L	0.0199						
Cadmium (total)	mg/L	<0.000010						
Calcium (total)	mg/L	34.8		28.5				
Chromium (total)	mg/L	<0.00050						
Cobalt (total)	mg/L	<0.00010						
Copper (total)	mg/L	0.00067						
Iron (total)	mg/L	0.017						
Lead (total)	mg/L	<0.00020						
Lithium (total)	mg/L	0.00366						
Magnesium (total)	mg/L	9.67		8.04				
Manganese (total)	mg/L	0.00589						
Mercury (total)	mg/L	<0.000010						
Molybdenum (total)	mg/L	0.00414						
Nickel (total)	mg/L	<0.00040						
Selenium (total)	mg/L	<0.00050						
Silicon (total, as Si)	mg/L	2.7						
Silver (total)	mg/L	<0.000050						
Sodium (total)	mg/L	12.3		10.1				
Strontium (total)	mg/L	0.339						
Sulphur (total)	mg/L	9.9						
Tellurium (total)	mg/L	<0.00050						
Thallium (total)	mg/L	<0.000020						
Thorium (total)	mg/L	<0.00010						
Tin (total)	mg/L	<0.00020						
Titanium (total)	mg/L	<0.0050						
Tungsten (total)	mg/L	<0.0010						
Uranium (total)	mg/L	0.00268						
Vanadium (total)	mg/L	<0.0010						
Zinc (total)	mg/L	<0.0040						
Zirconium (total)	mg/L	<0.00010						

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location							
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
<b>Field Results</b>									
Conductivity	µS/cm							271.3	
Dissolved oxygen	mg/L							<b>6.89</b>	
Oxidation reduction potential	mV							61.8	
pH								8.49	
Temperature	°C							<b>23.0</b>	
Total dissolved solids	mg/L							176.2	
Turbidity	NTU							0.80	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L								
Chemical Oxygen Demand	mg/L								
Chloride	mg/L	4.81							
Conductivity	µS/cm	232							
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	99.5							
pH		8.09							
Sulphate	mg/L	26.2							
Total suspended solids	mg/L	<3.3							
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<b>6.3</b>	<b>3.1</b>	<b>9.6</b>	<b>5.2</b>	<b>36</b>	<b>34</b>	<b>34</b>
Fecal coliforms (MPN)	MPN/100 mL		<b>6.3</b>	<b>3.1</b>	<b>9.6</b>	<b>6.3</b>	<b>38</b>	<b>34</b>	<b>34</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	<0.050							
Nitrate (as N)	mg/L	<0.010							
Nitrite (as N)	mg/L	<0.010							
Total nitrogen	mg/L	0.241							
Total kjeldahl nitrogen	mg/L	0.241							
Orthophosphate (dissolved, as P)	mg/L	<0.0050							
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L	0.0119							
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0051							
Potassium (total)	mg/L	2.29							

Okanagan Falls Advanced Wastewater Treatment Facility

Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID


Sample Type

Sampling Location	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
Date Sampled	10-Jun-20	17-Jun-20	24-Jun-20	29-Jun-20	08-Jul-20	22-Jul-20	22-Jul-20	22-Jul-20
Lab Sample ID	0061229-02	0061948-02	0062636-02	0063046-02	0070850-02	0072248-01	0072248-02	0072248-03
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Duplicate

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L							
Antimony (total)	mg/L							
Arsenic (total)	mg/L							
Barium (total)	mg/L							
Beryllium (total)	mg/L							
Bismuth (total)	mg/L							
Boron (total)	mg/L							
Cadmium (total)	mg/L							
Calcium (total)	mg/L	27.1						
Chromium (total)	mg/L							
Cobalt (total)	mg/L							
Copper (total)	mg/L							
Iron (total)	mg/L							
Lead (total)	mg/L							
Lithium (total)	mg/L							
Magnesium (total)	mg/L	7.70						
Manganese (total)	mg/L							
Mercury (total)	mg/L							
Molybdenum (total)	mg/L							
Nickel (total)	mg/L							
Selenium (total)	mg/L							
Silicon (total, as Si)	mg/L							
Silver (total)	mg/L							
Sodium (total)	mg/L	9.72						
Strontium (total)	mg/L							
Sulphur (total)	mg/L							
Tellurium (total)	mg/L							
Thallium (total)	mg/L							
Thorium (total)	mg/L							
Tin (total)	mg/L							
Titanium (total)	mg/L							
Tungsten (total)	mg/L							
Uranium (total)	mg/L							
Vanadium (total)	mg/L							
Zinc (total)	mg/L							
Zirconium (total)	mg/L							

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location		Date Sampled		Lab Sample ID		Sample Type	
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
<b>Field Results</b>									
Conductivity	µS/cm								276.6
Dissolved oxygen	mg/L								<b>7.96</b>
Oxidation reduction potential	mV								47.7
pH									8.28
Temperature	°C								<b>22.7</b>
Total dissolved solids	mg/L								180.1
Turbidity	NTU								0.71
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	108	120	104					
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0					
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0					
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	<1.0	<1.0	<1.0					
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	108	120	104					
Biochemical oxygen demand	mg/L	<2.0	<2.0	<2.0					
Chemical Oxygen Demand	mg/L	19	16	18					
Chloride	mg/L	5.20	5.11	5.24					5.37
Conductivity	µS/cm	252	251	245					257
Fluoride	mg/L	0.13	0.13	0.13					
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	121	119	117					110
pH		8.16	8.17	8.13					8.39
Sulphate	mg/L	27.3	27.4	27.2					27.9
Total suspended solids	mg/L	<4.0	<4.0						<2.0
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				<b>14</b>	<b>5</b>	<b>14</b>	<b>14</b>	
Fecal coliforms (MPN)	MPN/100 mL				<b>16</b>	<b>5</b>	<b>17</b>	<b>18</b>	
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	<0.050	<0.050	<0.050					<0.050
Nitrate (as N)	mg/L	<0.010	<0.010	<0.010					<0.010
Nitrite (as N)	mg/L	<0.010	<0.010	<0.010					<0.010
Total nitrogen	mg/L	0.252	0.233	0.220					0.242
Total kjeldahl nitrogen	mg/L	0.252	0.233	0.220					0.242
Orthophosphate (dissolved, as P)	mg/L	<0.0050	<0.0050	<0.0050					<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L	<0.050	<0.050	<0.050					
Phosphorus (total, APHA 4500-P)	mg/L	0.0108	0.0134	0.0114					0.0056
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0052	<0.0050	<0.0050					<0.0050
Potassium (total)	mg/L	2.49	2.46	2.49					2.23



## Okanagan Falls Advanced Wastewater Treatment Facility


## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
		Date Sampled	22-Jul-20	22-Jul-20	22-Jul-20	29-Jul-20	06-Aug-20	12-Aug-20	19-Aug-20
		Lab Sample ID	0072252-01	0072252-02	0072252-03	0073036-02	0080566-02	0081249-02	0081992-02
		Sample Type	Normal	Duplicate	Duplicate	Normal	Normal	Normal	Normal
<b>Total Metals</b>									
Aluminum (total)	mg/L		0.0103	0.0098	0.0109				
Antimony (total)	mg/L		<0.00020	<0.00020	<0.00020				
Arsenic (total)	mg/L		<0.00050	0.00051	<0.00050				
Barium (total)	mg/L		0.0222	0.0213	0.0222				
Beryllium (total)	mg/L		<0.00010	<0.00010	<0.00010				
Bismuth (total)	mg/L		<0.00010	<0.00010	<0.00010				
Boron (total)	mg/L		<0.0500	<0.0500	<0.0500				
Cadmium (total)	mg/L		<0.000010	<0.000010	<0.000010				
Calcium (total)	mg/L		32.3	31.8	30.8				30.2
Chromium (total)	mg/L		<0.00050	<0.00050	<0.00050				
Cobalt (total)	mg/L		<0.00010	<0.00010	<0.00010				
Copper (total)	mg/L		0.00081	0.00077	0.00070				
Iron (total)	mg/L		0.018	0.015	0.015				
Lead (total)	mg/L		<0.00020	<0.00020	<0.00020				
Lithium (total)	mg/L		0.00267	0.00269	0.00294				
Magnesium (total)	mg/L		9.64	9.50	9.68				8.43
Manganese (total)	mg/L		0.00326	0.00319	0.00322				
Mercury (total)	mg/L		<0.000010	<0.000010	<0.000010				
Molybdenum (total)	mg/L		0.00313	0.00311	0.00315				
Nickel (total)	mg/L		0.00047	<0.00040	<0.00040				
Selenium (total)	mg/L		0.00051	0.00056	0.00056				
Silicon (total, as Si)	mg/L		3.8	3.7	3.9				
Silver (total)	mg/L		<0.000050	<0.000050	<0.000050				
Sodium (total)	mg/L		11.1	10.9	11.1				10.3
Strontium (total)	mg/L		0.264	0.256	0.261				
Sulphur (total)	mg/L		10.8	10.4	10.7				
Tellurium (total)	mg/L		<0.00050	<0.00050	<0.00050				
Thallium (total)	mg/L		<0.000020	<0.000020	<0.000020				
Thorium (total)	mg/L		<0.00010	<0.00010	<0.00010				
Tin (total)	mg/L		<0.00020	<0.00020	<0.00020				
Titanium (total)	mg/L		<0.0050	<0.0050	<0.0050				
Tungsten (total)	mg/L		<0.0010	<0.0010	<0.0010				
Uranium (total)	mg/L		0.00236	0.00227	0.00235				
Vanadium (total)	mg/L		<0.0010	<0.0010	<0.0010				
Zinc (total)	mg/L		<0.0040	<0.0040	<0.0040				
Zirconium (total)	mg/L		0.00010	0.00011	0.00013				

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location		Date Sampled		Lab Sample ID		Sample Type	
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
		25-Aug-20	02-Sep-20	09-Sep-20	09-Sep-20	17-Sep-20	23-Sep-20	14-Oct-20	14-Oct-20
		0082601-02	0090448-02	0091052-02	0091051-02	0091958-02	0092589-02	20J1348-02	20J1347-02
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm			279.8				280.4	
Dissolved oxygen	mg/L			9.38				10.07	
Oxidation reduction potential	mV			50.1				69.7	
pH				8.33				8.01	
Temperature	°C			<u>20.3</u>				13.8	
Total dissolved solids	mg/L			182.0				182.0	
Turbidity	NTU			0.61				0.62	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							111	
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							<1.0	
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							<1.0	
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							<1.0	
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							111	
Biochemical oxygen demand	mg/L							5.0	
Chemical Oxygen Demand	mg/L							10	
Chloride	mg/L			5.49				5.68	
Conductivity	µS/cm			262				280	
Fluoride	mg/L							0.14	
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L			128				119	
pH				8.47				8.16	
Sulphate	mg/L			28.4				28.3	
Total suspended solids	mg/L			<2.0				<2.9	
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<b>8</b>	<b>5</b>		<b>4</b>	<b>5</b>	<b>10</b>		<b>15</b>
Fecal coliforms (MPN)	MPN/100 mL	<b>8</b>	<b>6</b>		<b>6</b>	<b>7</b>	<b>16</b>		<b>19</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			<0.050				<0.050	
Nitrate (as N)	mg/L			<0.010				<0.010	
Nitrite (as N)	mg/L			<0.010				<0.010	
Total nitrogen	mg/L			0.241				0.254	
Total kjeldahl nitrogen	mg/L			0.241				0.254	
Orthophosphate (dissolved, as P)	mg/L			<0.0050				<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							<0.050	
Phosphorus (total, APHA 4500-P)	mg/L			0.0105				0.0126	
Phosphorus (dissolved, APHA 4500-P)	mg/L			<0.0050				0.0051	
Potassium (total)	mg/L			2.66				2.46	

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID


Sample Type

Sampling Location	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream
Date Sampled	25-Aug-20	02-Sep-20	09-Sep-20	09-Sep-20	17-Sep-20	23-Sep-20	14-Oct-20	14-Oct-20
Lab Sample ID	0082601-02	0090448-02	0091052-02	0091051-02	0091958-02	0092589-02	20J1348-02	20J1347-02
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L						0.0110	
Antimony (total)	mg/L						<0.00020	
Arsenic (total)	mg/L						0.00059	
Barium (total)	mg/L						0.0225	
Beryllium (total)	mg/L						<b>0.00054</b>	
Bismuth (total)	mg/L						<0.00010	
Boron (total)	mg/L						<0.0500	
Cadmium (total)	mg/L						<0.000010	
Calcium (total)	mg/L			34.5			32.8	
Chromium (total)	mg/L						<0.00050	
Cobalt (total)	mg/L						0.00010	
Copper (total)	mg/L						0.0284	
Iron (total)	mg/L						<0.010	
Lead (total)	mg/L						<0.00020	
Lithium (total)	mg/L						0.00318	
Magnesium (total)	mg/L			10.1			8.86	
Manganese (total)	mg/L						0.00498	
Mercury (total)	mg/L						<0.000010	
Molybdenum (total)	mg/L						0.00330	
Nickel (total)	mg/L						0.00049	
Selenium (total)	mg/L						<0.00050	
Silicon (total, as Si)	mg/L						3.3	
Silver (total)	mg/L						<0.000050	
Sodium (total)	mg/L			14.9			10.9	
Strontium (total)	mg/L						0.291	
Sulphur (total)	mg/L						10.0	
Tellurium (total)	mg/L						<0.00050	
Thallium (total)	mg/L						<0.000020	
Thorium (total)	mg/L						<0.00010	
Tin (total)	mg/L						<0.00020	
Titanium (total)	mg/L						<0.0050	
Tungsten (total)	mg/L						<0.0010	
Uranium (total)	mg/L						0.00248	
Vanadium (total)	mg/L						0.0019	
Zinc (total)	mg/L						<0.0040	
Zirconium (total)	mg/L						<0.00010	

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location							
		Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
Date Sampled	Lab Sample ID	17-Nov-20	17-Nov-20	09-Dec-20	09-Dec-20	21-Jan-20	21-Jan-20	11-Feb-20	11-Feb-20
Sample Type		20K2032-02	20K2037-02	20L1194-02	20L1193-02	0011331-03	0011330-03	0020953-03	0020951-03
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm	284.9		288.6		298.1		298.6	
Dissolved oxygen	mg/L	11.43		12.71		14.01		14.29	
Oxidation reduction potential	mV	53.1		94.7		122.9		138.6	
pH		8.21		7.92		8.13		8.13	
Temperature	°C	6.9		5.2		2.0		3.0	
Total dissolved solids	mg/L	185.2		197.9		193.7		194.3	
Turbidity	NTU	0.80		0.94		0.87		1.49	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L					116			
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L					<1.0			
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L					<1.0			
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L					<1.0			
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L					116			
Biochemical oxygen demand	mg/L					<6.2			
Chemical Oxygen Demand	mg/L					17			
Chloride	mg/L	5.50		5.67		6.40		6.24	
Conductivity	µS/cm	284		272		285		267	
Fluoride	mg/L					0.16			
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	139		124		128		126	
pH		8.15		8.13		8.14		8.07	
Sulphate	mg/L	29.4		26.9		29.8		30.5	
Total suspended solids	mg/L	<2.0		<2.0		2.2		2.8	
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<b>5</b>			<b>2</b>		<b>1</b>	<b>5.2</b>
Fecal coliforms (MPN)	MPN/100 mL		<b>5</b>			<b>2</b>		<b>1</b>	<b>6.3</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	<0.050		<0.050		<0.020		0.020	
Nitrate (as N)	mg/L	<0.010		<0.010		<0.010		<0.010	
Nitrite (as N)	mg/L	<0.010		<0.010		<0.010		<0.010	
Total nitrogen	mg/L	0.186		0.243		0.318		0.237	
Total kjeldahl nitrogen	mg/L	0.186		0.243		0.318		0.237	
Orthophosphate (dissolved, as P)	mg/L	<0.0050		<0.0050		<0.0050		<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L					<0.050			
Phosphorus (total, APHA 4500-P)	mg/L	0.0249		0.0170		0.0112		0.0091	
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0190		0.0073		0.0036		0.0038	
Potassium (total)	mg/L	2.96		2.65		2.56		2.61	

## Okanagan Falls Advanced Wastewater Treatment Facility


## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
		Date Sampled	17-Nov-20	17-Nov-20	09-Dec-20	09-Dec-20	21-Jan-20	21-Jan-20	11-Feb-20	11-Feb-20
Lab Sample ID	Sample Type	20K2032-02	20K2037-02	20L1194-02	20L1193-02	0011331-03	0011330-03	0020953-03	0020951-03	
<b>Total Metals</b>										
Aluminum (total)	mg/L					0.0112				
Antimony (total)	mg/L					<0.00020				
Arsenic (total)	mg/L					0.00064				
Barium (total)	mg/L					0.0254				
Beryllium (total)	mg/L					<0.00010				
Bismuth (total)	mg/L					<0.00010				
Boron (total)	mg/L					0.0182				
Cadmium (total)	mg/L					<0.000010				
Calcium (total)	mg/L	36.5		33.5		34.2		34.1		
Chromium (total)	mg/L					<0.00050				
Cobalt (total)	mg/L					<0.00010				
Copper (total)	mg/L					<0.00040				
Iron (total)	mg/L					0.024				
Lead (total)	mg/L					<0.00020				
Lithium (total)	mg/L					0.00388				
Magnesium (total)	mg/L	11.5		9.86		10.2		9.80		
Manganese (total)	mg/L					0.00680				
Mercury (total)	mg/L					<0.000010				
Molybdenum (total)	mg/L					0.00361				
Nickel (total)	mg/L					<0.00040				
Selenium (total)	mg/L					<0.00050				
Silicon (total, as Si)	mg/L					2.7				
Silver (total)	mg/L					<0.000050				
Sodium (total)	mg/L	14.5		12.4		12.9		12.5		
Strontium (total)	mg/L					0.346				
Sulphur (total)	mg/L					11.2				
Tellurium (total)	mg/L					<0.00050				
Thallium (total)	mg/L					<0.000020				
Thorium (total)	mg/L					<0.00010				
Tin (total)	mg/L					<0.00020				
Titanium (total)	mg/L					<0.0050				
Tungsten (total)	mg/L					<0.0010				
Uranium (total)	mg/L					0.00278				
Vanadium (total)	mg/L					0.0010				
Zinc (total)	mg/L					<0.0040				
Zirconium (total)	mg/L					<0.00010				

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location								
		Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	
Date Sampled	Lab Sample ID	10-Mar-20	10-Mar-20	15-Apr-20	15-Apr-20	07-May-20	13-May-20	13-May-20	20-May-20	
Sample Type		0030940-03	0030939-03	0041203-02	0041204-02	0050716-03	0051246-03	0051247-03	0051658-03	
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	
<b>Field Results</b>										
Conductivity	µS/cm	293.9			297.3		251.8			
Dissolved oxygen	mg/L	13.25			12.5		10.64			
Oxidation reduction potential	mV	128.7			112.0		76.0			
pH		8.36			8.36		8.24			
Temperature	°C	3.4			7.7		10.8			
Total dissolved solids	mg/L	191.1			193.0		163.8			
Turbidity	NTU	0.83			0.76		7.03			
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L				121					
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L				<1.0					
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L				<1.0					
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L				<1.0					
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L				121					
Biochemical oxygen demand	mg/L				<5.8					
Chemical Oxygen Demand	mg/L				13					
Chloride	mg/L	6.20			6.30		5.06			
Conductivity	µS/cm	279			272		242			
Fluoride	mg/L				0.14					
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	143			128		102			
pH		8.06			8.14		8.15			
Sulphate	mg/L	29.8			30.3		24.8			
Total suspended solids	mg/L	<2.0			2.4		12.0			
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL		<1.0	<1		<b>3.0</b>	<b>13.4</b>		<b>20.1</b>	
Fecal coliforms (MPN)	MPN/100 mL		<b>1.0</b>	<1		<b>5.2</b>	<b>13.4</b>		<b>21.6</b>	
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L	<0.020			<0.050		<0.050			
Nitrate (as N)	mg/L	<0.010			<0.010		<0.010			
Nitrite (as N)	mg/L	<0.010			<0.010		<0.010			
Total nitrogen	mg/L	0.272			0.338		0.317			
Total kjeldahl nitrogen	mg/L	0.272			0.338		0.317			
Orthophosphate (dissolved, as P)	mg/L	<0.0050			<0.0050		<0.0050			
Phosphorus (total, by ICPMS/ICPOES)	mg/L				<0.050					
Phosphorus (total, APHA 4500-P)	mg/L	0.0086			0.0231		0.0297			
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0037			0.0053		0.0050			
Potassium (total)	mg/L	2.92			2.61		2.22			

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	
		Date Sampled	10-Mar-20	10-Mar-20	15-Apr-20	15-Apr-20	07-May-20	13-May-20	13-May-20	20-May-20
		Lab Sample ID	0030940-03	0030939-03	0041203-02	0041204-02	0050716-03	0051246-03	0051247-03	0051658-03
		Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Total Metals</b>										
Aluminum (total)	mg/L					0.0096				
Antimony (total)	mg/L					<0.00020				
Arsenic (total)	mg/L					0.00165				
Barium (total)	mg/L					0.0235				
Beryllium (total)	mg/L					<0.00010				
Bismuth (total)	mg/L					<0.00010				
Boron (total)	mg/L					0.0257				
Cadmium (total)	mg/L					<0.000010				
Calcium (total)	mg/L		38.2			35.0		27.6		
Chromium (total)	mg/L					<0.00050				
Cobalt (total)	mg/L					<0.00010				
Copper (total)	mg/L					0.00062				
Iron (total)	mg/L					0.020				
Lead (total)	mg/L					<0.00020				
Lithium (total)	mg/L					0.00371				
Magnesium (total)	mg/L		11.6			9.72		7.96		
Manganese (total)	mg/L					0.00588				
Mercury (total)	mg/L					<0.000010				
Molybdenum (total)	mg/L					0.00341				
Nickel (total)	mg/L					<0.00040				
Selenium (total)	mg/L					<0.00050				
Silicon (total, as Si)	mg/L					2.8				
Silver (total)	mg/L					<0.000050				
Sodium (total)	mg/L		13.8			12.4		10.2		
Strontium (total)	mg/L					0.337				
Sulphur (total)	mg/L					10.1				
Tellurium (total)	mg/L					<0.00050				
Thallium (total)	mg/L					<0.000020				
Thorium (total)	mg/L					<0.00010				
Tin (total)	mg/L					<0.00020				
Titanium (total)	mg/L					<0.0050				
Tungsten (total)	mg/L					<0.0010				
Uranium (total)	mg/L					0.00268				
Vanadium (total)	mg/L					<0.0010				
Zinc (total)	mg/L					<0.0040				
Zirconium (total)	mg/L					<0.00010				

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location								
		Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	
Date Sampled	Lab Sample ID	26-May-20	03-Jun-20	10-Jun-20	10-Jun-20	17-Jun-20	24-Jun-20	29-Jun-20	08-Jul-20	
Sample Type		0052255-03	0060487-03	0061228-03	0061229-03	0061948-03	0062636-03	0063046-03	0070850-03	
		Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	
<b>Field Results</b>										
Conductivity	µS/cm			254.2						
Dissolved oxygen	mg/L			10.23						
Oxidation reduction potential	mV			99.9						
pH				8.31						
Temperature	°C			14.7						
Total dissolved solids	mg/L			165.1						
Turbidity	NTU			1.11						
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L									
Biochemical oxygen demand	mg/L									
Chemical Oxygen Demand	mg/L									
Chloride	mg/L				4.78					
Conductivity	µS/cm				231					
Fluoride	mg/L									
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L				106					
pH					8.10					
Sulphate	mg/L				26.1					
Total suspended solids	mg/L				<3.3					
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL	5.2	8.6	4.1		7.5	8.4	7.5	8.5	
Fecal coliforms (MPN)	MPN/100 mL	5.2	8.6	4.1		7.5	9.6	7.5	8.5	
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L				<0.050					
Nitrate (as N)	mg/L				<0.010					
Nitrite (as N)	mg/L				<0.010					
Total nitrogen	mg/L				0.258					
Total kjeldahl nitrogen	mg/L				0.258					
Orthophosphate (dissolved, as P)	mg/L				<0.0050					
Phosphorus (total, by ICPMS/ICPOES)	mg/L									
Phosphorus (total, APHA 4500-P)	mg/L				0.0124					
Phosphorus (dissolved, APHA 4500-P)	mg/L				0.0053					
Potassium (total)	mg/L				2.39					



Okanagan Falls Advanced Wastewater Treatment Facility

Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID

Sample Type

Sampling Location	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
Date Sampled	26-May-20	03-Jun-20	10-Jun-20	10-Jun-20	17-Jun-20	24-Jun-20	29-Jun-20	08-Jul-20
Lab Sample ID	0052255-03	0060487-03	0061228-03	0061229-03	0061948-03	0062636-03	0063046-03	0070850-03
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L							
Antimony (total)	mg/L							
Arsenic (total)	mg/L							
Barium (total)	mg/L							
Beryllium (total)	mg/L							
Bismuth (total)	mg/L							
Boron (total)	mg/L							
Cadmium (total)	mg/L							
Calcium (total)	mg/L				28.3			
Chromium (total)	mg/L							
Cobalt (total)	mg/L							
Copper (total)	mg/L							
Iron (total)	mg/L							
Lead (total)	mg/L							
Lithium (total)	mg/L							
Magnesium (total)	mg/L				8.52			
Manganese (total)	mg/L							
Mercury (total)	mg/L							
Molybdenum (total)	mg/L							
Nickel (total)	mg/L							
Selenium (total)	mg/L							
Silicon (total, as Si)	mg/L							
Silver (total)	mg/L							
Sodium (total)	mg/L				10.1			
Strontium (total)	mg/L							
Sulphur (total)	mg/L							
Tellurium (total)	mg/L							
Thallium (total)	mg/L							
Thorium (total)	mg/L							
Tin (total)	mg/L							
Titanium (total)	mg/L							
Tungsten (total)	mg/L							
Uranium (total)	mg/L							
Vanadium (total)	mg/L							
Zinc (total)	mg/L							
Zirconium (total)	mg/L							

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
		Date Sampled	15-Jul-20	22-Jul-20	22-Jul-20	29-Jul-20	06-Aug-20	12-Aug-20	19-Aug-20
		Lab Sample ID	0071397-03	0072258-02	0072260-02	0073036-03	0080566-03	0081249-03	0081992-03
		Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm			272.0				276.3	
Dissolved oxygen	mg/L			<b>6.93</b>				8.25	
Oxidation reduction potential	mV			57.1				48.3	
pH				8.51				8.36	
Temperature	°C			<b>22.9</b>				<b>22.9</b>	
Total dissolved solids	mg/L			176.8				179.4	
Turbidity	NTU			1.03				0.53	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L			108					
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L			<1.0					
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L			<1.0					
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L			<1.0					
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L			108					
Biochemical oxygen demand	mg/L			<2.0					
Chemical Oxygen Demand	mg/L			19					
Chloride	mg/L			5.16					5.37
Conductivity	µS/cm			249					262
Fluoride	mg/L			0.14					
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L			122					109
pH				8.20					8.40
Sulphate	mg/L			27.2					27.8
Total suspended solids	mg/L			<4.0					<2.0
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL		<b>5</b>	<b>18</b>		<b>13</b>	<b>10</b>	<b>6</b>	<b>5</b>
Fecal coliforms (MPN)	MPN/100 mL		<b>5</b>	<b>18</b>		<b>13</b>	<b>11</b>	<b>6</b>	<b>6</b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			<0.050					<0.050
Nitrate (as N)	mg/L			<0.010					<0.010
Nitrite (as N)	mg/L			<0.010					<0.010
Total nitrogen	mg/L			0.268					0.143
Total kjeldahl nitrogen	mg/L			0.268					0.143
Orthophosphate (dissolved, as P)	mg/L			<0.0050					<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L			<0.050					
Phosphorus (total, APHA 4500-P)	mg/L			0.0123					0.0061
Phosphorus (dissolved, APHA 4500-P)	mg/L			<0.0050					<0.0050
Potassium (total)	mg/L			2.51					2.20

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID

Sample Type

Sampling Location	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
Date Sampled	15-Jul-20	22-Jul-20	22-Jul-20	29-Jul-20	06-Aug-20	12-Aug-20	19-Aug-20	19-Aug-20
Lab Sample ID	0071397-03	0072258-02	0072260-02	0073036-03	0080566-03	0081249-03	0081992-03	0081994-03
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L			0.0120				
Antimony (total)	mg/L			<0.00020				
Arsenic (total)	mg/L			0.00053				
Barium (total)	mg/L			0.0218				
Beryllium (total)	mg/L			<0.00010				
Bismuth (total)	mg/L			<0.00010				
Boron (total)	mg/L			<0.0500				
Cadmium (total)	mg/L			<0.000010				
Calcium (total)	mg/L			32.6				30.0
Chromium (total)	mg/L			<0.00050				
Cobalt (total)	mg/L			<0.00010				
Copper (total)	mg/L			0.00093				
Iron (total)	mg/L			0.025				
Lead (total)	mg/L			<0.00020				
Lithium (total)	mg/L			0.00269				
Magnesium (total)	mg/L			9.76				8.31
Manganese (total)	mg/L			0.00446				
Mercury (total)	mg/L			<0.000010				
Molybdenum (total)	mg/L			0.00317				
Nickel (total)	mg/L			<0.00040				
Selenium (total)	mg/L			<0.00050				
Silicon (total, as Si)	mg/L			3.9				
Silver (total)	mg/L			<0.000050				
Sodium (total)	mg/L			11.4				10.2
Strontium (total)	mg/L			0.263				
Sulphur (total)	mg/L			10.8				
Tellurium (total)	mg/L			<0.00050				
Thallium (total)	mg/L			<0.000020				
Thorium (total)	mg/L			<0.00010				
Tin (total)	mg/L			<0.00020				
Titanium (total)	mg/L			<0.0050				
Tungsten (total)	mg/L			<0.0010				
Uranium (total)	mg/L			0.00225				
Vanadium (total)	mg/L			<0.0010				
Zinc (total)	mg/L			<0.0040				
Zirconium (total)	mg/L			0.00011				

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location		Date Sampled		Lab Sample ID		Sample Type	
		Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
<b>Field Results</b>									
Conductivity	µS/cm			279.6				280.4	
Dissolved oxygen	mg/L			9.67				9.60	
Oxidation reduction potential	mV			48.6				67.0	
pH				8.40				8.07	
Temperature	°C			<u>20.4</u>				13.8	
Total dissolved solids	mg/L			182.0				182.0	
Turbidity	NTU			0.60				0.52	
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							114	
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							<1.0	
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							<1.0	
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							<1.0	
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							114	
Biochemical oxygen demand	mg/L							4.3	
Chemical Oxygen Demand	mg/L							11	
Chloride	mg/L			5.47				5.69	
Conductivity	µS/cm			269				275	
Fluoride	mg/L							0.14	
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L			130				120	
pH				8.52				8.19	
Sulphate	mg/L			28.4				27.8	
Total suspended solids	mg/L			<2.0				<3.9	
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	<b>5</b>	<b><u>12</u></b>		<b>5</b>	<b>8</b>	<b><u>37</u></b>		<b><u>14</u></b>
Fecal coliforms (MPN)	MPN/100 mL	<b>8</b>	<b><u>12</u></b>		<b>5</b>	<b><u>13</u></b>	<b><u>37</u></b>		<b><u>18</u></b>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			<0.050				<0.050	
Nitrate (as N)	mg/L			<0.010				<0.010	
Nitrite (as N)	mg/L			<0.010				<0.010	
Total nitrogen	mg/L			0.238				0.227	
Total kjeldahl nitrogen	mg/L			0.238				0.227	
Orthophosphate (dissolved, as P)	mg/L			<0.0050				<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							<0.050	
Phosphorus (total, APHA 4500-P)	mg/L			0.0105				0.0112	
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0054				<0.0050	
Potassium (total)	mg/L			2.74				2.47	

Okanagan Falls Advanced Wastewater Treatment Facility

Water Quality Results



Sampling Location

Date Sampled

Lab Sample ID

Sample Type

Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
25-Aug-20	02-Sep-20	09-Sep-20	09-Sep-20	17-Sep-20	23-Sep-20	14-Oct-20	14-Oct-20	
0082601-03	0090448-03	0091052-03	0091051-03	0091958-03	0092589-03	20J1348-03	20J1347-03	
Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	

Analyte	Unit							
<b>Total Metals</b>								
Aluminum (total)	mg/L						0.0055	
Antimony (total)	mg/L						<0.00020	
Arsenic (total)	mg/L						<0.00050	
Barium (total)	mg/L						0.0223	
Beryllium (total)	mg/L						<0.00010	
Bismuth (total)	mg/L						<0.00010	
Boron (total)	mg/L						<0.0500	
Cadmium (total)	mg/L						<0.000010	
Calcium (total)	mg/L			34.8			33.5	
Chromium (total)	mg/L						<0.00050	
Cobalt (total)	mg/L						<0.00010	
Copper (total)	mg/L						<0.00040	
Iron (total)	mg/L						<0.010	
Lead (total)	mg/L						<0.00020	
Lithium (total)	mg/L						0.00325	
Magnesium (total)	mg/L			10.4			8.85	
Manganese (total)	mg/L						0.00457	
Mercury (total)	mg/L						<0.000010	
Molybdenum (total)	mg/L						0.00335	
Nickel (total)	mg/L						0.00042	
Selenium (total)	mg/L						<0.00050	
Silicon (total, as Si)	mg/L						3.4	
Silver (total)	mg/L						<0.000050	
Sodium (total)	mg/L			13.4			11.0	
Strontium (total)	mg/L						0.287	
Sulphur (total)	mg/L						10.5	
Tellurium (total)	mg/L						<0.00050	
Thallium (total)	mg/L						<0.000020	
Thorium (total)	mg/L						<0.00010	
Tin (total)	mg/L						<0.00020	
Titanium (total)	mg/L						<0.0050	
Tungsten (total)	mg/L						<0.0010	
Uranium (total)	mg/L						0.00247	
Vanadium (total)	mg/L						0.0020	
Zinc (total)	mg/L						<0.0040	
Zirconium (total)	mg/L						<0.00010	

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location			
		Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
<b>Field Results</b>					
Conductivity	µS/cm	285.6		287.1	
Dissolved oxygen	mg/L	10.99		12.72	
Oxidation reduction potential	mV	56.5		91.4	
pH		8.15		7.97	
Temperature	°C	6.9		5.2	
Total dissolved solids	mg/L	185.2		186.5	
Turbidity	NTU	0.70		1.13	
<b>Lab Results</b>					
<b>General</b>					
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L				
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L				
Biochemical oxygen demand	mg/L				
Chemical Oxygen Demand	mg/L				
Chloride	mg/L	5.71		5.60	
Conductivity	µS/cm	283		270	
Fluoride	mg/L				
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	141		125	
pH		8.18		8.13	
Sulphate	mg/L	28.0		26.7	
Total suspended solids	mg/L	<2.0		<2.0	
<b>Microbiological</b>					
E. coli (MPN)	MPN/100 mL		<b>5</b>		<b>1</b>
Fecal coliforms (MPN)	MPN/100 mL		<b>7</b>		<b>1</b>
<b>Nutrients</b>					
Ammonia (total, as N)	mg/L	<0.050		<0.050	
Nitrate (as N)	mg/L	<0.010		<0.010	
Nitrite (as N)	mg/L	<0.010		<0.010	
Total nitrogen	mg/L	0.260		0.332	
Total kjeldahl nitrogen	mg/L	0.260		0.332	
Orthophosphate (dissolved, as P)	mg/L	<0.0050		<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L				
Phosphorus (total, APHA 4500-P)	mg/L	0.0248		0.0163	
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0164		0.0082	
Potassium (total)	mg/L	2.97		2.58	

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Sampling Location	Date Sampled	Lab Sample ID	Sample Type
		Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream	Okanagan River Channel 500m Downstream
<b>Total Metals</b>					
Aluminum (total)	mg/L		17-Nov-20	20K2032-03	Normal
Antimony (total)	mg/L		17-Nov-20	20K2037-03	Normal
Arsenic (total)	mg/L		09-Dec-20	20L1194-03	Normal
Barium (total)	mg/L		09-Dec-20	20L1193-03	Normal
Beryllium (total)	mg/L				
Bismuth (total)	mg/L				
Boron (total)	mg/L				
Cadmium (total)	mg/L				
Calcium (total)	mg/L	37.6			34.0
Chromium (total)	mg/L				
Cobalt (total)	mg/L				
Copper (total)	mg/L				
Iron (total)	mg/L				
Lead (total)	mg/L				
Lithium (total)	mg/L				
Magnesium (total)	mg/L	11.3			9.73
Manganese (total)	mg/L				
Mercury (total)	mg/L				
Molybdenum (total)	mg/L				
Nickel (total)	mg/L				
Selenium (total)	mg/L				
Silicon (total, as Si)	mg/L				
Silver (total)	mg/L				
Sodium (total)	mg/L	14.5			12.4
Strontium (total)	mg/L				
Sulphur (total)	mg/L				
Tellurium (total)	mg/L				
Thallium (total)	mg/L				
Thorium (total)	mg/L				
Tin (total)	mg/L				
Titanium (total)	mg/L				
Tungsten (total)	mg/L				
Uranium (total)	mg/L				
Vanadium (total)	mg/L				
Zinc (total)	mg/L				
Zirconium (total)	mg/L				

## Exceedances by Guideline

Sampling Location	Guideline	Exceedances
Okanagan River Channel 100m Upstream	BCAWQG AL (ST)	Temperature [F]
	BCAWQG AL (LT)	Dissolved oxygen [F], Temperature [F]
	GCDWQ MAC	E. coli (MPN), Fecal coliforms (MPN)
	GCDWQ AO	Temperature [F]
	BC SDWQG MAC	E. coli (MPN), Fecal coliforms (MPN)
	BC SDWQG AO	Temperature [F]
Okanagan River Channel 100m Downstream	BCAWQG AL (ST)	Temperature [F]
	BCAWQG AL (LT)	Dissolved oxygen [F], Temperature [F]
	BCWWQG AL	Beryllium (total)
	GCDWQ MAC	E. coli (MPN), Fecal coliforms (MPN)
	GCDWQ AO	Temperature [F]
	BC SDWQG MAC	E. coli (MPN), Fecal coliforms (MPN)
Okanagan River Channel 500m Downstream	BCAWQG AL (ST)	Temperature [F]
	BCAWQG AL (LT)	Dissolved oxygen [F], Temperature [F]
	GCDWQ MAC	E. coli (MPN), Fecal coliforms (MPN)
	GCDWQ AO	Temperature [F]
	BC SDWQG MAC	E. coli (MPN), Fecal coliforms (MPN)
	BC SDWQG AO	Temperature [F]

[F] = Field Result(s)

## Exceedances by Analyte

	Okanagan River Channel 100m Upstream	Okanagan River Channel 100m Downstream	Okanagan River Channel 500m Downstream
<b>Field Results</b>			
Dissolved oxygen	X	X	X
Temperature	X	X	X
<b>Lab Results</b>			
<b>Microbiological</b>			
E. coli (MPN)	X	X	X
Fecal coliforms (MPN)	X	X	X
<b>Total Metals</b>			
Beryllium (total)		X	





Analyte	Unit	Guideline							
		BCAQG AL (ST)	BCAQG AL (LT)	BCWWQG AL	GCDWQ MAC	GCDWQ AO	BCAQG L	BCWWQG L	BCAQG I
<b>Field Results</b>									
Conductivity	µS/cm	NG	NG	NG	NG	NG	NG	NG	NG
Dissolved oxygen	mg/L	min 5 <sup>1.1</sup>	min 8 <sup>2.1</sup>	NG	NG	NG	NG	NG	NG
Oxidation reduction potential	mV	NG	NG	NG	NG	NG	NG	NG	NG
pH		N <sup>1.2</sup>	N <sup>2.2</sup>	NG	NG	7.0 - 10.5 <sup>5.1</sup>	5.0 - 9.5 <sup>6.1</sup>	NG	5.0 - 9.5 <sup>8.1</sup>
Temperature	°C	19 <sup>1.3</sup>	19 <sup>2.3</sup>	NG	NG	15	N <sup>6.2</sup>	NG	N <sup>8.2</sup>
Total dissolved solids	mg/L	NG	NG	NG	NG	500	NG	1000 <sup>7.1</sup>	NG
Turbidity	NTU	N <sup>1.4</sup>	N <sup>2.4</sup>	NG	N <sup>4.1</sup>	NG	N <sup>6.3</sup>	NG	N <sup>8.3</sup>
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	NG	NG	N <sup>3.1</sup>	NG	NG	NG	NG	NG
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	NG	NG	N <sup>3.2</sup>	NG	NG	NG	NG	NG
Biochemical oxygen demand	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Chemical Oxygen Demand	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Chloride	mg/L	600 <sup>1.5</sup>	150 <sup>2.5</sup>	NG	NG	250	600 <sup>6.4</sup>	NG	100
Conductivity	µS/cm	NG	NG	NG	NG	NG	NG	NG	NG
Fluoride	mg/L	Calc <sup>1.6</sup>	Calc <sup>2.6</sup>	NG	1.5	NG	1.5 <sup>6.5</sup>	NG	2.0 <sup>8.4</sup>
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
pH		N <sup>1.7</sup>	N <sup>2.7</sup>	NG	NG	7.0 - 10.5 <sup>5.2</sup>	5.0 - 9.5 <sup>6.6</sup>	NG	5.0 - 9.5 <sup>8.5</sup>
Sulphate	mg/L	Calc <sup>1.8</sup>	Calc <sup>2.8</sup>	NG	NG	500 <sup>5.3</sup>	1000	1000 <sup>7.2</sup>	NG
Total suspended solids	mg/L	N <sup>1.9</sup>	N <sup>2.9</sup>	NG	NG	NG	N <sup>6.7</sup>	NG	N <sup>8.6</sup>
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL	N <sup>1.10</sup>	N <sup>2.10</sup>	NG	0 <sup>4.2</sup>	NG	200 <sup>6.8</sup>	NG	385 <sup>8.7</sup>
Fecal coliforms (MPN)	MPN/100 mL	N <sup>1.11</sup>	N <sup>2.11</sup>	NG	0 <sup>4.3</sup>	NG	200 <sup>6.9</sup>	NG	1000 <sup>8.8</sup>
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L	Calc <sup>1.12</sup>	Calc <sup>2.12</sup>	NG	NG	NG	NG	NG	NG
Nitrate (as N)	mg/L	32.8 <sup>1.13</sup>	3.0 <sup>2.13</sup>	NG	10	NG	100 <sup>6.10</sup>	NG	NG
Nitrite (as N)	mg/L	Calc <sup>1.16</sup>	Calc <sup>2.16</sup>	NG	1	NG	10 <sup>6.13</sup>	NG	NG
Total nitrogen	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Total kjeldahl nitrogen	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Orthophosphate (dissolved, as P)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Phosphorus (total, by ICPMS/ICPOES)	mg/L	N <sup>1.17</sup>	N <sup>2.17</sup>	NG	NG	NG	NG	NG	NG
Phosphorus (total, APHA 4500-P)	mg/L	N <sup>1.18</sup>	N <sup>2.18</sup>	NG	NG	NG	NG	NG	NG
Phosphorus (dissolved, APHA 4500-P)	mg/L	N <sup>1.19</sup>	N <sup>2.19</sup>	NG	NG	NG	NG	NG	NG
Potassium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results



Analyte	Unit	Guideline							
		BCAQG AL (ST)	BCAQG AL (LT)	BCWWQG AL	GCDWQ MAC	GCDWQ AO	BCAQG L	BCWWQG L	BCAQG I
<b>Total Metals</b>									
Aluminum (total)	mg/L	NG	NG	NG	NG	N <sup>5.4</sup>	5 <sup>6.14</sup>	NG	5 <sup>8.9</sup>
Antimony (total)	mg/L	NG	NG	0.009 <sup>3.3</sup>	0.006	NG	NG	NG	NG
Arsenic (total)	mg/L	0.005	0.005	NG	0.010 <sup>4.6</sup>	NG	0.025 <sup>6.15</sup>	NG	0.100 <sup>8.10</sup>
Barium (total)	mg/L	NG	NG	1	2.0 <sup>4.7</sup>	NG	NG	NG	NG
Beryllium (total)	mg/L	NG	NG	0.00013	NG	NG	NG	0.100	NG
Bismuth (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Boron (total)	mg/L	1.2	1.2	NG	5	NG	5	NG	0.5 <sup>8.11</sup>
Cadmium (total)	mg/L	NG	NG	NG	0.007 <sup>4.8</sup>	NG	NG	0.080 <sup>7.3</sup>	NG
Calcium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Chromium (total)	mg/L	NG	NG	0.001 <sup>3.4</sup>	0.05	NG	NG	0.050 <sup>7.4</sup>	NG
Cobalt (total)	mg/L	0.110 <sup>1.20</sup>	0.004 <sup>2.20</sup>	NG	NG	NG	NG	1	NG
Copper (total)	mg/L	NG	NG	NG	2 <sup>4.9</sup>	1	0.300	NG	0.200 <sup>8.12</sup>
Iron (total)	mg/L	1.0	1.0	NG	NG	0.3	NG	NG	NG
Lead (total)	mg/L	Calc <sup>1.21</sup>	Calc <sup>2.21</sup>	NG	0.005 <sup>4.10</sup>	NG	0.100	NG	0.200 <sup>8.13</sup>
Lithium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Magnesium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Manganese (total)	mg/L	Calc <sup>1.22</sup>	Calc <sup>2.22</sup>	NG	0.12 <sup>4.11</sup>	0.02 <sup>5.5</sup>	NG	NG	NG
Mercury (total)	mg/L	0.000020 <sup>1.23</sup>	0.000020 <sup>2.23</sup>	NG	0.001	NG	0.0030	NG	0.0020
Molybdenum (total)	mg/L	2 <sup>1.24</sup>	1 <sup>2.24</sup>	NG	NG	NG	0.05 <sup>6.16</sup>	NG	0.05 <sup>8.14</sup>
Nickel (total)	mg/L	NG	NG	Calc <sup>3.5</sup>	NG	NG	NG	1	NG
Selenium (total)	mg/L	0.002 <sup>1.25</sup>	0.002 <sup>2.25</sup>	NG	0.05	NG	0.0300 <sup>6.17</sup>	NG	0.010 <sup>8.15</sup>
Silicon (total, as Si)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Silver (total)	mg/L	Calc <sup>1.26</sup>	Calc <sup>2.26</sup>	NG	NG	NG	NG	NG	NG
Sodium (total)	mg/L	NG	NG	NG	NG	200	NG	NG	NG
Strontium (total)	mg/L	NG	NG	NG	7.0 <sup>4.12</sup>	NG	NG	NG	NG
Sulphur (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Tellurium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Thallium (total)	mg/L	NG	NG	0.0008 <sup>3.6</sup>	NG	NG	NG	NG	NG
Thorium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Tin (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Titanium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Tungsten (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG
Uranium (total)	mg/L	NG	NG	0.0085	0.02	NG	NG	0.200	NG
Vanadium (total)	mg/L	NG	NG	NG	NG	NG	NG	0.100	NG
Zinc (total)	mg/L	Calc <sup>1.27</sup>	Calc <sup>2.27</sup>	NG	NG	5.0	2.000	NG	1.000 <sup>8.16</sup>
Zirconium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG	NG



Analyte	Unit	Guideline						
		BCWWQG I	BC SDWQG MAC	BC SDWQG AO	BC CSR AW(F)	BC CSR IW	BC CSR LW	BC CSR DW
<b>Field Results</b>								
Conductivity	µS/cm	700 <sup>9.1</sup>	NG	NG	NG	NG	NG	NG
Dissolved oxygen	mg/L	NG	NG	NG	NG	NG	NG	NG
Oxidation reduction potential	mV	NG	NG	NG	NG	NG	NG	NG
pH		NG	NG	NG	NG	NG	NG	NG
Temperature	°C	NG	NG	15	NG	NG	NG	NG
Total dissolved solids	mg/L	500 <sup>9.2</sup>	NG	NG	NG	NG	NG	NG
Turbidity	NTU	NG	N <sup>10.1</sup>	NG	NG	NG	NG	NG
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG
Biochemical oxygen demand	mg/L	NG	NG	NG	NG	NG	NG	NG
Chemical Oxygen Demand	mg/L	NG	NG	NG	NG	NG	NG	NG
Chloride	mg/L	NG	NG	250	1500	100 <sup>13.1</sup>	600	250 <sup>15.1</sup>
Conductivity	µS/cm	700 <sup>9.3</sup>	NG	NG	NG	NG	NG	NG
Fluoride	mg/L	NG	1.5	NG	Calc <sup>12.1</sup>	1.000	1.000 <sup>14.1</sup>	1.500
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L	NG	NG	NG	NG	NG	NG	NG
pH		NG	NG	NG	NG	NG	NG	NG
Sulphate	mg/L	NG	NG	500	Calc <sup>12.2</sup>	NG	1000	500 <sup>15.2</sup>
Total suspended solids	mg/L	NG	NG	NG	NG	NG	NG	NG
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL	NG	10 <sup>10.2</sup>	NG	NG	NG	NG	NG
Fecal coliforms (MPN)	MPN/100 mL	NG	10 <sup>10.3</sup>	NG	NG	NG	NG	NG
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L	NG	NG	NG	Calc <sup>12.3</sup>	NG	NG	NG
Nitrate (as N)	mg/L	NG	10	NG	400 <sup>12.4</sup>	NG	100 <sup>14.2</sup>	10 <sup>15.3</sup>
Nitrite (as N)	mg/L	NG	1.0	NG	Calc <sup>12.7</sup>	NG	10.000	1
Total nitrogen	mg/L	NG	NG	NG	NG	NG	NG	NG
Total kjeldahl nitrogen	mg/L	NG	NG	NG	NG	NG	NG	NG
Orthophosphate (dissolved, as P)	mg/L	NG	NG	NG	NG	NG	NG	NG
Phosphorus (total, by ICPMS/ICPOES)	mg/L	NG	NG	N <sup>11.1</sup>	NG	NG	NG	NG
Phosphorus (total, APHA 4500-P)	mg/L	NG	NG	N <sup>11.2</sup>	NG	NG	NG	NG
Phosphorus (dissolved, APHA 4500-P)	mg/L	NG	NG	N <sup>11.3</sup>	NG	NG	NG	NG
Potassium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG



Analyte	Unit	Guideline						
		BCWWQG I	BC SDWQG MAC	BC SDWQG AO	BC CSR AW(F)	BC CSR IW	BC CSR LW	BC CSR DW
<b>Total Metals</b>								
Aluminum (total)	mg/L	NG	9.5	NG	NG	5.000	5.000	9.500 <sup>15.6</sup>
Antimony (total)	mg/L	NG	0.006	NG	0.090	NG	NG	0.006
Arsenic (total)	mg/L	NG	0.01	NG	0.050	0.100	0.025	0.010
Barium (total)	mg/L	NG	NG	NG	10.000	NG	NG	1.000
Beryllium (total)	mg/L	0.100	NG	NG	0.0015	0.100	0.100	0.008
Bismuth (total)	mg/L	NG	NG	NG	NG	NG	NG	NG
Boron (total)	mg/L	NG	5.0	NG	12.000	0.500 <sup>13.2</sup>	5.000	5.000
Cadmium (total)	mg/L	0.0051 <sup>9.4</sup>	0.005	NG	Calc <sup>12.8</sup>	0.005	0.080	0.005
Calcium (total)	mg/L	NG	NG	NG	NG	NG	1000	NG
Chromium (total)	mg/L	0.0049 <sup>9.5</sup>	0.05	NG	0.010 <sup>12.9</sup>	0.005 <sup>13.3</sup>	0.050 <sup>14.5</sup>	0.050 <sup>15.7</sup>
Cobalt (total)	mg/L	0.050 <sup>9.6</sup>	0.001	NG	0.040	0.050	1.000	0.001
Copper (total)	mg/L	NG	2.0 <sup>10.4</sup>	1.0	Calc <sup>12.10</sup>	0.200	0.300	1.500 <sup>15.8</sup>
Iron (total)	mg/L	NG	NG	0.3	NG	5.000 <sup>13.4</sup>	NG	6.500 <sup>15.9</sup>
Lead (total)	mg/L	NG	0.005	NG	Calc <sup>12.11</sup>	0.200	0.100	0.010
Lithium (total)	mg/L	0.75 <sup>9.7</sup>	NG	NG	NG	2.500 <sup>13.5</sup>	5.000	0.008
Magnesium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG
Manganese (total)	mg/L	0.200	0.12	0.02	NG	0.200 <sup>13.6</sup>	NG	1.500 <sup>15.10</sup>
Mercury (total)	mg/L	NG	0.001	NG	0.00025	0.001	0.002	0.001
Molybdenum (total)	mg/L	NG	0.088	NG	10.000	0.010 <sup>13.7</sup>	0.050	0.250
Nickel (total)	mg/L	0.200	0.08	NG	Calc <sup>12.12</sup>	0.200	1.000	0.080
Selenium (total)	mg/L	NG	0.01	NG	0.020	0.020 <sup>13.8</sup>	0.030	0.010
Silicon (total, as Si)	mg/L	NG	NG	NG	NG	NG	NG	NG
Silver (total)	mg/L	NG	NG	NG	Calc <sup>12.13</sup>	NG	NG	0.020
Sodium (total)	mg/L	NG	NG	NG	NG	NG	NG	200 <sup>15.11</sup>
Strontium (total)	mg/L	NG	7.0	NG	NG	NG	NG	2.500
Sulphur (total)	mg/L	NG	NG	NG	NG	NG	NG	NG
Tellurium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG
Thallium (total)	mg/L	NG	NG	NG	0.003	NG	NG	NG
Thorium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG
Tin (total)	mg/L	NG	NG	NG	NG	NG	NG	2.500
Titanium (total)	mg/L	NG	NG	NG	1.000	NG	NG	NG
Tungsten (total)	mg/L	NG	NG	NG	NG	NG	NG	0.003
Uranium (total)	mg/L	0.010	0.02	NG	0.085	0.010	0.200	0.020
Vanadium (total)	mg/L	0.100	NG	NG	NG	0.100	0.100	0.020
Zinc (total)	mg/L	NG	3.0	5.0	Calc <sup>12.14</sup>	1.000 <sup>13.9</sup>	2.000	3.000 <sup>15.12</sup>
Zirconium (total)	mg/L	NG	NG	NG	NG	NG	NG	NG

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

### 1. Notes for BC Approved Water Quality Guidelines for freshwater aquatic life (Short-term acute) (BCAWQG AL (ST))

#### General Notes:

The Water Quality Guidelines (Criteria) Reports by BC Ministry of Environment were used as references for the guidelines. (Internet address: [http://www.env.gov.bc.ca/wat/wq/wq\\_guidelines.html](http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html) ). Overview Reports (BC MOE) were used as the references for the guidelines unless the note for specific analyte indicates that the Technical Appendix (BC MOE) was used. / For some parameters, there are two water quality guidelines: the short-term acute guideline (i.e. maximum), and the long-term chronic guideline (i.e. average). The short-term acute guideline was used in this criteria set for parameters that have both guideline values.

#### Note 1.1 for Dissolved oxygen:

The instantaneous minimum guideline for dissolved oxygen is 5 mg/L for all life stages other than buried embryo/alevin. The instantaneous minimum guideline for dissolved oxygen in the water column is 9 mg/L for buried embryo/alevin. The instantaneous minimum guideline for dissolved oxygen in interstitial water is 6 mg/L for buried embryo/alevin.

The 30-day mean guideline (minimum) for dissolved oxygen is 8 mg/L for all life stages other than buried embryo/alevin. The 30-day mean guideline (minimum) for dissolved oxygen in the water column is 11 mg/L for

#### Note 1.2 for pH:

pH less than 6.5: No statistically significant decrease in pH from background.

pH from 6.5 to 9.0: Unrestricted change permitted within this range.

pH over 9.0: No statistically significant increase in pH from background.

See BC MOE Overview Report for additional details.

#### Note 1.3 for Temperature:

The maximum daily temperature of 19 degrees Celsius is for streams with unknown fish distribution. See BC MOE Overview Report for additional details for streams with unknown fish distribution, and specific guidelines for streams with known fish distribution, and guideline for lakes and impoundments.

#### Note 1.4 for Turbidity:

When background is less than or equal to 8 NTU:

- Maximum Induced Turbidity of 8 NTU in 24 hours.

- For sediment inputs that last between 24 hours and 30 days (daily sampling preferred) the mean turbidity should not exceed background by more than 2 NTU.

Maximum Induced Turbidity of 5 NTU when background is between 8 and 50 NTU.

Maximum Induced Turbidity of 10% when background is greater than 50 NTU.

#### Note 1.5 for Chloride:

To protect freshwater aquatic life from acute and lethal effects, the maximum concentration of chloride (mg/L as NaCl) at any time should not exceed 600 mg/L.

To protect freshwater aquatic life from chronic effects, the average (arithmetic mean computed from five weekly samples collected over a 30-day period) concentration of chloride (mg/L as NaCl) should not exceed 150 mg/L.

#### Note 1.6 for Fluoride:

Correction by BC MOE Sept. 2011: The criteria for Fluoride (total) in mg/L is 0.4 as a maximum where the water hardness (as CaCO<sub>3</sub>) is less than or equal to 10 mg/L. Otherwise use the equation:

LC50 fluoride =  $-51.73 + 92.57 \log_{10}(\text{Hardness})$  and multiply by 0.01.

Hardness is as CaCO<sub>3</sub> in units mg/L.

#### Note 1.7 for pH:

pH less than 6.5: No statistically significant decrease in pH from background.

pH from 6.5 to 9.0: Unrestricted change permitted within this range.

pH over 9.0: No statistically significant increase in pH from background.

See BC MOE Overview Report for additional details.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 1.8 for Sulphate:**

The approved 30-day average (minimum of 5 evenly-spaced samples collected in 30 days) water quality guidelines to protect aquatic life in BC for sulphate are:

128 mg/L at hardness of 0 to 30 mg/L as CaCO<sub>3</sub>

218 mg/L at hardness of 31 to 75 mg/L as CaCO<sub>3</sub>

309 mg/L at hardness of 76 to 180mg/L as CaCO<sub>3</sub>

429 mg/L at hardness 181 to 250 mg/L as CaCO<sub>3</sub>

Need to determine guideline based on site water for hardness greater than 250 mg/L as CaCO<sub>3</sub>.

For screening purposes in this report, exceedance were flagged for sulphate greater than 429 mg/L at hardness greater than 250 mg/L as CaCO<sub>3</sub>.

**Note 1.9 for Total suspended solids:**

Maximum Induced Suspended Sediments - mg/L or % of background:

- 25 mg/L in 24 hours when background is less than or equal to 25;

- Mean of 5 mg/L in 30 days when background is less than or equal to 25;

- 25 mg/L when background is between 25 and 250;

- 10% when background is greater than or equal to 250.

**Note 1.10 for E. coli (MPN):**

The escherichia coli density in fresh and marine waters used for the growing and harvesting of shellfish for human consumption should not exceed a median MPN of 14/100 mL over 30 days, and at least 90% of the samples in a 30-day period should not exceed 43/100 mL.

**Note 1.11 for Fecal coliforms (MPN):**

The guideline for fecal coliforms is as follows: "The fecal coliform density in fresh and marine waters used for the growing and harvesting of shellfish for human consumption should not exceed a median MPN of 14/100 mL over 30 days, and at least 90% of the samples in a 30-day period should not exceed 43/100 mL."

**Note 1.12 for Ammonia (total, as N):**

The maximum guideline for ammonia varies as a function of pH and temperature. See Table 3 in Overview Report Update September 2009.

The 30-day average guideline for ammonia varies as a function of pH and temperature. See Table 4 in Overview Report Update September 2009. / The lab pH and field temperature results were used for determining the maximum ammonia for this report. If a lab pH result was not available then the field pH result was used.

**Note 1.13 for Nitrate (as N):**

The guideline maximum for nitrate (as N) is 32.8 mg/l.

The 30-day average guideline for nitrate (as N) is 3.0 mg /L. The 30-day average (chronic) concentration is based on 5 weekly samples collected within a 30-day period.

Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed these values.

**Note 1.14 for Nitrate + Nitrite (as N):**

The guideline maximum for nitrate (as N) is 32.8 mg/l.

The 30-day average guideline for nitrate (as N) is 3.0 mg /L. The 30-day average (chronic) concentration is based on 5 weekly samples collected within a 30-day period.

Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed these values.

**Note 1.15 for Nitrate + Nitrite (as N) (calculated):**

The guideline maximum for nitrate (as N) is 32.8 mg/l.

The 30-day average guideline for nitrate (as N) is 3.0 mg /L. The 30-day average (chronic) concentration is based on 5 weekly samples collected within a 30-day period.

Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed these values.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 1.16 for Nitrite (as N):**

The guideline maximum for nitrite as N is:

0.06 mg/L if chloride less than 2 mg/L

0.12 mg/L if chloride is 2 to 4 mg/L

0.18 mg/L if chloride is 4 to 6 mg/L

0.24 mg/L if chloride is 6 to 8 mg/L

0.30 mg/L if chloride is 8 to 10 mg/L

0.60 mg/L if chloride is greater than 10 mg/L.

The guideline 30-day average for nitrite as N is:

0.02 mg/L if chloride less than 2 mg/L

0.04 mg/L if chloride is 2 to 4 mg/L

0.06 mg/L if chloride is 4 to 6 mg/L

0.08 mg/L if chloride is 6 to 8 mg/L

0.10 mg/L if chloride is 8 to 10 mg/L

0.20 mg/L if chloride is greater than 10 mg/L.

**Note 1.17 for Phosphorus (total, by ICPMS/ICPOES):**

Streams: None proposed for streams.

Lakes: It is not possible to specify a single phosphorous concentration to achieve protection of aquatic life in lakes. A range of total phosphorous concentrations (5-15 µg/L) is suggested as the criterion which can be used as the basis for site specific water quality objectives.

**Note 1.18 for Phosphorus (total, APHA 4500-P):**

Streams: None proposed for streams.

Lakes: It is not possible to specify a single phosphorous concentration to achieve protection of aquatic life in lakes. A range of total phosphorous concentrations (5-15 µg/L) is suggested as the criterion which can be used as the basis for site specific water quality objectives.

**Note 1.19 for Phosphorus (dissolved, APHA 4500-P):**

Streams: None proposed for streams.

Lakes: It is not possible to specify a single phosphorous concentration to achieve protection of aquatic life in lakes. A range of total phosphorous concentrations (5-15 µg/L) is suggested as the criterion which can be used as the basis for site specific water quality objectives.

**Note 1.20 for Cobalt (total):**

The interim maximum concentration for total cobalt is 110 µg/L to protect aquatic life in the freshwater environment from acute effects of cobalt.

The interim 30-day average concentration for total cobalt (based on five weekly samples) is 4 µg/L to protect aquatic life from chronic effects of cobalt.

**Note 1.21 for Lead (total):**

The maximum guideline for total lead in water, at a water hardness less than or equal to 8 mg/L as CaCO<sub>3</sub> is set at 3.0 µg/L. When water hardness exceeds 8.0 mg/L CaCO<sub>3</sub> the maximum guideline for lead at any time is given by the following equation:

Maximum Criteria (µg/L) =  $\exp(1.273 \ln(\text{hardness}) - 1.460)$ .

The 30-day average guideline for total lead in water, when water hardness exceeds 8 mg/L as CaCO<sub>3</sub>, is as follows:

30-Day Average (µg/L) is less than or equal to  $3.31 + \exp(1.273 \ln(\text{mean hardness}) - 4.704)$ .

For hardness less than or equal to 8.0 mg/L there is no 30-day average guideline; hence the maximum

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 1.22 for Manganese (total):**

The maximum concentration of total manganese in mg/L at any time should not exceed the value as determined by the following relationship:

$$0.01102 \text{ hardness} + 0.54$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

The 30-day mean concentration of total manganese in mg/L should be less than or equal to the value as determined by the following relationship:

$$0.0044 \text{ hardness} + 0.605$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

**Note 1.23 for Mercury (total):**

The average concentration of total mercury in water as measured over a 30-day period (based on five weekly samples) should not exceed 0.02 µg/L when the methyl mercury (MeHg) constitutes less than or equal to 0.5% of the total mercury concentration. When the proportion of MeHg is greater than 0.5%, the guideline should be adjusted as indicated in the Table 1 and Table 4 of the BC MOE Overview Report - First Update, February 2001. There is no guideline maximum for total mercury in water, for freshwater aquatic life.

**Note 1.24 for Molybdenum (total):**

The maximum concentration for total molybdenum is 2 mg/L.

The 30-day average concentration for total molybdenum (based on at least five weekly samples in a period of 30 days) is less than or equal to 1 mg/L.

**Note 1.25 for Selenium (total):**

The 30-day average water quality guideline for protection of aquatic life is 2 µg/L determined as the mean concentration of 5 evenly spaced samples collected over 30 days, and measured as total selenium.

The 30-day average alert concentration for the protection of aquatic life in sensitive ecosystems is 1 µg/L determined as the mean concentration of 5 evenly spaced samples collected over 30 days, and measured as

**Note 1.26 for Silver (total):**

The guideline maximum for total silver is:

0.1 µg/L maximum if hardness less than or equal to 100 mg/L

3.0 µg/L maximum if hardness greater than 100 mg/L.

The guideline 30-day average for total silver is:

0.05 µg/L as 30-day mean if hardness less than or equal to 100 mg/L

1.5 µg/L as 30-day mean if hardness greater than 100 mg/L.

**Note 1.27 for Zinc (total):**

The maximum concentration of total zinc (µg/L) at any time should not exceed 33 µg/L when water hardness is less than or equal to 90 mg/L as CaCO<sub>3</sub>.

When water hardness exceeds 90 mg/L CaCO<sub>3</sub>, the guideline maximum in µg/L for total zinc is the value determined by the following relationship:

$$33 + 0.75 * (\text{hardness} - 90)$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

The 30-day average concentration of total zinc (µg/L) at any time should not exceed 7.5 µg/L when water hardness is less than or equal to 90 mg/L as CaCO<sub>3</sub>.

When water hardness exceeds 90 mg/L CaCO<sub>3</sub>, the guideline maximum in µg/L for total zinc is the value determined by the following relationship:

$$7.5 + 0.75 * (\text{hardness} - 90)$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.



## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

### 2. Notes for BC Approved Water Quality Guidelines for freshwater aquatic life (Long-term chronic) (BCAWQG AL (LT))

#### General Notes:

The Water Quality Guidelines (Criteria) Reports by BC Ministry of Environment were used as references for the guidelines. (Internet address: [http://www.env.gov.bc.ca/wat/wq/wq\\_guidelines.html](http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html) ). Overview Reports (BC MOE) were used as the references for the guidelines unless the note for specific analyte indicates that the Technical Appendix (BC MOE) was used. / For some parameters, there are two water quality guidelines: the short-term acute guideline (i.e. maximum), and the long-term chronic guideline (i.e. average). The long-term chronic guideline was used in this criteria set for parameters that have both guideline values.

#### Note 2.1 for Dissolved oxygen:

The instantaneous minimum guideline for dissolved oxygen is 5 mg/L for all life stages other than buried embryo/alevin. The instantaneous minimum guideline for dissolved oxygen in the water column is 9 mg/L for buried embryo/alevin. The instantaneous minimum guideline for dissolved oxygen in interstitial water is 6 mg/L for buried embryo/alevin.

The 30-day mean guideline (minimum) for dissolved oxygen is 8 mg/L for all life stages other than buried embryo/alevin. The 30-day mean guideline (minimum) for dissolved oxygen in the water column is 11 mg/L for

#### Note 2.2 for pH:

pH less than 6.5: No statistically significant decrease in pH from background.

pH from 6.5 to 9.0: Unrestricted change permitted within this range.

pH over 9.0: No statistically significant increase in pH from background.

See BC MOE Overview Report for additional details.

#### Note 2.3 for Temperature:

The maximum daily temperature of 19 degrees Celsius is for streams with unknown fish distribution. See BC MOE Overview Report for additional details for streams with unknown fish distribution, and specific guidelines for streams with known fish distribution, and guideline for lakes and impoundments.

#### Note 2.4 for Turbidity:

When background is less than or equal to 8 NTU:

- Maximum Induced Turbidity of 8 NTU in 24 hours.

- For sediment inputs that last between 24 hours and 30 days (daily sampling preferred) the mean turbidity should not exceed background by more than 2 NTU.

Maximum Induced Turbidity of 5 NTU when background is between 8 and 50 NTU.

Maximum Induced Turbidity of 10% when background is greater than 50 NTU.

#### Note 2.5 for Chloride:

To protect freshwater aquatic life from acute and lethal effects, the maximum concentration of chloride (mg/L as NaCl) at any time should not exceed 600 mg/L.

To protect freshwater aquatic life from chronic effects, the average (arithmetic mean computed from five weekly samples collected over a 30-day period) concentration of chloride (mg/L as NaCl) should not exceed 150 mg/L.

#### Note 2.6 for Fluoride:

Correction by BC MOE Sept. 2011: The criteria for Fluoride (total) in mg/L is 0.4 as a maximum where the water hardness (as CaCO<sub>3</sub>) is less than or equal to 10 mg/L. Otherwise use the equation:

LC50 fluoride =  $-51.73 + 92.57 \log_{10}(\text{Hardness})$  and multiply by 0.01.

Hardness is as CaCO<sub>3</sub> in units mg/L.

#### Note 2.7 for pH:

pH less than 6.5: No statistically significant decrease in pH from background.

pH from 6.5 to 9.0: Unrestricted change permitted within this range.

pH over 9.0: No statistically significant increase in pH from background.

See BC MOE Overview Report for additional details.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 2.8 for Sulphate:**

The approved 30-day average (minimum of 5 evenly-spaced samples collected in 30 days) water quality guidelines to protect aquatic life in BC for sulphate are:

128 mg/L at hardness of 0 to 30 mg/L as CaCO<sub>3</sub>

218 mg/L at hardness of 31 to 75 mg/L as CaCO<sub>3</sub>

309 mg/L at hardness of 76 to 180 mg/L as CaCO<sub>3</sub>

429 mg/L at hardness 181 to 250 mg/L as CaCO<sub>3</sub>

Need to determine guideline based on site water for hardness greater than 250 mg/L as CaCO<sub>3</sub>.

For screening purposes in this report, exceedance were flagged for sulphate greater than 429 mg/L at hardness greater than 250 mg/L as CaCO<sub>3</sub>.

**Note 2.9 for Total suspended solids:**

Maximum Induced Suspended Sediments - mg/L or % of background:

- 25 mg/L in 24 hours when background is less than or equal to 25;

- Mean of 5 mg/L in 30 days when background is less than or equal to 25;

- 25 mg/L when background is between 25 and 250;

- 10% when background is greater than or equal to 250.

**Note 2.10 for E. coli (MPN):**

The escherichia coli density in fresh and marine waters used for the growing and harvesting of shellfish for human consumption should not exceed a median MPN of 14/100 mL over 30 days, and at least 90% of the samples in a 30-day period should not exceed 43/100 mL.

**Note 2.11 for Fecal coliforms (MPN):**

The guideline for fecal coliforms is as follows: "The fecal coliform density in fresh and marine waters used for the growing and harvesting of shellfish for human consumption should not exceed a median MPN of 14/100 mL over 30 days, and at least 90% of the samples in a 30-day period should not exceed 43/100 mL."

**Note 2.12 for Ammonia (total, as N):**

The maximum guideline for ammonia varies as a function of pH and temperature. See Table 3 in Overview Report Update September 2009.

The 30-day average guideline for ammonia varies as a function of pH and temperature. See Table 4 in Overview Report Update September 2009. / The lab pH and field temperature results were used for determining the maximum ammonia concentration for this report. If a lab pH result was not available then the field pH result was

**Note 2.13 for Nitrate (as N):**

The guideline maximum for nitrate (as N) is 32.8 mg/l.

The 30-day average guideline for nitrate (as N) is 3.0 mg /L. The 30-day average (chronic) concentration is based on 5 weekly samples collected within a 30-day period.

Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed these values.

**Note 2.14 for Nitrate + Nitrite (as N):**

The guideline maximum for nitrate (as N) is 32.8 mg/l.

The 30-day average guideline for nitrate (as N) is 3.0 mg /L. The 30-day average (chronic) concentration is based on 5 weekly samples collected within a 30-day period.

Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed these values.

**Note 2.15 for Nitrate + Nitrite (as N) (calculated):**

The guideline maximum for nitrate (as N) is 32.8 mg/l.

The 30-day average guideline for nitrate (as N) is 3.0 mg /L. The 30-day average (chronic) concentration is based on 5 weekly samples collected within a 30-day period.

Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed these values.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 2.16 for Nitrite (as N):**

The guideline maximum for nitrite as N is:

0.06 mg/L if chloride less than 2 mg/L

0.12 mg/L if chloride is 2 to 4 mg/L

0.18 mg/L if chloride is 4 to 6 mg/L

0.24 mg/L if chloride is 6 to 8 mg/L

0.30 mg/L if chloride is 8 to 10 mg/L

0.60 mg/L if chloride is greater than 10 mg/L.

The guideline 30-day average for nitrite as N is:

0.02 mg/L if chloride less than 2 mg/L

0.04 mg/L if chloride is 2 to 4 mg/L

0.06 mg/L if chloride is 4 to 6 mg/L

0.08 mg/L if chloride is 6 to 8 mg/L

0.10 mg/L if chloride is 8 to 10 mg/L

0.20 mg/L if chloride is greater than 10 mg/L.

**Note 2.17 for Phosphorus (total, by ICPMS/ICPOES):**

Streams: None proposed for streams.

Lakes: It is not possible to specify a single phosphorous concentration to achieve protection of aquatic life in lakes. A range of total phosphorous concentrations (5-15 µg/L) is suggested as the criterion which can be used as the basis for site specific water quality objectives.

**Note 2.18 for Phosphorus (total, APHA 4500-P):**

Streams: None proposed for streams.

Lakes: It is not possible to specify a single phosphorous concentration to achieve protection of aquatic life in lakes. A range of total phosphorous concentrations (5-15 µg/L) is suggested as the criterion which can be used as the basis for site specific water quality objectives.

**Note 2.19 for Phosphorus (dissolved, APHA 4500-P):**

Streams: None proposed for streams.

Lakes: It is not possible to specify a single phosphorous concentration to achieve protection of aquatic life in lakes. A range of total phosphorous concentrations (5-15 µg/L) is suggested as the criterion which can be used as the basis for site specific water quality objectives.

**Note 2.20 for Cobalt (total):**

The interim maximum concentration for total cobalt is 110 µg/L to protect aquatic life in the freshwater environment from acute effects of cobalt.

The interim 30-day average concentration for total cobalt (based on five weekly samples) is 4 µg/L to protect aquatic life from chronic effects of cobalt.

**Note 2.21 for Lead (total):**

The maximum guideline for total lead in water, at a water hardness less than or equal to 8 mg/L as CaCO<sub>3</sub> is set at 3.0 µg/L. When water hardness exceeds 8.0 mg/L CaCO<sub>3</sub> the maximum guideline for lead at any time is given by the following equation:

Maximum Criteria (µg/L) =  $\exp(1.273 \ln(\text{hardness}) - 1.460)$ .

The 30-day average guideline for total lead in water, when water hardness exceeds 8 mg/L as CaCO<sub>3</sub>, is as follows:

30-Day Average (µg/L) is less than or equal to  $3.31 + \exp(1.273 \ln(\text{mean hardness}) - 4.704)$ .

For hardness less than or equal to 8.0 mg/L there is no 30-day average guideline; hence the maximum

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 2.22 for Manganese (total):**

The maximum concentration of total manganese in mg/L at any time should not exceed the value as determined by the following relationship:

$$0.01102 \text{ hardness} + 0.54$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

The 30-day mean concentration of total manganese in mg/L should be less than or equal to the value as determined by the following relationship:

$$0.0044 \text{ hardness} + 0.605$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

**Note 2.23 for Mercury (total):**

The average concentration of total mercury in water as measured over a 30-day period (based on five weekly samples) should not exceed 0.02 µg/L when the methyl mercury (MeHg) constitutes less than or equal to 0.5% of the total mercury concentration. When the proportion of MeHg is greater than 0.5%, the guideline should be adjusted as indicated in the Table 1 and Table 4 of the BC MOE Overview Report - First Update, February 2001. There is no guideline maximum for total mercury in water, for freshwater aquatic life.

**Note 2.24 for Molybdenum (total):**

The maximum concentration for total molybdenum is 2 mg/L.

The 30-day average concentration for total molybdenum (based on at least five weekly samples in a period of 30 days) is less than or equal to 1 mg/L.

**Note 2.25 for Selenium (total):**

The 30-day average water quality guideline for protection of aquatic life is 2 µg/L determined as the mean concentration of 5 evenly spaced samples collected over 30 days, and measured as total selenium.

The 30-day average alert concentration for the protection of aquatic life in sensitive ecosystems is 1 µg/L determined as the mean concentration of 5 evenly spaced samples collected over 30 days, and measured as

**Note 2.26 for Silver (total):**

The guideline maximum for total silver is:

$$0.1 \text{ µg/L maximum if hardness less than or equal to } 100 \text{ mg/L}$$

$$3.0 \text{ µg/L maximum if hardness greater than } 100 \text{ mg/L.}$$

The guideline 30-day average for total silver is:

$$0.05 \text{ µg/L as 30-day mean if hardness less than or equal to } 100 \text{ mg/L}$$

$$1.5 \text{ µg/L as 30-day mean if hardness greater than } 100 \text{ mg/L.}$$

**Note 2.27 for Zinc (total):**

The maximum concentration of total zinc (µg/L) at any time should not exceed 33 µg/L when water hardness is less than or equal to 90 mg/L as CaCO<sub>3</sub>.

When water hardness exceeds 90 mg/L CaCO<sub>3</sub>, the guideline maximum in µg/L for total zinc is the value determined by the following relationship:

$$33 + 0.75 * (\text{hardness} - 90)$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

The 30-day average concentration of total zinc (µg/L) at any time should not exceed 7.5 µg/L when water hardness is less than or equal to 90 mg/L as CaCO<sub>3</sub>.

When water hardness exceeds 90 mg/L CaCO<sub>3</sub>, the guideline maximum in µg/L for total zinc is the value determined by the following relationship:

$$7.5 + 0.75 * (\text{hardness} - 90)$$

where water hardness is reported as mg/L of CaCO<sub>3</sub>.

**3. Notes for BC Working Water Quality Guidelines for Freshwater Aquatic Life (2020) (BCWWQG AL)****General Notes:**

Reference: B.C. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (2020). WWQG values are long-term (i.e. average) concentrations unless identified as a short-term maximum in the "Notes" for a specific analyte. Long-term WWQGs represent average substance concentrations calculated from 5 samples in 30 days. WWQG are given for total substance concentrations unless otherwise noted.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

### Note 3.1 for Alkalinity (phenolphthalein, as CaCO<sub>3</sub>):

The guideline for alkalinity (total as CaCO<sub>3</sub>) is as follows:

- Less than 10 mg/L, highly sensitive to acid inputs
- 10 to 20 mg/L, moderately sensitive to acid inputs
- Greater than 20 mg/L, low sensitivity to acid inputs.

Sensitivity to acid inputs can be determined by the concentration of dissolved calcium: < 4 mg/L is highly sensitive to acid inputs; 4 to 8 mg/L is moderately sensitive; and > 8 mg/L is low sensitivity.

### Note 3.2 for Alkalinity (total, as CaCO<sub>3</sub>):

The guideline for alkalinity (total as CaCO<sub>3</sub>) is as follows:

- Less than 10 mg/L, highly sensitive to acid inputs
- 10 to 20 mg/L, moderately sensitive to acid inputs
- Greater than 20 mg/L, low sensitivity to acid inputs.

Sensitivity to acid inputs can be determined by the concentration of dissolved calcium: < 4 mg/L is highly sensitive to acid inputs; 4 to 8 mg/L is moderately sensitive; and > 8 mg/L is low sensitivity.

### Note 3.3 for Antimony (total):

The guideline is for antimony (III).

### Note 3.4 for Chromium (total):

The guideline for Cr(VI) is 1 µg/L (total). The guideline for Cr(III) is 8.9 µg/L (total). The guideline of 1 µg/L for Cr(VI) was used, in this report, to identify exceedances for dissolved chromium, and total chromium as a means for determining the potential for exceeding the Cr(VI) and/or Cr(III) guidelines.

### Note 3.5 for Nickel (total):

The guideline for nickel in µg/L is determined as follows:

When the water hardness is 0 to ≤ 60 mg/L, the maximum is 25 µg/L

At hardness > 60 to ≤ 180 mg/L the maximum is calculated using the equation:

$e^{\{0.76[\ln(\text{hardness})] + 1.06\}}$

At hardness > 180 mg/L, the maximum is 150 µg/L

Where water hardness is reported as mg/L CaCO<sub>3</sub>.

If the water hardness is unknown, the maximum is 25 µg/L.

### Note 3.6 for Thallium (total):

30-day average, site-specific objective for the lower Columbia River, BC

## 4. Notes for Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations (GCDWQ MAC)

### Note 4.1 for Turbidity:

Waterworks systems that use a surface water source or a groundwater source under the direct influence of surface water should filter the source water to meet health-based turbidity limits, as defined for specific treatment technologies. Where possible, filtration systems should be designed and operated to reduce turbidity levels as low as possible, with a treated water turbidity target of less than 0.1 NTU at all times. Where this is not achievable, the treated water turbidity levels from individual filters should meet the requirements described in GCDWQ.

For systems that use groundwater that is not under the direct influence of surface water, which are considered less vulnerable to faecal contamination, turbidity should generally be below 1.0 NTU.

For effective operation of the distribution system, it is good practice to ensure that water entering the distribution system has turbidity levels below 1.0 NTU.

### Note 4.2 for E. coli (MPN):

MAC is none detectable per 100 mL

### Note 4.3 for Fecal coliforms (MPN):

The GCDWQ does not have a guideline for fecal coliforms. The GCDWQ were revised in 2006 when the guideline for fecal coliforms was deleted, and a guideline for E. coli was added. However the GCDWQ has a guideline for total coliforms that includes the following statement: "The maximum acceptable concentration (MAC) of total coliforms in water leaving a treatment plant and in non-disinfected groundwater leaving the well is none detectable per 100 mL." Therefore a guideline of none detectable per 100 mL was used for fecal coliforms for this

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 4.4 for Nitrate + Nitrite (as N):**

The MAC for Nitrate (as N) is 10 mg/L

**Note 4.5 for Nitrate + Nitrite (as N) (calculated):**

The MAC for Nitrate (as N) is 10 mg/L

**Note 4.6 for Arsenic (total):**

Every effort should be made to maintain arsenic levels in drinking water as low as reasonably achievable.

**Note 4.7 for Barium (total):**

Update January 24, 2020. The MAC was revised from 1.0 mg/L to 2.0 mg/L.

**Note 4.8 for Cadmium (total):**

A maximum acceptable concentration (MAC) of 0.007 mg/L (7 µg/L) is established for total cadmium in drinking water, based on a sample of water taken at the tap. (Update July 14, 2020)

**Note 4.9 for Copper (total):**

A maximum acceptable concentration (MAC) of 2 mg/L is established for total copper in drinking water, based on a sample of water taken at the tap. Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on Copper, June 2019.

**Note 4.10 for Lead (total):**

The maximum acceptable concentration (MAC) for total lead in drinking water is 0.005 mg/L (5 µg/L), based on a sample of water taken at the tap and using the appropriate protocol for the type of building being sampled. Every effort should be made to maintain lead levels in drinking water as low as reasonably achievable (or ALARA). (GCDWQ: Guideline Technical Document; March, 2019)

**Note 4.11 for Manganese (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**Note 4.12 for Strontium (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on strontium, May 2019.

**5. Notes for Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives (GCDWQ AO)****Note 5.1 for pH:**

The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

**Note 5.2 for pH:**

The operational guideline for pH is a range of 7.0 to 10.5 in finished drinking water.

**Note 5.3 for Sulphate:**

There may be a laxative effect in some individuals when sulphate levels exceed 500 mg/L. Health authorities should be notified of drinking water sources containing above 500 mg/L.

**Note 5.4 for Aluminum (total):**

This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems.

**Note 5.5 for Manganese (total):**

Guidelines for Canadian Drinking Water Quality - Guideline Technical Document on manganese, May 2019.

**6. Notes for BC Approved Water Quality Guidelines for livestock (BCAWQG L)****General Notes:**

The Water Quality Guidelines (Criteria) Reports by BC Ministry of Environment were used as references for the guidelines. (Internet address: [http://www.env.gov.bc.ca/wat/wq/wq\\_guidelines.html](http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html) ). Overview Reports (BC MOE) were used as the references for the guidelines unless the note for specific analyte indicates that the Technical Appendix (BC MOE) was used.

**Note 6.1 for pH:**

Update August 2019 Summary Report.

**Note 6.2 for Temperature:**

The recommended guideline for temperature is + or - 1 degree Celsius change from natural ambient background.

**Note 6.3 for Turbidity:**

Induced turbidity should not exceed 5 NTU when background turbidity is less than or equal to 50 NTU, nor should induced turbidity be more than 10 % of background when background is greater than 50 NTU.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 6.4 for Chloride:**

The water quality guideline for chloride for livestock watering is 600 mg/L.

**Note 6.5 for Fluoride:**

The total fluoride recommendation for dairy cows, breeding stock and other long-lived animals is 1.0 mg/L as a 30-day mean and 1.5 mg/L as a maximum. Total fluoride should not exceed 2.0 mg/L as a 30-day mean or 4.0 mg/L maximum in the drinking water of all other types of livestock, unless fluoride is provided in the diet by bone meal or mineral additives, in which case 1.0 mg/L as a 30-day mean and 2.0 mg/L maximum is recommended. / The most stringent guideline maximum was used in this report.

**Note 6.6 for pH:**

Update August 2019 Summary Report.

**Note 6.7 for Total suspended solids:**

Induced suspended sediments should not exceed 10 mg/L when background suspended sediments is less than or equal to 100 mg/L, nor should induced suspended sediments be more than 10 % of background when background is greater than 100 mg/L.

**Note 6.8 for E. coli (MPN):**

The guideline for E. coli varies based on site specific factors including type of livestock, whether livestock are closely confined, and type of water treatment.

The guideline for free range animals is “none applicable”.

The guideline maximum for general livestock use is 200/100 mL.

The guideline maximum for closely confined, no treatment, is 0/100 mL.

The guideline maximum for closely confined, disinfection only, is less than or equal to 10/100 mL 90th percentile.

The guideline maximum for closely confined, partial treatment, is less than or equal to 100/100 mL 90th percentile.

The guideline for closely confined, complete treatment is “none applicable”. / The guideline for general livestock

**Note 6.9 for Fecal coliforms (MPN):**

The guideline for Fecal coliforms varies based on site specific factors including type of livestock, whether livestock are closely confined, and type of water treatment.

The guideline for free range animals is “none applicable”.

The guideline maximum for general livestock use is 200/100 mL.

The guideline maximum for closely confined, no treatment, is 0/100 mL.

The guideline maximum for closely confined, disinfection only, is less than or equal to 10/100 mL 90th percentile.

The guideline maximum for closely confined, partial treatment, is less than or equal to 100/100 mL 90th percentile.

The guideline for closely confined, complete treatment is “none applicable”. / The guideline for general livestock

**Note 6.10 for Nitrate (as N):**

Overview Report Update, September 2009.

**Note 6.11 for Nitrate + Nitrite (as N):**

The guideline maximum for nitrate as nitrogen is 100 mg/l. Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed this value. Overview Report Update, September 2009.

**Note 6.12 for Nitrate + Nitrite (as N) (calculated):**

The guideline maximum for nitrate as nitrogen is 100 mg/l. Where nitrate and nitrite are present, the total nitrate+nitrite nitrogen should not exceed this value. Overview Report Update, September 2009.

**Note 6.13 for Nitrite (as N):**

Overview Report Update, September 2009.

**Note 6.14 for Aluminum (total):**

The guideline maximum for total aluminum is 5 mg/L. A separate guideline for dissolved aluminum is not

**Note 6.15 for Arsenic (total):**

The interim guideline for total arsenic is 25 µg/L.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 6.16 for Molybdenum (total):**

If livestock are consuming forages not irrigated, or if no molybdenum containing fertilizers are applied to grow feed consumed by livestock, then the guideline maximum for total molybdenum is 0.08 mg/L. For all other cases, the guideline maximum for total molybdenum is 0.05 mg/L. / The most stringent guideline maximum was used in

**Note 6.17 for Selenium (total):**

The guideline for total selenium is 30.0 µg/L mean. The mean concentrations in the water column are based on at least 5 weekly samples taken over a 30-day period.

**7. Notes for BC Working Water Quality Guidelines for Livestock (2020) (BCWWQG L)****General Notes:**

Reference: B.C. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (2020). WWQG values are long-term (i.e. average) concentrations unless identified as a short-term maximum in the “Notes” for a specific analyte. Long-term WWQGs represent average substance concentrations calculated from 5 samples in 30 days. WWQG are given for total substance concentrations unless otherwise noted.

**Note 7.1 for Total dissolved solids:**

The guideline is 1,000-3,000 mg/L, and is species dependent. Maximum of 1000 mg/L is relatively low level of salinity; excellent for all classes of livestock.

TDS between 1000 and 3000 mg/L is satisfactory for all classes of livestock and poultry, but some loss in productivity should be anticipated: may cause temporary and mild diarrhoea in livestock not accustomed to them or watery droppings in poultry. / The most stringent guideline was used in this report.

**Note 7.2 for Sulphate:**

The guideline is for dissolved sulphate.

**Note 7.3 for Cadmium (total):**

This is a Short-term maximum guideline.

**Note 7.4 for Chromium (total):**

The guideline for Cr(VI) is 50 µg/L (total). The guideline for Cr(III) is 50 µg/L (total). The guideline of 50 µg/L for Cr(VI), and for Cr(III) was used, in this report, to identify exceedances for dissolved chromium, and total chromium as a means for determining the potential for exceeding the Cr(VI) and/or Cr(III) guidelines.

**8. Notes for BC Approved Water Quality Guidelines for irrigation (BCAWQG I)****General Notes:**

The Water Quality Guidelines (Criteria) Reports by BC Ministry of Environment were used as references for the guidelines. (Internet address: [http://www.env.gov.bc.ca/wat/wq/wq\\_guidelines.html](http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html) ). Overview Reports (BC MOE) were used as the references for the guidelines unless the note for specific analyte indicates that the Technical Appendix (BC MOE) was used.

**Note 8.1 for pH:**

Update August 2019 Summary Report.

**Note 8.2 for Temperature:**

The recommended guideline for temperature is + or - 1 degree Celsius change from natural ambient background.

**Note 8.3 for Turbidity:**

Induced turbidity should not exceed 10 NTU when background turbidity is less than or equal to 50 NTU, nor should induced turbidity be more than 20 % of background when background is greater than 50 NTU.

**Note 8.4 for Fluoride:**

Total fluoride in irrigation water should not exceed 1.0 mg/L as a 30-day average or a maximum of 2.0 mg/L.

**Note 8.5 for pH:**

Update August 2019 Summary Report.

**Note 8.6 for Total suspended solids:**

Induced suspended sediments should not exceed 20 mg/L when background suspended sediments is less than or equal to 100 mg/L, nor should induced suspended sediments be more than 20 % of background when background is greater than 100 mg/L.



## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 8.7 for E. coli (MPN):**

The guideline for irrigation for E. coli varies as a function of crop, public access, and livestock access.

The guideline maximum for crops eaten raw is less than or equal to 77/100 mL geometric mean.

The guideline maximum for public access and livestock access is less than or equal to 385/100 mL geometric mean.

The guideline maximum for general irrigation is less than or equal to 1000/100 mL geometric mean. / The

**Note 8.8 for Fecal coliforms (MPN):**

The guideline for irrigation for Fecal coliforms depends on the crop, public access, and livestock access.

The guideline maximum for crops eaten raw is less than or equal to 200/100 mL geometric mean.

The guideline for public access and livestock access is “none applicable”.

The guideline maximum for general irrigation is less than or equal to 1000/100 mL geometric mean. / The guideline for general irrigation was used in this report.

**Note 8.9 for Aluminum (total):**

The guideline maximum for total aluminum is 5 mg/L. A separate guideline for dissolved aluminum is not

**Note 8.10 for Arsenic (total):**

The interim guideline for total arsenic is 100 µg/L.

**Note 8.11 for Boron (total):**

The guideline for total boron depends on the crop, and varies from 0.5 mg/L to 6 mg/L. The most stringent guideline maximum of 0.5 mg/L, for very sensitive and sensitive crops, was used to identify exceedances for this

**Note 8.12 for Copper (total):**

The guideline maximum for total copper is 200 µg/L.

**Note 8.13 for Lead (total):**

For neutral and alkaline fine-textured soils the total lead concentration in irrigation water should not exceed 400 µg/L at any time. The concentration of total lead in irrigation water for use on all other soils should not exceed 200 µg/L at any time. / The most stringent guideline maximum was used in this report.

**Note 8.14 for Molybdenum (total):**

The guideline maximum for total molybdenum for irrigation of forage crops is 0.05 mg/L. There is no guideline maximum for total molybdenum for irrigation of non-forage crops.

**Note 8.15 for Selenium (total):**

The guideline for total selenium is 10 µg/L mean. The mean concentrations in the water column are based on at least 5 weekly samples taken over a 30-day period.

**Note 8.16 for Zinc (total):**

The guideline maximum for total zinc for irrigation is as follows:

- Soil pH less than 6: 1000 µg/L.
- Soil pH equal to or greater than 6, and less than 7: 2000 µg/L.
- Soil pH greater than or equal to 7: 5000 µg/L. / The most stringent guideline maximum was used in this report.

**9. Notes for BC Working Water Quality Guidelines for Irrigation (2020) (BCWWQG I)****General Notes:**

Reference: B.C. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture (2020). WWQG values are long-term (i.e. average) concentrations unless identified as a short-term maximum in the “Notes” for a specific analyte. Long-term WWQGs represent average substance concentrations calculated from 5 samples in 30 days. WWQG are given for total substance concentrations unless otherwise noted.

**Note 9.1 for Conductivity:**

The guideline varies from 700 to 5000 µS/cm depending on the type of crop. The most stringent guideline has been used for this report.

**Note 9.2 for Total dissolved solids:**

The guideline varies from 500 to 3500 mg/L depending on the type of crop. The most stringent guideline has been used for this report.

**Note 9.3 for Conductivity:**

The guideline varies from 700 to 5000 µS/cm depending on the type of crop. The most stringent guideline has been used for this report.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 9.4 for Cadmium (total):**

This is a Short-term maximum guideline.

**Note 9.5 for Chromium (total):**

The guideline for Cr(VI) is 8 µg/L (total).

The guideline for Cr(III) is 4.9 µg/L (total).

The guideline of 4.9 µg/L for Cr(III) was used, in this report, to identify exceedances for dissolved chromium, and total chromium as a means for determining the potential for exceeding the Cr(VI) and/or Cr(III) guidelines.

**Note 9.6 for Cobalt (total):**

Continuous or intermittent use on all soils.

**Note 9.7 for Lithium (total):**

The guideline is 2.5 mg/L for non-citrus crops (May not be protective of barley and other cereal crops; 1.0 mg/L suggested for cereal crops). The guideline is 0.75 mg/L for citrus crops. / The most stringent guideline was used in this report.

**10. Notes for BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2020 and updates) (BC SDWQG MAC)****General Notes:**

The source drinking water quality guidelines presented in this document apply to the ambient water before it is treated and distributed for domestic use. The guidelines apply to drinking water sources from surface water and

**Note 10.1 for Turbidity:**

For raw drinking water without treatment for particulates the guideline is: ≤ 1 NTU of turbidity.

For raw drinking water with treatment for particulates the guideline is:

Natural background turbidity is ≤ 50 NTU: Change from background should not exceed 5 NTU.

Natural background turbidity is > 50 NTU: Change from background should not exceed 10% of the background

**Note 10.2 for E. coli (MPN):**

The MAC is ≤ 10 E. coli /100 mL; 90th percentile (minimum of 5 samples).

**Note 10.3 for Fecal coliforms (MPN):**

The MAC is ≤ 10 coliforms/100 mL; 90th percentile (minimum of 5 samples).

**Note 10.4 for Copper (total):**

Includes short-term and long-term exposure.

**11. Notes for BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2020 and updates) (BC SDWQG AO)****General Notes:**

The source drinking water quality guidelines presented in this document apply to the ambient water before it is treated and distributed for domestic use. The guidelines apply to drinking water sources from surface water and

**Note 11.1 for Phosphorus (total, by ICPMS/ICPOES):**

The AO for lakes is 0.01 mg/L. For lakes with residence time > 6 months, measure total P during spring overturn.

For lakes with residence time < 6 months, measure mean epilimnetic total P during the growing season (ENV

**Note 11.2 for Phosphorus (total, APHA 4500-P):**

The AO for lakes is 0.01 mg/L. For lakes with residence time > 6 months, measure total P during spring overturn.

For lakes with residence time < 6 months, measure mean epilimnetic total P during the growing season (ENV

**Note 11.3 for Phosphorus (dissolved, APHA 4500-P):**

The AO for lakes is 0.01 mg/L. For lakes with residence time > 6 months, measure total P during spring overturn.

For lakes with residence time < 6 months, measure mean epilimnetic total P during the growing season (ENV

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

### 12. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Freshwater Aquatic Life (2017 and updates) (BC CSR AW(F))

#### General Notes:

Aquatic life standards assume minimum 1:10 dilution available, and are to protect freshwater life.

Standards for all organic substances are for total substance concentrations. Any water sample to be analyzed for organic substances should not be filtered.

Standards for surface water samples to be analyzed for heavy metals, metalloids and inorganic ions are total substance concentrations. In addition, it is recommended that surface water samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for dissolved substance concentrations.

Standards for groundwater samples for heavy metals, metalloids and inorganic ions are for dissolved substance concentrations. In addition, it is recommended that groundwater samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for total substance concentrations.

#### Note 12.1 for Fluoride:

The standard for fluoride is:

2000 µg/L @ H < 50

3000 µg/L @ H ≥ 50

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

#### Note 12.2 for Sulphate:

The standard for sulfate is:

1280 mg/L @ H ≤ 30

2180 mg/L @ H 31 - 75

3090 mg/L @ H 76 - 180

4290 mg/L @ H > 180

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

#### Note 12.3 for Ammonia (total, as N):

Standard varies with pH and temperature. 10 degrees C is assumed. Consult a director for further advice.

The standard for ammonia, total (as N) is:

1,310 µg/L @ pH ≥ to 8.5

3,700 µg/L @ pH 8.0 - < 8.5

11,300 µg/L @ pH 7.5 - < 8.0

18,500 µg/L @ pH 7.0 - < 7.5

18,400 µg/L @ pH < 7.0

#### Note 12.4 for Nitrate (as N):

Standard may not protect all amphibians. Consult director for further advice.

#### Note 12.5 for Nitrate + Nitrite (as N):

Standard may not protect all amphibians. Consult director for further advice.

#### Note 12.6 for Nitrate + Nitrite (as N) (calculated):

Standard may not protect all amphibians. Consult director for further advice.

#### Note 12.7 for Nitrite (as N):

Standard varies with chloride concentration. Consult a director for further advice.

The standard for nitrite (as N) is:

200 µg/L (Cl < 2 mg/L)

400 µg/L (Cl 2 - < 4 mg/L)

600 µg/L (Cl 4 - < 6 mg/L)

800 µg/L (Cl 6 - < 8 mg/L)

1,000 µg/L (Cl 8 - < 10 mg/L)

2,000 µg/L (Cl ≥ 10 mg/L)

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 12.8 for Cadmium (total):**

The standard for cadmium is as follows:

- 0.5 µg/L @ H < 30
- 1.5 µg/L @ H 30 - < 90
- 2.5 µg/L @ H 90 - < 150
- 3.5 µg/L @ H 150 - < 210
- 4 µg/L @ H ≥ 210

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

**Note 12.9 for Chromium (total):**

Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary.

Standard is 10 µg/L for chromium, hexavalent. Standard is 90 µg/L for chromium, trivalent. The standard of 10 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

**Note 12.10 for Copper (total):**

The standard for copper is as follows:

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

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

**Note 12.11 for Lead (total):**

The standard for lead is as follows:

- 40 µg/L @ H < 50
- 50 µg/L @ H 50 - < 100
- 60 µg/L @ H 100 - < 200
- 110 µg/L @ H 200 - < 300
- 160 µg/L @ ≥ 300

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

**Note 12.12 for Nickel (total):**

The standard for nickel is as follows:

- 250 µg/L @ H < 60
- 650 µg/L @ H 60 - < 120
- 1,100 µg/L @ H 120 - < 180
- 1,500 µg/L @ H ≥ 180

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

**Note 12.13 for Silver (total):**

The standard for silver is:

- 0.5 µg/L @ H ≤ 100
- 15 µg/L @ H > 100

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 12.14 for Zinc (total):**

The standard for zinc is as follows:

75 µg/L @ H < 90

150 µg/L @ H = 90 - < 100

900 µg/L @ H = 100 - < 200

1,650 µg/L @ H = 200 - < 300

2,400 µg/L @ H = 300 - < 400

3,150 µg/L @ H = 400 - < 500

If H ≥ 500 then use following formula:

Standard (µg/L) =  $10 \times [7.5 + \{(0.75)(H - 90)\}]$

Where H means water hardness in mg/L as CaCO<sub>3</sub>.

There are special ministry approval and data reporting requirements for water hardness values ≥ 500 mg/L as CaCO<sub>3</sub>.

**13. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Irrigation (2017 and updates) (BC CSR IW)****General Notes:**

BC Contaminated Sites Regulation, Generic Numerical Water Standards, Schedule 3.2; includes amendments up to B.C. Reg. 13/2019, January 24, 2019.

Standards for all organic substances are for total substance concentrations. Any water sample to be analyzed for organic substances should not be filtered.

Standards for surface water samples to be analyzed for heavy metals, metalloids and inorganic ions are total substance concentrations. In addition, it is recommended that surface water samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for dissolved substance concentrations.

Standards for groundwater samples for heavy metals, metalloids and inorganic ions are for dissolved substance concentrations. In addition, it is recommended that groundwater samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for total substance concentrations.

Standards apply to irrigation of all soil types, unless otherwise indicated. / There are several different standards for site-specific factors for some analytes. The most stringent standards were used for this criteria set.

**Note 13.1 for Chloride:**

Standard to protect all types of crops.

**Note 13.2 for Boron (total):**

Standard varies depending on crop. This standard is for blackberry crop.

**Note 13.3 for Chromium (total):**

Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary.

Standard is 8 µg/L for chromium, hexavalent. Standard is 5 µg/L for chromium, trivalent. The standard of 5 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

**Note 13.4 for Iron (total):**

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as

(a) item A6, A7, A8 or A11

(b) item C1, C2, C3, C4 or C6,

(c) item D2, D3, D5, or D6

(d) item E4, or

(e) item H14.

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.

**Note 13.5 for Lithium (total):**

Standard to protect all types of crops.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

**Note 13.6 for Manganese (total):**

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as

- (a) item B1
- (b) item C1, C3 or C4
- (c) item D2, D3, D5, or D6
- (d) item E4, or
- (e) item H3 or H14.

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.

**Note 13.7 for Molybdenum (total):**

Standard varies with crop, soil drainage and Mo:Cu ratio. Standard is 10 – 30 µg/L. Consult a director for further advice.

**Note 13.8 for Selenium (total):**

Standard varies with type of application; continuous or intermittent. This standard is for continuous applications on crops.

**Note 13.9 for Zinc (total):**

The standard varies (from 1000 to 5000 µg/L) with soil pH. This standard (which is the most stringent) is for soil pH less than 6.0

**14. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Livestock (2017 and updates) (BC CSR LW)****General Notes:**

BC Contaminated Sites Regulation, Generic Numerical Water Standards, Schedule 3.2; includes amendments up to B.C. Reg. 13/2019, January 24, 2019.

Standards for all organic substances are for total substance concentrations. Any water sample to be analyzed for organic substances should not be filtered.

Standards for surface water samples to be analyzed for heavy metals, metalloids and inorganic ions are total substance concentrations. In addition, it is recommended that surface water samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for dissolved substance concentrations.

Standards for groundwater samples for heavy metals, metalloids and inorganic ions are for dissolved substance concentrations. In addition, it is recommended that groundwater samples being analyzed for heavy metals, metalloids and inorganic ions should also be analyzed for total substance concentrations.

**Note 14.1 for Fluoride:**

Standard varies with type of livestock. Consult a director for further advice.

**Note 14.2 for Nitrate (as N):**

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

**Note 14.3 for Nitrate + Nitrite (as N):**

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

**Note 14.4 for Nitrate + Nitrite (as N) (calculated):**

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

**Note 14.5 for Chromium (total):**

Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary.

Standard is 50 µg/L for chromium, hexavalent. Standard is 50 µg/L for chromium, trivalent. The standard of 50 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

## Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results

### 15. Notes for BC CSR, Schedule 3.2, Generic Numerical Water Standards for Drinking Water (2017 and updates) (BC CSR DW)

#### General Notes:

BC Contaminated Sites Regulation, Generic Numerical Water Standards, Schedule 3.2; includes amendments up to B.C. Reg. 13/2019, January 24, 2019.

Drinking water standards are for unfiltered samples obtained at the point of consumption. Heavy metals, metalloids and inorganic ions are expressed as total substance concentrations unless otherwise indicated.

#### Note 15.1 for Chloride:

Standard to protect against taste and odour concerns.

#### Note 15.2 for Sulphate:

Standard to protect against taste and odour concerns.

#### Note 15.3 for Nitrate (as N):

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

#### Note 15.4 for Nitrate + Nitrite (as N):

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

#### Note 15.5 for Nitrate + Nitrite (as N) (calculated):

Where nitrate and nitrite are present, total nitrate plus nitrite-nitrogen should not exceed this value.

#### Note 15.6 for Aluminum (total):

Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

#### Note 15.7 for Chromium (total):

Analytical results for chromium (all species) in water may be used to demonstrate compliance with the standards. Where the standards cannot be met based on analytical results for chromium (all species), chromium speciation may be necessary.

Standard is 50 µg/L for chromium, hexavalent. Standard is 6000 µg/L for chromium, trivalent. The standard of 50 µg/L was used to identify exceedances for total chromium in order to demonstrate compliance with the standards.

#### Note 15.8 for Copper (total):

Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

#### Note 15.9 for Iron (total):

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as

- (a) item A6, A7, A8 or A11
- (b) item C1, C2, C3, C4 or C6,
- (c) item D2, D3, D5, or D6
- (d) item E4, or
- (e) item H14.

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.

Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

**Guideline Notes for Reports for RDOS Landfill and Wastewater Treatment Sites Water Quality Results****Note 15.10 for Manganese (total):**

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as

- (a) item B1
- (b) item C1, C3 or C4
- (c) item D2, D3, D5, or D6
- (d) item E4, or
- (e) item H3 or H14.

Standard applies to a site used for an industrial or commercial purpose or activity set out in Schedule 2 as item H11 or H20, but only if the site was used for the purpose or activity in conjunction with or as a result of the site also being used for at least one of the purposes or activities set out above.

Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

Standard may not address aesthetic (organoleptic) concerns related to drinking water quality. Water treatment may be required.

**Note 15.11 for Sodium (total):**

Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.

**Note 15.12 for Zinc (total):**

Standard is specific to protection of human health. Standard is derived with TRV protective of adults. Standard may not adequately protect other age groups.



## Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
BC CSR AW(F)	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Freshwater Aquatic Life (2017 and updates)
BC CSR DW	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Drinking Water (2017 and updates)
BC CSR IW	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Irrigation (2017 and updates)
BC CSR LW	BC CSR, Schedule 3.2, Generic Numerical Water Standards for Livestock (2017 and updates)
BC SDWQG AO	BC Source Drinking Water Quality Guidelines - Aesthetic Objectives (2020 and updates)
BC SDWQG MAC	BC Source Drinking Water Quality Guidelines - Maximum Acceptable Concentrations (2020 and updates)
BCAWQG AL (LT)	BC Approved Water Quality Guidelines for freshwater aquatic life (Long-term chronic)
BCAWQG AL (ST)	BC Approved Water Quality Guidelines for freshwater aquatic life (Short-term acute)
BCAWQG I	BC Approved Water Quality Guidelines for irrigation
BCAWQG L	BC Approved Water Quality Guidelines for livestock
BCWWQG AL	BC Working Water Quality Guidelines for Freshwater Aquatic Life (2020)
BCWWQG I	BC Working Water Quality Guidelines for Irrigation (2020)
BCWWQG L	BC Working Water Quality Guidelines for Livestock (2020)
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
GCDWQ AO	Guidelines for Canadian Drinking Water Quality - Aesthetic Objectives
GCDWQ MAC	Guidelines for Canadian Drinking Water Quality - Maximum Acceptable Concentrations
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<b>BC CSR AW(F)</b>	Highlighted value exceeds BC CSR AW(F)
<b>BC CSR DW</b>	Highlighted value exceeds BC CSR DW
<b>BC CSR IW</b>	Highlighted value exceeds BC CSR IW
<b>BC CSR LW</b>	Highlighted value exceeds BC CSR LW
<b>BC SDWQG AO</b>	Highlighted value exceeds BC SDWQG AO
<b>BC SDWQG MAC</b>	Highlighted value exceeds BC SDWQG MAC
<b>BCAWQG AL (LT)</b>	Highlighted value exceeds BCAWQG AL (LT)
<b>BCAWQG AL (ST)</b>	Highlighted value exceeds BCAWQG AL (ST)
<b>BCAWQG I</b>	Highlighted value exceeds BCAWQG I
<b>BCAWQG L</b>	Highlighted value exceeds BCAWQG L
<b>BCWWQG AL</b>	Highlighted value exceeds BCWWQG AL
<b>BCWWQG I</b>	Highlighted value exceeds BCWWQG I
<b>BCWWQG L</b>	Highlighted value exceeds BCWWQG L
<b>GCDWQ AO</b>	Highlighted value exceeds GCDWQ AO
<b>GCDWQ MAC</b>	Highlighted value exceeds GCDWQ MAC
<b>SL Criteria Override</b>	Highlighted value exceeds sampling location criteria override

# **APPENDIX S**

## **Okanagan River Channel Water Quality Monitoring 2020 Lab Reports**



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0011330
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-01-22 12:10 / 9°C
<b>PO NUMBER</b>	OK Falls WW	<b>REPORTED</b>	2020-01-24 15:13
<b>PROJECT</b>	OK Falls WWTP QORC	<b>COC NUMBER</b>	B66131
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: YES

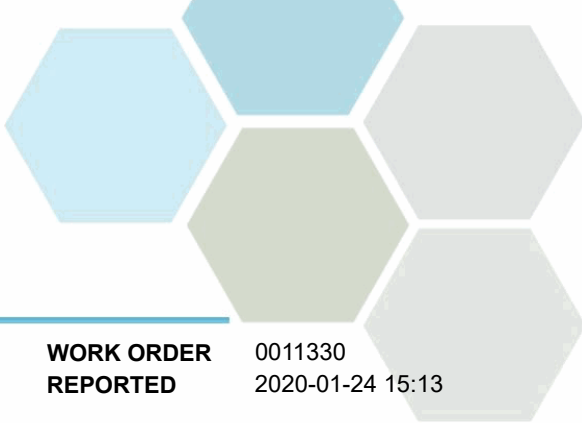
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011330  
2020-01-24 15:13

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0011330-01) | Matrix: Water | Sampled: 2020-01-21 13:25**

*Microbiological Parameters*

Coliforms, Fecal	< 1.0	1.0	MPN/100 mL	2020-01-22	
E. coli	< 1.0	1.0	MPN/100 mL	2020-01-22	

**Okanagan River Channel 100m Downstream - Bacteria (0011330-02) | Matrix: Water | Sampled: 2020-01-21 13:40**

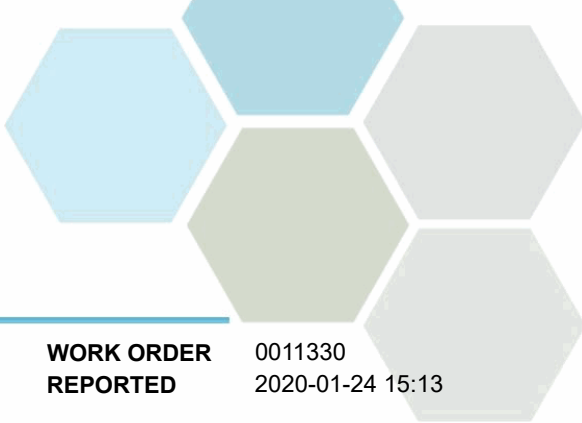
*Microbiological Parameters*

Coliforms, Fecal	1.0	1.0	MPN/100 mL	2020-01-22	
E. coli	1.0	1.0	MPN/100 mL	2020-01-22	

**Okanagan River Channel 500m Downstream - Bacteria (0011330-03) | Matrix: Water | Sampled: 2020-01-21 14:00**

*Microbiological Parameters*

Coliforms, Fecal	1.0	1.0	MPN/100 mL	2020-01-22	
E. coli	1.0	1.0	MPN/100 mL	2020-01-22	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011330  
2020-01-24 15:13

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 0011331

**RECEIVED / TEMP** 2020-01-22 12:10 / 9°C

**REPORTED** 2020-01-30 11:45

**COC NUMBER** B66313

### 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.

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

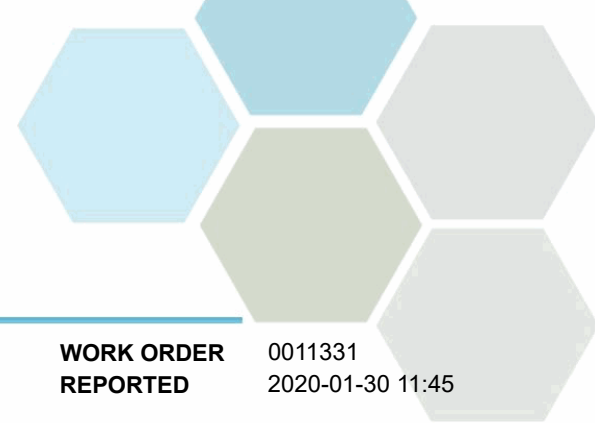
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

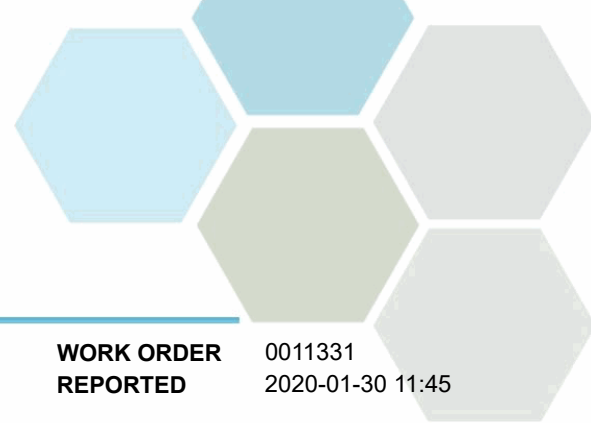


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011331  
2020-01-30 11:45

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0011331-01)   Matrix: Water   Sampled: 2020-01-21 13:25</b>					FILT, PRESa
<b>Anions</b>					
Chloride	6.53	0.10	mg/L	2020-01-24	
Fluoride	0.14	0.10	mg/L	2020-01-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-01-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-01-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-01-24	
Sulfate	30.5	1.0	mg/L	2020-01-24	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	125	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.229	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	114	1.0	mg/L	2020-01-23	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Bicarbonate (as CaCO3)	114	1.0	mg/L	2020-01-23	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-01-23	
BOD, 5-day	< 6.2	2.0	mg/L	2020-01-28	
Chemical Oxygen Demand	20	20	mg/L	2020-01-26	
Conductivity (EC)	274	2.0	µS/cm	2020-01-23	
Nitrogen, Total Kjeldahl	0.229	0.050	mg/L	2020-01-23	
pH	8.16	0.10	pH units	2020-01-23	HT2
Phosphorus, Total (as P)	0.0160	0.0020	mg/L	2020-01-23	
Phosphorus, Total Dissolved	0.0046	0.0020	mg/L	2020-01-23	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-01-24	
<b>Total Metals</b>					
Aluminum, total	0.0114	0.0050	mg/L	2020-01-29	
Antimony, total	< 0.00020	0.00020	mg/L	2020-01-29	
Arsenic, total	0.00055	0.00050	mg/L	2020-01-29	
Barium, total	0.0253	0.0050	mg/L	2020-01-29	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-01-29	
Boron, total	0.0263	0.0050	mg/L	2020-01-29	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-01-29	
Calcium, total	33.3	0.20	mg/L	2020-01-29	
Chromium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-01-29	
Copper, total	< 0.00040	0.00040	mg/L	2020-01-29	
Iron, total	0.019	0.010	mg/L	2020-01-29	
Lead, total	< 0.00020	0.00020	mg/L	2020-01-29	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011331  
2020-01-30 11:45

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0011331-01)   Matrix: Water   Sampled: 2020-01-21 13:25, Continued</b>					FILT, PRESa

**Total Metals, Continued**

Lithium, total	0.00375	0.00010	mg/L	2020-01-29	
Magnesium, total	10.1	0.010	mg/L	2020-01-29	
Manganese, total	0.00577	0.00020	mg/L	2020-01-29	
Mercury, total	< 0.000010	0.000010	mg/L	2020-01-28	
Molybdenum, total	0.00354	0.00010	mg/L	2020-01-29	
Nickel, total	< 0.00040	0.00040	mg/L	2020-01-29	
Phosphorus, total	< 0.050	0.050	mg/L	2020-01-29	
Potassium, total	2.57	0.10	mg/L	2020-01-29	
Selenium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Silicon, total	2.7	1.0	mg/L	2020-01-29	
Silver, total	< 0.000050	0.000050	mg/L	2020-01-29	
Sodium, total	12.8	0.10	mg/L	2020-01-29	
Strontium, total	0.346	0.0010	mg/L	2020-01-29	
Sulfur, total	11.4	3.0	mg/L	2020-01-29	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Thallium, total	< 0.000020	0.000020	mg/L	2020-01-29	
Thorium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Tin, total	< 0.00020	0.00020	mg/L	2020-01-29	
Titanium, total	< 0.0050	0.0050	mg/L	2020-01-29	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-01-29	
Uranium, total	0.00284	0.000020	mg/L	2020-01-29	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-01-29	
Zinc, total	< 0.0040	0.0040	mg/L	2020-01-29	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-01-29	

**Okanagan River Channel 100m Downstream (0011331-02) | Matrix: Water | Sampled: 2020-01-21 13:40**

FILT, PRES

**Anions**

Chloride	6.64	0.10	mg/L	2020-01-24	
Fluoride	0.16	0.10	mg/L	2020-01-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-01-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-01-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-01-24	
Sulfate	31.1	1.0	mg/L	2020-01-24	

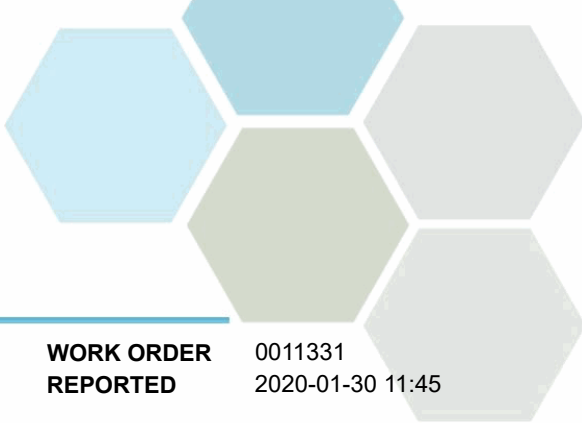
**Calculated Parameters**

Hardness, Total (as CaCO3)	128	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.232	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	116	1.0	mg/L	2020-01-23	
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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011331  
2020-01-30 11:45

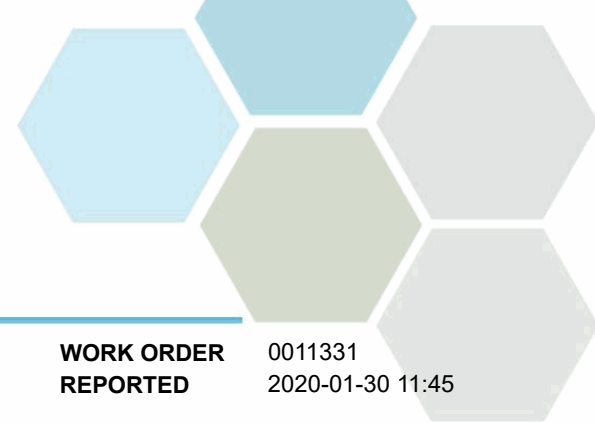
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0011331-02)   Matrix: Water   Sampled: 2020-01-21 13:40, Continued</b>					<b>FILT, PRES</b>

**General Parameters, Continued**

Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Bicarbonate (as CaCO3)	<b>116</b>	1.0	mg/L	2020-01-23	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-01-23	
BOD, 5-day	< 6.2	2.0	mg/L	2020-01-28	
Chemical Oxygen Demand	<b>23</b>	20	mg/L	2020-01-26	
Conductivity (EC)	<b>285</b>	2.0	µS/cm	2020-01-23	
Nitrogen, Total Kjeldahl	<b>0.232</b>	0.050	mg/L	2020-01-23	
pH	<b>8.17</b>	0.10	pH units	2020-01-23	HT2
Phosphorus, Total (as P)	<b>0.0149</b>	0.0020	mg/L	2020-01-23	
Phosphorus, Total Dissolved	<b>0.0034</b>	0.0020	mg/L	2020-01-23	
Solids, Total Suspended	<b>2.2</b>	2.0	mg/L	2020-01-24	

**Total Metals**

Aluminum, total	<b>0.0133</b>	0.0050	mg/L	2020-01-29	
Antimony, total	< 0.00020	0.00020	mg/L	2020-01-29	
Arsenic, total	<b>0.00056</b>	0.00050	mg/L	2020-01-29	
Barium, total	<b>0.0267</b>	0.0050	mg/L	2020-01-29	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-01-29	
Boron, total	<b>0.0209</b>	0.0050	mg/L	2020-01-29	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-01-29	
Calcium, total	<b>34.1</b>	0.20	mg/L	2020-01-29	
Chromium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-01-29	
Copper, total	< 0.00040	0.00040	mg/L	2020-01-29	
Iron, total	<b>0.028</b>	0.010	mg/L	2020-01-29	
Lead, total	< 0.00020	0.00020	mg/L	2020-01-29	
Lithium, total	<b>0.00377</b>	0.00010	mg/L	2020-01-29	
Magnesium, total	<b>10.4</b>	0.010	mg/L	2020-01-29	
Manganese, total	<b>0.00660</b>	0.00020	mg/L	2020-01-29	
Mercury, total	< 0.000010	0.000010	mg/L	2020-01-28	
Molybdenum, total	<b>0.00357</b>	0.00010	mg/L	2020-01-29	
Nickel, total	< 0.00040	0.00040	mg/L	2020-01-29	
Phosphorus, total	< 0.050	0.050	mg/L	2020-01-29	
Potassium, total	<b>2.62</b>	0.10	mg/L	2020-01-29	
Selenium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Silicon, total	<b>2.9</b>	1.0	mg/L	2020-01-29	
Silver, total	< 0.000050	0.000050	mg/L	2020-01-29	
Sodium, total	<b>13.0</b>	0.10	mg/L	2020-01-29	
Strontium, total	<b>0.355</b>	0.0010	mg/L	2020-01-29	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011331  
2020-01-30 11:45

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0011331-02)   Matrix: Water   Sampled: 2020-01-21 13:40, Continued</b>					FILT, PRES

**Total Metals, Continued**

Sulfur, total	12.0	3.0	mg/L	2020-01-29	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Thallium, total	< 0.000020	0.000020	mg/L	2020-01-29	
Thorium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Tin, total	< 0.00020	0.00020	mg/L	2020-01-29	
Titanium, total	< 0.0050	0.0050	mg/L	2020-01-29	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-01-29	
Uranium, total	0.00285	0.000020	mg/L	2020-01-29	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-01-29	
Zinc, total	< 0.0040	0.0040	mg/L	2020-01-29	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-01-29	

**Okanagan River Channel 500m Downstream (0011331-03) | Matrix: Water | Sampled: 2020-01-21 14:00**

FILT,  
PRES

**Anions**

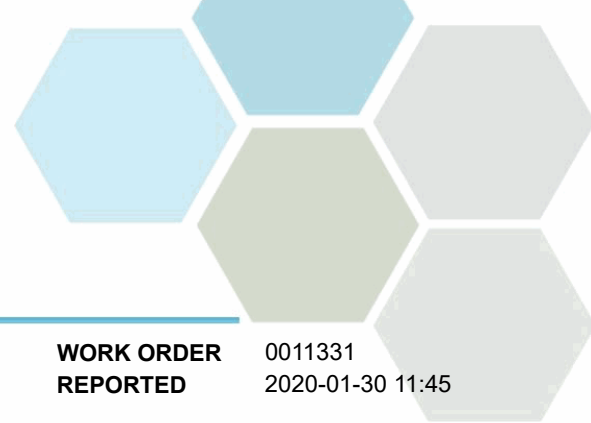
Chloride	6.40	0.10	mg/L	2020-01-24	
Fluoride	0.16	0.10	mg/L	2020-01-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-01-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-01-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-01-24	
Sulfate	29.8	1.0	mg/L	2020-01-24	

**Calculated Parameters**

Hardness, Total (as CaCO3)	128	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.318	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	116	1.0	mg/L	2020-01-23	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Bicarbonate (as CaCO3)	116	1.0	mg/L	2020-01-23	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-01-23	
Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-01-23	
BOD, 5-day	< 6.2	2.0	mg/L	2020-01-28	
Chemical Oxygen Demand	17	20	mg/L	2020-01-26	
Conductivity (EC)	285	2.0	µS/cm	2020-01-23	
Nitrogen, Total Kjeldahl	0.318	0.050	mg/L	2020-01-23	
pH	8.14	0.10	pH units	2020-01-23	HT2
Phosphorus, Total (as P)	0.0112	0.0020	mg/L	2020-01-23	
Phosphorus, Total Dissolved	0.0036	0.0020	mg/L	2020-01-23	
Solids, Total Suspended	2.2	2.0	mg/L	2020-01-24	

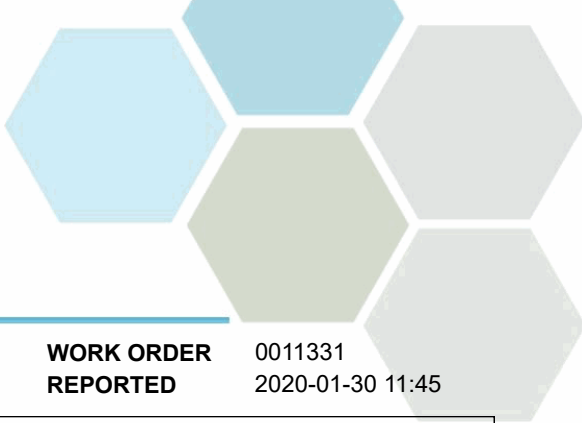


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011331  
2020-01-30 11:45

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 500m Downstream (0011331-03)   Matrix: Water   Sampled: 2020-01-21 14:00, Continued</b>					<b>FILT, PRES</b>
<i>Total Metals</i>					
Aluminum, total	0.0112	0.0050	mg/L	2020-01-29	
Antimony, total	< 0.00020	0.00020	mg/L	2020-01-29	
Arsenic, total	0.00064	0.00050	mg/L	2020-01-29	
Barium, total	0.0254	0.0050	mg/L	2020-01-29	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-01-29	
Boron, total	0.0182	0.0050	mg/L	2020-01-29	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-01-29	
Calcium, total	34.2	0.20	mg/L	2020-01-29	
Chromium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-01-29	
Copper, total	< 0.00040	0.00040	mg/L	2020-01-29	
Iron, total	0.024	0.010	mg/L	2020-01-29	
Lead, total	< 0.00020	0.00020	mg/L	2020-01-29	
Lithium, total	0.00388	0.00010	mg/L	2020-01-29	
Magnesium, total	10.2	0.010	mg/L	2020-01-29	
Manganese, total	0.00680	0.00020	mg/L	2020-01-29	
Mercury, total	< 0.000010	0.000010	mg/L	2020-01-28	
Molybdenum, total	0.00361	0.00010	mg/L	2020-01-29	
Nickel, total	< 0.00040	0.00040	mg/L	2020-01-29	
Phosphorus, total	< 0.050	0.050	mg/L	2020-01-29	
Potassium, total	2.56	0.10	mg/L	2020-01-29	
Selenium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Silicon, total	2.7	1.0	mg/L	2020-01-29	
Silver, total	< 0.000050	0.000050	mg/L	2020-01-29	
Sodium, total	12.9	0.10	mg/L	2020-01-29	
Strontium, total	0.346	0.0010	mg/L	2020-01-29	
Sulfur, total	11.2	3.0	mg/L	2020-01-29	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-01-29	
Thallium, total	< 0.000020	0.000020	mg/L	2020-01-29	
Thorium, total	< 0.00010	0.00010	mg/L	2020-01-29	
Tin, total	< 0.00020	0.00020	mg/L	2020-01-29	
Titanium, total	< 0.0050	0.0050	mg/L	2020-01-29	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-01-29	
Uranium, total	0.00278	0.000020	mg/L	2020-01-29	
Vanadium, total	0.0010	0.0010	mg/L	2020-01-29	
Zinc, total	< 0.0040	0.0040	mg/L	2020-01-29	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-01-29	



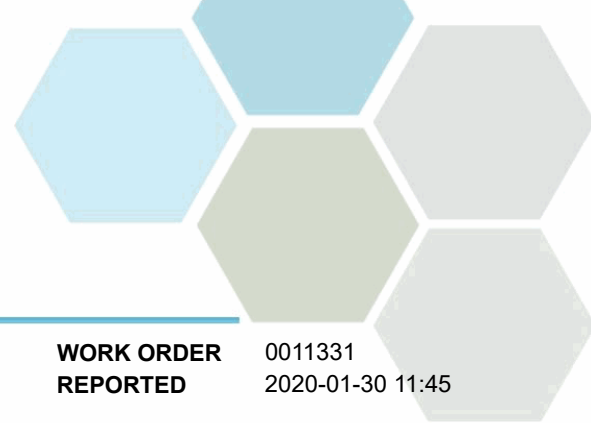
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP QORC

**WORK ORDER** 0011331  
**REPORTED** 2020-01-30 11:45

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for DP' in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0011331  
2020-01-30 11:45

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
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

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0020951

**RECEIVED / TEMP** 2020-02-12 12:00 / 7°C

**REPORTED** 2020-02-13 17:15

**COC NUMBER** B86830

### 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.

### Work Order Comments:

Custody Seals Intact: YES

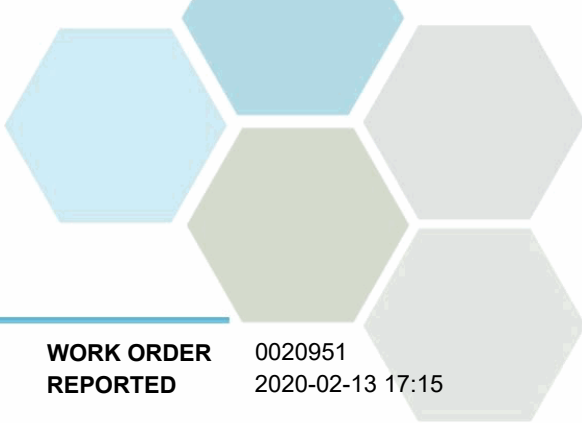
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0020951  
2020-02-13 17:15

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0020951-01) | Matrix: Water | Sampled: 2020-02-11 10:35**

*Microbiological Parameters*

Coliforms, Fecal	9.8	1.0	MPN/100 mL	2020-02-12	
E. coli	9.8	1.0	MPN/100 mL	2020-02-12	

**Okanagan River Channel 100m Downstream - Bacteria (0020951-02) | Matrix: Water | Sampled: 2020-02-11 11:20**

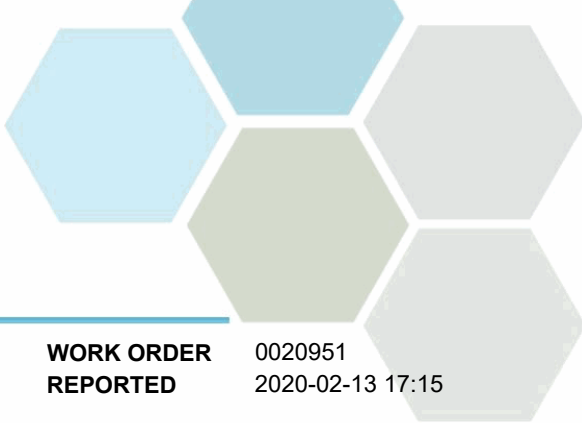
*Microbiological Parameters*

Coliforms, Fecal	3.1	1.0	MPN/100 mL	2020-02-12	
E. coli	3.1	1.0	MPN/100 mL	2020-02-12	

**Okanagan River Channel 500m Downstream - Bacteria (0020951-03) | Matrix: Water | Sampled: 2020-02-11 11:40**

*Microbiological Parameters*

Coliforms, Fecal	6.3	1.0	MPN/100 mL	2020-02-12	
E. coli	5.2	1.0	MPN/100 mL	2020-02-12	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0020951  
2020-02-13 17:15

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0020953

**RECEIVED / TEMP** 2020-02-12 15:24 / 7°C

**REPORTED** 2020-02-20 13:08

**COC NUMBER** B86830

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

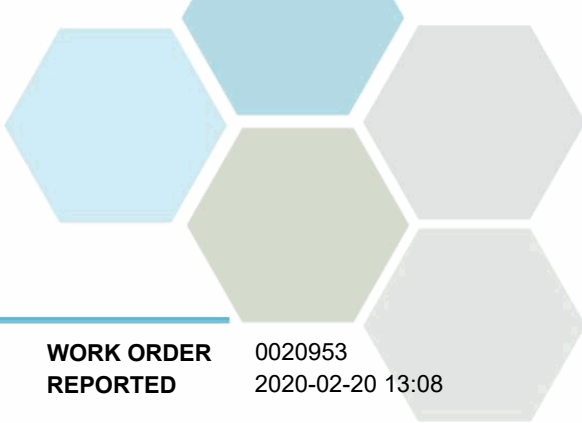
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0020953  
2020-02-20 13:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0020953-01)   Matrix: Water   Sampled: 2020-02-11 10:55</b>					FILT, PRES

**Anions**

Chloride	6.21	0.10	mg/L	2020-02-13	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-02-13	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-02-13	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-02-13	
Sulfate	30.1	1.0	mg/L	2020-02-13	

**Calculated Parameters**

Hardness, Total (as CaCO3)	120	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.230	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-02-13	
Conductivity (EC)	274	2.0	µS/cm	2020-02-14	
Nitrogen, Total Kjeldahl	0.230	0.050	mg/L	2020-02-14	
pH	8.03	0.10	pH units	2020-02-14	HT2
Phosphorus, Total (as P)	0.0099	0.0020	mg/L	2020-02-13	
Phosphorus, Total Dissolved	0.0043	0.0020	mg/L	2020-02-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-02-14	

**Total Metals**

Calcium, total	32.5	0.20	mg/L	2020-02-19	
Magnesium, total	9.36	0.010	mg/L	2020-02-19	
Potassium, total	2.48	0.10	mg/L	2020-02-19	
Sodium, total	11.9	0.10	mg/L	2020-02-19	

**Okanagan River Channel 100m Downstream (0020953-02) | Matrix: Water | Sampled: 2020-02-11 11:20**

FILT,  
PRESa

**Anions**

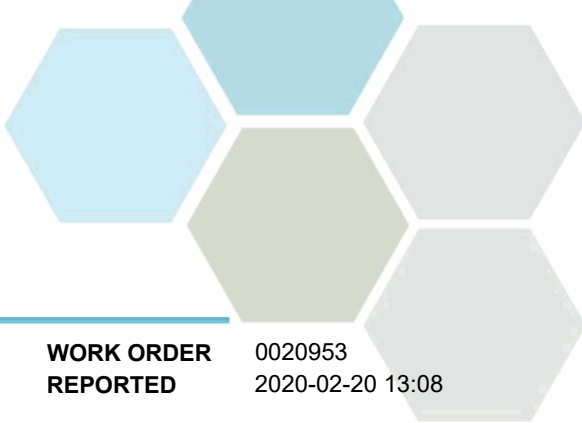
Chloride	6.32	0.10	mg/L	2020-02-13	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-02-13	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-02-13	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-02-13	
Sulfate	31.3	1.0	mg/L	2020-02-13	

**Calculated Parameters**

Hardness, Total (as CaCO3)	125	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.247	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-02-13	
Conductivity (EC)	282	2.0	µS/cm	2020-02-14	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0020953  
2020-02-20 13:08

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0020953-02)   Matrix: Water   Sampled: 2020-02-11 11:20, Continued</b>					FILT, PRESa

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.247	0.050	mg/L	2020-02-14	
pH	8.07	0.10	pH units	2020-02-14	HT2
Phosphorus, Total (as P)	0.0086	0.0020	mg/L	2020-02-13	
Phosphorus, Total Dissolved	0.0036	0.0020	mg/L	2020-02-13	
Solids, Total Suspended	4.2	2.0	mg/L	2020-02-14	

**Total Metals**

Calcium, total	34.3	0.20	mg/L	2020-02-19	
Magnesium, total	9.59	0.010	mg/L	2020-02-19	
Potassium, total	2.53	0.10	mg/L	2020-02-19	
Sodium, total	12.1	0.10	mg/L	2020-02-19	

**Okanagan River Channel 500m Downstream (0020953-03) | Matrix: Water | Sampled: 2020-02-11 11:40**

FILT, PRESb

**Anions**

Chloride	6.24	0.10	mg/L	2020-02-13	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-02-13	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-02-13	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-02-13	
Sulfate	30.5	1.0	mg/L	2020-02-13	

**Calculated Parameters**

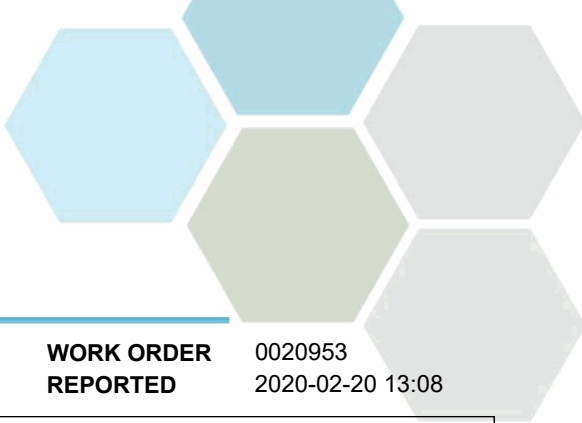
Hardness, Total (as CaCO3)	126	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.237	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.020	0.020	mg/L	2020-02-13	
Conductivity (EC)	267	2.0	µS/cm	2020-02-14	
Nitrogen, Total Kjeldahl	0.237	0.050	mg/L	2020-02-14	
pH	8.07	0.10	pH units	2020-02-14	HT2
Phosphorus, Total (as P)	0.0091	0.0020	mg/L	2020-02-13	
Phosphorus, Total Dissolved	0.0038	0.0020	mg/L	2020-02-13	
Solids, Total Suspended	2.8	2.0	mg/L	2020-02-14	

**Total Metals**

Calcium, total	34.1	0.20	mg/L	2020-02-19	
Magnesium, total	9.80	0.010	mg/L	2020-02-19	
Potassium, total	2.61	0.10	mg/L	2020-02-19	
Sodium, total	12.5	0.10	mg/L	2020-02-19	



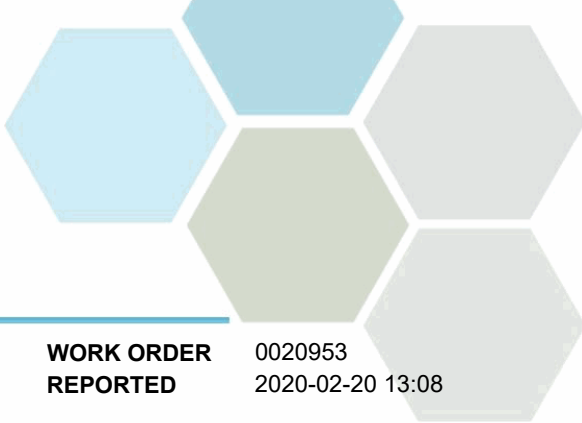
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 0020953  
**REPORTED** 2020-02-20 13:08

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP, TKN, NH3, TP in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for TP, DP, NH3, TKN in the laboratory and the holding time has been extended.
- PRESb Sample has been preserved for TP,DP,NH3,TKN in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0020953  
2020-02-20 13:08

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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
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

### 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. The quality control (QC) data is available upon request

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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0030939
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-03-11 11:55 / 4°C 2020-03-13 15:54
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B86413
<b>PROJECT</b>	OK Falls WWTP MORC		
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: YES

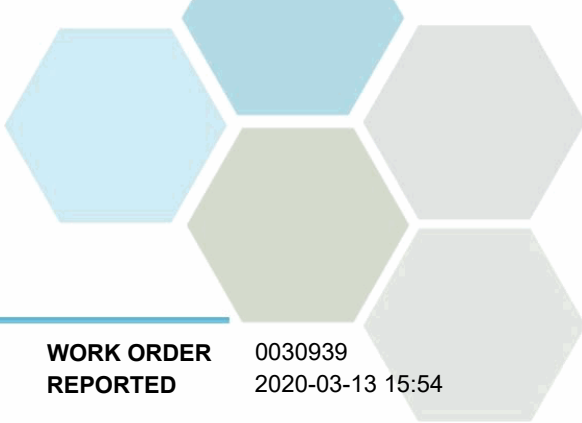
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0030939  
2020-03-13 15:54

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0030939-01) | Matrix: Water | Sampled: 2020-03-10 11:13**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-11	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-11	

**Okanagan River Channel 100m Downstream - Bacteria (0030939-02) | Matrix: Water | Sampled: 2020-03-10 11:30**

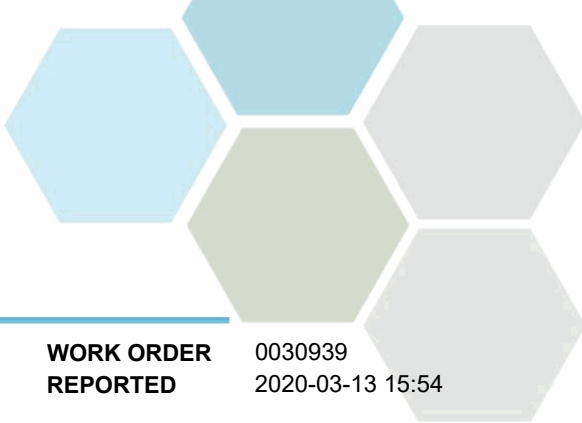
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	1.0	1.0	MPN/100 mL	2020-03-11	
E. coli (Q-Tray)	1.0	1.0	MPN/100 mL	2020-03-11	

**Okanagan River Channel 500m Downstream - Bacteria (0030939-03) | Matrix: Water | Sampled: 2020-03-10 11:45**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	1.0	1.0	MPN/100 mL	2020-03-11	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-03-11	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0030939  
2020-03-13 15:54

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0030940

**RECEIVED / TEMP** 2020-03-11 11:55 / 4°C  
**REPORTED** 2020-03-18 16:20

**COC NUMBER** B86413

### Introduction:

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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.

### Work Order Comments:

Custody Seals Intact: YES

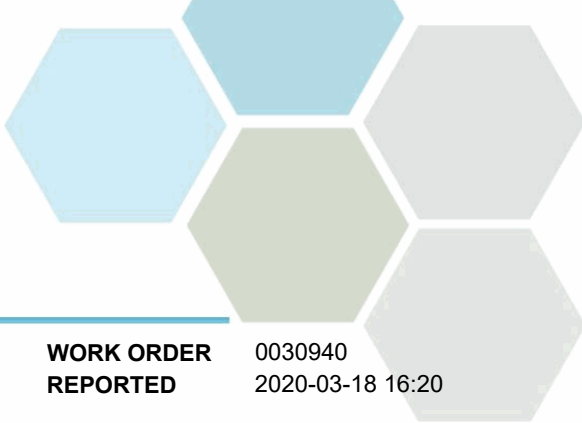
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0030940  
2020-03-18 16:20

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0030940-01)   Matrix: Water   Sampled: 2020-03-10 11:13</b>					FILT, PRESa

### Anions

Chloride	6.15	0.10	mg/L	2020-03-12	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-03-12	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-03-12	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-03-12	
Sulfate	29.7	1.0	mg/L	2020-03-12	

### Calculated Parameters

Hardness, Total (as CaCO3)	136	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.230	0.0500	mg/L	N/A	

### General Parameters

Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-03-12	
Conductivity (EC)	274	2.0	µS/cm	2020-03-11	
Nitrogen, Total Kjeldahl	0.230	0.050	mg/L	2020-03-13	
pH	8.17	0.10	pH units	2020-03-11	HT2
Phosphorus, Total (as P)	0.0093	0.0020	mg/L	2020-03-13	
Phosphorus, Total Dissolved	0.0040	0.0020	mg/L	2020-03-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-14	

### Total Metals

Calcium, total	36.2	0.20	mg/L	2020-03-18	
Magnesium, total	10.9	0.010	mg/L	2020-03-18	
Potassium, total	2.77	0.10	mg/L	2020-03-18	
Sodium, total	13.2	0.10	mg/L	2020-03-18	

## Okanagan River Channel 100m Downstream (0030940-02) | Matrix: Water | Sampled: 2020-03-10 11:30

FILT,  
PRESb

### Anions

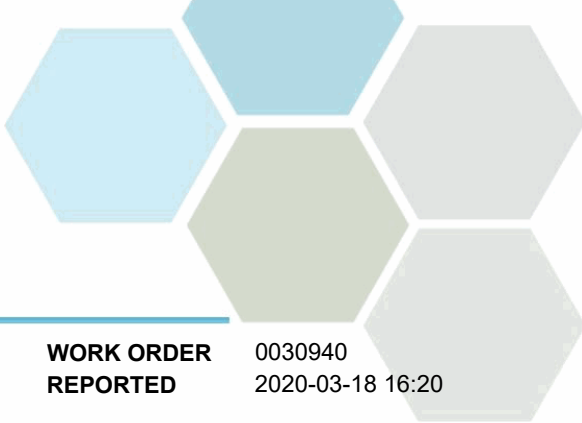
Chloride	6.23	0.10	mg/L	2020-03-12	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-03-12	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-03-12	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-03-12	
Sulfate	30.3	1.0	mg/L	2020-03-12	

### Calculated Parameters

Hardness, Total (as CaCO3)	146	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.250	0.0500	mg/L	N/A	

### General Parameters

Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-03-12	
Conductivity (EC)	287	2.0	µS/cm	2020-03-11	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0030940  
2020-03-18 16:20

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0030940-02)   Matrix: Water   Sampled: 2020-03-10 11:30, Continued</b>					FILT, PRESb

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.250	0.050	mg/L	2020-03-13	
pH	8.22	0.10	pH units	2020-03-11	HT2
Phosphorus, Total (as P)	0.0094	0.0020	mg/L	2020-03-13	
Phosphorus, Total Dissolved	0.0037	0.0020	mg/L	2020-03-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-14	

**Total Metals**

Calcium, total	39.2	0.20	mg/L	2020-03-18	
Magnesium, total	11.6	0.010	mg/L	2020-03-18	
Potassium, total	2.92	0.10	mg/L	2020-03-18	
Sodium, total	13.8	0.10	mg/L	2020-03-18	

**Okanagan River Channel 500m Downstream (0030940-03) | Matrix: Water | Sampled: 2020-03-10 11:45**

FILT, PRES

**Anions**

Chloride	6.20	0.10	mg/L	2020-03-12	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-03-12	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-03-12	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-03-12	
Sulfate	29.8	1.0	mg/L	2020-03-12	

**Calculated Parameters**

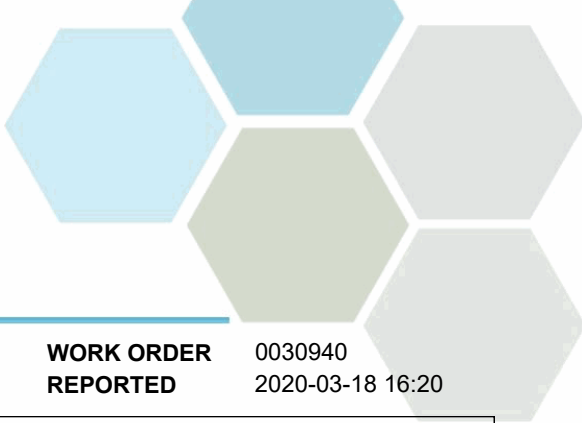
Hardness, Total (as CaCO3)	143	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.272	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.020	0.020	mg/L	2020-03-12	
Conductivity (EC)	279	2.0	µS/cm	2020-03-12	
Nitrogen, Total Kjeldahl	0.272	0.050	mg/L	2020-03-13	
pH	8.06	0.10	pH units	2020-03-12	HT2
Phosphorus, Total (as P)	0.0086	0.0020	mg/L	2020-03-13	
Phosphorus, Total Dissolved	0.0037	0.0020	mg/L	2020-03-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-03-14	

**Total Metals**

Calcium, total	38.2	0.20	mg/L	2020-03-18	
Magnesium, total	11.6	0.010	mg/L	2020-03-18	
Potassium, total	2.92	0.10	mg/L	2020-03-18	
Sodium, total	13.8	0.10	mg/L	2020-03-18	



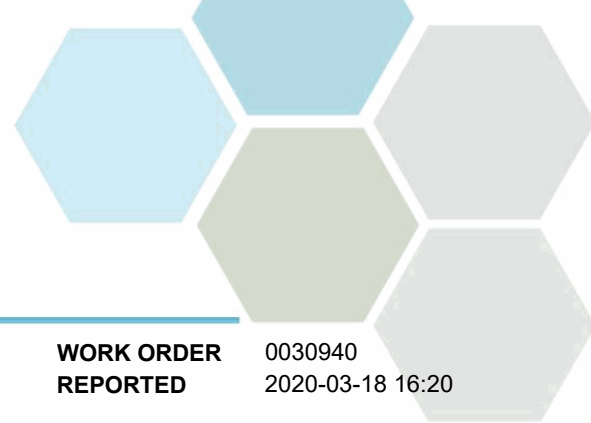
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 0030940  
**REPORTED** 2020-03-18 16:20

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP, TP, TKN, NH3 in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for TKN, NH3, DP, TP in the laboratory and the holding time has been extended.
- PRESb Sample has been preserved for TP, DP, TKN, NH3 in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0030940  
2020-03-18 16:20

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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
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

### General Comments:

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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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0041203
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-04-16 11:30 / 6°C 2020-04-22 15:51
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B91612
<b>PROJECT</b>	OK Falls WWTP QORC		
<b>PROJECT INFO</b>			

### 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.

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#### 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.

### Work Order Comments:

Custody Seals Intact: YES

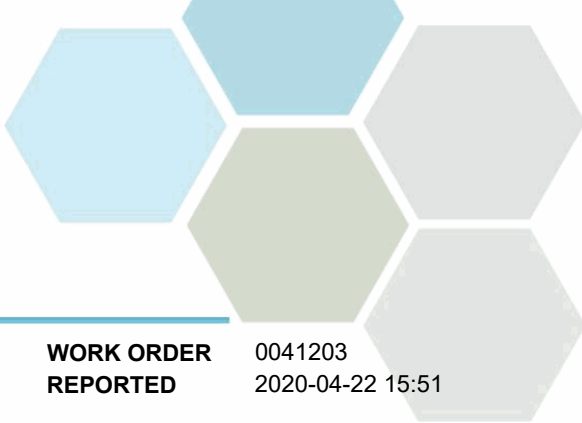
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041203  
2020-04-22 15:51

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0041203-01) | Matrix: Water | Sampled: 2020-04-15 11:10**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	4.1	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	4.1	1.0	MPN/100 mL	2020-04-16	

**Okanagan River Channel 500m Downstream - Bacteria (0041203-02) | Matrix: Water | Sampled: 2020-04-15 11:30**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	

**Okanagan River Channel 100m Downstream - Bacteria (0041203-03) | Matrix: Water | Sampled: 2020-04-15 11:45**

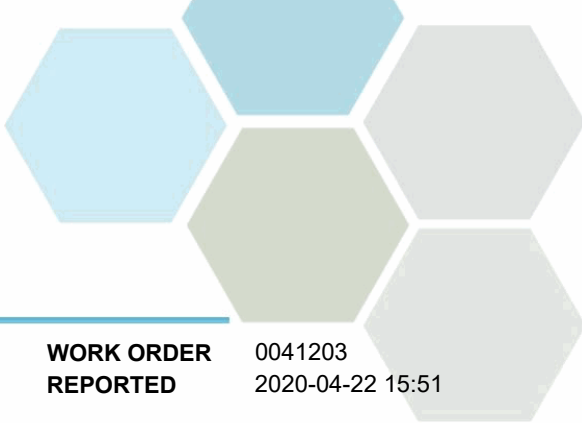
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	1.0	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	1.0	1.0	MPN/100 mL	2020-04-16	

**Field Blank - OK River 100m D/S - Bacteria (0041203-04) | Matrix: Water | Sampled: 2020-04-15 11:50**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	
E. coli (Q-Tray)	< 1.0	1.0	MPN/100 mL	2020-04-16	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041203  
2020-04-22 15:51

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 0041204

**RECEIVED / TEMP** 2020-04-16 11:30 / 6°C  
**REPORTED** 2020-04-23 07:46

**COC NUMBER** B91612

### Introduction:

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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.

### Work Order Comments:

Custody Seals Intact: YES

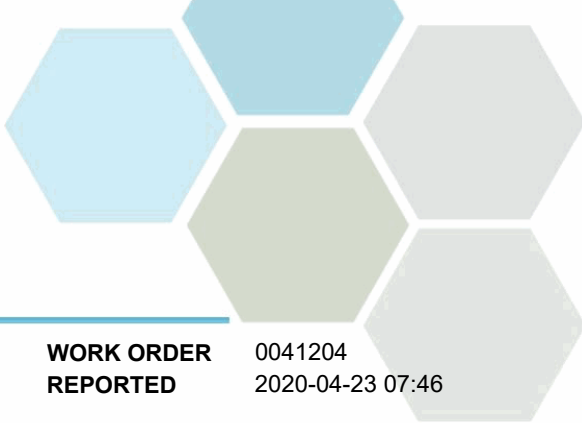
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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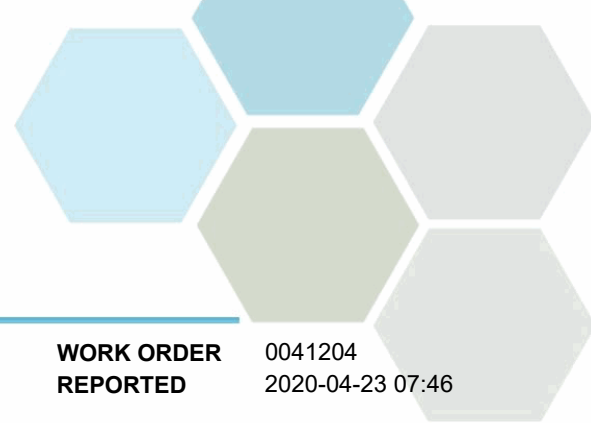


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0041204-01)   Matrix: Water   Sampled: 2020-04-15 11:10</b>					FILT, PRES
<b>Anions</b>					
Chloride	6.17	0.10	mg/L	2020-04-17	
Fluoride	0.14	0.10	mg/L	2020-04-17	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-04-17	
Sulfate	30.8	1.0	mg/L	2020-04-17	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	127	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.254	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	119	1.0	mg/L	2020-04-21	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Bicarbonate (as CaCO3)	119	1.0	mg/L	2020-04-21	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-04-21	
BOD, 5-day	< 5.8	2.0	mg/L	2020-04-22	
Chemical Oxygen Demand	13	20	mg/L	2020-04-20	
Conductivity (EC)	271	2.0	µS/cm	2020-04-21	
Nitrogen, Total Kjeldahl	0.254	0.050	mg/L	2020-04-20	
pH	8.13	0.10	pH units	2020-04-21	HT2
Phosphorus, Total (as P)	0.0105	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	0.0047	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	2.0	2.0	mg/L	2020-04-21	
<b>Total Metals</b>					
Aluminum, total	0.0113	0.0050	mg/L	2020-04-21	
Antimony, total	< 0.00020	0.00020	mg/L	2020-04-21	
Arsenic, total	0.00176	0.00050	mg/L	2020-04-21	
Barium, total	0.0236	0.0050	mg/L	2020-04-21	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-04-21	
Boron, total	0.0434	0.0050	mg/L	2020-04-21	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-04-21	
Calcium, total	34.6	0.20	mg/L	2020-04-21	
Chromium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-04-21	
Copper, total	0.00079	0.00040	mg/L	2020-04-21	
Iron, total	0.020	0.010	mg/L	2020-04-21	
Lead, total	< 0.00020	0.00020	mg/L	2020-04-21	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0041204-01)   Matrix: Water   Sampled: 2020-04-15 11:10, Continued</b>					FILT, PRES

**Total Metals, Continued**

Lithium, total	0.00362	0.00010	mg/L	2020-04-21	
Magnesium, total	9.71	0.010	mg/L	2020-04-21	
Manganese, total	0.00593	0.00020	mg/L	2020-04-21	
Mercury, total	< 0.000010	0.000010	mg/L	2020-04-22	
Molybdenum, total	0.00338	0.00010	mg/L	2020-04-21	
Nickel, total	< 0.00040	0.00040	mg/L	2020-04-21	
Phosphorus, total	< 0.050	0.050	mg/L	2020-04-21	
Potassium, total	2.59	0.10	mg/L	2020-04-21	
Selenium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Silicon, total	2.7	1.0	mg/L	2020-04-21	
Silver, total	< 0.000050	0.000050	mg/L	2020-04-21	
Sodium, total	12.4	0.10	mg/L	2020-04-21	
Strontium, total	0.333	0.0010	mg/L	2020-04-21	
Sulfur, total	9.6	3.0	mg/L	2020-04-21	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Thallium, total	< 0.000020	0.000020	mg/L	2020-04-21	
Thorium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Tin, total	< 0.00020	0.00020	mg/L	2020-04-21	
Titanium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-04-21	
Uranium, total	0.00259	0.000020	mg/L	2020-04-21	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-04-21	
Zinc, total	< 0.0040	0.0040	mg/L	2020-04-21	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-04-21	

**Okanagan River Channel 500m Downstream (0041204-02) | Matrix: Water | Sampled: 2020-04-15 11:30**

FILT,  
PRES

**Anions**

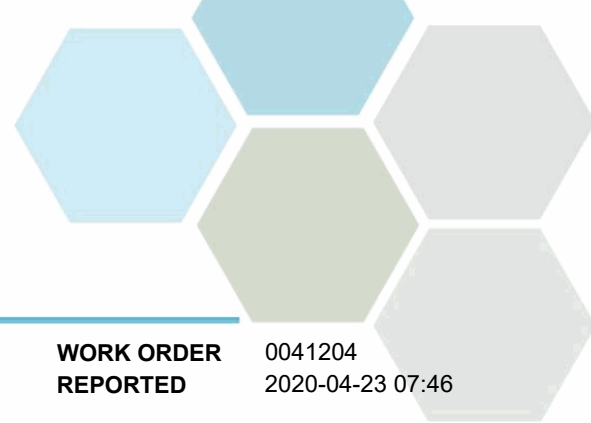
Chloride	6.30	0.10	mg/L	2020-04-17	
Fluoride	0.14	0.10	mg/L	2020-04-17	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-04-17	
Sulfate	30.3	1.0	mg/L	2020-04-17	

**Calculated Parameters**

Hardness, Total (as CaCO3)	128	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.338	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	121	1.0	mg/L	2020-04-21	
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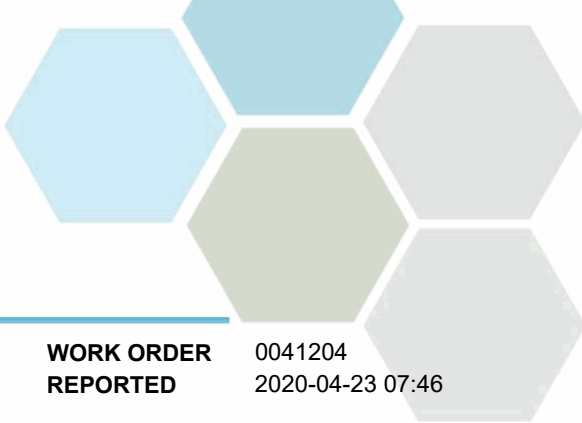


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 500m Downstream (0041204-02)   Matrix: Water   Sampled: 2020-04-15 11:30, Continued</b>					FILT, PRES
<b>General Parameters, Continued</b>					
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Bicarbonate (as CaCO3)	121	1.0	mg/L	2020-04-21	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-04-21	
BOD, 5-day	< 5.8	2.0	mg/L	2020-04-22	
Chemical Oxygen Demand	13	20	mg/L	2020-04-20	
Conductivity (EC)	272	2.0	µS/cm	2020-04-21	
Nitrogen, Total Kjeldahl	0.338	0.050	mg/L	2020-04-20	
pH	8.14	0.10	pH units	2020-04-21	HT2
Phosphorus, Total (as P)	0.0231	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	0.0053	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	2.4	2.0	mg/L	2020-04-21	
<b>Total Metals</b>					
Aluminum, total	0.0096	0.0050	mg/L	2020-04-21	
Antimony, total	< 0.00020	0.00020	mg/L	2020-04-21	
Arsenic, total	0.00165	0.00050	mg/L	2020-04-21	
Barium, total	0.0235	0.0050	mg/L	2020-04-21	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-04-21	
Boron, total	0.0257	0.0050	mg/L	2020-04-21	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-04-21	
Calcium, total	35.0	0.20	mg/L	2020-04-21	
Chromium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-04-21	
Copper, total	0.00062	0.00040	mg/L	2020-04-21	
Iron, total	0.020	0.010	mg/L	2020-04-21	
Lead, total	< 0.00020	0.00020	mg/L	2020-04-21	
Lithium, total	0.00371	0.00010	mg/L	2020-04-21	
Magnesium, total	9.72	0.010	mg/L	2020-04-21	
Manganese, total	0.00588	0.00020	mg/L	2020-04-21	
Mercury, total	< 0.000010	0.000010	mg/L	2020-04-22	
Molybdenum, total	0.00341	0.00010	mg/L	2020-04-21	
Nickel, total	< 0.00040	0.00040	mg/L	2020-04-21	
Phosphorus, total	< 0.050	0.050	mg/L	2020-04-21	
Potassium, total	2.61	0.10	mg/L	2020-04-21	
Selenium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Silicon, total	2.8	1.0	mg/L	2020-04-21	
Silver, total	< 0.000050	0.000050	mg/L	2020-04-21	
Sodium, total	12.4	0.10	mg/L	2020-04-21	
Strontium, total	0.337	0.0010	mg/L	2020-04-21	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 500m Downstream (0041204-02)   Matrix: Water   Sampled: 2020-04-15 11:30, Continued</b>					FILT, PRES

**Total Metals, Continued**

Sulfur, total	10.1	3.0	mg/L	2020-04-21	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Thallium, total	< 0.000020	0.000020	mg/L	2020-04-21	
Thorium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Tin, total	< 0.00020	0.00020	mg/L	2020-04-21	
Titanium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-04-21	
Uranium, total	0.00268	0.000020	mg/L	2020-04-21	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-04-21	
Zinc, total	< 0.0040	0.0040	mg/L	2020-04-21	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-04-21	

**Okanagan River Channel 100m Downstream (0041204-03) | Matrix: Water | Sampled: 2020-04-15 11:45**

FILT, PRES

**Anions**

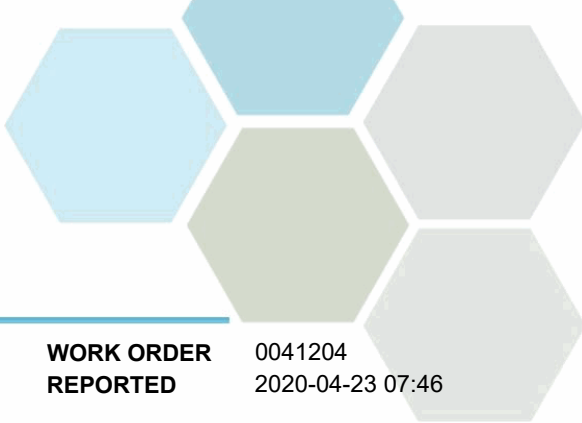
Chloride	6.33	0.10	mg/L	2020-04-17	
Fluoride	0.14	0.10	mg/L	2020-04-17	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-04-17	
Sulfate	30.8	1.0	mg/L	2020-04-17	

**Calculated Parameters**

Hardness, Total (as CaCO3)	127	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.218	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	121	1.0	mg/L	2020-04-21	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Bicarbonate (as CaCO3)	121	1.0	mg/L	2020-04-21	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-04-21	
BOD, 5-day	< 5.8	2.0	mg/L	2020-04-22	
Chemical Oxygen Demand	12	20	mg/L	2020-04-20	
Conductivity (EC)	275	2.0	µS/cm	2020-04-21	
Nitrogen, Total Kjeldahl	0.218	0.050	mg/L	2020-04-20	
pH	8.16	0.10	pH units	2020-04-21	HT2
Phosphorus, Total (as P)	0.0092	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	0.0055	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-04-21	



# TEST RESULTS

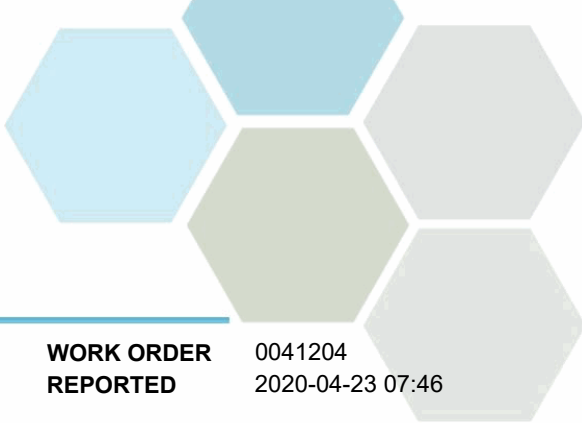
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0041204-03)   Matrix: Water   Sampled: 2020-04-15 11:45, Continued</b>					FILT, PRES
<i>Total Metals</i>					
Aluminum, total	0.0098	0.0050	mg/L	2020-04-21	
Antimony, total	< 0.00020	0.00020	mg/L	2020-04-21	
Arsenic, total	0.00148	0.00050	mg/L	2020-04-21	
Barium, total	0.0247	0.0050	mg/L	2020-04-21	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-04-21	
Boron, total	0.0199	0.0050	mg/L	2020-04-21	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-04-21	
Calcium, total	34.8	0.20	mg/L	2020-04-21	
Chromium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-04-21	
Copper, total	0.00067	0.00040	mg/L	2020-04-21	
Iron, total	0.017	0.010	mg/L	2020-04-21	
Lead, total	< 0.00020	0.00020	mg/L	2020-04-21	
Lithium, total	0.00366	0.00010	mg/L	2020-04-21	
Magnesium, total	9.67	0.010	mg/L	2020-04-21	
Manganese, total	0.00589	0.00020	mg/L	2020-04-21	
Mercury, total	< 0.000010	0.000010	mg/L	2020-04-22	
Molybdenum, total	0.00414	0.00010	mg/L	2020-04-21	
Nickel, total	< 0.00040	0.00040	mg/L	2020-04-21	
Phosphorus, total	< 0.050	0.050	mg/L	2020-04-21	
Potassium, total	2.57	0.10	mg/L	2020-04-21	
Selenium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Silicon, total	2.7	1.0	mg/L	2020-04-21	
Silver, total	< 0.000050	0.000050	mg/L	2020-04-21	
Sodium, total	12.3	0.10	mg/L	2020-04-21	
Strontium, total	0.339	0.0010	mg/L	2020-04-21	
Sulfur, total	9.9	3.0	mg/L	2020-04-21	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Thallium, total	< 0.000020	0.000020	mg/L	2020-04-21	
Thorium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Tin, total	< 0.00020	0.00020	mg/L	2020-04-21	
Titanium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-04-21	
Uranium, total	0.00268	0.000020	mg/L	2020-04-21	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-04-21	
Zinc, total	< 0.0040	0.0040	mg/L	2020-04-21	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-04-21	

**Field Blank - OK River 100m D/S (0041204-04) | Matrix: Water | Sampled: 2020-04-15 11:50**

FILT, PRES

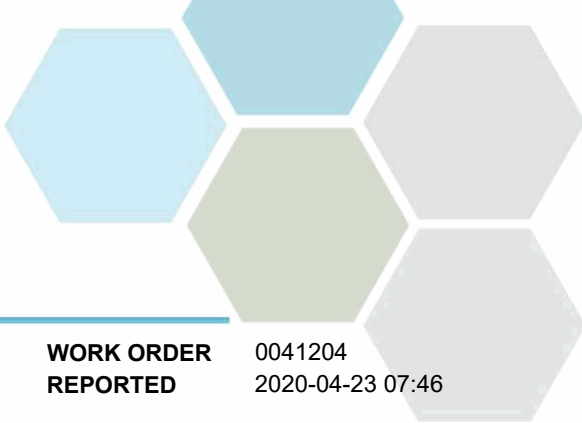


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Field Blank - OK River 100m D/S (0041204-04)   Matrix: Water   Sampled: 2020-04-15 11:50, Continued</b>					FILT, PRES
<b>Anions</b>					
Chloride	< 0.10	0.10	mg/L	2020-04-17	
Fluoride	< 0.10	0.10	mg/L	2020-04-17	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-04-17	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-04-17	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-04-17	
Sulfate	< 1.0	1.0	mg/L	2020-04-17	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	< 0.500	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-04-21	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-04-21	
BOD, 5-day	< 5.8	2.0	mg/L	2020-04-22	
Chemical Oxygen Demand	< 5	20	mg/L	2020-04-20	
Conductivity (EC)	< 2.0	2.0	µS/cm	2020-04-21	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2020-04-20	
pH	<b>5.17</b>	0.10	pH units	2020-04-21	HT2
Phosphorus, Total (as P)	<b>0.0039</b>	0.0020	mg/L	2020-04-17	
Phosphorus, Total Dissolved	<b>0.0033</b>	0.0020	mg/L	2020-04-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-04-21	
<b>Total Metals</b>					
Aluminum, total	< 0.0050	0.0050	mg/L	2020-04-21	
Antimony, total	< 0.00020	0.00020	mg/L	2020-04-21	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-04-21	
Barium, total	< 0.0050	0.0050	mg/L	2020-04-21	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-04-21	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-04-21	
Boron, total	< 0.0050	0.0050	mg/L	2020-04-21	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-04-21	
Calcium, total	< 0.20	0.20	mg/L	2020-04-21	
Chromium, total	< 0.00050	0.00050	mg/L	2020-04-21	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-04-21	
Copper, total	< 0.00040	0.00040	mg/L	2020-04-21	
Iron, total	< 0.010	0.010	mg/L	2020-04-21	
Lead, total	< 0.00020	0.00020	mg/L	2020-04-21	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Field Blank - OK River 100m D/S (0041204-04)   Matrix: Water   Sampled: 2020-04-15 11:50, Continued</b>					<b>FILT, PRES</b>

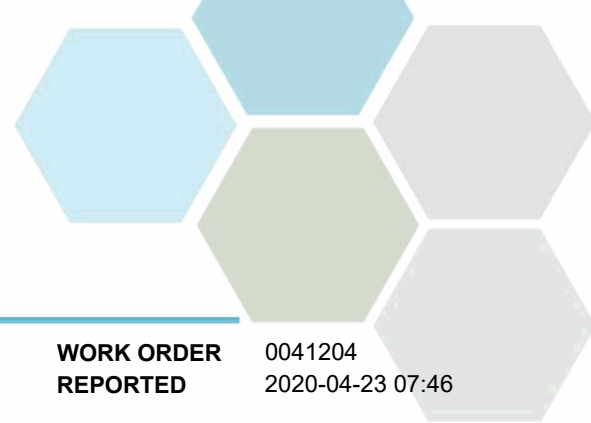
**Total Metals, Continued**

Lithium, total	< 0.00010	0.00010	mg/L	2020-04-21
Magnesium, total	< 0.010	0.010	mg/L	2020-04-21
Manganese, total	< 0.00020	0.00020	mg/L	2020-04-21
Mercury, total	< 0.000010	0.000010	mg/L	2020-04-22
Molybdenum, total	< 0.00010	0.00010	mg/L	2020-04-21
Nickel, total	< 0.00040	0.00040	mg/L	2020-04-21
Phosphorus, total	< 0.050	0.050	mg/L	2020-04-21
Potassium, total	< 0.10	0.10	mg/L	2020-04-21
Selenium, total	< 0.00050	0.00050	mg/L	2020-04-21
Silicon, total	< 1.0	1.0	mg/L	2020-04-21
Silver, total	< 0.000050	0.000050	mg/L	2020-04-21
Sodium, total	<b>3.34</b>	0.10	mg/L	2020-04-21
Strontium, total	< 0.0010	0.0010	mg/L	2020-04-21
Sulfur, total	<b>4.0</b>	3.0	mg/L	2020-04-21
Tellurium, total	< 0.00050	0.00050	mg/L	2020-04-21
Thallium, total	< 0.000020	0.000020	mg/L	2020-04-21
Thorium, total	< 0.00010	0.00010	mg/L	2020-04-21
Tin, total	< 0.00020	0.00020	mg/L	2020-04-21
Titanium, total	< 0.0050	0.0050	mg/L	2020-04-21
Tungsten, total	< 0.0010	0.0010	mg/L	2020-04-21
Uranium, total	< 0.000020	0.000020	mg/L	2020-04-21
Vanadium, total	< 0.0010	0.0010	mg/L	2020-04-21
Zinc, total	< 0.0040	0.0040	mg/L	2020-04-21
Zirconium, total	< 0.00010	0.00010	mg/L	2020-04-21

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0041204  
2020-04-23 07:46

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
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

### General Comments:

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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](mailto:acrump@caro.ca)



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0050716

**RECEIVED / TEMP** 2020-05-08 12:00 / 3°C

**REPORTED** 2020-05-11 14:11

**COC NUMBER** B91517

### 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.

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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.

### Work Order Comments:

Custody Seals Intact: YES

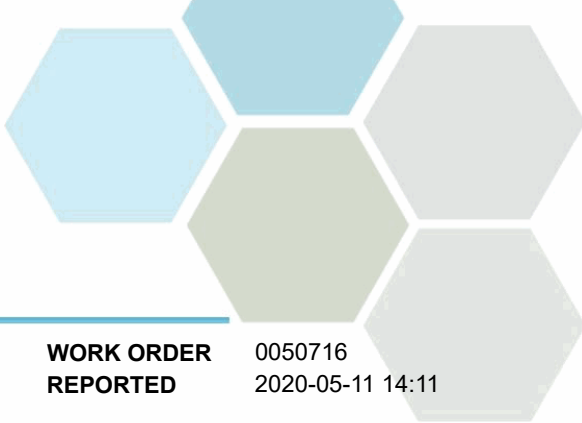
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0050716  
2020-05-11 14:11

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0050716-01) | Matrix: Water | Sampled: 2020-05-07 10:55**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-08	
E. coli (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-08	

**Okanagan River Channel 100m Downstream - Bacteria (0050716-02) | Matrix: Water | Sampled: 2020-05-07 11:05**

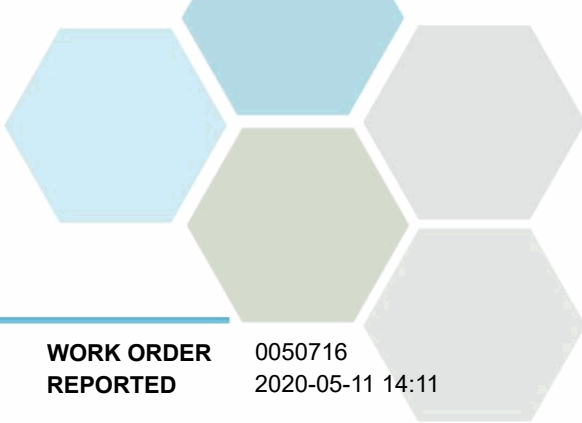
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	1.0	1.0	MPN/100 mL	2020-05-08	
E. coli (Q-Tray)	1.0	1.0	MPN/100 mL	2020-05-08	

**Okanagan River Channel 500m Downstream - Bacteria (0050716-03) | Matrix: Water | Sampled: 2020-05-07 11:15**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	5.2	1.0	MPN/100 mL	2020-05-08	
E. coli (Q-Tray)	3.0	1.0	MPN/100 mL	2020-05-08	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0050716  
2020-05-11 14:11

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0051246

**RECEIVED / TEMP** 2020-05-14 13:15 / 7°C  
**REPORTED** 2020-05-21 15:38

**COC NUMBER** B66315

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

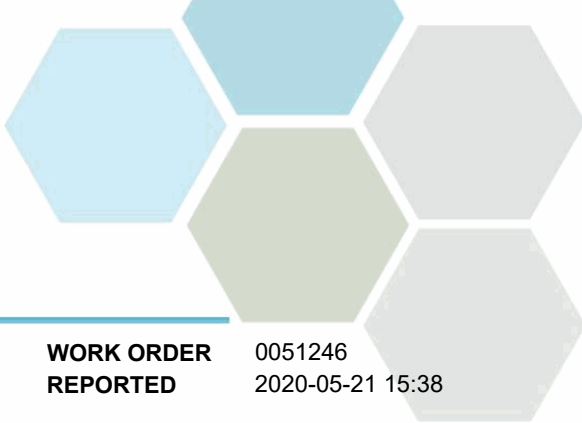
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### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051246  
2020-05-21 15:38

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0051246-01) | Matrix: Water | Sampled: 2020-05-13 13:15**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	2.0	1.0	MPN/100 mL	2020-05-14	
E. coli (Q-Tray)	2.0	1.0	MPN/100 mL	2020-05-14	

**Okanagan River Channel 100m Downstream - Bacteria (0051246-02) | Matrix: Water | Sampled: 2020-05-13 13:25**

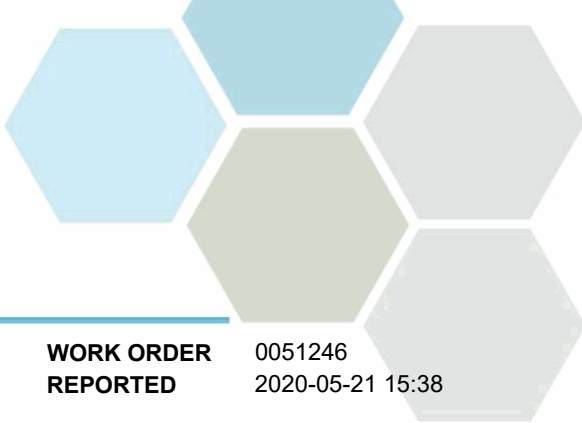
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-14	
E. coli (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-14	

**Okanagan River Channel 500m Downstream - Bacteria (0051246-03) | Matrix: Water | Sampled: 2020-05-13 13:40**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	13.4	1.0	MPN/100 mL	2020-05-14	
E. coli (Q-Tray)	13.4	1.0	MPN/100 mL	2020-05-14	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051246  
2020-05-21 15:38

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0051247

**RECEIVED / TEMP** 2020-05-14 13:17 / 7°C  
**REPORTED** 2020-05-22 14:10

**COC NUMBER** B66315

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

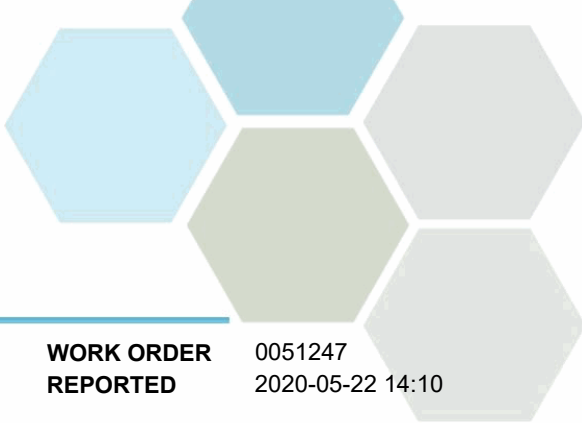
### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051247  
2020-05-22 14:10

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0051247-01)   Matrix: Water   Sampled: 2020-05-13 13:15</b>					FILT, PRES

**Anions**

Chloride	4.43	0.10	mg/L	2020-05-14	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-05-14	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-05-14	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-05-14	
Sulfate	22.9	1.0	mg/L	2020-05-14	

**Calculated Parameters**

Hardness, Total (as CaCO3)	101	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.280	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-05-20	
Conductivity (EC)	222	2.0	µS/cm	2020-05-16	
Nitrogen, Total Kjeldahl	0.280	0.050	mg/L	2020-05-22	
pH	7.76	0.10	pH units	2020-05-16	HT2
Phosphorus, Total (as P)	0.0272	0.0020	mg/L	2020-05-20	
Phosphorus, Total Dissolved	0.0067	0.0020	mg/L	2020-05-20	
Solids, Total Suspended	22.0	2.0	mg/L	2020-05-20	

**Total Metals**

Calcium, total	27.8	0.20	mg/L	2020-05-21	
Magnesium, total	7.61	0.010	mg/L	2020-05-21	
Potassium, total	2.18	0.10	mg/L	2020-05-21	
Sodium, total	9.67	0.10	mg/L	2020-05-21	

**Okanagan River Channel 100m Downstream (0051247-02) | Matrix: Water | Sampled: 2020-05-13 13:25**

FILT,  
PRES

**Anions**

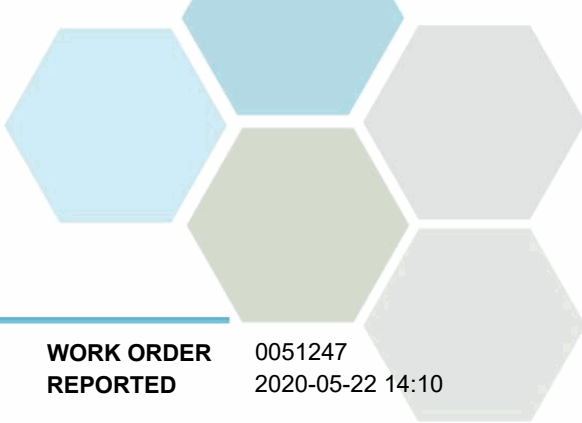
Chloride	4.98	0.10	mg/L	2020-05-14	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-05-14	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-05-14	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-05-14	
Sulfate	24.4	1.0	mg/L	2020-05-14	

**Calculated Parameters**

Hardness, Total (as CaCO3)	104	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.268	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-05-20	
Conductivity (EC)	239	2.0	µS/cm	2020-05-16	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051247  
2020-05-22 14:10

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0051247-02)   Matrix: Water   Sampled: 2020-05-13 13:25, Continued</b>					FILT, PRES

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.268	0.050	mg/L	2020-05-22	
pH	8.07	0.10	pH units	2020-05-16	HT2
Phosphorus, Total (as P)	0.0342	0.0020	mg/L	2020-05-20	
Phosphorus, Total Dissolved	0.0052	0.0020	mg/L	2020-05-20	
Solids, Total Suspended	15.2	2.0	mg/L	2020-05-20	

**Total Metals**

Calcium, total	28.5	0.20	mg/L	2020-05-21	
Magnesium, total	8.04	0.010	mg/L	2020-05-21	
Potassium, total	2.25	0.10	mg/L	2020-05-21	
Sodium, total	10.1	0.10	mg/L	2020-05-21	

**Okanagan River Channel 500m Downstream (0051247-03) | Matrix: Water | Sampled: 2020-05-13 13:40**

FILT,  
PRES

**Anions**

Chloride	5.06	0.10	mg/L	2020-05-14	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-05-14	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-05-14	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-05-14	
Sulfate	24.8	1.0	mg/L	2020-05-14	

**Calculated Parameters**

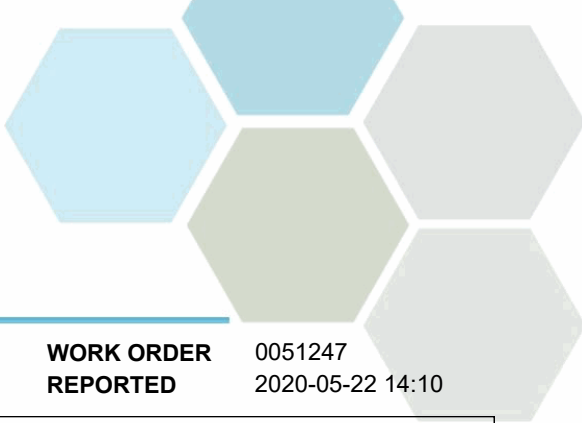
Hardness, Total (as CaCO3)	102	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.317	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-05-20	
Conductivity (EC)	242	2.0	µS/cm	2020-05-16	
Nitrogen, Total Kjeldahl	0.317	0.050	mg/L	2020-05-22	
pH	8.15	0.10	pH units	2020-05-16	HT2
Phosphorus, Total (as P)	0.0297	0.0020	mg/L	2020-05-20	
Phosphorus, Total Dissolved	0.0050	0.0020	mg/L	2020-05-20	
Solids, Total Suspended	12.0	2.0	mg/L	2020-05-20	

**Total Metals**

Calcium, total	27.6	0.20	mg/L	2020-05-21	
Magnesium, total	7.96	0.010	mg/L	2020-05-21	
Potassium, total	2.22	0.10	mg/L	2020-05-21	
Sodium, total	10.2	0.10	mg/L	2020-05-21	



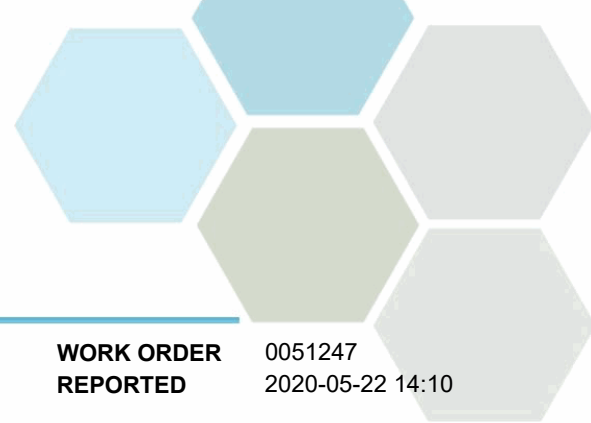
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 0051247  
**REPORTED** 2020-05-22 14:10

**Sample Qualifiers:**

FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.  
HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
PRES Sample has been preserved for TKN, DP, TP, NH3 in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051247  
2020-05-22 14:10

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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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 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
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

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0051658

**RECEIVED / TEMP** 2020-05-20 12:25 / 7°C  
**REPORTED** 2020-05-27 16:07

**COC NUMBER** B91725

### 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.

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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.

### Work Order Comments:

Custody Seals Intact: YES

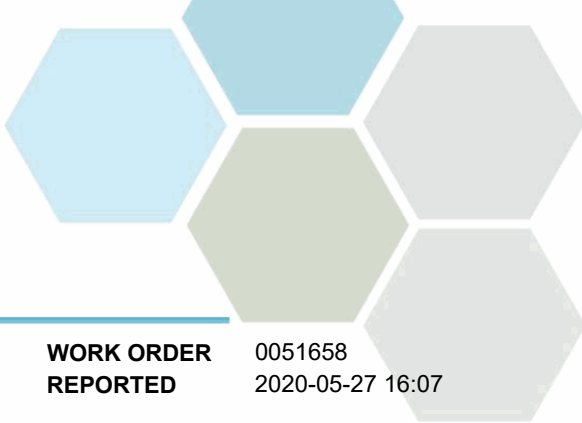
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051658  
2020-05-27 16:07

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0051658-01) | Matrix: Water | Sampled: 2020-05-20 07:25**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	17.3	1.0	MPN/100 mL	2020-05-21	
E. coli (Q-Tray)	12.1	1.0	MPN/100 mL	2020-05-21	

**Okanagan River Channel 100m Downstream - Bacteria (0051658-02) | Matrix: Water | Sampled: 2020-05-20 07:35**

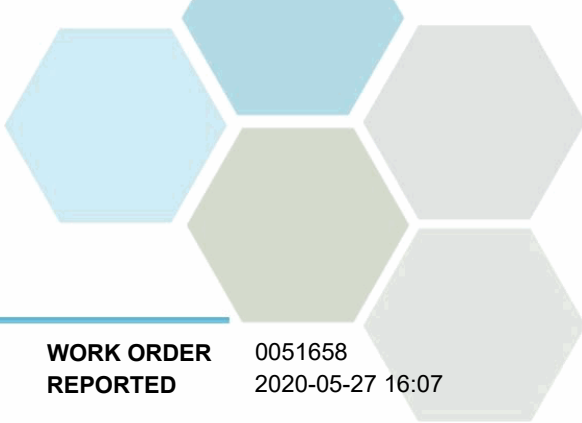
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	21.6	1.0	MPN/100 mL	2020-05-21	
E. coli (Q-Tray)	17.3	1.0	MPN/100 mL	2020-05-21	

**Okanagan River Channel 500m Downstream - Bacteria (0051658-03) | Matrix: Water | Sampled: 2020-05-20 07:45**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	21.6	1.0	MPN/100 mL	2020-05-21	
E. coli (Q-Tray)	20.1	1.0	MPN/100 mL	2020-05-21	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0051658  
2020-05-27 16:07

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0052255

**RECEIVED / TEMP** 2020-05-27 12:30 / 6°C

**REPORTED** 2020-05-29 15:46

**COC NUMBER** B92234

### 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.

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

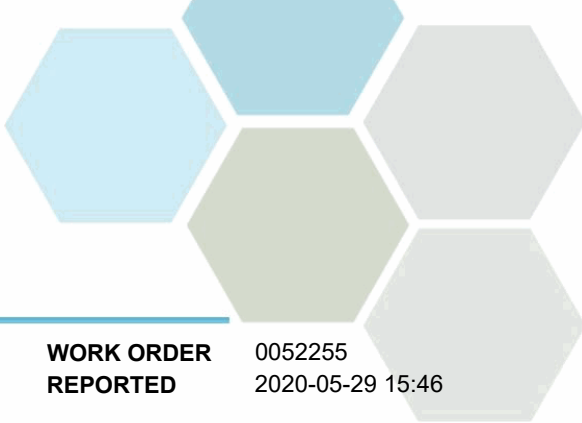
### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0052255  
2020-05-29 15:46

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0052255-01) | Matrix: Water | Sampled: 2020-05-26 11:45**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-27	
E. coli (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-27	

**Okanagan River Channel 100m Downstream - Bacteria (0052255-02) | Matrix: Water | Sampled: 2020-05-26 11:55**

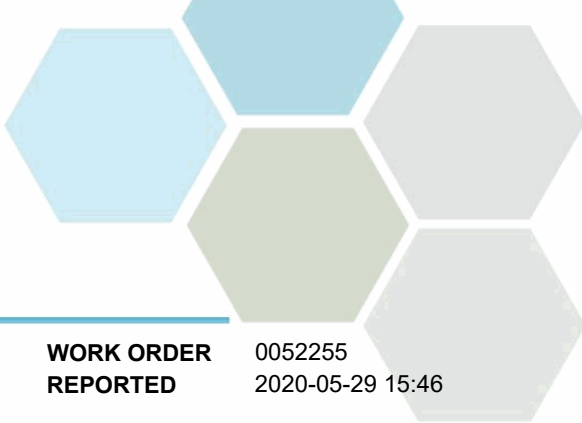
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-27	
E. coli (Q-Tray)	3.1	1.0	MPN/100 mL	2020-05-27	

**Okanagan River Channel 500m Downstream - Bacteria (0052255-03) | Matrix: Water | Sampled: 2020-05-26 12:00**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	5.2	1.0	MPN/100 mL	2020-05-27	
E. coli (Q-Tray)	5.2	1.0	MPN/100 mL	2020-05-27	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0052255  
2020-05-29 15:46

Analysis Description	Method Ref.	Technique	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0060487

**RECEIVED / TEMP** 2020-06-03 12:30 / 7°C

**REPORTED** 2020-06-10 15:50

**COC NUMBER** B92581

### 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.

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

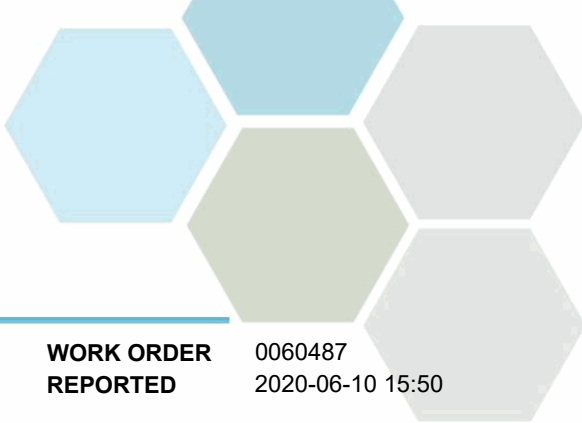
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0060487  
2020-06-10 15:50

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0060487-01) | Matrix: Water | Sampled: 2020-06-03 07:25**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	17.1	1.0	MPN/100 mL	2020-06-04	
E. coli (Q-Tray)	17.1	1.0	MPN/100 mL	2020-06-04	

**Okanagan River Channel 100m Downstream - Bacteria (0060487-02) | Matrix: Water | Sampled: 2020-06-03 07:30**

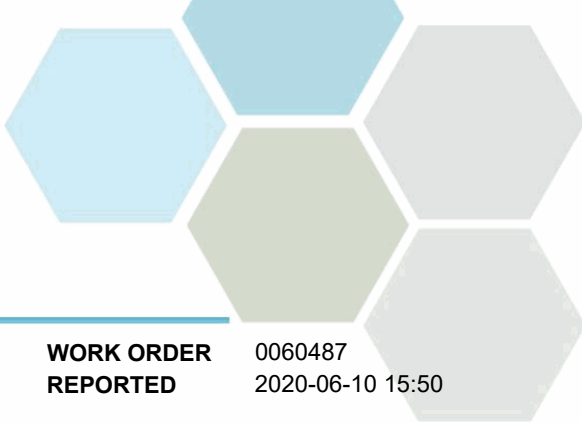
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	13.2	1.0	MPN/100 mL	2020-06-04	
E. coli (Q-Tray)	10.9	1.0	MPN/100 mL	2020-06-04	

**Okanagan River Channel 500m Downstream - Bacteria (0060487-03) | Matrix: Water | Sampled: 2020-06-03 07:35**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	8.6	1.0	MPN/100 mL	2020-06-04	
E. coli (Q-Tray)	8.6	1.0	MPN/100 mL	2020-06-04	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0060487  
2020-06-10 15:50

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0061228

**RECEIVED / TEMP** 2020-06-11 12:00 / 4°C

**REPORTED** 2020-06-12 15:10

**COC NUMBER** B92593

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

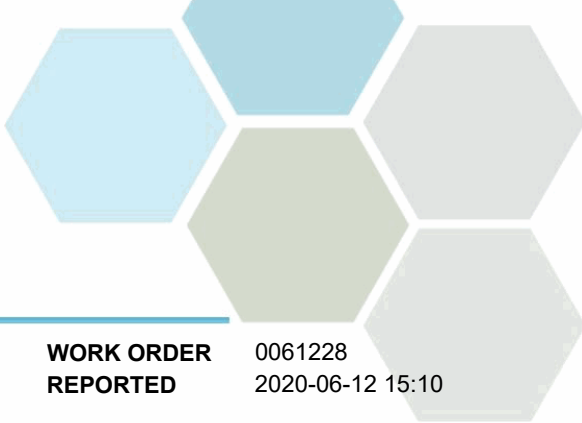
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061228  
2020-06-12 15:10

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0061228-01) | Matrix: Water | Sampled: 2020-06-10 10:20**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	14.8	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	13.5	1.0	MPN/100 mL	2020-06-11	

**Okanagan River Channel 100m Downstream - Bacteria (0061228-02) | Matrix: Water | Sampled: 2020-06-10 10:40**

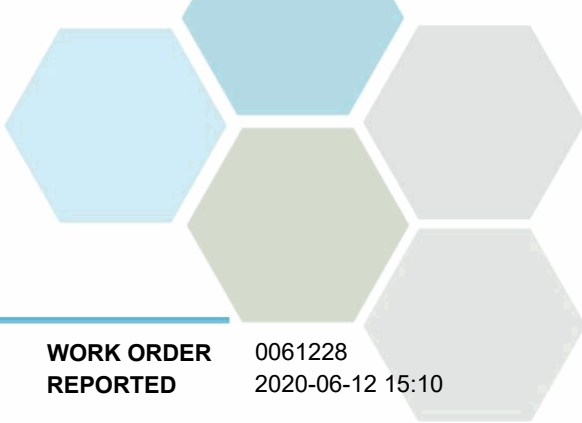
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	7.5	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	7.5	1.0	MPN/100 mL	2020-06-11	

**Okanagan River Channel 500m Downstream - Bacteria (0061228-03) | Matrix: Water | Sampled: 2020-06-10 10:50**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	4.1	1.0	MPN/100 mL	2020-06-11	
E. coli (Q-Tray)	4.1	1.0	MPN/100 mL	2020-06-11	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061228  
2020-06-12 15:10

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0061229

**RECEIVED / TEMP** 2020-06-11 12:00 / 4°C  
**REPORTED** 2020-06-18 16:31

**COC NUMBER** B92593

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### Work Order Comments:

Custody Seals Intact: YES

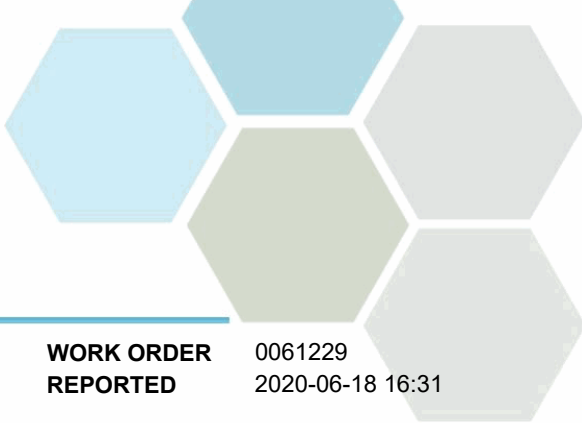
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Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061229  
2020-06-18 16:31

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0061229-01)   Matrix: Water   Sampled: 2020-06-10 10:20</b>					FILT, PRES

**Anions**

Chloride	4.75	0.10	mg/L	2020-06-14	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-06-14	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-06-14	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-06-14	HT1
Sulfate	25.9	1.0	mg/L	2020-06-14	

**Calculated Parameters**

Hardness, Total (as CaCO3)	101	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.231	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-06-16	
Conductivity (EC)	228	2.0	µS/cm	2020-06-12	
Nitrogen, Total Kjeldahl	0.231	0.050	mg/L	2020-06-16	
pH	8.05	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	0.0119	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	0.0053	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	< 3.3	2.0	mg/L	2020-06-17	

**Total Metals**

Calcium, total	27.0	0.20	mg/L	2020-06-17	
Magnesium, total	8.23	0.010	mg/L	2020-06-17	
Potassium, total	2.26	0.10	mg/L	2020-06-17	
Sodium, total	9.75	0.10	mg/L	2020-06-17	

**Okanagan River Channel 100m Downstream (0061229-02) | Matrix: Water | Sampled: 2020-06-10 10:40**

FILT,  
PRES

**Anions**

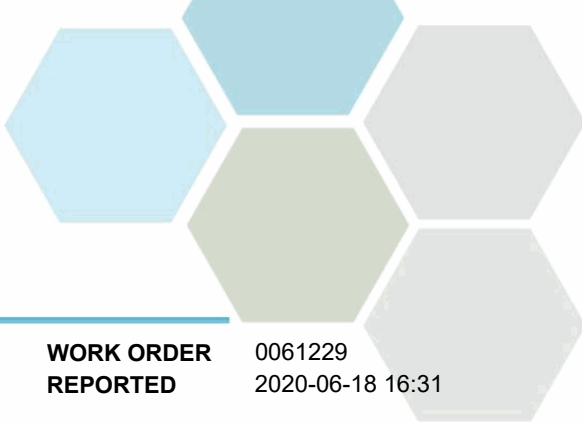
Chloride	4.81	0.10	mg/L	2020-06-14	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-06-14	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-06-14	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-06-14	HT1
Sulfate	26.2	1.0	mg/L	2020-06-14	

**Calculated Parameters**

Hardness, Total (as CaCO3)	99.5	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.241	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-06-16	
Conductivity (EC)	232	2.0	µS/cm	2020-06-12	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061229  
2020-06-18 16:31

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0061229-02)   Matrix: Water   Sampled: 2020-06-10 10:40, Continued</b>					FILT, PRES

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.241	0.050	mg/L	2020-06-16	
pH	8.09	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	0.0119	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	0.0051	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	< 3.3	2.0	mg/L	2020-06-17	

**Total Metals**

Calcium, total	27.1	0.20	mg/L	2020-06-18	
Magnesium, total	7.70	0.010	mg/L	2020-06-18	
Potassium, total	2.29	0.10	mg/L	2020-06-18	
Sodium, total	9.72	0.10	mg/L	2020-06-18	

**Okanagan River Channel 500m Downstream (0061229-03) | Matrix: Water | Sampled: 2020-06-10 10:50**

FILT,  
PRES

**Anions**

Chloride	4.78	0.10	mg/L	2020-06-14	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-06-14	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-06-14	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-06-14	HT1
Sulfate	26.1	1.0	mg/L	2020-06-14	

**Calculated Parameters**

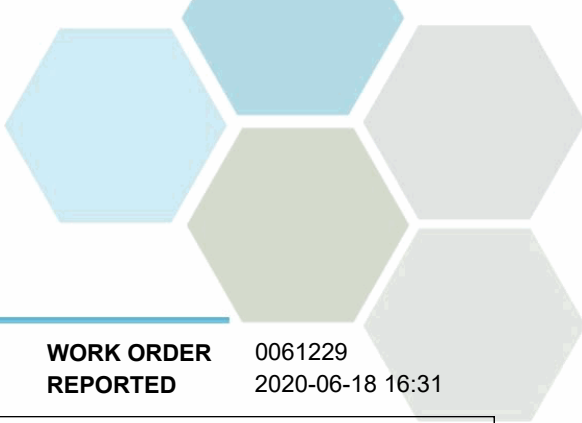
Hardness, Total (as CaCO3)	106	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.258	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-06-16	
Conductivity (EC)	231	2.0	µS/cm	2020-06-12	
Nitrogen, Total Kjeldahl	0.258	0.050	mg/L	2020-06-16	
pH	8.10	0.10	pH units	2020-06-12	HT2
Phosphorus, Total (as P)	0.0124	0.0020	mg/L	2020-06-16	
Phosphorus, Total Dissolved	0.0053	0.0020	mg/L	2020-06-16	
Solids, Total Suspended	< 3.3	2.0	mg/L	2020-06-17	

**Total Metals**

Calcium, total	28.3	0.20	mg/L	2020-06-17	
Magnesium, total	8.52	0.010	mg/L	2020-06-17	
Potassium, total	2.39	0.10	mg/L	2020-06-17	
Sodium, total	10.1	0.10	mg/L	2020-06-17	



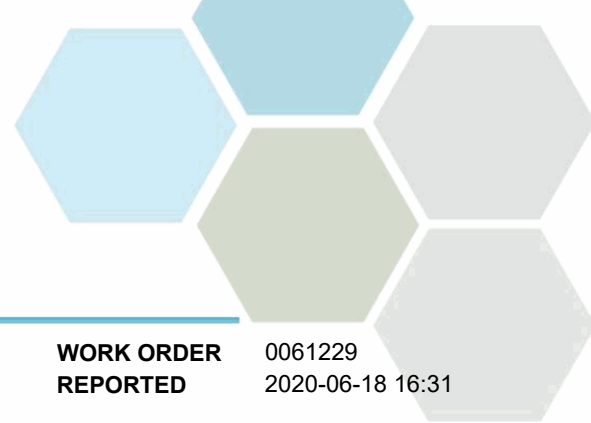
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 0061229  
**REPORTED** 2020-06-18 16:31

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- 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.
- PRES Sample has been preserved for NH3, TKN, TP & TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061229  
2020-06-18 16:31

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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

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**CERTIFICATE OF ANALYSIS**

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0061948
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-06-18 12:00 / 7°C 2020-06-24 15:09
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B66316
<b>PROJECT</b>	OK Falls WWTP MORC		
<b>PROJECT INFO</b>			

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**Work Order Comments:**

Custody Seals Intact: YES

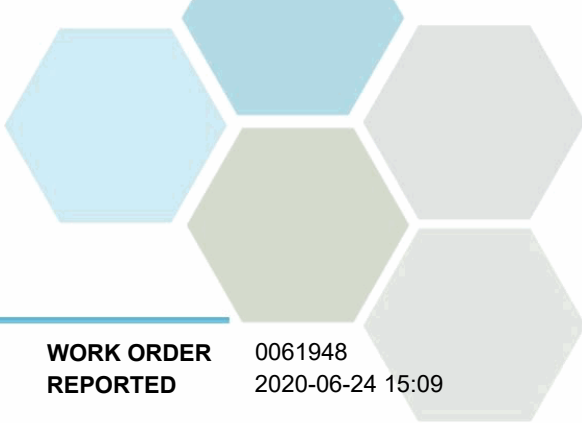
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**Authorized By:**

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061948  
2020-06-24 15:09

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0061948-01) | Matrix: Water | Sampled: 2020-06-17 13:00**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	7.4	1.0	MPN/100 mL	2020-06-18	
E. coli (Q-Tray)	6.3	1.0	MPN/100 mL	2020-06-18	

**Okanagan River Channel 100m Downstream - Bacteria (0061948-02) | Matrix: Water | Sampled: 2020-06-17 13:05**

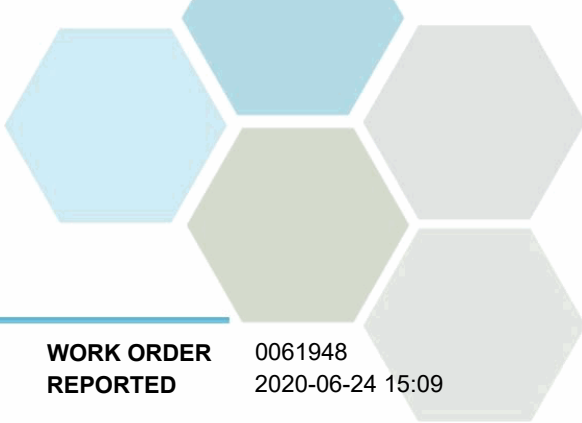
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	6.3	1.0	MPN/100 mL	2020-06-18	
E. coli (Q-Tray)	6.3	1.0	MPN/100 mL	2020-06-18	

**Okanagan River Channel 500m Downstream - Bacteria (0061948-03) | Matrix: Water | Sampled: 2020-06-17 13:12**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	7.5	1.0	MPN/100 mL	2020-06-18	
E. coli (Q-Tray)	7.5	1.0	MPN/100 mL	2020-06-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0061948  
2020-06-24 15:09

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

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RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
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*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability*



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0062636

**RECEIVED / TEMP** 2020-06-25 12:30 / 7°C

**REPORTED** 2020-06-26 17:09

**COC NUMBER** B92991

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### Work Order Comments:

Custody Seals Intact: YES

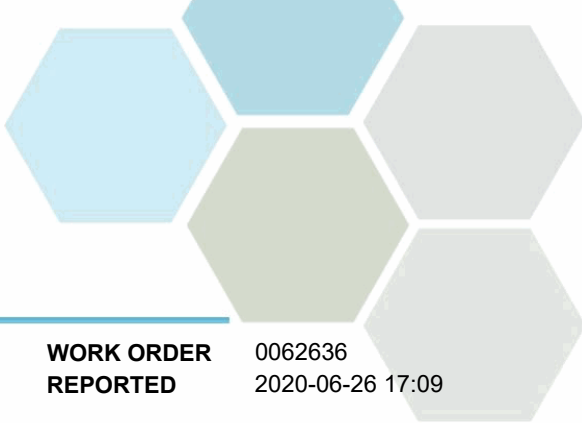
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0062636  
2020-06-26 17:09

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0062636-01) | Matrix: Water | Sampled: 2020-06-24 11:40**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	15.8	1.0	MPN/100 mL	2020-06-25	
E. coli (Q-Tray)	10.9	1.0	MPN/100 mL	2020-06-25	

**Okanagan River Channel 100m Downstream - Bacteria (0062636-02) | Matrix: Water | Sampled: 2020-06-24 11:45**

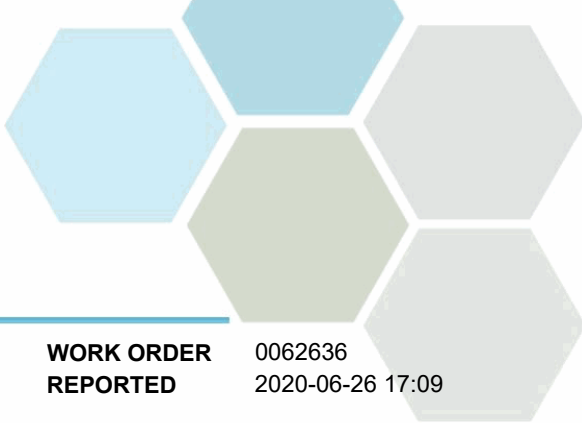
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	3.1	1.0	MPN/100 mL	2020-06-25	
E. coli (Q-Tray)	3.1	1.0	MPN/100 mL	2020-06-25	

**Okanagan River Channel 500m Downstream - Bacteria (0062636-03) | Matrix: Water | Sampled: 2020-06-24 11:53**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	9.6	1.0	MPN/100 mL	2020-06-25	
E. coli (Q-Tray)	8.4	1.0	MPN/100 mL	2020-06-25	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0062636  
2020-06-26 17:09

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0063046

**RECEIVED / TEMP** 2020-06-30 15:00 / 3°C

**REPORTED** 2020-07-02 16:18

**COC NUMBER** B93048

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

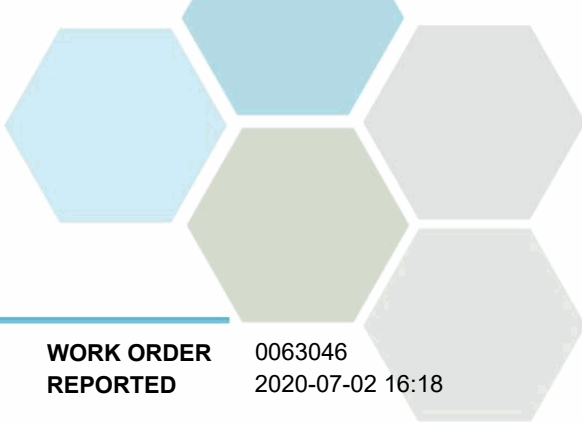
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0063046  
2020-07-02 16:18

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0063046-01) | Matrix: Water | Sampled: 2020-06-29 10:55**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	21.8	1.0	MPN/100 mL	2020-06-30	
E. coli (Q-Tray)	20.3	1.0	MPN/100 mL	2020-06-30	

**Okanagan River Channel 100m Downstream - Bacteria (0063046-02) | Matrix: Water | Sampled: 2020-06-29 11:05**

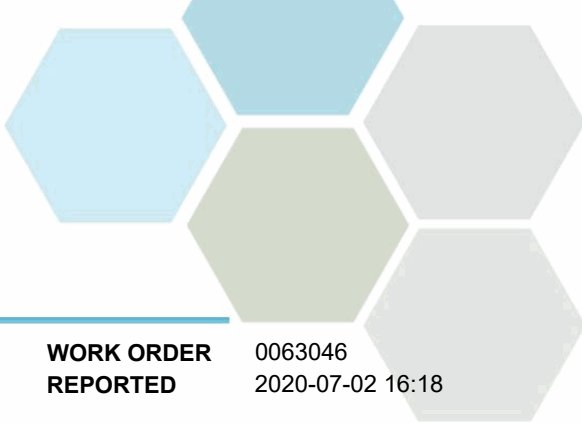
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	9.6	1.0	MPN/100 mL	2020-06-30	
E. coli (Q-Tray)	9.6	1.0	MPN/100 mL	2020-06-30	

**Okanagan River Channel 500m Downstream - Bacteria (0063046-03) | Matrix: Water | Sampled: 2020-06-29 11:10**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	7.5	1.0	MPN/100 mL	2020-06-30	
E. coli (Q-Tray)	7.5	1.0	MPN/100 mL	2020-06-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0063046  
2020-07-02 16:18

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0070850

**RECEIVED / TEMP** 2020-07-09 12:30 / 5°C  
**REPORTED** 2020-07-14 15:20

**COC NUMBER** B93110

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

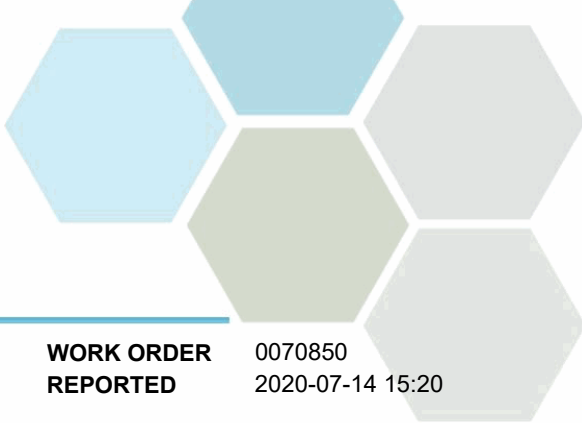
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0070850  
2020-07-14 15:20

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0070850-01) | Matrix: Water | Sampled: 2020-07-08 10:25**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	8.6	1.0	MPN/100 mL	2020-07-09	
E. coli (Q-Tray)	8.6	1.0	MPN/100 mL	2020-07-09	

**Okanagan River Channel 100m Downstream - Bacteria (0070850-02) | Matrix: Water | Sampled: 2020-07-08 10:32**

*Microbiological Parameters*

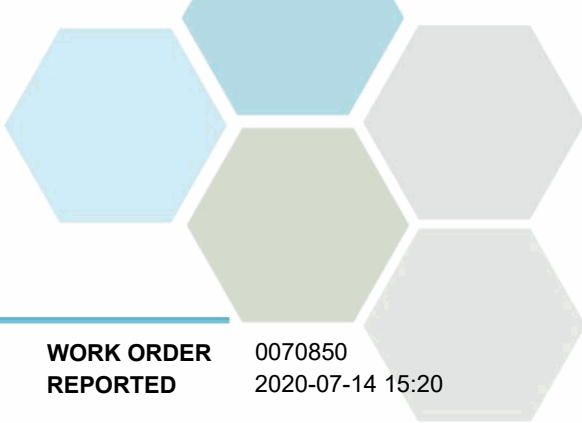
Coliforms, Fecal (Q-Tray)	6.3	1.0	MPN/100 mL	2020-07-09	
E. coli (Q-Tray)	5.2	1.0	MPN/100 mL	2020-07-09	

**Okanagan River Channel 500m Downstream - Bacteria (0070850-03) | Matrix: Water | Sampled: 2020-07-08 10:38**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	8.5	1.0	MPN/100 mL	2020-07-09	
E. coli (Q-Tray)	8.5	1.0	MPN/100 mL	2020-07-09	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0070850  
2020-07-14 15:20

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0071397

**RECEIVED / TEMP** 2020-07-15 12:20 / 9°C

**REPORTED** 2020-07-22 15:59

**COC NUMBER** B93047

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: NO

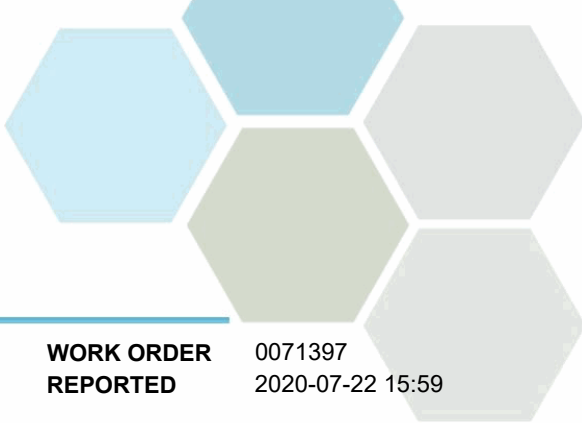
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0071397  
2020-07-22 15:59

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0071397-01) | Matrix: Water | Sampled: 2020-07-15 07:30**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	16	1	MPN/100 mL	2020-07-15	
E. coli (Q-Tray)	13	1	MPN/100 mL	2020-07-15	

**Okanagan River Channel 100m Upstream - Bacteria (0071397-02) | Matrix: Water | Sampled: 2020-07-15 07:35**

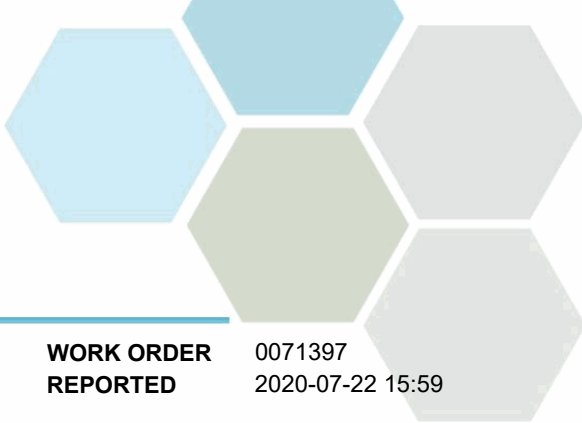
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	7	1	MPN/100 mL	2020-07-15	
E. coli (Q-Tray)	7	1	MPN/100 mL	2020-07-15	

**Okanagan River Channel 500m Downstream - Bacteria (0071397-03) | Matrix: Water | Sampled: 2020-07-15 07:45**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	5	1	MPN/100 mL	2020-07-15	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-07-15	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0071397  
2020-07-22 15:59

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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**CERTIFICATE OF ANALYSIS**

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0072248
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-07-23 12:00 / 11°C 2020-07-28 09:45
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B67422
<b>PROJECT</b>	OK Falls WWTP QORC		
<b>PROJECT INFO</b>			

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*Ahead of the Curve*



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**Work Order Comments:**

Custody Seals Intact: YES

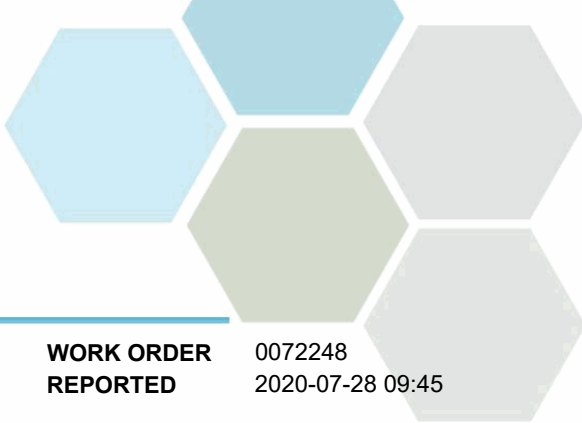
*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

**Authorized By:**

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072248  
2020-07-28 09:45

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Downstream - Bacteria (0072248-01) | Matrix: Water | Sampled: 2020-07-22 10:30**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	38	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	36	1	MPN/100 mL	2020-07-23	

**Okanagan River Channel REP #1 100m Downstream - Bacteria (0072248-02) | Matrix: Water | Sampled: 2020-07-22 10:30**

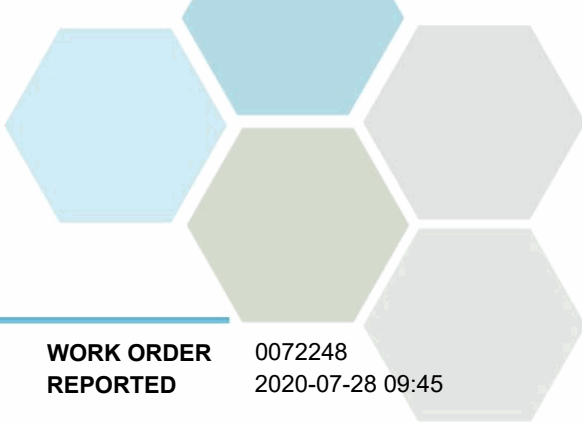
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	34	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	34	1	MPN/100 mL	2020-07-23	

**Okanagan River Channel REP #2 100m Downstream - Bacteria (0072248-03) | Matrix: Water | Sampled: 2020-07-22 10:30**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	34	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	34	1	MPN/100 mL	2020-07-23	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072248  
2020-07-28 09:45

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
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## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0072252
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-07-23 12:00 / 11°C 2020-07-30 14:15
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B67422
<b>PROJECT</b>	OK Falls WWTP QORC		
<b>PROJECT INFO</b>			

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

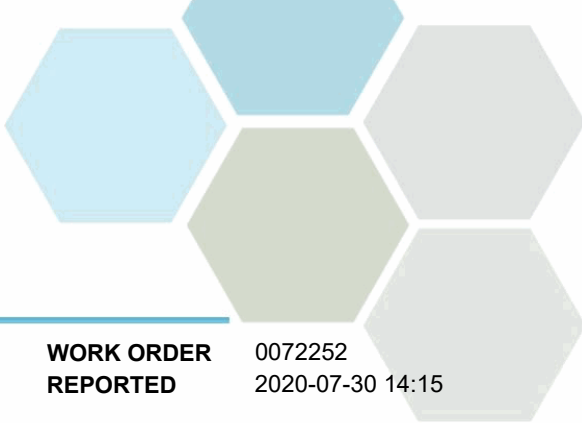
### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



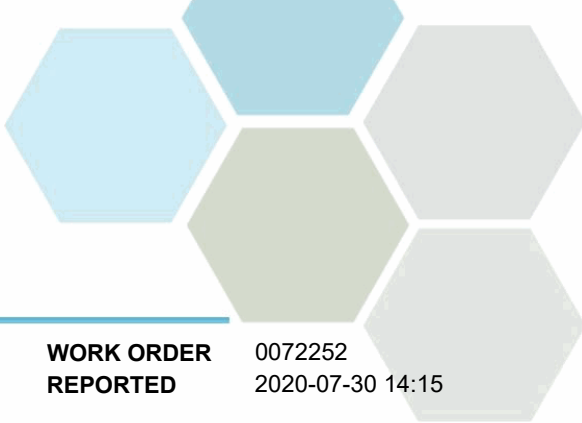


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0072252-01)   Matrix: Water   Sampled: 2020-07-22 10:30</b>					FILT, PRES
<b>Anions</b>					
Chloride	5.20	0.10	mg/L	2020-07-24	
Fluoride	0.13	0.10	mg/L	2020-07-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-07-24	
Sulfate	27.3	1.0	mg/L	2020-07-24	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	121	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.252	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	108	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Bicarbonate (as CaCO3)	108	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-07-24	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
Chemical Oxygen Demand	19	20	mg/L	2020-07-28	
Conductivity (EC)	252	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	0.252	0.050	mg/L	2020-07-29	
pH	8.16	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	0.0108	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	0.0052	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 4.0	2.0	mg/L	2020-07-28	
<b>Total Metals</b>					
Aluminum, total	0.0103	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-07-28	
Barium, total	0.0222	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	< 0.0500	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	32.3	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-07-28	
Copper, total	0.00081	0.00040	mg/L	2020-07-28	
Iron, total	0.018	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	0.00267	0.00010	mg/L	2020-07-28	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0072252-01)   Matrix: Water   Sampled: 2020-07-22 10:30, Continued</b>					FILT, PRES

**Total Metals, Continued**

Magnesium, total	9.64	0.010	mg/L	2020-07-28	
Manganese, total	0.00326	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	0.00313	0.00010	mg/L	2020-07-28	
Nickel, total	0.00047	0.00040	mg/L	2020-07-28	
Phosphorus, total	< 0.050	0.050	mg/L	2020-07-28	
Potassium, total	2.49	0.10	mg/L	2020-07-28	
Selenium, total	0.00051	0.00050	mg/L	2020-07-28	
Silicon, total	3.8	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	11.1	0.10	mg/L	2020-07-28	
Strontium, total	0.264	0.0010	mg/L	2020-07-28	
Sulfur, total	10.8	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	0.00236	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	< 0.0040	0.0040	mg/L	2020-07-28	
Zirconium, total	0.00010	0.00010	mg/L	2020-07-28	

**Okanagan River Channel REP#1 100m Downstream (0072252-02) | Matrix: Water | Sampled: 2020-07-22 10:30**

FILT, PRES

**Anions**

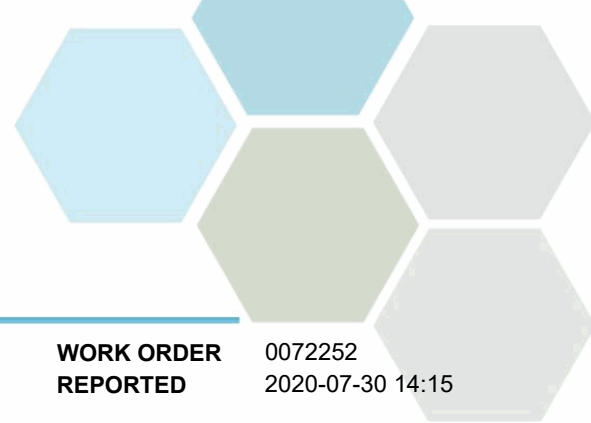
Chloride	5.11	0.10	mg/L	2020-07-24	
Fluoride	0.13	0.10	mg/L	2020-07-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-07-24	
Sulfate	27.4	1.0	mg/L	2020-07-24	

**Calculated Parameters**

Hardness, Total (as CaCO3)	119	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.233	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	120	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	

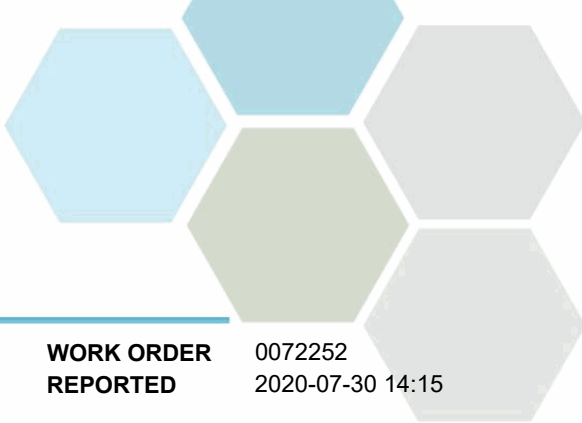


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel REP#1 100m Downstream (0072252-02)   Matrix: Water   Sampled: 2020-07-22 10:30, Continued</b>					FILT, PRES
<i>General Parameters, Continued</i>					
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	120	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-07-24	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
Chemical Oxygen Demand	16	20	mg/L	2020-07-28	
Conductivity (EC)	251	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	0.233	0.050	mg/L	2020-07-29	
pH	8.17	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	0.0134	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 4.0	2.0	mg/L	2020-07-28	
<i>Total Metals</i>					
Aluminum, total	0.0098	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	0.00051	0.00050	mg/L	2020-07-28	
Barium, total	0.0213	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	< 0.0500	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	31.8	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-07-28	
Copper, total	0.00077	0.00040	mg/L	2020-07-28	
Iron, total	0.015	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	0.00269	0.00010	mg/L	2020-07-28	
Magnesium, total	9.50	0.010	mg/L	2020-07-28	
Manganese, total	0.00319	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	0.00311	0.00010	mg/L	2020-07-28	
Nickel, total	< 0.00040	0.00040	mg/L	2020-07-28	
Phosphorus, total	< 0.050	0.050	mg/L	2020-07-28	
Potassium, total	2.46	0.10	mg/L	2020-07-28	
Selenium, total	0.00056	0.00050	mg/L	2020-07-28	
Silicon, total	3.7	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	10.9	0.10	mg/L	2020-07-28	
Strontium, total	0.256	0.0010	mg/L	2020-07-28	
Sulfur, total	10.4	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	

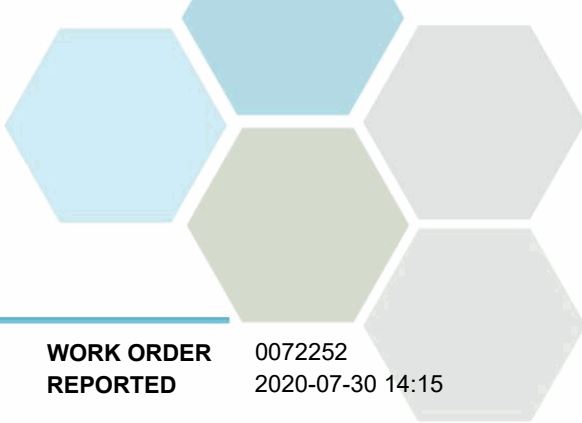


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel REP#1 100m Downstream (0072252-02)   Matrix: Water   Sampled: 2020-07-22 10:30, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	<b>0.00227</b>	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	< 0.0040	0.0040	mg/L	2020-07-28	
Zirconium, total	<b>0.00011</b>	0.00010	mg/L	2020-07-28	
<b>Okanagan River Channel REP#2 100m Downstream (0072252-03)   Matrix: Water   Sampled: 2020-07-22 10:30</b>					FILT, PRES
<i>Anions</i>					
Chloride	<b>5.24</b>	0.10	mg/L	2020-07-24	
Fluoride	<b>0.13</b>	0.10	mg/L	2020-07-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-07-24	
Sulfate	<b>27.2</b>	1.0	mg/L	2020-07-24	
<i>Calculated Parameters</i>					
Hardness, Total (as CaCO3)	<b>117</b>	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>0.220</b>	0.0500	mg/L	N/A	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	<b>104</b>	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Bicarbonate (as CaCO3)	<b>104</b>	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-07-24	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
Chemical Oxygen Demand	<b>18</b>	20	mg/L	2020-07-28	
Conductivity (EC)	<b>245</b>	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	<b>0.220</b>	0.050	mg/L	2020-07-29	
pH	<b>8.13</b>	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	<b>0.0114</b>	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-07-29	
<i>Total Metals</i>					
Aluminum, total	<b>0.0109</b>	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	



# TEST RESULTS

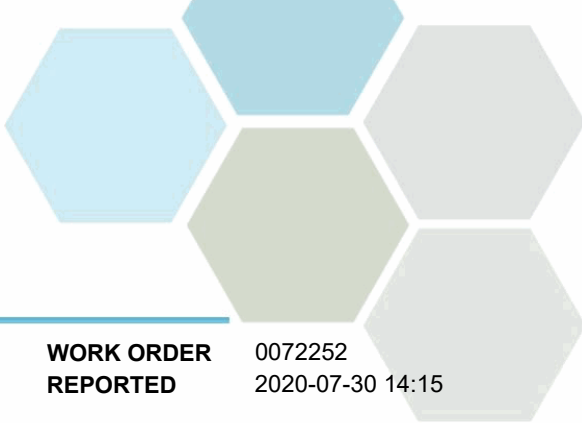
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel REP#2 100m Downstream (0072252-03)   Matrix: Water   Sampled: 2020-07-22 10:30, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Arsenic, total	< 0.00050	0.00050	mg/L	2020-07-28	
Barium, total	<b>0.0222</b>	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	< 0.0500	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	<b>30.8</b>	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-07-28	
Copper, total	<b>0.00070</b>	0.00040	mg/L	2020-07-28	
Iron, total	<b>0.015</b>	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	<b>0.00294</b>	0.00010	mg/L	2020-07-28	
Magnesium, total	<b>9.68</b>	0.010	mg/L	2020-07-28	
Manganese, total	<b>0.00322</b>	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	<b>0.00315</b>	0.00010	mg/L	2020-07-28	
Nickel, total	< 0.00040	0.00040	mg/L	2020-07-28	
Phosphorus, total	< 0.050	0.050	mg/L	2020-07-28	
Potassium, total	<b>2.49</b>	0.10	mg/L	2020-07-28	
Selenium, total	<b>0.00056</b>	0.00050	mg/L	2020-07-28	
Silicon, total	<b>3.9</b>	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	<b>11.1</b>	0.10	mg/L	2020-07-28	
Strontium, total	<b>0.261</b>	0.0010	mg/L	2020-07-28	
Sulfur, total	<b>10.7</b>	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	<b>0.00235</b>	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	< 0.0040	0.0040	mg/L	2020-07-28	
Zirconium, total	<b>0.00013</b>	0.00010	mg/L	2020-07-28	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

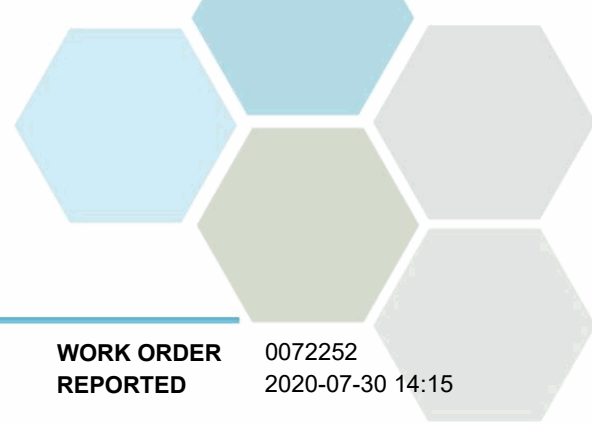
**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072252  
2020-07-30 14:15

### General Comments:

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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](mailto:acrump@caro.ca)

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 0072258

**RECEIVED / TEMP** 2020-07-23 12:00 / 5°C  
**REPORTED** 2020-07-28 09:44

**COC NUMBER** B67423

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

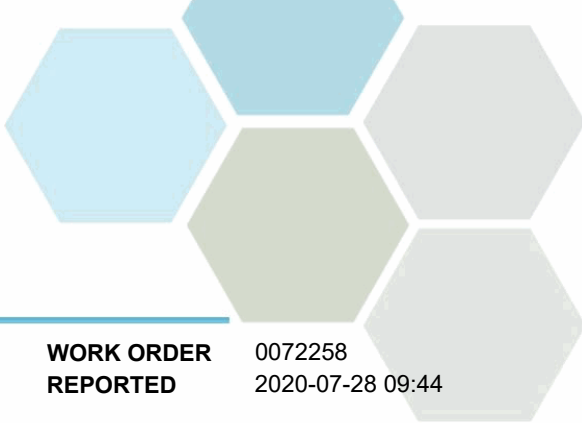
### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7





## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072258  
2020-07-28 09:44

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0072258-01) | Matrix: Water | Sampled: 2020-07-22 10:10**

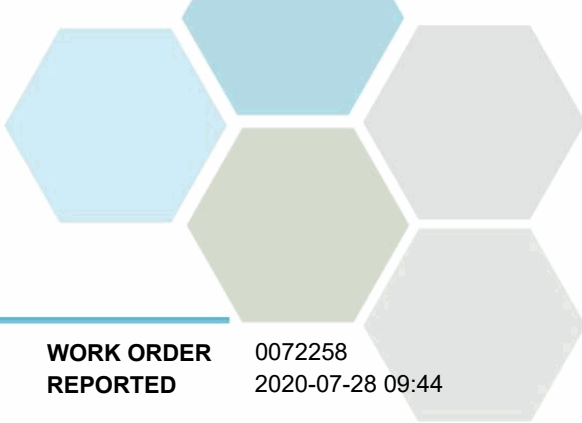
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	7	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	7	1	MPN/100 mL	2020-07-23	

**Okanagan River Channel 500m Downstream - Bacteria (0072258-02) | Matrix: Water | Sampled: 2020-07-22 10:50**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	18	1	MPN/100 mL	2020-07-23	
E. coli (Q-Tray)	18	1	MPN/100 mL	2020-07-23	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072258  
2020-07-28 09:44

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 0072260

**RECEIVED / TEMP REPORTED** 2020-07-23 12:00 / 5°C  
2020-07-30 11:57

**COC NUMBER** B67423

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**Work Order Comments:**

Custody Seals Intact: YES

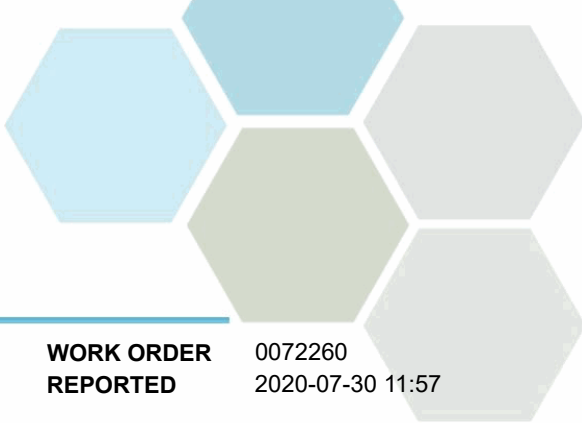
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**Authorized By:**

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072260  
2020-07-30 11:57

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0072260-01)   Matrix: Water   Sampled: 2020-07-22 10:10</b>					<b>FILT, PRES</b>

**Anions**

Chloride	5.07	0.10	mg/L	2020-07-24	
Fluoride	0.14	0.10	mg/L	2020-07-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-07-24	
Sulfate	27.5	1.0	mg/L	2020-07-24	

**Calculated Parameters**

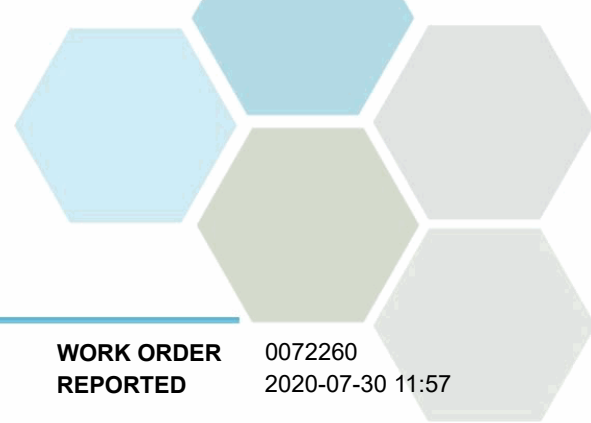
Hardness, Total (as CaCO3)	120	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.262	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	107	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Bicarbonate (as CaCO3)	107	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-07-27	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
Chemical Oxygen Demand	18	20	mg/L	2020-07-28	
Conductivity (EC)	253	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	0.262	0.050	mg/L	2020-07-29	
pH	8.18	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	0.0098	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 4.0	2.0	mg/L	2020-07-29	

**Total Metals**

Aluminum, total	0.0127	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-07-28	
Barium, total	0.0213	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	< 0.0500	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	32.3	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-07-28	
Copper, total	0.00086	0.00040	mg/L	2020-07-28	
Iron, total	0.015	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	0.00265	0.00010	mg/L	2020-07-28	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072260  
2020-07-30 11:57

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0072260-01)   Matrix: Water   Sampled: 2020-07-22 10:10, Continued</b>					FILT, PRES

**Total Metals, Continued**

Magnesium, total	9.62	0.010	mg/L	2020-07-28	
Manganese, total	0.00290	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	0.00313	0.00010	mg/L	2020-07-28	
Nickel, total	< 0.00040	0.00040	mg/L	2020-07-28	
Phosphorus, total	< 0.050	0.050	mg/L	2020-07-28	
Potassium, total	2.49	0.10	mg/L	2020-07-28	
Selenium, total	0.00053	0.00050	mg/L	2020-07-28	
Silicon, total	3.8	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	11.1	0.10	mg/L	2020-07-28	
Strontium, total	0.258	0.0010	mg/L	2020-07-28	
Sulfur, total	10.4	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	0.00230	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	< 0.0040	0.0040	mg/L	2020-07-28	
Zirconium, total	0.00012	0.00010	mg/L	2020-07-28	

**Okanagan River Channel 500m Downstream (0072260-02) | Matrix: Water | Sampled: 2020-07-22 10:50**

FILT, PRES

**Anions**

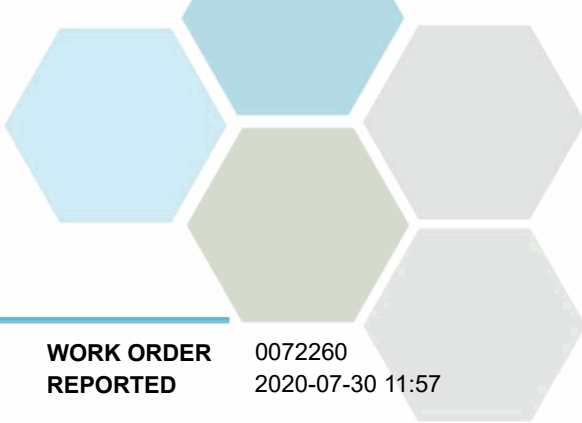
Chloride	5.16	0.10	mg/L	2020-07-24	
Fluoride	0.14	0.10	mg/L	2020-07-24	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-07-24	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-07-24	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-07-24	
Sulfate	27.2	1.0	mg/L	2020-07-24	

**Calculated Parameters**

Hardness, Total (as CaCO3)	122	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.268	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	108	1.0	mg/L	2020-07-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072260  
2020-07-30 11:57

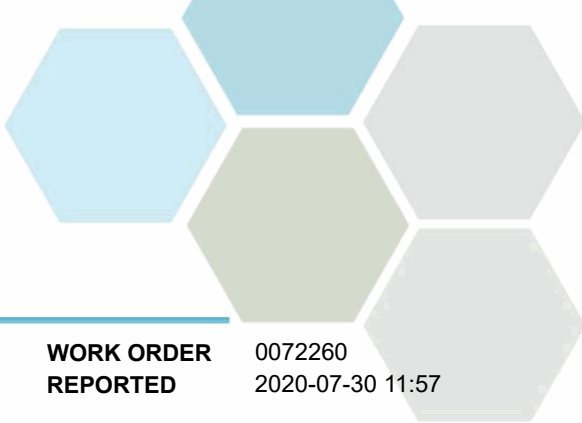
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 500m Downstream (0072260-02)   Matrix: Water   Sampled: 2020-07-22 10:50, Continued</b>					FILT, PRES

**General Parameters, Continued**

Alkalinity, Bicarbonate (as CaCO3)	108	1.0	mg/L	2020-07-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-07-24	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-07-27	
BOD, 5-day	< 2.0	2.0	mg/L	2020-07-29	
Chemical Oxygen Demand	19	20	mg/L	2020-07-28	
Conductivity (EC)	249	2.0	µS/cm	2020-07-24	
Nitrogen, Total Kjeldahl	0.268	0.050	mg/L	2020-07-29	
pH	8.20	0.10	pH units	2020-07-24	HT2
Phosphorus, Total (as P)	0.0123	0.0050	mg/L	2020-07-29	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-07-29	
Solids, Total Suspended	< 4.0	2.0	mg/L	2020-07-29	

**Total Metals**

Aluminum, total	0.0120	0.0050	mg/L	2020-07-28	
Antimony, total	< 0.00020	0.00020	mg/L	2020-07-28	
Arsenic, total	0.00053	0.00050	mg/L	2020-07-28	
Barium, total	0.0218	0.0050	mg/L	2020-07-28	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-07-28	
Boron, total	< 0.0500	0.0500	mg/L	2020-07-28	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-07-28	
Calcium, total	32.6	0.20	mg/L	2020-07-28	
Chromium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-07-28	
Copper, total	0.00093	0.00040	mg/L	2020-07-28	
Iron, total	0.025	0.010	mg/L	2020-07-28	
Lead, total	< 0.00020	0.00020	mg/L	2020-07-28	
Lithium, total	0.00269	0.00010	mg/L	2020-07-28	
Magnesium, total	9.76	0.010	mg/L	2020-07-28	
Manganese, total	0.00446	0.00020	mg/L	2020-07-28	
Mercury, total	< 0.000010	0.000010	mg/L	2020-07-28	
Molybdenum, total	0.00317	0.00010	mg/L	2020-07-28	
Nickel, total	< 0.00040	0.00040	mg/L	2020-07-28	
Phosphorus, total	< 0.050	0.050	mg/L	2020-07-28	
Potassium, total	2.51	0.10	mg/L	2020-07-28	
Selenium, total	< 0.00050	0.00050	mg/L	2020-07-28	
Silicon, total	3.9	1.0	mg/L	2020-07-28	
Silver, total	< 0.000050	0.000050	mg/L	2020-07-28	
Sodium, total	11.4	0.10	mg/L	2020-07-28	
Strontium, total	0.263	0.0010	mg/L	2020-07-28	
Sulfur, total	10.8	3.0	mg/L	2020-07-28	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-07-28	



## TEST RESULTS

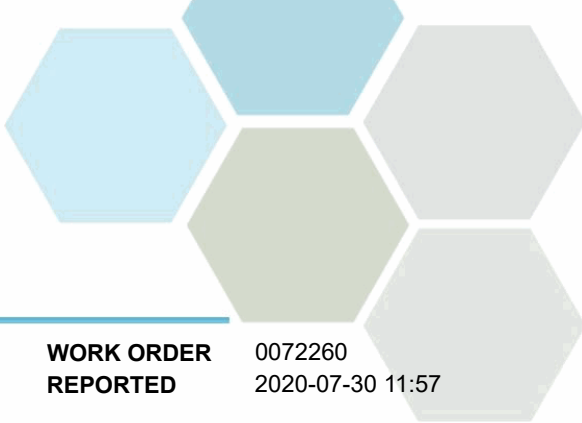
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072260  
2020-07-30 11:57

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 500m Downstream (0072260-02)   Matrix: Water   Sampled: 2020-07-22 10:50, Continued</b>					FILT, PRES
<i>Total Metals, Continued</i>					
Thallium, total	< 0.000020	0.000020	mg/L	2020-07-28	
Thorium, total	< 0.00010	0.00010	mg/L	2020-07-28	
Tin, total	< 0.00020	0.00020	mg/L	2020-07-28	
Titanium, total	< 0.0050	0.0050	mg/L	2020-07-28	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-07-28	
Uranium, total	<b>0.00225</b>	0.000020	mg/L	2020-07-28	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-07-28	
Zinc, total	< 0.0040	0.0040	mg/L	2020-07-28	
Zirconium, total	<b>0.00011</b>	0.00010	mg/L	2020-07-28	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072260  
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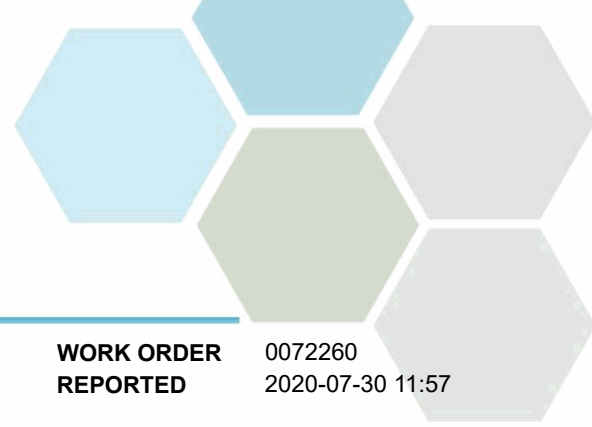
Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Biochemical Oxygen Demand in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 0072260  
2020-07-30 11:57

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0073036

**RECEIVED / TEMP** 2020-07-30 12:50 / 4°C  
**REPORTED** 2020-08-05 09:48

**COC NUMBER** B67425

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

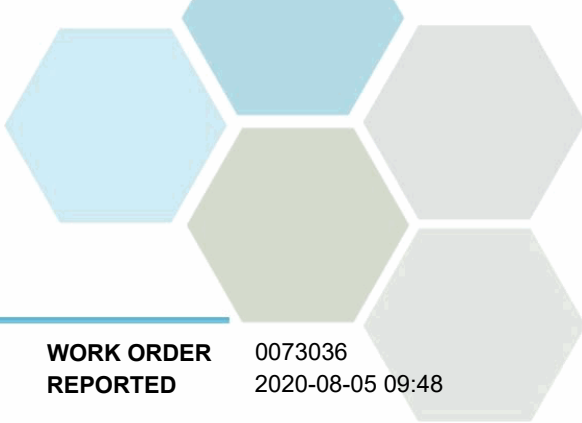
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0073036  
2020-08-05 09:48

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0073036-01) | Matrix: Water | Sampled: 2020-07-29 10:53**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	22	1	MPN/100 mL	2020-07-30	
E. coli (Q-Tray)	20	1	MPN/100 mL	2020-07-30	

**Okanagan River Channel 100m Downstream - Bacteria (0073036-02) | Matrix: Water | Sampled: 2020-07-29 10:58**

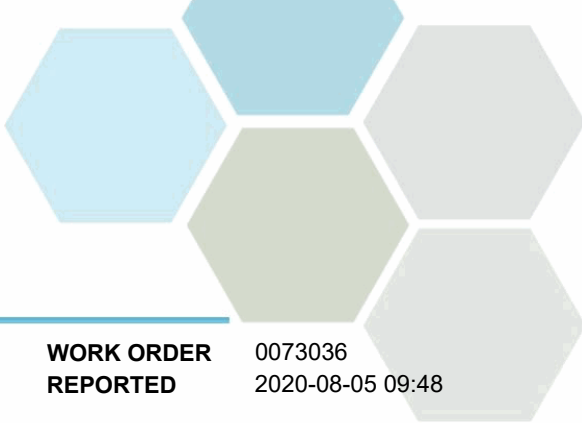
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	16	1	MPN/100 mL	2020-07-30	
E. coli (Q-Tray)	14	1	MPN/100 mL	2020-07-30	

**Okanagan River Channel 500m Downstream - Bacteria (0073036-03) | Matrix: Water | Sampled: 2020-07-29 11:03**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	13	1	MPN/100 mL	2020-07-30	
E. coli (Q-Tray)	13	1	MPN/100 mL	2020-07-30	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0073036  
2020-08-05 09:48

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0080566

**RECEIVED / TEMP** 2020-08-07 09:00 / 7°C

**REPORTED** 2020-10-20 17:00

**COC NUMBER** B93558

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

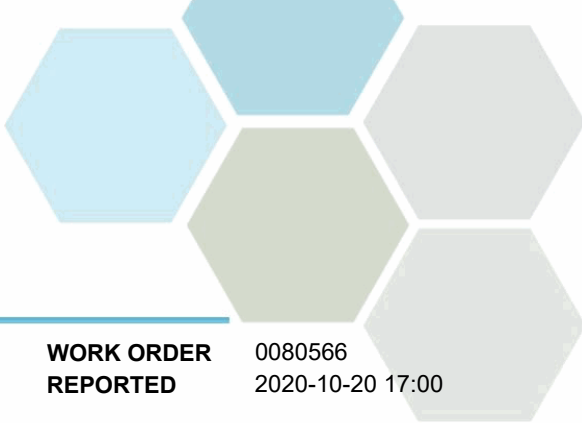
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0080566  
2020-10-20 17:00

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0080566-01) | Matrix: Water | Sampled: 2020-08-06 10:54**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	6	1	MPN/100 mL	2020-08-07	
E. coli (Q-Tray)	6	1	MPN/100 mL	2020-08-07	

**Okanagan River Channel 100m Downstream - Bacteria (0080566-02) | Matrix: Water | Sampled: 2020-08-06 11:00**

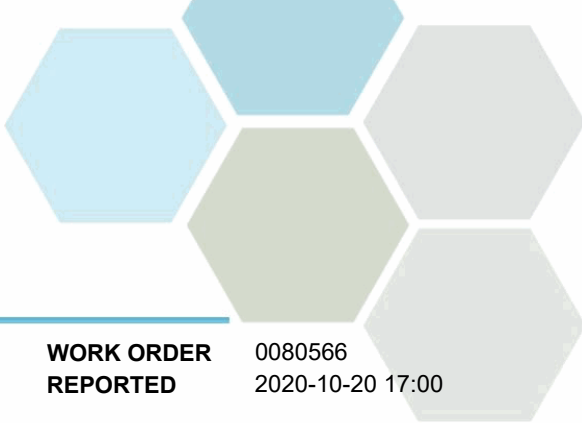
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	5	1	MPN/100 mL	2020-08-07	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-08-07	

**Okanagan River Channel 500m Downstream - Bacteria (0080566-03) | Matrix: Water | Sampled: 2020-08-06 11:05**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	11	1	MPN/100 mL	2020-08-07	
E. coli (Q-Tray)	10	1	MPN/100 mL	2020-08-07	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0080566  
2020-10-20 17:00

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0081249

**RECEIVED / TEMP** 2020-08-13 11:20 / 4°C  
**REPORTED** 2020-08-19 17:06

**COC NUMBER** B674236

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

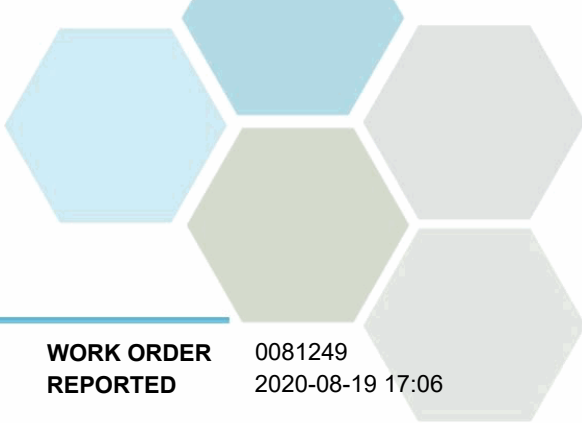
### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081249  
2020-08-19 17:06

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0081249-01) | Matrix: Water | Sampled: 2020-08-12 11:07**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	13	1	MPN/100 mL	2020-08-13	
E. coli (Q-Tray)	10	1	MPN/100 mL	2020-08-13	

**Okanagan River Channel 100m Downstream - Bacteria (0081249-02) | Matrix: Water | Sampled: 2020-08-12 11:14**

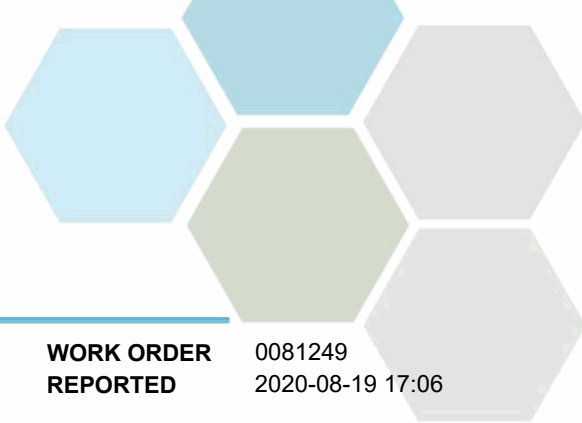
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	17	1	MPN/100 mL	2020-08-13	
E. coli (Q-Tray)	14	1	MPN/100 mL	2020-08-13	

**Okanagan River Channel 500m Downstream - Bacteria (0081249-03) | Matrix: Water | Sampled: 2020-08-12 11:19**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	6	1	MPN/100 mL	2020-08-13	
E. coli (Q-Tray)	6	1	MPN/100 mL	2020-08-13	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081249  
2020-08-19 17:06

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

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MPN/100 mL	Most Probable Number per 100 millilitres
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**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0081992

**RECEIVED / TEMP** 2020-08-20 12:00 / 5°C

**REPORTED** 2020-08-26 15:08

**COC NUMBER** B93650

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

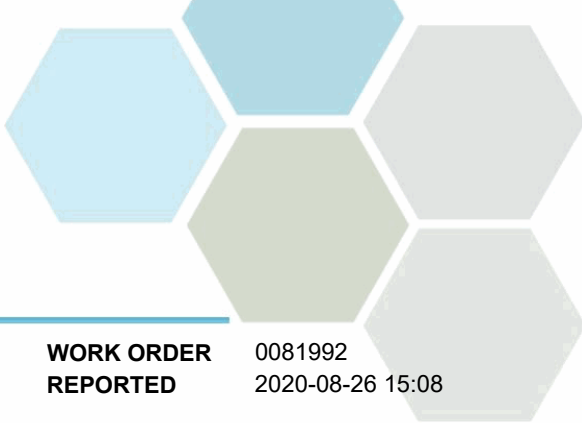
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081992  
2020-08-26 15:08

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0081992-01) | Matrix: Water | Sampled: 2020-08-19 10:30**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	10	1	MPN/100 mL	2020-08-20	
E. coli (Q-Tray)	10	1	MPN/100 mL	2020-08-20	

**Okanagan River Channel 100m Downstream - Bacteria (0081992-02) | Matrix: Water | Sampled: 2020-08-19 10:45**

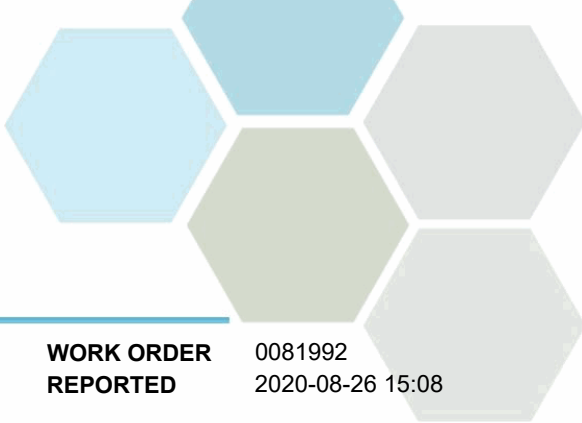
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	18	1	MPN/100 mL	2020-08-20	
E. coli (Q-Tray)	14	1	MPN/100 mL	2020-08-20	

**Okanagan River Channel 500m Downstream - Bacteria (0081992-03) | Matrix: Water | Sampled: 2020-08-19 11:00**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	6	1	MPN/100 mL	2020-08-20	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-08-20	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081992  
2020-08-26 15:08

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0081994

**RECEIVED / TEMP** 2020-08-20 12:00 / 5°C  
**REPORTED** 2020-08-26 11:06

**COC NUMBER** B93650

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

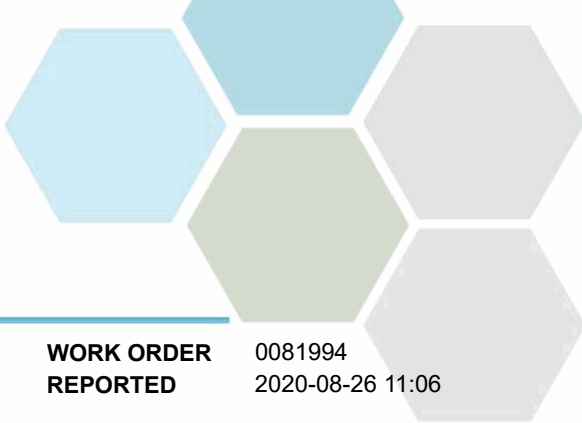
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081994  
2020-08-26 11:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0081994-01)   Matrix: Water   Sampled: 2020-08-19 10:30</b>					FILT, PRES

**Anions**

Chloride	5.35	0.10	mg/L	2020-08-21	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-08-21	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-08-21	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-08-21	
Sulfate	27.8	1.0	mg/L	2020-08-21	

**Calculated Parameters**

Hardness, Total (as CaCO3)	108	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.204	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-08-21	
Conductivity (EC)	257	2.0	µS/cm	2020-08-22	
Nitrogen, Total Kjeldahl	0.204	0.050	mg/L	2020-08-23	
pH	8.33	0.10	pH units	2020-08-22	HT2
Phosphorus, Total (as P)	0.0066	0.0050	mg/L	2020-08-25	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-08-25	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-23	

**Total Metals**

Calcium, total	29.4	0.20	mg/L	2020-08-24	
Magnesium, total	8.38	0.010	mg/L	2020-08-24	
Potassium, total	2.21	0.10	mg/L	2020-08-24	
Sodium, total	10.4	0.10	mg/L	2020-08-24	

**Okanagan River Channel 100m Downstream (0081994-02) | Matrix: Water | Sampled: 2020-08-19 10:45**

FILT,  
PRES

**Anions**

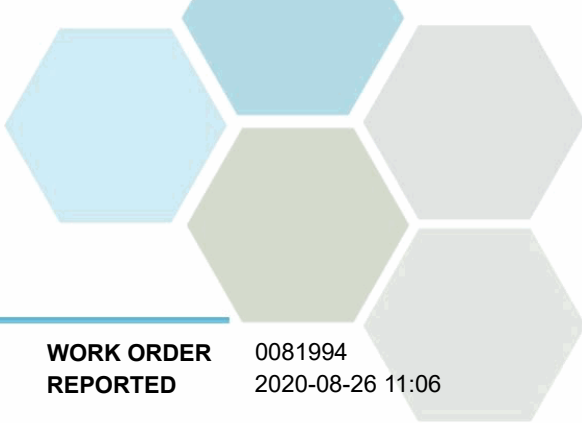
Chloride	5.37	0.10	mg/L	2020-08-21	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-08-21	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-08-21	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-08-21	
Sulfate	27.9	1.0	mg/L	2020-08-21	

**Calculated Parameters**

Hardness, Total (as CaCO3)	110	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.242	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-08-21	
Conductivity (EC)	257	2.0	µS/cm	2020-08-22	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081994  
2020-08-26 11:06

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0081994-02)   Matrix: Water   Sampled: 2020-08-19 10:45, Continued</b>					FILT, PRES

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.242	0.050	mg/L	2020-08-23	
pH	8.39	0.10	pH units	2020-08-22	HT2
Phosphorus, Total (as P)	0.0056	0.0050	mg/L	2020-08-25	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-08-25	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-23	

**Total Metals**

Calcium, total	30.2	0.20	mg/L	2020-08-24	
Magnesium, total	8.43	0.010	mg/L	2020-08-24	
Potassium, total	2.23	0.10	mg/L	2020-08-24	
Sodium, total	10.3	0.10	mg/L	2020-08-24	

**Okanagan River Channel 500m Downstream (0081994-03) | Matrix: Water | Sampled: 2020-08-19 11:00**

**Anions**

Chloride	5.37	0.10	mg/L	2020-08-21	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-08-21	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-08-21	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-08-21	
Sulfate	27.8	1.0	mg/L	2020-08-21	

**Calculated Parameters**

Hardness, Total (as CaCO3)	109	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.143	0.0500	mg/L	N/A	

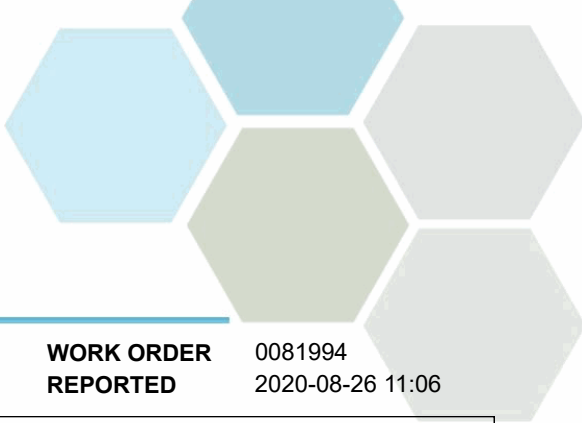
**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-08-21	
Conductivity (EC)	262	2.0	µS/cm	2020-08-22	
Nitrogen, Total Kjeldahl	0.143	0.050	mg/L	2020-08-23	
pH	8.40	0.10	pH units	2020-08-22	HT2
Phosphorus, Total (as P)	0.0061	0.0050	mg/L	2020-08-25	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-08-25	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-08-23	

**Total Metals**

Calcium, total	30.0	0.20	mg/L	2020-08-24	
Magnesium, total	8.31	0.010	mg/L	2020-08-24	
Potassium, total	2.20	0.10	mg/L	2020-08-24	
Sodium, total	10.2	0.10	mg/L	2020-08-24	





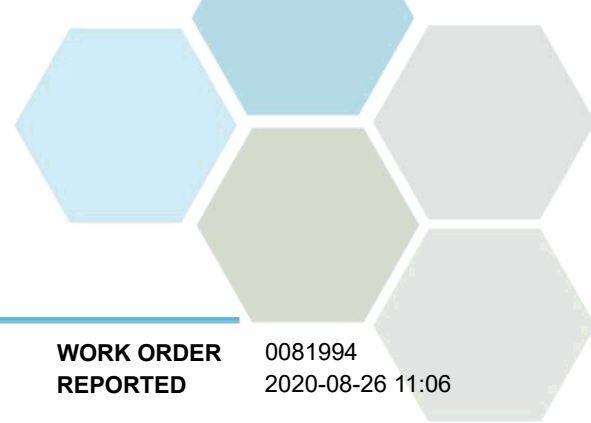
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 0081994  
**REPORTED** 2020-08-26 11:06

**Sample Qualifiers:**

FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.  
HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
PRES Sample has been preserved for NH3, TKN, TP & TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0081994  
2020-08-26 11:06

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0082601

**RECEIVED / TEMP** 2020-08-26 12:15 / 6°C

**REPORTED** 2020-08-28 17:11

**COC NUMBER** B93644

### Introduction:

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

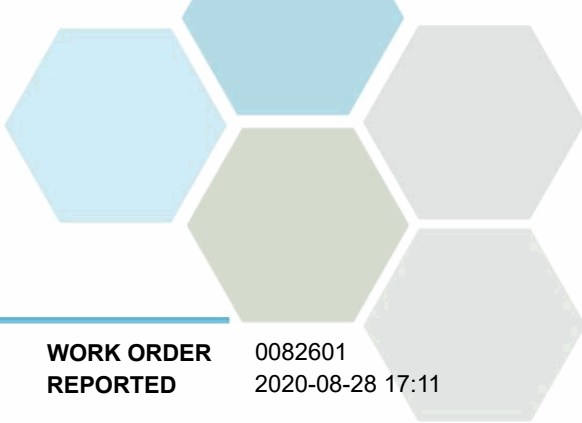
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0082601  
2020-08-28 17:11

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0082601-01) | Matrix: Water | Sampled: 2020-08-25 13:15**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	17	1	MPN/100 mL	2020-08-26	
E. coli (Q-Tray)	17	1	MPN/100 mL	2020-08-26	

**Okanagan River Channel 100m Downstream - Bacteria (0082601-02) | Matrix: Water | Sampled: 2020-08-25 12:30**

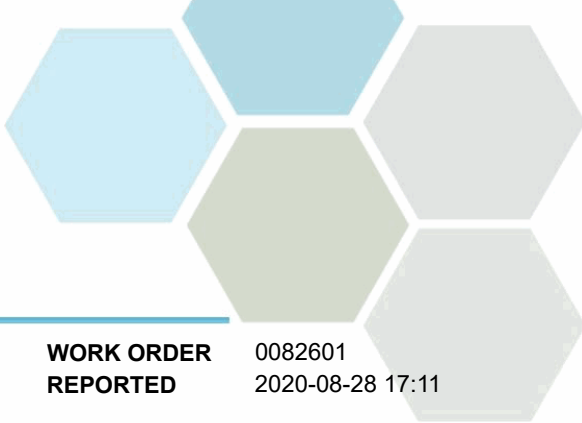
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	8	1	MPN/100 mL	2020-08-26	
E. coli (Q-Tray)	8	1	MPN/100 mL	2020-08-26	

**Okanagan River Channel 500m Downstream - Bacteria (0082601-03) | Matrix: Water | Sampled: 2020-08-25 13:25**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	8	1	MPN/100 mL	2020-08-26	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-08-26	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0082601  
2020-08-28 17:11

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0090448

**RECEIVED / TEMP** 2020-09-03 09:00 / 9°C

**REPORTED** 2020-09-09 09:54

**COC NUMBER** B90280

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

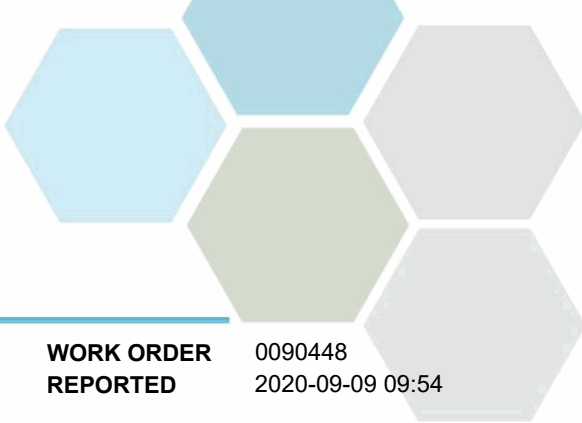
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0090448  
2020-09-09 09:54

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0090448-01) | Matrix: Water | Sampled: 2020-09-02 11:35**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	8	1	MPN/100 mL	2020-09-03	
E. coli (Q-Tray)	8	1	MPN/100 mL	2020-09-03	

**Okanagan River Channel 100m Downstream - Bacteria (0090448-02) | Matrix: Water | Sampled: 2020-09-02 11:40**

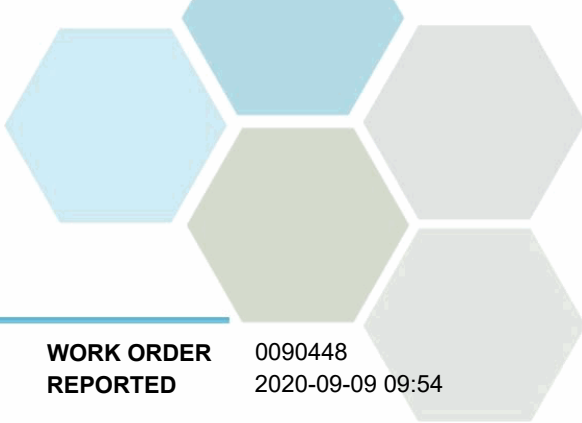
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	6	1	MPN/100 mL	2020-09-03	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-09-03	

**Okanagan River Channel 500m Downstream - Bacteria (0090448-03) | Matrix: Water | Sampled: 2020-09-02 11:47**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	12	1	MPN/100 mL	2020-09-03	
E. coli (Q-Tray)	12	1	MPN/100 mL	2020-09-03	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0090448  
2020-09-09 09:54

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0091051

**RECEIVED / TEMP** 2020-09-10 09:00 / 10°C  
**REPORTED** 2020-09-11 17:03

**COC NUMBER** B67443

### 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/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

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### Work Order Comments:

Custody Seals Intact: YES

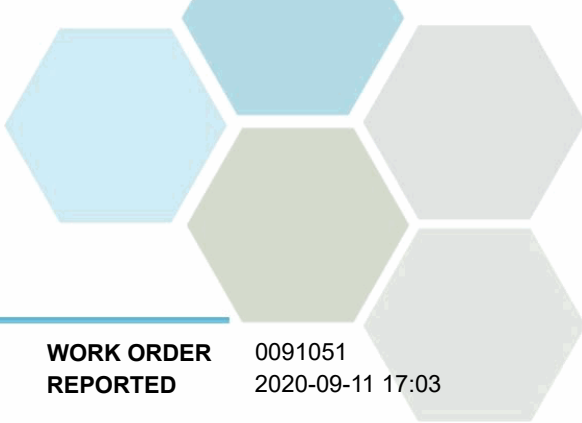
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091051  
2020-09-11 17:03

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0091051-01) | Matrix: Water | Sampled: 2020-09-09 11:30**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	5	1	MPN/100 mL	2020-09-10	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-09-10	

**Okanagan River Channel 100m Downstream - Bacteria (0091051-02) | Matrix: Water | Sampled: 2020-09-09 11:40**

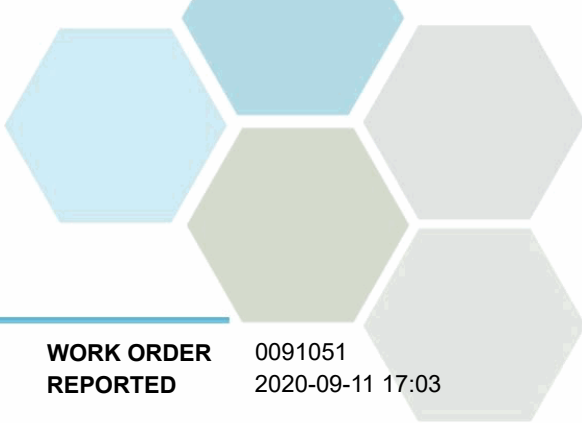
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	6	1	MPN/100 mL	2020-09-10	
E. coli (Q-Tray)	4	1	MPN/100 mL	2020-09-10	

**Okanagan River Channel 500m Downstream - Bacteria (0091051-03) | Matrix: Water | Sampled: 2020-09-09 11:55**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	5	1	MPN/100 mL	2020-09-10	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-09-10	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091051  
2020-09-11 17:03

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0091052

**RECEIVED / TEMP** 2020-09-10 09:00 / 10°C  
**REPORTED** 2020-09-18 10:11

**COC NUMBER** B67443

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

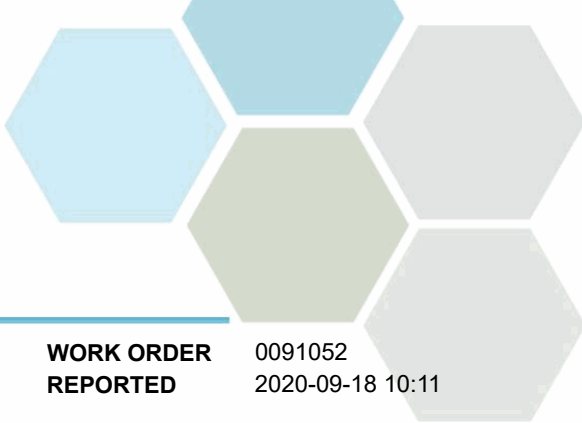
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091052  
2020-09-18 10:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (0091052-01)   Matrix: Water   Sampled: 2020-09-09 11:30</b>					<b>FILT, PRES</b>

**Anions**

Chloride	<b>5.43</b>	0.10	mg/L	2020-09-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-09-11	
Sulfate	<b>28.7</b>	1.0	mg/L	2020-09-11	

**Calculated Parameters**

Hardness, Total (as CaCO3)	<b>126</b>	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>0.322</b>	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-11	
Conductivity (EC)	<b>266</b>	2.0	µS/cm	2020-09-11	
Nitrogen, Total Kjeldahl	<b>0.322</b>	0.050	mg/L	2020-09-14	
pH	<b>8.44</b>	0.10	pH units	2020-09-11	HT2
Phosphorus, Total (as P)	<b>0.0118</b>	0.0050	mg/L	2020-09-14	
Phosphorus, Total Dissolved	<b>0.0061</b>	0.0050	mg/L	2020-09-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-14	

**Total Metals**

Calcium, total	<b>34.0</b>	0.20	mg/L	2020-09-17	
Magnesium, total	<b>10.0</b>	0.010	mg/L	2020-09-17	
Potassium, total	<b>2.67</b>	0.10	mg/L	2020-09-17	
Sodium, total	<b>12.9</b>	0.10	mg/L	2020-09-17	

**Okanagan River Channel 100m Downstream (0091052-02) | Matrix: Water | Sampled: 2020-09-09 11:40**

**FILT, PRES**

**Anions**

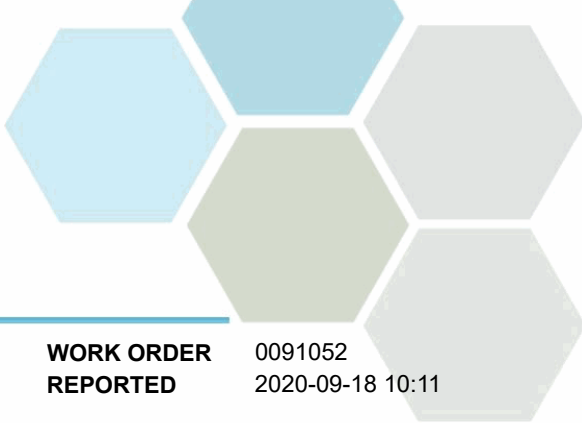
Chloride	<b>5.49</b>	0.10	mg/L	2020-09-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-09-11	
Sulfate	<b>28.4</b>	1.0	mg/L	2020-09-11	

**Calculated Parameters**

Hardness, Total (as CaCO3)	<b>128</b>	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>0.241</b>	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-11	
Conductivity (EC)	<b>262</b>	2.0	µS/cm	2020-09-11	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091052  
2020-09-18 10:11

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (0091052-02)   Matrix: Water   Sampled: 2020-09-09 11:40, Continued</b>					FILT, PRES

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.241	0.050	mg/L	2020-09-14	
pH	8.47	0.10	pH units	2020-09-11	HT2
Phosphorus, Total (as P)	0.0105	0.0050	mg/L	2020-09-14	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-09-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-14	

**Total Metals**

Calcium, total	34.5	0.20	mg/L	2020-09-17	
Magnesium, total	10.1	0.010	mg/L	2020-09-17	
Potassium, total	2.66	0.10	mg/L	2020-09-17	
Sodium, total	14.9	0.10	mg/L	2020-09-17	

**Okanagan River Channel 500m Downstream (0091052-03) | Matrix: Water | Sampled: 2020-09-09 11:55**

FILT, PRES

**Anions**

Chloride	5.47	0.10	mg/L	2020-09-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-09-11	
Sulfate	28.4	1.0	mg/L	2020-09-11	

**Calculated Parameters**

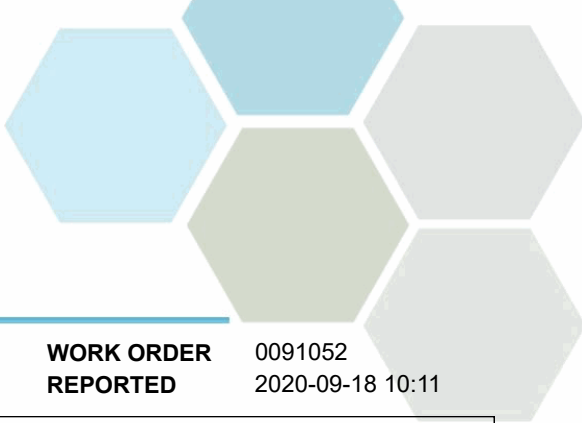
Hardness, Total (as CaCO3)	130	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.238	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-11	
Conductivity (EC)	269	2.0	µS/cm	2020-09-11	
Nitrogen, Total Kjeldahl	0.238	0.050	mg/L	2020-09-14	
pH	8.52	0.10	pH units	2020-09-11	HT2
Phosphorus, Total (as P)	0.0105	0.0050	mg/L	2020-09-14	
Phosphorus, Total Dissolved	0.0054	0.0050	mg/L	2020-09-14	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-14	

**Total Metals**

Calcium, total	34.8	0.20	mg/L	2020-09-17	
Magnesium, total	10.4	0.010	mg/L	2020-09-17	
Potassium, total	2.74	0.10	mg/L	2020-09-17	
Sodium, total	13.4	0.10	mg/L	2020-09-17	



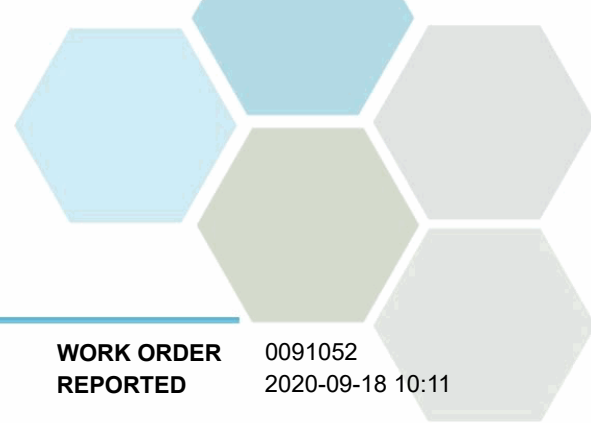
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 0091052  
**REPORTED** 2020-09-18 10:11

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for NH3, TKN, TP & TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091052  
2020-09-18 10:11

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0091958

**RECEIVED / TEMP** 2020-09-18 12:00 / 4°C  
**REPORTED** 2020-09-21 16:16

**COC NUMBER** B67429

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

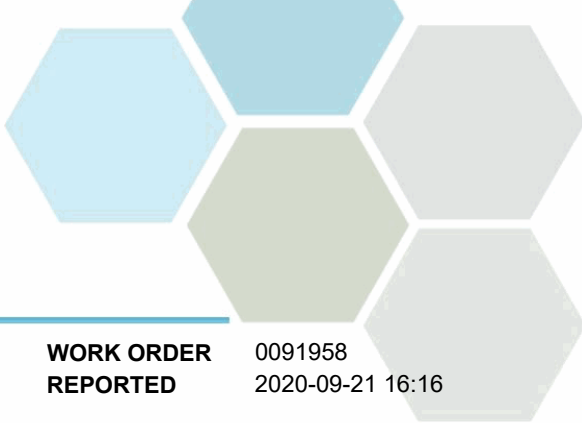
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091958  
2020-09-21 16:16

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0091958-01) | Matrix: Water | Sampled: 2020-09-17 10:10**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	17	1	MPN/100 mL	2020-09-18	
E. coli (Q-Tray)	8	1	MPN/100 mL	2020-09-18	

**Okanagan River Channel 100m Downstream - Bacteria (0091958-02) | Matrix: Water | Sampled: 2020-09-17 10:15**

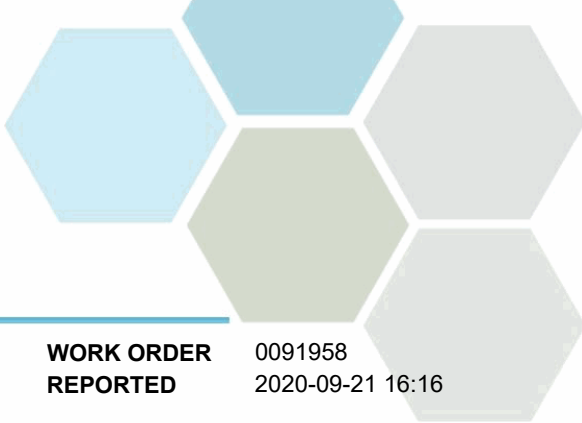
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	7	1	MPN/100 mL	2020-09-18	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-09-18	

**Okanagan River Channel 500m Downstream - Bacteria (0091958-03) | Matrix: Water | Sampled: 2020-09-17 10:20**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	13	1	MPN/100 mL	2020-09-18	
E. coli (Q-Tray)	8	1	MPN/100 mL	2020-09-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0091958  
2020-09-21 16:16

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 0092589

**RECEIVED / TEMP** 2020-09-24 09:15 / 3°C  
**REPORTED** 2020-09-29 13:33

**COC NUMBER** B67430

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

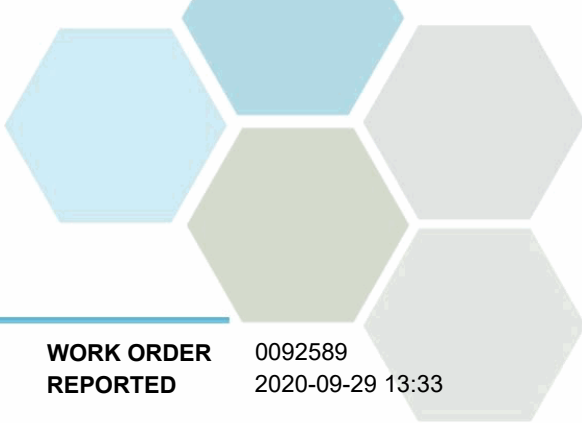
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0092589  
2020-09-29 13:33

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (0092589-01) | Matrix: Water | Sampled: 2020-09-23 10:05**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	36	1	MPN/100 mL	2020-09-24	
E. coli (Q-Tray)	23	1	MPN/100 mL	2020-09-24	

**Okanagan River Channel 100m Downstream - Bacteria (0092589-02) | Matrix: Water | Sampled: 2020-09-23 10:15**

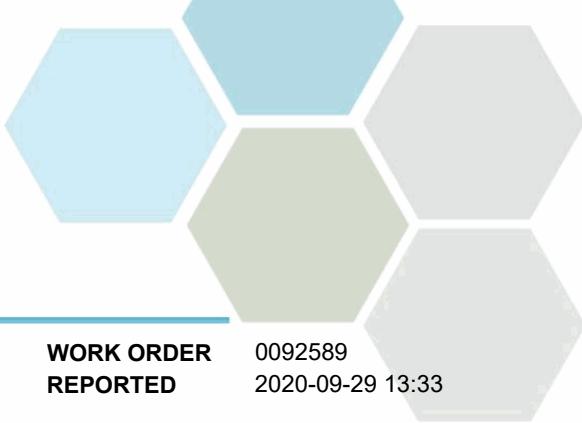
*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	16	1	MPN/100 mL	2020-09-24	
E. coli (Q-Tray)	10	1	MPN/100 mL	2020-09-24	

**Okanagan River Channel 500m Downstream - Bacteria (0092589-03) | Matrix: Water | Sampled: 2020-09-23 10:25**

*Microbiological Parameters*

Coliforms, Fecal (Q-Tray)	37	1	MPN/100 mL	2020-09-24	
E. coli (Q-Tray)	37	1	MPN/100 mL	2020-09-24	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 0092589  
2020-09-29 13:33

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### General Comments:

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 20J1347

**RECEIVED / TEMP** 2020-10-15 12:00 / 7°C  
**REPORTED** 2020-10-22 11:04

**COC NUMBER** B67433

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

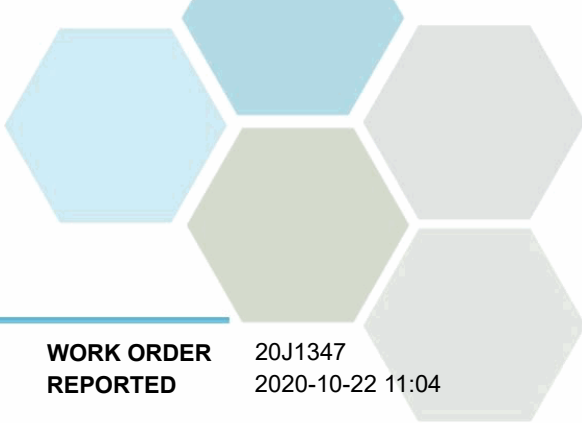
If you have any questions or concerns, please contact me at [acrump2@caro.ca](mailto:acrump2@caro.ca)

### Authorized By:

Alana Crump temp  
Team Lead, Client Service

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1347  
2020-10-22 11:04

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (20J1347-01) | Matrix: Water | Sampled: 2020-10-14 11:25**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	14	1	MPN/100 mL	2020-10-15	
E. coli (Q-Tray)	13	1	MPN/100 mL	2020-10-15	

**Okanagan River Channel 100m Downstream - Bacteria (20J1347-02) | Matrix: Water | Sampled: 2020-10-14 11:45**

**Microbiological Parameters**

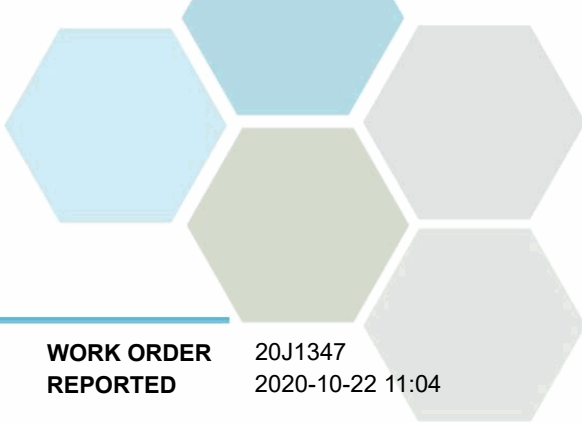
Coliforms, Fecal (Q-Tray)	19	1	MPN/100 mL	2020-10-15	
E. coli (Q-Tray)	15	1	MPN/100 mL	2020-10-15	

**Okanagan River Channel 500m Downstream - Bacteria (20J1347-03) | Matrix: Water | Sampled: 2020-10-14 12:00**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	18	1	MPN/100 mL	2020-10-15	
E. coli (Q-Tray)	14	1	MPN/100 mL	2020-10-15	





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1347  
2020-10-22 11:04

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### 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. The quality control (QC) data is available upon request

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*

## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 20J1348

**RECEIVED / TEMP** 2020-10-15 12:00 / 7°C  
**REPORTED** 2020-10-26 11:30

**COC NUMBER** B67433

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

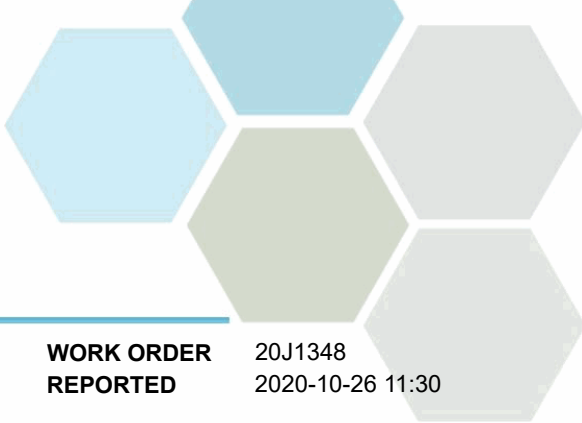
If you have any questions or concerns, please contact me at [acrump2@caro.ca](mailto:acrump2@caro.ca)

### Authorized By:

Alana Crump temp  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

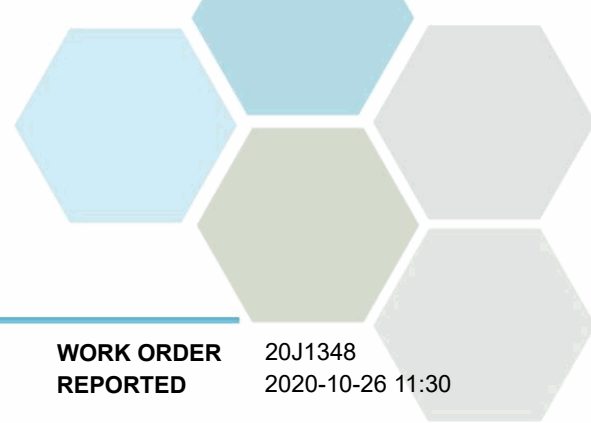


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (20J1348-01)   Matrix: Water   Sampled: 2020-10-14 11:25</b>					FILT, PRES
<b>Anions</b>					
Chloride	5.60	0.10	mg/L	2020-10-16	
Fluoride	0.14	0.10	mg/L	2020-10-16	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-16	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-16	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-10-16	
Sulfate	28.0	1.0	mg/L	2020-10-16	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	120	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.231	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	109	1.0	mg/L	2020-10-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Bicarbonate (as CaCO3)	109	1.0	mg/L	2020-10-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-10-16	
BOD, 5-day	4.0	2.0	mg/L	2020-10-21	
Chemical Oxygen Demand	16	20	mg/L	2020-10-21	
Conductivity (EC)	273	2.0	µS/cm	2020-10-18	
Nitrogen, Total Kjeldahl	0.231	0.050	mg/L	2020-10-21	
pH	8.14	0.10	pH units	2020-10-18	HT2
Phosphorus, Total (as P)	0.0114	0.0050	mg/L	2020-10-20	
Phosphorus, Total Dissolved	0.0070	0.0050	mg/L	2020-10-20	
Solids, Total Suspended	< 3.6	2.0	mg/L	2020-10-18	
<b>Total Metals</b>					
Aluminum, total	0.0105	0.0050	mg/L	2020-10-25	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-25	
Arsenic, total	0.00059	0.00050	mg/L	2020-10-25	
Barium, total	0.0224	0.0050	mg/L	2020-10-25	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-25	
Boron, total	< 0.0500	0.0500	mg/L	2020-10-25	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-25	
Calcium, total	33.4	0.20	mg/L	2020-10-25	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-10-25	
Copper, total	0.00130	0.00040	mg/L	2020-10-25	
Iron, total	< 0.010	0.010	mg/L	2020-10-25	
Lead, total	< 0.00020	0.00020	mg/L	2020-10-25	
Lithium, total	0.00323	0.00010	mg/L	2020-10-25	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (20J1348-01)   Matrix: Water   Sampled: 2020-10-14 11:25, Continued</b>					FILT, PRES

**Total Metals, Continued**

Magnesium, total	8.90	0.010	mg/L	2020-10-25	
Manganese, total	0.00587	0.00020	mg/L	2020-10-25	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-17	
Molybdenum, total	0.00334	0.00010	mg/L	2020-10-25	
Nickel, total	0.00049	0.00040	mg/L	2020-10-25	
Phosphorus, total	0.058	0.050	mg/L	2020-10-25	
Potassium, total	2.47	0.10	mg/L	2020-10-25	
Selenium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Silicon, total	3.4	1.0	mg/L	2020-10-25	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-25	
Sodium, total	11.9	0.10	mg/L	2020-10-25	
Strontium, total	0.285	0.0010	mg/L	2020-10-25	
Sulfur, total	10.4	3.0	mg/L	2020-10-25	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-25	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Tin, total	< 0.00020	0.00020	mg/L	2020-10-25	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-25	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-25	
Uranium, total	0.00247	0.000020	mg/L	2020-10-25	
Vanadium, total	0.0010	0.0010	mg/L	2020-10-25	
Zinc, total	< 0.0040	0.0040	mg/L	2020-10-25	
Zirconium, total	0.00022	0.00010	mg/L	2020-10-25	

**Okanagan River Channel 100m Downstream (20J1348-02) | Matrix: Water | Sampled: 2020-10-14 11:45**

FILT, PRES

**Anions**

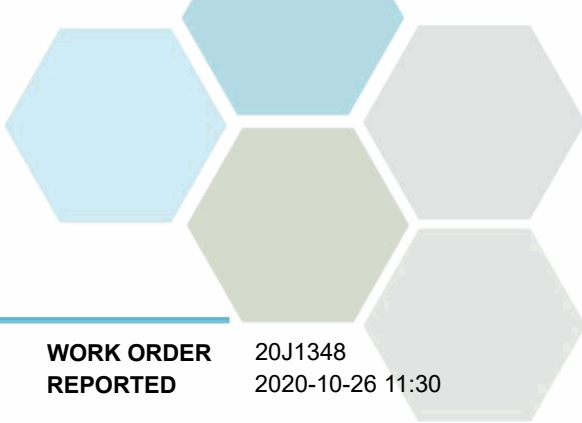
Chloride	5.68	0.10	mg/L	2020-10-16	
Fluoride	0.14	0.10	mg/L	2020-10-16	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-16	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-16	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-10-16	
Sulfate	28.3	1.0	mg/L	2020-10-16	

**Calculated Parameters**

Hardness, Total (as CaCO3)	119	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.254	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	111	1.0	mg/L	2020-10-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

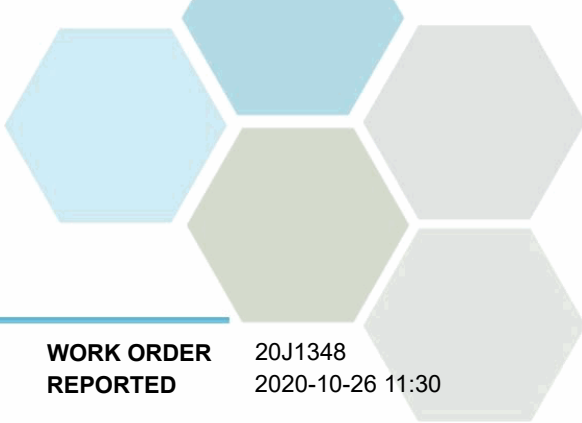
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (20J1348-02)   Matrix: Water   Sampled: 2020-10-14 11:45, Continued</b>					FILT, PRES

**General Parameters, Continued**

Alkalinity, Bicarbonate (as CaCO3)	111	1.0	mg/L	2020-10-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-10-16	
BOD, 5-day	5.0	2.0	mg/L	2020-10-21	
Chemical Oxygen Demand	10	20	mg/L	2020-10-21	
Conductivity (EC)	280	2.0	µS/cm	2020-10-18	
Nitrogen, Total Kjeldahl	0.254	0.050	mg/L	2020-10-21	
pH	8.16	0.10	pH units	2020-10-18	HT2
Phosphorus, Total (as P)	0.0126	0.0050	mg/L	2020-10-20	
Phosphorus, Total Dissolved	0.0051	0.0050	mg/L	2020-10-20	
Solids, Total Suspended	< 2.9	2.0	mg/L	2020-10-18	

**Total Metals**

Aluminum, total	0.0110	0.0050	mg/L	2020-10-25	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-25	
Arsenic, total	0.00059	0.00050	mg/L	2020-10-25	
Barium, total	0.0225	0.0050	mg/L	2020-10-25	
Beryllium, total	0.00054	0.00010	mg/L	2020-10-25	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-25	
Boron, total	< 0.0500	0.0500	mg/L	2020-10-25	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-25	
Calcium, total	32.8	0.20	mg/L	2020-10-25	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Cobalt, total	0.00010	0.00010	mg/L	2020-10-25	
Copper, total	0.0284	0.00040	mg/L	2020-10-25	
Iron, total	< 0.010	0.010	mg/L	2020-10-25	
Lead, total	< 0.00020	0.00020	mg/L	2020-10-25	
Lithium, total	0.00318	0.00010	mg/L	2020-10-25	
Magnesium, total	8.86	0.010	mg/L	2020-10-25	
Manganese, total	0.00498	0.00020	mg/L	2020-10-25	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-17	
Molybdenum, total	0.00330	0.00010	mg/L	2020-10-25	
Nickel, total	0.00049	0.00040	mg/L	2020-10-25	
Phosphorus, total	< 0.050	0.050	mg/L	2020-10-25	
Potassium, total	2.46	0.10	mg/L	2020-10-25	
Selenium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Silicon, total	3.3	1.0	mg/L	2020-10-25	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-25	
Sodium, total	10.9	0.10	mg/L	2020-10-25	
Strontium, total	0.291	0.0010	mg/L	2020-10-25	
Sulfur, total	10.0	3.0	mg/L	2020-10-25	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-25	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (20J1348-02)   Matrix: Water   Sampled: 2020-10-14 11:45, Continued</b>					FILT, PRES

**Total Metals, Continued**

Thallium, total	< 0.000020	0.000020	mg/L	2020-10-25	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Tin, total	< 0.00020	0.00020	mg/L	2020-10-25	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-25	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-25	
Uranium, total	<b>0.00248</b>	0.000020	mg/L	2020-10-25	
Vanadium, total	<b>0.0019</b>	0.0010	mg/L	2020-10-25	
Zinc, total	< 0.0040	0.0040	mg/L	2020-10-25	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-10-25	

**Okanagan River Channel 500m Downstream (20J1348-03) | Matrix: Water | Sampled: 2020-10-14 12:00**

FILT,  
PRESa

**Anions**

Chloride	<b>5.69</b>	0.10	mg/L	2020-10-16	
Fluoride	<b>0.14</b>	0.10	mg/L	2020-10-16	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-16	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-16	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-10-16	
Sulfate	<b>27.8</b>	1.0	mg/L	2020-10-16	

**Calculated Parameters**

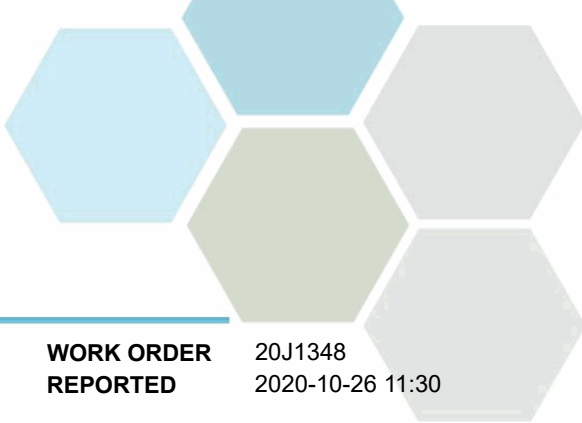
Hardness, Total (as CaCO3)	<b>120</b>	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	<b>0.227</b>	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO3)	<b>114</b>	1.0	mg/L	2020-10-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Bicarbonate (as CaCO3)	<b>114</b>	1.0	mg/L	2020-10-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-18	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-10-16	
BOD, 5-day	<b>4.3</b>	2.0	mg/L	2020-10-21	
Chemical Oxygen Demand	<b>11</b>	20	mg/L	2020-10-21	
Conductivity (EC)	<b>275</b>	2.0	µS/cm	2020-10-18	
Nitrogen, Total Kjeldahl	<b>0.227</b>	0.050	mg/L	2020-10-21	
pH	<b>8.19</b>	0.10	pH units	2020-10-18	HT2
Phosphorus, Total (as P)	<b>0.0112</b>	0.0050	mg/L	2020-10-20	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-10-20	
Solids, Total Suspended	< 3.9	2.0	mg/L	2020-10-18	

**Total Metals**

Aluminum, total	<b>0.0055</b>	0.0050	mg/L	2020-10-25	
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# TEST RESULTS

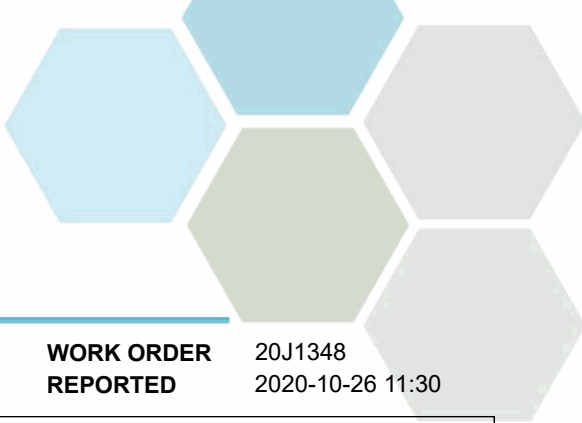
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 500m Downstream (20J1348-03)   Matrix: Water   Sampled: 2020-10-14 12:00, Continued</b>					FILT, PRESa

**Total Metals, Continued**

Antimony, total	< 0.00020	0.00020	mg/L	2020-10-25	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-10-25	
Barium, total	<b>0.0223</b>	0.0050	mg/L	2020-10-25	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-25	
Boron, total	< 0.0500	0.0500	mg/L	2020-10-25	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-25	
Calcium, total	<b>33.5</b>	0.20	mg/L	2020-10-25	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-10-25	
Copper, total	< 0.00040	0.00040	mg/L	2020-10-25	
Iron, total	< 0.010	0.010	mg/L	2020-10-25	
Lead, total	< 0.00020	0.00020	mg/L	2020-10-25	
Lithium, total	<b>0.00325</b>	0.00010	mg/L	2020-10-25	
Magnesium, total	<b>8.85</b>	0.010	mg/L	2020-10-25	
Manganese, total	<b>0.00457</b>	0.00020	mg/L	2020-10-25	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-17	
Molybdenum, total	<b>0.00335</b>	0.00010	mg/L	2020-10-25	
Nickel, total	<b>0.00042</b>	0.00040	mg/L	2020-10-25	
Phosphorus, total	< 0.050	0.050	mg/L	2020-10-25	
Potassium, total	<b>2.47</b>	0.10	mg/L	2020-10-25	
Selenium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Silicon, total	<b>3.4</b>	1.0	mg/L	2020-10-25	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-25	
Sodium, total	<b>11.0</b>	0.10	mg/L	2020-10-25	
Strontium, total	<b>0.287</b>	0.0010	mg/L	2020-10-25	
Sulfur, total	<b>10.5</b>	3.0	mg/L	2020-10-25	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-25	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-25	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-25	
Tin, total	< 0.00020	0.00020	mg/L	2020-10-25	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-25	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-25	
Uranium, total	<b>0.00247</b>	0.000020	mg/L	2020-10-25	
Vanadium, total	<b>0.0020</b>	0.0010	mg/L	2020-10-25	
Zinc, total	< 0.0040	0.0040	mg/L	2020-10-25	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-10-25	



## TEST RESULTS

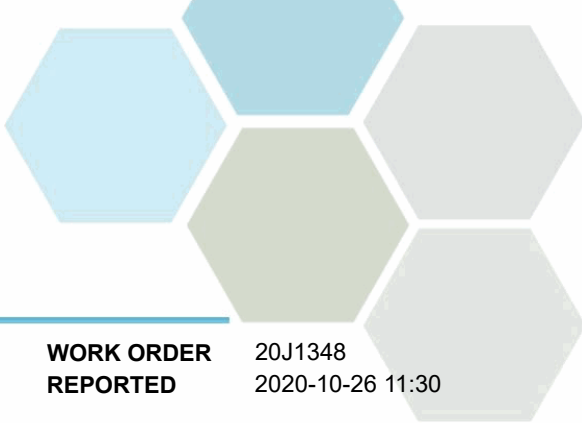
**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP QORC

**WORK ORDER** 20J1348  
**REPORTED** 2020-10-26 11:30

**Sample Qualifiers:**

- FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for TDP in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for TPD in the laboratory and the holding time has been extended.





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

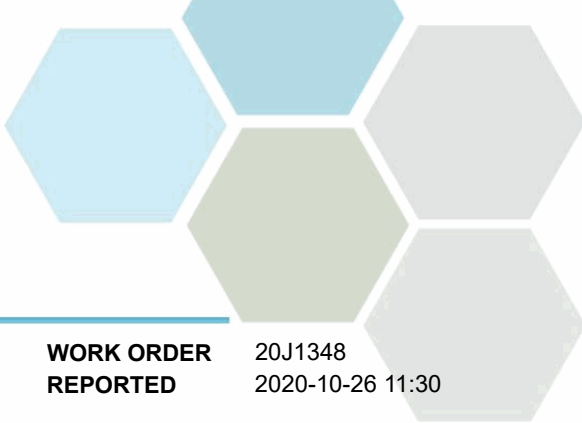
**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
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
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J1348  
2020-10-26 11:30

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 20K2032

**RECEIVED / TEMP** 2020-11-18 13:30 / 4°C  
**REPORTED** 2020-11-24 16:25

**COC NUMBER** B104513

### Introduction:

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#### *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.

### Work Order Comments:

Custody Seals Intact: YES

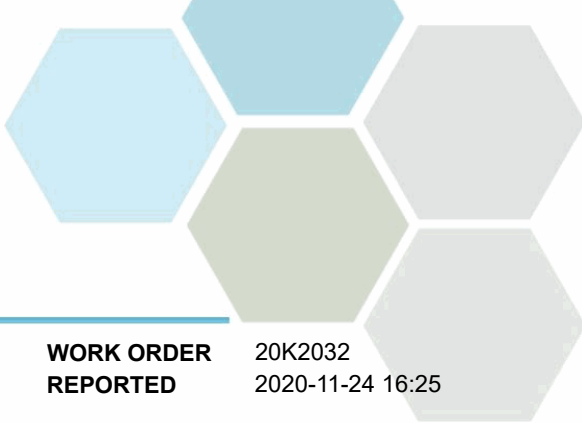
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20K2032  
2020-11-24 16:25

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (20K2032-01)   Matrix: Water   Sampled: 2020-11-17 10:30</b>					FILT, PRESa

**Anions**

Chloride	5.51	0.10	mg/L	2020-11-19	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-11-19	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-11-19	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-11-19	
Sulfate	28.7	1.0	mg/L	2020-11-19	

**Calculated Parameters**

Hardness, Total (as CaCO3)	136	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.224	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-11-19	
Conductivity (EC)	286	2.0	µS/cm	2020-11-22	
Nitrogen, Total Kjeldahl	0.224	0.050	mg/L	2020-11-24	
pH	8.14	0.10	pH units	2020-11-22	HT2
Phosphorus, Total (as P)	0.0273	0.0050	mg/L	2020-11-24	
Phosphorus, Total Dissolved	0.0181	0.0050	mg/L	2020-11-24	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-19	

**Total Metals**

Calcium, total	36.0	0.20	mg/L	2020-11-23	
Magnesium, total	11.0	0.010	mg/L	2020-11-23	
Potassium, total	2.89	0.10	mg/L	2020-11-23	
Sodium, total	14.1	0.10	mg/L	2020-11-23	

**Okanagan River Channel 100m Downstream (20K2032-02) | Matrix: Water | Sampled: 2020-11-17 10:50**

FILT,  
PRES

**Anions**

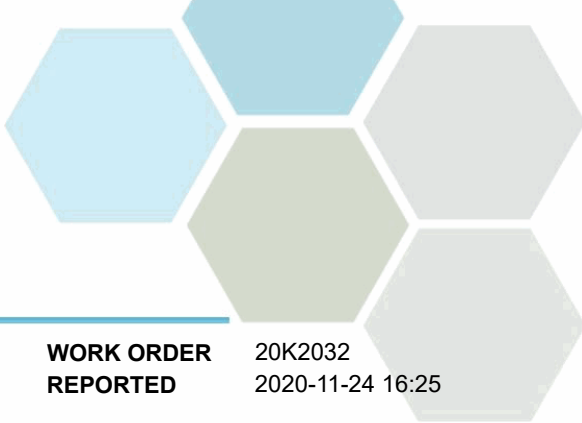
Chloride	5.50	0.10	mg/L	2020-11-19	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-11-19	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-11-19	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-11-19	
Sulfate	29.4	1.0	mg/L	2020-11-19	

**Calculated Parameters**

Hardness, Total (as CaCO3)	139	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.186	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-11-19	
Conductivity (EC)	284	2.0	µS/cm	2020-11-22	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20K2032  
2020-11-24 16:25

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (20K2032-02)   Matrix: Water   Sampled: 2020-11-17 10:50, Continued</b>					FILT, PRES

**General Parameters, Continued**

Nitrogen, Total Kjeldahl	0.186	0.050	mg/L	2020-11-24	
pH	8.15	0.10	pH units	2020-11-22	HT2
Phosphorus, Total (as P)	0.0249	0.0050	mg/L	2020-11-24	
Phosphorus, Total Dissolved	0.0190	0.0050	mg/L	2020-11-24	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-19	

**Total Metals**

Calcium, total	36.5	0.20	mg/L	2020-11-23	
Magnesium, total	11.5	0.010	mg/L	2020-11-23	
Potassium, total	2.96	0.10	mg/L	2020-11-23	
Sodium, total	14.5	0.10	mg/L	2020-11-23	

**Okanagan River Channel 500m Downstream (20K2032-03) | Matrix: Water | Sampled: 2020-11-17 11:05**

FILT, PRES

**Anions**

Chloride	5.71	0.10	mg/L	2020-11-19	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-11-19	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-11-19	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-11-19	
Sulfate	28.0	1.0	mg/L	2020-11-19	

**Calculated Parameters**

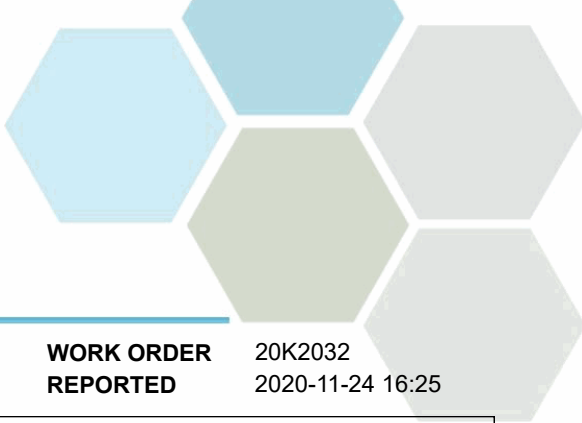
Hardness, Total (as CaCO3)	141	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.260	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-11-19	
Conductivity (EC)	283	2.0	µS/cm	2020-11-22	
Nitrogen, Total Kjeldahl	0.260	0.050	mg/L	2020-11-24	
pH	8.18	0.10	pH units	2020-11-22	HT2
Phosphorus, Total (as P)	0.0248	0.0050	mg/L	2020-11-24	
Phosphorus, Total Dissolved	0.0164	0.0050	mg/L	2020-11-24	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-11-19	

**Total Metals**

Calcium, total	37.6	0.20	mg/L	2020-11-23	
Magnesium, total	11.3	0.010	mg/L	2020-11-23	
Potassium, total	2.97	0.10	mg/L	2020-11-23	
Sodium, total	14.5	0.10	mg/L	2020-11-23	



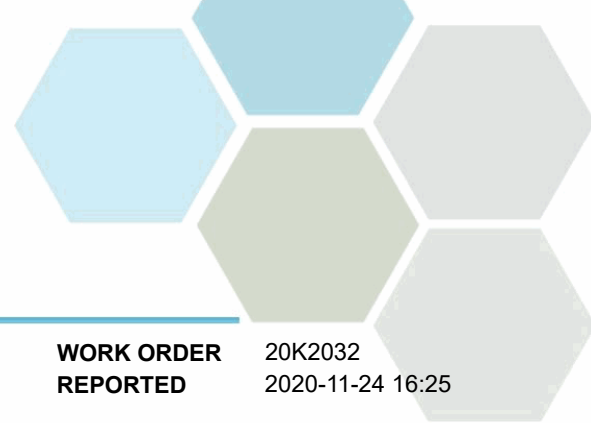
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 20K2032  
**REPORTED** 2020-11-24 16:25

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for DP, TP, NH3, TKN in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for TP, DP, NH3, TKN in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20K2032  
2020-11-24 16:25

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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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

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 20K2037

**RECEIVED / TEMP** 2020-11-18 13:30 / 4°C

**REPORTED** 2020-11-19 17:25

**COC NUMBER** B104513

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

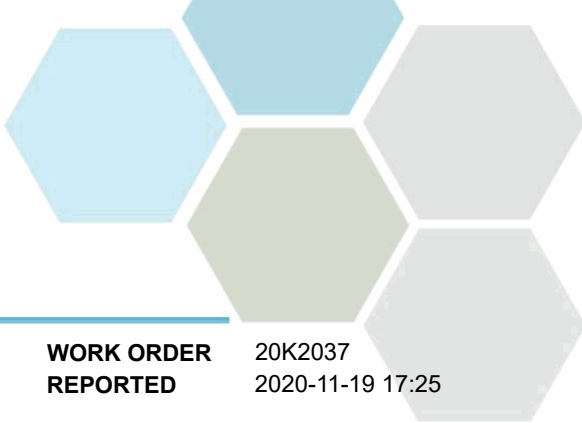
### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

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## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20K2037  
2020-11-19 17:25

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (20K2037-01) | Matrix: Water | Sampled: 2020-11-17 10:30**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	4	1	MPN/100 mL	2020-11-18	
E. coli (Q-Tray)	3	1	MPN/100 mL	2020-11-18	

**Okanagan River Channel 100m Downstream - Bacteria (20K2037-02) | Matrix: Water | Sampled: 2020-11-17 10:50**

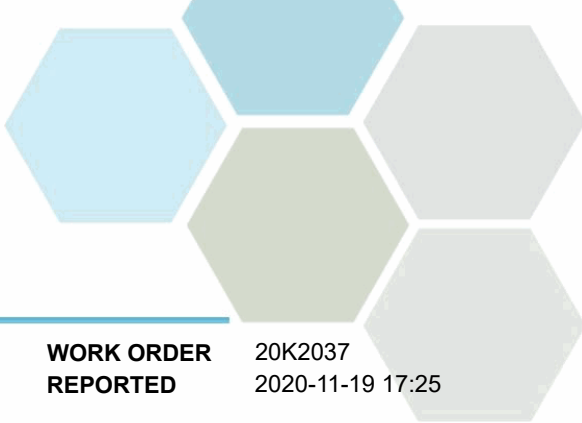
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	5	1	MPN/100 mL	2020-11-18	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-11-18	

**Okanagan River Channel 500m Downstream - Bacteria (20K2037-03) | Matrix: Water | Sampled: 2020-11-17 11:05**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	7	1	MPN/100 mL	2020-11-18	
E. coli (Q-Tray)	5	1	MPN/100 mL	2020-11-18	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20K2037  
2020-11-19 17:25

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP MORC

**PROJECT INFO**

**WORK ORDER** 20L1193

**RECEIVED / TEMP** 2020-12-10 12:10 / 5°C  
**REPORTED** 2020-12-11 14:53

**COC NUMBER** B104660

### Introduction:

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### Work Order Comments:

Custody Seals Intact: YES

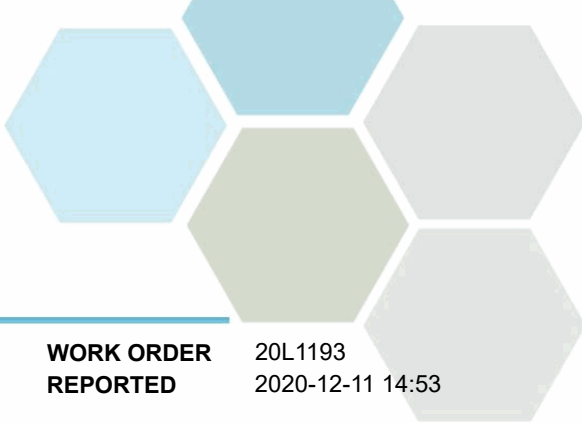
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20L1193  
2020-12-11 14:53

Analyte	Result	RL	Units	Analyzed	Qualifier
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**Okanagan River Channel 100m Upstream - Bacteria (20L1193-01) | Matrix: Water | Sampled: 2020-12-09 13:10**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	2	1	MPN/100 mL	2020-12-10	
E. coli (Q-Tray)	2	1	MPN/100 mL	2020-12-10	

**Okanagan River Channel 100m Downstream - Bacteria (20L1193-02) | Matrix: Water | Sampled: 2020-12-09 13:25**

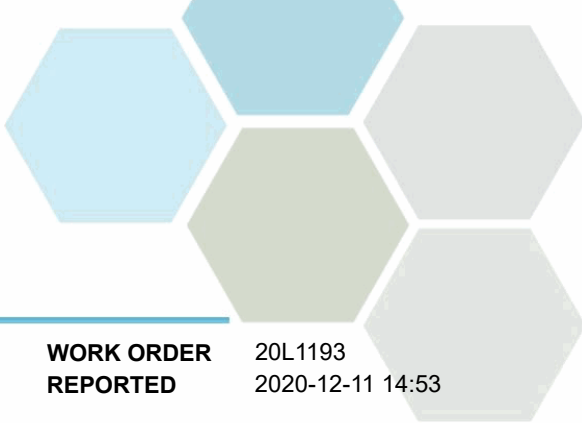
**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	2	1	MPN/100 mL	2020-12-10	
E. coli (Q-Tray)	2	1	MPN/100 mL	2020-12-10	

**Okanagan River Channel 500m Downstream - Bacteria (20L1193-03) | Matrix: Water | Sampled: 2020-12-09 13:35**

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	1	1	MPN/100 mL	2020-12-10	
E. coli (Q-Tray)	1	1	MPN/100 mL	2020-12-10	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20L1193  
2020-12-11 14:53

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### Glossary of Terms:

RL	Reporting Limit (default)
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### 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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing. The quality control (QC) data is available upon request

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	20L1194
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-12-10 12:10 / 5°C 2020-12-17 11:03
<b>PO NUMBER</b>	OK Falls WW	<b>COC NUMBER</b>	B104660
<b>PROJECT</b>	OK Falls WWTP MORC		
<b>PROJECT INFO</b>			

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

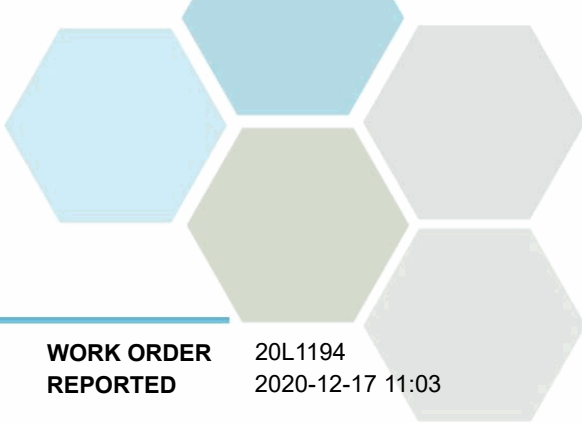
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20L1194  
2020-12-17 11:03

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Upstream (20L1194-01)   Matrix: Water   Sampled: 2020-12-09 13:10</b>					FILT, PRES

**Anions**

Chloride	5.57	0.10	mg/L	2020-12-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-12-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-12-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-12-11	
Sulfate	26.6	1.0	mg/L	2020-12-11	

**Calculated Parameters**

Hardness, Total (as CaCO3)	122	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.241	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-12-12	
Conductivity (EC)	274	2.0	µS/cm	2020-12-16	
Nitrogen, Total Kjeldahl	0.241	0.050	mg/L	2020-12-15	
pH	8.13	0.10	pH units	2020-12-16	HT2
Phosphorus, Total (as P)	0.0147	0.0050	mg/L	2020-12-16	
Phosphorus, Total Dissolved	0.0067	0.0050	mg/L	2020-12-16	
Solids, Total Suspended	2.0	2.0	mg/L	2020-12-11	

**Total Metals**

Calcium, total	32.6	0.20	mg/L	2020-12-12	
Magnesium, total	9.91	0.010	mg/L	2020-12-12	
Potassium, total	2.61	0.10	mg/L	2020-12-12	
Sodium, total	12.8	0.10	mg/L	2020-12-12	

**Okanagan River Channel 100m Downstream (20L1194-02) | Matrix: Water | Sampled: 2020-12-09 13:25**

FILT,  
PRES

**Anions**

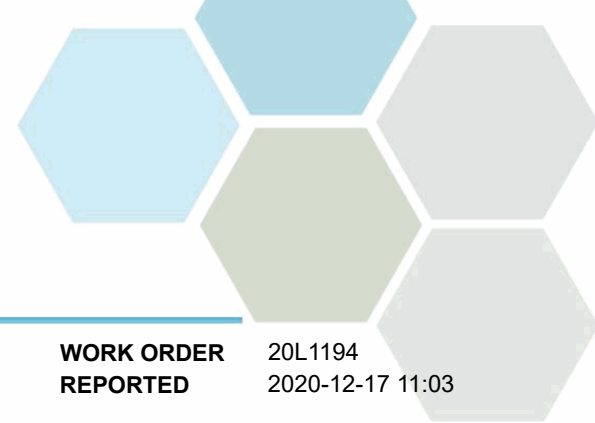
Chloride	5.67	0.10	mg/L	2020-12-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-12-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-12-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-12-11	
Sulfate	26.9	1.0	mg/L	2020-12-11	

**Calculated Parameters**

Hardness, Total (as CaCO3)	124	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.243	0.0500	mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-12-12	
Conductivity (EC)	272	2.0	µS/cm	2020-12-16	



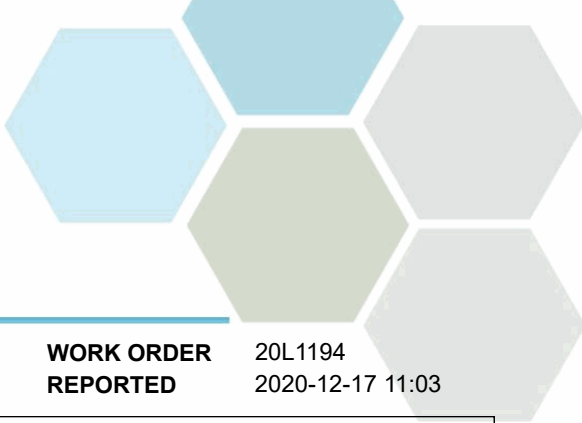
## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20L1194  
2020-12-17 11:03

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Okanagan River Channel 100m Downstream (20L1194-02)   Matrix: Water   Sampled: 2020-12-09 13:25, Continued</b>					FILT, PRES
<b>General Parameters, Continued</b>					
Nitrogen, Total Kjeldahl	0.243	0.050	mg/L	2020-12-15	
pH	8.13	0.10	pH units	2020-12-16	HT2
Phosphorus, Total (as P)	0.0170	0.0050	mg/L	2020-12-16	
Phosphorus, Total Dissolved	0.0073	0.0050	mg/L	2020-12-16	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-12-11	
<b>Total Metals</b>					
Calcium, total	33.5	0.20	mg/L	2020-12-12	
Magnesium, total	9.86	0.010	mg/L	2020-12-12	
Potassium, total	2.65	0.10	mg/L	2020-12-12	
Sodium, total	12.4	0.10	mg/L	2020-12-12	
<b>Okanagan River Channel 500m Downstream (20L1194-03)   Matrix: Water   Sampled: 2020-12-09 13:35</b>					FILT, PRES
<b>Anions</b>					
Chloride	5.60	0.10	mg/L	2020-12-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-12-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-12-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-12-11	
Sulfate	26.7	1.0	mg/L	2020-12-11	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	125	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.332	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-12-12	
Conductivity (EC)	270	2.0	µS/cm	2020-12-16	
Nitrogen, Total Kjeldahl	0.332	0.050	mg/L	2020-12-15	
pH	8.13	0.10	pH units	2020-12-16	HT2
Phosphorus, Total (as P)	0.0163	0.0050	mg/L	2020-12-16	
Phosphorus, Total Dissolved	0.0082	0.0050	mg/L	2020-12-16	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-12-11	
<b>Total Metals</b>					
Calcium, total	34.0	0.20	mg/L	2020-12-12	
Magnesium, total	9.73	0.010	mg/L	2020-12-12	
Potassium, total	2.58	0.10	mg/L	2020-12-12	
Sodium, total	12.4	0.10	mg/L	2020-12-12	





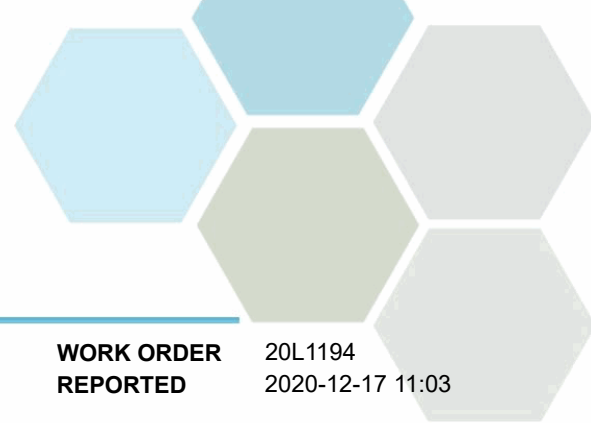
## TEST RESULTS

**REPORTED TO** Regional District of Okanagan Similkameen  
**PROJECT** OK Falls WWTP MORC

**WORK ORDER** 20L1194  
**REPORTED** 2020-12-17 11:03

**Sample Qualifiers:**

FILT The sample has been filtered for TDP in the laboratory. Results may not reflect conditions at the time of sampling.  
HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.  
PRES Sample has been preserved for NH3, TKN, TP, TDP in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP MORC

**WORK ORDER REPORTED** 20L1194  
2020-12-17 11:03

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
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

### General Comments:

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# **APPENDIX T**

## **Vaseux Lake Water Quality Monitoring Database Summary 2020**

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
<b>Field Results</b>								
Conductivity	Cross Ditch by sandfilter	µS/cm	1023	691	1186	153	14	14
	South Ditch	µS/cm	813	694	922	86	7	7
	Wetland Outlet	µS/cm	888	888	888		1	1
Dissolved oxygen	Cross Ditch by sandfilter	mg/L	8.42	4.84	12.59	2.52	14	14
	South Ditch	mg/L	9.26	3.29	19.53	5.46	7	7
	Wetland Outlet	mg/L	3.54	3.54	3.54		1	1
Oxidation reduction potential	Cross Ditch by sandfilter	mV	75.5	51.2	103.2	20.6	14	14
	South Ditch	mV	89.4	26.8	124.8	30.7	7	7
	Wetland Outlet	mV	82.5	82.5	82.5		1	1
pH	Cross Ditch by sandfilter		8.04	7.42	8.45	0.28	14	14
	South Ditch		7.93	7.55	8.39	0.3	7	7
	Wetland Outlet		7.25	7.25	7.25		1	1
Temperature	Cross Ditch by sandfilter	°C	13.7	1.9	24.8	7	14	14
	South Ditch	°C	12.1	3.5	18.4	6.4	7	7
	Wetland Outlet	°C	14	14	14		1	1
Total dissolved solids	Cross Ditch by sandfilter	mg/L	664.4	449.1	773.5	99.8	14	14
	South Ditch	mg/L	534	473.2	598	49	7	7
	Wetland Outlet	mg/L	578.5	578.5	578.5		1	1
Turbidity	Cross Ditch by sandfilter	NTU	13.9	1.84	56.9	18.5	13	13
	South Ditch	NTU	5.65	2.26	14.2	4.65	7	7
	Wetland Outlet	NTU					0	0
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L	339	339	339		1	1
Alkalinity (carbonate, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L					1	0
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L					1	0
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L					1	0
Alkalinity (total, as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L	339	339	339		1	1
Biochemical oxygen demand	Cross Ditch by sandfilter	mg/L	5.2	1.1	19.7	6.5	7	6
	South Ditch	mg/L	6.8	3	12.1	4.5	4	4
	Wetland Outlet	mg/L	2.6	2.6	2.6		1	1
5-d Carbonaceous BOD	Cross Ditch by sandfilter	mg/L					1	0
Chemical Oxygen Demand	Cross Ditch by sandfilter	mg/L	58	33	75	15	7	7
	South Ditch	mg/L	73	56	84	12	4	4
	Wetland Outlet	mg/L	37	37	37		1	1
Chloride	Cross Ditch by sandfilter	mg/L	126	126	126		1	1
Conductivity	Cross Ditch by sandfilter	µS/cm	1080	1080	1080		1	1
Fluoride	Cross Ditch by sandfilter	mg/L					1	0
Hardness, Total (total as CaCO <sub>3</sub> )	Cross Ditch by sandfilter	mg/L	357	357	357		1	1
pH	Cross Ditch by sandfilter		8.11	7.9	8.34	0.16	7	7
	South Ditch		7.91	7.43	8.09	0.32	4	4
	Wetland Outlet		7.93	7.93	7.93		1	1

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
Sulphate	Cross Ditch by sandfilter	mg/L	38.5	38.5	38.5		1	1
Total suspended solids	Cross Ditch by sandfilter	mg/L	11.6	<2.0	38.8	15.6	7	4
	South Ditch	mg/L	19.8	2.8	69.7	33.3	4	4
	Wetland Outlet	mg/L					1	0
<b>Microbiological</b>								
E. coli (MPN)	Cross Ditch by sandfilter	MPN/100 mL	45.7	<1.0	276	84.7	11	10
	South Ditch	MPN/100 mL	36	<1.0	90.8	39.1	4	3
	Wetland Outlet	MPN/100 mL					1	0
Fecal coliforms (MPN)	Cross Ditch by sandfilter	MPN/100 mL	51.6	<1.0	291	91.7	11	10
	South Ditch	MPN/100 mL	36.4	<1.0	90.8	39	4	3
	Wetland Outlet	MPN/100 mL					1	0
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	Cross Ditch by sandfilter	%					1	0
<b>Nutrients</b>								
Ammonia (total, as N)	Cross Ditch by sandfilter	mg/L	0.147	<0.050	0.51	0.163	7	6
	South Ditch	mg/L	0.071	0.039	0.093	0.023	4	4
	Wetland Outlet	mg/L	0.165	0.165	0.165		1	1
Nitrate (as N)	Cross Ditch by sandfilter	mg/L	0.127	<0.010	0.851	0.319	7	2
	South Ditch	mg/L					4	0
	Wetland Outlet	mg/L	2.01	2.01	2.01		1	1
Nitrate + Nitrite (as N)	Cross Ditch by sandfilter	mg/L	0.1389	<0.0100	0.936	0.3515	7	2
	South Ditch	mg/L					4	0
	Wetland Outlet	mg/L	2.05	2.05	2.05		1	1
Nitrite (as N)	Cross Ditch by sandfilter	mg/L	0.017	<0.010	0.086	0.031	7	1
	South Ditch	mg/L					4	0
	Wetland Outlet	mg/L	0.036	0.036	0.036		1	1
Total nitrogen	Cross Ditch by sandfilter	mg/L	1.80	1.06	2.73	0.58	7	7
	South Ditch	mg/L	1.65	1.28	1.94	0.27	4	4
	Wetland Outlet	mg/L	3.60	3.60	3.60		1	1
Total kjeldahl nitrogen	Cross Ditch by sandfilter	mg/L	1.67	1.06	2.21	0.41	7	7
	South Ditch	mg/L	1.65	1.28	1.94	0.27	4	4
	Wetland Outlet	mg/L	1.55	1.55	1.55		1	1
Total organic nitrogen	Cross Ditch by sandfilter	mg/L	1.52	0.96	2.00	0.342	7	7
	South Ditch	mg/L	1.58	1.19	1.9	0.29	4	4
	Wetland Outlet	mg/L	1.38	1.38	1.38		1	1
Orthophosphate (dissolved, as P)	Cross Ditch by sandfilter	mg/L	0.0037	<0.0050	0.011	0.0032	7	1
	South Ditch	mg/L	0.0058	<0.0050	0.0158	0.0067	4	1
	Wetland Outlet	mg/L	0.0492	0.0492	0.0492		1	1
Phosphorus (total, by ICPMS/ICPOES)	Cross Ditch by sandfilter	mg/L	0.065	0.065	0.065		1	1
Phosphorus (total, APHA 4500-P)	Cross Ditch by sandfilter	mg/L	0.061	0.0404	0.109	0.023	9	9
	South Ditch	mg/L	0.075	0.0366	0.123	0.04	4	4
	Wetland Outlet	mg/L	0.117	0.117	0.117		1	1

## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

Analyte	Sampling Location	Unit	Average	Minimum	Maximum	Standard Deviation	Number of Results	Number of Numerical Results
Phosphorus (dissolved, APHA 4500-P)	Cross Ditch by sandfilter	mg/L	0.0282	0.0171	0.0423	0.0079	7	7
	South Ditch	mg/L	0.0268	0.0124	0.055	0.0195	4	4
	Wetland Outlet	mg/L	0.0917	0.0917	0.0917		1	1
Potassium (total)	Cross Ditch by sandfilter	mg/L	15.3	15.3	15.3		1	1
<b>Total Metals</b>								
Aluminum (total)	Cross Ditch by sandfilter	mg/L	0.072	0.072	0.072		1	1
Antimony (total)	Cross Ditch by sandfilter	mg/L					1	0
Arsenic (total)	Cross Ditch by sandfilter	mg/L	0.00106	0.00106	0.00106		1	1
Barium (total)	Cross Ditch by sandfilter	mg/L	0.108	0.108	0.108		1	1
Beryllium (total)	Cross Ditch by sandfilter	mg/L					1	0
Bismuth (total)	Cross Ditch by sandfilter	mg/L					1	0
Boron (total)	Cross Ditch by sandfilter	mg/L	0.126	0.126	0.126		1	1
Cadmium (total)	Cross Ditch by sandfilter	mg/L					1	0
Calcium (total)	Cross Ditch by sandfilter	mg/L	104	104	104		1	1
Chromium (total)	Cross Ditch by sandfilter	mg/L					1	0
Cobalt (total)	Cross Ditch by sandfilter	mg/L	0.00017	0.00017	0.00017		1	1
Copper (total)	Cross Ditch by sandfilter	mg/L	0.00483	0.00483	0.00483		1	1
Iron (total)	Cross Ditch by sandfilter	mg/L	0.116	0.116	0.116		1	1
Lead (total)	Cross Ditch by sandfilter	mg/L	0.00032	0.00032	0.00032		1	1
Lithium (total)	Cross Ditch by sandfilter	mg/L	0.00732	0.00732	0.00732		1	1
Magnesium (total)	Cross Ditch by sandfilter	mg/L	23.7	23.7	23.7		1	1
Manganese (total)	Cross Ditch by sandfilter	mg/L	0.0405	0.0405	0.0405		1	1
Mercury (total)	Cross Ditch by sandfilter	mg/L					1	0
Molybdenum (total)	Cross Ditch by sandfilter	mg/L	0.00888	0.00888	0.00888		1	1
Nickel (total)	Cross Ditch by sandfilter	mg/L	0.00207	0.00207	0.00207		1	1
Selenium (total)	Cross Ditch by sandfilter	mg/L					1	0
Silicon (total, as Si)	Cross Ditch by sandfilter	mg/L	4.6	4.6	4.6		1	1
Silver (total)	Cross Ditch by sandfilter	mg/L					1	0
Sodium (total)	Cross Ditch by sandfilter	mg/L	87.4	87.4	87.4		1	1
Strontium (total)	Cross Ditch by sandfilter	mg/L	1.05	1.05	1.05		1	1
Sulphur (total)	Cross Ditch by sandfilter	mg/L	13.1	13.1	13.1		1	1
Tellurium (total)	Cross Ditch by sandfilter	mg/L					1	0
Thallium (total)	Cross Ditch by sandfilter	mg/L					1	0
Thorium (total)	Cross Ditch by sandfilter	mg/L					1	0
Tin (total)	Cross Ditch by sandfilter	mg/L					1	0
Titanium (total)	Cross Ditch by sandfilter	mg/L					1	0
Tungsten (total)	Cross Ditch by sandfilter	mg/L					1	0
Uranium (total)	Cross Ditch by sandfilter	mg/L	0.0175	0.0175	0.0175		1	1
Vanadium (total)	Cross Ditch by sandfilter	mg/L	0.0014	0.0014	0.0014		1	1
Zinc (total)	Cross Ditch by sandfilter	mg/L	0.0044	0.0044	0.0044		1	1
Zirconium (total)	Cross Ditch by sandfilter	mg/L	0.00016	0.00016	0.00016		1	1

## Water Quality Results

Analyte	Unit	Sampling Location	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	
		Date Sampled	18-Mar-20	18-Mar-20	01-Apr-20	15-Apr-20	15-Apr-20	29-Apr-20	13-May-20	13-May-20
		Lab Sample ID	0031667-01	0031666-01		0041208-02	0041207-02		0051250-01	0051249-01
		Sample Type	Normal	Normal	Field Only	Normal	Normal	Field Only	Normal	Normal
<b>Field Results</b>										
Conductivity	µS/cm		691.1		802	880		901	1003	
Dissolved oxygen	mg/L		10.64		12.59	10.22		10.63	6.39	
Oxidation reduction potential	mV		88.4		97.2	103.1		102.5	91	
pH			8.36		8.3	8.23		8.45	8.04	
Temperature	°C		4.2		5.7	13		12.7	18.5	
Total dissolved solids	mg/L		449.1		520	572		585	650	
Turbidity	NTU		49.7		56.9	23.5		6.51	10.3	
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L									
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L									
Biochemical oxygen demand	mg/L		2.4			19.7			1.9	
5-d Carbonaceous BOD	mg/L									
Chemical Oxygen Demand	mg/L		71			44			57	
Chloride	mg/L									
Conductivity	µS/cm									
Fluoride	mg/L									
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L									
pH			8.02			7.93			8.22	
Sulphate	mg/L									
Total suspended solids	mg/L		38.8			29			6.2	
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL			<1.0			3.1			2
Fecal coliforms (MPN)	MPN/100 mL			<1.0			3.1			5.2
<b>Toxicity</b>										
LC50, 96 hour, Rainbow Trout	%									
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L		0.095			0.118			0.51	
Nitrate (as N)	mg/L		<0.010			0.851			0.011	
Nitrate + Nitrite (as N)	mg/L		<0.0100			0.936			0.0113	
Nitrate + Nitrite (as N) (calculated)	mg/L		<0.014			0.937			<0.014	
Nitrite (as N)	mg/L		<0.010			0.086			<0.010	
Total nitrogen	mg/L		1.44			2.73			2.22	
Total kjeldahl nitrogen	mg/L		1.44			1.79			2.21	
Total organic nitrogen	mg/L		1.34			1.67			1.7	
Orthophosphate (dissolved, as P)	mg/L		0.011			<0.0050			<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L									
Phosphorus (total, APHA 4500-P)	mg/L		0.0864			0.109			0.0663	
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0171			0.025			0.0326	



## Water Quality Results

Analyte	Unit	Sampling Location	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	
		Date Sampled	27-May-20	10-Jun-20	10-Jun-20	17-Jun-20	24-Jun-20	29-Jun-20	25-Aug-20
		Lab Sample ID	Field Only	0061232-02	0061231-02	0061945-02	0062646-01	0063048-01	0082605-01
		Sample Type	Field Only	Normal	Normal	Normal	Normal	Normal	Normal
<b>Field Results</b>									
Conductivity	µS/cm		1051	1112			1141		1164
Dissolved oxygen	mg/L		6.83	7.7			4.84		6.37
Oxidation reduction potential	mV		103.2	60.2			67.2		55.2
pH			8.14	8.27			7.99		7.8
Temperature	°C		17.8	19			24.8		21
Total dissolved solids	mg/L		682.5	721.5			741		754
Turbidity	NTU		9.53	5					2.64
<b>Lab Results</b>									
<b>General</b>									
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L								
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L								
Biochemical oxygen demand	mg/L			3.6					1.1
5-d Carbonaceous BOD	mg/L								
Chemical Oxygen Demand	mg/L			75					68
Chloride	mg/L								
Conductivity	µS/cm								
Fluoride	mg/L								
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L								
pH				8.34					8.19
Sulphate	mg/L								
Total suspended solids	mg/L			3.4					<3.3
<b>Microbiological</b>									
E. coli (MPN)	MPN/100 mL				276	37.9	18.9	127	
Fecal coliforms (MPN)	MPN/100 mL				291	41.4	21.6	161	
<b>Toxicity</b>									
LC50, 96 hour, Rainbow Trout	%								
<b>Nutrients</b>									
Ammonia (total, as N)	mg/L			0.074					0.102
Nitrate (as N)	mg/L			<0.010					<0.010
Nitrate + Nitrite (as N)	mg/L			<0.0100					<0.0100
Nitrate + Nitrite (as N) (calculated)	mg/L			<0.014					<0.014
Nitrite (as N)	mg/L			<0.010					<0.010
Total nitrogen	mg/L			2.07					1.78
Total kjeldahl nitrogen	mg/L			2.07					1.78
Total organic nitrogen	mg/L			2					1.68
Orthophosphate (dissolved, as P)	mg/L			<0.0050					<0.0050
Phosphorus (total, by ICPMS/ICPOES)	mg/L								
Phosphorus (total, APHA 4500-P)	mg/L			0.0578					0.0474
Phosphorus (dissolved, APHA 4500-P)	mg/L			0.0247					0.0256





## Water Quality Results

Analyte	Unit	Sampling Location	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	Cross Ditch by sandfilter	
		Date Sampled	25-Aug-20	09-Sep-20	23-Sep-20	07-Oct-20	03-Nov-20	03-Nov-20	10-Nov-20	17-Nov-20
		Lab Sample ID	0082603-01	0092595-01	0092595-01	0092595-01	20K0304-01	20K0350-01	20K1352-01	20K2039-01
		Sample Type	Normal	Field Only	Normal	Field Only	Normal	Normal	Normal	Normal
<b>Field Results</b>										
Conductivity	µS/cm			1159	1186	1163		1080	993	987
Dissolved oxygen	mg/L			5.51	6.47	7.57		10.45	11.66	10.57
Oxidation reduction potential	mV			51.2	53.1	62.5		64.3	58.2	73.5
pH				7.78	8.13	7.79		7.42	7.92	7.76
Temperature	°C			17.1	15	16		5.1	1.9	4
Total dissolved solids	mg/L			754	773.5	754		702	643.5	643.5
Turbidity	NTU			1.84	4.79	2.35		2.37	5.3	4.6
<b>Lab Results</b>										
<b>General</b>										
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							339		
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							<1.0		
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							<1.0		
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							<1.0		
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							339		
Biochemical oxygen demand	mg/L				4.2			<7.1		
5-d Carbonaceous BOD	mg/L							<5.8		
Chemical Oxygen Demand	mg/L				60			33		
Chloride	mg/L							126		
Conductivity	µS/cm							1080		
Fluoride	mg/L							<0.10		
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							357		
pH					8.17			7.9		
Sulphate	mg/L							38.5		
Total suspended solids	mg/L				<2.0			<2.0		
<b>Microbiological</b>										
E. coli (MPN)	MPN/100 mL		4		21			2		10
Fecal coliforms (MPN)	MPN/100 mL		9		21			2		12
<b>Toxicity</b>										
LC50, 96 hour, Rainbow Trout	%							>100		
<b>Nutrients</b>										
Ammonia (total, as N)	mg/L				<0.050			0.105		
Nitrate (as N)	mg/L				<0.010			<0.010		
Nitrate + Nitrite (as N)	mg/L				<0.0100			<0.0100		
Nitrate + Nitrite (as N) (calculated)	mg/L				<0.014			<0.014		
Nitrite (as N)	mg/L				<0.010			<0.010		
Total nitrogen	mg/L				1.31			1.06		
Total kjeldahl nitrogen	mg/L				1.31			1.06		
Total organic nitrogen	mg/L				1.31			0.959		
Orthophosphate (dissolved, as P)	mg/L				<0.0050			<0.0050		
Phosphorus (total, by ICPMS/ICPOES)	mg/L							0.065		
Phosphorus (total, APHA 4500-P)	mg/L				0.043			0.0547	0.0404	0.044
Phosphorus (dissolved, APHA 4500-P)	mg/L				0.0299			0.0423		



## Water Quality Results

Analyte	Unit	Wetland Outlet		South Ditch		South Ditch	South Ditch	South Ditch
		10-Jun-20 0061232-03 Normal	10-Jun-20 0061231-03 Normal	18-Mar-20 0031667-02 Normal	18-Mar-20 0031666-02 Normal	01-Apr-20 Field Only	15-Apr-20 0041208-01 Normal	15-Apr-20 0041207-01 Normal
<b>Field Results</b>								
Conductivity	µS/cm	888		728.2		803.1	849	
Dissolved oxygen	mg/L	3.54		19.53		11.95	10.45	
Oxidation reduction potential	mV	82.5		91.2		124.8	92.1	
pH		7.25		8.39		8.08	7.96	
Temperature	°C	14		3.5		3.5	12.3	
Total dissolved solids	mg/L	578.5		473.2		521.9	552.5	
Turbidity	NTU			14.2		5.68	2.26	
<b>Lab Results</b>								
<b>General</b>								
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L							
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L							
Biochemical oxygen demand	mg/L	2.6		9			12.1	
5-d Carbonaceous BOD	mg/L							
Chemical Oxygen Demand	mg/L	37		72			56	
Chloride	mg/L							
Conductivity	µS/cm							
Fluoride	mg/L							
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L							
pH		7.93		8.09			7.43	
Sulphate	mg/L							
Total suspended solids	mg/L	<2.0		69.7			2.8	
<b>Microbiological</b>								
E. coli (MPN)	MPN/100 mL		<1.0		<1.0			18.4
Fecal coliforms (MPN)	MPN/100 mL		<1.0		<1.0			18.4
<b>Toxicity</b>								
LC50, 96 hour, Rainbow Trout	%							
<b>Nutrients</b>								
Ammonia (total, as N)	mg/L	0.165		0.039			0.093	
Nitrate (as N)	mg/L	2.01		<0.010			<0.010	
Nitrate + Nitrite (as N)	mg/L	2.05		<0.0100			<0.0100	
Nitrate + Nitrite (as N) (calculated)	mg/L	2.05		<0.014			<0.014	
Nitrite (as N)	mg/L	0.036		<0.010			<0.010	
Total nitrogen	mg/L	3.6		1.94			1.28	
Total kjeldahl nitrogen	mg/L	1.55		1.94			1.28	
Total organic nitrogen	mg/L	1.38		1.9			1.19	
Orthophosphate (dissolved, as P)	mg/L	0.0492		<0.0050			<0.0050	
Phosphorus (total, by ICPMS/ICPOES)	mg/L							
Phosphorus (total, APHA 4500-P)	mg/L	0.117		0.123			0.0366	
Phosphorus (dissolved, APHA 4500-P)	mg/L	0.0917		0.0124			0.0156	



## Water Quality Results

Sampling Location		South Ditch	South Ditch	South Ditch	South Ditch	South Ditch	South Ditch
Date Sampled		29-Apr-20	13-May-20	13-May-20	27-May-20	10-Jun-20	10-Jun-20
Lab Sample ID			0051250-02	0051249-02		0061232-01	0061231-01
Sample Type		Field Only	Normal	Normal	Field Only	Normal	Normal
Analyte	Unit						
<b>Field Results</b>							
Conductivity	µS/cm	910	922		787	694	
Dissolved oxygen	mg/L	8.27	6.66		3.29	4.66	
Oxidation reduction potential	mV	110.8	26.8		89.7	90.4	
pH		8.15	7.76		7.65	7.55	
Temperature	°C	12	18.4		16.6	18.3	
Total dissolved solids	mg/L	591.5	598		513.5	485	
Turbidity	NTU	9.71	2.57		2.84	2.32	
<b>Lab Results</b>							
<b>General</b>							
Alkalinity (bicarbonate, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (carbonate, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (hydroxide, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (phenolphthalein, as CaCO <sub>3</sub> )	mg/L						
Alkalinity (total, as CaCO <sub>3</sub> )	mg/L						
Biochemical oxygen demand	mg/L		3			3.2	
5-d Carbonaceous BOD	mg/L						
Chemical Oxygen Demand	mg/L		80			84	
Chloride	mg/L						
Conductivity	µS/cm						
Fluoride	mg/L						
Hardness, Total (total as CaCO <sub>3</sub> )	mg/L						
pH			8.09			8.01	
Sulphate	mg/L						
Total suspended solids	mg/L		3			3.7	
<b>Microbiological</b>							
E. coli (MPN)	MPN/100 mL			90.8			34.1
Fecal coliforms (MPN)	MPN/100 mL			90.8			35.9
<b>Toxicity</b>							
LC50, 96 hour, Rainbow Trout	%						
<b>Nutrients</b>							
Ammonia (total, as N)	mg/L		0.07			0.082	
Nitrate (as N)	mg/L		<0.010			<0.010	
Nitrate + Nitrite (as N)	mg/L		<0.0100			<0.0100	
Nitrate + Nitrite (as N) (calculated)	mg/L		<0.014			<0.014	
Nitrite (as N)	mg/L		<0.010			<0.010	
Total nitrogen	mg/L		1.7			1.67	
Total kjeldahl nitrogen	mg/L		1.7			1.67	
Total organic nitrogen	mg/L		1.63			1.58	
Orthophosphate (dissolved, as P)	mg/L		<0.0050			0.0158	
Phosphorus (total, by ICPMS/ICPOES)	mg/L						
Phosphorus (total, APHA 4500-P)	mg/L		0.048			0.0922	
Phosphorus (dissolved, APHA 4500-P)	mg/L		0.0241			0.055	



## Okanagan Falls Advanced Wastewater Treatment Facility

## Water Quality Results

		Sampling Location	Cross Ditch by sandfilter
		Date Sampled	03-Nov-20
		Lab Sample ID	20K0350-01
		Sample Type	Normal
Analyte	Unit		
<b>Total Metals</b>			
Aluminum (total)	mg/L	0.072	
Antimony (total)	mg/L	<0.00020	
Arsenic (total)	mg/L	0.00106	
Barium (total)	mg/L	0.108	
Beryllium (total)	mg/L	<0.00010	
Bismuth (total)	mg/L	<0.00010	
Boron (total)	mg/L	0.126	
Cadmium (total)	mg/L	<0.000010	
Calcium (total)	mg/L	104	
Chromium (total)	mg/L	<0.00050	
Cobalt (total)	mg/L	0.00017	
Copper (total)	mg/L	0.00483	
Iron (total)	mg/L	0.116	
Lead (total)	mg/L	0.00032	
Lithium (total)	mg/L	0.00732	
Magnesium (total)	mg/L	23.7	
Manganese (total)	mg/L	0.0405	
Mercury (total)	mg/L	<0.000010	
Molybdenum (total)	mg/L	0.00888	
Nickel (total)	mg/L	0.00207	
Potassium (total)	mg/L	15.3	
Selenium (total)	mg/L	<0.00050	
Silicon (total, as Si)	mg/L	4.6	
Silver (total)	mg/L	<0.000050	
Sodium (total)	mg/L	87.4	
Strontium (total)	mg/L	1.05	
Sulphur (total)	mg/L	13.1	
Tellurium (total)	mg/L	<0.00050	
Thallium (total)	mg/L	<0.000020	
Thorium (total)	mg/L	<0.00010	
Tin (total)	mg/L	<0.00020	
Titanium (total)	mg/L	<0.0050	
Tungsten (total)	mg/L	<0.0010	
Uranium (total)	mg/L	0.0175	
Vanadium (total)	mg/L	0.0014	
Zinc (total)	mg/L	0.0044	
Zirconium (total)	mg/L	0.00016	



## Legend for Reports for RDOS Wastewater Treatment Sites Water Quality Results

<	Less than reported detection limit
>	Greater than reported upper detection limit
>=	Greater than or equal to
A	Absent
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, and is calculated from a formula or table.
L	Laboratory reading type (Lab result)
m asl	metres above sea level
N	Narrative type of guideline or standard, or Result Note.
ND	Non-detect. Result is less than lower detection limit.
NG	No Guideline
No Guideline	No Guideline
NR	No Result
NS	No Standard
NT	Not Tested
OG	Overgrown
P	Present
PR	Presumptive
TK	Test kit reading type (Field result)
TNTC	Too numerous to count
	Highlighted value has a lower detection limit that is greater than the guideline/standard maximum and/or the guideline/standard minimum, or has an upper detection limit that is less than the guideline/standard maximum and/or the guideline/standard minimum.
	The maximum guideline/standard value cannot be determined because a result for a dependent analyte is not available for the sample.
<b>No Guideline</b>	Highlighted value exceeds No Guideline
SL Criteria Override	Highlighted value exceeds sampling location criteria override

# **APPENDIX U**

## **Vaseux Lake Water Quality Monitoring 2020 Lab Reports**



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0030725
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-03-10 08:10 / 4°C
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>REPORTED</b>	2020-03-17 16:34
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: YES

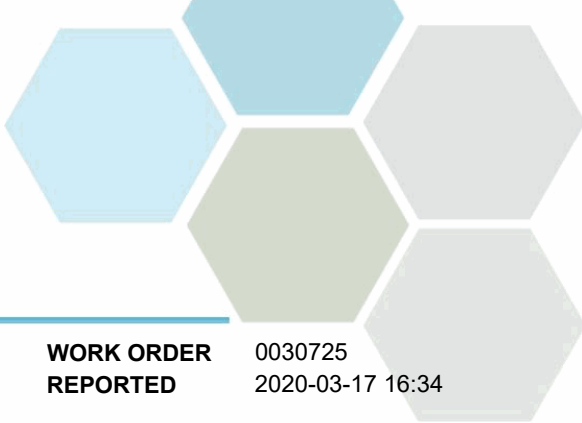
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
2020-03-17 16:34

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (0030725-01) | Matrix: Water | Sampled: 2020-03-09 12:00**

**Anions**

Chloride	6.27	AO ≤ 250	0.10 mg/L	2020-03-11	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-03-11	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-03-11	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-03-11	
Sulfate	30.0	AO ≤ 500	1.0 mg/L	2020-03-11	

**Calculated Parameters**

Hardness, Total (as CaCO3)	125	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.183	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.183	N/A	0.0500 mg/L	N/A	

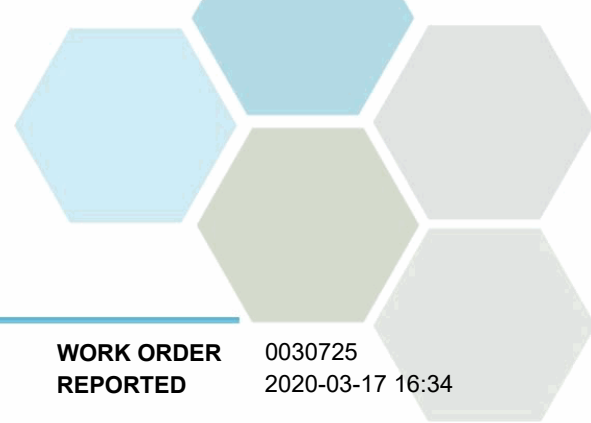
**General Parameters**

Ammonia, Total (as N)	< 0.020	None Required	0.020 mg/L	2020-03-11	
Chlorophyll a	1.59	N/A	0.10 µg/L	2020-03-11	
Nitrogen, Total Kjeldahl	0.183	N/A	0.050 mg/L	2020-03-11	
Phosphorus, Total (as P)	0.0102	N/A	0.0020 mg/L	2020-03-12	
Phosphorus, Total Dissolved	0.0066	N/A	0.0020 mg/L	2020-03-12	

**Total Metals**

Aluminum, total	0.0077	OG < 0.1	0.0050 mg/L	2020-03-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-03-15	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2020-03-15	
Barium, total	0.0229	MAC = 2	0.0050 mg/L	2020-03-15	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	
Boron, total	0.0156	MAC = 5	0.0050 mg/L	2020-03-15	
Cadmium, total	0.000022	MAC = 0.005	0.000010 mg/L	2020-03-15	
Calcium, total	34.0	None Required	0.20 mg/L	2020-03-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-03-15	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	
Copper, total	0.00071	MAC = 2	0.00040 mg/L	2020-03-15	
Iron, total	0.015	AO ≤ 0.3	0.010 mg/L	2020-03-15	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-03-15	
Lithium, total	0.00359	N/A	0.00010 mg/L	2020-03-15	
Magnesium, total	9.71	None Required	0.010 mg/L	2020-03-15	
Manganese, total	0.00597	MAC = 0.12	0.00020 mg/L	2020-03-15	
Molybdenum, total	0.00357	N/A	0.00010 mg/L	2020-03-15	
Nickel, total	0.00040	N/A	0.00040 mg/L	2020-03-15	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-03-15	
Potassium, total	2.66	N/A	0.10 mg/L	2020-03-15	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-03-15	
Silicon, total	2.2	N/A	1.0 mg/L	2020-03-15	





## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0030725-01)   Matrix: Water   Sampled: 2020-03-09 12:00, Continued</b>					
<i>Total Metals, Continued</i>					
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-03-15	
Sodium, total	<b>12.3</b>	AO ≤ 200	0.10 mg/L	2020-03-15	
Strontium, total	<b>0.318</b>	7	0.0010 mg/L	2020-03-15	
Sulfur, total	<b>10.3</b>	N/A	3.0 mg/L	2020-03-15	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-03-15	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-03-15	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-03-15	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-03-15	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-03-15	
Uranium, total	<b>0.00260</b>	MAC = 0.02	0.000020 mg/L	2020-03-15	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-03-15	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-03-15	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	

**Vaseux 20, 22, 24 m composite (0030725-02) | Matrix: Water | Sampled: 2020-03-09 12:30**

**Anions**

Chloride	<b>6.21</b>	AO ≤ 250	0.10 mg/L	2020-03-11	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-03-11	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-03-11	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-03-11	
Sulfate	<b>29.9</b>	AO ≤ 500	1.0 mg/L	2020-03-11	

**Calculated Parameters**

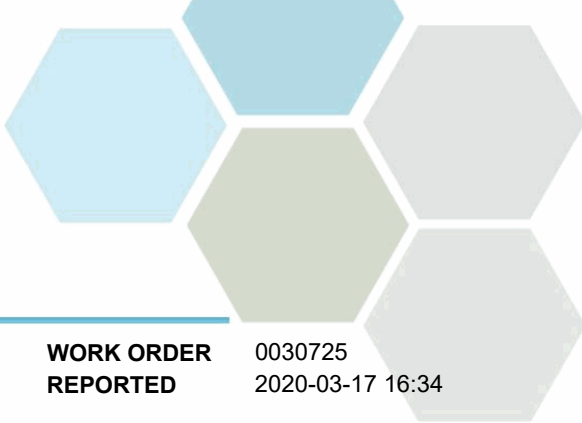
Hardness, Total (as CaCO3)	<b>125</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.181</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.181</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.020	None Required	0.020 mg/L	2020-03-11	
Chlorophyll a	<b>2.03</b>	N/A	0.10 µg/L	2020-03-11	
Nitrogen, Total Kjeldahl	<b>0.181</b>	N/A	0.050 mg/L	2020-03-11	
Phosphorus, Total (as P)	<b>0.0096</b>	N/A	0.0020 mg/L	2020-03-12	
Phosphorus, Total Dissolved	<b>0.0042</b>	N/A	0.0020 mg/L	2020-03-12	

**Total Metals**

Aluminum, total	<b>0.0118</b>	OG < 0.1	0.0050 mg/L	2020-03-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-03-15	
Arsenic, total	<b>0.00058</b>	MAC = 0.01	0.00050 mg/L	2020-03-15	
Barium, total	<b>0.0236</b>	MAC = 2	0.0050 mg/L	2020-03-15	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	

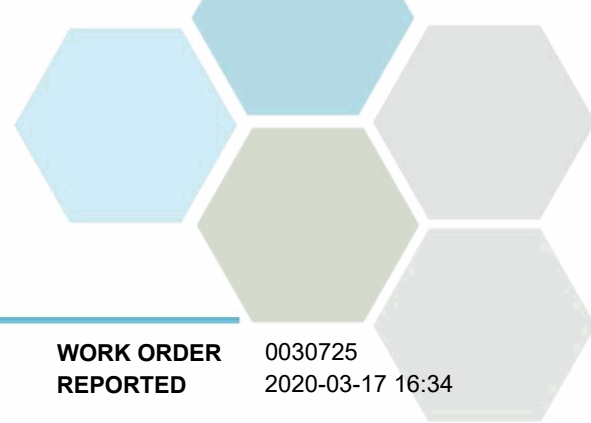


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
2020-03-17 16:34

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (0030725-02)   Matrix: Water   Sampled: 2020-03-09 12:30, Continued</b>					
<i>Total Metals, Continued</i>					
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	
Boron, total	<b>0.0155</b>	MAC = 5	0.0050 mg/L	2020-03-15	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-03-17	
Calcium, total	<b>34.2</b>	None Required	0.20 mg/L	2020-03-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-03-15	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-03-17	
Copper, total	<b>0.00074</b>	MAC = 2	0.00040 mg/L	2020-03-15	
Iron, total	<b>0.017</b>	AO ≤ 0.3	0.010 mg/L	2020-03-17	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-03-15	
Lithium, total	<b>0.00361</b>	N/A	0.00010 mg/L	2020-03-15	
Magnesium, total	<b>9.71</b>	None Required	0.010 mg/L	2020-03-15	
Manganese, total	<b>0.00632</b>	MAC = 0.12	0.00020 mg/L	2020-03-15	
Molybdenum, total	<b>0.00346</b>	N/A	0.00010 mg/L	2020-03-15	
Nickel, total	<b>0.00041</b>	N/A	0.00040 mg/L	2020-03-15	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-03-15	
Potassium, total	<b>2.68</b>	N/A	0.10 mg/L	2020-03-15	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-03-15	
Silicon, total	<b>2.2</b>	N/A	1.0 mg/L	2020-03-15	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-03-15	
Sodium, total	<b>12.2</b>	AO ≤ 200	0.10 mg/L	2020-03-15	
Strontium, total	<b>0.325</b>	7	0.0010 mg/L	2020-03-15	
Sulfur, total	<b>10.0</b>	N/A	3.0 mg/L	2020-03-15	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-03-15	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-03-15	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-03-15	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-03-15	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-03-15	
Uranium, total	<b>0.00265</b>	MAC = 0.02	0.000020 mg/L	2020-03-15	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-03-15	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-03-15	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-03-15	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
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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
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

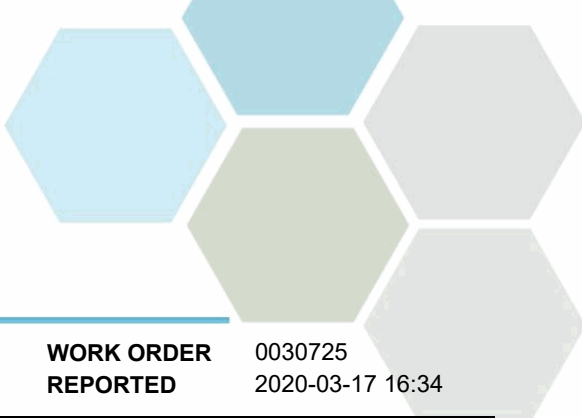
[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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](mailto:acrump@caro.ca)



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

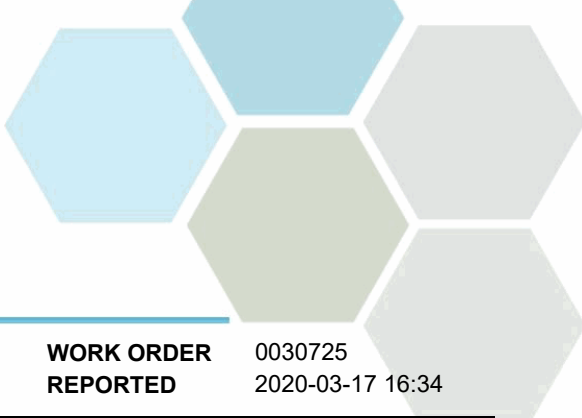
**WORK ORDER REPORTED** 0030725  
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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is 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
<b>Anions, Batch B0C0793</b>									
<b>Blank (B0C0793-BLK1)</b>			Prepared: 2020-03-11, Analyzed: 2020-03-11						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0C0793-BLK2)</b>			Prepared: 2020-03-11, Analyzed: 2020-03-11						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0C0793-BS1)</b>			Prepared: 2020-03-11, Analyzed: 2020-03-11						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.02	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	0.970	0.0050 mg/L	1.00		97	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0C0793-BS2)</b>			Prepared: 2020-03-11, Analyzed: 2020-03-11						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.01	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)	1.04	0.0050 mg/L	1.00		104	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>Duplicate (B0C0793-DUP1)</b>			Source: 0030725-01		Prepared: 2020-03-11, Analyzed: 2020-03-11				
Chloride	6.25	0.10 mg/L		6.27			< 1	10	
Nitrate (as N)	< 0.010	0.010 mg/L		< 0.010				10	
Nitrite (as N)	< 0.010	0.010 mg/L		< 0.010				15	
Phosphate (as P)	< 0.0050	0.0050 mg/L		< 0.0050				20	
Sulfate	30.1	1.0 mg/L		30.0			< 1	10	
<b>Matrix Spike (B0C0793-MS1)</b>			Source: 0030725-01		Prepared: 2020-03-11, Analyzed: 2020-03-11				
Chloride	22.2	0.10 mg/L	16.0	6.27	100	75-125			

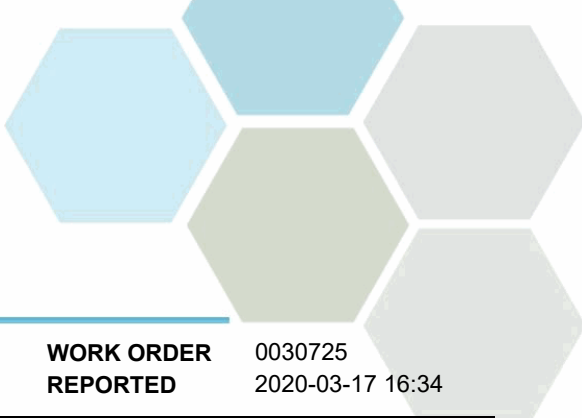


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Anions, Batch B0C0793, Continued</b>									
<b>Matrix Spike (B0C0793-MS1), Continued</b>		<b>Source: 0030725-01</b>		Prepared: 2020-03-11, Analyzed: 2020-03-11					
Nitrate (as N)	3.89	0.010 mg/L	4.00	< 0.010	97	75-125			
Nitrite (as N)	2.07	0.010 mg/L	2.00	< 0.010	103	80-120			
Phosphate (as P)	0.864	0.0050 mg/L	1.00	< 0.0050	86	70-130			
Sulfate	45.8	1.0 mg/L	16.0	30.0	99	75-125			
<b>General Parameters, Batch B0C0354</b>									
<b>Blank (B0C0354-BLK1)</b>		Prepared: 2020-03-04, Analyzed: 2020-03-11							
Chlorophyll a	< 0.10	0.10 µg/L							
<b>General Parameters, Batch B0C0878</b>									
<b>Blank (B0C0878-BLK1)</b>		Prepared: 2020-03-10, Analyzed: 2020-03-11							
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0C0878-BS1)</b>		Prepared: 2020-03-10, Analyzed: 2020-03-11							
Nitrogen, Total Kjeldahl	0.998	0.050 mg/L	1.00		100	85-115			
<b>General Parameters, Batch B0C0948</b>									
<b>Blank (B0C0948-BLK1)</b>		Prepared: 2020-03-11, Analyzed: 2020-03-11							
Ammonia, Total (as N)	< 0.020	0.020 mg/L							
<b>LCS (B0C0948-BS1)</b>		Prepared: 2020-03-11, Analyzed: 2020-03-11							
Ammonia, Total (as N)	1.02	0.020 mg/L	1.00		102	90-115			
<b>Duplicate (B0C0948-DUP1)</b>		<b>Source: 0030725-02</b>		Prepared: 2020-03-11, Analyzed: 2020-03-11					
Ammonia, Total (as N)	< 0.020	0.020 mg/L		< 0.020					15
<b>Matrix Spike (B0C0948-MS1)</b>		<b>Source: 0030725-02</b>		Prepared: 2020-03-11, Analyzed: 2020-03-11					
Ammonia, Total (as N)	0.261	0.020 mg/L	0.250	< 0.020	104	75-125			
<b>General Parameters, Batch B0C1056</b>									
<b>Blank (B0C1056-BLK1)</b>		Prepared: 2020-03-12, Analyzed: 2020-03-12							
Phosphorus, Total Dissolved	< 0.0020	0.0020 mg/L							
<b>Blank (B0C1056-BLK2)</b>		Prepared: 2020-03-12, Analyzed: 2020-03-12							
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>LCS (B0C1056-BS1)</b>		Prepared: 2020-03-12, Analyzed: 2020-03-12							
Phosphorus, Total Dissolved	0.0996	0.0020 mg/L	0.100		100	85-115			
<b>LCS (B0C1056-BS2)</b>		Prepared: 2020-03-12, Analyzed: 2020-03-12							
Phosphorus, Total (as P)	0.0998	0.0020 mg/L	0.100		100	85-115			
<b>Total Metals, Batch B0C1298</b>									
<b>Blank (B0C1298-BLK1)</b>		Prepared: 2020-03-14, Analyzed: 2020-03-15							
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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
2020-03-17 16:34

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Total Metals, Batch B0C1298, Continued**

**Blank (B0C1298-BLK1), Continued**

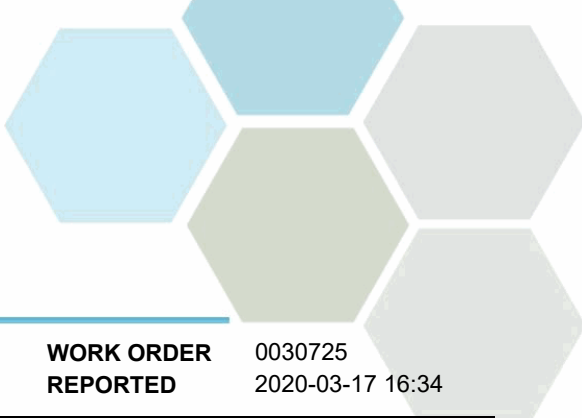
Prepared: 2020-03-14, Analyzed: 2020-03-15

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 (B0C1298-BS1)**

Prepared: 2020-03-14, Analyzed: 2020-03-15

Aluminum, total	0.0231	0.0050 mg/L	0.0199		116	80-120			
Antimony, total	0.0212	0.00020 mg/L	0.0200		106	80-120			
Arsenic, total	0.0214	0.00050 mg/L	0.0200		107	80-120			
Barium, total	0.0203	0.0050 mg/L	0.0198		102	80-120			
Beryllium, total	0.0221	0.00010 mg/L	0.0198		111	80-120			
Bismuth, total	0.0224	0.00010 mg/L	0.0200		112	80-120			
Boron, total	0.0200	0.0050 mg/L	0.0200		100	80-120			
Cadmium, total	0.0213	0.000010 mg/L	0.0199		107	80-120			
Calcium, total	2.17	0.20 mg/L	2.02		108	80-120			
Chromium, total	0.0213	0.00050 mg/L	0.0198		107	80-120			
Cobalt, total	0.0213	0.00010 mg/L	0.0199		107	80-120			
Copper, total	0.0218	0.00040 mg/L	0.0200		109	80-120			
Iron, total	2.11	0.010 mg/L	2.02		104	80-120			
Lead, total	0.0218	0.00020 mg/L	0.0199		110	80-120			
Lithium, total	0.0218	0.00010 mg/L	0.0200		109	80-120			
Magnesium, total	2.10	0.010 mg/L	2.02		104	80-120			
Manganese, total	0.0206	0.00020 mg/L	0.0199		103	80-120			
Molybdenum, total	0.0207	0.00010 mg/L	0.0200		104	80-120			
Nickel, total	0.0219	0.00040 mg/L	0.0200		109	80-120			
Phosphorus, total	2.15	0.050 mg/L	2.00		107	80-120			
Potassium, total	2.15	0.10 mg/L	2.02		107	80-120			
Selenium, total	0.0226	0.00050 mg/L	0.0200		113	80-120			

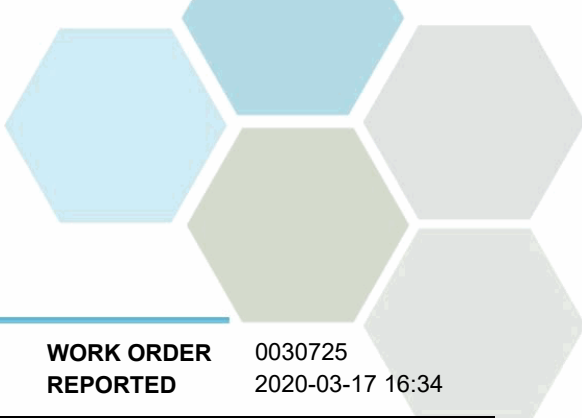


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
2020-03-17 16:34

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0C1298, Continued</b>									
<b>LCS (B0C1298-BS1), Continued</b>					Prepared: 2020-03-14, Analyzed: 2020-03-15				
Silicon, total	1.9	1.0 mg/L	2.00		94	80-120			
Silver, total	0.0214	0.000050 mg/L	0.0200		107	80-120			
Sodium, total	2.07	0.10 mg/L	2.02		103	80-120			
Strontium, total	0.0205	0.0010 mg/L	0.0200		102	80-120			
Sulfur, total	4.7	3.0 mg/L	5.00		94	80-120			
Tellurium, total	0.0207	0.00050 mg/L	0.0200		103	80-120			
Thallium, total	0.0220	0.000020 mg/L	0.0199		111	80-120			
Thorium, total	0.0208	0.00010 mg/L	0.0200		104	80-120			
Tin, total	0.0208	0.00020 mg/L	0.0200		104	80-120			
Titanium, total	0.0217	0.0050 mg/L	0.0200		109	80-120			
Tungsten, total	0.0215	0.0010 mg/L	0.0200		108	80-120			
Uranium, total	0.0211	0.000020 mg/L	0.0200		105	80-120			
Vanadium, total	0.0203	0.0010 mg/L	0.0200		102	80-120			
Zinc, total	0.0222	0.0040 mg/L	0.0200		111	80-120			
Zirconium, total	0.0210	0.00010 mg/L	0.0200		105	80-120			
<b>Duplicate (B0C1298-DUP1)</b>			<b>Source: 0030725-02</b>		Prepared: 2020-03-14, Analyzed: 2020-03-15				
Aluminum, total	0.0118	0.0050 mg/L		0.0118					20
Antimony, total	< 0.00020	0.00020 mg/L		< 0.00020					20
Arsenic, total	0.00073	0.00050 mg/L		0.00058					15
Barium, total	0.0231	0.0050 mg/L		0.0236					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	0.0148	0.0050 mg/L		0.0155					20
Cadmium, total	< 0.000010	0.000010 mg/L		< 0.000010					20
Calcium, total	33.5	0.20 mg/L		34.2			2		12
Chromium, total	< 0.00050	0.00050 mg/L		< 0.00050					12
Cobalt, total	< 0.00010	0.00010 mg/L		< 0.00010					13
Copper, total	0.00075	0.00040 mg/L		0.00074					20
Iron, total	0.016	0.010 mg/L		0.017					18
Lead, total	< 0.00020	0.00020 mg/L		< 0.00020					20
Lithium, total	0.00358	0.00010 mg/L		0.00361			< 1		19
Magnesium, total	9.93	0.010 mg/L		9.71			2		10
Manganese, total	0.00666	0.00020 mg/L		0.00632			5		13
Molybdenum, total	0.00382	0.00010 mg/L		0.00346			10		20
Nickel, total	0.00058	0.00040 mg/L		0.00041					20
Phosphorus, total	< 0.050	0.050 mg/L		< 0.050					20
Potassium, total	2.72	0.10 mg/L		2.68			2		13
Selenium, total	0.00052	0.00050 mg/L		< 0.00050					20
Silicon, total	2.2	1.0 mg/L		2.2					11
Silver, total	< 0.000050	0.000050 mg/L		< 0.000050					18
Sodium, total	12.3	0.10 mg/L		12.2			< 1		10
Strontium, total	0.317	0.0010 mg/L		0.325			2		9
Sulfur, total	9.4	3.0 mg/L		10.0					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	0.00265	0.000020 mg/L		0.00265			< 1		14
Vanadium, total	< 0.0010	0.0010 mg/L		< 0.0010					17
Zinc, total	< 0.0040	0.0040 mg/L		< 0.0040					8
Zirconium, total	< 0.00010	0.00010 mg/L		< 0.00010					20



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0030725  
2020-03-17 16:34

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0C1298, Continued</b>									
<b>Reference (B0C1298-SRM1)</b>					Prepared: 2020-03-14, Analyzed: 2020-03-15				
Aluminum, total	0.317	0.0050 mg/L	0.303		105	82-114			
Antimony, total	0.0517	0.00020 mg/L	0.0511		101	88-115			
Arsenic, total	0.123	0.00050 mg/L	0.118		104	88-111			
Barium, total	0.765	0.0050 mg/L	0.823		93	83-110			
Beryllium, total	0.0519	0.00010 mg/L	0.0496		105	80-119			
Boron, total	3.29	0.0050 mg/L	3.45		95	80-118			
Cadmium, total	0.0500	0.000010 mg/L	0.0495		101	90-110			
Calcium, total	11.5	0.20 mg/L	11.6		99	85-113			
Chromium, total	0.252	0.00050 mg/L	0.250		101	88-111			
Cobalt, total	0.0396	0.00010 mg/L	0.0377		105	90-114			
Copper, total	0.521	0.00040 mg/L	0.486		107	90-117			
Iron, total	0.520	0.010 mg/L	0.488		107	90-116			
Lead, total	0.210	0.00020 mg/L	0.204		103	90-110			
Lithium, total	0.420	0.00010 mg/L	0.403		104	79-118			
Magnesium, total	3.93	0.010 mg/L	3.79		104	88-116			
Manganese, total	0.108	0.00020 mg/L	0.109		99	88-108			
Molybdenum, total	0.198	0.00010 mg/L	0.198		100	88-110			
Nickel, total	0.257	0.00040 mg/L	0.249		103	90-112			
Phosphorus, total	0.246	0.050 mg/L	0.227		108	72-118			
Potassium, total	7.56	0.10 mg/L	7.21		105	87-116			
Selenium, total	0.133	0.00050 mg/L	0.121		110	90-122			
Sodium, total	7.47	0.10 mg/L	7.54		99	86-118			
Strontium, total	0.369	0.0010 mg/L	0.375		98	86-110			
Thallium, total	0.0843	0.000020 mg/L	0.0805		105	90-113			
Uranium, total	0.0305	0.000020 mg/L	0.0306		100	88-112			
Vanadium, total	0.390	0.0010 mg/L	0.386		101	87-110			
Zinc, total	2.67	0.0040 mg/L	2.49		107	90-113			





## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0040772
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-04-09 08:30 / 5°C 2020-04-20 16:20
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC		
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: YES

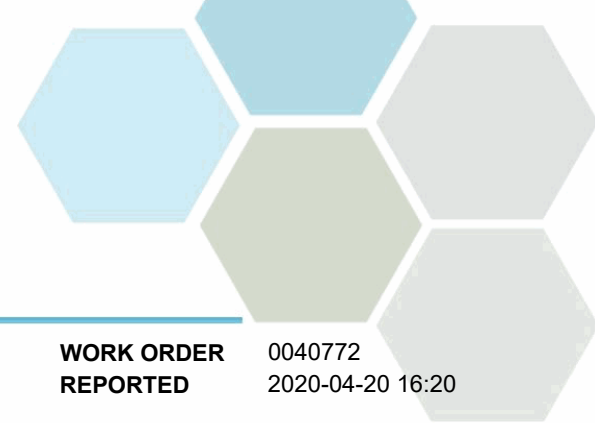
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (0040772-01) | Matrix: Water | Sampled: 2020-04-08 09:30**

**Anions**

Chloride	<b>6.28</b>	AO ≤ 250	0.10 mg/L	2020-04-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-04-09	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-04-09	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-04-09	
Sulfate	<b>30.6</b>	AO ≤ 500	1.0 mg/L	2020-04-09	

**Calculated Parameters**

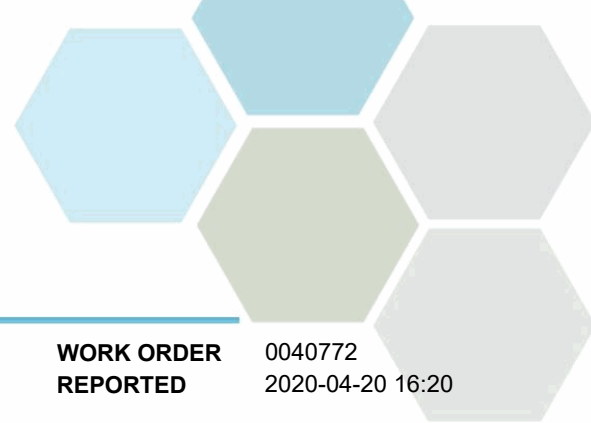
Hardness, Total (as CaCO3)	<b>115</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.168</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.168</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-04-17	
Chlorophyll a	<b>1.51</b>	N/A	0.10 µg/L	2020-04-17	
Nitrogen, Total Kjeldahl	<b>0.168</b>	N/A	0.050 mg/L	2020-04-15	
Phosphorus, Total (as P)	<b>0.0133</b>	N/A	0.0020 mg/L	2020-04-15	
Phosphorus, Total Dissolved	<b>0.0094</b>	N/A	0.0020 mg/L	2020-04-15	

**Total Metals**

Aluminum, total	<b>0.0080</b>	OG < 0.1	0.0050 mg/L	2020-04-16	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-04-16	
Arsenic, total	<b>0.00058</b>	MAC = 0.01	0.00050 mg/L	2020-04-16	
Barium, total	<b>0.0226</b>	MAC = 2	0.0050 mg/L	2020-04-16	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Boron, total	<b>0.0547</b>	MAC = 5	0.0050 mg/L	2020-04-16	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-04-16	
Calcium, total	<b>30.3</b>	None Required	0.20 mg/L	2020-04-16	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-04-16	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Copper, total	<b>0.00172</b>	MAC = 2	0.00040 mg/L	2020-04-16	
Iron, total	<b>0.015</b>	AO ≤ 0.3	0.010 mg/L	2020-04-16	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-04-16	
Lithium, total	<b>0.00359</b>	N/A	0.00010 mg/L	2020-04-16	
Magnesium, total	<b>9.49</b>	None Required	0.010 mg/L	2020-04-16	
Manganese, total	<b>0.00619</b>	MAC = 0.12	0.00020 mg/L	2020-04-16	
Molybdenum, total	<b>0.00339</b>	N/A	0.00010 mg/L	2020-04-16	
Nickel, total	<b>0.00048</b>	N/A	0.00040 mg/L	2020-04-16	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-04-16	
Potassium, total	<b>2.34</b>	N/A	0.10 mg/L	2020-04-16	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-04-16	
Silicon, total	<b>2.2</b>	N/A	1.0 mg/L	2020-04-16	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0040772-01)   Matrix: Water   Sampled: 2020-04-08 09:30, Continued</b>					
<i>Total Metals, Continued</i>					
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-04-16	
Sodium, total	<b>11.9</b>	AO ≤ 200	0.10 mg/L	2020-04-16	
Strontium, total	<b>0.310</b>	7	0.0010 mg/L	2020-04-16	
Sulfur, total	<b>9.9</b>	N/A	3.0 mg/L	2020-04-16	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-04-16	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-04-16	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-04-16	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-04-16	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-04-16	
Uranium, total	<b>0.00261</b>	MAC = 0.02	0.000020 mg/L	2020-04-16	
Vanadium, total	<b>0.0010</b>	N/A	0.0010 mg/L	2020-04-16	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-04-16	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	

**Vaseux 20, 22, 24 m composite (0040772-02) | Matrix: Water | Sampled: 2020-04-08 10:30**

**Anions**

Chloride	<b>6.20</b>	AO ≤ 250	0.10 mg/L	2020-04-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-04-09	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-04-09	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-04-09	
Sulfate	<b>30.6</b>	AO ≤ 500	1.0 mg/L	2020-04-09	

**Calculated Parameters**

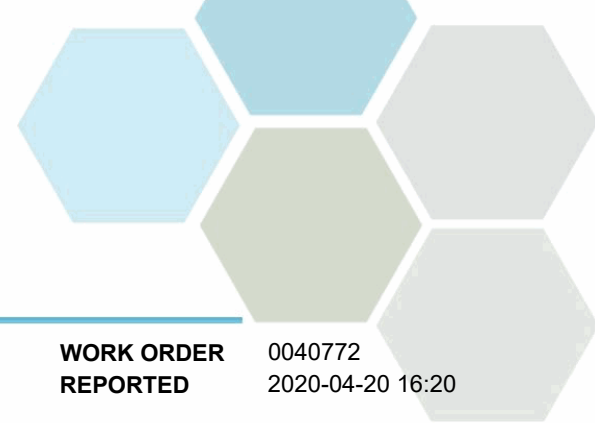
Hardness, Total (as CaCO3)	<b>114</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.215</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.215</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-04-17	
Chlorophyll a	<b>1.70</b>	N/A	0.10 µg/L	2020-04-17	
Nitrogen, Total Kjeldahl	<b>0.215</b>	N/A	0.050 mg/L	2020-04-15	
Phosphorus, Total (as P)	<b>0.0160</b>	N/A	0.0020 mg/L	2020-04-15	
Phosphorus, Total Dissolved	<b>0.0069</b>	N/A	0.0020 mg/L	2020-04-15	

**Total Metals**

Aluminum, total	<b>0.0170</b>	OG < 0.1	0.0050 mg/L	2020-04-16	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-04-16	
Arsenic, total	<b>0.00055</b>	MAC = 0.01	0.00050 mg/L	2020-04-16	
Barium, total	<b>0.0223</b>	MAC = 2	0.0050 mg/L	2020-04-16	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	

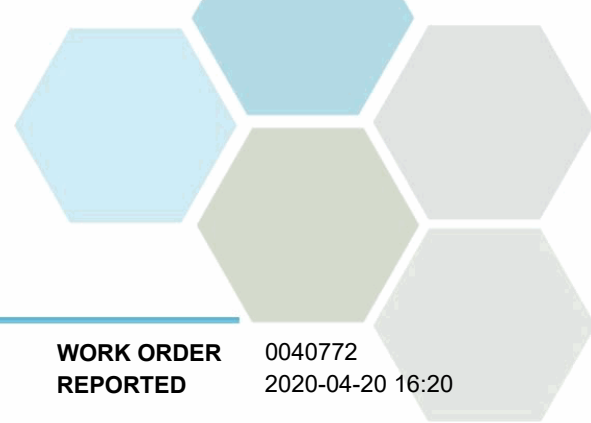


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (0040772-02)   Matrix: Water   Sampled: 2020-04-08 10:30, Continued</b>					
<i>Total Metals, Continued</i>					
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Boron, total	<b>0.0486</b>	MAC = 5	0.0050 mg/L	2020-04-16	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-04-16	
Calcium, total	<b>30.4</b>	None Required	0.20 mg/L	2020-04-16	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-04-16	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Copper, total	<b>0.00097</b>	MAC = 2	0.00040 mg/L	2020-04-16	
Iron, total	<b>0.027</b>	AO ≤ 0.3	0.010 mg/L	2020-04-16	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-04-16	
Lithium, total	<b>0.00355</b>	N/A	0.00010 mg/L	2020-04-16	
Magnesium, total	<b>9.35</b>	None Required	0.010 mg/L	2020-04-16	
Manganese, total	<b>0.00852</b>	MAC = 0.12	0.00020 mg/L	2020-04-16	
Molybdenum, total	<b>0.00322</b>	N/A	0.00010 mg/L	2020-04-16	
Nickel, total	<b>0.00051</b>	N/A	0.00040 mg/L	2020-04-16	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-04-16	
Potassium, total	<b>2.33</b>	N/A	0.10 mg/L	2020-04-16	
Selenium, total	<b>0.00051</b>	MAC = 0.05	0.00050 mg/L	2020-04-16	
Silicon, total	<b>2.2</b>	N/A	1.0 mg/L	2020-04-16	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-04-16	
Sodium, total	<b>11.8</b>	AO ≤ 200	0.10 mg/L	2020-04-16	
Strontium, total	<b>0.304</b>	7	0.0010 mg/L	2020-04-16	
Sulfur, total	<b>10.1</b>	N/A	3.0 mg/L	2020-04-16	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-04-16	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-04-16	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-04-16	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-04-16	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-04-16	
Uranium, total	<b>0.00263</b>	MAC = 0.02	0.000020 mg/L	2020-04-16	
Vanadium, total	<b>0.0010</b>	N/A	0.0010 mg/L	2020-04-16	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-04-16	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-04-16	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

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
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

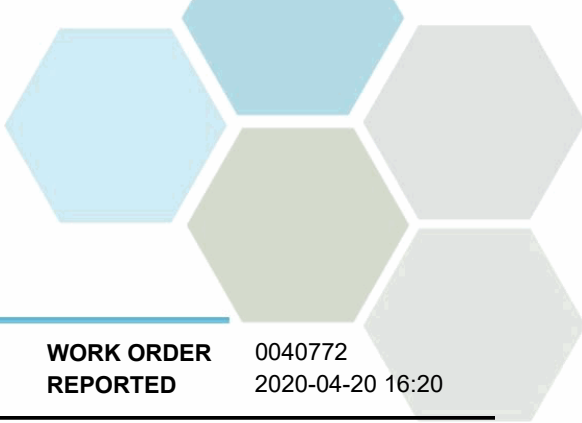
[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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](mailto:acrump@caro.ca)



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

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
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### Anions, Batch B0D0658

Blank (B0D0658-BLK1)			Prepared: 2020-04-09, Analyzed: 2020-04-09						
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							
Sulfate	< 1.0	1.0 mg/L							

Blank (B0D0658-BLK2)			Prepared: 2020-04-09, Analyzed: 2020-04-09						
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							
Sulfate	< 1.0	1.0 mg/L							

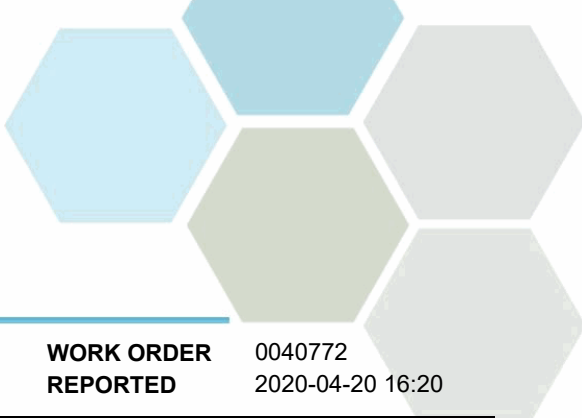
LCS (B0D0658-BS1)			Prepared: 2020-04-09, Analyzed: 2020-04-09						
Chloride	16.1	0.10 mg/L	16.0		101	90-110			
Nitrate (as N)	4.13	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	2.03	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	0.961	0.0050 mg/L	1.00		96	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			

LCS (B0D0658-BS2)			Prepared: 2020-04-09, Analyzed: 2020-04-09						
Chloride	15.9	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.08	0.010 mg/L	4.00		102	90-110			
Nitrite (as N)	2.04	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	0.977	0.0050 mg/L	1.00		98	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			

### General Parameters, Batch B0D0586

Blank (B0D0586-BLK1)			Prepared: 2020-04-08, Analyzed: 2020-04-17						
Chlorophyll a	< 0.10	0.10 µg/L							

### General Parameters, Batch B0D0836

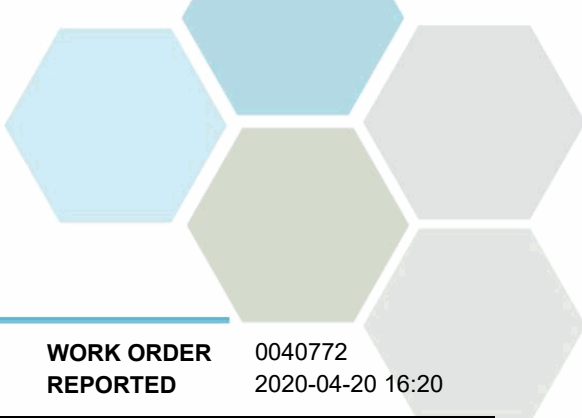


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B0D0836, Continued</b>									
<b>Blank (B0D0836-BLK1)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-15						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0D0836-BS1)</b>			Prepared: 2020-04-14, Analyzed: 2020-04-15						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
<b>Duplicate (B0D0836-DUP1)</b>			<b>Source: 0040772-02</b>		Prepared: 2020-04-14, Analyzed: 2020-04-15				
Nitrogen, Total Kjeldahl	0.193	0.050 mg/L		0.215				15	
<b>Matrix Spike (B0D0836-MS1)</b>			<b>Source: 0040772-02</b>		Prepared: 2020-04-14, Analyzed: 2020-04-15				
Nitrogen, Total Kjeldahl	2.18	0.100 mg/L	2.00	0.215	98	65-135			
<b>General Parameters, Batch B0D0872</b>									
<b>Blank (B0D0872-BLK1)</b>			Prepared: 2020-04-15, Analyzed: 2020-04-15						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>LCS (B0D0872-BS1)</b>			Prepared: 2020-04-15, Analyzed: 2020-04-15						
Phosphorus, Total (as P)	0.108	0.0020 mg/L	0.100		108	85-115			
<b>General Parameters, Batch B0D1061</b>									
<b>Blank (B0D1061-BLK1)</b>			Prepared: 2020-04-17, Analyzed: 2020-04-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0D1061-BLK2)</b>			Prepared: 2020-04-17, Analyzed: 2020-04-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>LCS (B0D1061-BS1)</b>			Prepared: 2020-04-17, Analyzed: 2020-04-17						
Ammonia, Total (as N)	0.923	0.050 mg/L	1.00		92	90-115			
<b>LCS (B0D1061-BS2)</b>			Prepared: 2020-04-17, Analyzed: 2020-04-17						
Ammonia, Total (as N)	0.898	0.050 mg/L	1.00		90	90-115			
<b>Total Metals, Batch B0D0894</b>									
<b>Blank (B0D0894-BLK1)</b>			Prepared: 2020-04-15, Analyzed: 2020-04-16						
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							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Total Metals, Batch B0D0894, Continued**

**Blank (B0D0894-BLK1), Continued**

Prepared: 2020-04-15, Analyzed: 2020-04-16

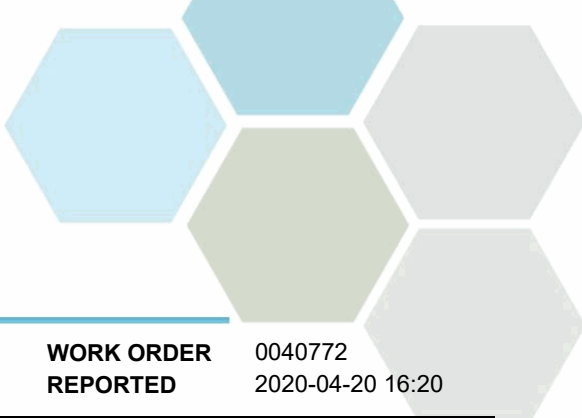
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, 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 (B0D0894-BS1)**

Prepared: 2020-04-15, Analyzed: 2020-04-16

Aluminum, total	0.0212	0.0050 mg/L	0.0199		106	80-120			
Antimony, total	0.0226	0.00020 mg/L	0.0200		113	80-120			
Arsenic, total	0.0220	0.00050 mg/L	0.0200		110	80-120			
Barium, total	0.0212	0.0050 mg/L	0.0198		107	80-120			
Beryllium, total	0.0221	0.00010 mg/L	0.0198		112	80-120			
Bismuth, total	0.0234	0.00010 mg/L	0.0200		117	80-120			
Boron, total	0.0179	0.0050 mg/L	0.0200		90	80-120			
Cadmium, total	0.0225	0.000010 mg/L	0.0199		113	80-120			
Calcium, total	2.33	0.20 mg/L	2.02		116	80-120			
Chromium, total	0.0216	0.00050 mg/L	0.0198		109	80-120			
Cobalt, total	0.0222	0.00010 mg/L	0.0199		112	80-120			
Copper, total	0.0229	0.00040 mg/L	0.0200		114	80-120			
Iron, total	2.06	0.010 mg/L	2.02		102	80-120			
Lead, total	0.0222	0.00020 mg/L	0.0199		112	80-120			
Lithium, total	0.0223	0.00010 mg/L	0.0200		112	80-120			
Magnesium, total	2.10	0.010 mg/L	2.02		104	80-120			
Manganese, total	0.0215	0.00020 mg/L	0.0199		108	80-120			
Molybdenum, total	0.0214	0.00010 mg/L	0.0200		107	80-120			
Nickel, total	0.0223	0.00040 mg/L	0.0200		111	80-120			
Phosphorus, total	2.08	0.050 mg/L	2.00		104	80-120			
Potassium, total	2.00	0.10 mg/L	2.02		99	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		89	80-120			
Silver, total	0.0226	0.000050 mg/L	0.0200		113	80-120			
Sodium, total	2.11	0.10 mg/L	2.02		105	80-120			
Strontium, total	0.0217	0.0010 mg/L	0.0200		108	80-120			
Sulfur, total	4.9	3.0 mg/L	5.00		98	80-120			
Tellurium, total	0.0216	0.00050 mg/L	0.0200		108	80-120			
Thallium, total	0.0232	0.000020 mg/L	0.0199		117	80-120			
Thorium, total	0.0221	0.00010 mg/L	0.0200		111	80-120			
Tin, total	0.0220	0.00020 mg/L	0.0200		110	80-120			
Titanium, total	0.0210	0.0050 mg/L	0.0200		105	80-120			
Tungsten, total	0.0218	0.0010 mg/L	0.0200		109	80-120			
Uranium, total	0.0229	0.000020 mg/L	0.0200		115	80-120			
Vanadium, total	0.0214	0.0010 mg/L	0.0200		107	80-120			
Zinc, total	0.0223	0.0040 mg/L	0.0200		111	80-120			





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0040772  
2020-04-20 16:20

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0D0894, Continued</b>									
<b>LCS (B0D0894-BS1), Continued</b>					Prepared: 2020-04-15, Analyzed: 2020-04-16				
Zirconium, total	0.0212	0.00010 mg/L	0.0200		106	80-120			
<b>Reference (B0D0894-SRM1)</b>					Prepared: 2020-04-15, Analyzed: 2020-04-16				
Aluminum, total	0.302	0.0050 mg/L	0.303		100	82-114			
Antimony, total	0.0564	0.00020 mg/L	0.0511		110	88-115			
Arsenic, total	0.130	0.00050 mg/L	0.118		111	88-111			
Barium, total	0.833	0.0050 mg/L	0.823		101	83-110			
Beryllium, total	0.0540	0.00010 mg/L	0.0496		109	80-119			
Boron, total	3.07	0.0050 mg/L	3.45		89	80-118			
Cadmium, total	0.0544	0.000010 mg/L	0.0495		110	90-110			
Calcium, total	11.0	0.20 mg/L	11.6		95	85-113			
Chromium, total	0.264	0.00050 mg/L	0.250		106	88-111			
Cobalt, total	0.0420	0.00010 mg/L	0.0377		111	90-114			
Copper, total	0.553	0.00040 mg/L	0.486		114	90-117			
Iron, total	0.560	0.010 mg/L	0.488		115	90-116			
Lead, total	0.221	0.00020 mg/L	0.204		108	90-110			
Lithium, total	0.433	0.00010 mg/L	0.403		107	79-118			
Magnesium, total	3.98	0.010 mg/L	3.79		105	88-116			
Manganese, total	0.116	0.00020 mg/L	0.109		106	88-108			
Molybdenum, total	0.208	0.00010 mg/L	0.198		105	88-110			
Nickel, total	0.266	0.00040 mg/L	0.249		107	90-112			
Phosphorus, total	0.238	0.050 mg/L	0.227		105	72-118			
Potassium, total	7.30	0.10 mg/L	7.21		101	87-116			
Selenium, total	0.146	0.00050 mg/L	0.121		121	90-122			
Sodium, total	7.63	0.10 mg/L	7.54		101	86-118			
Strontium, total	0.397	0.0010 mg/L	0.375		106	86-110			
Thallium, total	0.0902	0.000020 mg/L	0.0805		112	90-113			
Uranium, total	0.0335	0.000020 mg/L	0.0306		110	88-112			
Vanadium, total	0.401	0.0010 mg/L	0.386		104	87-110			
Zinc, total	2.54	0.0040 mg/L	2.49		102	90-113			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0050750
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-05-08 15:34 / 6°C
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>REPORTED</b>	2020-05-19 10:41
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: N/A

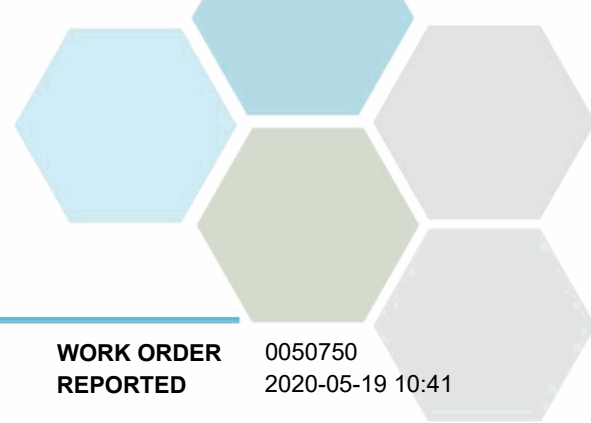
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

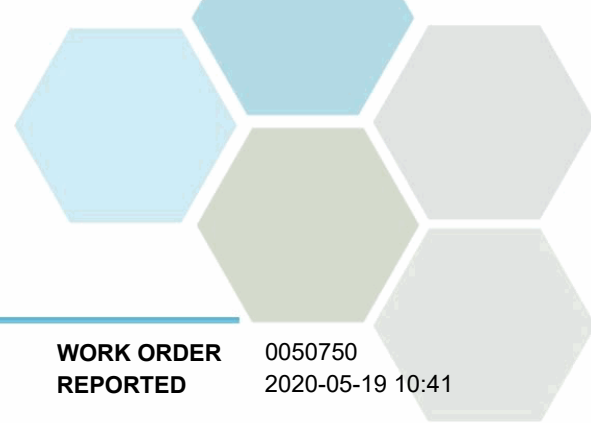


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0050750-01)   Matrix: Water   Sampled: 2020-05-08 11:00</b>					
<b>Anions</b>					
Chloride	5.59	AO ≤ 250	0.10 mg/L	2020-05-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-05-09	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-05-09	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-05-09	
Sulfate	27.8	AO ≤ 500	1.0 mg/L	2020-05-09	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	119	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.258	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.258	N/A	0.0500 mg/L	N/A	
<b>General Parameters</b>					
Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-05-11	
Chlorophyll a	1.80	N/A	0.10 µg/L	2020-05-13	
Nitrogen, Total Kjeldahl	0.258	N/A	0.050 mg/L	2020-05-15	
Phosphorus, Total (as P)	0.0211	N/A	0.0020 mg/L	2020-05-15	
Phosphorus, Total Dissolved	0.0056	N/A	0.0020 mg/L	2020-05-15	
<b>Total Metals</b>					
Aluminum, total	0.274	OG < 0.1	0.0050 mg/L	2020-05-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-05-15	
Arsenic, total	0.00061	MAC = 0.01	0.00050 mg/L	2020-05-15	
Barium, total	0.0289	MAC = 2	0.0050 mg/L	2020-05-15	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-05-15	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-05-15	
Boron, total	0.0383	MAC = 5	0.0050 mg/L	2020-05-15	
Cadmium, total	0.000020	MAC = 0.005	0.000010 mg/L	2020-05-15	
Calcium, total	32.0	None Required	0.20 mg/L	2020-05-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-05-15	
Cobalt, total	0.00015	N/A	0.00010 mg/L	2020-05-15	
Copper, total	0.00295	MAC = 2	0.00040 mg/L	2020-05-15	
Iron, total	0.274	AO ≤ 0.3	0.010 mg/L	2020-05-15	
Lead, total	0.00026	MAC = 0.005	0.00020 mg/L	2020-05-15	
Lithium, total	0.00374	N/A	0.00010 mg/L	2020-05-15	
Magnesium, total	9.47	None Required	0.010 mg/L	2020-05-15	
Manganese, total	0.0154	MAC = 0.12	0.00020 mg/L	2020-05-15	
Molybdenum, total	0.00419	N/A	0.00010 mg/L	2020-05-15	
Nickel, total	0.00078	N/A	0.00040 mg/L	2020-05-15	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-05-15	
Potassium, total	2.67	N/A	0.10 mg/L	2020-05-15	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-05-15	
Silicon, total	3.9	N/A	1.0 mg/L	2020-05-15	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0050750-01)   Matrix: Water   Sampled: 2020-05-08 11:00, Continued</b>					
<i>Total Metals, Continued</i>					
Silver, total	0.000080	None Required	0.000050 mg/L	2020-05-15	
Sodium, total	12.0	AO ≤ 200	0.10 mg/L	2020-05-15	
Strontium, total	0.333	7	0.0010 mg/L	2020-05-15	
Sulfur, total	10.9	N/A	3.0 mg/L	2020-05-15	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-05-15	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-05-15	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-05-15	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-05-15	
Titanium, total	0.0189	N/A	0.0050 mg/L	2020-05-15	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-05-15	
Uranium, total	0.00277	MAC = 0.02	0.000020 mg/L	2020-05-15	
Vanadium, total	0.0015	N/A	0.0010 mg/L	2020-05-15	
Zinc, total	0.0122	AO ≤ 5	0.0040 mg/L	2020-05-15	
Zirconium, total	0.00019	N/A	0.00010 mg/L	2020-05-15	

**Vaseux 20, 22, 24 m composite (0050750-02) | Matrix: Water | Sampled: 2020-05-08 11:30**

**Anions**

Chloride	5.88	AO ≤ 250	0.10 mg/L	2020-05-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-05-09	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-05-09	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-05-09	
Sulfate	29.2	AO ≤ 500	1.0 mg/L	2020-05-09	

**Calculated Parameters**

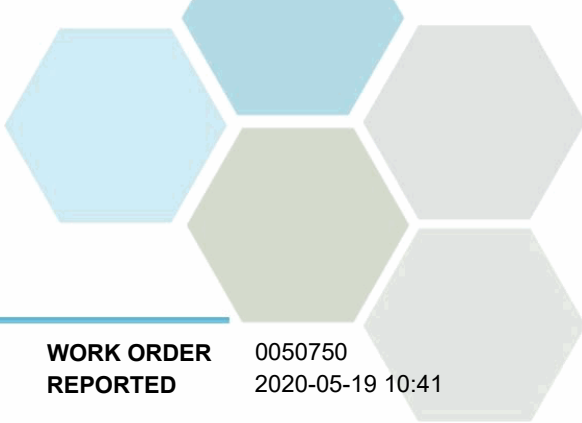
Hardness, Total (as CaCO3)	130	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.167	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.167	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-05-11	
Chlorophyll a	2.12	N/A	0.10 µg/L	2020-05-13	
Nitrogen, Total Kjeldahl	0.167	N/A	0.050 mg/L	2020-05-15	
Phosphorus, Total (as P)	0.0196	N/A	0.0020 mg/L	2020-05-15	
Phosphorus, Total Dissolved	0.0061	N/A	0.0020 mg/L	2020-05-15	

**Total Metals**

Aluminum, total	0.182	OG < 0.1	0.0050 mg/L	2020-05-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-05-15	
Arsenic, total	0.00067	MAC = 0.01	0.00050 mg/L	2020-05-15	
Barium, total	0.0297	MAC = 2	0.0050 mg/L	2020-05-15	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-05-15	

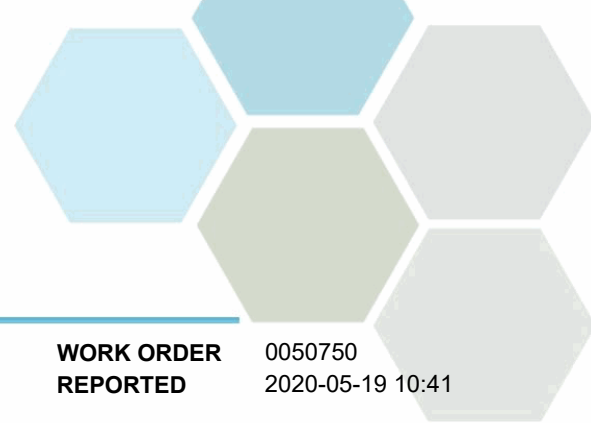


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (0050750-02)   Matrix: Water   Sampled: 2020-05-08 11:30, Continued</b>					
<i>Total Metals, Continued</i>					
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-05-15	
Boron, total	<b>0.0371</b>	MAC = 5	0.0050 mg/L	2020-05-15	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-05-15	
Calcium, total	<b>35.4</b>	None Required	0.20 mg/L	2020-05-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-05-15	
Cobalt, total	<b>0.00016</b>	N/A	0.00010 mg/L	2020-05-15	
Copper, total	<b>0.00113</b>	MAC = 2	0.00040 mg/L	2020-05-15	
Iron, total	<b>0.206</b>	AO ≤ 0.3	0.010 mg/L	2020-05-15	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-05-15	
Lithium, total	<b>0.00382</b>	N/A	0.00010 mg/L	2020-05-15	
Magnesium, total	<b>10.2</b>	None Required	0.010 mg/L	2020-05-15	
Manganese, total	<b>0.0242</b>	MAC = 0.12	0.00020 mg/L	2020-05-15	
Molybdenum, total	<b>0.00383</b>	N/A	0.00010 mg/L	2020-05-15	
Nickel, total	<b>0.00065</b>	N/A	0.00040 mg/L	2020-05-15	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-05-15	
Potassium, total	<b>2.83</b>	N/A	0.10 mg/L	2020-05-15	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-05-15	
Silicon, total	<b>3.7</b>	N/A	1.0 mg/L	2020-05-15	
Silver, total	<b>0.000057</b>	None Required	0.000050 mg/L	2020-05-15	
Sodium, total	<b>12.9</b>	AO ≤ 200	0.10 mg/L	2020-05-15	
Strontium, total	<b>0.341</b>	7	0.0010 mg/L	2020-05-15	
Sulfur, total	<b>11.6</b>	N/A	3.0 mg/L	2020-05-15	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-05-15	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-05-15	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-05-15	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-05-15	
Titanium, total	<b>0.0121</b>	N/A	0.0050 mg/L	2020-05-15	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-05-15	
Uranium, total	<b>0.00300</b>	MAC = 0.02	0.000020 mg/L	2020-05-15	
Vanadium, total	<b>0.0021</b>	N/A	0.0010 mg/L	2020-05-15	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-05-15	
Zirconium, total	<b>0.00011</b>	N/A	0.00010 mg/L	2020-05-15	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

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
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

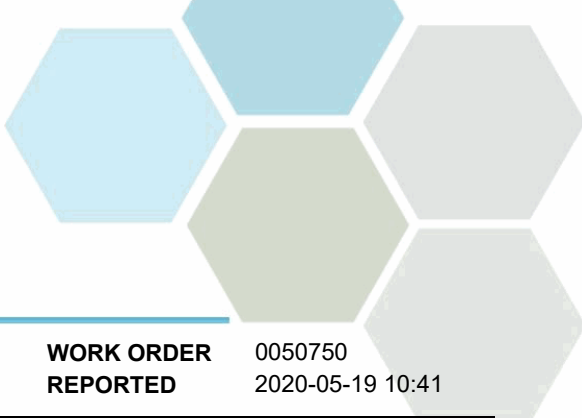
[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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](mailto:acrump@caro.ca)



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

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
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### Anions, Batch B0E0679

Blank (B0E0679-BLK1)			Prepared: 2020-05-09, Analyzed: 2020-05-09						
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							
Sulfate	< 1.0	1.0 mg/L							

Blank (B0E0679-BLK2)			Prepared: 2020-05-09, Analyzed: 2020-05-09						
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							
Sulfate	< 1.0	1.0 mg/L							

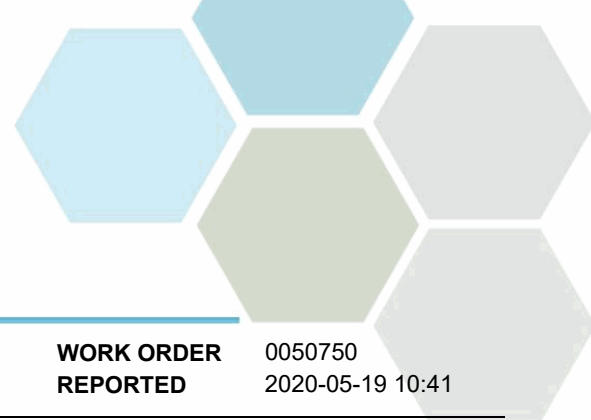
LCS (B0E0679-BS1)			Prepared: 2020-05-09, Analyzed: 2020-05-09						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.04	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.05	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			
Sulfate	15.9	1.0 mg/L	16.0		100	90-110			

LCS (B0E0679-BS2)			Prepared: 2020-05-09, Analyzed: 2020-05-09						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.09	0.010 mg/L	4.00		102	90-110			
Nitrite (as N)	2.05	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	1.00	0.0050 mg/L	1.00		100	80-120			
Sulfate	16.1	1.0 mg/L	16.0		101	90-110			

### General Parameters, Batch B0E0432

Blank (B0E0432-BLK1)			Prepared: 2020-05-06, Analyzed: 2020-05-13						
Chlorophyll a	< 0.10	0.10 µg/L							

### General Parameters, Batch B0E0783



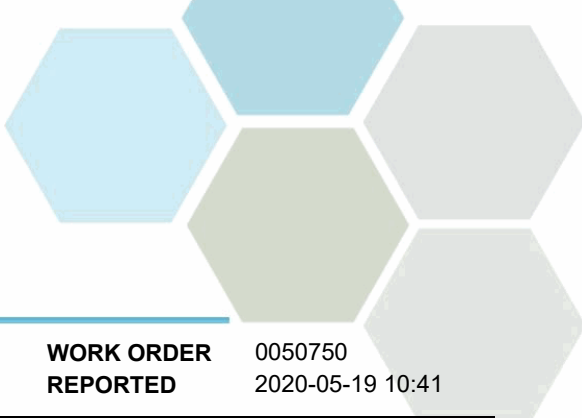
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B0E0783, Continued</b>									
<b>Blank (B0E0783-BLK1)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0E0783-BLK2)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0E0783-BLK3)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0E0783-BLK4)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>LCS (B0E0783-BS1)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	0.992	0.050 mg/L	1.00		99	90-115			
<b>LCS (B0E0783-BS2)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	1.02	0.050 mg/L	1.00		102	90-115			
<b>LCS (B0E0783-BS3)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	0.916	0.050 mg/L	1.00		92	90-115			
<b>LCS (B0E0783-BS4)</b>			Prepared: 2020-05-11, Analyzed: 2020-05-11						
Ammonia, Total (as N)	0.910	0.050 mg/L	1.00		91	90-115			
<b>Duplicate (B0E0783-DUP4)</b>			<b>Source: 0050750-02</b>		Prepared: 2020-05-11, Analyzed: 2020-05-11				
Ammonia, Total (as N)	< 0.050	0.050 mg/L		< 0.050					15
<b>Matrix Spike (B0E0783-MS4)</b>			<b>Source: 0050750-02</b>		Prepared: 2020-05-11, Analyzed: 2020-05-11				
Ammonia, Total (as N)	0.249	0.050 mg/L	0.250	< 0.050	100	75-125			
<b>General Parameters, Batch B0E1167</b>									
<b>Blank (B0E1167-BLK1)</b>			Prepared: 2020-05-14, Analyzed: 2020-05-15						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>Blank (B0E1167-BLK2)</b>			Prepared: 2020-05-14, Analyzed: 2020-05-15						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0E1167-BS1)</b>			Prepared: 2020-05-14, Analyzed: 2020-05-15						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
<b>LCS (B0E1167-BS2)</b>			Prepared: 2020-05-14, Analyzed: 2020-05-15						
Nitrogen, Total Kjeldahl	1.03	0.050 mg/L	1.00		103	85-115			
<b>Duplicate (B0E1167-DUP2)</b>			<b>Source: 0050750-02</b>		Prepared: 2020-05-14, Analyzed: 2020-05-15				
Nitrogen, Total Kjeldahl	0.168	0.050 mg/L		0.167					15
<b>Matrix Spike (B0E1167-MS2)</b>			<b>Source: 0050750-02</b>		Prepared: 2020-05-14, Analyzed: 2020-05-15				
Nitrogen, Total Kjeldahl	2.16	0.100 mg/L	2.00	0.167	100	65-135			
<b>General Parameters, Batch B0E1198</b>									
<b>Blank (B0E1198-BLK1)</b>			Prepared: 2020-05-15, Analyzed: 2020-05-15						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>Blank (B0E1198-BLK2)</b>			Prepared: 2020-05-15, Analyzed: 2020-05-15						
Phosphorus, Total Dissolved	< 0.0020	0.0020 mg/L							





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
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**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

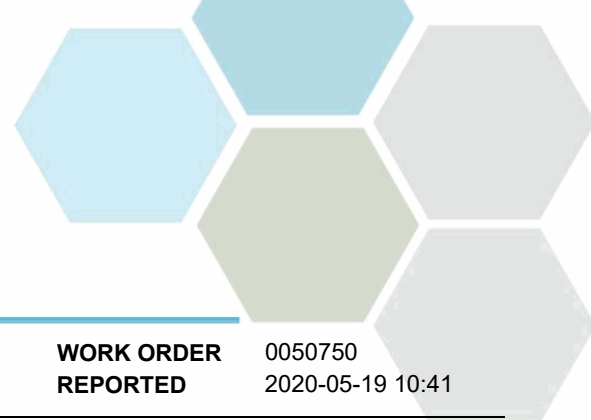
Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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### General Parameters, Batch B0E1198, Continued

<b>Blank (B0E1198-BLK3)</b>			Prepared: 2020-05-15, Analyzed: 2020-05-15						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>LCS (B0E1198-BS1)</b>			Prepared: 2020-05-15, Analyzed: 2020-05-15						
Phosphorus, Total (as P)	0.105	0.0020 mg/L	0.100		105	85-115			
<b>LCS (B0E1198-BS2)</b>			Prepared: 2020-05-15, Analyzed: 2020-05-15						
Phosphorus, Total Dissolved	0.104	0.0020 mg/L	0.100		104	85-115			
<b>LCS (B0E1198-BS3)</b>			Prepared: 2020-05-15, Analyzed: 2020-05-15						
Phosphorus, Total (as P)	0.107	0.0020 mg/L	0.100		107	85-115			

### Total Metals, Batch B0E1173

<b>Blank (B0E1173-BLK1)</b>			Prepared: 2020-05-14, Analyzed: 2020-05-15						
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							
<b>LCS (B0E1173-BS1)</b>			Prepared: 2020-05-14, Analyzed: 2020-05-15						
Aluminum, total	0.0212	0.0050 mg/L	0.0199		107	80-120			
Antimony, total	0.0217	0.00020 mg/L	0.0200		109	80-120			
Arsenic, total	0.0231	0.00050 mg/L	0.0200		115	80-120			



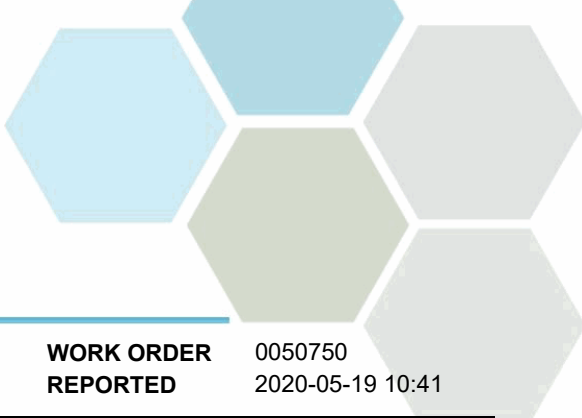
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0E1173, Continued</b>									
<b>LCS (B0E1173-BS1), Continued</b>					Prepared: 2020-05-14, Analyzed: 2020-05-15				
Barium, total	0.0219	0.0050 mg/L	0.0198		111	80-120			
Beryllium, total	0.0230	0.00010 mg/L	0.0198		116	80-120			
Bismuth, total	0.0238	0.00010 mg/L	0.0200		119	80-120			
Boron, total	0.0198	0.0050 mg/L	0.0200		99	80-120			
Cadmium, total	0.0226	0.000010 mg/L	0.0199		114	80-120			
Calcium, total	2.00	0.20 mg/L	2.02		99	80-120			
Chromium, total	0.0220	0.00050 mg/L	0.0198		111	80-120			
Cobalt, total	0.0223	0.00010 mg/L	0.0199		112	80-120			
Copper, total	0.0229	0.00040 mg/L	0.0200		114	80-120			
Iron, total	2.17	0.10 mg/L	2.02		107	80-120			
Lead, total	0.0233	0.00020 mg/L	0.0199		117	80-120			
Lithium, total	0.0230	0.00010 mg/L	0.0200		115	80-120			
Magnesium, total	2.08	0.010 mg/L	2.02		103	80-120			
Manganese, total	0.0220	0.00020 mg/L	0.0199		110	80-120			
Molybdenum, total	0.0213	0.00010 mg/L	0.0200		107	80-120			
Nickel, total	0.0225	0.00040 mg/L	0.0200		112	80-120			
Phosphorus, total	2.20	0.050 mg/L	2.00		110	80-120			
Potassium, total	2.18	0.10 mg/L	2.02		108	80-120			
Selenium, total	0.0231	0.00050 mg/L	0.0200		116	80-120			
Silicon, total	2.3	1.0 mg/L	2.00		117	80-120			
Silver, total	0.0198	0.000050 mg/L	0.0200		99	80-120			
Sodium, total	2.21	0.10 mg/L	2.02		109	80-120			
Strontium, total	0.0220	0.0010 mg/L	0.0200		110	80-120			
Sulfur, total	5.6	3.0 mg/L	5.00		111	80-120			
Tellurium, total	0.0218	0.00050 mg/L	0.0200		109	80-120			
Thallium, total	0.0234	0.000020 mg/L	0.0199		117	80-120			
Thorium, total	0.0225	0.00010 mg/L	0.0200		113	80-120			
Tin, total	0.0218	0.00020 mg/L	0.0200		109	80-120			
Titanium, total	0.0220	0.0050 mg/L	0.0200		110	80-120			
Tungsten, total	0.0218	0.0010 mg/L	0.0200		109	80-120			
Uranium, total	0.0231	0.000020 mg/L	0.0200		116	80-120			
Vanadium, total	0.0221	0.0010 mg/L	0.0200		110	80-120			
Zinc, total	0.0239	0.0040 mg/L	0.0200		119	80-120			
Zirconium, total	0.0214	0.00010 mg/L	0.0200		107	80-120			

<b>Duplicate (B0E1173-DUP1)</b>			<b>Source: 0050750-02</b>		Prepared: 2020-05-14, Analyzed: 2020-05-15				
Aluminum, total	0.185	0.0050 mg/L		0.182			2	20	
Antimony, total	< 0.00020	0.00020 mg/L		< 0.00020				20	
Arsenic, total	0.00062	0.00050 mg/L		0.00067				15	
Barium, total	0.0299	0.0050 mg/L		0.0297			< 1	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	0.0401	0.0050 mg/L		0.0371			8	20	
Cadmium, total	0.000010	0.000010 mg/L		0.000010				20	
Calcium, total	34.9	0.20 mg/L		35.4			1	12	
Chromium, total	< 0.00050	0.00050 mg/L		< 0.00050				12	
Cobalt, total	< 0.00010	0.00010 mg/L		0.00016				13	
Copper, total	0.00123	0.00040 mg/L		0.00113				20	
Iron, total	0.206	0.010 mg/L		0.206			< 1	18	
Lead, total	< 0.00020	0.00020 mg/L		< 0.00020				20	
Lithium, total	0.00390	0.00010 mg/L		0.00382			2	19	
Magnesium, total	10.0	0.010 mg/L		10.2			1	10	
Manganese, total	0.0237	0.00020 mg/L		0.0242			2	13	
Molybdenum, total	0.00370	0.00010 mg/L		0.00383			3	20	
Nickel, total	0.00066	0.00040 mg/L		0.00065				20	
Phosphorus, total	< 0.050	0.050 mg/L		< 0.050				20	



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0050750  
2020-05-19 10:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0E1173, Continued</b>									
<b>Duplicate (B0E1173-DUP1), Continued</b>		<b>Source: 0050750-02</b>		<b>Prepared: 2020-05-14, Analyzed: 2020-05-15</b>					
Potassium, total	2.78	0.10 mg/L		2.83			2	13	
Selenium, total	< 0.00050	0.00050 mg/L		< 0.00050				20	
Silicon, total	3.6	1.0 mg/L		3.7				11	
Silver, total	< 0.000050	0.000050 mg/L		0.000057				18	
Sodium, total	12.6	0.10 mg/L		12.9			2	10	
Strontium, total	0.341	0.0010 mg/L		0.341			< 1	9	
Sulfur, total	10.8	3.0 mg/L		11.6				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	0.0123	0.0050 mg/L		0.0121				20	
Tungsten, total	< 0.0010	0.0010 mg/L		< 0.0010				20	
Uranium, total	0.00300	0.000020 mg/L		0.00300			< 1	14	
Vanadium, total	0.0020	0.0010 mg/L		0.0021				17	
Zinc, total	< 0.0040	0.0040 mg/L		< 0.0040				8	
Zirconium, total	0.00011	0.00010 mg/L		0.00011				20	

<b>Reference (B0E1173-SRM1)</b>		<b>Prepared: 2020-05-14, Analyzed: 2020-05-17</b>							
Aluminum, total	0.296	0.0050 mg/L		0.303	98	82-114			
Antimony, total	0.0503	0.00020 mg/L		0.0511	98	88-115			
Arsenic, total	0.128	0.00050 mg/L		0.118	108	88-111			
Barium, total	0.798	0.0050 mg/L		0.823	97	83-110			
Beryllium, total	0.0509	0.00010 mg/L		0.0496	103	80-119			
Boron, total	3.57	0.0050 mg/L		3.45	103	80-118			
Cadmium, total	0.0506	0.000010 mg/L		0.0495	102	90-110			
Calcium, total	10.9	0.20 mg/L		11.6	94	85-113			
Chromium, total	0.258	0.00050 mg/L		0.250	103	88-111			
Cobalt, total	0.0409	0.00010 mg/L		0.0377	109	90-114			
Copper, total	0.538	0.00040 mg/L		0.486	111	90-117			
Iron, total	0.521	0.010 mg/L		0.488	107	90-116			
Lead, total	0.202	0.00020 mg/L		0.204	99	90-110			
Lithium, total	0.397	0.00010 mg/L		0.403	98	79-118			
Magnesium, total	3.85	0.010 mg/L		3.79	102	88-116			
Manganese, total	0.112	0.00020 mg/L		0.109	103	88-108			
Molybdenum, total	0.193	0.00010 mg/L		0.198	97	88-110			
Nickel, total	0.262	0.00040 mg/L		0.249	105	90-112			
Phosphorus, total	0.227	0.050 mg/L		0.227	100	72-118			
Potassium, total	7.35	0.10 mg/L		7.21	102	87-116			
Selenium, total	0.127	0.00050 mg/L		0.121	105	90-122			
Sodium, total	7.51	0.10 mg/L		7.54	100	86-118			
Strontium, total	0.383	0.0010 mg/L		0.375	102	86-110			
Thallium, total	0.0826	0.000020 mg/L		0.0805	103	90-113			
Uranium, total	0.0303	0.000020 mg/L		0.0306	99	88-112			
Vanadium, total	0.395	0.0010 mg/L		0.386	102	87-110			
Zinc, total	2.73	0.0040 mg/L		2.49	110	90-113			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0060452
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-06-03 16:15 / 13°C
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>REPORTED</b>	2020-06-11 13:04
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT INFO</b>			

### 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.

### Work Order Comments:

Custody Seals Intact: N/A

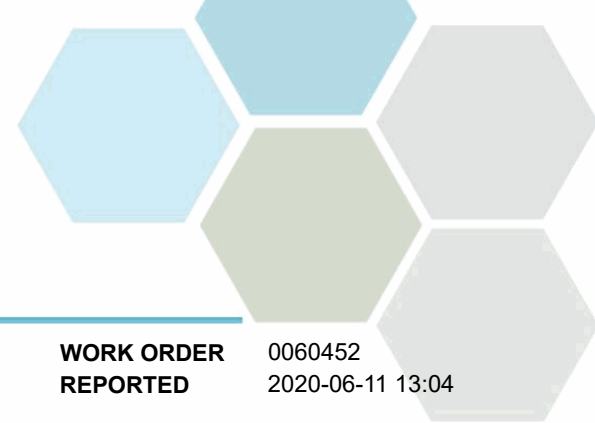
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (0060452-01) | Matrix: Water | Sampled: 2020-06-03 10:00**

**Anions**

Chloride	5.08	AO ≤ 250	0.10 mg/L	2020-06-04	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-06-04	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-06-04	
Phosphate (as P)	0.0051	N/A	0.0050 mg/L	2020-06-04	
Sulfate	25.9	AO ≤ 500	1.0 mg/L	2020-06-04	

**Calculated Parameters**

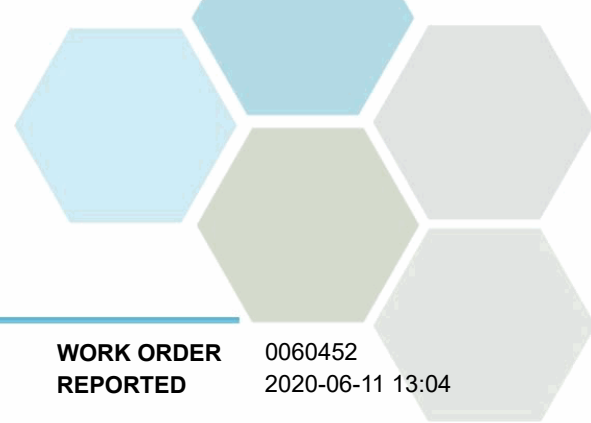
Hardness, Total (as CaCO3)	119	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.350	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.350	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-06-09	
Chlorophyll a	2.61	N/A	0.10 µg/L	2020-06-04	
Nitrogen, Total Kjeldahl	0.350	N/A	0.050 mg/L	2020-06-09	
Phosphorus, Total (as P)	0.0152	N/A	0.0020 mg/L	2020-06-08	
Phosphorus, Total Dissolved	0.0114	N/A	0.0020 mg/L	2020-06-08	

**Total Metals**

Aluminum, total	0.0793	OG < 0.1	0.0050 mg/L	2020-06-09	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-06-09	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2020-06-09	
Barium, total	0.0236	MAC = 2	0.0050 mg/L	2020-06-09	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-06-09	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-06-09	
Boron, total	0.0158	MAC = 5	0.0050 mg/L	2020-06-09	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-06-09	
Calcium, total	31.8	None Required	0.20 mg/L	2020-06-09	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-06-09	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-06-09	
Copper, total	0.00229	MAC = 2	0.00040 mg/L	2020-06-09	
Iron, total	0.070	AO ≤ 0.3	0.010 mg/L	2020-06-09	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-06-09	
Lithium, total	0.00354	N/A	0.00010 mg/L	2020-06-09	
Magnesium, total	9.65	None Required	0.010 mg/L	2020-06-09	
Manganese, total	0.00849	MAC = 0.12	0.00020 mg/L	2020-06-09	
Molybdenum, total	0.00315	N/A	0.00010 mg/L	2020-06-09	
Nickel, total	0.00043	N/A	0.00040 mg/L	2020-06-09	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-06-09	
Potassium, total	2.56	N/A	0.10 mg/L	2020-06-09	
Selenium, total	0.00052	MAC = 0.05	0.00050 mg/L	2020-06-09	
Silicon, total	3.8	N/A	1.0 mg/L	2020-06-09	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0060452-01)   Matrix: Water   Sampled: 2020-06-03 10:00, Continued</b>					
<i>Total Metals, Continued</i>					
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-06-09	
Sodium, total	<b>11.5</b>	AO ≤ 200	0.10 mg/L	2020-06-09	
Strontium, total	<b>0.286</b>	7	0.0010 mg/L	2020-06-09	
Sulfur, total	<b>8.1</b>	N/A	3.0 mg/L	2020-06-09	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-06-09	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-06-09	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-06-09	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-06-09	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-06-09	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-06-09	
Uranium, total	<b>0.00252</b>	MAC = 0.02	0.000020 mg/L	2020-06-09	
Vanadium, total	<b>0.0013</b>	N/A	0.0010 mg/L	2020-06-09	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-06-09	
Zirconium, total	<b>0.00017</b>	N/A	0.00010 mg/L	2020-06-09	

**Vaseux 20, 22, 24 m composite (0060452-02) | Matrix: Water | Sampled: 2020-06-03 10:30**

**Anions**

Chloride	<b>5.55</b>	AO ≤ 250	0.10 mg/L	2020-06-04	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-06-04	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-06-04	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-06-04	
Sulfate	<b>27.5</b>	AO ≤ 500	1.0 mg/L	2020-06-04	

**Calculated Parameters**

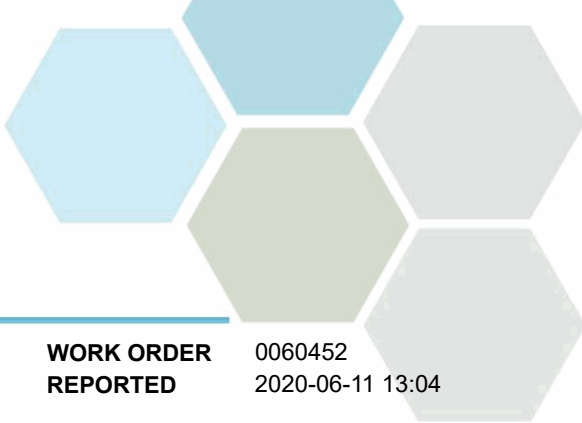
Hardness, Total (as CaCO3)	<b>126</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.238</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.238</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-06-09	
Chlorophyll a	<b>1.38</b>	N/A	0.10 µg/L	2020-06-04	
Nitrogen, Total Kjeldahl	<b>0.238</b>	N/A	0.050 mg/L	2020-06-09	
Phosphorus, Total (as P)	<b>0.0214</b>	N/A	0.0020 mg/L	2020-06-08	
Phosphorus, Total Dissolved	<b>0.0085</b>	N/A	0.0020 mg/L	2020-06-08	

**Total Metals**

Aluminum, total	<b>0.0576</b>	OG < 0.1	0.0050 mg/L	2020-06-09	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-06-09	
Arsenic, total	<b>0.00057</b>	MAC = 0.01	0.00050 mg/L	2020-06-09	
Barium, total	<b>0.0273</b>	MAC = 2	0.0050 mg/L	2020-06-09	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-06-09	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

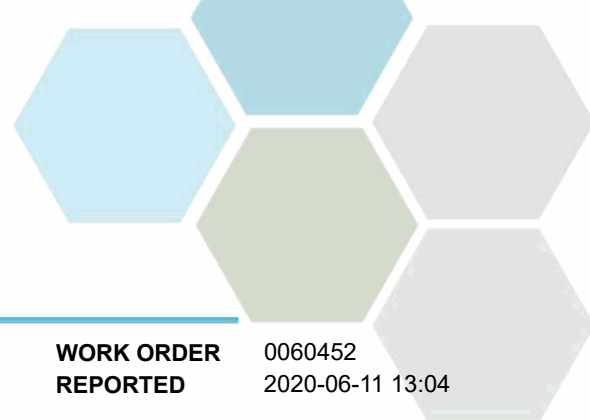
**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**Vaseux 20, 22, 24 m composite (0060452-02) | Matrix: Water | Sampled: 2020-06-03 10:30, Continued**

*Total Metals, Continued*

Bismuth, total	< 0.00010	N/A	0.00010	mg/L	2020-06-09	
Boron, total	<b>0.0155</b>	MAC = 5	0.0050	mg/L	2020-06-09	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2020-06-09	
Calcium, total	<b>33.9</b>	None Required	0.20	mg/L	2020-06-09	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-06-09	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2020-06-09	
Copper, total	<b>0.00191</b>	MAC = 2	0.00040	mg/L	2020-06-09	
Iron, total	<b>0.135</b>	AO ≤ 0.3	0.010	mg/L	2020-06-09	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-06-09	
Lithium, total	<b>0.00368</b>	N/A	0.00010	mg/L	2020-06-09	
Magnesium, total	<b>10.1</b>	None Required	0.010	mg/L	2020-06-09	
Manganese, total	<b>0.0780</b>	MAC = 0.12	0.00020	mg/L	2020-06-09	
Molybdenum, total	<b>0.00334</b>	N/A	0.00010	mg/L	2020-06-09	
Nickel, total	<b>0.00046</b>	N/A	0.00040	mg/L	2020-06-09	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2020-06-09	
Potassium, total	<b>2.75</b>	N/A	0.10	mg/L	2020-06-09	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-06-09	
Silicon, total	<b>3.5</b>	N/A	1.0	mg/L	2020-06-09	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2020-06-09	
Sodium, total	<b>12.3</b>	AO ≤ 200	0.10	mg/L	2020-06-09	
Strontium, total	<b>0.306</b>	7	0.0010	mg/L	2020-06-09	
Sulfur, total	<b>8.9</b>	N/A	3.0	mg/L	2020-06-09	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2020-06-09	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2020-06-09	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-06-09	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-06-09	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-06-09	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-06-09	
Uranium, total	<b>0.00261</b>	MAC = 0.02	0.000020	mg/L	2020-06-09	
Vanadium, total	<b>0.0010</b>	N/A	0.0010	mg/L	2020-06-09	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2020-06-09	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2020-06-09	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
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Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry		Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

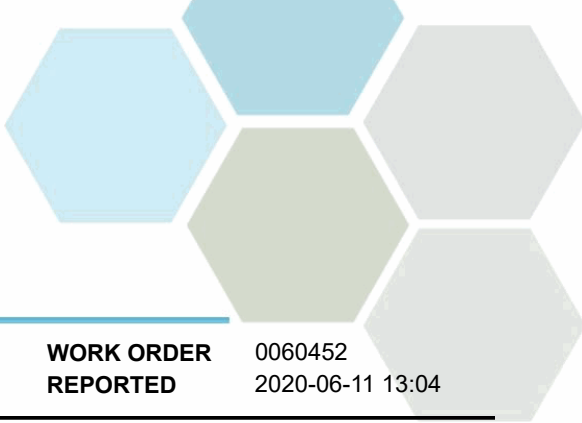
*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

### 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](mailto:acrump@caro.ca)





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

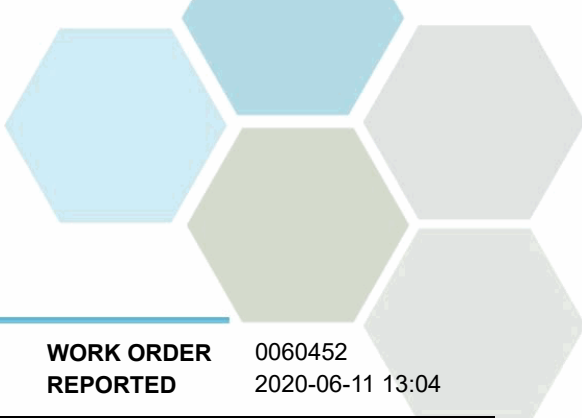
**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

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
<b>Anions, Batch B0F0248</b>									
<b>Blank (B0F0248-BLK1)</b>			Prepared: 2020-06-04, Analyzed: 2020-06-04						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0F0248-BLK2)</b>			Prepared: 2020-06-04, Analyzed: 2020-06-04						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0F0248-BLK3)</b>			Prepared: 2020-06-04, Analyzed: 2020-06-04						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0F0248-BS1)</b>			Prepared: 2020-06-04, Analyzed: 2020-06-04						
Chloride	16.1	0.10 mg/L	16.0		101	90-110			
Nitrate (as N)	4.03	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.02	0.010 mg/L	2.00		101	85-115			
Phosphate (as P)	1.09	0.0050 mg/L	1.00		109	80-120			
Sulfate	16.2	1.0 mg/L	16.0		101	90-110			
<b>LCS (B0F0248-BS2)</b>			Prepared: 2020-06-04, Analyzed: 2020-06-04						
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		100	85-115			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0F0248-BS3)</b>			Prepared: 2020-06-04, Analyzed: 2020-06-04						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			

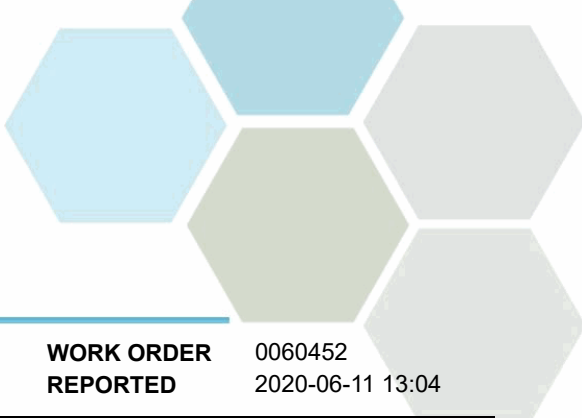


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Anions, Batch B0F0248, Continued</b>									
<b>LCS (B0F0248-BS3), Continued</b>					Prepared: 2020-06-04, Analyzed: 2020-06-04				
Nitrate (as N)	4.16	0.010 mg/L	4.00		104	90-110			
Nitrite (as N)	2.10	0.010 mg/L	2.00		105	85-115			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>Duplicate (B0F0248-DUP2)</b>					Source: 0060452-02 Prepared: 2020-06-04, Analyzed: 2020-06-04				
Chloride	5.58	0.10 mg/L		5.55			< 1	10	
Nitrate (as N)	< 0.010	0.010 mg/L		< 0.010				10	
Nitrite (as N)	< 0.010	0.010 mg/L		< 0.010				15	
Phosphate (as P)	< 0.0050	0.0050 mg/L		< 0.0050				20	
Sulfate	27.6	1.0 mg/L		27.5			< 1	10	
<b>Matrix Spike (B0F0248-MS2)</b>					Source: 0060452-02 Prepared: 2020-06-04, Analyzed: 2020-06-04				
Chloride	21.6	0.10 mg/L	16.0	5.55	100	75-125			
Nitrate (as N)	3.60	0.010 mg/L	4.00	< 0.010	90	75-125			
Nitrite (as N)	2.03	0.010 mg/L	2.00	< 0.010	102	80-120			
Phosphate (as P)	0.988	0.0050 mg/L	1.00	< 0.0050	99	70-130			
Sulfate	44.0	1.0 mg/L	16.0	27.5	103	75-125			
<b>General Parameters, Batch B0E2341</b>									
<b>Blank (B0E2341-BLK1)</b>					Prepared: 2020-05-30, Analyzed: 2020-06-04				
Chlorophyll a	< 0.10	0.10 µg/L							
<b>General Parameters, Batch B0F0610</b>									
<b>Blank (B0F0610-BLK1)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-08				
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>Blank (B0F0610-BLK2)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-08				
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
<b>Blank (B0F0610-BLK3)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-08				
Phosphorus, Total Dissolved	< 0.0020	0.0020 mg/L							
<b>LCS (B0F0610-BS1)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-08				
Phosphorus, Total (as P)	0.104	0.0020 mg/L	0.100		104	85-115			
<b>LCS (B0F0610-BS2)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-08				
Phosphorus, Total (as P)	0.104	0.0020 mg/L	0.100		104	85-115			
<b>LCS (B0F0610-BS3)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-08				
Phosphorus, Total Dissolved	0.105	0.0020 mg/L	0.100		105	85-115			
<b>General Parameters, Batch B0F0651</b>									
<b>Blank (B0F0651-BLK1)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-09				
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>Blank (B0F0651-BLK2)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-09				
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0F0651-BS1)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-09				
Nitrogen, Total Kjeldahl	1.05	0.050 mg/L	1.00		105	85-115			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**General Parameters, Batch B0F0651, Continued**

<b>LCS (B0F0651-BS2)</b>			Prepared: 2020-06-08, Analyzed: 2020-06-09						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			

**General Parameters, Batch B0F0693**

<b>Blank (B0F0693-BLK1)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

<b>Blank (B0F0693-BLK2)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

<b>Blank (B0F0693-BLK3)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

<b>Blank (B0F0693-BLK4)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

<b>LCS (B0F0693-BS1)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	0.947	0.050 mg/L	1.00		95	90-115			

<b>LCS (B0F0693-BS2)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	0.957	0.050 mg/L	1.00		96	90-115			

<b>LCS (B0F0693-BS3)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	0.935	0.050 mg/L	1.00		94	90-115			

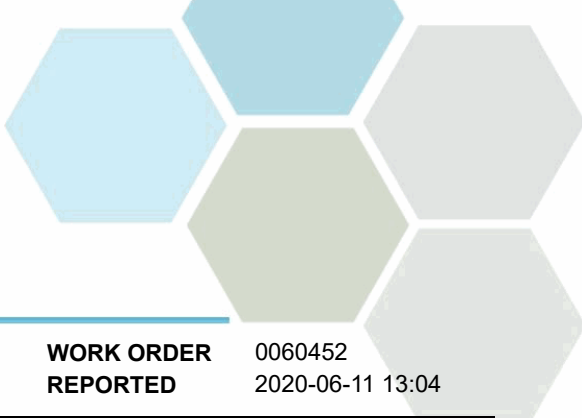
<b>LCS (B0F0693-BS4)</b>			Prepared: 2020-06-09, Analyzed: 2020-06-09						
Ammonia, Total (as N)	0.896	0.050 mg/L	1.00		90	90-115			

<b>Duplicate (B0F0693-DUP1)</b>		<b>Source: 0060452-01</b>		Prepared: 2020-06-09, Analyzed: 2020-06-09					
Ammonia, Total (as N)	< 0.050	0.050 mg/L		< 0.050					15

<b>Matrix Spike (B0F0693-MS1)</b>		<b>Source: 0060452-01</b>		Prepared: 2020-06-09, Analyzed: 2020-06-09					
Ammonia, Total (as N)	0.240	0.050 mg/L	0.250	< 0.050	96	75-125			

**Total Metals, Batch B0F0613**

<b>Blank (B0F0613-BLK1)</b>			Prepared: 2020-06-08, Analyzed: 2020-06-09						
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							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Total Metals, Batch B0F0613, Continued**

**Blank (B0F0613-BLK1), Continued**

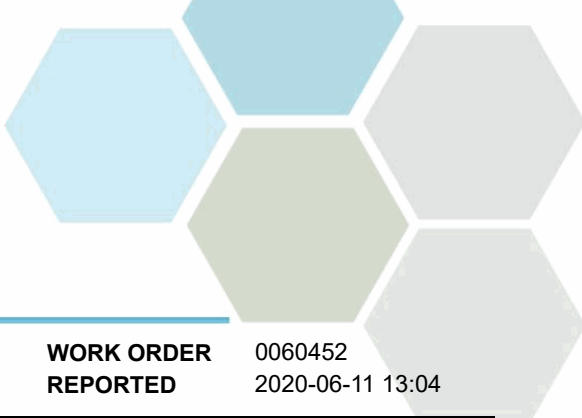
Prepared: 2020-06-08, Analyzed: 2020-06-09

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 (B0F0613-BS1)**

Prepared: 2020-06-08, Analyzed: 2020-06-09

Aluminum, total	0.0204	0.0050 mg/L	0.0199		103	80-120			
Antimony, total	0.0188	0.00020 mg/L	0.0200		94	80-120			
Arsenic, total	0.0206	0.00050 mg/L	0.0200		103	80-120			
Barium, total	0.0197	0.0050 mg/L	0.0198		100	80-120			
Beryllium, total	0.0214	0.00010 mg/L	0.0198		108	80-120			
Bismuth, total	0.0215	0.00010 mg/L	0.0200		107	80-120			
Boron, total	0.0205	0.0050 mg/L	0.0200		103	80-120			
Cadmium, total	0.0201	0.000010 mg/L	0.0199		101	80-120			
Calcium, total	2.33	0.20 mg/L	2.02		115	80-120			
Chromium, total	0.0213	0.00050 mg/L	0.0198		108	80-120			
Cobalt, total	0.0201	0.00010 mg/L	0.0199		101	80-120			
Copper, total	0.0209	0.00040 mg/L	0.0200		104	80-120			
Iron, total	2.11	0.010 mg/L	2.02		104	80-120			
Lead, total	0.0208	0.00020 mg/L	0.0199		105	80-120			
Lithium, total	0.0218	0.00010 mg/L	0.0200		109	80-120			
Magnesium, total	2.28	0.010 mg/L	2.02		113	80-120			
Manganese, total	0.0202	0.00020 mg/L	0.0199		101	80-120			
Molybdenum, total	0.0188	0.00010 mg/L	0.0200		94	80-120			
Nickel, total	0.0205	0.00040 mg/L	0.0200		102	80-120			
Phosphorus, total	1.93	0.050 mg/L	2.00		96	80-120			
Potassium, total	2.19	0.10 mg/L	2.02		109	80-120			
Selenium, total	0.0207	0.00050 mg/L	0.0200		104	80-120			
Silicon, total	2.1	1.0 mg/L	2.00		103	80-120			
Silver, total	0.0200	0.000050 mg/L	0.0200		100	80-120			
Sodium, total	2.30	0.10 mg/L	2.02		114	80-120			
Strontium, total	0.0198	0.0010 mg/L	0.0200		99	80-120			
Sulfur, total	4.6	3.0 mg/L	5.00		92	80-120			
Tellurium, total	0.0169	0.00050 mg/L	0.0200		85	80-120			
Thallium, total	0.0208	0.000020 mg/L	0.0199		104	80-120			
Thorium, total	0.0195	0.00010 mg/L	0.0200		98	80-120			
Tin, total	0.0189	0.00020 mg/L	0.0200		95	80-120			
Titanium, total	0.0182	0.0050 mg/L	0.0200		91	80-120			
Tungsten, total	0.0195	0.0010 mg/L	0.0200		97	80-120			
Uranium, total	0.0200	0.000020 mg/L	0.0200		100	80-120			
Vanadium, total	0.0205	0.0010 mg/L	0.0200		103	80-120			
Zinc, total	0.0192	0.0040 mg/L	0.0200		96	80-120			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0060452  
2020-06-11 13:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0F0613, Continued</b>									
<b>LCS (B0F0613-BS1), Continued</b>					Prepared: 2020-06-08, Analyzed: 2020-06-09				
Zirconium, total	0.0186	0.00010 mg/L	0.0200		93	80-120			
<b>Reference (B0F0613-SRM1)</b>					Prepared: 2020-06-08, Analyzed: 2020-06-09				
Aluminum, total	0.312	0.0050 mg/L	0.303		103	82-114			
Antimony, total	0.0489	0.00020 mg/L	0.0511		96	88-115			
Arsenic, total	0.120	0.00050 mg/L	0.118		102	88-111			
Barium, total	0.772	0.0050 mg/L	0.823		94	83-110			
Beryllium, total	0.0508	0.00010 mg/L	0.0496		102	80-119			
Boron, total	3.52	0.0050 mg/L	3.45		102	80-118			
Cadmium, total	0.0479	0.000010 mg/L	0.0495		97	90-110			
Calcium, total	11.3	0.20 mg/L	11.6		98	85-113			
Chromium, total	0.261	0.00050 mg/L	0.250		104	88-111			
Cobalt, total	0.0383	0.00010 mg/L	0.0377		102	90-114			
Copper, total	0.499	0.00040 mg/L	0.486		103	90-117			
Iron, total	0.494	0.010 mg/L	0.488		101	90-116			
Lead, total	0.199	0.00020 mg/L	0.204		98	90-110			
Lithium, total	0.413	0.00010 mg/L	0.403		103	79-118			
Magnesium, total	4.26	0.010 mg/L	3.79		112	88-116			
Manganese, total	0.107	0.00020 mg/L	0.109		98	88-108			
Molybdenum, total	0.192	0.00010 mg/L	0.198		97	88-110			
Nickel, total	0.250	0.00040 mg/L	0.249		100	90-112			
Phosphorus, total	0.252	0.050 mg/L	0.227		111	72-118			
Potassium, total	7.65	0.10 mg/L	7.21		106	87-116			
Selenium, total	0.120	0.00050 mg/L	0.121		99	90-122			
Sodium, total	7.65	0.10 mg/L	7.54		101	86-118			
Strontium, total	0.362	0.0010 mg/L	0.375		97	86-110			
Thallium, total	0.0795	0.000020 mg/L	0.0805		99	90-113			
Uranium, total	0.0296	0.000020 mg/L	0.0306		97	88-112			
Vanadium, total	0.374	0.0010 mg/L	0.386		97	87-110			
Zinc, total	2.36	0.0040 mg/L	2.49		95	90-113			

## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls (Vaseux Lake) via LAC

**PROJECT** OK Falls (Vaseux Lake) via LAC

**PROJECT INFO**

**WORK ORDER** 0070167

**RECEIVED / TEMP** 2020-07-02 15:55 / 12°C

**REPORTED** 2020-07-09 14:23

**COC NUMBER** 43899.47714

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: N/A

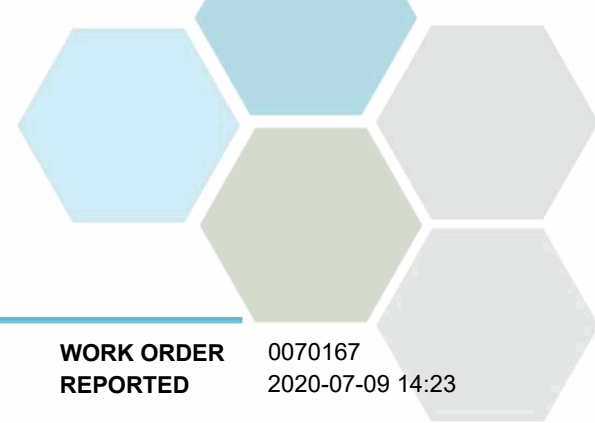
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (0070167-01) | Matrix: Water | Sampled: 2020-07-02 09:30**

**Anions**

Chloride	<b>4.99</b>	AO ≤ 250	0.10 mg/L	2020-07-06	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-07-06	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-07-06	HT1
Phosphate (as P)	< 0.0100	N/A	0.0050 mg/L	2020-07-06	HT1
Sulfate	<b>26.3</b>	AO ≤ 500	1.0 mg/L	2020-07-06	

**Calculated Parameters**

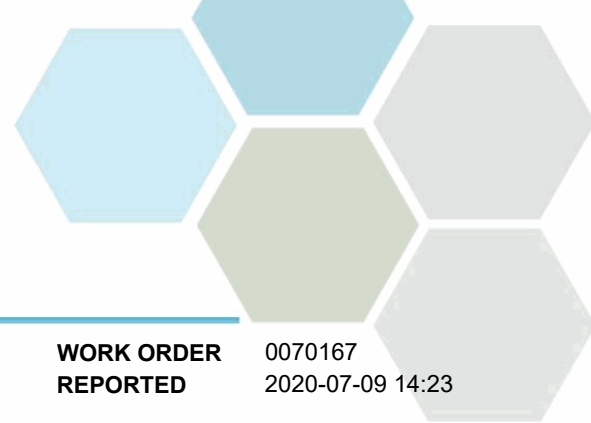
Hardness, Total (as CaCO3)	<b>105</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.212</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.212</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-07-03	
Chlorophyll a	<b>2.13</b>	N/A	0.10 µg/L	2020-07-08	
Nitrogen, Total Kjeldahl	<b>0.212</b>	N/A	0.050 mg/L	2020-07-09	
Phosphorus, Total (as P)	<b>0.0124</b>	N/A	0.0020 mg/L	2020-07-06	
Phosphorus, Total Dissolved	<b>0.0057</b>	N/A	0.0020 mg/L	2020-07-06	

**Total Metals**

Aluminum, total	<b>0.0226</b>	OG < 0.1	0.0050 mg/L	2020-07-07	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-07-07	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2020-07-07	
Barium, total	<b>0.0218</b>	MAC = 2	0.0050 mg/L	2020-07-07	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-07-07	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-07-07	
Calcium, total	<b>27.8</b>	None Required	0.20 mg/L	2020-07-07	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Copper, total	<b>0.00120</b>	MAC = 2	0.00040 mg/L	2020-07-07	
Iron, total	<b>0.027</b>	AO ≤ 0.3	0.010 mg/L	2020-07-07	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-07-07	
Lithium, total	<b>0.00318</b>	N/A	0.00010 mg/L	2020-07-07	
Magnesium, total	<b>8.64</b>	None Required	0.010 mg/L	2020-07-07	
Manganese, total	<b>0.00622</b>	MAC = 0.12	0.00020 mg/L	2020-07-07	
Molybdenum, total	<b>0.00310</b>	N/A	0.00010 mg/L	2020-07-07	
Nickel, total	<b>0.00049</b>	N/A	0.00040 mg/L	2020-07-07	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-07-07	
Potassium, total	<b>2.22</b>	N/A	0.10 mg/L	2020-07-07	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Silicon, total	<b>3.3</b>	N/A	1.0 mg/L	2020-07-07	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-07-07	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0070167-01)   Matrix: Water   Sampled: 2020-07-02 09:30, Continued</b>					
<i>Total Metals, Continued</i>					
Sodium, total	10.8	AO ≤ 200	0.10 mg/L	2020-07-07	
Strontium, total	0.264	7	0.0010 mg/L	2020-07-07	
Sulfur, total	9.8	N/A	3.0 mg/L	2020-07-07	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-07-07	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-07-07	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-07-07	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-07-07	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Uranium, total	0.00232	MAC = 0.02	0.000020 mg/L	2020-07-07	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-07-07	
Zirconium, total	0.00014	N/A	0.00010 mg/L	2020-07-07	

**Vaseux 20, 22, 24 m composite (0070167-02) | Matrix: Water | Sampled: 2020-07-02 09:45**

**Anions**

Chloride	5.66	AO ≤ 250	0.10 mg/L	2020-07-06	
Nitrate (as N)	0.013	MAC = 10	0.010 mg/L	2020-07-06	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-07-06	HT1
Phosphate (as P)	< 0.0100	N/A	0.0050 mg/L	2020-07-06	HT1
Sulfate	27.1	AO ≤ 500	1.0 mg/L	2020-07-06	

**Calculated Parameters**

Hardness, Total (as CaCO <sub>3</sub> )	120	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	0.0129	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.281	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.205	N/A	0.0500 mg/L	N/A	

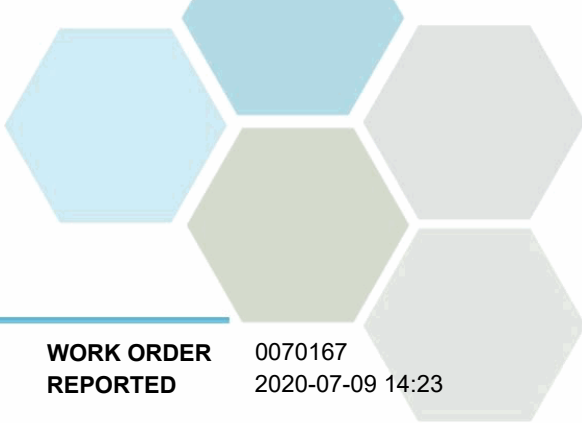
**General Parameters**

Ammonia, Total (as N)	0.063	None Required	0.050 mg/L	2020-07-03	
Chlorophyll a	0.49	N/A	0.10 µg/L	2020-07-08	
Nitrogen, Total Kjeldahl	0.268	N/A	0.050 mg/L	2020-07-09	
Phosphorus, Total (as P)	0.0349	N/A	0.0020 mg/L	2020-07-06	
Phosphorus, Total Dissolved	0.0204	N/A	0.0020 mg/L	2020-07-06	

**Total Metals**

Aluminum, total	0.0391	OG < 0.1	0.0050 mg/L	2020-07-07	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-07-07	
Arsenic, total	0.00069	MAC = 0.01	0.00050 mg/L	2020-07-07	
Barium, total	0.0272	MAC = 2	0.0050 mg/L	2020-07-07	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-07-07	





# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (0070167-02)   Matrix: Water   Sampled: 2020-07-02 09:45, Continued</b>						
<i>Total Metals, Continued</i>						
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2020-07-07	
Calcium, total	<b>31.6</b>	None Required	0.20	mg/L	2020-07-07	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-07-07	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2020-07-07	
Copper, total	<b>0.00081</b>	MAC = 2	0.00040	mg/L	2020-07-07	
Iron, total	<b>0.224</b>	AO ≤ 0.3	0.010	mg/L	2020-07-07	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-07-07	
Lithium, total	<b>0.00351</b>	N/A	0.00010	mg/L	2020-07-07	
Magnesium, total	<b>9.88</b>	None Required	0.010	mg/L	2020-07-07	
Manganese, total	<b>0.192</b>	MAC = 0.12	0.00020	mg/L	2020-07-07	
Molybdenum, total	<b>0.00336</b>	N/A	0.00010	mg/L	2020-07-07	
Nickel, total	<b>0.00072</b>	N/A	0.00040	mg/L	2020-07-07	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2020-07-07	
Potassium, total	<b>2.64</b>	N/A	0.10	mg/L	2020-07-07	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-07-07	
Silicon, total	<b>4.4</b>	N/A	1.0	mg/L	2020-07-07	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2020-07-07	
Sodium, total	<b>12.6</b>	AO ≤ 200	0.10	mg/L	2020-07-07	
Strontium, total	<b>0.315</b>	7	0.0010	mg/L	2020-07-07	
Sulfur, total	<b>10.7</b>	N/A	3.0	mg/L	2020-07-07	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2020-07-07	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2020-07-07	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-07-07	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-07-07	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-07-07	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-07-07	
Uranium, total	<b>0.00240</b>	MAC = 0.02	0.000020	mg/L	2020-07-07	
Vanadium, total	<b>0.0013</b>	N/A	0.0010	mg/L	2020-07-07	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2020-07-07	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2020-07-07	

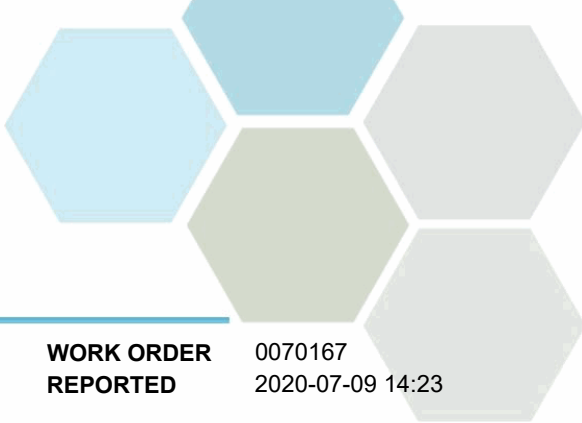
**Vaseux 1, 5, 10 m Triplicate 1 (0070167-03) | Matrix: Water | Sampled: 2020-07-02 09:30**

**Anions**

Chloride	<b>5.04</b>	AO ≤ 250	0.10	mg/L	2020-07-06	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2020-07-06	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2020-07-06	HT1
Phosphate (as P)	< 0.0100	N/A	0.0050	mg/L	2020-07-06	HT1
Sulfate	<b>26.5</b>	AO ≤ 500	1.0	mg/L	2020-07-06	

**Calculated Parameters**

Hardness, Total (as CaCO3)	<b>105</b>	None Required	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m Triplicate 1 (0070167-03) | Matrix: Water | Sampled: 2020-07-02 09:30, Continued**

**Calculated Parameters, Continued**

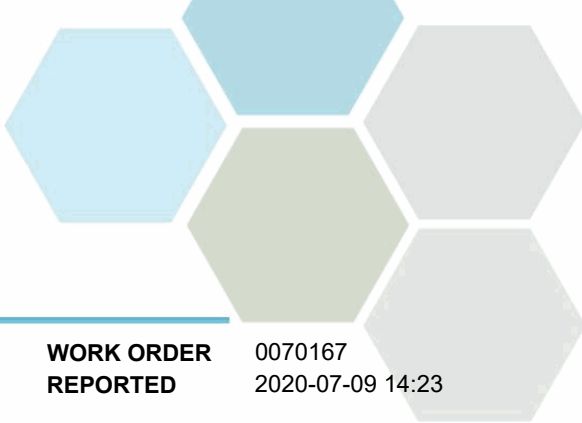
Nitrogen, Total	<b>0.197</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.197</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-07-03	
Nitrogen, Total Kjeldahl	<b>0.197</b>	N/A	0.050 mg/L	2020-07-09	
Phosphorus, Total (as P)	<b>0.0114</b>	N/A	0.0020 mg/L	2020-07-06	
Phosphorus, Total Dissolved	<b>0.0060</b>	N/A	0.0020 mg/L	2020-07-06	

**Total Metals**

Aluminum, total	<b>0.0212</b>	OG < 0.1	0.0050 mg/L	2020-07-07	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-07-07	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2020-07-07	
Barium, total	<b>0.0211</b>	MAC = 2	0.0050 mg/L	2020-07-07	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-07-07	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-07-07	
Calcium, total	<b>27.7</b>	None Required	0.20 mg/L	2020-07-07	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Copper, total	<b>0.00088</b>	MAC = 2	0.00040 mg/L	2020-07-07	
Iron, total	<b>0.026</b>	AO ≤ 0.3	0.010 mg/L	2020-07-07	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-07-07	
Lithium, total	<b>0.00313</b>	N/A	0.00010 mg/L	2020-07-07	
Magnesium, total	<b>8.58</b>	None Required	0.010 mg/L	2020-07-07	
Manganese, total	<b>0.00618</b>	MAC = 0.12	0.00020 mg/L	2020-07-07	
Molybdenum, total	<b>0.00309</b>	N/A	0.00010 mg/L	2020-07-07	
Nickel, total	<b>0.00043</b>	N/A	0.00040 mg/L	2020-07-07	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-07-07	
Potassium, total	<b>2.20</b>	N/A	0.10 mg/L	2020-07-07	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Silicon, total	<b>3.2</b>	N/A	1.0 mg/L	2020-07-07	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-07-07	
Sodium, total	<b>10.8</b>	AO ≤ 200	0.10 mg/L	2020-07-07	
Strontium, total	<b>0.259</b>	7	0.0010 mg/L	2020-07-07	
Sulfur, total	<b>8.1</b>	N/A	3.0 mg/L	2020-07-07	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-07-07	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-07-07	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-07-07	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-07-07	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Uranium, total	<b>0.00232</b>	MAC = 0.02	0.000020 mg/L	2020-07-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m Triplicate 1 (0070167-03)   Matrix: Water   Sampled: 2020-07-02 09:30, Continued</b>					
<i>Total Metals, Continued</i>					
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-07-07	
Zirconium, total	<b>0.00013</b>	N/A	0.00010 mg/L	2020-07-07	

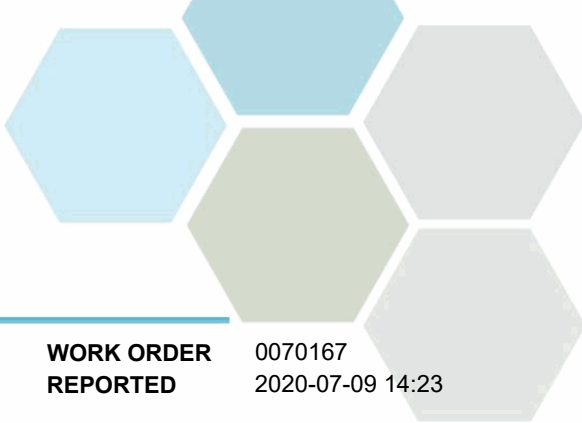
**Vaseux 1, 5, 10 m Triplicate 2 (0070167-04) | Matrix: Water | Sampled: 2020-07-02 09:30**

<i>Anions</i>					
Chloride	<b>4.97</b>	AO ≤ 250	0.10 mg/L	2020-07-06	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-07-06	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-07-06	HT1
Phosphate (as P)	< 0.0100	N/A	0.0050 mg/L	2020-07-06	HT1
Sulfate	<b>26.2</b>	AO ≤ 500	1.0 mg/L	2020-07-06	

<i>Calculated Parameters</i>					
Hardness, Total (as CaCO3)	<b>106</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.206</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.206</b>	N/A	0.0500 mg/L	N/A	

<i>General Parameters</i>					
Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-07-03	
Nitrogen, Total Kjeldahl	<b>0.206</b>	N/A	0.050 mg/L	2020-07-09	
Phosphorus, Total (as P)	<b>0.0112</b>	N/A	0.0020 mg/L	2020-07-06	
Phosphorus, Total Dissolved	<b>0.0076</b>	N/A	0.0020 mg/L	2020-07-06	

<i>Total Metals</i>					
Aluminum, total	<b>0.0232</b>	OG < 0.1	0.0050 mg/L	2020-07-07	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-07-07	
Arsenic, total	<b>0.00051</b>	MAC = 0.01	0.00050 mg/L	2020-07-07	
Barium, total	<b>0.0221</b>	MAC = 2	0.0050 mg/L	2020-07-07	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-07-07	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-07-07	
Calcium, total	<b>27.9</b>	None Required	0.20 mg/L	2020-07-07	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Copper, total	<b>0.00122</b>	MAC = 2	0.00040 mg/L	2020-07-07	
Iron, total	<b>0.028</b>	AO ≤ 0.3	0.010 mg/L	2020-07-07	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-07-07	
Lithium, total	<b>0.00319</b>	N/A	0.00010 mg/L	2020-07-07	
Magnesium, total	<b>8.67</b>	None Required	0.010 mg/L	2020-07-07	
Manganese, total	<b>0.00633</b>	MAC = 0.12	0.00020 mg/L	2020-07-07	
Molybdenum, total	<b>0.00315</b>	N/A	0.00010 mg/L	2020-07-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m Triplicate 2 (0070167-04)   Matrix: Water   Sampled: 2020-07-02 09:30, Continued</b>					
<i>Total Metals, Continued</i>					
Nickel, total	0.00042	N/A	0.00040 mg/L	2020-07-07	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-07-07	
Potassium, total	2.24	N/A	0.10 mg/L	2020-07-07	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Silicon, total	3.3	N/A	1.0 mg/L	2020-07-07	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-07-07	
Sodium, total	10.9	AO ≤ 200	0.10 mg/L	2020-07-07	
Strontium, total	0.268	7	0.0010 mg/L	2020-07-07	
Sulfur, total	8.8	N/A	3.0 mg/L	2020-07-07	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-07-07	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-07-07	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-07-07	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-07-07	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Uranium, total	0.00235	MAC = 0.02	0.000020 mg/L	2020-07-07	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-07-07	
Zirconium, total	0.00015	N/A	0.00010 mg/L	2020-07-07	

**Vaseux 20, 22, 24 m Triplicate 1 (0070167-05) | Matrix: Water | Sampled: 2020-07-02 10:30**

**Anions**

Chloride	5.83	AO ≤ 250	0.10 mg/L	2020-07-06	
Nitrate (as N)	0.012	MAC = 10	0.010 mg/L	2020-07-06	HT1
Nitrite (as N)	0.010	MAC = 1	0.010 mg/L	2020-07-06	HT1
Phosphate (as P)	< 0.0100	N/A	0.0050 mg/L	2020-07-06	HT1
Sulfate	27.6	AO ≤ 500	1.0 mg/L	2020-07-06	

**Calculated Parameters**

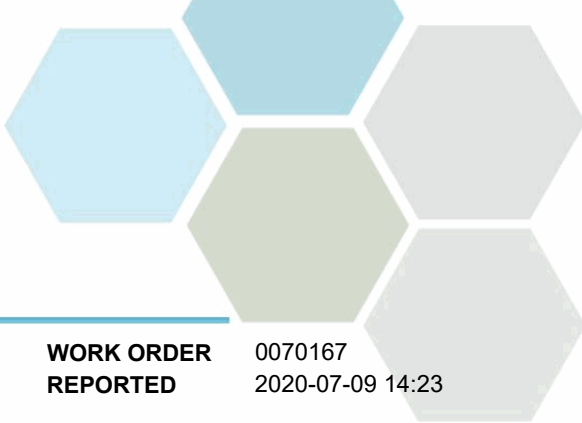
Hardness, Total (as CaCO3)	113	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	0.0223	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.310	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.212	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.076	None Required	0.050 mg/L	2020-07-03	
Nitrogen, Total Kjeldahl	0.288	N/A	0.050 mg/L	2020-07-09	
Phosphorus, Total (as P)	0.0336	N/A	0.0020 mg/L	2020-07-06	
Phosphorus, Total Dissolved	0.0194	N/A	0.0020 mg/L	2020-07-06	

**Total Metals**

Aluminum, total	0.0376	OG < 0.1	0.0050 mg/L	2020-07-07	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-07-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

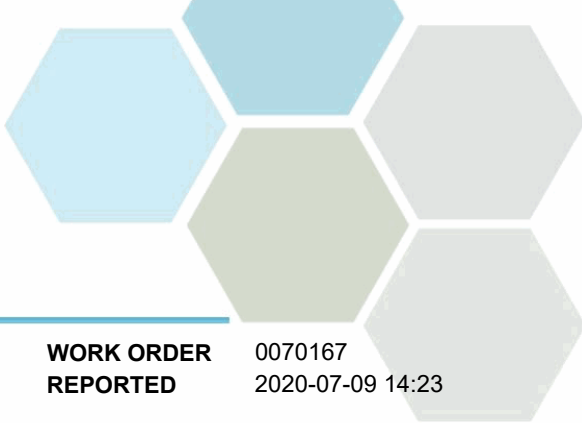
**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m Triplicate 1 (0070167-05)   Matrix: Water   Sampled: 2020-07-02 10:30, Continued</b>					
<i>Total Metals, Continued</i>					
Arsenic, total	0.00065	MAC = 0.01	0.00050 mg/L	2020-07-07	
Barium, total	0.0249	MAC = 2	0.0050 mg/L	2020-07-07	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-07-07	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-07-07	
Calcium, total	30.1	None Required	0.20 mg/L	2020-07-07	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Copper, total	0.00066	MAC = 2	0.00040 mg/L	2020-07-07	
Iron, total	0.202	AO ≤ 0.3	0.010 mg/L	2020-07-07	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-07-07	
Lithium, total	0.00339	N/A	0.00010 mg/L	2020-07-07	
Magnesium, total	9.06	None Required	0.010 mg/L	2020-07-07	
Manganese, total	0.176	MAC = 0.12	0.00020 mg/L	2020-07-07	
Molybdenum, total	0.00304	N/A	0.00010 mg/L	2020-07-07	
Nickel, total	0.00047	N/A	0.00040 mg/L	2020-07-07	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-07-07	
Potassium, total	2.40	N/A	0.10 mg/L	2020-07-07	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Silicon, total	4.0	N/A	1.0 mg/L	2020-07-07	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-07-07	
Sodium, total	11.6	AO ≤ 200	0.10 mg/L	2020-07-07	
Strontium, total	0.287	7	0.0010 mg/L	2020-07-07	
Sulfur, total	9.1	N/A	3.0 mg/L	2020-07-07	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-07-07	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-07-07	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-07-07	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-07-07	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Uranium, total	0.00233	MAC = 0.02	0.000020 mg/L	2020-07-07	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-07-07	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-07-07	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	

**Vaseux 20, 22, 24 m Triplicate 2 (0070167-06) | Matrix: Water | Sampled: 2020-07-02 10:30**

**Anions**

Chloride	5.73	AO ≤ 250	0.10 mg/L	2020-07-06	
Nitrate (as N)	0.012	MAC = 10	0.010 mg/L	2020-07-06	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-07-06	HT1
Phosphate (as P)	< 0.0100	N/A	0.0050 mg/L	2020-07-06	HT1



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 20, 22, 24 m Triplicate 2 (0070167-06) | Matrix: Water | Sampled: 2020-07-02 10:30, Continued**

**Anions, Continued**

Sulfate	27.2	AO ≤ 500	1.0 mg/L	2020-07-06	
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**Calculated Parameters**

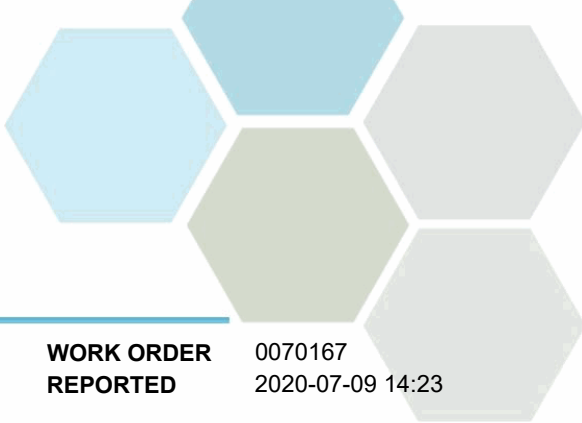
Hardness, Total (as CaCO3)	115	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	0.0115	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.296	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.209	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.076	None Required	0.050 mg/L	2020-07-03	
Nitrogen, Total Kjeldahl	0.285	N/A	0.050 mg/L	2020-07-09	
Phosphorus, Total (as P)	0.0399	N/A	0.0020 mg/L	2020-07-06	
Phosphorus, Total Dissolved	0.0193	N/A	0.0020 mg/L	2020-07-06	

**Total Metals**

Aluminum, total	0.0360	OG < 0.1	0.0050 mg/L	2020-07-07	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-07-07	
Arsenic, total	0.00067	MAC = 0.01	0.00050 mg/L	2020-07-07	
Barium, total	0.0261	MAC = 2	0.0050 mg/L	2020-07-07	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-07-07	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-07-07	
Calcium, total	30.5	None Required	0.20 mg/L	2020-07-07	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-07-07	
Copper, total	0.00077	MAC = 2	0.00040 mg/L	2020-07-07	
Iron, total	0.208	AO ≤ 0.3	0.010 mg/L	2020-07-07	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-07-07	
Lithium, total	0.00343	N/A	0.00010 mg/L	2020-07-07	
Magnesium, total	9.30	None Required	0.010 mg/L	2020-07-07	
Manganese, total	0.179	MAC = 0.12	0.00020 mg/L	2020-07-07	
Molybdenum, total	0.00309	N/A	0.00010 mg/L	2020-07-07	
Nickel, total	0.00048	N/A	0.00040 mg/L	2020-07-07	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-07-07	
Potassium, total	2.43	N/A	0.10 mg/L	2020-07-07	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-07-07	
Silicon, total	4.0	N/A	1.0 mg/L	2020-07-07	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-07-07	
Sodium, total	11.7	AO ≤ 200	0.10 mg/L	2020-07-07	
Strontium, total	0.296	7	0.0010 mg/L	2020-07-07	
Sulfur, total	8.8	N/A	3.0 mg/L	2020-07-07	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-07-07	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-07-07	



## TEST RESULTS

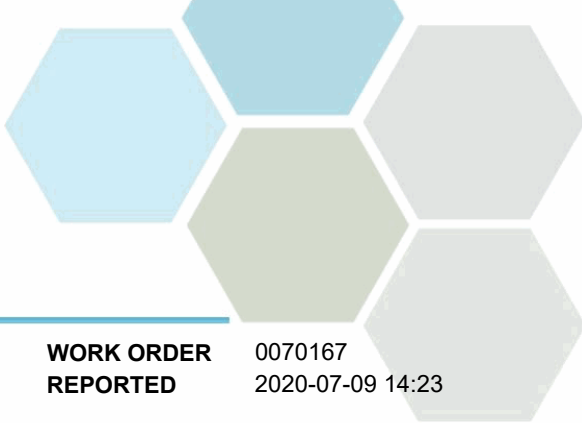
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m Triplicate 2 (0070167-06)   Matrix: Water   Sampled: 2020-07-02 10:30, Continued</b>						
<i>Total Metals, Continued</i>						
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-07-07	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-07-07	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-07-07	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-07-07	
Uranium, total	<b>0.00235</b>	MAC = 0.02	0.000020	mg/L	2020-07-07	
Vanadium, total	< 0.0010	N/A	0.0010	mg/L	2020-07-07	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2020-07-07	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2020-07-07	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry		Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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:

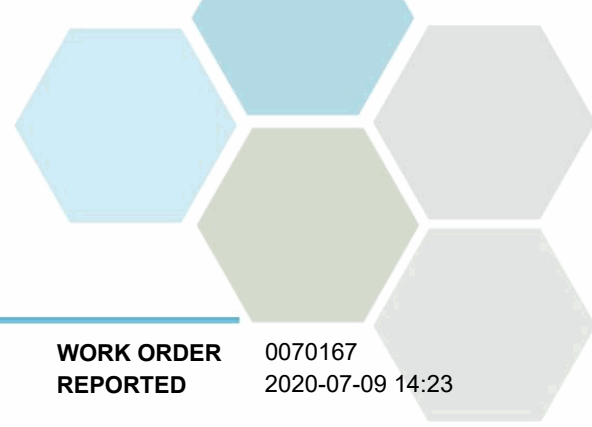
RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

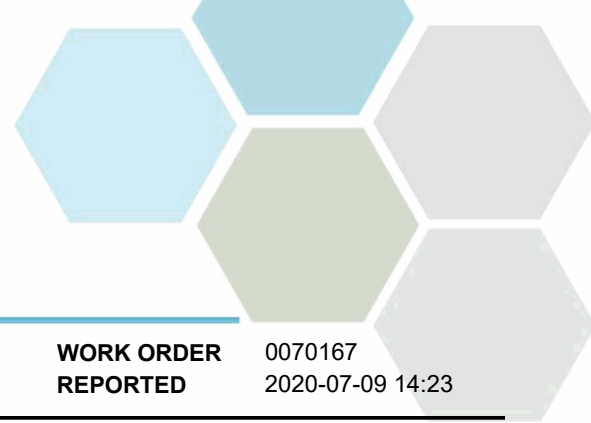
**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

### 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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

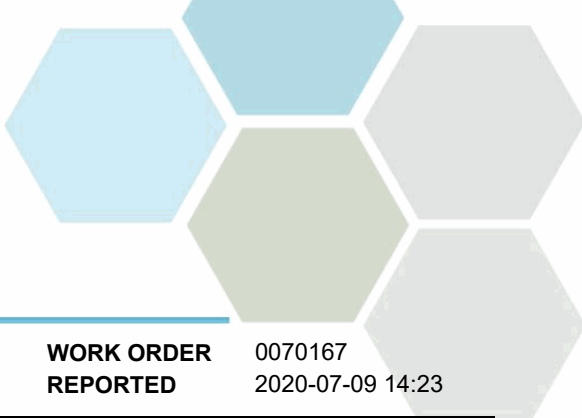
**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

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
<b>Anions, Batch B0G0094</b>									
<b>Blank (B0G0094-BLK1)</b>			Prepared: 2020-07-05, Analyzed: 2020-07-05						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0G0094-BLK2)</b>			Prepared: 2020-07-06, Analyzed: 2020-07-06						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0G0094-BLK3)</b>			Prepared: 2020-07-06, Analyzed: 2020-07-06						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0G0094-BS1)</b>			Prepared: 2020-07-05, Analyzed: 2020-07-05						
Chloride	16.1	0.10 mg/L	16.0		101	90-110			
Nitrate (as N)	3.78	0.010 mg/L	4.00		95	90-110			
Nitrite (as N)	2.25	0.010 mg/L	2.00		112	85-115			
Phosphate (as P)	1.00	0.0050 mg/L	1.00		100	80-120			
Sulfate	16.1	1.0 mg/L	16.0		101	90-110			
<b>LCS (B0G0094-BS2)</b>			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Chloride	16.1	0.10 mg/L	16.0		101	90-110			
Nitrate (as N)	3.80	0.010 mg/L	4.00		95	90-110			
Nitrite (as N)	1.98	0.010 mg/L	2.00		99	85-115			
Phosphate (as P)	1.10	0.0050 mg/L	1.00		110	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0G0094-BS3)</b>			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	3.95	0.010 mg/L	4.00		99	90-110			



## APPENDIX 2: QUALITY CONTROL RESULTS

<b>REPORTED TO PROJECT</b>	Regional District of Okanagan Similkameen OK Falls (Vaseux Lake) via LAC	<b>WORK ORDER REPORTED</b>	0070167 2020-07-09 14:23
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Anions, Batch B0G0094, Continued**

LCS (B0G0094-BS3), Continued			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Nitrite (as N)	2.05	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	0.953	0.0050 mg/L	1.00		95	80-120			
Sulfate	15.9	1.0 mg/L	16.0		99	90-110			

Duplicate (B0G0094-DUP3)			Source: 0070167-04		Prepared: 2020-07-06, Analyzed: 2020-07-06				
Chloride	5.03	0.10 mg/L		4.97			1	10	
Nitrate (as N)	< 0.010	0.010 mg/L	< 0.010					10	
Nitrite (as N)	< 0.010	0.010 mg/L	< 0.010					15	
Phosphate (as P)	< 0.0050	0.0050 mg/L	< 0.0100					20	
Sulfate	26.4	1.0 mg/L	26.2				< 1	10	

Matrix Spike (B0G0094-MS3)			Source: 0070167-04		Prepared: 2020-07-06, Analyzed: 2020-07-06				
Chloride	21.0	0.10 mg/L	16.0	4.97	100	75-125			
Nitrate (as N)	3.88	0.010 mg/L	4.00	< 0.010	97	75-125			
Nitrite (as N)	2.09	0.010 mg/L	2.00	< 0.010	105	80-120			
Phosphate (as P)	0.854	0.0050 mg/L	1.00	< 0.0100	85	70-130			
Sulfate	42.2	1.0 mg/L	16.0	26.2	100	75-125			

**General Parameters, Batch B0F2584**

Blank (B0F2584-BLK1)			Prepared: 2020-06-30, Analyzed: 2020-07-08						
Chlorophyll a	< 0.10	0.10 µg/L							

**General Parameters, Batch B0G0106**

Blank (B0G0106-BLK1)			Prepared: 2020-07-03, Analyzed: 2020-07-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B0G0106-BLK2)			Prepared: 2020-07-03, Analyzed: 2020-07-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

LCS (B0G0106-BS1)			Prepared: 2020-07-03, Analyzed: 2020-07-03						
Ammonia, Total (as N)	1.04	0.050 mg/L	1.00		104	90-115			

LCS (B0G0106-BS2)			Prepared: 2020-07-03, Analyzed: 2020-07-03						
Ammonia, Total (as N)	1.04	0.050 mg/L	1.00		104	90-115			

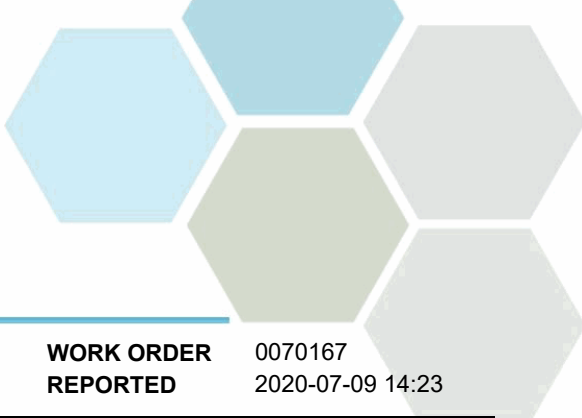
**General Parameters, Batch B0G0351**

Blank (B0G0351-BLK1)			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
Phosphorus, Total Dissolved	< 0.0020	0.0020 mg/L							

Blank (B0G0351-BLK2)			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
Phosphorus, Total Dissolved	< 0.0020	0.0020 mg/L							

LCS (B0G0351-BS1)			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Phosphorus, Total (as P)	0.100	0.0020 mg/L	0.100		100	85-115			
Phosphorus, Total Dissolved	0.100	0.0020 mg/L	0.100		100	85-115			

LCS (B0G0351-BS2)			Prepared: 2020-07-06, Analyzed: 2020-07-06						
Phosphorus, Total (as P)	0.101	0.0020 mg/L	0.100		101	85-115			
Phosphorus, Total Dissolved	0.101	0.0020 mg/L	0.100		101	85-115			

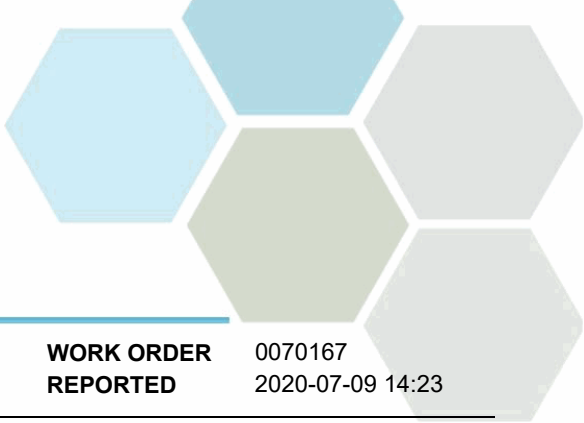


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B0G0526</b>									
<b>Blank (B0G0526-BLK1)</b>			Prepared: 2020-07-07, Analyzed: 2020-07-09						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>Blank (B0G0526-BLK2)</b>			Prepared: 2020-07-07, Analyzed: 2020-07-09						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0G0526-BS1)</b>			Prepared: 2020-07-07, Analyzed: 2020-07-09						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
<b>LCS (B0G0526-BS2)</b>			Prepared: 2020-07-07, Analyzed: 2020-07-09						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
<b>Total Metals, Batch B0G0403</b>									
<b>Blank (B0G0403-BLK1)</b>			Prepared: 2020-07-06, Analyzed: 2020-07-07						
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	< 0.0500	0.0500 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							
<b>LCS (B0G0403-BS1)</b>			Prepared: 2020-07-06, Analyzed: 2020-07-07						
Aluminum, total	0.0195	0.0050 mg/L	0.0199		98	80-120			
Antimony, total	0.0202	0.00020 mg/L	0.0200		101	80-120			
Arsenic, total	0.0195	0.00050 mg/L	0.0200		98	80-120			



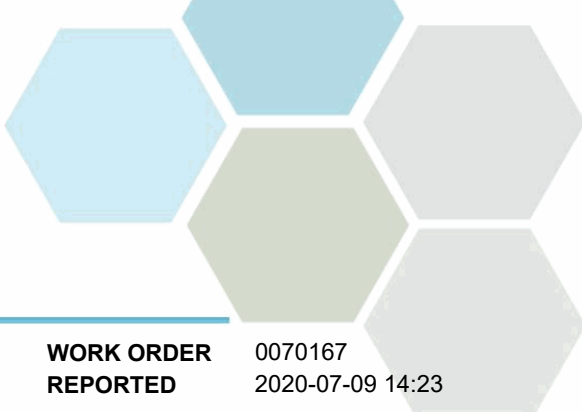
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0G0403, Continued</b>									
<b>LCS (B0G0403-BS1), Continued</b>					Prepared: 2020-07-06, Analyzed: 2020-07-07				
Barium, total	0.0188	0.0050 mg/L	0.0198		95	80-120			
Beryllium, total	0.0203	0.00010 mg/L	0.0198		102	80-120			
Bismuth, total	0.0204	0.00010 mg/L	0.0200		102	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		100	80-120			
Cadmium, total	0.0194	0.000010 mg/L	0.0199		98	80-120			
Calcium, total	1.91	0.20 mg/L	2.02		95	80-120			
Chromium, total	0.0191	0.00050 mg/L	0.0198		96	80-120			
Cobalt, total	0.0197	0.00010 mg/L	0.0199		99	80-120			
Copper, total	0.0204	0.00040 mg/L	0.0200		102	80-120			
Iron, total	1.88	0.10 mg/L	2.02		93	80-120			
Lead, total	0.0204	0.00020 mg/L	0.0199		103	80-120			
Lithium, total	0.0203	0.00010 mg/L	0.0200		102	80-120			
Magnesium, total	1.97	0.010 mg/L	2.02		97	80-120			
Manganese, total	0.0196	0.00020 mg/L	0.0199		99	80-120			
Molybdenum, total	0.0195	0.00010 mg/L	0.0200		97	80-120			
Nickel, total	0.0199	0.00040 mg/L	0.0200		99	80-120			
Phosphorus, total	1.99	0.050 mg/L	2.00		100	80-120			
Potassium, total	1.91	0.10 mg/L	2.02		95	80-120			
Selenium, total	0.0200	0.00050 mg/L	0.0200		100	80-120			
Silicon, total	1.9	1.0 mg/L	2.00		97	80-120			
Silver, total	0.0191	0.000050 mg/L	0.0200		96	80-120			
Sodium, total	2.02	0.10 mg/L	2.02		100	80-120			
Strontium, total	0.0186	0.0010 mg/L	0.0200		93	80-120			
Sulfur, total	4.3	3.0 mg/L	5.00		86	80-120			
Tellurium, total	0.0202	0.00050 mg/L	0.0200		101	80-120			
Thallium, total	0.0205	0.000020 mg/L	0.0199		103	80-120			
Thorium, total	0.0203	0.00010 mg/L	0.0200		101	80-120			
Tin, total	0.0201	0.00020 mg/L	0.0200		101	80-120			
Titanium, total	0.0205	0.0050 mg/L	0.0200		103	80-120			
Tungsten, total	0.0200	0.0010 mg/L	0.0200		100	80-120			
Uranium, total	0.0209	0.000020 mg/L	0.0200		104	80-120			
Vanadium, total	0.0190	0.0010 mg/L	0.0200		95	80-120			
Zinc, total	0.0198	0.0040 mg/L	0.0200		99	80-120			
Zirconium, total	0.0188	0.00010 mg/L	0.0200		94	80-120			

<b>Reference (B0G0403-SRM1)</b>					Prepared: 2020-07-06, Analyzed: 2020-07-07				
Aluminum, total	0.280	0.0050 mg/L	0.303		92	82-114			
Antimony, total	0.0517	0.00020 mg/L	0.0511		101	88-115			
Arsenic, total	0.120	0.00050 mg/L	0.118		101	88-111			
Barium, total	0.761	0.0050 mg/L	0.823		92	83-110			
Beryllium, total	0.0505	0.00010 mg/L	0.0496		102	80-119			
Boron, total	3.40	0.0500 mg/L	3.45		99	80-118			
Cadmium, total	0.0482	0.000010 mg/L	0.0495		97	90-110			
Calcium, total	10.2	0.20 mg/L	11.6		88	85-113			
Chromium, total	0.251	0.00050 mg/L	0.250		100	88-111			
Cobalt, total	0.0388	0.00010 mg/L	0.0377		103	90-114			
Copper, total	0.510	0.00040 mg/L	0.486		105	90-117			
Iron, total	0.483	0.010 mg/L	0.488		99	90-116			
Lead, total	0.203	0.00020 mg/L	0.204		99	90-110			
Lithium, total	0.405	0.00010 mg/L	0.403		101	79-118			
Magnesium, total	3.77	0.010 mg/L	3.79		100	88-116			
Manganese, total	0.107	0.00020 mg/L	0.109		98	88-108			
Molybdenum, total	0.196	0.00010 mg/L	0.198		99	88-110			
Nickel, total	0.250	0.00040 mg/L	0.249		101	90-112			
Phosphorus, total	0.198	0.050 mg/L	0.227		87	72-118			
Potassium, total	7.12	0.10 mg/L	7.21		99	87-116			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0070167  
2020-07-09 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0G0403, Continued</b>									
<b>Reference (B0G0403-SRM1), Continued</b>					Prepared: 2020-07-06, Analyzed: 2020-07-07				
Selenium, total	0.121	0.00050 mg/L	0.121		100	90-122			
Sodium, total	7.40	0.10 mg/L	7.54		98	86-118			
Strontium, total	0.376	0.0010 mg/L	0.375		100	86-110			
Thallium, total	0.0817	0.000020 mg/L	0.0805		102	90-113			
Uranium, total	0.0297	0.000020 mg/L	0.0306		97	88-112			
Vanadium, total	0.385	0.0010 mg/L	0.386		100	87-110			
Zinc, total	2.42	0.0040 mg/L	2.49		97	90-113			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	0080520
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-08-06 15:52 / 14°C 2020-10-20 16:57
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC		
<b>PROJECT INFO</b>			

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: N/A

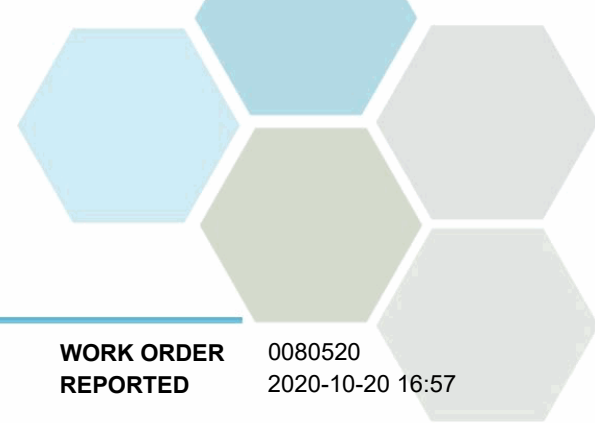
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0080520  
2020-10-20 16:57

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (0080520-01) | Matrix: Water | Sampled: 2020-08-06 09:00**

**Anions**

Chloride	5.16	AO ≤ 250	0.10 mg/L	2020-08-08	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-08-08	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-08-08	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-08-08	
Sulfate	26.5	AO ≤ 500	1.0 mg/L	2020-08-08	

**Calculated Parameters**

Hardness, Total (as CaCO3)	114	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.226	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.226	N/A	0.0500 mg/L	N/A	

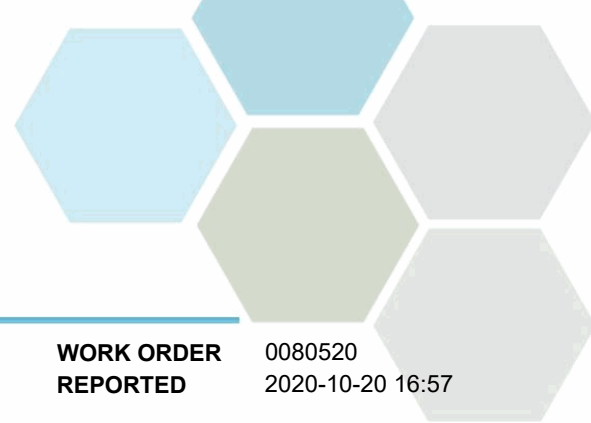
**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-08-10	
Chlorophyll a	1.54	N/A	0.10 µg/L	2020-08-11	
Nitrogen, Total Kjeldahl	0.226	N/A	0.050 mg/L	2020-08-12	
Phosphorus, Total (as P)	0.0104	N/A	0.0050 mg/L	2020-08-12	
Phosphorus, Total Dissolved	0.0073	N/A	0.0050 mg/L	2020-08-12	

**Total Metals**

Aluminum, total	0.0165	OG < 0.1	0.0050 mg/L	2020-08-12	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-08-12	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2020-08-12	
Barium, total	0.0225	MAC = 2	0.0050 mg/L	2020-08-12	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-08-12	
Cadmium, total	0.000038	MAC = 0.005	0.000010 mg/L	2020-08-12	
Calcium, total	29.9	None Required	0.20 mg/L	2020-08-12	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-08-12	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	
Copper, total	0.00094	MAC = 2	0.00040 mg/L	2020-08-12	
Iron, total	0.032	AO ≤ 0.3	0.010 mg/L	2020-08-12	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-08-12	
Lithium, total	0.00323	N/A	0.00010 mg/L	2020-08-12	
Magnesium, total	9.41	None Required	0.010 mg/L	2020-08-12	
Manganese, total	0.00838	MAC = 0.12	0.00020 mg/L	2020-08-12	
Molybdenum, total	0.00302	N/A	0.00010 mg/L	2020-08-12	
Nickel, total	0.00047	N/A	0.00040 mg/L	2020-08-12	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-08-12	
Potassium, total	2.40	N/A	0.10 mg/L	2020-08-12	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-08-12	
Silicon, total	3.5	N/A	1.0 mg/L	2020-08-12	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-08-12	





## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0080520  
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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0080520-01)   Matrix: Water   Sampled: 2020-08-06 09:00, Continued</b>					
<i>Total Metals, Continued</i>					
Sodium, total	11.7	AO ≤ 200	0.10 mg/L	2020-08-12	
Strontium, total	0.281	7	0.0010 mg/L	2020-08-12	
Sulfur, total	7.4	N/A	3.0 mg/L	2020-08-12	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-08-12	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-08-12	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-08-12	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-08-12	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-08-12	
Uranium, total	0.00242	MAC = 0.02	0.000020 mg/L	2020-08-12	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-08-12	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-08-12	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	

**Vaseux 20, 22, 24 m composite (0080520-02) | Matrix: Water | Sampled: 2020-08-06 10:00**

**Anions**

Chloride	5.75	AO ≤ 250	0.10 mg/L	2020-08-08	
Nitrate (as N)	0.084	MAC = 10	0.010 mg/L	2020-08-08	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-08-08	
Phosphate (as P)	0.0072	N/A	0.0050 mg/L	2020-08-08	
Sulfate	25.2	AO ≤ 500	1.0 mg/L	2020-08-08	

**Calculated Parameters**

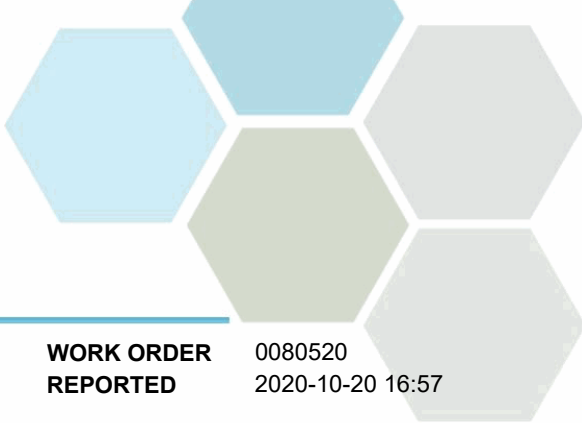
Hardness, Total (as CaCO3)	119	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	0.0842	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.328	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.244	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-08-10	
Chlorophyll a	0.40	N/A	0.10 µg/L	2020-08-11	
Nitrogen, Total Kjeldahl	0.244	N/A	0.050 mg/L	2020-08-12	
Phosphorus, Total (as P)	0.0515	N/A	0.0050 mg/L	2020-08-12	
Phosphorus, Total Dissolved	0.0325	N/A	0.0050 mg/L	2020-08-12	

**Total Metals**

Aluminum, total	0.0198	OG < 0.1	0.0050 mg/L	2020-08-12	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-08-12	
Arsenic, total	0.00062	MAC = 0.01	0.00050 mg/L	2020-08-12	
Barium, total	0.0249	MAC = 2	0.0050 mg/L	2020-08-12	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-08-12	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-08-12	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

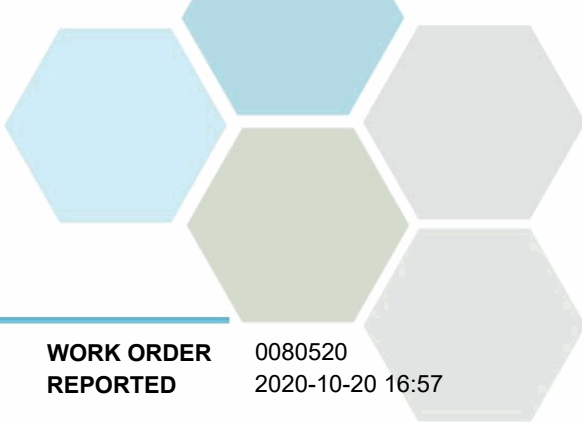
**WORK ORDER REPORTED** 0080520  
2020-10-20 16:57

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**Vaseux 20, 22, 24 m composite (0080520-02) | Matrix: Water | Sampled: 2020-08-06 10:00, Continued**

*Total Metals, Continued*

Cadmium, total	<b>0.000014</b>	MAC = 0.005	0.000010	mg/L	2020-08-12	
Calcium, total	<b>31.5</b>	None Required	0.20	mg/L	2020-08-12	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-08-12	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2020-08-12	
Copper, total	< 0.00040	MAC = 2	0.00040	mg/L	2020-08-12	
Iron, total	<b>0.261</b>	AO ≤ 0.3	0.010	mg/L	2020-08-12	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-08-12	
Lithium, total	<b>0.00342</b>	N/A	0.00010	mg/L	2020-08-12	
Magnesium, total	<b>9.80</b>	None Required	0.010	mg/L	2020-08-12	
Manganese, total	<b>0.362</b>	MAC = 0.12	0.00020	mg/L	2020-08-12	
Molybdenum, total	<b>0.00297</b>	N/A	0.00010	mg/L	2020-08-12	
Nickel, total	<b>0.00044</b>	N/A	0.00040	mg/L	2020-08-12	
Phosphorus, total	<b>0.057</b>	N/A	0.050	mg/L	2020-08-12	
Potassium, total	<b>2.61</b>	N/A	0.10	mg/L	2020-08-12	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-08-12	
Silicon, total	<b>5.2</b>	N/A	1.0	mg/L	2020-08-12	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2020-08-12	
Sodium, total	<b>12.5</b>	AO ≤ 200	0.10	mg/L	2020-08-12	
Strontium, total	<b>0.303</b>	7	0.0010	mg/L	2020-08-12	
Sulfur, total	<b>7.8</b>	N/A	3.0	mg/L	2020-08-12	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2020-08-12	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2020-08-12	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-08-12	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-08-12	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-08-12	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-08-12	
Uranium, total	<b>0.00215</b>	MAC = 0.02	0.000020	mg/L	2020-08-12	
Vanadium, total	< 0.0010	N/A	0.0010	mg/L	2020-08-12	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2020-08-12	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2020-08-12	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0080520  
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Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry		Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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*

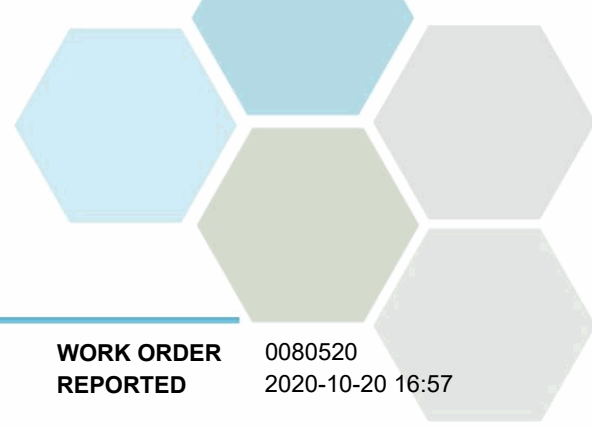
### Glossary of Terms:

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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

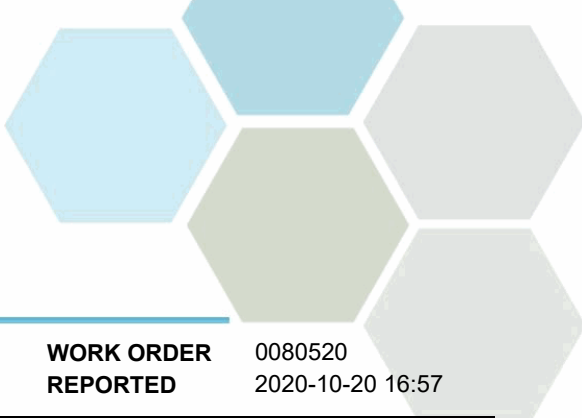
**WORK ORDER REPORTED** 0080520  
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### General Comments:

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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

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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
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### Anions, Batch B0H0529

Blank (B0H0529-BLK1)			Prepared: 2020-08-08, Analyzed: 2020-08-08						
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							
Sulfate	< 1.0	1.0 mg/L							

LCS (B0H0529-BS1)			Prepared: 2020-08-08, Analyzed: 2020-08-08						
Chloride	16.1	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.11	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	2.14	0.010 mg/L	2.00		107	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			

### General Parameters, Batch B0H0004

Blank (B0H0004-BLK1)			Prepared: 2020-08-01, Analyzed: 2020-08-11						
Chlorophyll a	< 0.10	0.10 µg/L							

### General Parameters, Batch B0H0655

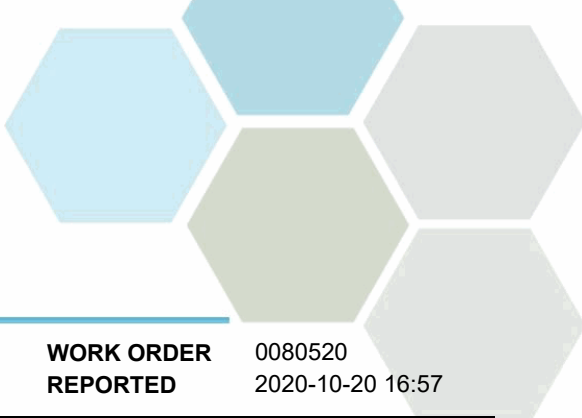
Blank (B0H0655-BLK1)			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B0H0655-BLK2)			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B0H0655-BLK3)			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B0H0655-BLK4)			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

LCS (B0H0655-BS1)			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	0.994	0.050 mg/L	1.00		99	90-115			

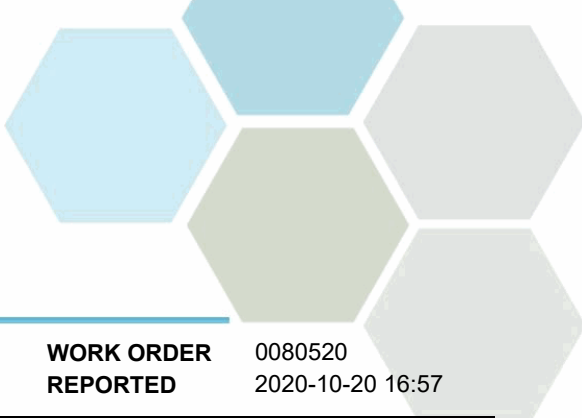


## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0080520  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B0H0655, Continued</b>									
<b>LCS (B0H0655-BS2)</b>			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	0.995	0.050 mg/L	1.00		100	90-115			
<b>LCS (B0H0655-BS3)</b>			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	0.984	0.050 mg/L	1.00		98	90-115			
<b>LCS (B0H0655-BS4)</b>			Prepared: 2020-08-10, Analyzed: 2020-08-10						
Ammonia, Total (as N)	1.01	0.050 mg/L	1.00		101	90-115			
<b>Duplicate (B0H0655-DUP2)</b>			<b>Source: 0080520-02</b>		Prepared: 2020-08-10, Analyzed: 2020-08-10				
Ammonia, Total (as N)	< 0.050	0.050 mg/L		< 0.050				15	
<b>Matrix Spike (B0H0655-MS2)</b>			<b>Source: 0080520-02</b>		Prepared: 2020-08-10, Analyzed: 2020-08-10				
Ammonia, Total (as N)	0.285	0.050 mg/L	0.250	< 0.050	96	75-125			
<b>General Parameters, Batch B0H0795</b>									
<b>Blank (B0H0795-BLK1)</b>			Prepared: 2020-08-11, Analyzed: 2020-08-12						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>Blank (B0H0795-BLK2)</b>			Prepared: 2020-08-11, Analyzed: 2020-08-12						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0H0795-BS1)</b>			Prepared: 2020-08-11, Analyzed: 2020-08-12						
Nitrogen, Total Kjeldahl	0.980	0.050 mg/L	1.00		98	85-115			
<b>LCS (B0H0795-BS2)</b>			Prepared: 2020-08-11, Analyzed: 2020-08-12						
Nitrogen, Total Kjeldahl	0.990	0.050 mg/L	1.00		99	85-115			
<b>General Parameters, Batch B0H0872</b>									
<b>Blank (B0H0872-BLK1)</b>			Prepared: 2020-08-12, Analyzed: 2020-08-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
<b>Blank (B0H0872-BLK2)</b>			Prepared: 2020-08-12, Analyzed: 2020-08-12						
Phosphorus, Total Dissolved	< 0.0050	0.0050 mg/L							
<b>LCS (B0H0872-BS1)</b>			Prepared: 2020-08-12, Analyzed: 2020-08-12						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
<b>LCS (B0H0872-BS2)</b>			Prepared: 2020-08-12, Analyzed: 2020-08-12						
Phosphorus, Total Dissolved	0.110	0.0050 mg/L	0.100		110	85-115			
<b>Total Metals, Batch B0H0935</b>									
<b>Blank (B0H0935-BLK1)</b>			Prepared: 2020-08-12, Analyzed: 2020-08-12						
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	< 0.0500	0.0500 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							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0080520  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Total Metals, Batch B0H0935, Continued**

**Blank (B0H0935-BLK1), Continued**

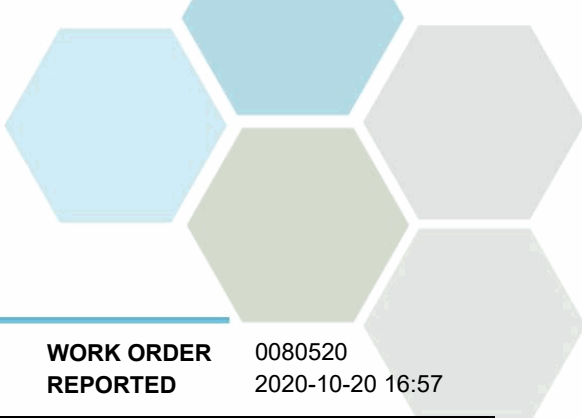
Prepared: 2020-08-12, Analyzed: 2020-08-12

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 (B0H0935-BS1)**

Prepared: 2020-08-12, Analyzed: 2020-08-12

Aluminum, total	0.0239	0.0050 mg/L	0.0199		120	80-120			
Antimony, total	0.0223	0.00020 mg/L	0.0200		111	80-120			
Arsenic, total	0.0224	0.00050 mg/L	0.0200		112	80-120			
Barium, total	0.0224	0.0050 mg/L	0.0198		113	80-120			
Beryllium, total	0.0180	0.00010 mg/L	0.0198		91	80-120			
Bismuth, total	0.0218	0.00010 mg/L	0.0200		109	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		83	80-120			
Cadmium, total	0.0215	0.000010 mg/L	0.0199		108	80-120			
Calcium, total	1.96	0.20 mg/L	2.02		97	80-120			
Chromium, total	0.0237	0.00050 mg/L	0.0198		120	80-120			
Cobalt, total	0.0232	0.00010 mg/L	0.0199		117	80-120			
Copper, total	0.0215	0.00040 mg/L	0.0200		107	80-120			
Iron, total	2.09	0.010 mg/L	2.02		103	80-120			
Lead, total	0.0206	0.00020 mg/L	0.0199		103	80-120			
Lithium, total	0.0183	0.00010 mg/L	0.0200		92	80-120			
Magnesium, total	2.01	0.010 mg/L	2.02		99	80-120			
Manganese, total	0.0212	0.00020 mg/L	0.0199		106	80-120			
Molybdenum, total	0.0220	0.00010 mg/L	0.0200		110	80-120			
Nickel, total	0.0218	0.00040 mg/L	0.0200		109	80-120			
Phosphorus, total	1.94	0.050 mg/L	2.00		97	80-120			
Potassium, total	2.14	0.10 mg/L	2.02		106	80-120			
Selenium, total	0.0183	0.00050 mg/L	0.0200		92	80-120			
Silicon, total	2.1	1.0 mg/L	2.00		107	80-120			
Silver, total	0.0207	0.000050 mg/L	0.0200		104	80-120			
Sodium, total	1.96	0.10 mg/L	2.02		97	80-120			
Strontium, total	0.0218	0.0010 mg/L	0.0200		109	80-120			
Sulfur, total	5.2	3.0 mg/L	5.00		104	80-120			
Tellurium, total	0.0201	0.00050 mg/L	0.0200		100	80-120			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0080520  
2020-10-20 16:57

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0H0935, Continued</b>									
<b>LCS (B0H0935-BS1), Continued</b>					Prepared: 2020-08-12, Analyzed: 2020-08-12				
Thallium, total	0.0215	0.000020 mg/L	0.0199		108	80-120			
Thorium, total	0.0210	0.00010 mg/L	0.0200		105	80-120			
Tin, total	0.0218	0.00020 mg/L	0.0200		109	80-120			
Titanium, total	0.0235	0.0050 mg/L	0.0200		117	80-120			
Tungsten, total	0.0223	0.0010 mg/L	0.0200		111	80-120			
Uranium, total	0.0213	0.000020 mg/L	0.0200		107	80-120			
Vanadium, total	0.0240	0.0010 mg/L	0.0200		120	80-120			
Zinc, total	0.0216	0.0040 mg/L	0.0200		108	80-120			
Zirconium, total	0.0229	0.00010 mg/L	0.0200		114	80-120			
<b>Reference (B0H0935-SRM1)</b>					Prepared: 2020-08-12, Analyzed: 2020-08-12				
Aluminum, total	0.326	0.0050 mg/L	0.299		109	70-130			
Antimony, total	0.0504	0.00020 mg/L	0.0517		97	70-130			
Arsenic, total	0.120	0.00050 mg/L	0.119		101	70-130			
Barium, total	0.776	0.0050 mg/L	0.801		97	70-130			
Beryllium, total	0.0501	0.00010 mg/L	0.0501		100	70-130			
Boron, total	4.30	0.0500 mg/L	4.11		105	70-130			
Cadmium, total	0.0517	0.000010 mg/L	0.0503		103	70-130			
Calcium, total	9.62	0.20 mg/L	10.7		90	70-130			
Chromium, total	0.260	0.00050 mg/L	0.250		104	70-130			
Cobalt, total	0.0409	0.00010 mg/L	0.0384		107	70-130			
Copper, total	0.477	0.00040 mg/L	0.487		98	70-130			
Iron, total	0.475	0.010 mg/L	0.504		94	70-130			
Lead, total	0.282	0.00020 mg/L	0.278		102	70-130			
Lithium, total	0.426	0.00010 mg/L	0.398		107	70-130			
Magnesium, total	3.76	0.010 mg/L	3.59		105	70-130			
Manganese, total	0.117	0.00020 mg/L	0.111		106	70-130			
Molybdenum, total	0.195	0.00010 mg/L	0.196		99	70-130			
Nickel, total	0.245	0.00040 mg/L	0.248		99	70-130			
Phosphorus, total	0.228	0.050 mg/L	0.213		107	70-130			
Potassium, total	6.22	0.10 mg/L	5.89		106	70-130			
Selenium, total	0.139	0.00050 mg/L	0.120		115	70-130			
Sodium, total	9.24	0.10 mg/L	8.71		106	70-130			
Strontium, total	0.389	0.0010 mg/L	0.393		99	70-130			
Thallium, total	0.0830	0.000020 mg/L	0.0787		106	70-130			
Uranium, total	0.0360	0.000020 mg/L	0.0344		105	70-130			
Vanadium, total	0.368	0.0010 mg/L	0.391		94	70-130			
Zinc, total	2.57	0.0040 mg/L	2.50		103	70-130			





## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls (Vaseux Lake) via LAC

**PROJECT** OK Falls (Vaseux Lake) via LAC

**PROJECT INFO**

**WORK ORDER** 0090546

**RECEIVED / TEMP** 2020-09-03 16:24 / 6°C

**REPORTED** 2020-09-11 10:15

**COC NUMBER** 43899.47575

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

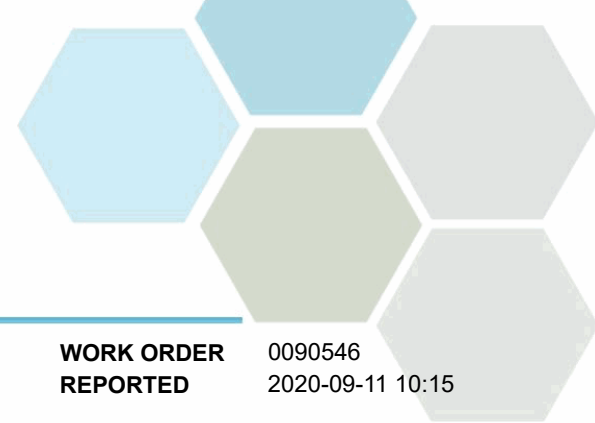
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (0090546-01) | Matrix: Water | Sampled: 2020-09-03 11:30**

**Anions**

Chloride	5.38	AO ≤ 250	0.10 mg/L	2020-09-04	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-09-04	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-09-04	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-09-04	
Sulfate	27.5	AO ≤ 500	1.0 mg/L	2020-09-04	

**Calculated Parameters**

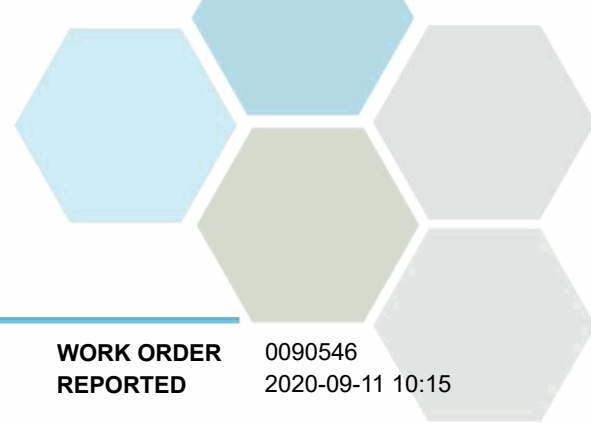
Hardness, Total (as CaCO3)	130	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.196	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.196	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-09-08	
Chlorophyll a	1.69	N/A	0.10 µg/L	2020-09-10	HT1
Nitrogen, Total Kjeldahl	0.196	N/A	0.050 mg/L	2020-09-09	
Phosphorus, Total (as P)	0.0136	N/A	0.0050 mg/L	2020-09-08	
Phosphorus, Total Dissolved	0.0116	N/A	0.0050 mg/L	2020-09-08	

**Total Metals**

Aluminum, total	0.0287	OG < 0.1	0.0050 mg/L	2020-09-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-09-10	
Arsenic, total	0.00083	MAC = 0.01	0.00050 mg/L	2020-09-10	
Barium, total	0.0256	MAC = 2	0.0050 mg/L	2020-09-10	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-09-10	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-09-10	
Boron, total	0.0545	MAC = 5	0.0500 mg/L	2020-09-10	
Cadmium, total	0.000012	MAC = 0.005	0.000010 mg/L	2020-09-10	
Calcium, total	34.7	None Required	0.20 mg/L	2020-09-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-09-10	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-09-10	
Copper, total	0.00101	MAC = 2	0.00040 mg/L	2020-09-10	
Iron, total	0.050	AO ≤ 0.3	0.010 mg/L	2020-09-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-09-10	
Lithium, total	0.00347	N/A	0.00010 mg/L	2020-09-10	
Magnesium, total	10.4	None Required	0.010 mg/L	2020-09-10	
Manganese, total	0.00817	MAC = 0.12	0.00020 mg/L	2020-09-10	
Molybdenum, total	0.00346	N/A	0.00010 mg/L	2020-09-10	
Nickel, total	0.00050	N/A	0.00040 mg/L	2020-09-10	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-09-10	
Potassium, total	2.76	N/A	0.10 mg/L	2020-09-10	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-09-10	
Silicon, total	4.3	N/A	1.0 mg/L	2020-09-10	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-09-10	



## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (0090546-01)   Matrix: Water   Sampled: 2020-09-03 11:30, Continued</b>					
<i>Total Metals, Continued</i>					
Sodium, total	11.9	AO ≤ 200	0.10 mg/L	2020-09-10	
Strontium, total	0.311	7	0.0010 mg/L	2020-09-10	
Sulfur, total	10.2	N/A	3.0 mg/L	2020-09-10	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-09-10	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-09-10	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-09-10	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-09-10	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-09-10	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-09-10	
Uranium, total	0.00256	MAC = 0.02	0.000020 mg/L	2020-09-10	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-09-10	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-09-10	
Zirconium, total	0.00011	N/A	0.00010 mg/L	2020-09-10	

**Vaseux 20, 22, 24 m composite (0090546-02) | Matrix: Water | Sampled: 2020-09-03 11:50**

**Anions**

Chloride	5.69	AO ≤ 250	0.10 mg/L	2020-09-04	
Nitrate (as N)	0.037	MAC = 10	0.010 mg/L	2020-09-04	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-09-04	
Phosphate (as P)	0.0117	N/A	0.0050 mg/L	2020-09-04	
Sulfate	24.4	AO ≤ 500	1.0 mg/L	2020-09-04	

**Calculated Parameters**

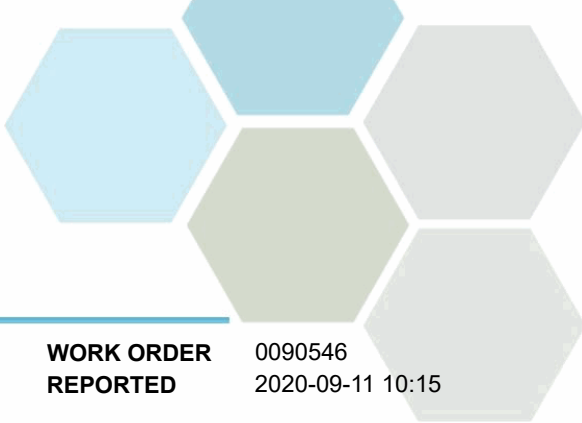
Hardness, Total (as CaCO3)	129	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	0.0367	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.365	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.211	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.117	None Required	0.050 mg/L	2020-09-08	
Chlorophyll a	0.65	N/A	0.10 µg/L	2020-09-10	HT1
Nitrogen, Total Kjeldahl	0.328	N/A	0.050 mg/L	2020-09-09	
Phosphorus, Total (as P)	0.0914	N/A	0.0050 mg/L	2020-09-08	
Phosphorus, Total Dissolved	0.0439	N/A	0.0050 mg/L	2020-09-08	

**Total Metals**

Aluminum, total	0.0601	OG < 0.1	0.0050 mg/L	2020-09-10	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-09-10	
Arsenic, total	0.00116	MAC = 0.01	0.00050 mg/L	2020-09-10	
Barium, total	0.0272	MAC = 2	0.0050 mg/L	2020-09-10	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-09-10	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-09-10	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-09-10	



# TEST RESULTS

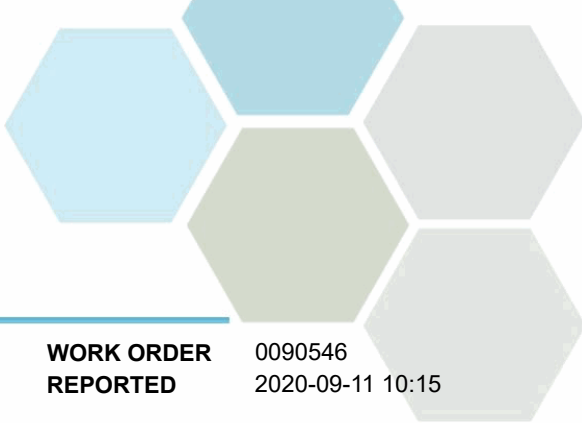
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (0090546-02)   Matrix: Water   Sampled: 2020-09-03 11:50, Continued</b>						
<i>Total Metals, Continued</i>						
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2020-09-10	
Calcium, total	<b>34.9</b>	None Required	0.20	mg/L	2020-09-10	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-09-10	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2020-09-10	
Copper, total	<b>0.00067</b>	MAC = 2	0.00040	mg/L	2020-09-10	
Iron, total	<b>0.476</b>	AO ≤ 0.3	0.010	mg/L	2020-09-10	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-09-10	
Lithium, total	<b>0.00352</b>	N/A	0.00010	mg/L	2020-09-10	
Magnesium, total	<b>10.3</b>	None Required	0.010	mg/L	2020-09-10	
Manganese, total	<b>0.453</b>	MAC = 0.12	0.00020	mg/L	2020-09-10	
Molybdenum, total	<b>0.00297</b>	N/A	0.00010	mg/L	2020-09-10	
Nickel, total	<b>0.00047</b>	N/A	0.00040	mg/L	2020-09-10	
Phosphorus, total	<b>0.134</b>	N/A	0.050	mg/L	2020-09-10	
Potassium, total	<b>2.83</b>	N/A	0.10	mg/L	2020-09-10	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-09-10	
Silicon, total	<b>6.1</b>	N/A	1.0	mg/L	2020-09-10	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2020-09-10	
Sodium, total	<b>11.8</b>	AO ≤ 200	0.10	mg/L	2020-09-10	
Strontium, total	<b>0.323</b>	7	0.0010	mg/L	2020-09-10	
Sulfur, total	<b>7.8</b>	N/A	3.0	mg/L	2020-09-10	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2020-09-10	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2020-09-10	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-09-10	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-09-10	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-09-10	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-09-10	
Uranium, total	<b>0.00205</b>	MAC = 0.02	0.000020	mg/L	2020-09-10	
Vanadium, total	<b>0.0015</b>	N/A	0.0010	mg/L	2020-09-10	
Zinc, total	<b>0.0051</b>	AO ≤ 5	0.0040	mg/L	2020-09-10	
Zirconium, total	<b>0.00013</b>	N/A	0.00010	mg/L	2020-09-10	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry		Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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*

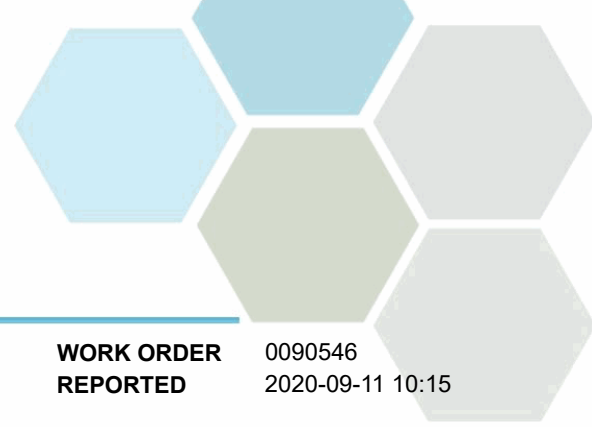
### Glossary of Terms:

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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

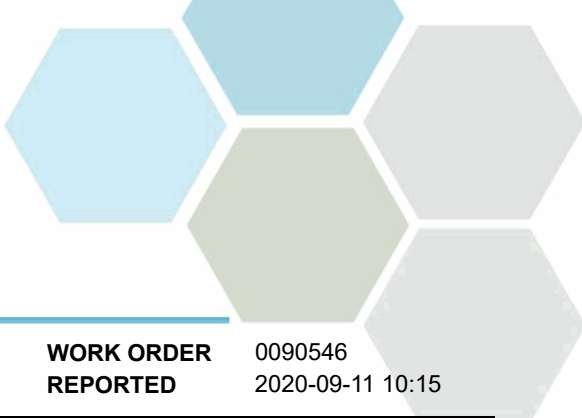
**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

### General Comments:

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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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

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
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### Anions, Batch B010445

Blank (B010445-BLK1)			Prepared: 2020-09-04, Analyzed: 2020-09-04						
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							
Sulfate	< 1.0	1.0 mg/L							

LCS (B010445-BS1)			Prepared: 2020-09-04, Analyzed: 2020-09-04						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	3.97	0.010 mg/L	4.00		99	90-110			
Nitrite (as N)	2.17	0.010 mg/L	2.00		109	85-115			
Phosphate (as P)	1.02	0.0050 mg/L	1.00		102	80-120			
Sulfate	16.1	1.0 mg/L	16.0		101	90-110			

### General Parameters, Batch B010233

Blank (B010233-BLK1)			Prepared: 2020-09-02, Analyzed: 2020-09-10						
Chlorophyll a	0.11	0.10 µg/L							BLK

### General Parameters, Batch B010594

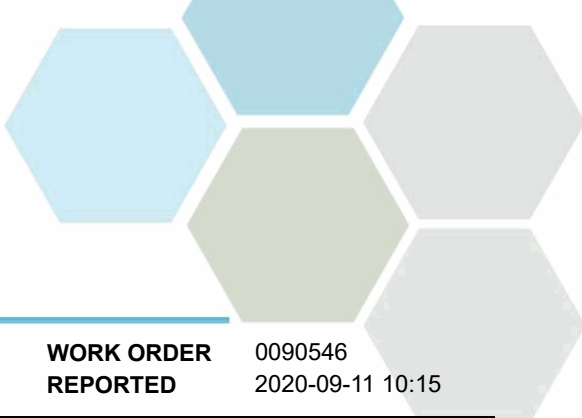
Blank (B010594-BLK1)			Prepared: 2020-09-08, Analyzed: 2020-09-08						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Phosphorus, Total Dissolved	< 0.0050	0.0050 mg/L							

LCS (B010594-BS1)			Prepared: 2020-09-08, Analyzed: 2020-09-08						
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
Phosphorus, Total Dissolved	0.108	0.0050 mg/L	0.100		108	85-115			

### General Parameters, Batch B010597

Blank (B010597-BLK1)			Prepared: 2020-09-08, Analyzed: 2020-09-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B010597-BLK2)			Prepared: 2020-09-08, Analyzed: 2020-09-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**General Parameters, Batch B010597, Continued**

<b>LCS (B010597-BS1)</b>			Prepared: 2020-09-08, Analyzed: 2020-09-08						
Ammonia, Total (as N)	0.990	0.050 mg/L	1.00		99	90-115			
<b>LCS (B010597-BS2)</b>			Prepared: 2020-09-08, Analyzed: 2020-09-08						
Ammonia, Total (as N)	0.979	0.050 mg/L	1.00		98	90-115			

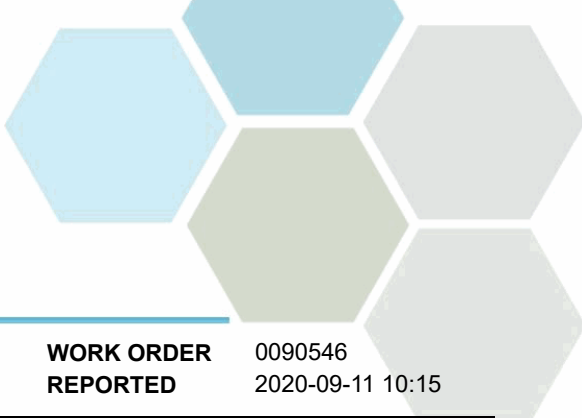
**General Parameters, Batch B010631**

<b>Blank (B010631-BLK1)</b>			Prepared: 2020-09-08, Analyzed: 2020-09-09						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>Blank (B010631-BLK2)</b>			Prepared: 2020-09-08, Analyzed: 2020-09-09						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B010631-BS1)</b>			Prepared: 2020-09-08, Analyzed: 2020-09-09						
Nitrogen, Total Kjeldahl	1.07	0.050 mg/L	1.00		107	85-115			
<b>LCS (B010631-BS2)</b>			Prepared: 2020-09-08, Analyzed: 2020-09-09						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
<b>Duplicate (B010631-DUP1)</b>		<b>Source: 0090546-02</b>		Prepared: 2020-09-08, Analyzed: 2020-09-09					
Nitrogen, Total Kjeldahl	0.297	0.050 mg/L		0.328			10	15	
<b>Matrix Spike (B010631-MS1)</b>		<b>Source: 0090546-02</b>		Prepared: 2020-09-08, Analyzed: 2020-09-09					
Nitrogen, Total Kjeldahl	2.36	0.100 mg/L	2.00	0.328	102	65-135			

**Total Metals, Batch B010708**

<b>Blank (B010708-BLK1)</b>			Prepared: 2020-09-09, Analyzed: 2020-09-10						
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	< 0.0500	0.0500 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							





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Total Metals, Batch B010708, Continued**

**Blank (B010708-BLK1), Continued**

Prepared: 2020-09-09, Analyzed: 2020-09-10

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 (B010708-BS1)**

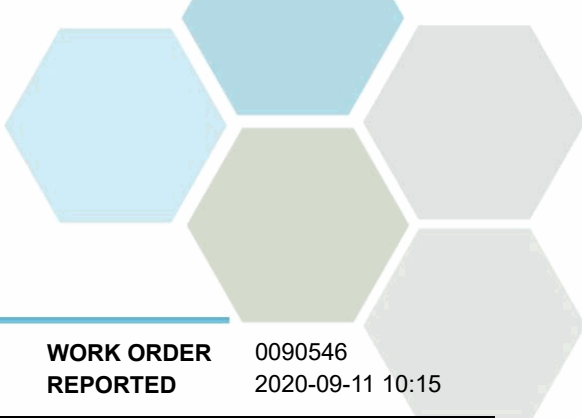
Prepared: 2020-09-09, Analyzed: 2020-09-10

Aluminum, total	0.0228	0.0050 mg/L	0.0199		114	80-120			
Antimony, total	0.0204	0.00020 mg/L	0.0200		102	80-120			
Arsenic, total	0.0194	0.00050 mg/L	0.0200		97	80-120			
Barium, total	0.0192	0.0050 mg/L	0.0198		97	80-120			
Beryllium, total	0.0193	0.00010 mg/L	0.0198		97	80-120			
Bismuth, total	0.0204	0.00010 mg/L	0.0200		102	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		108	80-120			
Cadmium, total	0.0190	0.000010 mg/L	0.0199		96	80-120			
Calcium, total	2.16	0.20 mg/L	2.02		107	80-120			
Chromium, total	0.0184	0.00050 mg/L	0.0198		93	80-120			
Cobalt, total	0.0182	0.00010 mg/L	0.0199		91	80-120			
Copper, total	0.0190	0.00040 mg/L	0.0200		95	80-120			
Iron, total	1.88	0.010 mg/L	2.02		93	80-120			
Lead, total	0.0189	0.00020 mg/L	0.0199		95	80-120			
Lithium, total	0.0195	0.00010 mg/L	0.0200		98	80-120			
Magnesium, total	2.09	0.010 mg/L	2.02		103	80-120			
Manganese, total	0.0177	0.00020 mg/L	0.0199		89	80-120			
Molybdenum, total	0.0184	0.00010 mg/L	0.0200		92	80-120			
Nickel, total	0.0188	0.00040 mg/L	0.0200		94	80-120			
Phosphorus, total	2.06	0.050 mg/L	2.00		103	80-120			
Potassium, total	2.08	0.10 mg/L	2.02		103	80-120			
Selenium, total	0.0188	0.00050 mg/L	0.0200		94	80-120			
Silicon, total	2.3	1.0 mg/L	2.00		117	80-120			
Silver, total	0.0186	0.000050 mg/L	0.0200		93	80-120			
Sodium, total	2.33	0.10 mg/L	2.02		116	80-120			
Strontium, total	0.0192	0.0010 mg/L	0.0200		96	80-120			
Sulfur, total	4.4	3.0 mg/L	5.00		88	80-120			
Tellurium, total	0.0188	0.00050 mg/L	0.0200		94	80-120			
Thallium, total	0.0196	0.000020 mg/L	0.0199		99	80-120			
Thorium, total	0.0192	0.00010 mg/L	0.0200		96	80-120			
Tin, total	0.0193	0.00020 mg/L	0.0200		96	80-120			
Titanium, total	0.0180	0.0050 mg/L	0.0200		90	80-120			
Tungsten, total	0.0193	0.0010 mg/L	0.0200		97	80-120			
Uranium, total	0.0192	0.000020 mg/L	0.0200		96	80-120			
Vanadium, total	0.0175	0.0010 mg/L	0.0200		87	80-120			
Zinc, total	0.0205	0.0040 mg/L	0.0200		102	80-120			
Zirconium, total	0.0188	0.00010 mg/L	0.0200		94	80-120			

**Reference (B010708-SRM1)**

Prepared: 2020-09-09, Analyzed: 2020-09-10

Aluminum, total	0.306	0.0050 mg/L	0.299		102	70-130			
Antimony, total	0.0533	0.00020 mg/L	0.0517		103	70-130			
Arsenic, total	0.124	0.00050 mg/L	0.119		104	70-130			
Barium, total	0.774	0.0050 mg/L	0.801		97	70-130			
Beryllium, total	0.0504	0.00010 mg/L	0.0501		101	70-130			
Boron, total	3.89	0.0500 mg/L	4.11		95	70-130			
Cadmium, total	0.0496	0.000010 mg/L	0.0503		99	70-130			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 0090546  
2020-09-11 10:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B010708, Continued</b>									
<b>Reference (B010708-SRM1), Continued</b>					Prepared: 2020-09-09, Analyzed: 2020-09-10				
Calcium, total	11.5	0.20 mg/L	10.7		108	70-130			
Chromium, total	0.240	0.00050 mg/L	0.250		96	70-130			
Cobalt, total	0.0371	0.00010 mg/L	0.0384		97	70-130			
Copper, total	0.475	0.00040 mg/L	0.487		98	70-130			
Iron, total	0.492	0.010 mg/L	0.504		98	70-130			
Lead, total	0.279	0.00020 mg/L	0.278		100	70-130			
Lithium, total	0.404	0.00010 mg/L	0.398		101	70-130			
Magnesium, total	3.94	0.010 mg/L	3.59		110	70-130			
Manganese, total	0.101	0.00020 mg/L	0.111		91	70-130			
Molybdenum, total	0.195	0.00010 mg/L	0.196		100	70-130			
Nickel, total	0.240	0.00040 mg/L	0.248		97	70-130			
Phosphorus, total	0.268	0.050 mg/L	0.213		126	70-130			
Potassium, total	6.39	0.10 mg/L	5.89		109	70-130			
Selenium, total	0.126	0.00050 mg/L	0.120		105	70-130			
Sodium, total	9.38	0.10 mg/L	8.71		108	70-130			
Strontium, total	0.395	0.0010 mg/L	0.393		101	70-130			
Thallium, total	0.0816	0.000020 mg/L	0.0787		104	70-130			
Uranium, total	0.0351	0.000020 mg/L	0.0344		102	70-130			
Vanadium, total	0.358	0.0010 mg/L	0.391		91	70-130			
Zinc, total	2.49	0.0040 mg/L	2.50		99	70-130			

**QC Qualifiers:**

BLK Analyte concentration in the Method Blank is above the Reporting Limit (RL).



**CERTIFICATE OF ANALYSIS**

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	20J0535
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-10-07 16:19 / 9°C
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>REPORTED</b>	2020-10-16 10:19
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT INFO</b>			

**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/IEC 17025:2017 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.

**Work Order Comments:**

Custody Seals Intact: N/A

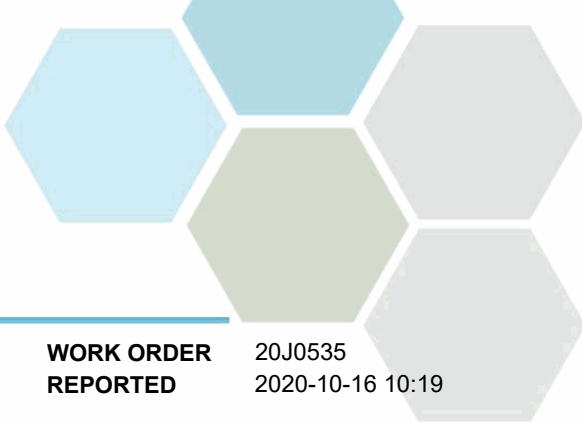
*If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)*

**Authorized By:**

Alana Crump  
Team Lead, Client Service

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#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20J0535  
2020-10-16 10:19

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (20J0535-01) | Matrix: Water | Sampled: 2020-10-07 09:00**

**Anions**

Chloride	5.58	AO ≤ 250	0.10 mg/L	2020-10-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-10-09	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-10-09	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-10-09	
Sulfate	27.6	AO ≤ 500	1.0 mg/L	2020-10-09	

**Calculated Parameters**

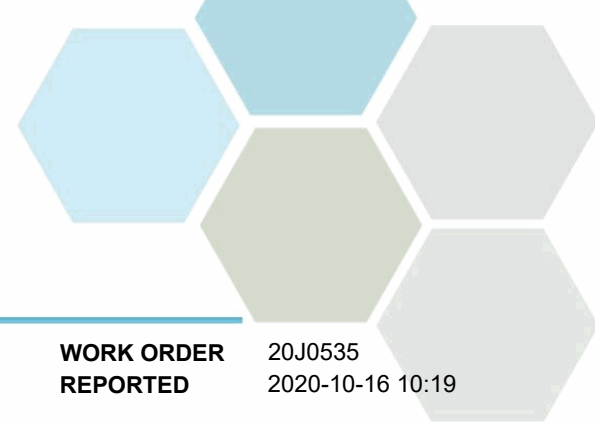
Hardness, Total (as CaCO3)	142	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.217	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.217	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-10-10	
Chlorophyll a	1.33	N/A	0.10 µg/L	2020-10-13	HT1
Nitrogen, Total Kjeldahl	0.217	N/A	0.050 mg/L	2020-10-13	
Phosphorus, Total (as P)	0.0096	N/A	0.0050 mg/L	2020-10-13	
Phosphorus, Total Dissolved	0.0071	N/A	0.0050 mg/L	2020-10-13	

**Total Metals**

Aluminum, total	0.0117	OG < 0.1	0.0050 mg/L	2020-10-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-10-15	
Arsenic, total	0.00072	MAC = 0.01	0.00050 mg/L	2020-10-15	
Barium, total	0.0245	MAC = 2	0.0050 mg/L	2020-10-15	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-10-15	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-10-15	
Calcium, total	39.4	None Required	0.20 mg/L	2020-10-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-10-15	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	
Copper, total	0.00104	MAC = 2	0.00040 mg/L	2020-10-15	
Iron, total	0.026	AO ≤ 0.3	0.010 mg/L	2020-10-15	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-10-15	
Lithium, total	0.00396	N/A	0.00010 mg/L	2020-10-15	
Magnesium, total	10.6	None Required	0.010 mg/L	2020-10-15	
Manganese, total	0.00408	MAC = 0.12	0.00020 mg/L	2020-10-15	
Molybdenum, total	0.00349	N/A	0.00010 mg/L	2020-10-15	
Nickel, total	0.00054	N/A	0.00040 mg/L	2020-10-15	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-10-15	
Potassium, total	3.08	N/A	0.10 mg/L	2020-10-15	
Selenium, total	0.00050	MAC = 0.05	0.00050 mg/L	2020-10-15	
Silicon, total	3.7	N/A	1.0 mg/L	2020-10-15	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-10-15	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20J0535  
2020-10-16 10:19

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (20J0535-01)   Matrix: Water   Sampled: 2020-10-07 09:00, Continued</b>					
<i>Total Metals, Continued</i>					
Sodium, total	11.7	AO ≤ 200	0.10 mg/L	2020-10-15	
Strontium, total	0.315	7	0.0010 mg/L	2020-10-15	
Sulfur, total	11.1	N/A	3.0 mg/L	2020-10-15	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-10-15	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-10-15	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-10-15	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-10-15	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-10-15	
Uranium, total	0.00278	MAC = 0.02	0.000020 mg/L	2020-10-15	
Vanadium, total	< 0.0010	N/A	0.0010 mg/L	2020-10-15	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-10-15	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	

**Vaseux 20, 22, 24 m composite (20J0535-02) | Matrix: Water | Sampled: 2020-10-07 09:15**

**Anions**

Chloride	5.75	AO ≤ 250	0.10 mg/L	2020-10-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-10-09	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-10-09	
Phosphate (as P)	0.0301	N/A	0.0050 mg/L	2020-10-09	
Sulfate	22.9	AO ≤ 500	1.0 mg/L	2020-10-09	

**Calculated Parameters**

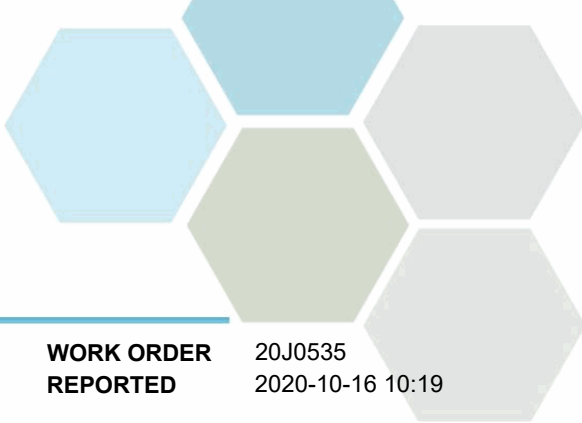
Hardness, Total (as CaCO3)	132	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.456	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.245	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	0.211	None Required	0.050 mg/L	2020-10-10	
Chlorophyll a	< 1.00	N/A	0.10 µg/L	2020-10-13	HT1
Nitrogen, Total Kjeldahl	0.456	N/A	0.050 mg/L	2020-10-13	
Phosphorus, Total (as P)	0.125	N/A	0.0050 mg/L	2020-10-13	
Phosphorus, Total Dissolved	0.0919	N/A	0.0050 mg/L	2020-10-13	

**Total Metals**

Aluminum, total	0.0622	OG < 0.1	0.0050 mg/L	2020-10-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-10-15	
Arsenic, total	0.00104	MAC = 0.01	0.00050 mg/L	2020-10-15	
Barium, total	0.0271	MAC = 2	0.0050 mg/L	2020-10-15	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-10-15	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-10-15	



# TEST RESULTS

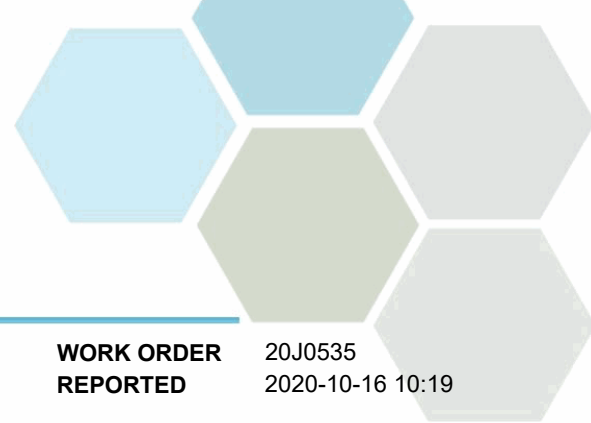
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (20J0535-02)   Matrix: Water   Sampled: 2020-10-07 09:15, Continued</b>						
<i>Total Metals, Continued</i>						
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2020-10-15	
Calcium, total	<b>36.0</b>	None Required	0.20	mg/L	2020-10-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-10-15	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2020-10-15	
Copper, total	<b>0.00069</b>	MAC = 2	0.00040	mg/L	2020-10-15	
Iron, total	<b>0.568</b>	AO ≤ 0.3	0.010	mg/L	2020-10-15	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-10-15	
Lithium, total	<b>0.00353</b>	N/A	0.00010	mg/L	2020-10-15	
Magnesium, total	<b>10.2</b>	None Required	0.010	mg/L	2020-10-15	
Manganese, total	<b>0.445</b>	MAC = 0.12	0.00020	mg/L	2020-10-15	
Molybdenum, total	<b>0.00282</b>	N/A	0.00010	mg/L	2020-10-15	
Nickel, total	<b>0.00056</b>	N/A	0.00040	mg/L	2020-10-15	
Phosphorus, total	<b>0.134</b>	N/A	0.050	mg/L	2020-10-15	
Potassium, total	<b>3.09</b>	N/A	0.10	mg/L	2020-10-15	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-10-15	
Silicon, total	<b>6.1</b>	N/A	1.0	mg/L	2020-10-15	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2020-10-15	
Sodium, total	<b>11.4</b>	AO ≤ 200	0.10	mg/L	2020-10-15	
Strontium, total	<b>0.321</b>	7	0.0010	mg/L	2020-10-15	
Sulfur, total	<b>9.3</b>	N/A	3.0	mg/L	2020-10-15	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2020-10-15	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2020-10-15	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-10-15	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-10-15	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-10-15	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-10-15	
Uranium, total	<b>0.00197</b>	MAC = 0.02	0.000020	mg/L	2020-10-15	
Vanadium, total	< 0.0010	N/A	0.0010	mg/L	2020-10-15	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2020-10-15	
Zirconium, total	<b>0.00014</b>	N/A	0.00010	mg/L	2020-10-15	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20J0535  
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Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry		Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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*

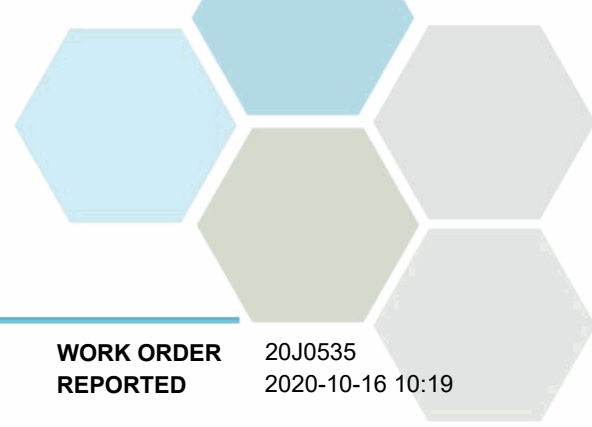
### Glossary of Terms:

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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20J0535  
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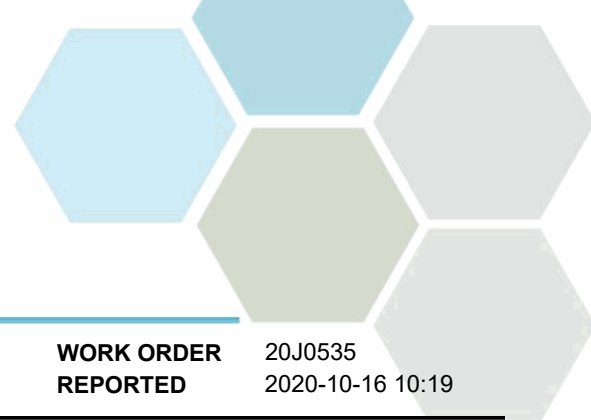
### General Comments:

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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*





## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

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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.

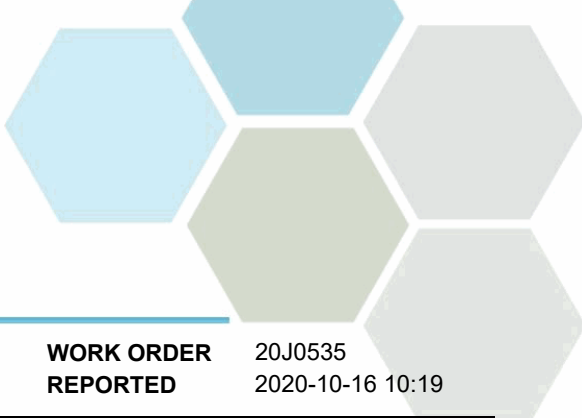
Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Anions, Batch B0J0697</b>									
<b>Blank (B0J0697-BLK1)</b>			Prepared: 2020-10-08, Analyzed: 2020-10-08						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0J0697-BLK2)</b>			Prepared: 2020-10-09, Analyzed: 2020-10-09						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0J0697-BS1)</b>			Prepared: 2020-10-08, Analyzed: 2020-10-08						
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)	2.00	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.03	0.0050 mg/L	1.00		103	80-120			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0J0697-BS2)</b>			Prepared: 2020-10-09, Analyzed: 2020-10-09						
Chloride	15.9	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.02	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		101	85-115			
Phosphate (as P)	0.997	0.0050 mg/L	1.00		100	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			

### General Parameters, Batch B0J0565

<b>Blank (B0J0565-BLK1)</b>			Prepared: 2020-10-06, Analyzed: 2020-10-13						
Chlorophyll a	< 0.10	0.10 µg/L							

### General Parameters, Batch B0J0965

<b>Blank (B0J0965-BLK1)</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

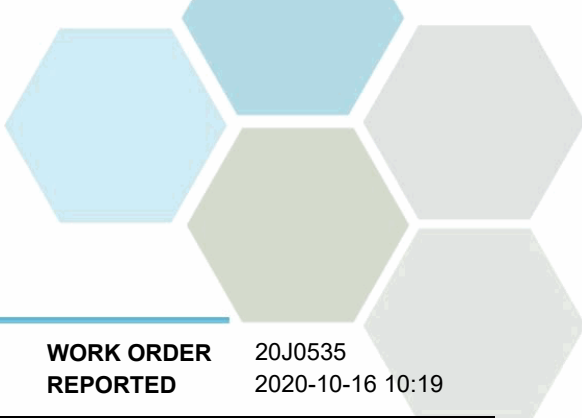


## APPENDIX 2: QUALITY CONTROL RESULTS

<b>REPORTED TO PROJECT</b>	Regional District of Okanagan Similkameen OK Falls (Vaseux Lake) via LAC	<b>WORK ORDER REPORTED</b>	20J0535 2020-10-16 10:19
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>General Parameters, Batch B0J0965, Continued</b>									
<b>Blank (B0J0965-BLK1), Continued</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
<b>Blank (B0J0965-BLK2)</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>Blank (B0J0965-BLK3)</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
<b>LCS (B0J0965-BS1)</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
Ammonia, Total (as N)	0.984	0.050 mg/L	1.00		98	90-115			
<b>LCS (B0J0965-BS2)</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
Ammonia, Total (as N)	0.977	0.050 mg/L	1.00		98	90-115			
<b>LCS (B0J0965-BS3)</b>			Prepared: 2020-10-10, Analyzed: 2020-10-10						
Ammonia, Total (as N)	0.969	0.050 mg/L	1.00		97	90-115			
<b>General Parameters, Batch B0J1044</b>									
<b>Blank (B0J1044-BLK1)</b>			Prepared: 2020-10-12, Analyzed: 2020-10-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>Blank (B0J1044-BLK2)</b>			Prepared: 2020-10-12, Analyzed: 2020-10-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
<b>LCS (B0J1044-BS1)</b>			Prepared: 2020-10-12, Analyzed: 2020-10-13						
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			
<b>LCS (B0J1044-BS2)</b>			Prepared: 2020-10-12, Analyzed: 2020-10-13						
Nitrogen, Total Kjeldahl	1.08	0.050 mg/L	1.00		108	85-115			
<b>General Parameters, Batch B0J1047</b>									
<b>Blank (B0J1047-BLK1)</b>			Prepared: 2020-10-13, Analyzed: 2020-10-13						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Phosphorus, Total Dissolved	< 0.0050	0.0050 mg/L							
<b>Blank (B0J1047-BLK2)</b>			Prepared: 2020-10-13, Analyzed: 2020-10-13						
Phosphorus, Total Dissolved	< 0.0050	0.0050 mg/L							
<b>LCS (B0J1047-BS1)</b>			Prepared: 2020-10-13, Analyzed: 2020-10-13						
Phosphorus, Total (as P)	0.102	0.0050 mg/L	0.100		102	85-115			
Phosphorus, Total Dissolved	0.101	0.0050 mg/L	0.100		101	85-115			
<b>LCS (B0J1047-BS2)</b>			Prepared: 2020-10-13, Analyzed: 2020-10-13						
Phosphorus, Total Dissolved	0.101	0.0050 mg/L	0.100		101	85-115			
<b>Duplicate (B0J1047-DUP1)</b>			<b>Source: 20J0535-02</b>		Prepared: 2020-10-13, Analyzed: 2020-10-13				
Phosphorus, Total (as P)	0.124	0.0050 mg/L		0.125			< 1	15	
Phosphorus, Total Dissolved	0.0929	0.0050 mg/L		0.0919			1	15	
<b>Matrix Spike (B0J1047-MS1)</b>			<b>Source: 20J0535-02</b>		Prepared: 2020-10-13, Analyzed: 2020-10-13				
Phosphorus, Total (as P)	0.229	0.0050 mg/L	0.102	0.125	102	70-125			
Phosphorus, Total Dissolved	0.196	0.0050 mg/L	0.102	0.0919	102	70-125			

**Total Metals, Batch B0J1313**



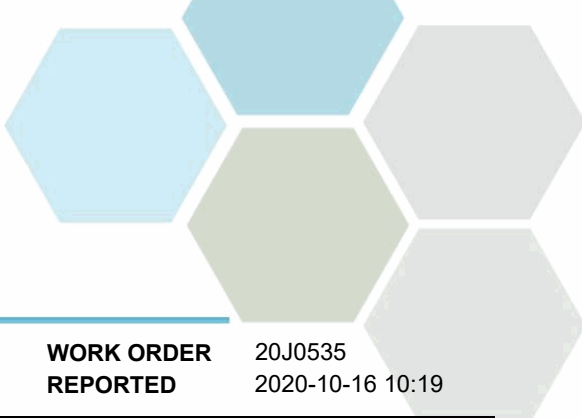
## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20J0535  
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0J1313, Continued</b>									
<b>Blank (B0J1313-BLK1)</b>					Prepared: 2020-10-15, Analyzed: 2020-10-15				
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	< 0.0500	0.0500 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							

<b>LCS (B0J1313-BS1)</b>					Prepared: 2020-10-15, Analyzed: 2020-10-15				
Aluminum, total	0.0219	0.0050 mg/L	0.0199		110	80-120			
Antimony, total	0.0214	0.00020 mg/L	0.0200		107	80-120			
Arsenic, total	0.0212	0.00050 mg/L	0.0200		106	80-120			
Barium, total	0.0204	0.0050 mg/L	0.0198		103	80-120			
Beryllium, total	0.0237	0.00010 mg/L	0.0198		120	80-120			
Bismuth, total	0.0219	0.00010 mg/L	0.0200		109	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		109	80-120			
Cadmium, total	0.0204	0.000010 mg/L	0.0199		103	80-120			
Calcium, total	2.24	0.20 mg/L	2.02		111	80-120			
Chromium, total	0.0214	0.00050 mg/L	0.0198		108	80-120			
Cobalt, total	0.0212	0.00010 mg/L	0.0199		106	80-120			
Copper, total	0.0220	0.00040 mg/L	0.0200		110	80-120			
Iron, total	2.05	0.010 mg/L	2.02		101	80-120			
Lead, total	0.0207	0.00020 mg/L	0.0199		104	80-120			
Lithium, total	0.0219	0.00010 mg/L	0.0200		110	80-120			
Magnesium, total	2.23	0.010 mg/L	2.02		110	80-120			
Manganese, total	0.0206	0.00020 mg/L	0.0199		103	80-120			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20J0535  
2020-10-16 10:19

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0J1313, Continued</b>									
<b>LCS (B0J1313-BS1), Continued</b>					Prepared: 2020-10-15, Analyzed: 2020-10-15				
Molybdenum, total	0.0207	0.00010 mg/L	0.0200		103	80-120			
Nickel, total	0.0217	0.00040 mg/L	0.0200		109	80-120			
Phosphorus, total	2.18	0.050 mg/L	2.00		109	80-120			
Potassium, total	2.36	0.10 mg/L	2.02		117	80-120			
Selenium, total	0.0201	0.00050 mg/L	0.0200		101	80-120			
Silicon, total	2.1	1.0 mg/L	2.00		107	80-120			
Silver, total	0.0205	0.000050 mg/L	0.0200		103	80-120			
Sodium, total	2.27	0.10 mg/L	2.02		113	80-120			
Strontium, total	0.0211	0.0010 mg/L	0.0200		105	80-120			
Sulfur, total	5.1	3.0 mg/L	5.00		102	80-120			
Tellurium, total	0.0221	0.00050 mg/L	0.0200		111	80-120			
Thallium, total	0.0230	0.000020 mg/L	0.0199		116	80-120			
Thorium, total	0.0221	0.00010 mg/L	0.0200		111	80-120			
Tin, total	0.0212	0.00020 mg/L	0.0200		106	80-120			
Titanium, total	0.0217	0.0050 mg/L	0.0200		108	80-120			
Tungsten, total	0.0215	0.0010 mg/L	0.0200		108	80-120			
Uranium, total	0.0231	0.000020 mg/L	0.0200		115	80-120			
Vanadium, total	0.0224	0.0010 mg/L	0.0200		112	80-120			
Zinc, total	0.0234	0.0040 mg/L	0.0200		117	80-120			
Zirconium, total	0.0209	0.00010 mg/L	0.0200		105	80-120			
<b>Reference (B0J1313-SRM1)</b>					Prepared: 2020-10-15, Analyzed: 2020-10-15				
Aluminum, total	0.293	0.0050 mg/L	0.299		98	70-130			
Antimony, total	0.0517	0.00020 mg/L	0.0517		100	70-130			
Arsenic, total	0.130	0.00050 mg/L	0.119		109	70-130			
Barium, total	0.785	0.0050 mg/L	0.801		98	70-130			
Beryllium, total	0.0549	0.00010 mg/L	0.0501		110	70-130			
Boron, total	3.97	0.0500 mg/L	4.11		96	70-130			
Cadmium, total	0.0496	0.000010 mg/L	0.0503		99	70-130			
Calcium, total	11.8	0.20 mg/L	10.7		110	70-130			
Chromium, total	0.263	0.00050 mg/L	0.250		105	70-130			
Cobalt, total	0.0404	0.00010 mg/L	0.0384		105	70-130			
Copper, total	0.524	0.00040 mg/L	0.487		108	70-130			
Iron, total	0.517	0.010 mg/L	0.504		103	70-130			
Lead, total	0.318	0.00020 mg/L	0.278		115	70-130			
Lithium, total	0.438	0.00010 mg/L	0.398		110	70-130			
Magnesium, total	4.04	0.010 mg/L	3.59		113	70-130			
Manganese, total	0.107	0.00020 mg/L	0.111		97	70-130			
Molybdenum, total	0.202	0.00010 mg/L	0.196		103	70-130			
Nickel, total	0.265	0.00040 mg/L	0.248		107	70-130			
Phosphorus, total	0.242	0.050 mg/L	0.213		114	70-130			
Potassium, total	7.21	0.10 mg/L	5.89		122	70-130			
Selenium, total	0.122	0.00050 mg/L	0.120		102	70-130			
Sodium, total	8.65	0.10 mg/L	8.71		99	70-130			
Strontium, total	0.403	0.0010 mg/L	0.393		102	70-130			
Thallium, total	0.0862	0.000020 mg/L	0.0787		110	70-130			
Uranium, total	0.0370	0.000020 mg/L	0.0344		108	70-130			
Vanadium, total	0.405	0.0010 mg/L	0.391		104	70-130			
Zinc, total	2.59	0.0040 mg/L	2.50		104	70-130			



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Regional District of Okanagan Similkameen 101 Martin Street Penticton, BC V2A 5J9	<b>WORK ORDER</b>	20K0766
<b>ATTENTION</b>	Rina Seppen	<b>RECEIVED / TEMP REPORTED</b>	2020-11-05 14:33 / 4°C 2020-11-13 17:02
<b>PO NUMBER</b>	OK Falls (Vaseux Lake) via LAC	<b>COC NUMBER</b>	43899.47575
<b>PROJECT</b>	OK Falls (Vaseux Lake) via LAC		
<b>PROJECT INFO</b>			

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: N/A

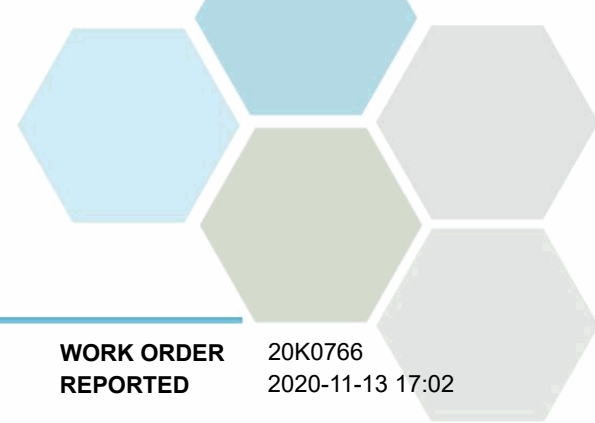
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20K0766  
2020-11-13 17:02

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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**Vaseux 1, 5, 10 m composite (20K0766-01) | Matrix: Water | Sampled: 2020-11-05 09:30**

**Anions**

Chloride	<b>5.86</b>	AO ≤ 250	0.10 mg/L	2020-11-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-11-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-11-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-11-09	HT1
Sulfate	<b>29.4</b>	AO ≤ 500	1.0 mg/L	2020-11-09	

**Calculated Parameters**

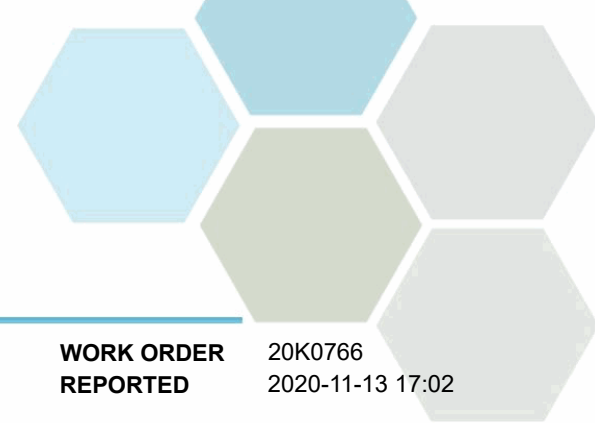
Hardness, Total (as CaCO3)	<b>134</b>	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	<b>0.221</b>	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	<b>0.221</b>	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-11-09	
Chlorophyll a	<b>2.46</b>	N/A	0.10 µg/L	2020-11-12	
Nitrogen, Total Kjeldahl	<b>0.221</b>	N/A	0.050 mg/L	2020-11-13	
Phosphorus, Total (as P)	<b>0.0153</b>	N/A	0.0050 mg/L	2020-11-12	
Phosphorus, Total Dissolved	<b>0.0089</b>	N/A	0.0050 mg/L	2020-11-12	

**Total Metals**

Aluminum, total	<b>0.0179</b>	OG < 0.1	0.0050 mg/L	2020-11-11	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-11-11	
Arsenic, total	<b>0.00061</b>	MAC = 0.01	0.00050 mg/L	2020-11-11	
Barium, total	<b>0.0254</b>	MAC = 2	0.0050 mg/L	2020-11-11	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-11-11	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2020-11-11	
Calcium, total	<b>36.3</b>	None Required	0.20 mg/L	2020-11-11	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-11-11	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	
Copper, total	<b>0.00167</b>	MAC = 2	0.00040 mg/L	2020-11-11	
Iron, total	<b>0.039</b>	AO ≤ 0.3	0.010 mg/L	2020-11-11	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2020-11-11	
Lithium, total	<b>0.00384</b>	N/A	0.00010 mg/L	2020-11-11	
Magnesium, total	<b>10.6</b>	None Required	0.010 mg/L	2020-11-11	
Manganese, total	<b>0.0187</b>	MAC = 0.12	0.00020 mg/L	2020-11-11	
Molybdenum, total	<b>0.00366</b>	N/A	0.00010 mg/L	2020-11-11	
Nickel, total	<b>0.00043</b>	N/A	0.00040 mg/L	2020-11-11	
Phosphorus, total	< 0.050	N/A	0.050 mg/L	2020-11-11	
Potassium, total	<b>2.72</b>	N/A	0.10 mg/L	2020-11-11	
Selenium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2020-11-11	
Silicon, total	<b>3.7</b>	N/A	1.0 mg/L	2020-11-11	
Silver, total	< 0.000050	None Required	0.000050 mg/L	2020-11-11	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20K0766  
2020-11-13 17:02

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>Vaseux 1, 5, 10 m composite (20K0766-01)   Matrix: Water   Sampled: 2020-11-05 09:30, Continued</b>					
<i>Total Metals, Continued</i>					
Sodium, total	12.9	AO ≤ 200	0.10 mg/L	2020-11-11	
Strontium, total	0.326	7	0.0010 mg/L	2020-11-11	
Sulfur, total	9.3	N/A	3.0 mg/L	2020-11-11	
Tellurium, total	< 0.00050	N/A	0.00050 mg/L	2020-11-11	
Thallium, total	< 0.000020	N/A	0.000020 mg/L	2020-11-11	
Thorium, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	
Tin, total	< 0.00020	N/A	0.00020 mg/L	2020-11-11	
Titanium, total	< 0.0050	N/A	0.0050 mg/L	2020-11-11	
Tungsten, total	< 0.0010	N/A	0.0010 mg/L	2020-11-11	
Uranium, total	0.00271	MAC = 0.02	0.000020 mg/L	2020-11-11	
Vanadium, total	0.0017	N/A	0.0010 mg/L	2020-11-11	
Zinc, total	< 0.0040	AO ≤ 5	0.0040 mg/L	2020-11-11	
Zirconium, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	

**Vaseux 20, 22, 24 m composite (20K0766-02) | Matrix: Water | Sampled: 2020-11-05 10:00**

**Anions**

Chloride	5.83	AO ≤ 250	0.10 mg/L	2020-11-10	
Nitrate (as N)	< 0.010	MAC = 10	0.010 mg/L	2020-11-10	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2020-11-10	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2020-11-10	HT1
Sulfate	28.9	AO ≤ 500	1.0 mg/L	2020-11-10	

**Calculated Parameters**

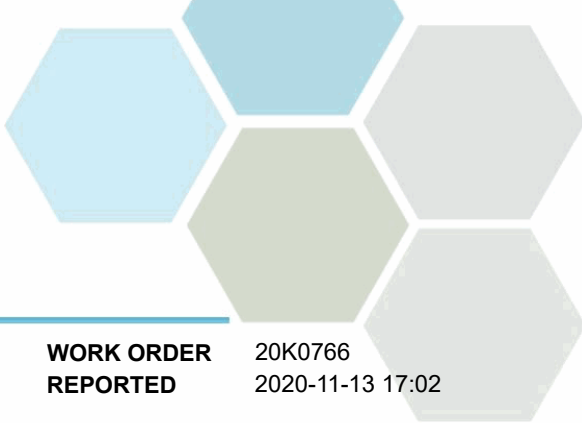
Hardness, Total (as CaCO3)	133	None Required	0.500 mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.228	N/A	0.0500 mg/L	N/A	
Nitrogen, Organic	0.228	N/A	0.0500 mg/L	N/A	

**General Parameters**

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2020-11-09	
Chlorophyll a	1.55	N/A	0.10 µg/L	2020-11-12	
Nitrogen, Total Kjeldahl	0.228	N/A	0.050 mg/L	2020-11-13	
Phosphorus, Total (as P)	0.0160	N/A	0.0050 mg/L	2020-11-12	
Phosphorus, Total Dissolved	0.0102	N/A	0.0050 mg/L	2020-11-12	

**Total Metals**

Aluminum, total	0.0287	OG < 0.1	0.0050 mg/L	2020-11-11	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2020-11-11	
Arsenic, total	0.00063	MAC = 0.01	0.00050 mg/L	2020-11-11	
Barium, total	0.0262	MAC = 2	0.0050 mg/L	2020-11-11	
Beryllium, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	
Bismuth, total	< 0.00010	N/A	0.00010 mg/L	2020-11-11	
Boron, total	< 0.0500	MAC = 5	0.0500 mg/L	2020-11-11	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

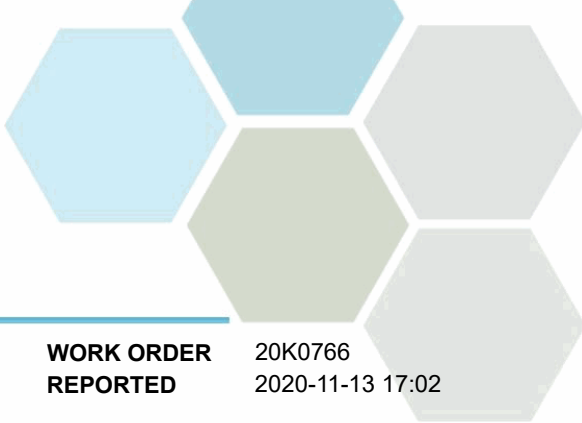
**WORK ORDER REPORTED** 20K0766  
2020-11-13 17:02

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Vaseux 20, 22, 24 m composite (20K0766-02)   Matrix: Water   Sampled: 2020-11-05 10:00, Continued</b>						
<i>Total Metals, Continued</i>						
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2020-11-11	
Calcium, total	<b>35.9</b>	None Required	0.20	mg/L	2020-11-11	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-11-11	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2020-11-11	
Copper, total	<b>0.00073</b>	MAC = 2	0.00040	mg/L	2020-11-11	
Iron, total	<b>0.061</b>	AO ≤ 0.3	0.010	mg/L	2020-11-11	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2020-11-11	
Lithium, total	<b>0.00391</b>	N/A	0.00010	mg/L	2020-11-11	
Magnesium, total	<b>10.6</b>	None Required	0.010	mg/L	2020-11-11	
Manganese, total	<b>0.0316</b>	MAC = 0.12	0.00020	mg/L	2020-11-11	
Molybdenum, total	<b>0.00367</b>	N/A	0.00010	mg/L	2020-11-11	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2020-11-11	
Phosphorus, total	< 0.050	N/A	0.050	mg/L	2020-11-11	
Potassium, total	<b>2.73</b>	N/A	0.10	mg/L	2020-11-11	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2020-11-11	
Silicon, total	<b>4.0</b>	N/A	1.0	mg/L	2020-11-11	
Silver, total	< 0.000050	None Required	0.000050	mg/L	2020-11-11	
Sodium, total	<b>13.1</b>	AO ≤ 200	0.10	mg/L	2020-11-11	
Strontium, total	<b>0.327</b>	7	0.0010	mg/L	2020-11-11	
Sulfur, total	<b>9.8</b>	N/A	3.0	mg/L	2020-11-11	
Tellurium, total	< 0.00050	N/A	0.00050	mg/L	2020-11-11	
Thallium, total	< 0.000020	N/A	0.000020	mg/L	2020-11-11	
Thorium, total	< 0.00010	N/A	0.00010	mg/L	2020-11-11	
Tin, total	< 0.00020	N/A	0.00020	mg/L	2020-11-11	
Titanium, total	< 0.0050	N/A	0.0050	mg/L	2020-11-11	
Tungsten, total	< 0.0010	N/A	0.0010	mg/L	2020-11-11	
Uranium, total	<b>0.00265</b>	MAC = 0.02	0.000020	mg/L	2020-11-11	
Vanadium, total	<b>0.0016</b>	N/A	0.0010	mg/L	2020-11-11	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2020-11-11	
Zirconium, total	< 0.00010	N/A	0.00010	mg/L	2020-11-11	

**Sample Qualifiers:**

HT1 The sample was prepared and/or analyzed past the recommended holding time.





## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

**WORK ORDER REPORTED** 20K0766  
2020-11-13 17:02

Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Chlorophyll-A in Water	SM 10200 H (2017)	Spectrophotometry		Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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*

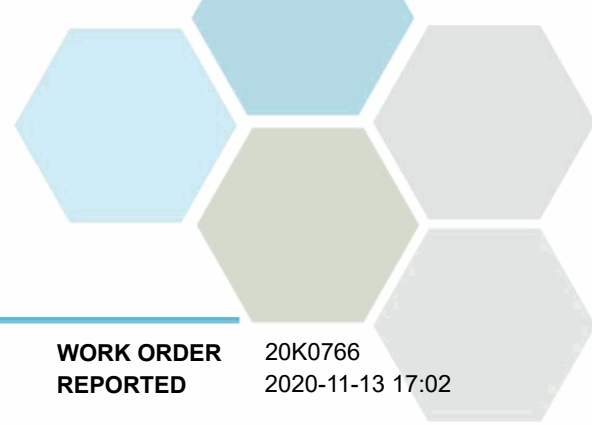
### Glossary of Terms:

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
AO	Aesthetic Objective
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
OG	Operational Guideline (treated water)
µg/L	Micrograms per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

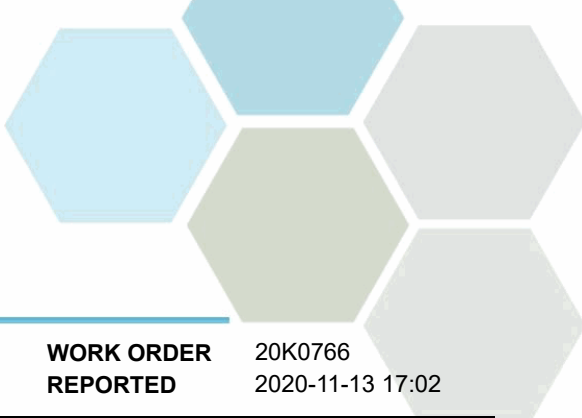
**WORK ORDER REPORTED** 20K0766  
2020-11-13 17:02

**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 or once samples expire, whichever comes first. Longer hold is possible if 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](mailto:acrump@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

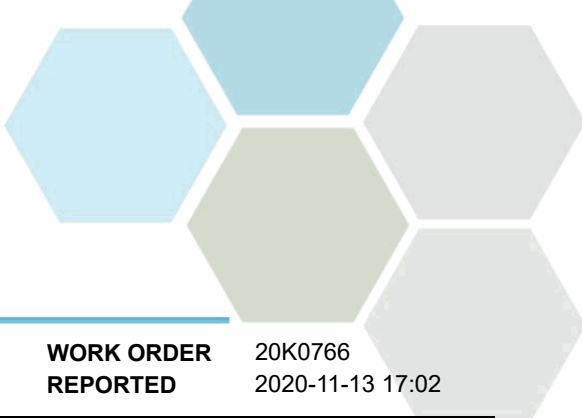
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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC 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
<b>Anions, Batch B0K0617</b>									
<b>Blank (B0K0617-BLK1)</b>			Prepared: 2020-11-09, Analyzed: 2020-11-09						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>Blank (B0K0617-BLK2)</b>			Prepared: 2020-11-10, Analyzed: 2020-11-10						
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							
Sulfate	< 1.0	1.0 mg/L							
<b>LCS (B0K0617-BS1)</b>			Prepared: 2020-11-09, Analyzed: 2020-11-09						
Chloride	16.1	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)	2.09	0.010 mg/L	2.00		105	85-115			
Phosphate (as P)	1.02	0.0050 mg/L	1.00		102	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			
<b>LCS (B0K0617-BS2)</b>			Prepared: 2020-11-10, Analyzed: 2020-11-10						
Chloride	16.1	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.08	0.010 mg/L	2.00		104	85-115			
Phosphate (as P)	1.02	0.0050 mg/L	1.00		102	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			
<b>Duplicate (B0K0617-DUP1)</b>			Source: 20K0766-01		Prepared: 2020-11-09, Analyzed: 2020-11-09				
Chloride	5.87	0.10 mg/L		5.86			< 1	10	
Nitrate (as N)	< 0.010	0.010 mg/L		< 0.010				10	
Nitrite (as N)	< 0.010	0.010 mg/L		< 0.010				15	
Phosphate (as P)	< 0.0050	0.0050 mg/L		< 0.0050				20	
Sulfate	29.3	1.0 mg/L		29.4			< 1	10	
<b>Matrix Spike (B0K0617-MS1)</b>			Source: 20K0766-01		Prepared: 2020-11-09, Analyzed: 2020-11-09				
Chloride	22.2	0.10 mg/L	16.0	5.86	102	75-125			
Nitrate (as N)	3.93	0.010 mg/L	4.00	< 0.010	98	75-125			



## APPENDIX 2: QUALITY CONTROL RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls (Vaseux Lake) via LAC

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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**Anions, Batch B0K0617, Continued**

Matrix Spike (B0K0617-MS1), Continued	Source: 20K0766-01		Prepared: 2020-11-09, Analyzed: 2020-11-09						
Nitrite (as N)	1.99	0.010 mg/L	2.00	< 0.010	99	80-120			
Phosphate (as P)	0.983	0.0050 mg/L	1.00	< 0.0050	98	70-130			
Sulfate	44.8	1.0 mg/L	16.0	29.4	97	75-125			

**General Parameters, Batch B0K0340**

Blank (B0K0340-BLK1)	Prepared: 2020-11-04, Analyzed: 2020-11-12								
Chlorophyll a	0.15	0.10 µg/L							

**General Parameters, Batch B0K0619**

Blank (B0K0619-BLK1)	Prepared: 2020-11-09, Analyzed: 2020-11-09								
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B0K0619-BLK2)	Prepared: 2020-11-09, Analyzed: 2020-11-09								
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

Blank (B0K0619-BLK3)	Prepared: 2020-11-09, Analyzed: 2020-11-09								
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

LCS (B0K0619-BS1)	Prepared: 2020-11-09, Analyzed: 2020-11-09								
Ammonia, Total (as N)	1.02	0.050 mg/L	1.00		102	90-115			

LCS (B0K0619-BS2)	Prepared: 2020-11-09, Analyzed: 2020-11-09								
Ammonia, Total (as N)	1.02	0.050 mg/L	1.00		102	90-115			

LCS (B0K0619-BS3)	Prepared: 2020-11-09, Analyzed: 2020-11-09								
Ammonia, Total (as N)	1.01	0.050 mg/L	1.00		101	90-115			

Duplicate (B0K0619-DUP3)	Source: 20K0766-02		Prepared: 2020-11-09, Analyzed: 2020-11-09						
Ammonia, Total (as N)	< 0.050	0.050 mg/L		< 0.050					15

Matrix Spike (B0K0619-MS3)	Source: 20K0766-02		Prepared: 2020-11-09, Analyzed: 2020-11-09						
Ammonia, Total (as N)	0.314	0.050 mg/L	0.250	< 0.050	110	75-125			

**General Parameters, Batch B0K0985**

Blank (B0K0985-BLK1)	Prepared: 2020-11-12, Analyzed: 2020-11-12								
Phosphorus, Total Dissolved	< 0.0050	0.0050 mg/L							

Blank (B0K0985-BLK2)	Prepared: 2020-11-12, Analyzed: 2020-11-12								
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							

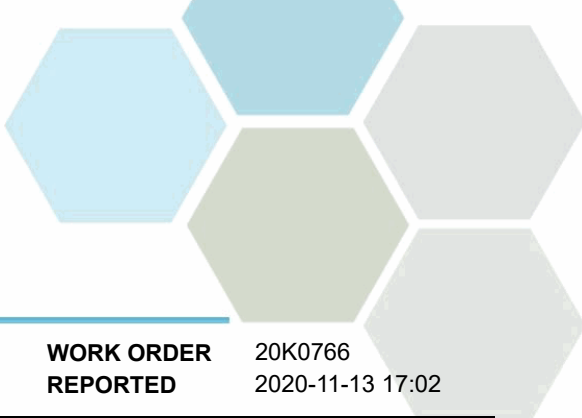
LCS (B0K0985-BS1)	Prepared: 2020-11-12, Analyzed: 2020-11-12								
Phosphorus, Total Dissolved	0.103	0.0050 mg/L	0.100		103	85-115			

LCS (B0K0985-BS2)	Prepared: 2020-11-12, Analyzed: 2020-11-12								
Phosphorus, Total (as P)	0.103	0.0050 mg/L	0.100		103	85-115			

**General Parameters, Batch B0K1047**

Blank (B0K1047-BLK1)	Prepared: 2020-11-12, Analyzed: 2020-11-13								
Nitrogen, Total Kjeldahl	0.237	0.050 mg/L							

Blank (B0K1047-BLK2)	Prepared: 2020-11-12, Analyzed: 2020-11-13								
Nitrogen, Total Kjeldahl	0.157	0.050 mg/L							



## APPENDIX 2: QUALITY CONTROL RESULTS

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OK Falls (Vaseux Lake) via LAC

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
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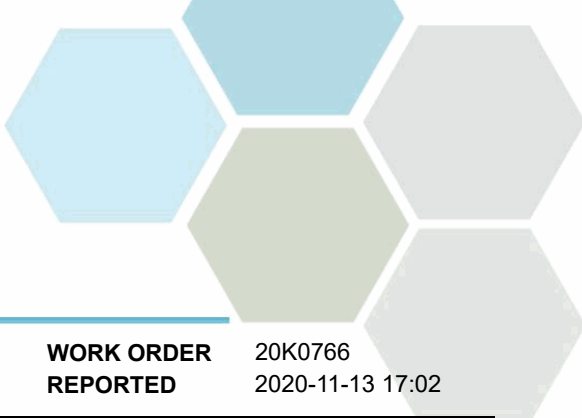
**General Parameters, Batch B0K1047, Continued**

<b>LCS (B0K1047-BS1)</b>			Prepared: 2020-11-12, Analyzed: 2020-11-13						
Nitrogen, Total Kjeldahl	1.16	0.050 mg/L	1.00		116	85-115			
<b>LCS (B0K1047-BS2)</b>			Prepared: 2020-11-12, Analyzed: 2020-11-13						
Nitrogen, Total Kjeldahl	1.12	0.050 mg/L	1.00		112	85-115			
<b>Duplicate (B0K1047-DUP1)</b>			<b>Source: 20K0766-01</b>		Prepared: 2020-11-12, Analyzed: 2020-11-13				
Nitrogen, Total Kjeldahl	0.345	0.050 mg/L		0.221			44	15	
<b>Matrix Spike (B0K1047-MS1)</b>			<b>Source: 20K0766-01</b>		Prepared: 2020-11-12, Analyzed: 2020-11-13				
Nitrogen, Total Kjeldahl	2.34	0.100 mg/L	2.00	0.221	106	65-135			

**Total Metals, Batch B0K0950**

<b>Blank (B0K0950-BLK1)</b>			Prepared: 2020-11-10, Analyzed: 2020-11-11						
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	< 0.0500	0.0500 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							

<b>LCS (B0K0950-BS1)</b>			Prepared: 2020-11-10, Analyzed: 2020-11-11						
Aluminum, total	0.0220	0.0050 mg/L	0.0199		111	80-120			
Antimony, total	0.0214	0.00020 mg/L	0.0200		107	80-120			
Arsenic, total	0.0216	0.00050 mg/L	0.0200		108	80-120			



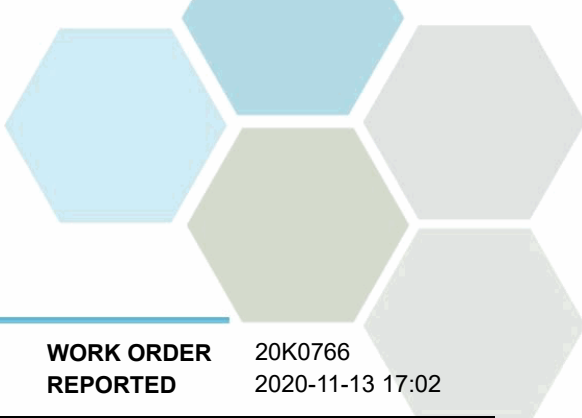
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0K0950, Continued</b>									
<b>LCS (B0K0950-BS1), Continued</b>					Prepared: 2020-11-10, Analyzed: 2020-11-11				
Barium, total	0.0203	0.0050 mg/L	0.0198		102	80-120			
Beryllium, total	0.0218	0.00010 mg/L	0.0198		110	80-120			
Bismuth, total	0.0218	0.00010 mg/L	0.0200		109	80-120			
Boron, total	< 0.0500	0.0500 mg/L	0.0200		113	80-120			
Cadmium, total	0.0207	0.000010 mg/L	0.0199		104	80-120			
Calcium, total	1.98	0.20 mg/L	2.02		98	80-120			
Chromium, total	0.0214	0.00050 mg/L	0.0198		108	80-120			
Cobalt, total	0.0213	0.00010 mg/L	0.0199		107	80-120			
Copper, total	0.0231	0.00040 mg/L	0.0200		115	80-120			
Iron, total	2.20	0.010 mg/L	2.02		109	80-120			
Lead, total	0.0213	0.00020 mg/L	0.0199		107	80-120			
Lithium, total	0.0223	0.00010 mg/L	0.0200		111	80-120			
Magnesium, total	2.18	0.010 mg/L	2.02		108	80-120			
Manganese, total	0.0208	0.00020 mg/L	0.0199		104	80-120			
Molybdenum, total	0.0206	0.00010 mg/L	0.0200		103	80-120			
Nickel, total	0.0218	0.00040 mg/L	0.0200		109	80-120			
Phosphorus, total	2.15	0.050 mg/L	2.00		107	80-120			
Potassium, total	2.04	0.10 mg/L	2.02		101	80-120			
Selenium, total	0.0217	0.00050 mg/L	0.0200		109	80-120			
Silicon, total	2.2	1.0 mg/L	2.00		111	80-120			
Silver, total	0.0218	0.000050 mg/L	0.0200		109	80-120			
Sodium, total	2.08	0.10 mg/L	2.02		103	80-120			
Strontium, total	0.0204	0.0010 mg/L	0.0200		102	80-120			
Sulfur, total	4.9	3.0 mg/L	5.00		98	80-120			
Tellurium, total	0.0217	0.00050 mg/L	0.0200		109	80-120			
Thallium, total	0.0212	0.000020 mg/L	0.0199		107	80-120			
Thorium, total	0.0193	0.00010 mg/L	0.0200		96	80-120			
Tin, total	0.0212	0.00020 mg/L	0.0200		106	80-120			
Titanium, total	0.0223	0.0050 mg/L	0.0200		112	80-120			
Tungsten, total	0.0209	0.0010 mg/L	0.0200		104	80-120			
Uranium, total	0.0214	0.000020 mg/L	0.0200		107	80-120			
Vanadium, total	0.0210	0.0010 mg/L	0.0200		105	80-120			
Zinc, total	0.0177	0.0040 mg/L	0.0200		88	80-120			
Zirconium, total	0.0211	0.00010 mg/L	0.0200		105	80-120			

<b>Reference (B0K0950-SRM1)</b>					Prepared: 2020-11-10, Analyzed: 2020-11-11				
Aluminum, total	0.333	0.0050 mg/L	0.299		111	70-130			
Antimony, total	0.0532	0.00020 mg/L	0.0517		103	70-130			
Arsenic, total	0.132	0.00050 mg/L	0.119		111	70-130			
Barium, total	0.827	0.0050 mg/L	0.801		103	70-130			
Beryllium, total	0.0553	0.00010 mg/L	0.0501		110	70-130			
Boron, total	4.20	0.0500 mg/L	4.11		102	70-130			
Cadmium, total	0.0530	0.000010 mg/L	0.0503		105	70-130			
Calcium, total	10.8	0.20 mg/L	10.7		101	70-130			
Chromium, total	0.270	0.00050 mg/L	0.250		108	70-130			
Cobalt, total	0.0420	0.00010 mg/L	0.0384		109	70-130			
Copper, total	0.556	0.00040 mg/L	0.487		114	70-130			
Iron, total	0.555	0.010 mg/L	0.504		110	70-130			
Lead, total	0.301	0.00020 mg/L	0.278		108	70-130			
Lithium, total	0.446	0.00010 mg/L	0.398		112	70-130			
Magnesium, total	4.01	0.010 mg/L	3.59		112	70-130			
Manganese, total	0.120	0.00020 mg/L	0.111		108	70-130			
Molybdenum, total	0.209	0.00010 mg/L	0.196		107	70-130			
Nickel, total	0.274	0.00040 mg/L	0.248		111	70-130			
Phosphorus, total	0.261	0.050 mg/L	0.213		123	70-130			
Potassium, total	6.30	0.10 mg/L	5.89		107	70-130			



## APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<b>Total Metals, Batch B0K0950, Continued</b>									
<b>Reference (B0K0950-SRM1), Continued</b>					Prepared: 2020-11-10, Analyzed: 2020-11-11				
Selenium, total	0.132	0.00050 mg/L	0.120		110	70-130			
Sodium, total	9.39	0.10 mg/L	8.71		108	70-130			
Strontium, total	0.412	0.0010 mg/L	0.393		105	70-130			
Thallium, total	0.0853	0.000020 mg/L	0.0787		108	70-130			
Uranium, total	0.0364	0.000020 mg/L	0.0344		106	70-130			
Vanadium, total	0.414	0.0010 mg/L	0.391		106	70-130			
Zinc, total	2.70	0.0040 mg/L	2.50		108	70-130			

## **APPENDIX V**

### **Okanagan River and Vaseux Lake – 2020 Annual Report**

by Larratt Aquatic March 2021





LARRATT  
AQUATIC

Impact of RDOS WWTP on Vaseux Lake and Okanagan River  
2020 Annual Report

Prepared for Regional District Okanagan-Similkameen:

## Executive Summary

The Regional District of Okanagan-Similkameen (RDOS) began operating a wastewater treatment plant (WWTP) for the community of Okanagan Falls in March 2013. The WWTP treats sewage to the tertiary level, which includes phosphorus removal. The plant discharges treated effluent into Okanagan River upstream of Vaseux Lake.

RDOS contracted Larratt Aquatic Consulting Ltd. (LAC) to sample Vaseux Lake monthly from March to November in the years 2013 to 2020 for the parameters required by BC ENV permit and to combine all available data into an annual report summarizing the impacts, if any, of the WWTP on Okanagan River and Vaseux Lake.

The WWTP discharged 195,600 m<sup>3</sup> of treated effluent into Okanagan River in 2020. The effluent contributed 675 kg of nitrogen and 29 kg of phosphorous, both the second lowest concentrations to date<sup>1</sup>. This represented 0.26% of the total nitrogen load (Total load = 263,974 kg of TN) and 0.2% of the total phosphorus load (Total load = 14,225 kg of TP) in Okanagan River in 2020. These nutrients were transported 2.7 km down Okanagan River into Vaseux Lake. Nitrogen and phosphorus are the primary nutrients that fuel aquatic food chains.

Okanagan River was sampled 100 m upstream as well as 100 m and 500 m downstream of the WWTP to evaluate possible impacts of the treated effluent on the river. No statistically verifiable differences were detected for either total nitrogen or total phosphorus between upstream and downstream samples from 2013-2020. Freshet and seasonal variation were the dominant influences on the data. Benthic invertebrate samples collected in October appeared to show an impact with lower species richness at the downstream site than the upstream site during most years but the effect of climate and the 2017-2018 freshets continued to outweigh any potential impacts from the WWTP.

Vaseux Lake began to develop thermal stratification in May and overturned in November in 2020. Decomposition of organics in the sediment depleted dissolved oxygen and caused the water below the thermocline to become anoxic by the end of summer each year. The Secchi depth, a measure of water clarity, ranged from 0.82 m to 6.25 m during 2020. Phosphorus increased during freshet as sediment were carried into the lake. Chloride, a common indicator for human impacts on aquatic systems, increased from 2013-2020. Vaseux Lake experienced elevated phytoplankton productivity and the largest recorded cyanobacteria density in the surface water during 2020. Likely a consequence of the 2017-2018 and 2020 freshets.

From 2013-2020 there were no observed impacts from the WWTP operation on Vaseux Lake chemistry and biology or the chemistry of Okanagan River but there appears to be a small impact on benthic invertebrates downstream of the plant discharge during some years although this pattern is not yet statistically significant.

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<sup>1</sup> WWTP effluent in 2017 and 2020 both contributed 29 kg of phosphorous to Okanagan River

**Acknowledgements**

Special thanks to Regional District of Okanagan-Similkameen staff, particularly Rina Seppen and Karen Moore, for their assistance in preparing this report.

**Preferred Citation**

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Report prepared by: Larratt Aquatic Consulting Ltd.

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Sara Knezevic: Field Biologist, B.Sc



Heather Larratt: Aquatic Biologist, R.P. Bio



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## 1.0 Introduction

### 1.1 Background

The Regional District of Okanagan-Similkameen (RDOS) began operating a new wastewater treatment plant (WWTP) for the community of Okanagan Falls on March 5, 2013. The WWTP is permitted to release treated effluent into Okanagan River. A 1.4 ha treatment wetland was constructed adjacent to the WWTP and was in the commissioning phase during 2020 with establishment of aquatic vegetation. The goal of the wetland is to further reduce nutrient loading to Okanagan River. A requirement of their Operational Certificate is to monitor the effects of the effluent on water quality within Okanagan River channel and in Vaseux Lake downstream (Figure 1, Table 1, Appendix 5). The results from 2020 are summarized in this report and are combined with data since 2013 to illustrate trends.

Table 1: Monitoring program frequency

Site	Frequency
WWTP	Weekly (Jan-Dec)
Okanagan River	Chemistry: Monthly (Jan-Dec) Bacteria: Weekly (May-Sept) Benthic Invertebrates: Annually (Oct)
Vaseux Lake	Monthly (Mar-Nov)

### 1.2 Geography Overview

Okanagan Falls is a small town on the southern end of Skaha Lake in the Okanagan Valley of British Columbia (Figure 1). The Okanagan River flows from Skaha Lake and passes through Okanagan falls before flowing into Vaseux Lake to the south. Vaseux Lake is the smallest of the Okanagan mainstem lakes. The Okanagan Falls WWTP releases treated effluent into Okanagan River, 2.7 km upstream of Vaseux Lake. Vaseux Lake is shallow, averaging approximately 5 m, but has a small deep zone near the center that reaches 27 m (Appendix 6).

Vaseux Lake is a productive lake (meso-eutrophic) (Nordin, 1985) and the extensive aquatic macrophyte growth covering much of the shallows (Appendix 6) will remain an integral part of its environment regardless of varying nutrient inputs from Okanagan River (CBCCB, 1974).



Figure 1: Overview map of Okanagan mainstem lakes and close-up of the area of study

## 2.0 Results and Discussion

### 2.1 Wastewater Treatment Plant Effluent

Temperatures of the treated effluent rose and fell seasonally. The highest recorded temperature by the on-line analyzer in 2020 was 22.7 °C on August 19 (Figure 2). Effluent pH decreased from 2013 – 2020 and averaged  $6.93 \pm 0.08$  during 2020 (Field pH; Mann-Kendall,  $p < 0.001$ ).

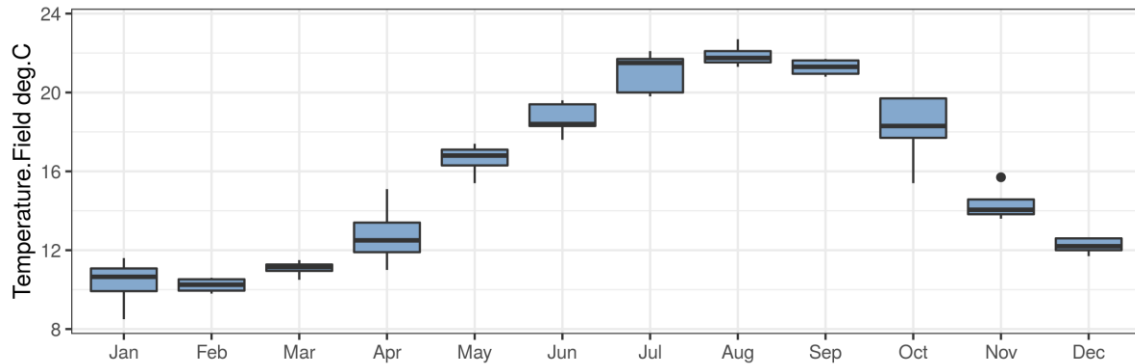


Figure 2: Monthly temperature of treated effluent before it enters Okanagan River, 2013-2020

Daily discharge from the WWTP to Okanagan River during 2013-2020 averaged  $548 \pm 125 \text{ m}^3/\text{day}$ . Flows typically peaked during the summer high demand period when seasonal residences are full. Discharge during 2020 was close to the 2013-2019 average throughout the first half of the year and above average during the second half (Figure 3). 195,600  $\text{m}^3$  was released from the WWTP directly into Okanagan River while an additional 20,102  $\text{m}^3$  was released into the new treatment wetland with 2898  $\text{m}^3$  released into Okanagan River from the wetland for a total of 198,497  $\text{m}^3$  of treated effluent released into Okanagan River (Figure 4). Comparatively, the 2020 annual discharge for the Okanagan River was 1.07 billion  $\text{m}^3$  (Water Office, 2020). The WWTP effluent therefore made up only 0.02% of the total flow in Okanagan River at Okanagan Falls during 2020.

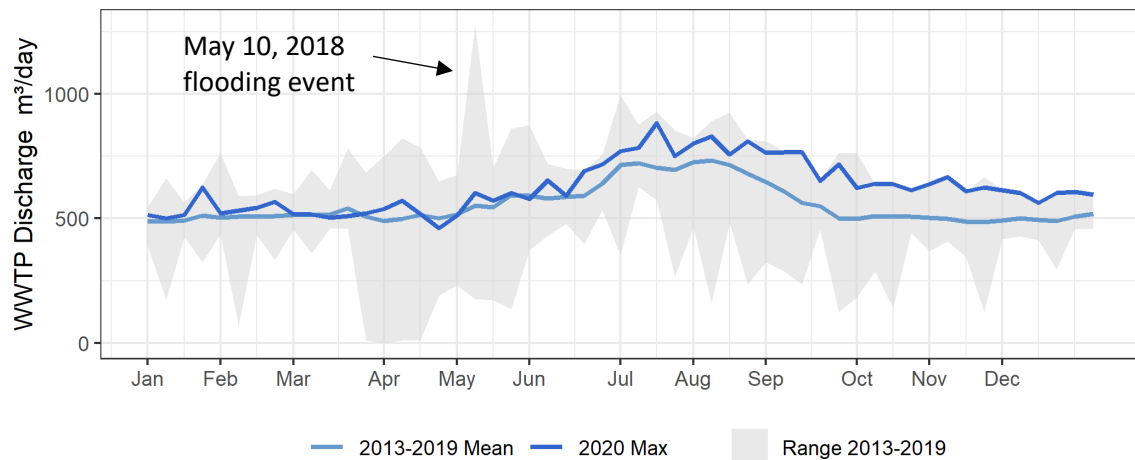


Figure 3: Weekly average discharge from the WWTP, 2013-2020



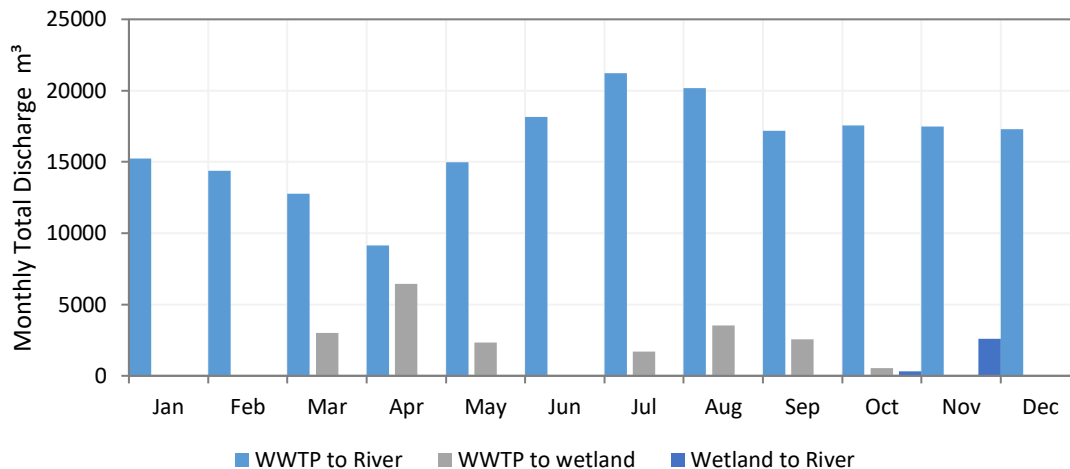


Figure 4: Comparison of discharge from WWTP to Okanagan River and the new polishing wetland during 2020

Nutrients released from the WWTP are a potential concern for downstream water bodies. Effluent concentrations of total nitrogen as well as nitrate, the most biologically available form of nitrogen, decreased from 2013 to 2020 (Mann-Kendall,  $p < 0.001$ ; Figure 5). The declining trend is likely related to increased WWTP efficiency.

Total nitrogen averaged  $3.78 \pm 1.37$  mg/L as N in the WWTP discharge during 2020 (mean of  $5.09 \pm 2.50$  mg/L as N from 2013-2020). In 2020, 675 kg of total nitrogen was added to Okanagan River from the WWTP<sup>2</sup> (mean of  $1236 \pm 368$  kg/yr as N from 2013-2020; Appendix 2). The WWTP discharged 376 kg of nitrate in 2020 (mean of  $565 \pm 179$  kg/yr as N from 2013-2020) with an annual average effluent nitrate concentration of  $1.95 \pm 1$  mg/L as N ( $2.86 \pm 1.65$  mg/L as N from 2013-2020; Figure 5). Nitrogen released from the WWTP accounted for 0.26 % of the annual total nitrogen load flowing into Vaseux Lake in 2020. Nitrate was regularly below detection in Okanagan River samples, making it difficult to accurately determine the percent of total load contributed by the WWTP. In the data collected to date, the WWTP has supplied up to 10% of the nitrate load during low flow periods. However, all samples from the upstream site contained undetectable nitrate during 2020 (Table 2).

WWTP effluent phosphorus concentrations were stable from 2013-2020 and averaged  $0.15 \pm 0.05$  mg/L as P during 2020 ( $0.168 \pm 0.165$  mg/L in 2013-2020; Figure 5). The total annual phosphorus load contributed by the WWTP decreased yearly from 2013 (61 kg) to 2016 (28 kg) and measured 29 kg in 2020 (mean of  $37 \pm 16$  kg/yr as P from 2013-2020; Figure 5). During the low flow period, the WWTP contributed up to 0.8 % of the total phosphorus load flowing into Vaseux Lake in 2020 (0.20% of total 2020 load; Table 2), which is an important consideration because phosphorus is more limited in aquatic environments than nitrogen.

<sup>2</sup> This represents the load from the WWTP directly into Okanagan River.

Table 2: Comparison of nutrient loadings into Okanagan River by the WWTP, 2020

Month	WWTP Loadings (kg/yr)			% of Total Monthly Load into Vaseux Lake		
	TN	NO <sub>3</sub>	TP	TN	NO <sub>3</sub> *	TP
Jan	87	39	2.1	0.8%	-	0.3%
Feb	69	48	1.4	0.4%	-	0.2%
Mar	47	26	1.5	0.2%	-	0.2%
Apr	33	16	1.4	0.2%	-	0.2%
May	41	9	2.3	0.1%	-	0.06%
Jun	73	33	2.3	0.2%	-	0.10%
Jul	65	45	3.3	0.1%	-	0.2%
Aug	35	11	3.0	0.2%	-	0.4%
Sep	46	20	2.6	0.3%	-	0.4%
Oct	48	42	3.8	0.5%	-	0.8%
Nov	76	57	3.3	0.9%	-	0.3%
Dec	57	29	2.0	0.7%	-	0.4%

\*Nitrate was below detection (<0.010 mg/L as N) at the upstream Okanagan River site in samples from 2020

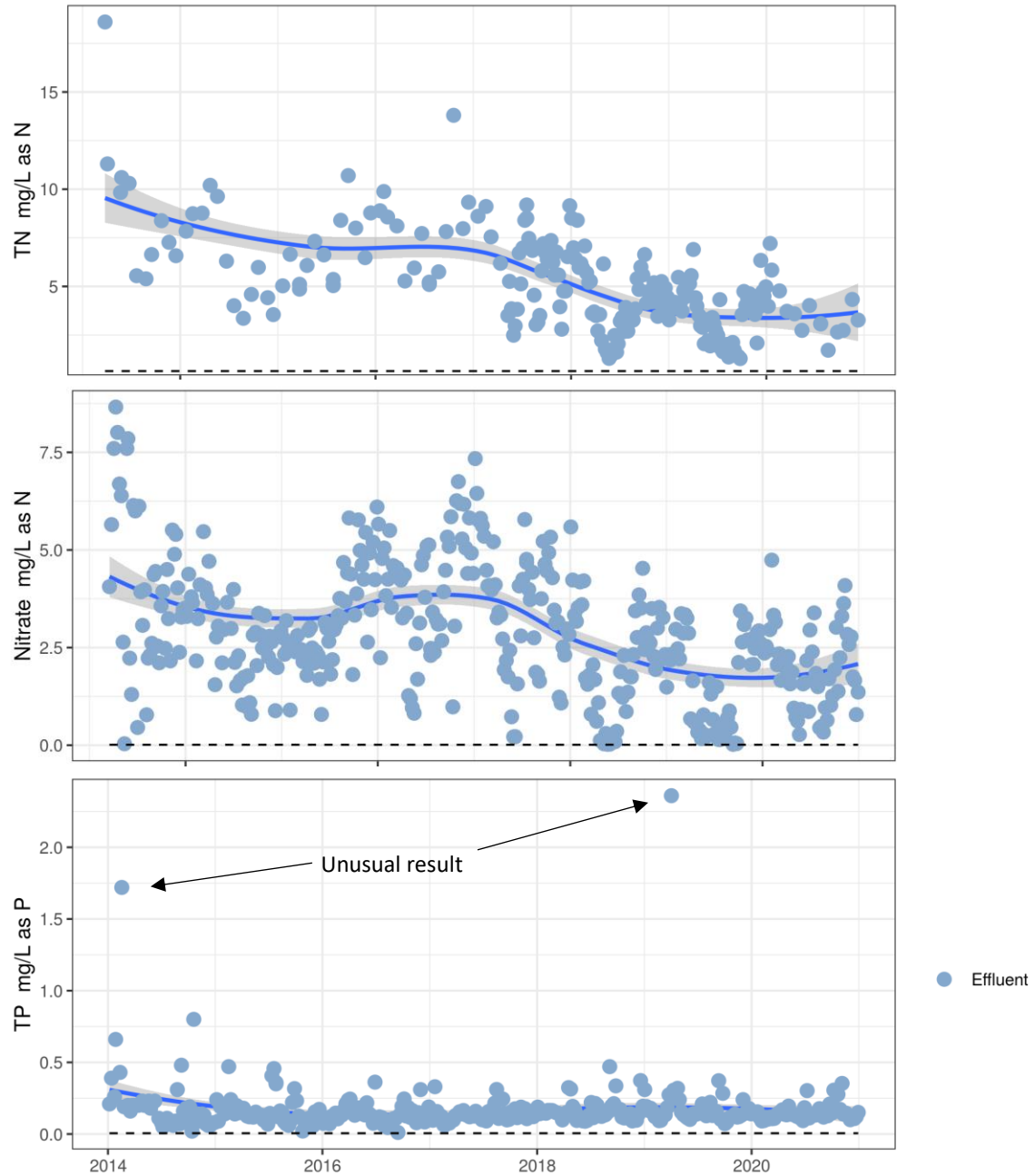


Figure 5: TN, Nitrate and TP concentrations in the treated effluent in 2013-2020

Fecal bacteria and *E. coli* samples collected in the treated effluent contained very low counts with only 1/52 samples having detectable *E. coli* during 2020 (1 MPN/100mL on June 24 2020). Fecal bacteria in the effluent discharge were nearly always lower than the receiving Okanagan River water (Figure 10).

## 2.2 Okanagan River

### 2.2.1 Flow

Okanagan River is by far the largest inflow to Vaseux Lake. The annual discharge for Okanagan River was 1.07 billion m<sup>3</sup> in 2020, the largest annual total discharge during this study (2013-2020, Figure 6). The WWTP contributed 195,600 m<sup>3</sup> of effluent to the river, representing only 0.02% of the total annual water volume entering Vaseux Lake via Okanagan River. Compared to the very small 2019 freshet, the 2020 freshet was large and augmented by a large drawdown of Okanagan Lake during Feb – Apr 2020 (Figure 6).

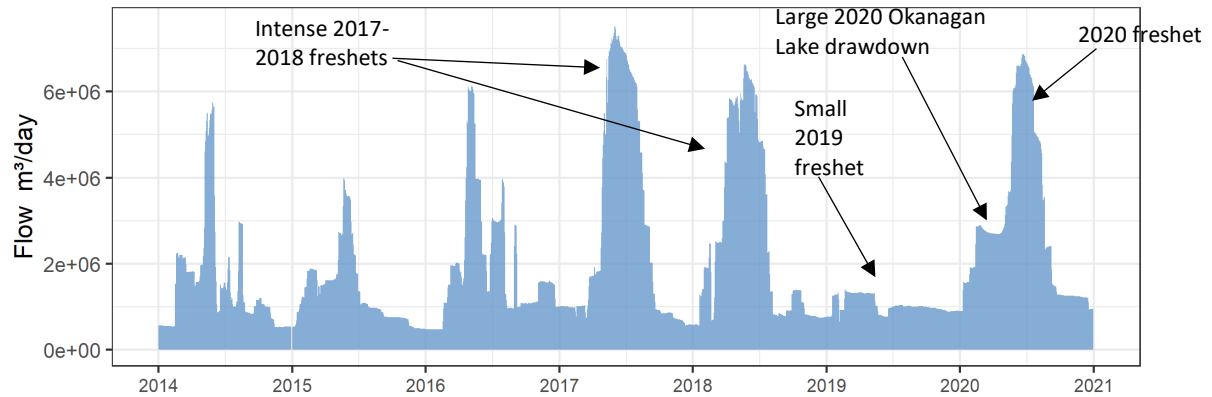


Figure 6: Daily flow in Okanagan River at Okanagan Falls, 2014-2020

Note: significantly larger shaded area surrounding 2017 and 2018, 2020 freshets = substantially more water flowing through Vaseux Lake

### 2.2.2 Water Chemistry

There was no statistically significant difference between samples taken upstream and downstream of the WWTP for any forms of nitrogen or phosphorus during 2013-2020 (Kruskal-Wallis tests, Figure 7).

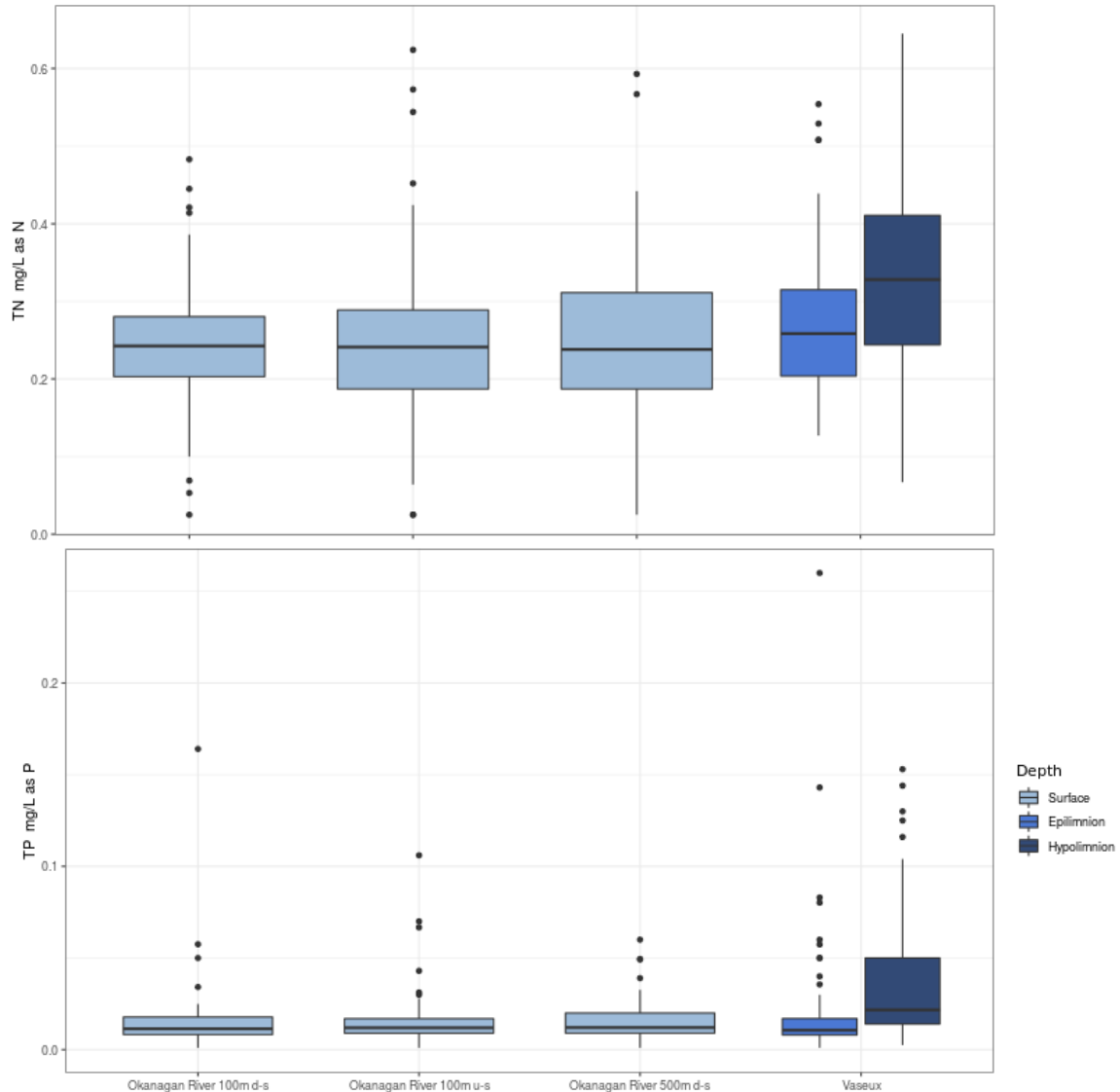


Figure 7: Average TN, TP at Okanagan River and Vaseux Lake sample locations upstream and downstream of the WWTP from 2013 to 2020

**Notes:**

-Vaseux Lake surface was comparable to Okanagan River for both parameters. Anoxic conditions in the hypolimnion of Vaseux Lake increases nutrient concentrations

### Water Chemistry Trends

Some water quality parameters increased or decreased significantly from 2013 to 2020 (Table 3). Total nitrogen has decreased upstream and downstream of the WWTP from 2013-2019 (Mann-Kendall,  $p < 0.006$ ). Once 2020 sampling commenced, the declining trend of TN at the 500 m downstream sampling site discontinued but remained present at the two other sites (Table 3). The greatest rate of change in TN concentrations at all Okanagan River sites occurred from 2013-2015. TN recordings appear to have plateaued since then.

Both total nitrogen and total dissolved phosphorus (TDP) decreased upstream and downstream of the WWTP (Mann-Kendall,  $p \leq 0.001$ ) and appear to have plateaued since 2015 while total phosphorus (TP) did not significantly change from 2013-2020. TP includes phosphorus associated with suspended sediment. TP concentrations increase in wet years and during freshet but decrease in dry years. Ammonia showed an increasing trend at all three river sites from 2013-2020 (Mann-Kendall,  $p \leq 0.003$ ) indicating that watershed impacts are also affecting ammonia concentrations.

Table 3: Select significant linear trends in Okanagan River data based on Mann-Kendall analysis, 2013-2020

Parameter	NH <sub>3</sub>	TN	TKN	TDP	TP	CI
100m u/s	↑	↓	↓	-	-	↑
100m d/s	↑	↓	↓	-	-	↑
500m d/s	↑	-	↓	-	-	↑

↑ increasing trend   ↓ decreasing trend   -- no significant trend

Note: TDP was stable from 2015-2020 and is shown as no trend in this table because of that.

Conductivity showed dramatic seasonal variation with low concentrations during freshet, and higher concentrations through the fall and winter as groundwater contributions to the river became more important (Figure 8). Conductivity averaged  $262.7 \pm 19.6 \mu\text{S/cm}$  at the upstream site and  $265 \pm 17.46 \mu\text{S/cm}$  500 m downstream during 2020; the difference was not statistically significant (KW-Test,  $p=0.11$ ). Conductivity during freshet 2020 was the lowest recorded at all three river sites because of the significant snowmelt dilution.

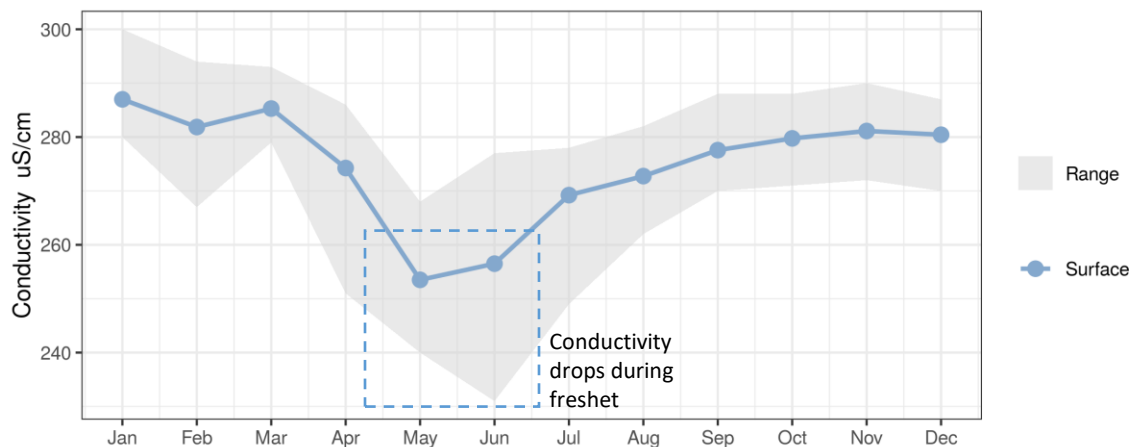


Figure 8 : Conductivity in Okanagan River by month, 2013-2020

Source: Okanagan River 500m d/s site

Chloride has increased by 30% from 2013 to 2020 at the upstream 100 m site (Figure 9, Mann-Kendall,  $p < 0.001$ ). Chloride averaged  $5.56 \pm 0.62$  mg/L and  $5.68 \pm 0.55$  mg/L 100m upstream and 500 m downstream sites respectively during 2020; the difference was not statistically significant (KW-Test,  $p = 0.89$ ).

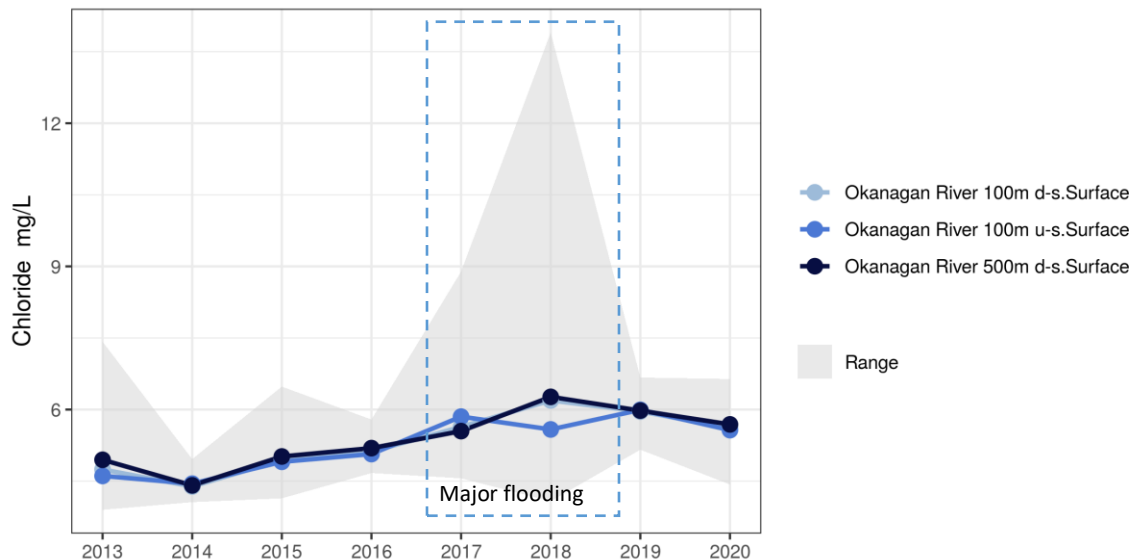


Figure 9: Annual chloride averages (mg/L) upstream and downstream of the WWTP from 2013-2020

pH was stable at all three river sites from 2013-2020. Small trends have appeared in some years but as the database grows, interannual variation is smoothed out and an oscillating pattern of pH has emerged. This pattern in pH has been observed in numerous lakes throughout the Okanagan and is driven by climate. The effluent pH was consistently lower than the pH of the river sites.

### Water Quality Exceedances

Only two parameters exceeded any BC guideline for the protection of aquatic life during 2020 in Okanagan River sample sites (1 total copper exceedance, 10 total phosphorous exceedances). During 2020 total phosphorous exceedances occurred on 5 dates. During three of these dates, exceedances occurred both upstream and downstream of the WWTP. Coinciding exceedances suggest that upstream factors influenced the exceedances rather than WWTP effluent. From 2013-2020, total phosphorus at all three Okanagan River sites frequently exceeded the BC ENV guideline for the protection of salmonid fish of 0.015 mg/L TP. 22% of 2020 river samples were in exceedance and exceedances occurred at all three sites.

### 2.2.3 Bacteria

Bacteriological sampling was performed at the three sites along Okanagan River upstream and downstream of the WWTP. The data exhibited strong seasonal variation with *E. coli* counts increasing with water temperature from 2013-2020 (Figure 10). Bacteria counts in the effluent were very low, resulting in no significant differences between the upstream or downstream sites in the 2013 - 2020 data. *E. coli* counts in the WWTP effluent were much lower than the receiving river throughout 2020 (Figure 10).

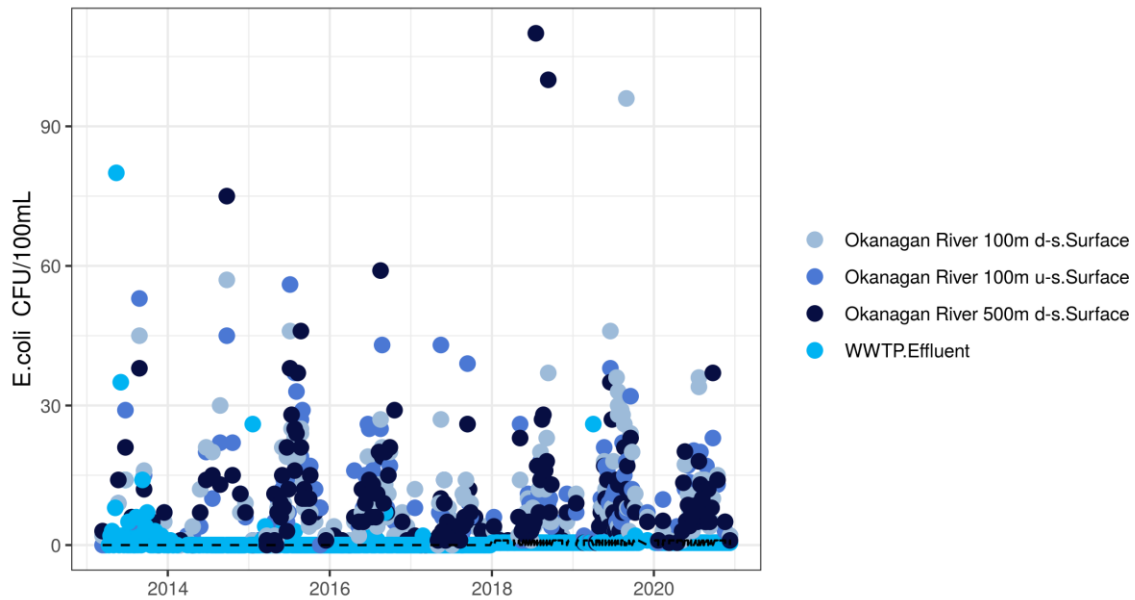


Figure 10: *E. coli* counts in samples from Okanagan River and the WWTP, 2013-2020

### 2.2.4 Benthic Invertebrates

Benthic invertebrates were sampled at the three sites along Okanagan River in October during 2014-2020 (2015 excluded). The results are presented in Figure 11. A healthy river normally has higher values for species richness and EPT<sup>3</sup> richness than an unhealthy river. EPT is a taxonomic index made up pollution sensitive species such as mayflies. *Diptera* are a class of fly larvae that are considered tolerant of pollution, indicating declining health of the river. Overall species richness was stable in Okanagan River with a short-term increase in species richness from 2014-2018 and a short-term decline in species richness from 2018-2020 such that long-term change occurred over the 2014-2020 dataset (Figure 11). During most years, species richness is higher upstream the WWTP than 100m downstream. During periods of increased species and EPT richness, *Diptera* percentage remained relatively stable. When indicators of river health declined at all sites during 2019, sites downstream of the WWTP exhibited increased *Diptera* percentages (Figure 11). The decrease in invertebrate richness during 2019 is likely a consequence of the intense 2017-2018 freshets and associated upstream watershed failures. A similar decrease in richness may occur during 2021 following the large 2020 freshet.

<sup>3</sup> EPT stands for *Ephemeroptera* (mayflies), *Plecoptera* (stoneflies), *Trichoptera* (caddisflies)



The benthic invertebrate data indicate that Okanagan River is not a healthy water body and that the WWTP may be impacting benthic invertebrates in some years. Despite the potential impact during some years, upstream impacts appear to play a larger role with EPT and species richness.

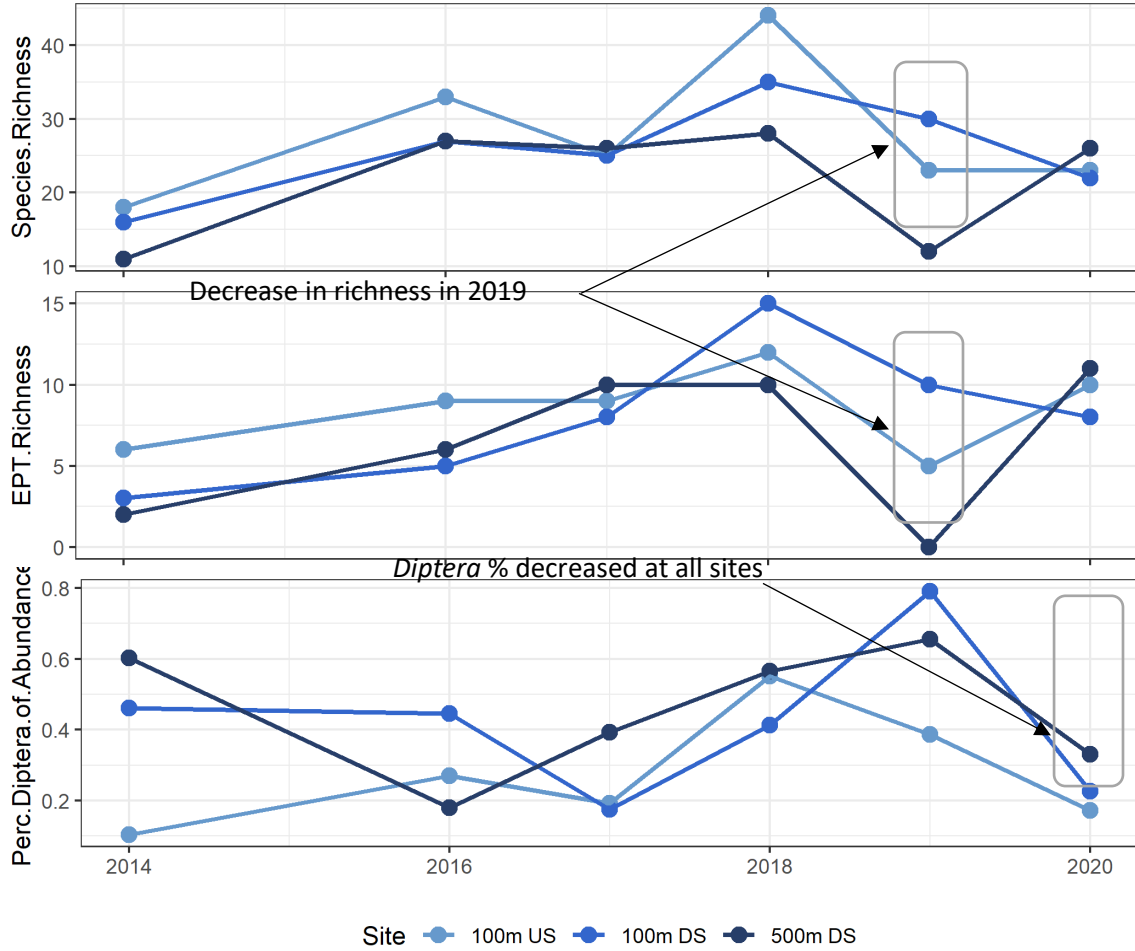


Figure 11: Species richness, EPT richness, and percent *Diptera* in Okanagan River benthic invertebrates, 2014-2020

## 2.3 Vaseux Lake

### 2.3.1 Limnology

Vaseux Lake is a small shallow lake with a volume of only 17.6 million m<sup>3</sup> and a short theoretical residency time of under two weeks. Okanagan Lake, for comparison, contains 262 billion m<sup>3</sup> of water and has an average residency time of 60 years (CBCCB, 1974). Vaseux Lake warms quickly each summer to 23-25 °C at the surface. The peak recorded surface temperature in 2020 was 23.9 °C (Figure 14, Figure 12). Vaseux Lake develops stable thermal stratification most years from May to November. Fall overturn occurred earlier than previous years during 2019 and 2020; the lake was fully mixed by the November 5<sup>th</sup>, 2020 sampling trip. Vaseux Lake freezes over completely each winter with ice-off typically occurring during the first half of March.

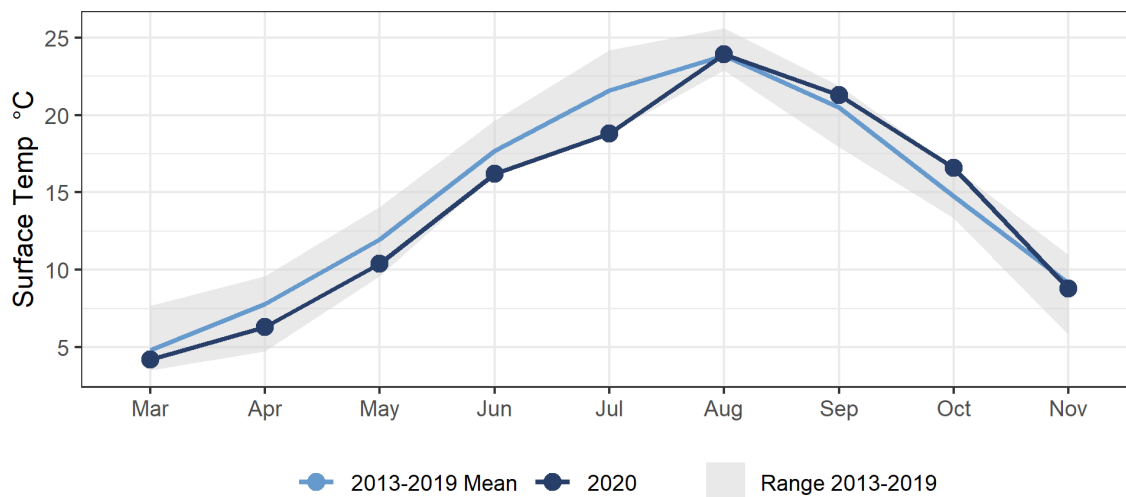


Figure 12: Surface temperature in Vaseux Lake during 2020 compared to 2013-2020 average

pH recordings were collected each month. During periods of mixing, pH measurements appeared to be relatively similar at all depths and varied during periods of stratification (Figure 13). Water depths comprising the epilimnion contained higher pH recordings than the hypolimnion, especially while the anoxic zone was present (Figure 13). Differences can be attributed to photosynthetic processes that increase pH in the epilimnion and anoxic conditions which cause pH to decrease in the hypolimnion.

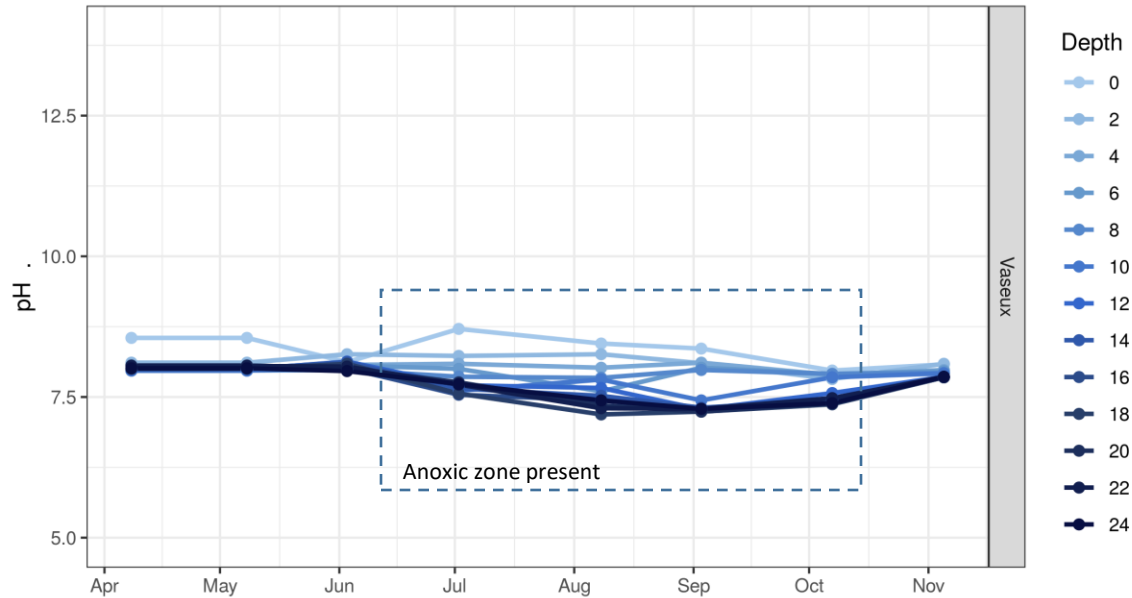


Figure 13: pH recordings of Vaseux Lake during 2020

Vaseux is a productive lake. It produces large quantities of organic material (aquatic macrophytes, algae, and bacteria) through the growing season. This organic material settles to the sediment and decomposes. Decomposition of organic compounds consumes oxygen from the overlying water column and releases nutrients into it. Vaseux Lake sediments exert strong oxygen demand and rendered essentially all the water below the thermocline completely anoxic by September from 2013 - 2020 (Figure 14). Approximately ¼ of the entire lake’s volume becomes anoxic each summer.

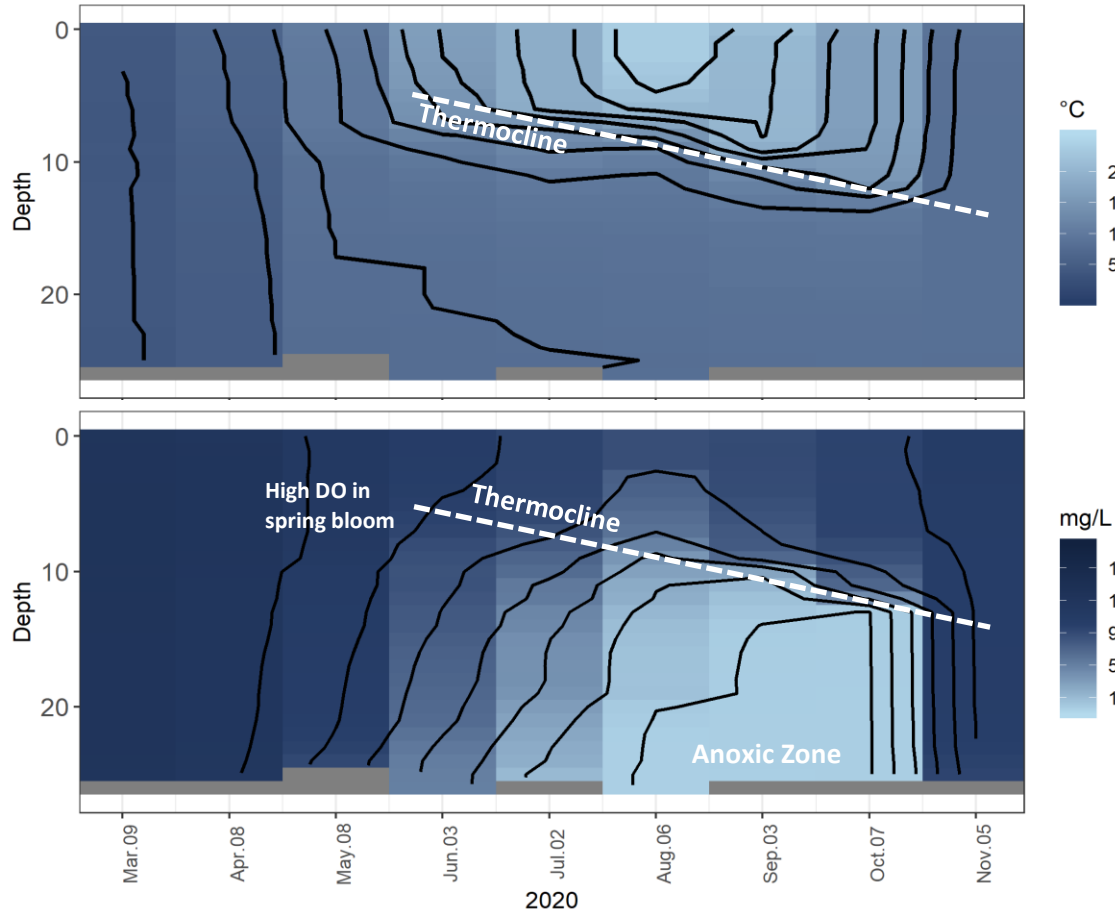


Figure 14: Temperature (top) and dissolved oxygen (bottom) profiles for Vaseux Lake

Water clarity in Vaseux Lake was moderate with an average Secchi depth of  $4.72 \pm 1.71$  m in 2020 (Figure 15). Secchi depth was close to the 2013–2019 average, and within the recorded range for the entire 2020 growing season (Figure 15). Secchi was below average during May because of a combination of a strong spring bloom and sediment plume caused by an ongoing slope failure in the Shuttleworth Creek watershed (Figure 16), the secchi recording measured only 0.82 m (Figure 15, Figure 25). For reference, eutrophic lakes experiencing excessive nutrient enrichment usually have Secchi depths below 3 m.

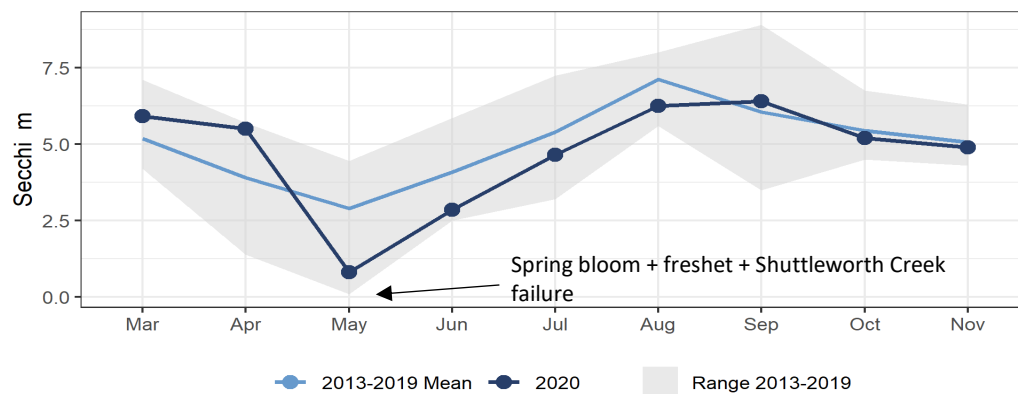


Figure 15: Secchi depth in Vaseux Lake in 2013–2020



Figure 16: Satellite Images of Vaseux Lake on May 7 as the Shuttleworth Creek plume enters Vaseux Lake and on May 19 when the plume had clouded the entire lake

### 2.3.2 Water Chemistry

Seasonal variation in most parameters is far greater than the impact of the WWTP. The contribution of the WWTP relative to base Okanagan River flows is very small and the residency time of Vaseux Lake is very short, all factors that mitigate any possible adverse impacts as nutrients are flushed away before they can accumulate.

#### Nutrients – Annual Variation

Based on the concentrations of nitrogen and phosphorus, Vaseux Lake is defined as meso-eutrophic or highly productive. Total Nitrogen concentrations declined in both the epilimnion and hypolimnion from 2013-2020 (Mann-Kendall,  $p=0.04$ ,  $p=0.02$ ) while total phosphorus concentrations were stable from 2013 to 2020 (Figure 17). During 2020, surface nutrients averaged  $0.23 \pm 0.05$  mg/L as TN and  $0.013 \pm 0.004$  mg/L as TP (Figure 17). For comparison, total nitrogen and phosphorus concentrations in Okanagan Lake during 2020 (measured at Summerland<sup>4</sup>) averaged  $0.24 \pm 0.02$  mg/L TN and  $0.005 \pm 0.001$  mg/L TP (ENV, 2021). Dissolved phosphorus was stable in Vaseux Lake from 2013 to 2020 (Mann-Kendall,  $p=0.90$ ) and in the Okanagan River upstream of the WWTP from 2015-2020 (Figure 7).

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<sup>4</sup> ENV Site 0500454

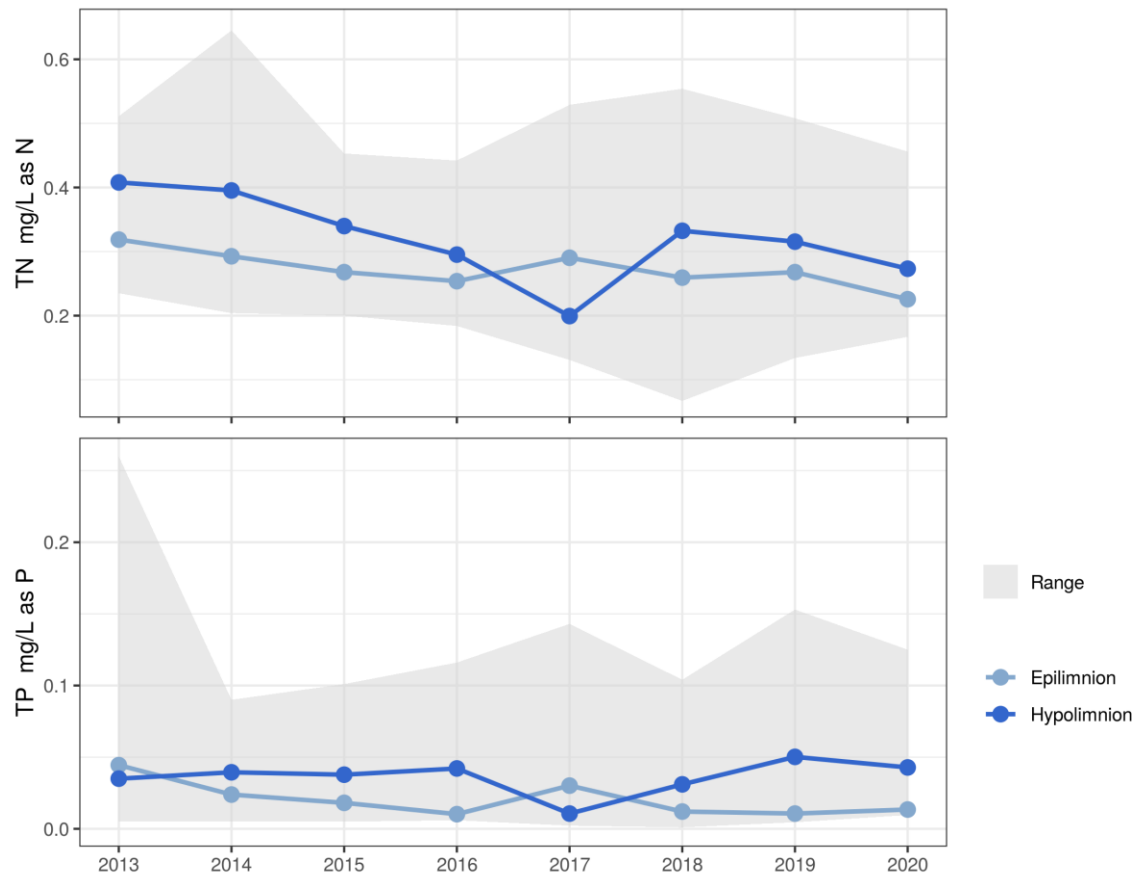


Figure 17: Total nitrogen and phosphorus in Vaseux Lake from 2013-2020

Ammonia increased significantly in the Vaseux epilimnion and hypolimnion from 2013-2020 (Figure 18; Mann-Kendall,  $p < 0.001$ ). Epilimnetic ammonia concentrations increased from  $0.011 \pm 0.006$  mg/L as N with 89 % of samples below detection limit in 2013 to  $0.037 \pm 0.028$  mg/L as N with only 22 % of samples below detection in 2019<sup>5</sup>. Increasing trends in ammonia have been observed throughout the Okanagan in recent years and ammonia increased significantly upstream of the WWTP (Mann-Kendall,  $p < 0.001$ ); hence the increase in Vaseux Lake ammonia relates to watershed influences and not to the WWTP. The WWTP represented only 0.31% of the ammonia reporting to Vaseux Lake in 2020 (Appendix 2).

<sup>5</sup> Lab detection limit was stable at 0.02 mg/L from 2013-2019 and was changed to 0.05 mg/L in 2020 without notifying LAC resulting in 100% non-detect values in the epilimnion during 2020. This error has been corrected for 2021 samples.

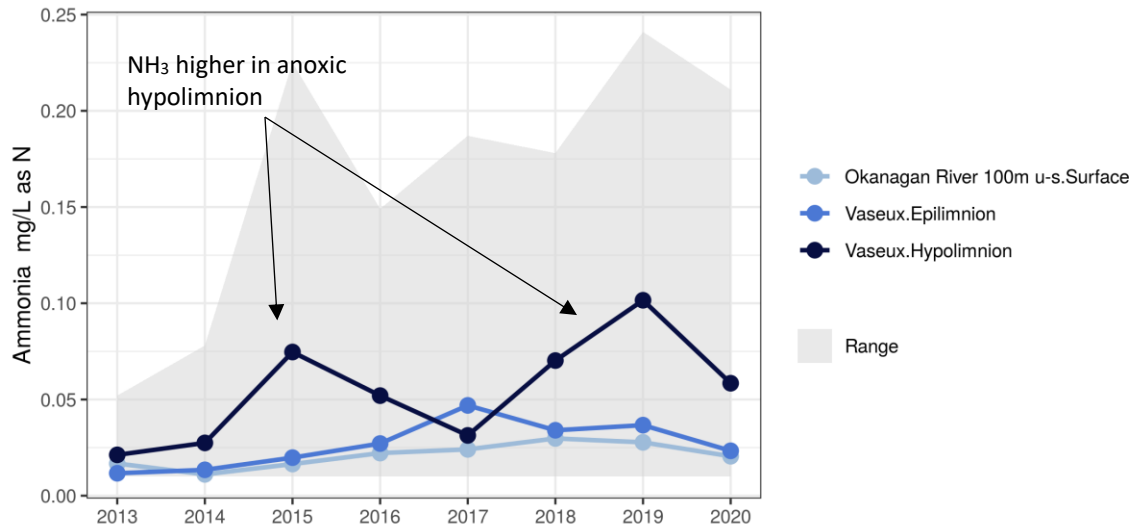


Figure 18: Ammonia concentration in Okanagan River and Vaseux Lake, 2013-2020

Note: Lab changed detection limit during 2020 without notifying LAC resulting in more non-detect values compared to previous years; this will be corrected for 2021, returning to the previous detection limit

**Nutrients – Seasonal Variations**

Total nitrogen was relatively stable during freshet while epilimnion total phosphorus increased. Suspended sediment often carries phosphorus adsorbed onto particulates and in organic material (Figure 19). Okanagan River transports phosphorus into Vaseux Lake on particulates where they are then deposited.

The deep water of Vaseux Lake contained higher nutrient concentrations than the surface. This is because sediment nutrients are released into deep waters under anoxic conditions (Figure 14, Figure 19).

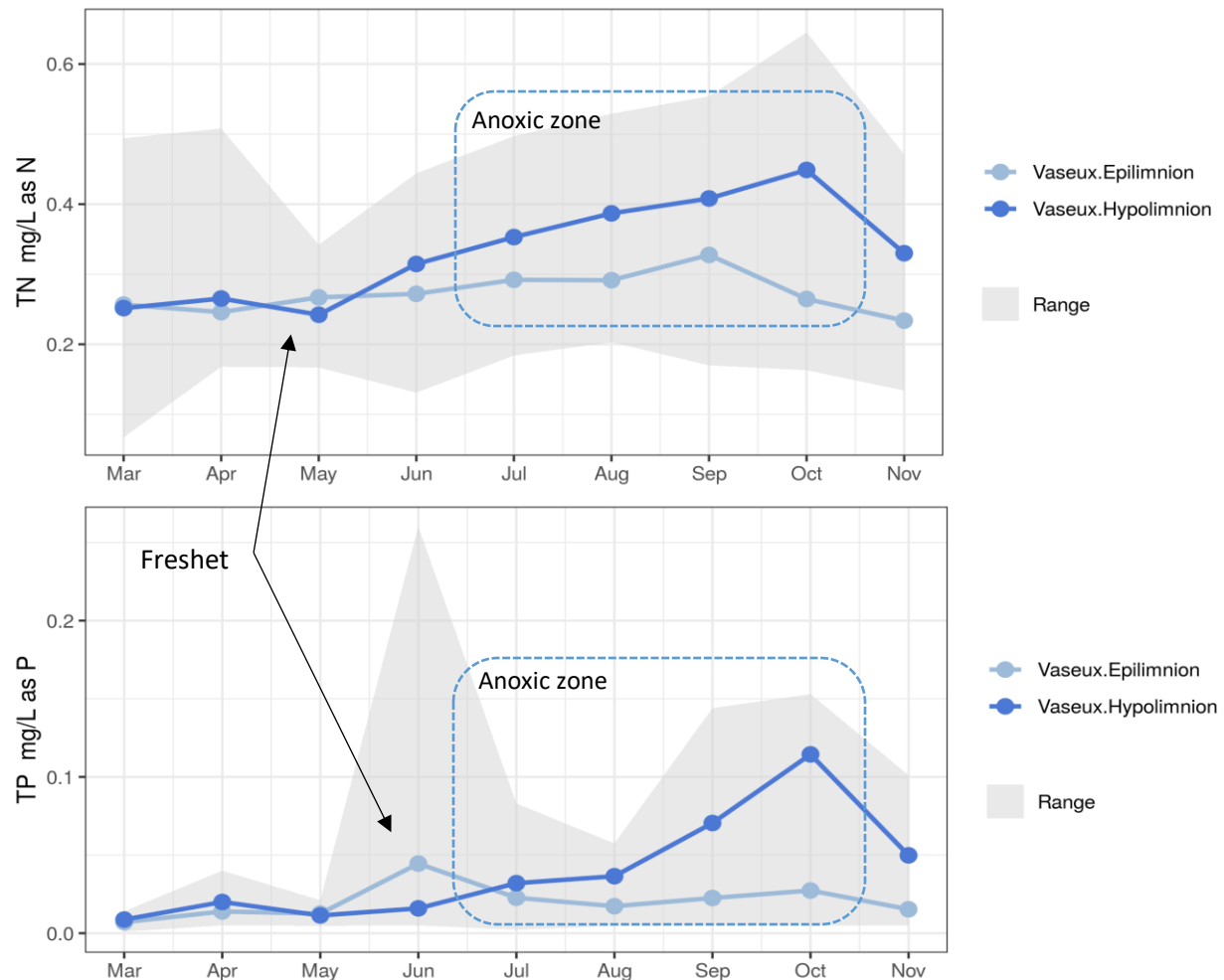


Figure 19: Monthly total nitrogen and total phosphorus epilimnion and hypolimnion samples from Vaseux Lake, 2013-2020

### Nutrients - Loading

The vast majority of nutrients that flow into Vaseux Lake come from Okanagan River. In 2020, 99.8% of the total nitrogen (263,373 kg) and 99.8% of total phosphorus (14,201 kg) from external sources came from Okanagan River whereas the WWTP only contributed 0.26% and 0.20% TN and TP respectively (loadings based on concentrations in Okanagan River samples upstream of WWTP). Internal loading from the anoxic zone is a significant source of nutrients to Vaseux Lake. An estimate developed as part of the 2018 Vaseux Lake Land Use Study (Larratt and Self, 2019) showed that internal loading accounted for approximately 6% of total nitrogen, 30% of nitrate, 11% of total phosphorus, and 30% of dissolved phosphorus in Vaseux Lake.

There were no historic data on nutrient conditions available from the ENV database. However, the 1974 Okanagan Basin Water Report describes nutrient ranges of 0.03-0.39 mg/L as P of total phosphorus and 0.01-1.06 mg/L as N of total nitrogen (CBCCB, 1974). 2013-2020 nitrogen concentrations fell within or below these ranges, indicating that nutrient conditions in Vaseux improved between 1974 and 2013, likely with the introduction of nutrient removal at upstream wastewater treatment plants during the 1970s-1980s.



To date, sampling has not detected a significant WWTP impact on Vaseux Lake water chemistry. This is likely because of the low WWTP loading rate and the rapid flushing rate of Vaseux Lake (theoretical residence time of only two weeks) that moves nutrients downstream before they can accumulate.

### Chloride/Road Runoff

Chloride can be used as an indicator of human impacts on aquatic systems. The largest source of anthropogenic chloride is typically road-salt, followed by sewage effluents (Figure 20, WWTP discharge averaged  $111 \pm 24$  mg/L during 2020). Chloride increased significantly from 2013 to 2020 (Mann-Kendall,  $p < 0.001$ ; Figure 21; Appendix 2) and averaged  $5.58 \pm 0.48$  mg/L during 2020 in the epilimnion Vaseux Lake. Over the long term (decades), chloride is likely to continue increasing as it does in the other Okanagan mainstem lakes. These chloride concentrations were far below the aquatic life guideline ( $< 600$  mg/L) and are unlikely to affect any aquatic plants or animals in the foreseeable future; however, the trend is undesirable and indicates ongoing impacts to the upstream urban watershed.

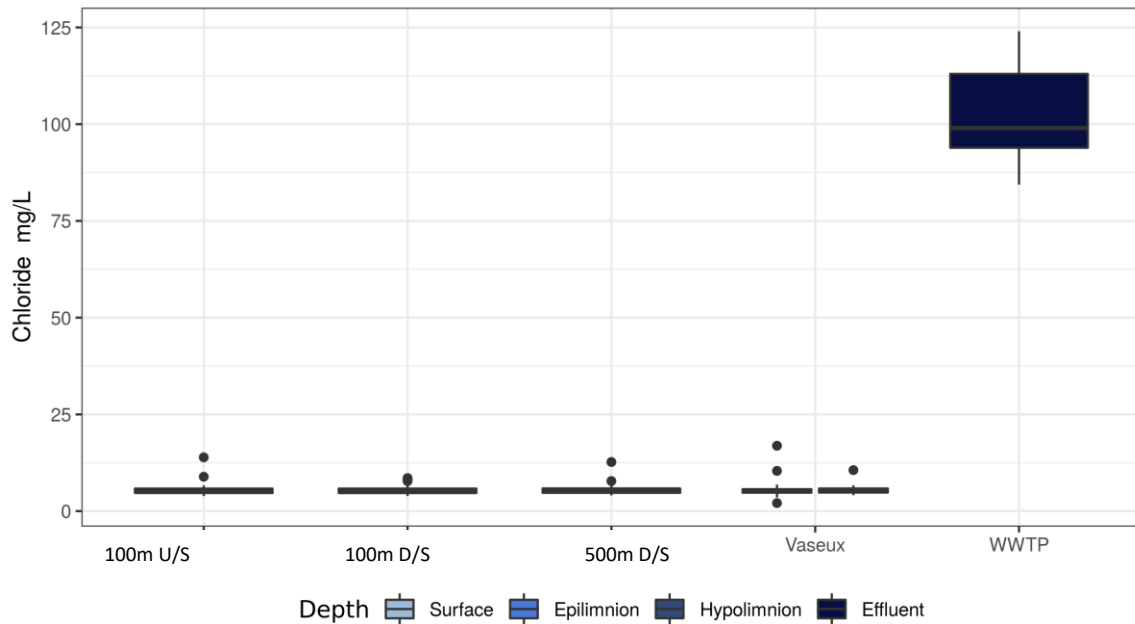


Figure 20: Chloride concentration at all sample sites from 2013-2020

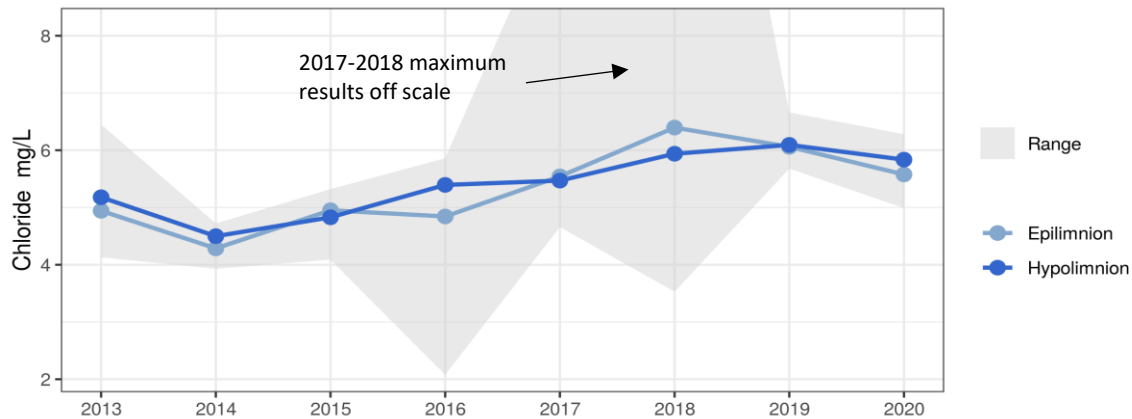


Figure 21: Chloride concentration in Vaseux Lake, 2013-2020

### Metals

Beginning in 2017, the full suite of total metals was measured each month. Metals specified in the Permit included the cations calcium ( $\text{Ca}^{+2}$ ), magnesium ( $\text{Mg}^{+2}$ ), potassium ( $\text{K}^{+}$ ), and sodium ( $\text{Na}^{+}$ , Appendix 5). These four metals exhibited a common pattern, where they:

- Increased initially during early freshet as road salt washed into the lake
- Decreased during spring freshet while large Okanagan river flows diluted Vaseux Lake
- Increased between July and August sample dates with evaporative accumulation
- Returned to baseline values in the fall (Figure 22)

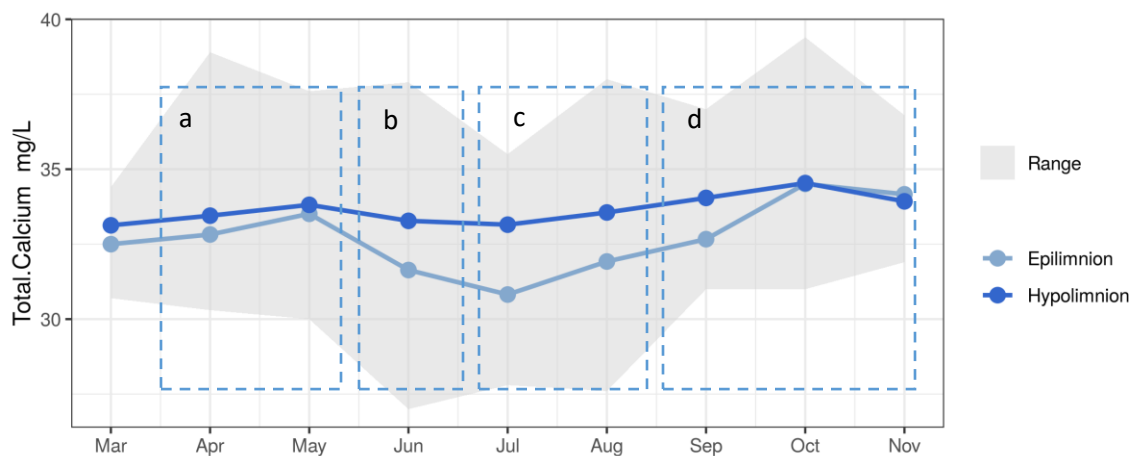


Figure 22: Monthly calcium concentrations in Vaseux Lake, 2013-2020

As of 2020, several metals exhibited increasing trends including lithium, strontium, and uranium. Although these metals were not at risk of exceeding guidelines, they do function as a groundwater signature and indicate increased groundwater reporting to Vaseux Lake in recent years, a pattern observed throughout the region. The current dataset is limited but it appears that these were a temporary effect from the very wet 2017-2018 but further years will provide additional insight.

### 2.3.3 Algae

Vaseux Lake supports large algae populations. Chlorophyll-a (chl-a), the primary photosynthetic pigment in many types of algae, is used as a measure of algae concentration. During 2020, there was a maximum chl-a concentration of 2.61 µg/L during the spring bloom and a minimum chl-a concentration of 1.33 µg/L during the fall (Figure 23, Figure 25). Algae and chl-a concentrations declined after the lake stratifies each year (Figure 23). Epilimnion chl-a averaged  $1.85 \pm 0.45$  µg/L during 2020 and  $2.0 \pm 1.3$  µg/L from 2013-2020. Algae counts and chl-a were very high in 2013 and declined through 2017, but the large 2018 freshet and associated nutrient inputs increased algae counts in 2019 and 2020 compared to previous years.

Inter-annual variation is complex but to date, no trend in algae production attributable to the WWTP is apparent.

Each year, nutrients become depleted from the water above the thermocline and cannot be replenished from deep-water nutrients until the lake mixes again in the fall. This results in lower summer algae production than would occur if the lake periodically mixed during the summer. This period of low algae production is called the summer clear phase (Figure 23).

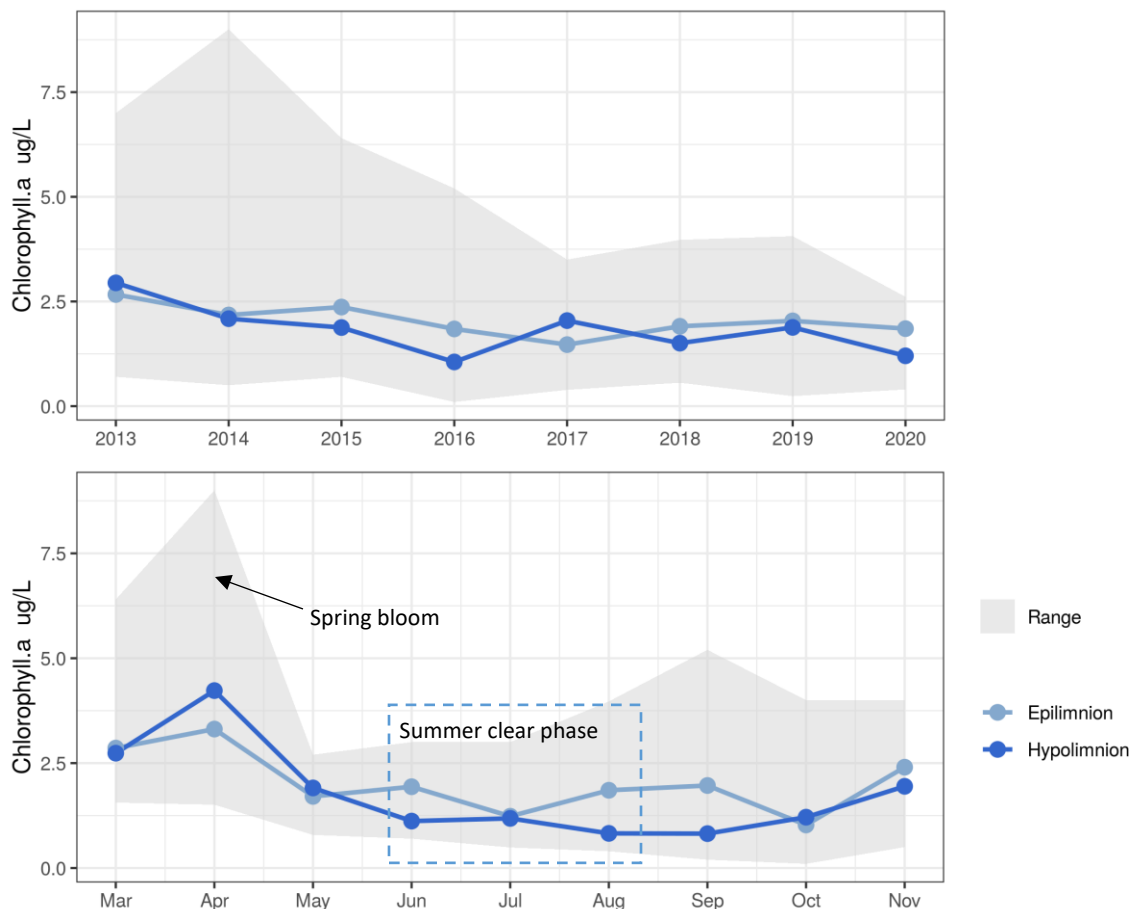


Figure 23: Chlorophyll-a concentration in Vaseux Lake epilimnion and hypolimnion water samples over time (top) and by month (bottom), 2013-2020

As it has in the past, diatoms and cyanobacteria dominated the phytoplankton at all depths in Vaseux Lake during 2020 (Figure 25). A major cyanobacteria bloom following ice-off reached 5830 cells/mL<sup>6</sup> in the surface water and ~ 4000 cells/mL in the deep samples (April 4, 2020; 10 m, 20 m). This was one of the largest cyanobacterial blooms to occur in Vaseux Lake during this study. A spring diatom bloom was smaller extent than 2019’s diatom bloom (April 4, 2020 = 2840 cells/mL at 20 m). Throughout 2020, cyanobacteria concentrations were high and averaged 2089 ± 1790 cells/mL.

Vaseux supports several potentially toxic cyanobacteria including *Planktothrix* spp. and *Lyngbya* spp. and these were the dominant cyanobacteria in Vaseux in 2013-2020 (Figure 24). Vaseux Lake cyanobacteria counts exceeded the Alert Level 1 drinking water threshold (2000 cells/mL) in 8 of 27 samples during 2020 (Figure 25; WHO, 1999). To date, 2016 and 2017 were the only years during this sampling program when this threshold was not exceeded.

There was a declining trend in cyanobacteria concentrations in Vaseux from 2013-2017 but productivity increased during 2018-2020. The cause of the declining trend was likely related to drier summer weather and the associated lower nutrient concentrations in Okanagan River inflows (Table 3). The 2017-2018 wet phase is therefore likely responsible for the increase in productivity during 2018-2020. Vaseux Lake is not used as a source of drinking water and exceedances do not require action on the part of RDOS.

Trends identified to date appear to be climate-driven and there were no indications of nutrient enrichment or other impacts by the WWTP on Vaseux Lake’s algae population from the 2013–2020 data.

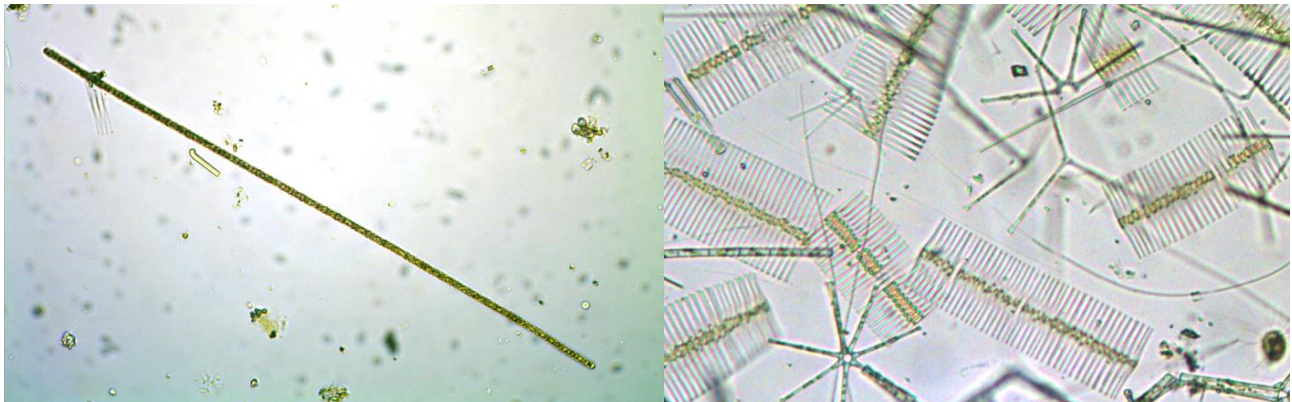


Figure 24: *Planktothrix* spp. (left) and various common diatoms (right) from Vaseux Lake algae samples

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<sup>6</sup> Highest recorded concentration of cyanobacteria in the surface water (2013-2020)

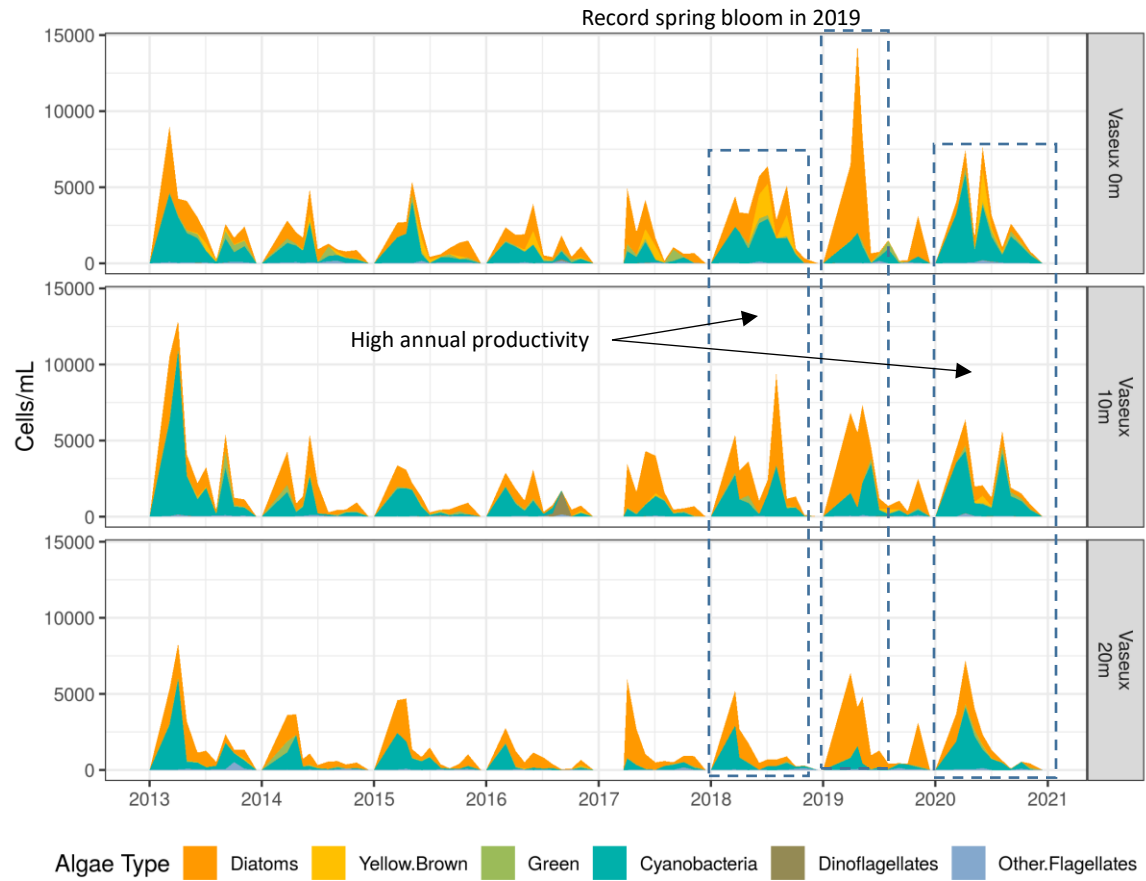


Figure 25: Vaseux Lake algae counts for three depths, 2013-2020

### 3.0 Conclusions

The WWTP contributed an additional 675 kg of nitrogen and 29 kg of phosphorus to Okanagan River in 2020. This represented a very small fraction of the total load entering Vaseux Lake. Most of the annual nutrient loading comes from Okanagan River and internal nutrient recycling within the anoxic zone of Vaseux Lake. Most parameters place Vaseux Lake in the meso-eutrophic range (highly productive), the same range as it was in the 1970's.

There were some statistically significant impacts attributable to the WWTP detected within the initial dilution zone (100m) in Okanagan River from 2013-2017. These include higher ammonia, sodium, chloride, calcium, magnesium, and zinc concentrations immediately downstream of the WWTP. However, the record 2017-2018 freshets altered the upstream environment and these changes overwhelmed the minor effects of the WWTP and they have not been detected in subsequent years.

More years of study will be required to determine conclusively if there were impacts on the Okanagan River benthic invertebrate community from the WWTP, but the data to date suggest a possible small negative impact during some years.

To date, there have been no observable water quality or microflora impacts on Vaseux Lake from the release of treated effluent from the WWTP during 2013-2020.

### 4.0 Recommendations

We recommend that the existing sampling program be continued in 2021 as performed in 2020 with the following amendments:

- Coordinate with CARO labs to return to 0.02 mg/L as N detection limit for ammonia
- Collect water chemistry samples from wetland discharge to Okanagan River if flows are higher than 2020

## 5.0 Literature Cited or Used

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## 6.0 Appendix 1: Statistical Methods

Statistical analyses were performed on data to support claims made throughout this report. The use of the word ‘significantly’ within this report signifies that the claim has stood up under statistical analysis. Unless otherwise stated, all statistical analyses were performed to a confidence of greater than or equal to 95% ( $p \leq 0.05$ ). The  $\pm$  symbol indicates the standard deviation throughout this report.

Water quality data often contains non-detect values for many parameters. Non-detect values were handled using an algorithm that used the following approach:

- If values flanking the non-detectable value are also non-detectable, then 0 is substituted and noted
- If values flanking the non-detectable value include a detectable value, then  $\frac{1}{2}$  of the detection limit is substituted and noted

A more detailed breakdown of the data management and specific advanced statistical analysis used in the preparation of this report can be found in Appendix 1.

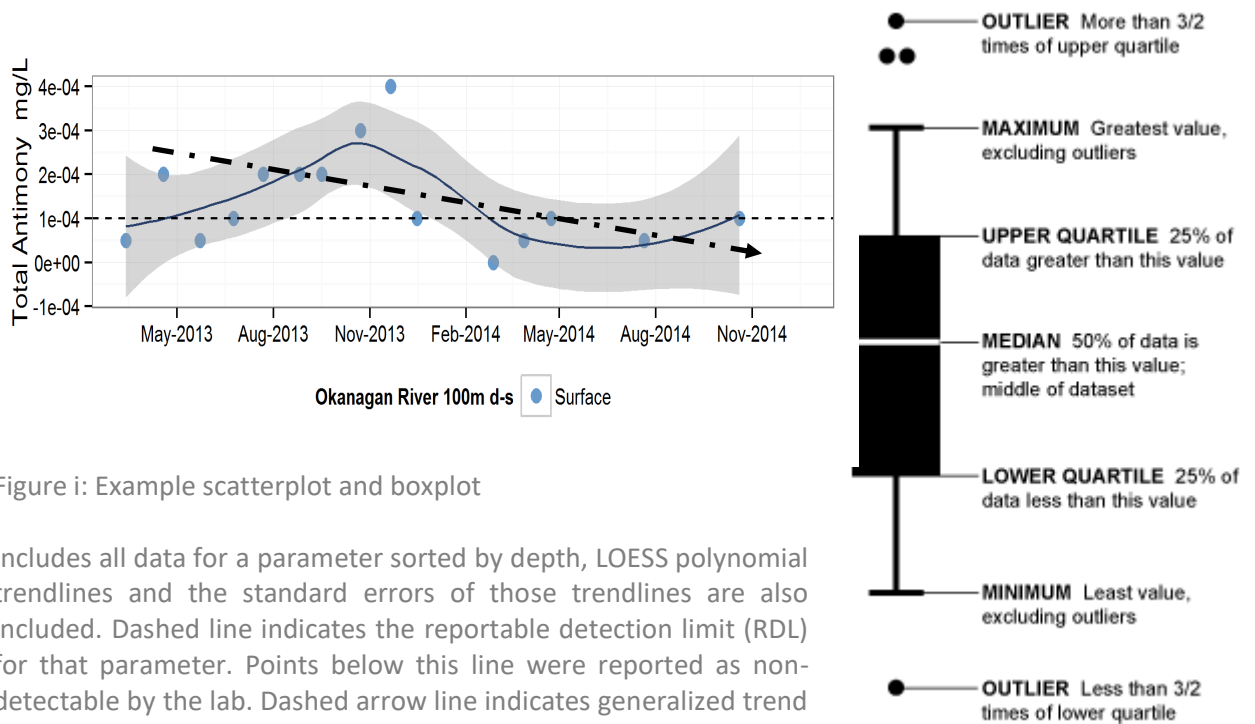


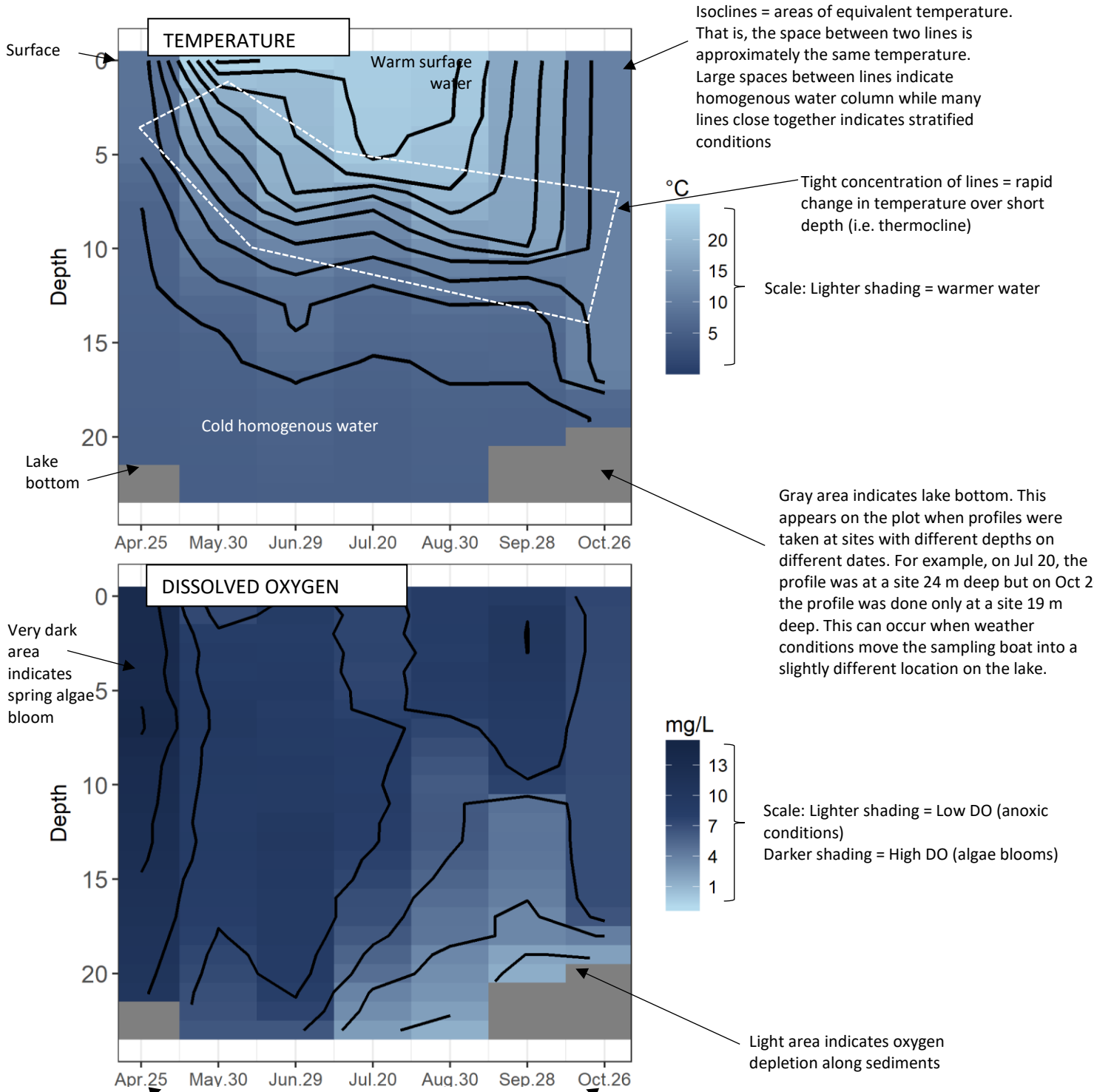
Figure i: Example scatterplot and boxplot

Includes all data for a parameter sorted by depth, LOESS polynomial trendlines and the standard errors of those trendlines are also included. Dashed line indicates the reportable detection limit (RDL) for that parameter. Points below this line were reported as non-detectable by the lab. Dashed arrow line indicates generalized trend pattern (not mathematical) and is exaggerated for ease of visual reading.



Temperature/DO Profile Plot Interpretation

Temperature and dissolved oxygen profiles were routinely collected as part of this study. An example of a temperature graph and dissolved oxygen graph, descriptions of their key features, and how to read them are presented here.



Each vertical column in graph represents conditions within a column of the lake on given date. E.g. on Apr 25, DO was very high through entire water column but on Sept 28, there was significant oxygen depletion in the deep water

Many water parameters are present at or below the detectable limit in the natural environment and in the data reported here. A variety of techniques exist for dealing with non-detection data through estimating values prior to subsequent analyses. Techniques for handling non-detection values must be considered carefully, as they can influence interpretations of subsequent analyses. For instance, if many non-detectable values occur in a data set, substituting all non-detectable values with 0 is likely to underestimate the true value, and does not accurately reflect the variability that occurs in a sampled parameter. Treating the non-detectable values as a NULL or as if they were not sampled overestimates the actual value because too much emphasis is given to detected values. Likewise, substituting all non-detectable values with  $\frac{1}{2}$  of the detection limit frequently causes over-estimation of true values, particularly in older data with higher detection limits. This project applies the  $\frac{1}{2}$  detection limit approach while also plotting the detection limit so it can be readily visualized over time, allowing assessment of if detection limit is skewing data.

#### **Mann-Kendall Trend Analysis**

Mann-Kendall trend tests (implemented in the “Kendall” package in R; (McLeod 2013)) were used to identify and assess the direction and statistical significance of trends in water quality measurements over time. The Mann-Kendall test is a non-parametric statistical test, which, unlike traditional regression analysis, does not assume normally distributed data (Hipel and McLeod 2005). This is a key attribute of this test as water quality data are typically not normally distributed, with many low and fewer high values. In cases where patterns in water quality are likely to differ markedly among months (e.g., due to seasonal hydrological patterns), seasonal Mann-Kendall tests can be used in the future to compare time series among the same months in different years in order to better determine overarching trends.

The Mann-Kendall trend test provides a p-value analogous to that provided by simple linear regression, from which statistical significance is determined at an alpha level of 0.05. The relative strength and direction of trends is measured through a second test statistic, Kendall’s tau (T) rank correlation coefficient. Tau ranges from -1 to 1 with negative and positive values indicating negative and positive correlations (trends) respectively, and the departure from zero indicating the relative strength of the trend (Helsel and Hirsch 2002).

#### **Kruskal-Wallis Test of Difference**

The Kruskal–Wallis one-way analysis of variance by ranks is a non-parametric method for testing whether samples originate from the same distribution. It is used for comparing more than two samples that are independent, or not related. It is the non-parametric equivalent of the more traditional ANOVA statistical test. The calculation produces a p-value from which statistical significance is determined (Spurrier, 2003).

## 7.0 Appendix 2: Loading Estimates

OK River	Total OK River (kg)	Total WWTP (kg)	Internal Loading Estimates†	Total Mass (kg)	% WWTP	%River	%Internal Load	Total not WWTP
Discharge	1,075,469,017m <sup>3</sup>	195,600 m <sup>3</sup>		1,073,165,924 m <sup>3</sup>	0.02%	100.0%	0.0%	100.0%
Chloride	5,735,605	6,794		5,742,399	0.12%	99.9%	0.0%	99.9%
Ammonia	23,848	75		23,899	0.31%	99.7%	0.0%	99.7%
Nitrate	*	375		*	*	*	*	*
Nitrite	*	19		*	*	*	*	*
TKN	263,947	325		264,273	0.12%	99.9%	0.0%	99.9%
TP	14,226	29	3,378	17,632	0.20%	80.7%	19.2%	99.8%
TDP	5,429	21	1,937	7,386	0.38%	73.5%	26.3%	99.7%
Orthophosphate	2,689	7	797	3,494	0.28%	76.9%	22.9%	99.8%
Nitrate + Nitrite	*	395	5,192	*	*	*	*	*
TN	263,948	675	17,126	281,750	0.25%	93.7%	6.1%	99.8%

\* All values below detection in Okanagan River, calculating loads is not possible

† Internal loading is based on 2019 Vaseux Lake Land Use Study (Larratt and Self, 2019)

### 8.0 Appendix 3: 2018 Extreme Weather and Flooding Events

Record flooding in 2017 was followed by the intense 2018 freshet that caused flooding and slope failures throughout the Okanagan region. Shuttleworth Creek flows into Okanagan River upstream of the WWTP at Okanagan Falls and has a documented history of watershed failures (Larratt and Self, 2019). On May 10 2018, there was a major failure on Shuttleworth Ck. upstream of Okanagan Falls that carried a tremendous amount of material into the Okanagan River and Vaseux Lake (Figure 26). Water clarity throughout Vaseux Lake was reduced to near zero (0.1 m Secchi) on May 11 and remained below average throughout the 2018 growing season (Figure 15). There was also flooding around Green Lake that required water to be pumped into Okanagan River upstream of Vaseux Lake. The net result of the 2018 flooding was lower water quality in Vaseux Lake during 2018, with poorer water clarity and greater algae production (Figure 25).



Figure 26: Impacts of May 10, 2018 watershed failure on Shuttleworth Creek (Clockwise from top left: Shuttleworth Creek entering Okanagan River; Vaseux Lake completely muddy; water clarity in Vaseux Lake; Shuttleworth Creek upstream of Okanagan River with debris strewn about

## 9.0 Appendix 4: Abbreviations & Terms

### Entities

CBCCB=Canada-British Columbia Consultative Board  
 IHA = Interior Health Authority  
 LAC = Larratt Aquatic Consulting  
 MFLNRORD = Ministry of Forests, Lands, and Natural Resources Operations and Rural Development  
 ENV = Ministry of Environment  
 MoT = Ministry of Transportation and Infrastructure  
 RDOS = Regional District of Okanagan-Similkameen  
 WHO = World Health Organization

### Technical Phrases, Regulations

BCWQ = BC Water Quality  
 BMP = Best Management Practices  
 CDWG = Canadian Drinking Water Guidelines  
 OCP =Official Community Plan  
 RDL = Reportable Detection Limit  
 SCADA =Supervisory Control And Data Acquisition (system)  
 WWTP = Wastewater Treatment Plant

### Definitions

Term	Definition
Algae bloom	A superabundant growth of algae
Anaerobic/anoxic	Devoid of oxygen
Benthic	Organisms that dwell in or are associated with the sediments
Bioavailable	Available for use by plants or animals
Cyanobacteria	Bacteria-like algae having cyanochrome as the main photosynthetic pigment
Diatoms	Algae that have hard, silica-based "shells" frustules
Fall overturn	Surface waters cool and sink, until a fall storm mixes the water column
Eutrophic	Nutrient-rich, biologically productive water body
Green algae	A large family of algae with chlorophyll as the main photosynthetic pigment
Nutrient limitation	A nutrient will limit or control the potential growth of organisms e.g. P or N
Limnology	The study of the physical, chemical, and biological aspects of freshwater
Loading	(Nutrient) loading = nutrient concentration x water volume
Microflora	The sum of algae, bacteria, fungi, <i>Actinomyces</i> , etc., in water or biofilms
Phytoplankton	Algae that float, drift or swim in water columns of reservoirs and lakes
Plankton	Those organisms that float or swim in water
Residence time	Time for a parcel of water to pass through a reservoir or lake (flushing time)
Secchi depth	Depth where a 20 cm secchi disk can be seen; measures water transparency
Thermocline	The lake zone of greatest change in water temperature with depth (> 1°C/m); it separates the surface water (epilimnion) from the cold hypolimnion below
Zooplankton	Minute animals that graze algae, bacteria and detritus in water bodies

**Lake Classification by Trophic Status Indicators**

Trophic Status	chlorophyll-a ug/L	Total P ug/L	Total N ug/L	Secchi disc m	primary production mg C/m <sup>2</sup> /day
Oligotrophic	0 – 2	1 – 10	<100	> 6	50- 300
Mesotrophic	2 – 5	10 – 20	100 – 500	3 – 6	250 – 1000
Eutrophic	>5	> 20	500-1000	< 3	>1000

**Nutrient Balance Definitions for Microflora (Dissolved Inorganic N : Dissolved Inorganic P)**

Phosphorus Limitation	Co-Limitation of N and P	Nitrogen Limitation
>15 : 1	<15 : 1 – 5 : 1	5 : 1 or less

Nordin,1985

## 10.0 Appendix 5: Conditions of Permit

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- (d) Cobalt, mg/kg;
- (e) Copper, mg/kg;
- (f) Lead, mg/kg;
- (g) Mercury, mg/kg;
- (h) Molybdenum, mg/kg;
- (i) Nickel, mg/kg;
- (j) Selenium, mg/kg;
- (k) Zinc, mg/kg;

- 4.4.3** Install and maintain a system for measuring and recording the volumes of sludge produced, the location where the sludge was discharged, and the amount of sludge discharged at each location.

### **4.5 Groundwater and Spray Irrigation Monitoring Program**

The Regional District must have a Qualified Professional assess and develop an irrigation plan for any and all sites that utilize reclaimed water for irrigation purposes. The irrigation plan must clearly document appropriate agronomic loading rates for each site. Each site and irrigation plan should be reassessed every five years or whenever major changes to the site occur and must include auditing of irrigation duration and application rates. The first such evaluation is required within two years of the issuance of this Operational Certificate.

### **4.6 Surface Water Impact Sampling and Monitoring Program**

The Regional District is required to undertake Okanagan River and Vaseux Lake sampling and monitoring as specified below.

#### **4.6.1 Sampling Sites**

A surface water impact monitoring program is required on the Okanagan River and Vaseux Lake. The monitoring program, as a minimum, must consist of one set of samples taken monthly at hydrologically appropriate locations upstream and downstream of the effluent diffuser as follows. Site locations and sampling procedures are to be approved in writing, by the Director.

##### **Okanagan River sites**

- 1) Upstream site – 50 metres or less upstream of the weir adjacent

Date issued: May 6, 2013



Sajid A. Barlas, Ph.D., P.Ag.  
for Director, *Environmental Management Act*  
Southern Interior Region - Okanagan

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- to the AWWTP;
- 2) Edge of initial dilution zone (IDZ) – 100 metres downstream of the diffuser;
  - 3) Downstream of IDZ – 500 metres downstream of diffuser; and
  - 4) Downstream of Vaseux Lake

**Vaseux Lake site**

Central deep location (EMS#220331: site co-ordinates 49.300000, 119.533300)

**4.6.2 Analyses**

Obtain analyses of the Okanagan River sites samples for the following:

Parameter	Frequency	Type
temperature	monthly	meter
dissolved oxygen	monthly	meter
specific conductivity	monthly	meter
pH	monthly	meter
total suspended solids	monthly	grab
ions (hardness, Cl, SO <sub>4</sub> , Na, K, Mg)	monthly	grab
nitrogen, (total N, TKN, organic N, nitrate, nitrite, ammonia)	monthly	grab
phosphorus (total P, dissolved P, ortho-phosphate)	monthly	grab
microbiological (October – April)	monthly	grab
microbiological (May – September)	weekly for sites 1, 2 and 3; monthly for site 4	grab
benthic macro-invertebrates (if suitable habitat is available)	annually (late summer to early fall)	follow Environment Canada CABIN protocol

Date issued: May 6, 2013



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Obtain analyses of the Vaseux Lake site samples for the following:

Parameter	Frequency	Type	Sampling Depths		
			Epilimnion	Hypolimnion	Vertical Profile
temperature	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
dissolved oxygen	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
specific conductivity	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
pH	monthly (March (or ice off) to November)	meter	n/a	n/a	every 2m (surface to bottom)
ions (hardness, Cl, SO <sub>4</sub> , Na, K, Mg)	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite	20, 22, 24m composite	n/a
nitrogen, (total N, TKN, organic N, nitrate, nitrite, ammonia)	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite	20, 22, 24m composite	n/a
phosphorus (total P, dissolved P, ortho-phosphate)	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite	20, 22, 24m composite	n/a
chlorophyll-A	monthly (March (or ice off) to November)	grab	1, 5, 10 m composite (2 x 1 litre replicate)	20, 22, 24m composite (2 x 1 litre replicate)	n/a
secchi depth (water clarity)	monthly (March (or ice off) to November)	secchi disc	at surface	n/a	n/a

Date issued: May 6, 2013

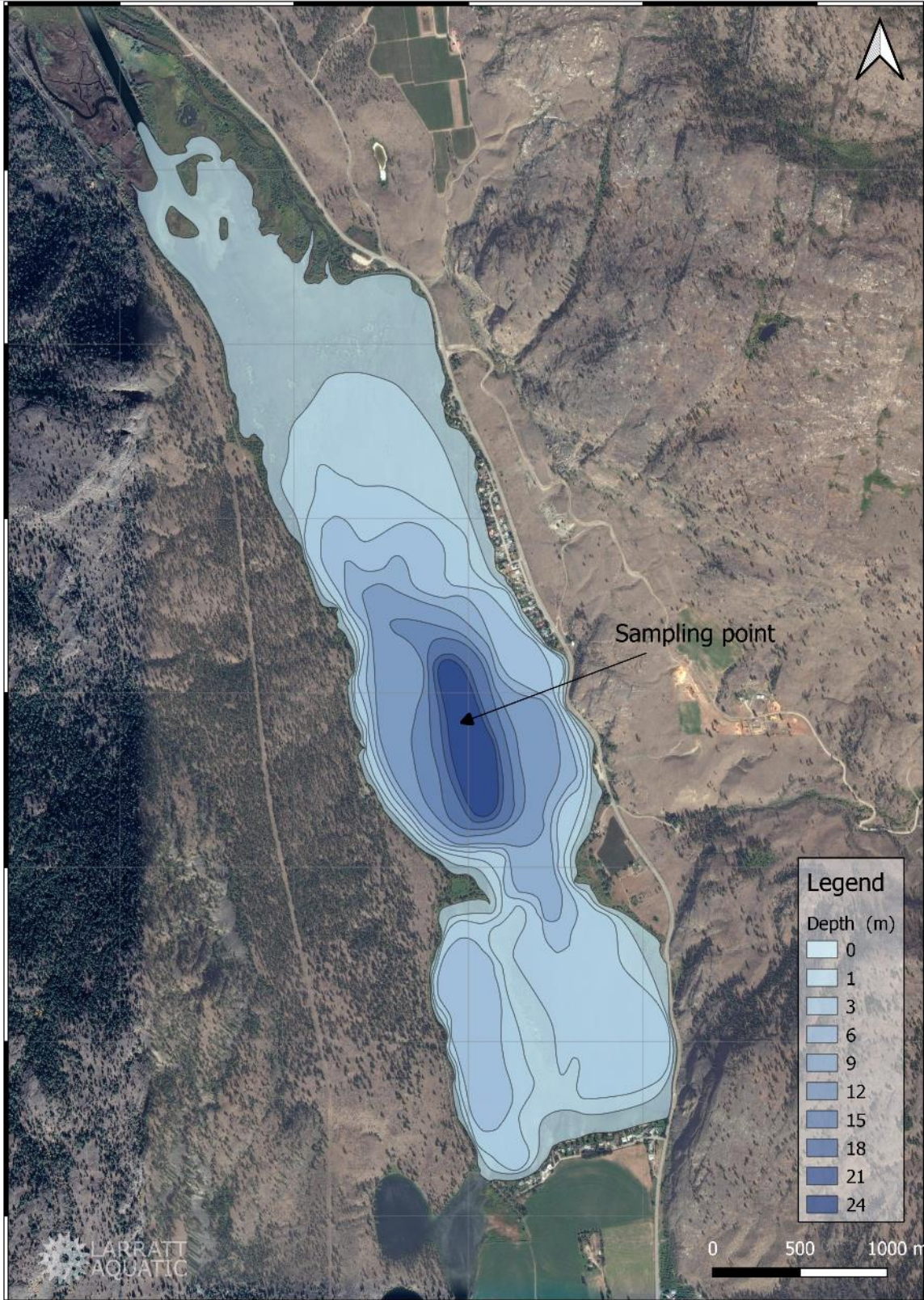


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11.0 Appendix 6: Bathymetry of Vaseux Lake



Note: Depth isolines are in 3 m increments from 0m (shoreline) to 24m (deepest basin); Modified from: Sharpshoots, 2010

## 12.0 Appendix 7: Methodology

### 12.1.1 Wastewater Treatment Plant

RDOS staff sampled the treated effluent weekly before it reached Okanagan River. pH and temperature were measured continuously using a HACH Digital Peek probe located within the effluent channel. Other parameters were sampled on weekly, monthly, or quarterly schedules. All samples were sent to CARO Analytical in Kelowna for water chemistry analysis.

### 12.1.2 Okanagan River Channel

RDOS staff sampled Okanagan River at three sites: 100 m upstream, 100 m downstream, and 500 m downstream of the WWTP. Samples were taken 4 m from the shore of the river channel using a fiberglass pole sampler. Samples were collected from approximately 0.5 m below the surface of the river. All samples were sent to CARO Analytical in Kelowna for water chemistry analysis.

At the same time, field measurements were taken using a YSI Pro Plus multi-meter. Field readings measured pH, dissolved oxygen (DO), oxidative reductive potential (ORP), conductivity, total dissolved solids (TDS), and temperature. Turbidity was also measured in the field. Instruments were calibrated prior to each sampling occasion.

Invertebrates were sampled from the sediment within the river channel in October by LAC staff. The samples were collected using an Ekman Dredge sampler from the top few centimeters of sediment. Three to five sub-samples were combined in each of three samples and delivered to Cordillera Consulting, Summerland for identification and enumeration.

### 12.1.3

### 12.1.4 Vaseux Lake

Larratt Aquatic Consulting (LAC) was contracted to perform monthly sampling on Vaseux Lake from March to November in 2019. All samples were taken from the same location in the center of the deepest part of Vaseux Lake (Figure 1, Appendix 6). Three water samples were taken from the epilimnion at 1, 5, and 10 m and combined into a single composite sample. Likewise, samples from 20, 22, and 24 m were combined into a composite sample that represented the water quality in the hypolimnion of the lake. These samples were taken to CARO Analytical in Kelowna for water chemistry analysis on the same day as collection.

Field temperature, DO, TDS, and conductivity were taken on each trip with a Hanna HI 9828 or YSI Pro Solo multimeter. The probe was lowered from the surface to the sediments and readings were taken at one-meter intervals. These data were used to build profiles of Vaseux Lake over 2019 (Figure 14).

LAC also sampled Vaseux Lake for algae at 0, 10, and 20 m. The algae contents collected from 1-liter sample volumes were identified to the lowest possible taxonomic level and enumerated in cells/mL. An 80 µm plankton net was pulled vertically from 10 m depth to the water surface to collect a qualitative sample of the type and relative abundance of the algae and zooplankton species present in the epilimnion. Samples were analyzed by LAC staff using light microscopy.

### 13.0 Appendix 8: Cordillera Consulting Results Report



**Project: Vaseux WWTP 2020**

RDSO/Similkameen

Taxonomist: Scott Finlayson

[scottfinlayson@cordilleraconsulting.ca](mailto:scottfinlayson@cordilleraconsulting.ca)

250-494-7553

Site:	100m u/s	100m d/s	500m d/s
Sample:	100m u/s	100m d/s	500m d/s
Sample Collection Date:	07-Oct-20	07-Oct-20	07-Oct-20
CC#:	CC211250	CC211251	CC211252

**Richness Measures**

Species Richness	13	13	12
EPT Richness	7	5	6
Ephemeroptera Richness	3	3	3
Plecoptera Richness			
Trichoptera Richness	4	2	3
Chironomidae Richness	1	1	1
Oligochaeta Richness	1	1	
Non-Chiro. Non-Olig. Richness			

**Abundance Measures**

Corrected Abundance	874	1269	913
EPT Abundance	693	844	533

**Dominance Measures**

1st Dominant Taxon	Glossosomatidae	Hydropsychidae	Hydropsychidae
1st Dominant Abundance	422	432	301
2nd Dominant Taxon	Hydropsychidae	Chironomidae	Chironomidae
2nd Dominant Abundance	218	351	278
3rd Dominant Taxon	Chironomidae	Glossosomatidae	Glossosomatidae
3rd Dominant Abundance	135	213	102
% 1 Dominant Taxon	48.33%	34.04%	32.93%
% 2 Dominant Taxon	24.99%	27.66%	30.45%

% 3 Dominant Taxon	15.45%	16.78%	11.20%
Percent Dominance	88.76%	78.49%	74.57%
<b>Community Composition</b>			
% Ephemeroptera	5.26%	15.68%	13.58%
% Plecoptera			
% Trichoptera	74.03%	50.83%	44.80%
% EPT	79.29%	66.51%	58.38%
% Diptera	15.79%	29.87%	36.36%
% Oligochaeta	0.57%	0.47%	
% Baetidae	0.92%	4.33%	10.95%
% Chironomidae	15.45%	27.66%	30.45%
% Odonata			
<b>Functional Group Composition</b>			
% Predators	3.43%	2.21%	2.30%
% Shredder-Herbivores	0.34%	0.47%	1.31%
% Collector-Gatherers	6.19%	16.63%	14.25%
% Scrapers	48.33%	17.26%	11.20%
% Macrophyte-Herbivore			
% Collector-Filterer	25.33%	35.78%	37.53%
% Omnivore			
% Parasite			
% Piercer-Herbivore			
% Gatherer			
% Unclassified	16.37%	27.66%	33.41%
<b>Functional Group Richness</b>			
Predators Richness	1	2	2
Shredder-Herbivores Richness	1	1	1
Collector-Gatherers Richness	5	5	4
Scrapers Richness	1	2	1
MH Richness			
CF Richness	2	2	2
OM Richness			
PA Richness			
Piercer-Herbivore Richness			
Gatherer Richness			
Unclassified	3	1	2
<b>EPA Functional Group Composition</b>			
% Predators			
% Parasite			
% Collector-Gatherers			
% Collector-Filterer			

% Macrophyte-Herbivore  
% Xylophage  
% Scraper  
% Shredder  
% Piercer  
% Omnivore  
% Unclassified

**EPA Functional Group Richness**

Predators  
Parasite  
Collector-Gatherers  
Collector-Filterer  
Macrophyte-Herbivore  
Xylophage  
Scraper  
Shredder  
Piercer  
Omnivore  
Unclassified

**SAFIT Functional Group Composition**

% Predators  
% Parasite  
% Collector-Gatherers  
% Collector-Filterer  
% Macrophyte-Herbivore  
% Periphyton-Herbivore  
% Scraper  
% Shredder  
% Omnivore  
% Unclassified

**SAFIT Functional Group Richness**

Predators  
Parasite  
Collector-Gatherers  
Collector-Filterer  
Macrophyte-Herbivore  
Periphyton-Herbivore  
Scraper  
Shredder  
Omnivore  
Unclassified

---

**EPA Habitat Composition**

- % Clinger
- % Climber
- % Sprawler
- % Burrower
- % Swimmer
- % Diver
- % Skater

**EPA Habitat Richness**

- Clinger
- Climber
- Sprawler
- Burrower
- Swimmer
- Diver
- Skater

**Voltinism Composition**

- % Univoltine
- % Semivoltine 0.47%
- % Multivoltine

**Voltinism Richness**

- Univoltine
- Semivoltine 1
- Multivoltine

**Diversity/Evenness Measures**

Shannon-Weiner H' (log 10)	0.63	0.75	0.76
Shannon-Weiner H' (log 2)	2.09	2.49	2.53
Shannon-Weiner H' (log e)	1.45	1.72	1.75
Simpson's Index (D)	0.32	0.23	0.23
Simpson's Index of Diversity (1 - D)	0.68	0.77	0.77
Simpson's Reciprocal Index (1/D)	3.11	4.31	4.37

**Biotic Indices**

Hilsenhoff Biotic Index	2.50	3.97	4.34
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# **APPENDIX W**

## **Spill Incident Water Quality Monitoring 2020 Lab Reports**





## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QORC

**PROJECT INFO**

**WORK ORDER** 20J0015

**RECEIVED / TEMP** 2020-10-05 08:45 / 9°C

**REPORTED** 2020-10-13 11:36

**COC NUMBER** B91041

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

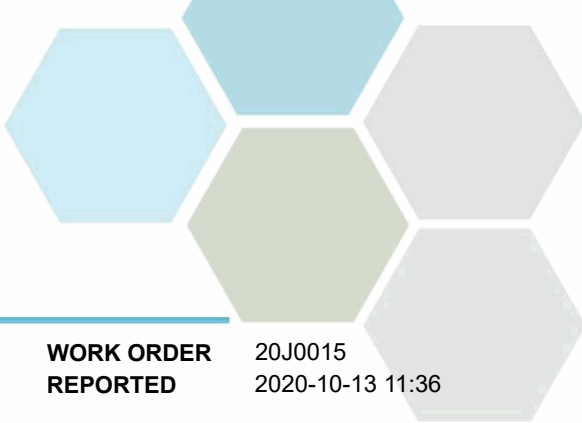
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

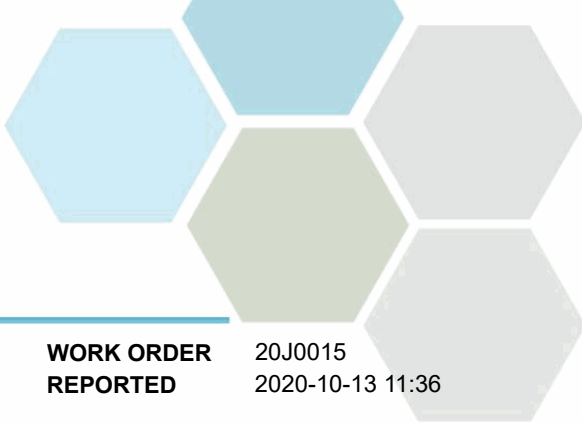


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Skaha Lake - Dog Park (20J0015-01)   Matrix: Water   Sampled: 2020-10-02 11:15</b>					FILT, PRESb
<b>Anions</b>					
Chloride	5.60	0.10	mg/L	2020-10-07	
Fluoride	0.15	0.10	mg/L	2020-10-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-10-07	HT1
Sulfate	28.4	1.0	mg/L	2020-10-07	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	130	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.268	0.0500	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	108	1.0	mg/L	2020-10-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Bicarbonate (as CaCO3)	108	1.0	mg/L	2020-10-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-10-06	
BOD, 5-day	< 1.0	2.0	mg/L	2020-10-12	HT1
Chemical Oxygen Demand	24	20	mg/L	2020-10-08	
Conductivity (EC)	279	2.0	µS/cm	2020-10-06	
Nitrogen, Total Kjeldahl	0.268	0.050	mg/L	2020-10-07	
pH	8.19	0.10	pH units	2020-10-06	HT2
Phosphorus, Total (as P)	0.0138	0.0050	mg/L	2020-10-09	
Phosphorus, Total Dissolved	0.0069	0.0050	mg/L	2020-10-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-06	
<b>Microbiological Parameters</b>					
Coliforms, Fecal (Q-Tray)	2280	1	MPN/100 mL	2020-10-05	HT1
E. coli (Q-Tray)	2280	1	MPN/100 mL	2020-10-05	HT1
<b>Total Metals</b>					
Aluminum, total	0.0059	0.0050	mg/L	2020-10-07	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-07	
Arsenic, total	0.00055	0.00050	mg/L	2020-10-07	
Barium, total	0.0236	0.0050	mg/L	2020-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-07	
Boron, total	< 0.0500	0.0500	mg/L	2020-10-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-07	
Calcium, total	34.2	0.20	mg/L	2020-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-10-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Skaha Lake - Dog Park (20J0015-01)   Matrix: Water   Sampled: 2020-10-02 11:15, Continued</b>					FILT, PRES <sup>b</sup>

**Total Metals, Continued**

Copper, total	0.00070	0.00040	mg/L	2020-10-07	
Iron, total	0.013	0.010	mg/L	2020-10-07	
Lead, total	< 0.00020	0.00020	mg/L	2020-10-07	
Lithium, total	0.00355	0.00010	mg/L	2020-10-07	
Magnesium, total	10.8	0.010	mg/L	2020-10-07	
Manganese, total	0.00344	0.00020	mg/L	2020-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-09	
Molybdenum, total	0.00358	0.00010	mg/L	2020-10-07	
Nickel, total	0.00041	0.00040	mg/L	2020-10-07	
Phosphorus, total	< 0.050	0.050	mg/L	2020-10-07	
Potassium, total	2.70	0.10	mg/L	2020-10-07	
Selenium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Silicon, total	3.7	1.0	mg/L	2020-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-07	
Sodium, total	13.3	0.10	mg/L	2020-10-07	
Strontium, total	0.303	0.0010	mg/L	2020-10-07	
Sulfur, total	11.6	3.0	mg/L	2020-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Tin, total	< 0.00020	0.00020	mg/L	2020-10-07	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-07	
Uranium, total	0.00251	0.000020	mg/L	2020-10-07	
Vanadium, total	0.0014	0.0010	mg/L	2020-10-07	
Zinc, total	< 0.0040	0.0040	mg/L	2020-10-07	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-10-07	

**Skaha Lake - 605 Willow (20J0015-02) | Matrix: Water | Sampled: 2020-10-02 11:35**

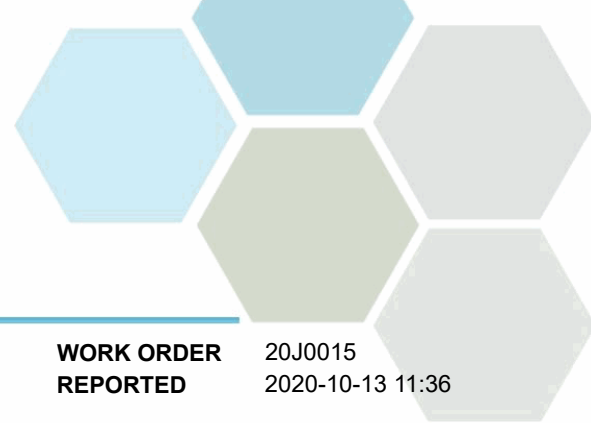
FILT,  
PRES

**Anions**

Chloride	6.41	0.10	mg/L	2020-10-07	
Fluoride	0.15	0.10	mg/L	2020-10-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-10-07	HT1
Sulfate	28.9	1.0	mg/L	2020-10-07	

**Calculated Parameters**

Hardness, Total (as CaCO3)	137	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.234	0.0500	mg/L	N/A	

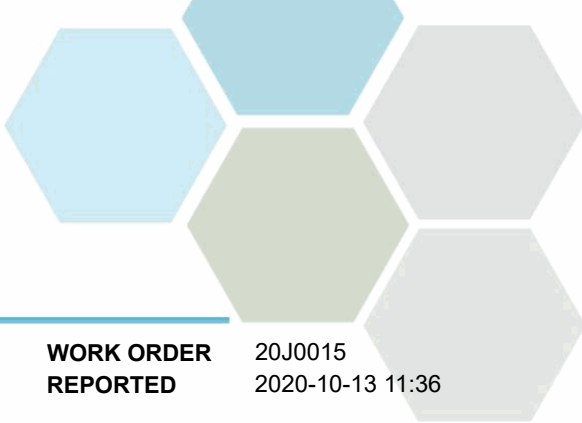


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Skaha Lake - 605 Willow (20J0015-02)   Matrix: Water   Sampled: 2020-10-02 11:35, Continued</b>					<b>FILT, PRES</b>
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	111	1.0	mg/L	2020-10-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Bicarbonate (as CaCO3)	111	1.0	mg/L	2020-10-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-10-06	
BOD, 5-day	< 1.0	2.0	mg/L	2020-10-12	HT1
Chemical Oxygen Demand	23	20	mg/L	2020-10-08	
Conductivity (EC)	289	2.0	µS/cm	2020-10-06	
Nitrogen, Total Kjeldahl	0.234	0.050	mg/L	2020-10-07	
pH	8.18	0.10	pH units	2020-10-06	HT2
Phosphorus, Total (as P)	0.0126	0.0050	mg/L	2020-10-09	
Phosphorus, Total Dissolved	0.0050	0.0050	mg/L	2020-10-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-06	
<b>Microbiological Parameters</b>					
Coliforms, Fecal (Q-Tray)	9210	1	MPN/100 mL	2020-10-05	HT1
E. coli (Q-Tray)	5480	1	MPN/100 mL	2020-10-05	HT1
<b>Total Metals</b>					
Aluminum, total	0.0053	0.0050	mg/L	2020-10-07	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-07	
Arsenic, total	0.00058	0.00050	mg/L	2020-10-07	
Barium, total	0.0255	0.0050	mg/L	2020-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-07	
Boron, total	< 0.0500	0.0500	mg/L	2020-10-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-07	
Calcium, total	36.7	0.20	mg/L	2020-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-10-07	
Copper, total	0.00075	0.00040	mg/L	2020-10-07	
Iron, total	0.010	0.010	mg/L	2020-10-07	
Lead, total	< 0.00020	0.00020	mg/L	2020-10-07	
Lithium, total	0.00370	0.00010	mg/L	2020-10-07	
Magnesium, total	11.0	0.010	mg/L	2020-10-07	
Manganese, total	0.00426	0.00020	mg/L	2020-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-09	
Molybdenum, total	0.00348	0.00010	mg/L	2020-10-07	
Nickel, total	0.00041	0.00040	mg/L	2020-10-07	
Phosphorus, total	< 0.050	0.050	mg/L	2020-10-07	
Potassium, total	2.74	0.10	mg/L	2020-10-07	
Selenium, total	< 0.00050	0.00050	mg/L	2020-10-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Skaha Lake - 605 Willow (20J0015-02)   Matrix: Water   Sampled: 2020-10-02 11:35, Continued</b>					<b>FILT, PRES</b>
<i>Total Metals, Continued</i>					
Silicon, total	4.0	1.0	mg/L	2020-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-07	
Sodium, total	13.7	0.10	mg/L	2020-10-07	
Strontium, total	0.316	0.0010	mg/L	2020-10-07	
Sulfur, total	10.1	3.0	mg/L	2020-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Tin, total	< 0.00020	0.00020	mg/L	2020-10-07	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-07	
Uranium, total	0.00264	0.000020	mg/L	2020-10-07	
Vanadium, total	0.0017	0.0010	mg/L	2020-10-07	
Zinc, total	< 0.0040	0.0040	mg/L	2020-10-07	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-10-07	

**Skaha Lake - Main St. Wharf (20J0015-03) | Matrix: Water | Sampled: 2020-10-02 12:10**

**FILT<sub>a</sub>, PRES<sub>a</sub>**

**Anions**

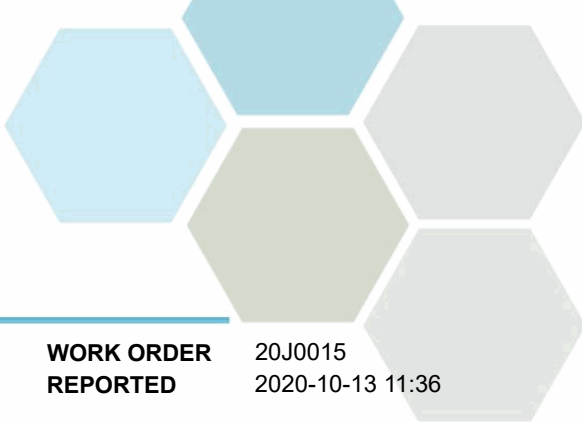
Chloride	5.60	0.10	mg/L	2020-10-07	
Fluoride	0.15	0.10	mg/L	2020-10-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2020-10-07	HT1
Sulfate	28.6	1.0	mg/L	2020-10-07	

**Calculated Parameters**

Hardness, Total (as CaCO <sub>3</sub> )	130	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.263	0.0500	mg/L	N/A	

**General Parameters**

Alkalinity, Total (as CaCO <sub>3</sub> )	95.2	1.0	mg/L	2020-10-06	
Alkalinity, Phenolphthalein (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Bicarbonate (as CaCO <sub>3</sub> )	95.2	1.0	mg/L	2020-10-06	
Alkalinity, Carbonate (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Hydroxide (as CaCO <sub>3</sub> )	< 1.0	1.0	mg/L	2020-10-06	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-10-06	
BOD, 5-day	< 1.0	2.0	mg/L	2020-10-12	HT1
Chemical Oxygen Demand	25	20	mg/L	2020-10-08	
Conductivity (EC)	281	2.0	µS/cm	2020-10-06	
Nitrogen, Total Kjeldahl	0.263	0.050	mg/L	2020-10-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Skaha Lake - Main St. Wharf (20J0015-03)   Matrix: Water   Sampled: 2020-10-02 12:10, Continued</b>					FILTa, PRESa

**General Parameters, Continued**

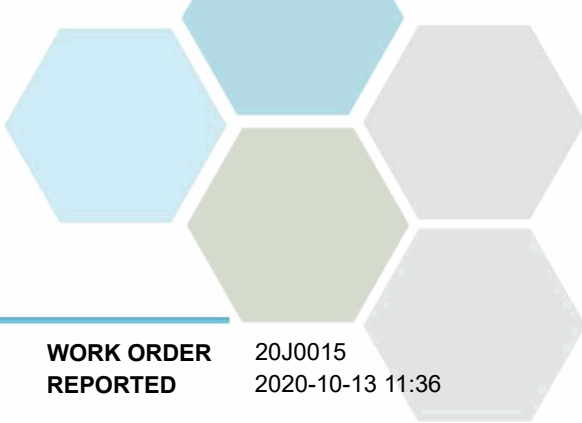
pH	8.23	0.10	pH units	2020-10-06	HT2
Phosphorus, Total (as P)	0.0100	0.0050	mg/L	2020-10-09	
Phosphorus, Total Dissolved	< 0.0050	0.0050	mg/L	2020-10-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-10-06	

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	88	1	MPN/100 mL	2020-10-05	HT1
E. coli (Q-Tray)	60	1	MPN/100 mL	2020-10-05	HT1

**Total Metals**

Aluminum, total	0.0059	0.0050	mg/L	2020-10-07	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-07	
Arsenic, total	0.00060	0.00050	mg/L	2020-10-07	
Barium, total	0.0216	0.0050	mg/L	2020-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-10-07	
Boron, total	< 0.0500	0.0500	mg/L	2020-10-07	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-10-07	
Calcium, total	34.8	0.20	mg/L	2020-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-10-07	
Copper, total	0.00074	0.00040	mg/L	2020-10-07	
Iron, total	0.010	0.010	mg/L	2020-10-07	
Lead, total	< 0.00020	0.00020	mg/L	2020-10-07	
Lithium, total	0.00339	0.00010	mg/L	2020-10-07	
Magnesium, total	10.4	0.010	mg/L	2020-10-07	
Manganese, total	0.00426	0.00020	mg/L	2020-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-09	
Molybdenum, total	0.00343	0.00010	mg/L	2020-10-07	
Nickel, total	0.00045	0.00040	mg/L	2020-10-07	
Phosphorus, total	< 0.050	0.050	mg/L	2020-10-07	
Potassium, total	2.48	0.10	mg/L	2020-10-07	
Selenium, total	0.00055	0.00050	mg/L	2020-10-07	
Silicon, total	3.7	1.0	mg/L	2020-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-07	
Sodium, total	12.6	0.10	mg/L	2020-10-07	
Strontium, total	0.297	0.0010	mg/L	2020-10-07	
Sulfur, total	9.7	3.0	mg/L	2020-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Tin, total	< 0.00020	0.00020	mg/L	2020-10-07	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-07	



## TEST RESULTS

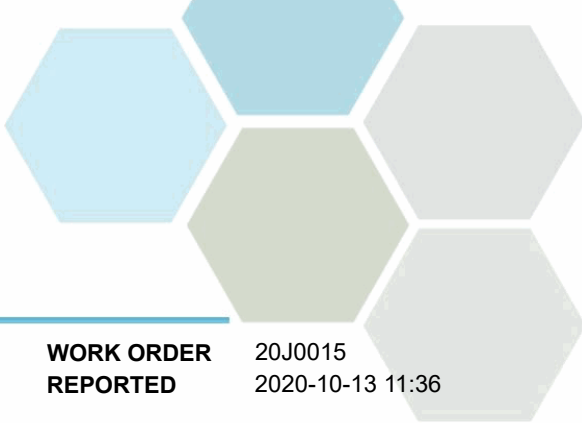
**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>Skaha Lake - Main St. Wharf (20J0015-03)   Matrix: Water   Sampled: 2020-10-02 12:10, Continued</b>					FILTa, PRESa
<i>Total Metals, Continued</i>					
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-07	
Uranium, total	<b>0.00238</b>	0.000020	mg/L	2020-10-07	
Vanadium, total	<b>0.0016</b>	0.0010	mg/L	2020-10-07	
Zinc, total	<b>0.0174</b>	0.0040	mg/L	2020-10-07	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-10-07	

**Sample Qualifiers:**

- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- FILTa The sample has been filtered for TP in the laboratory. Results may not reflect conditions at the time of sampling.
- 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.
- PRES Sample has been preserved for Metals, TP, TKN, NH3, COD in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for Metals, TP, TKN, NO3, COD in the laboratory and the holding time has been extended.
- PRESb Sample has been preserved for Metals, TP, NH3, TKN, COD in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

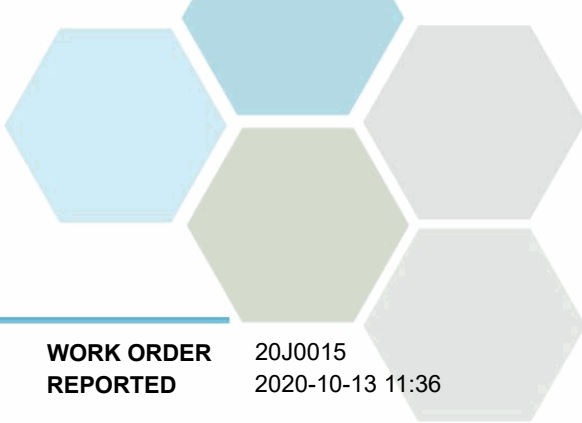
Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Biochemical Oxygen 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, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
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 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QORC

**WORK ORDER REPORTED** 20J0015  
2020-10-13 11:36

**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. The quality control (QC) data is available upon request

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*

## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP QCE

**PROJECT INFO**

**WORK ORDER** 20J0018

**RECEIVED / TEMP** 2020-10-05 08:45 / 12°C  
**REPORTED** 2020-10-13 14:35

**COC NUMBER** B91058

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

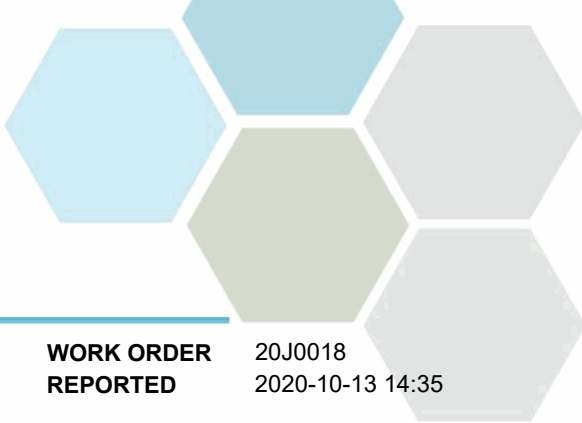
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

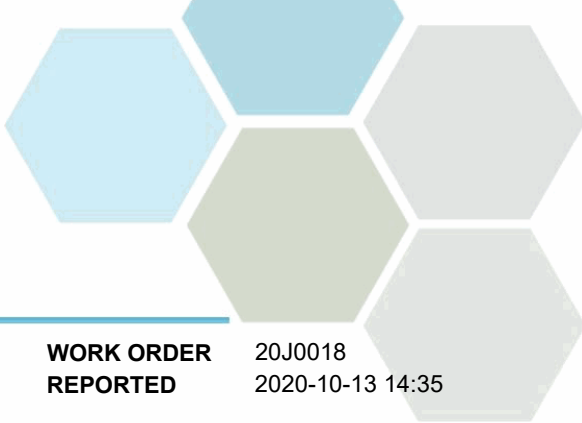


# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J0018  
2020-10-13 14:35

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>605 Willow - East Puddle (20J0018-01)   Matrix: Water   Sampled: 2020-10-02 10:30</b>					FILT, PRES
<b>Anions</b>					
Chloride	169	0.10	mg/L	2020-10-07	
Fluoride	0.27	0.10	mg/L	2020-10-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Phosphate (as P)	3.56	0.0050	mg/L	2020-10-07	HT1
Sulfate	58.4	1.0	mg/L	2020-10-07	
<b>Calculated Parameters</b>					
Hardness, Total (as CaCO3)	339	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	53.4	1.00	mg/L	N/A	
Nitrogen, Organic	11.4	1.25	mg/L	N/A	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	387	1.0	mg/L	2020-10-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Bicarbonate (as CaCO3)	387	1.0	mg/L	2020-10-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Ammonia, Total (as N)	42.0	0.050	mg/L	2020-10-07	
BOD, 5-day	> 36	2.0	mg/L	2020-10-12	BOD5, HT1
BOD, 5-day Carbonaceous	> 38	2.0	mg/L	2020-10-12	BOD5, HT1
Chemical Oxygen Demand	238	20	mg/L	2020-10-07	
Conductivity (EC)	1480	2.0	µS/cm	2020-10-06	
Nitrogen, Total Kjeldahl	53.4	0.050	mg/L	2020-10-08	
pH	7.90	0.10	pH units	2020-10-06	HT2
Phosphorus, Total (as P)	5.00	0.0050	mg/L	2020-10-09	
Phosphorus, Total Dissolved	3.98	0.0050	mg/L	2020-10-09	
Solids, Total Suspended	41.2	2.0	mg/L	2020-10-06	
UV Transmittance @ 254nm	24.7	0.10	% T	2020-10-07	HT1
<b>Microbiological Parameters</b>					
Coliforms, Fecal (Q-Tray)	> 242000	1	MPN/100 mL	2020-10-05	HT1
E. coli (Q-Tray)	> 242000	1	MPN/100 mL	2020-10-05	HT1
<b>Total Metals</b>					
Aluminum, total	0.0254	0.0050	mg/L	2020-10-07	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-07	
Arsenic, total	0.00165	0.00050	mg/L	2020-10-07	
Barium, total	0.125	0.0050	mg/L	2020-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Bismuth, total	0.00082	0.00010	mg/L	2020-10-07	
Boron, total	0.131	0.0500	mg/L	2020-10-07	
Cadmium, total	0.000044	0.000010	mg/L	2020-10-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J0018  
2020-10-13 14:35

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>605 Willow - East Puddle (20J0018-01)   Matrix: Water   Sampled: 2020-10-02 10:30, Continued</b>					<b>FILT, PRES</b>

**Total Metals, Continued**

Calcium, total	96.4	0.20	mg/L	2020-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Cobalt, total	0.00030	0.00010	mg/L	2020-10-07	
Copper, total	0.0247	0.00040	mg/L	2020-10-07	
Iron, total	0.097	0.010	mg/L	2020-10-07	
Lead, total	0.00203	0.00020	mg/L	2020-10-07	
Lithium, total	0.0105	0.00010	mg/L	2020-10-07	
Magnesium, total	23.7	0.010	mg/L	2020-10-07	
Manganese, total	0.0675	0.00020	mg/L	2020-10-07	
Mercury, total	< 0.000010	0.000010	mg/L	2020-10-09	
Molybdenum, total	0.00442	0.00010	mg/L	2020-10-07	
Nickel, total	0.00147	0.00040	mg/L	2020-10-07	
Phosphorus, total	5.81	0.050	mg/L	2020-10-07	
Potassium, total	24.4	0.10	mg/L	2020-10-07	
Selenium, total	0.00074	0.00050	mg/L	2020-10-07	
Silicon, total	13.9	1.0	mg/L	2020-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-07	
Sodium, total	121	0.10	mg/L	2020-10-07	
Strontium, total	0.871	0.0010	mg/L	2020-10-07	
Sulfur, total	25.7	3.0	mg/L	2020-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Tin, total	0.00089	0.00020	mg/L	2020-10-07	
Titanium, total	< 0.0050	0.0050	mg/L	2020-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-07	
Uranium, total	0.00567	0.000020	mg/L	2020-10-07	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-10-07	
Zinc, total	0.0456	0.0040	mg/L	2020-10-07	
Zirconium, total	0.00091	0.00010	mg/L	2020-10-07	

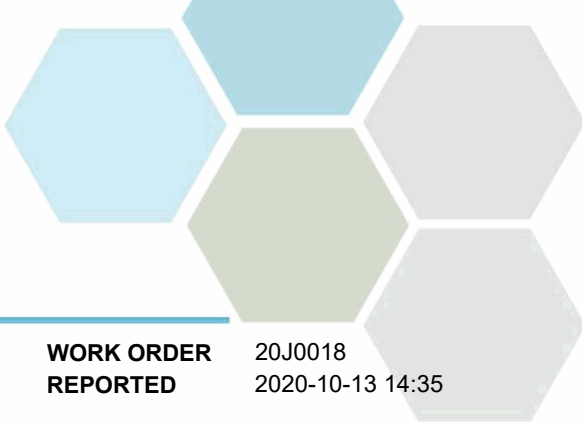
**605 Willow - North Puddle (20J0018-02) | Matrix: Water | Sampled: 2020-10-02 10:35**

**FILT, PRESa**

**Anions**

Chloride	110	0.10	mg/L	2020-10-07	
Fluoride	0.32	0.10	mg/L	2020-10-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-10-07	HT1
Phosphate (as P)	4.52	0.0050	mg/L	2020-10-07	HT1
Sulfate	56.8	1.0	mg/L	2020-10-07	

**Calculated Parameters**



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J0018  
2020-10-13 14:35

Analyte	Result	RL	Units	Analyzed	Qualifier
<b>605 Willow - North Puddle (20J0018-02)   Matrix: Water   Sampled: 2020-10-02 10:35, Continued</b>					FILT, PRESa

**Calculated Parameters, Continued**

Hardness, Total (as CaCO3)	285	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	65.2	1.00	mg/L	N/A	
Nitrogen, Organic	15.0	1.25	mg/L	N/A	

**General Parameters**

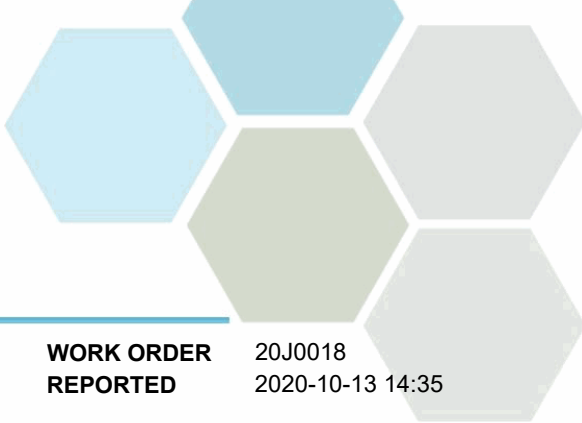
Alkalinity, Total (as CaCO3)	447	1.0	mg/L	2020-10-06	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Bicarbonate (as CaCO3)	447	1.0	mg/L	2020-10-06	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-10-06	
Ammonia, Total (as N)	50.2	0.050	mg/L	2020-10-07	
BOD, 5-day	> 36	2.0	mg/L	2020-10-12	BOD5, HT1
BOD, 5-day Carbonaceous	> 38	2.0	mg/L	2020-10-12	BOD5, HT1
Chemical Oxygen Demand	286	20	mg/L	2020-10-07	
Conductivity (EC)	1340	2.0	µS/cm	2020-10-06	
Nitrogen, Total Kjeldahl	65.2	0.050	mg/L	2020-10-08	
pH	8.01	0.10	pH units	2020-10-06	HT2
Phosphorus, Total (as P)	6.39	0.0050	mg/L	2020-10-12	
Phosphorus, Total Dissolved	4.80	0.0050	mg/L	2020-10-12	
Solids, Total Suspended	48.0	2.0	mg/L	2020-10-06	
UV Transmittance @ 254nm	25.2	0.10	% T	2020-10-07	HT1

**Microbiological Parameters**

Coliforms, Fecal (Q-Tray)	> 242000	1	MPN/100 mL	2020-10-05	HT1
E. coli (Q-Tray)	> 242000	1	MPN/100 mL	2020-10-05	HT1

**Total Metals**

Aluminum, total	0.0363	0.0050	mg/L	2020-10-07	
Antimony, total	< 0.00020	0.00020	mg/L	2020-10-07	
Arsenic, total	0.00164	0.00050	mg/L	2020-10-07	
Barium, total	0.107	0.0050	mg/L	2020-10-07	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Bismuth, total	0.00087	0.00010	mg/L	2020-10-07	
Boron, total	0.126	0.0500	mg/L	2020-10-07	
Cadmium, total	0.000053	0.000010	mg/L	2020-10-07	
Calcium, total	81.5	0.20	mg/L	2020-10-07	
Chromium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Cobalt, total	0.00026	0.00010	mg/L	2020-10-07	
Copper, total	0.0268	0.00040	mg/L	2020-10-07	
Iron, total	0.098	0.010	mg/L	2020-10-07	
Lead, total	0.00192	0.00020	mg/L	2020-10-07	
Lithium, total	0.00946	0.00010	mg/L	2020-10-07	
Magnesium, total	19.6	0.010	mg/L	2020-10-07	



# TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J0018  
2020-10-13 14:35

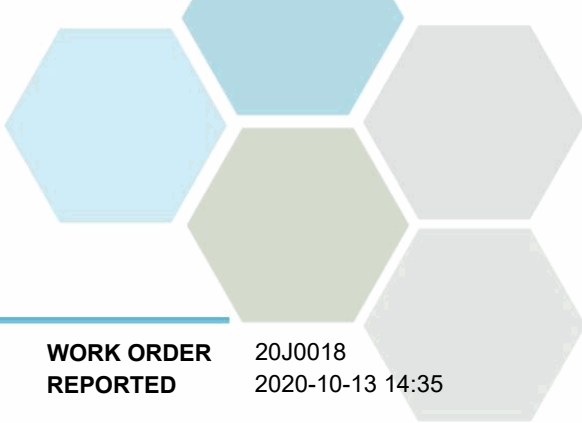
Analyte	Result	RL	Units	Analyzed	Qualifier
<b>605 Willow - North Puddle (20J0018-02)   Matrix: Water   Sampled: 2020-10-02 10:35, Continued</b>					FILT, PRESa

**Total Metals, Continued**

Manganese, total	0.0553	0.00020	mg/L	2020-10-07	
Mercury, total	0.000012	0.000010	mg/L	2020-10-09	
Molybdenum, total	0.00324	0.00010	mg/L	2020-10-07	
Nickel, total	0.00146	0.00040	mg/L	2020-10-07	
Phosphorus, total	6.39	0.050	mg/L	2020-10-07	
Potassium, total	22.8	0.10	mg/L	2020-10-07	
Selenium, total	0.00057	0.00050	mg/L	2020-10-07	
Silicon, total	13.0	1.0	mg/L	2020-10-07	
Silver, total	< 0.000050	0.000050	mg/L	2020-10-07	
Sodium, total	90.4	0.10	mg/L	2020-10-07	
Strontium, total	0.714	0.0010	mg/L	2020-10-07	
Sulfur, total	25.5	3.0	mg/L	2020-10-07	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-10-07	
Thallium, total	< 0.000020	0.000020	mg/L	2020-10-07	
Thorium, total	< 0.00010	0.00010	mg/L	2020-10-07	
Tin, total	0.00099	0.00020	mg/L	2020-10-07	
Titanium, total	0.0062	0.0050	mg/L	2020-10-07	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-10-07	
Uranium, total	0.00515	0.000020	mg/L	2020-10-07	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-10-07	
Zinc, total	0.0493	0.0040	mg/L	2020-10-07	
Zirconium, total	0.00099	0.00010	mg/L	2020-10-07	

**Sample Qualifiers:**

- BOD5 The sample dilutions set up for the BOD analysis failed to meet the criteria of a residual dissolved oxygen of at least 1 mg/L.
- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- 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.
- PRES Sample has been preserved for Metals, TP, NH3, TKN, COD in the laboratory and the holding time has been extended.
- PRESa Sample has been preserved for Metals, TP, TKN, NH3, COD in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

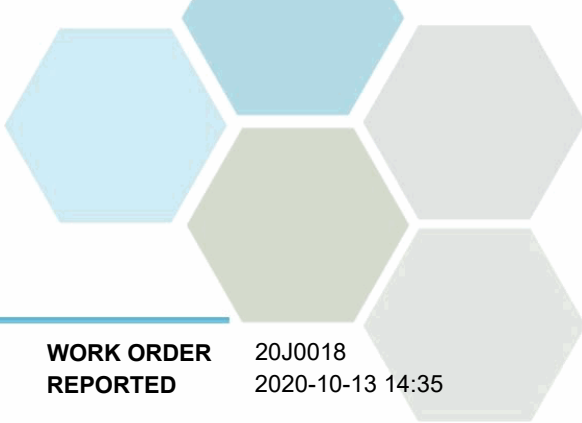
**WORK ORDER REPORTED** 20J0018  
2020-10-13 14:35

Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
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
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
Chemical Oxygen Demand in Water	SM 5220 D* (2017)	Closed Reflux, Colorimetry	✓	Kelowna
Coliforms, Fecal in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
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 [total Ca] + 4.118 [total Mg] (Est)	✓	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 Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	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 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
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna

*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)
% T	Percent Transmittance
<	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 PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP QCE

**WORK ORDER REPORTED** 20J0018  
2020-10-13 14:35

**General Comments:**

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*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*



## CERTIFICATE OF ANALYSIS

**REPORTED TO** Regional District of Okanagan Similkameen  
101 Martin Street  
Penticton, BC V2A 5J9

**ATTENTION** Rina Seppen

**PO NUMBER** OK Falls WW

**PROJECT** OK Falls WWTP

**PROJECT INFO**

**WORK ORDER** 20J0603

**RECEIVED / TEMP** 2020-10-08 09:20 / 3°C

**REPORTED** 2020-10-09 15:17

**COC NUMBER** B67441

### 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/IEC 17025:2017 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.

### Work Order Comments:

Custody Seals Intact: YES

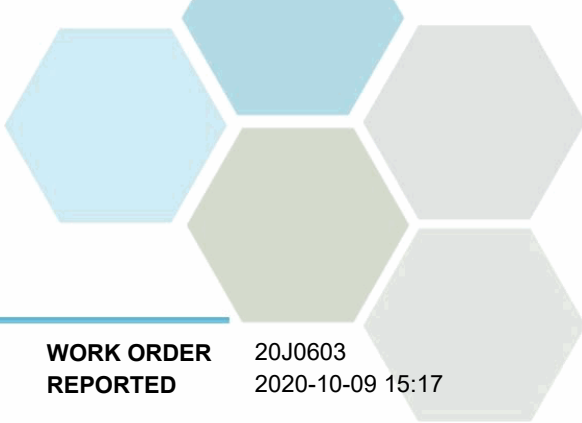
If you have any questions or concerns, please contact me at [acrump@caro.ca](mailto:acrump@caro.ca)

### Authorized By:

Alana Crump  
Team Lead, Client Service

1-888-311-8846 | [www.caro.ca](http://www.caro.ca)

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7

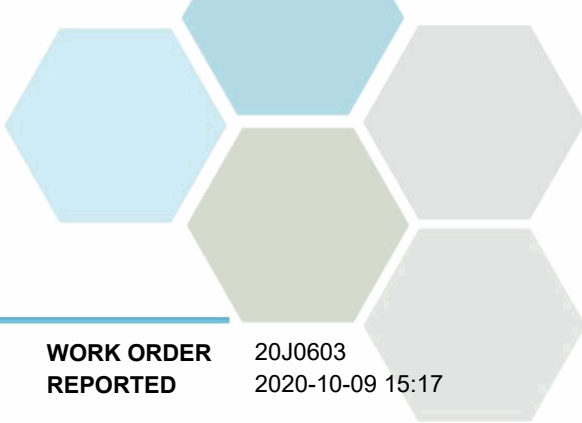


## TEST RESULTS

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 20J0603  
2020-10-09 15:17

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>Domestic Well (20J0603-01)   Matrix: Water   Sampled: 2020-10-07 12:45</b>						
<i>Microbiological Parameters</i>						
Coliforms, Total (Q-Tray)	< 1	N/A	1	MPN/100 mL	2020-10-08	
E. coli (Q-Tray)	< 1	N/A	1	MPN/100 mL	2020-10-08	
<b>Skaha Lake - 605 Willow (20J0603-02)   Matrix: Water   Sampled: 2020-10-07 13:05</b>						
<i>Microbiological Parameters</i>						
Coliforms, Total (Q-Tray)	<b>328</b>	N/A	1	MPN/100 mL	2020-10-08	
E. coli (Q-Tray)	<b>27</b>	N/A	1	MPN/100 mL	2020-10-08	
<b>Kenyon Park (20J0603-03)   Matrix: Water   Sampled: 2020-10-07 13:15</b>						
<i>Microbiological Parameters</i>						
Coliforms, Total (Q-Tray)	<b>220</b>	N/A	1	MPN/100 mL	2020-10-08	
E. coli (Q-Tray)	<b>6</b>	N/A	1	MPN/100 mL	2020-10-08	



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Regional District of Okanagan Similkameen  
OK Falls WWTP

**WORK ORDER REPORTED** 20J0603  
2020-10-09 15:17

Analysis Description	Method Ref.	Technique	Accredited	Location
Coliforms, Total in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna
E. coli in Water	NA / SM 9223 (2017)	Quanti-Tray / Enzyme Substrate Endo Agar	✓	Kelowna

### 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
MPN/100 mL	Most Probable Number per 100 millilitres
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

### Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

*Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user*

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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](mailto:acrump@caro.ca)

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