

WASTEWATER TREATMENT PLANT 2022 ANNUAL REPORT

DISTRICT OF LAKE COUNTRY



Sarah Graham
(Email address)

Table of Contents

1.0 Authorized Discharges	2
1.1 Authorized Source.....	2
1.2 Authorized Rate of Discharge	2
1.3 Effluent Quality	3
1.3.1 Carbonaceous BOD (CBOD).....	4
1.3.2 Total Suspended Solids (TSS)	4
1.3.3 Ortho Phosphorus.....	4
1.3.4 Total Soluble Nitrogen (TSN).....	5
2.0 General Requirements	5
2.1 Maintenance of works	5
2.2 Emergency Procedures	5
2.3 Bypasses.....	6
2.4 Plant Modifications	6
2.5 Facility Classification and Operator Certification.....	6
2.6 Qualified Professional	6
2.7 Plans-Works	6
2.8 Operation and Maintenance.....	6
2.9 Contingency Plan.....	6
2.10 Sludge Management	7
2.10.1 Sludge Volume Measurement	7
2.10.2 Sludge Sampling Program	8
2.11 Infiltration Facilities	8
2.12 Sewage Collection System	8
2.12.1 Infiltration, Inflow and Cross Connections.....	8
2.13 Domestic Wells	9
2.14 Groundwater Extraction	9
2.15 Irrigation.....	9
3.0 Monitoring Requirements.....	9
3.1 Influent and Effluent Monitoring.....	9
3.2 Groundwater Monitoring.....	10
3.3 Modification of the Monitoring Program	10
3.4 Sampling Facilities & Procedures	10

3.5 Analytical Procedures	11
3.6 Quality Assurance	11
4.0 Reporting Requirements.....	11
4.1 Non-Compliance Notification and Reporting.....	11
4.2 EMS Reporting	11
4.3 Annual Reporting	11
4.3.1 Exceedances.....	11
4.3.2 Groundwater Reporting.....	12
4.3.3 Plant Performance Trends	13
4.3.4 Lab reports	13
4.3.5 Quality Assurance Data.....	13
4.3.6 Sludge Management Recording.....	13
4.3.7 Evaluation of Authorized works.....	13
4.3.8 Contingency Plan.....	13
Appendix A - Total Daily Flows.....	A
Appendix B – Accredited Laboratory Reports.....	B
Appendix C – Non-Compliance Reporting	C
Appendix D - Groundwater Monitoring Report.....	D
Appendix E – Monitoring Wells Locations	E
Appendix F – Plant Performance Trends	F

This annual report for the year 2022 is submitted according to the requirements of the Lake Country Wastewater Treatment Plant (LCWWTP) Operational Certificate – #14651. This report follows the format detailed in the Operational Certificate. The Operational Certificate was first issued in November 1998 and last amended in June 2021.

The LCWWTP, located at 4062 Beaver Lake Road in Lake Country, British Columbia, is a Class IV tertiary treatment plant owned, operated, and maintained by the District of Lake Country.

This document has been reviewed by the Wastewater Crew Leader and shared with wastewater operators and relevant District of Lake Country personnel. I certify that the information in this document and all attachments are correct, accurate, and complete to the best of my knowledge.

Cover image taken on November 2014 after phase III upgrade.

Prepared by:

Sarah Graham, Engineering Technician

March 20, 2023

Date

Reviewed by:

Davin Larsen ASCT, Wastewater Crew Leader

Date

Reviewed by:

Kiel Wilkie ASCT, Utilities Manager

Date

1.0 Authorized Discharges

1.1 Authorized Source

The Lake County Wastewater Treatment Plant (LCWWTP) authorized works consist of a biological nutrient removal tertiary treatment plant, chemical phosphorous removal facilities, effluent flow meter, 3 rapid infiltration basins, 2 subsurface infiltration trenches and other related appurtenances.

The site reference number for the effluent discharge is Environmental Monitoring System (EMS) E233626. The LCWWTP discharges treated effluent to a ground infiltration system located south of the treatment works. In 2012, infiltration capacity was upgraded with the addition of 3 open basins. In 2015, the existing 2 sub-surface fields were renewed to their original condition with new pipe and media.

The discharge is authorized under provisions of the Operational Certificate – #14651, issued June 22, 2021.

This section applies to the discharge of effluent to the ground by infiltration from the LCWWTP to the 3 infiltration basins and the 2 subsurface infiltration trenches.



Figure 1: Effluent RI Basin 1

1.2 Authorized Rate of Discharge

The authorized maximum daily discharge limit issued for the year 2022 is 2000 m³/d, based on a monthly average. Effluent totals are determined by subtracting the reclaimed water meter total from the effluent flow meter total as the reclaimed water flow is taken from the effluent discharge line after the effluent flow meter and recycled through the plant as process water.

- 2022 Annual Average 1,934 m³/d (2021=1952 m³/d)
- 2022 Peak Month 62,778 m³ - January 2022; and
- 2022 Peak Daily 2,381 m³/d - January 12, 2022

Details of the monthly flows are provided in [Table 1](#). Daily flows can be found in [Appendix A](#).

Table 1: Daily, Monthly, and Average Effluent Flows

2022	Influent	Effluent				Septage
	Flow (m3/month)	Flow* (m3/month)	Minimum* (m3/day)	Maximum* (m3/day)	Daily Avg* (m3/day)	Flow (m3/month)
January	56,256	62,778	1,877	2,381	2,025	359
February	51,867	55,950	1,891	2,145	1,998	420
March	55,764	60,916	1,894	2,047	1,965	910
April	50,917	59,226	1,831	2,129	1,974	1,081
May	51,531	58,763	1,763	2,090	1,896	1,219
June	52,018	58,492	1,809	2,100	1,950	1,042
July	54,781	61,266	1,877	2,097	1,976	1,060
August	53,271	59,860	1,855	2,034	1,931	1,395
September	49,495	54,820	1,349	1,966	1,827	1,203
October	50,874	57,253	1,211	1,963	1,847	1,344
November	50,389	57,457	1,824	2,066	1,915	801
December	51,403	59,170	1,745	2,194	1,909	419
Total	628,566	705,951	-	-	-	11,252

* Effluent totals are determined by subtracting the reclaimed water meter total from the effluent flow meter total, refer to [section 1.2](#) for explanation.

1.3 Effluent Quality

Monthly grab samples are taken to an accredited lab for analysis, and the annual average results are calculated based on the 12 monthly results. Effluent discharge requirements, received from the Operation Certificate - #14651, are listed in [Table 2](#). Listed in [Table 3](#) are the accredited lab results from the monthly samples. Daily in-house samples are taken for process control and operational performance checks using the standard methods listed in the BC Field Sampling Manual (2013 ed.) and the British Columbia Environmental Laboratory Manual (2020 ed.).



Figure 2: In-house Laboratory

Table 2: Effluent Quality Requirement – Maximums

Parameters	Daily	Annual Average
CBOD5	10	-
Total Suspended Solids (mg/L)	20	-
Ortho-Phosphorus (mg/L as P)	1.5	0.15
Total Soluble Nitrogen (mg/L as N)	10	6

Table 3: Effluent Monthly Grab Samples - Accredited Lab Analysis

	CBOD ₅ (mg/L)	TSS (mg/L)	Ortho – P (mg/L)	Total Soluble N (mg/L)	pH
Daily Permit Levels	10	20	1.5	10	
January	12.2*	9.5	0.01	5.30	6.98
February	9.0	19.3	0.01	12.87*	7.73
March	12.0*	13.9	0.01	9.97	7.78
April	7.8	10.7	0.03	5.89	7.68
May	4.6	9.4	0.01	4.56	7.00
June	<7.0	5.0	0.01	1.40	7.93
July	<2.2	4.3	0.02	0.98	7.91
August	<7.0	3.6	0.01	2.03	8.03
September	4.6	4.2	0.03	3.09	7.73
October	3.0	3.0	0.01	3.01	7.63
November	<4.6	4.6	0.01	2.45	7.95
December	<7.0	4.0	0.01	2.11	7.30
Annual Average	6.7	7.6	0.01	4.47	7.64

*Refer to Section 1.3.1 and 1.3.4

The 2022 operating results and effluent discharge criteria for CBOD₅, TSS, Ortho-phosphorus, and total soluble nitrogen are discussed in the following sections.

1.3.1 Carbonaceous BOD (CBOD)

Monthly CBOD₅ samples analyzed by the accredited lab (refer to [Table 3](#)) showed two occasions, January 6, 2022, and March 14, 2022, when the CBOD₅ concentration were higher than the operational certificate requirements. A second sample was taken on January 14, 2022 to ensure the issue was resolved or if it was an anomaly. The resample was well below the exceedance level at 4.4 mg/L, therefore no further action was taken. MOE was notified of this non-compliance on January 25, 2022. Accredited laboratory results can be found in [Appendix B](#). On March 14, 2022 the plant process was failing due to the effect of seasonal cold weather and therefore a second sample was not taken as it was certain that the original sample was accurate. Typically, the treatment process does not fully recover from seasonal cold weather until mid April.

The current upgrades underway at the LCWWTP include the addition of filtration ([section 2.4](#)) which will help to address cold weather issues and fluctuations in effluent quality.

1.3.2 Total Suspended Solids (TSS)

Suspended Solids are analyzed monthly by an accredited lab (refer to [Table 3](#)). The yearly average was 7.6 mg/L, and the maximum was 19.3 mg/L occurring on February 28, 2022. There were no occasions in 2022 when TSS was higher than the operational certificate requirement of 20 mg/L. TSS is also analyzed in-house seven days a week to help inform process control. A filtration process is currently being added to the LCWWTP and will be operational in 2023 and is expected to vastly improve the TSS results.

1.3.3 Ortho Phosphorus

Effluent Ortho Phosphorus is analyzed monthly by an external accredited laboratory (refer to [Table 3](#)). The biological nutrient removal process is supported with periodic Alum addition when required. The

Ortho Phosphorus annual average was 0.01 mg/L. This was below the operational certificate requirement of 0.15 mg/L for an annual average. At no time in 2022 did the effluent Ortho Phosphorus exceed the daily limit of 1.5 mg/L, with the maximum concentration of 0.03 mg/L. Ortho Phosphorus is also analyzed inhouse daily to help inform process control.

1.3.4 Total Soluble Nitrogen (TSN)

Total Soluble Nitrogen is measured as the sum of ammonia, nitrite, and nitrate, as per the operational certificate. Samples are analyzed monthly by the accredited lab for TSN (refer to [Table 3](#)), as well as daily in-house to aid in process control. Issues regarding TSN removal have mostly been attributed to the strength and volume of the centrate generated from the dewatering of septage. Effluent TSN variations can typically be seen in correlation with the volume of septage received. Cold weather also has had a detrimental effect on TSN removal.

In 2022, the facility experienced 1 sample where the TSN limit of 10.0 mg/L was exceeded, with the maximum concentration being 12.87 mg/L measured on February 28, 2022. A Non-Compliance Report was sent to MOE regarding this incidence.

The yearly average for TSN was 4.47 mg/L, which is in compliance with the permitted annual average limit of 6.0 mg/L for TSN.

2.0 General Requirements

2.1 Maintenance of works

District operators complete several plant operation checklists every day; copies of these are available upon request.

The District utilizes a Computer Maintenance Management System (CMMS) that schedules and tracks all plant maintenance. All equipment is listed in the maintenance database and all manufacturer data and literature is indexed in binders. At a minimum all maintenance is in accordance with the authorized works recommended schedule.

2.2 Emergency Procedures

In 2021, the District finalized a Wastewater Operations Contingency Plan. This plan was created to outline protocols to be taken during any preconceived emergency as per section 2.10 of the Operational Certificate. This plan is intended as supplemental material for instructing new operators and supporting current operators with the proper steps to be taken if a critical failure should occur in any stage of the wastewater handling processes. The primary focus of this plan is ensuring public health and safety is maintained along with the protection of the surrounding natural environment.

There were 8 unauthorized discharges in 2022. 3 regarding water quality exceedances (see [section 1.2](#)), 1 daily flow exceedance, 2 raw sewage spills due to infrastructure breaks within the collection system, and 1 treated effluent spill originating from the subsurface disposal fields. All incidents were reported to MOE in a non-compliance report and these reports can be found in [Appendix C](#).

2.3 Bypasses

There were no plant bypasses required in 2022.

2.4 Plant Modifications

The District of Lake Country is currently in the process of upgrading the Wastewater Treatment Plant with approval from the Ministry of Environment and Climate Change Strategy (MOE). In the current upgrade (Phase 4); there are provisions for added effluent treatment, increased disposal capacity, improved redundancy, and effluent filtration to help meet current and future community needs.

2.5 Facility Classification and Operator Certification

The British Columbia Environmental Operators Certification Program (EOCP) classifies the Lake Country Wastewater Treatment Plant as a Level IV facility and the Collection System a Class II system. The four staff members at the LCWWTP are all EOCP-certified wastewater treatment operators and collection system operators. Levels of certification are displayed in [Table 4](#).

Table 4: EOCP certification level

Operator	Wastewater Treatment Level	Wastewater Collections Level
Davin Larsen (Crew Lead)	IV	II
Mike Davis	IV	II
Aaron Geck	IV	I
Shelby McFarlane	II	-

2.6 Qualified Professional

This report was compiled by the ASCT certified staff at the Wastewater Treatment facility. The required data for the report has been collected and analyzed using the proper methods outlined in the British Columbia Field Sampling Manual and the British Columbia Environmental Laboratory Manual. Where required, accredited lab services were utilized, and results have been uploaded to EMS database.

Furthermore, a third-party qualified professional has been contracted to review all data and the report itself for further transparency.

2.7 Plans-Works

All existing and currently constructed authorized works have been certified by a qualified person and constructed to the appropriate standards.

2.8 Operation and Maintenance

The District of Lake Country has a Wastewater Treatment Operation and Maintenance Manual that lists design criteria, process descriptions, maintenance, and standard operating procedures for the more common functions of the facility.

2.9 Contingency Plan

A Contingency Plan was created in 2021 and sent to the MOE in early 2022. The plan details the measures in place for any foreseeable emergency. A copy of the plan is available upon request.

2.10 Sludge Management

Biosolids produced in the wastewater treatment plant process are trucked to the Ogogrow Production Facility at 551 Commonage Road in Vernon, B.C. where they are beneficially reused to produce a soil amendment known as Ogogrow™.

The process used for the stabilization of biosolids is the Extended Aerated Static Pile Composting Method. The biosolids are mixed with wood waste and the compost is aerated for a period of approximately 20 days. Naturally occurring aerobic bacteria generate elevated pile temperatures that destroy pathogens.



Figure 3: Ogogrow Production Facility

All compost processed meets the minimum temperature requirement of 55 degrees Celsius for at least three days and 45 degrees Celsius for 14 days to achieve the requirements of the Organic Matter Recycling Regulation. Composted biosolids are then placed on a secondary aeration system for 14 days, followed by a curing process for a minimum of ninety days. Compost is screened to one half inch to produce the final product. Each 500 cubic yard batch is tested for Salmonella and Faecal Coliform bacteria prior to sale, with upper acceptable limits of 0.75 mpn/g Salmonella, and 1000 mpn/g Faecal Coliform. Furthermore, Ogogrow™ is tested at regular intervals for metals, nutrients, and other parameters, which are either required by regulation, or deemed to be important information for the end user. The facility produces Class A compost. This means that the product can be sold with no restrictions for use, so it can be applied to flowers, shrubs, and vegetable gardens. Ogogrow is widely used throughout the Okanagan by gardeners and landscapers.

2.10.1 Sludge Volume Measurement

[Table 5](#) details the total amount of dewatered sludge hauled to the Ogogrow Production Facility.

Table 5: Dewatered Sludge Quantities

2022	Monthly Totals	
	Number of Loads	Dry Weight (Tonnes)*
January	16	121.9
February	14	135.2
March	19	193.8
April	20	185.6
May	20	199.7
June	22	201.1
July	19	168.6
August	20	189.1
September	18	157.6
October	18	172.9
November	17	136.1
December	14	106.3
Total	217	1,967.9

*Estimated weights based on solids concentrations of sludge components

2.10.2 Sludge Sampling Program

Dewatered sludge samples are sent to an accredited lab monthly. The results of this monitoring are available upon request.

2.11 Infiltration Facilities

Plant effluent is sent to the infiltration works that consist of 3 open basins and 2 sub surface fields. The basins are rotated on a weekly basis to ensure there is a rest period and cleaned on a regular basis to remove the build up of solids on the sacrificial sand layer. Every one to two years, the sand layer is replaced with prewashed 2- and 3-mm washed sand.

In 2022 there was one incident of an overflow spill (see [section 2.2](#)) from the subsurface fields. A Non-Compliance report was sent to MOE.

As part of the current phase 4 upgrade an additional sub surface field will be built to ensure proper disposal capacity is met. Additionally, plans are currently underway for the City of Kelowna to take excess flows from the facility until future disposal methods have been approved by MOE.

2.12 Sewage Collection System

The District of Lake Country Wastewater Collection system consists of 12 lift stations and 76.5 kilometers of sanitary sewer main. Other appurtenances are air valves, siphon chambers, and odour chemical dosing stations. The system is registered as a Level II Collection System by the EOCB and contains over 3,300 residential sanitary sewer services equivalences.

In 2022 upgrades to the Woodsdale Liftstation were implemented. Upgrades included installing higher capacity pumps, new plumbing, flow monitoring and safety upgrades such as a working platform inside the wet well.



Figure 4: Woodsdale Lift Station

2.12.1 Infiltration, Inflow and Cross Connections

As the District of Lake Country grows, so has the collection system's infrastructure. While there have been no consistent infiltration issues, there have been some recognized sources of inflow from properties dealing with drainage from flood events and a high groundwater table. The District of Lake Country has been in contact with several properties and continues to deal with these on a case-by-case basis.

In the past, flow from pool discharge has had noticeable effects on the collections system and lift stations. These connections have been identified and a notice sent to property owners advising them of

District bylaws regarding waste sent to the sanitary system. An inspection and follow up program have been completed and discharge from pools have been mitigated.

The District has 4 “Smartcovers” that remotely monitors sanitary manholes for variations in flow and level. These can assist operators in locating sources of infiltration and inflow and can be used as an alarm tool for sanitary sewer overflows in high-risk areas.

2.13 Domestic Wells

There has been no evidence of adverse groundwater impact from the wastewater treatment disposal system. In the event there was any impact the District would supply potable water to those affected. Private well data can be found in [Appendix D](#).

2.14 Groundwater Extraction

In March of 2004, the District of Lake Country installed a groundwater extraction well that would pump groundwater from the southwest corner of the Wastewater Treatment Plant property to the middle of Vernon Creek at the south end of Swalwell Park. This groundwater well has not been used since its installation.

2.15 Irrigation

Treated effluent is only used for wastewater treatment plant process water and not used in the irrigation of any property.

3.0 Monitoring Requirements

3.1 Influent and Effluent Monitoring

Plant influent and effluent samples are sent to an accredited lab monthly and align with the monitoring program that is outlined in section 3.1 of the Operational Certificate. Effluent flow meter readings are automatically stored in the wastewater lab data management system, Hach Wims, and are checked daily. [Table 1](#) summarizes the WWTP influent and effluent flows. [Table 6](#) presents the influent accredited lab data. Effluent accredited lab data is tabulated in [Table 3](#). Copies of the accredited lab reports can be found in [Appendix B](#), which contain all effluent and influent monitoring requirements outlined in the operational certificate.

Table 6: 2022 Influent accredited lab data

	CBOD5 (mg/L)	TSS (mg/L)	Ortho – P (mg/L)	Total Soluble N (mg/L)	pH
January	462	207	4.99	50.0	7.24
February	231	278	5.48	55.3	8.02
March	331	278	4.37	58.9	8.05
April	297	192	5.46	64.2	7.77
May	346	300	4.74	67.6	8.03
June	230	190	4.85	60.6	7.91
July	206	173	4.76	65.4	8.01
August	359	328	4.84	60.4	8.05
September	308	282	4.51	57.4	7.63
October	316	296	4.88	61.7	7.68
November	443	326	3.81	57.4	7.38
December	195	172	2.74	57.2	8.13
Annual Average	310	252	4.60	59.7	7.83

3.2 Groundwater Monitoring

The groundwater monitoring program has been developed and reviewed by a third-party qualified professional (Urban Systems Ltd.) and includes the monitoring of the following:

- groundwater flow pattern;
- groundwater quality;
- nutrient removal capability of the soil;
- groundwater levels
- reasonable notice of impending high ground water problems; and
- elevated phosphorus or nitrate levels which may be a result of the effluent disposal.

The groundwater monitoring program is outlined in Section 3.2 of the Operational Certificate. A map of monitoring well locations can be found in [Appendix E](#), and the data is summarised in a memorandum from Urban Systems Ltd, which can be found in [Appendix D](#).

3.3 Modification of the Monitoring Program

The monitoring program was amended as part of the 2021 Operational Certificate. There have been no further changes to the monitoring plan since the Operational Certificate was issued in June 2022. However, H6 Domestic Well 9719 McCarthy Road is no longer accessible and the home on the property is no longer occupied. The property was sold and is now an industrial marijuana operation with high security.

3.4 Sampling Facilities & Procedures

The District has installed and maintains sampling facilities for all sample sites. All procedures for the sampling, storing, and transporting of samples are in accordance with the BC Field Sampling Manual and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013 Edition (Permittee).

3.5 Analytical Procedures

The District follows and submits samples for laboratory analysis in accordance with the British Columbia Environmental Laboratory Manual (2020 Permittee Edition).

3.6 Quality Assurance

The District of Lake Country contracts Caro Analytical Services for their accredited lab testing. Along with sample results, Caro includes a copy of their quality assurance/quality control with each report which includes an equipment blank. Caro is a Canadian Accredited Laboratories Association (CALA) certified and International Standards Organization (ISO) accredited lab.

In-house testing completed at the LCWWTP lab adheres to the BC Field Sampling Manual, 2013 edition, for the examination of water and wastewater. Operators complete regularly scheduled calibrations of lab equipment as well as sampling quality control using blanks, duplicates, and split samples to ensure quality operational and permit required samples. This lab is not accredited, so the data is only used for operational purposes, not for reporting purposes.

4.0 Reporting Requirements

All LCWWTP data collected from the lab and from the SCADA system are recorded on the web-based software program Hach Wims and is available for review upon request.

4.1 Non-Compliance Notification and Reporting

All non-compliances are reported to the Director via email within 30 days of the event. This includes the cause and the resolution and a preventative plan of the non-compliance along with any lab data, pictures, and supporting documents. Non-compliance reports can be found in [Appendix C](#).

4.2 EMS Reporting

All lab data is entered into the Environmental Monitoring System (EMS) by the accredited lab within 30 days of the samples collection.

4.3 Annual Reporting

4.3.1 Exceedances

The Wastewater treatment plant experienced 8 non-compliances in 2022. Non-Compliance Reports were sent to MOE for each incidence and can be found in [Appendix C](#). A summary of those exceedances/non compliances are below:

- **Daily flow limit exceedance (1)** – In January the daily flow average exceeded the 2000 m³/day limit for allowable effluent discharge. The daily average flow for January was 2025 m³/day. This exceedance is inherent with current community growth. January 2022 also saw a rapid melting event that increased flow by 5-10%. There is a provision in the permit to raise this limit to 2200 m³/day once the current upgrade to the Wastewater treatment facility is completed. This will require an amendment to the operational certificate. The District is also currently working through an update to the Liquid Waste Management Plan

which will also provide long-term direction for managing community growth and resulting flows.

- **CBOD exceedance (2)** There were two occasions, January 6, 2022, and March 14, 2022, when the CBOD₅ concentration were higher than the operational certificate requirements. A second sample was taken on January 14, 2022 to ensure the issue was resolved or if it was an anomaly. The resample was well below the exceedance level at 4.4 mg/L, therefore no further action was taken. MOE was notified of this non-compliance on January 25, 2022. On March 14, 2022 the plant process was failing due to cold weather and therefore a second sample was not taken as it was certain that the original sample was accurate. The current upgrades underway at the LCWWTP include the addition of filtration ([section 2.4](#)) which will help to address cold weather issues and fluctuations in effluent quality.
- **TSN exceedance (1)** In 2022, the facility experienced 1 sample where the TSN limit of 10.0 mg/L was exceeded, with the maximum concentration being 12.87 mg/L measured on February 28, 2022. A Non-Compliance Report was sent to MOE regarding this incidence. The exceedance corresponds with colder weather and higher septage flows. Upgrades to the facility will include extended aeration that will enhance biomass growth in cold weather conditions.
- **Sewer line break (1)** On February 21, 2022, there was a leak found on a force main leaving the Clement Lift Station adjacent to 3210 Clement Rd. The spill ran to a street storm catchment system that consists of a catch basin and a retention tank that overflows to Wood Lake. The spill volume is estimated to be 10 m³. PEP was called immediately after the flow was contained. The storm catchment system was flushed and vacuumed out.
- **Raw sewage Spill (1)** A raw sewage spill occurred during a lift station upgrade at 3724 Wooddale Rd on November 22, 2022. An upgrade was underway at the liftstation which involved replacing piping in an excavated pit. During the night the newly glued piping broke loose and raw sewage flooded the open excavation. It is uncertain how much sewage escaped the excavation. Vac Trucks were brought on site and able to remove the spill immediately and an excavator was able to remove the contaminated soils. PEP was called after the leak was contained. Additional sampling proceeded and an End of Spill report was completed.
- **Treated effluent spill (1)** On February 24, 2022, approximately 5 m³ of treated effluent originating from the subsurface disposal field surfaced on the adjacent property. An operator adjusted the flow away from the subsurface field to an open basin to stop the water from surfacing. PEP was called shortly after. The current upgrade to the WWTP includes the addition of another disposal area as well as the option to send excess flow to the City of Kelowna, both of which will help ensure that this issue does not happen again.

4.3.2 Groundwater Reporting

Refer to [Appendix D](#) for a report on the groundwater conditions at the LCWWTP and surrounding area.

4.3.3 Plant Performance Trends

Refer to [Appendix F](#) for plant trends performance depicted as annual graphs.

4.3.4 Lab reports

Please refer to [Table 3](#) for summarized accredited lab data. Copies of the accredited lab results can be found in [Appendix B](#).

4.3.5 Quality Assurance Data

CARO test results can be found in [Appendix B](#) containing the QA/AC data.

4.3.6 Sludge Management Recording

Please refer to [section 2.10.1](#) of this report

4.3.7 Evaluation of Authorized works

The overall current condition of the District of Lake Country Wastewater Facility is fair to good. With a recent upgrade in 2015, a current upgrade underway, and another upgrade planned within 3 to 5 years, the District of Lake Country has identified components for upgrade and replacement at present and for the foreseeable future. A few of the current components have been highlighted below.

- Effluent filter addition – this will add a layer of protection to effluent quality to prevent TSS, ortho and BOD issues in the future.
- Redundant treatment components – a third bioreactor and a second secondary clarifier are currently being constructed to increase treatment capacity and give some redundancy when maintenance issues arise.
- Additional infiltration gallery – another infiltration galley will allow better disposal of peak daily flows and will help to avoid any treated effluent spills.
- Consideration of alternative means of effluent disposal – will help the LCWWTP combat the growth of the community and resulting increases in flow.

4.3.8 Contingency Plan

A contingency plan (see [section 2.2](#)) for the LCWWTP and collection system was created in 2021 and submitted to the Ministry on January 12th, 2022. There have been no further updates to the plan since its submission.

Appendix A - Total Daily Flows

Final Effluent Flow (m³)												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1951	1947	1927	2007	1979	1838	1969	2034	1864	1839	1929	1904
2	1913	1980	2040	2026	1884	1809	1954	1918	1845	1928	1854	1855
3	1948	1983	2039	2129	1867	2005	2097	1897	1794	1852	1901	1861
4	1943	1994	1985	2022	1883	1881	2091	1965	1809	1211	1957	2003
5	1962	2044	1989	2004	1973	2047	2059	1901	1966	1851	2047	1909
6	1928	2145	2047	2025	1763	1942	1999	1893	1876	1873	2066	1881
7	1877	2124	1952	2004	1832	1905	2002	1897	1868	1848	1933	1857
8	1940	2068	1967	2010	1952	1998	1960	1885	1797	1882	1910	1796
9	1959	2050	1924	2063	1917	1969	1989	1954	1769	1841	1884	1874
10	1916	1968	1916	2127	1900	1901	1979	1938	1768	1924	1824	1874
11	1961	1978	1912	2096	1915	1926	2009	1951	1912	1873	1889	1915
12	2381	2015	1977	2017	1861	1924	2019	1932	1846	1819	1894	1909
13	2120	2051	1950	2054	1910	2017	2008	1937	1776	1868	2050	1866
14	2094	2019	1956	1961	1862	1971	1961	1934	1789	1826	1954	1906
15	2206	1940	1895	2018	2090	1909	1973	1972	1693	1814	1950	1856
16	2280	1959	1894	1990	1936	1927	1944	1966	1836	1934	1888	1847
17	2137	1984	1936	1978	1886	1896	1985	1973	1862	1812	1933	1939
18	2029	2016	1969	1944	1885	1875	2037	1965	1898	1802	1865	1932
19	2026	1973	1995	1919	1852	2100	1937	1958	1870	1843	1933	1925
20	2059	1939	1978	1841	1858	2014	1973	1897	1817	1841	1954	1939
21	2003	1899	1911	1922	1856	1978	1976	1967	1881	1857	1833	1894
22	2012	1970	1990	1867	1786	1945	1913	1923	1858	1850	1849	1937
23	2090	2043	1982	1831	2001	1949	1877	1968	1822	1963	1874	1888
24	2001	1939	1975	1955	1923	1926	1962	1916	1841	1890	1863	1879
25	1994	1916	1929	1897	1869	1911	1906	1877	1936	1941	1842	1745
26	2027	1891	1959	1933	1884	1988	1987	1855	1879	1934	1939	1865
27	1988	2015	2041	1917	1876	2018	1977	1877	1850	1927	1987	2135
28	1946	2100	1942	1919	1896	2015	1957	1927	1349	1820	1905	2194
29	1981		1938	1874	1955	1977	1979	1944	1895	1828	1884	1939
30	2088		2003	1876	1885	1931	1909	1914	1884	1959	1866	1917
31	2018		1998		1827		1878	1925		1803		1929

Appendix B – Accredited Laboratory Reports



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22D0645
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-04-05 14:20 / 14.4°C 2022-04-13 14:42
PO NUMBER		COC NUMBER	44656.56896
PROJECT	Monitoring Wells		
PROJECT INFO	Lake Country WWTP		

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.

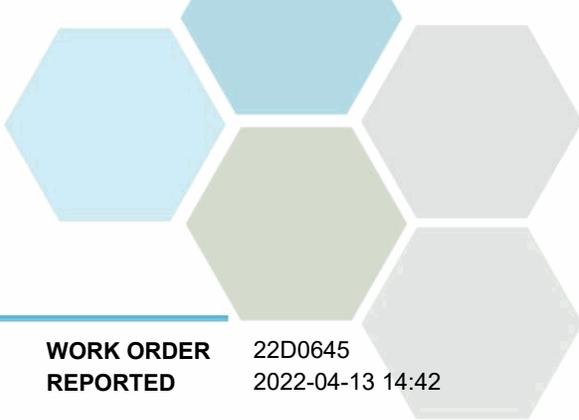
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

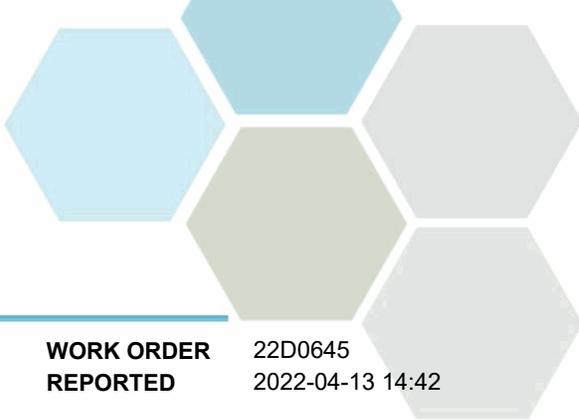
REPORTED TO PROJECT Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

Analyte	Result	RL	Units	Analyzed	Qualifier
MW-2 (22D0645-01) Matrix: Water Sampled: 2022-04-05 09:50					
Anions					
Chloride	7.77	0.10	mg/L	2022-04-07	
Nitrate (as N)	1.05	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	0.0069	0.0050	mg/L	2022-04-07	
Calculated Parameters					
Nitrate+Nitrite (as N)	1.05	0.0100	mg/L	N/A	
Nitrogen, Total	1.11	0.0500	mg/L	N/A	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-04-08	
Conductivity (EC)	452	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	0.058	0.050	mg/L	2022-04-11	
pH	7.74	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	0.0230	0.0050	mg/L	2022-04-11	
Turbidity	7.29	0.10	NTU	2022-04-07	
Microbiological Parameters					
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	
Total Metals					
Sodium, total	17.3	0.10	mg/L	2022-04-10	

MW-10 (22D0645-02) | Matrix: Water | Sampled: 2022-04-05 11:15

Anions					
Chloride	107	0.10	mg/L	2022-04-07	
Nitrate (as N)	2.98	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-04-07	
Calculated Parameters					
Nitrate+Nitrite (as N)	2.98	0.0100	mg/L	N/A	
Nitrogen, Total	3.14	0.0500	mg/L	N/A	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-04-08	
Conductivity (EC)	855	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	0.154	0.050	mg/L	2022-04-11	
pH	7.17	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	0.166	0.0050	mg/L	2022-04-11	
Turbidity	1.29	0.10	NTU	2022-04-07	
Microbiological Parameters					
E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

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

MW-10 (22D0645-02) | Matrix: Water | Sampled: 2022-04-05 11:15, Continued

Total Metals

Sodium, total	78.9	0.10	mg/L	2022-04-10	
---------------	------	------	------	------------	--

MW-12 (22D0645-03) | Matrix: Water | Sampled: 2022-04-05 10:50

Anions

Chloride	102	0.10	mg/L	2022-04-07	
Nitrate (as N)	2.09	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	0.0056	0.0050	mg/L	2022-04-07	

Calculated Parameters

Nitrate+Nitrite (as N)	2.09	0.0100	mg/L	N/A	
Nitrogen, Total	2.22	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-04-08	
Conductivity (EC)	853	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	0.125	0.050	mg/L	2022-04-11	
pH	7.35	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	0.164	0.0050	mg/L	2022-04-11	
Turbidity	5.95	0.10	NTU	2022-04-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	
------------------	-----	---	------------	------------	--

Total Metals

Sodium, total	89.2	0.10	mg/L	2022-04-10	
---------------	------	------	------	------------	--

MW-14 (22D0645-04) | Matrix: Water | Sampled: 2022-04-05 10:15

Anions

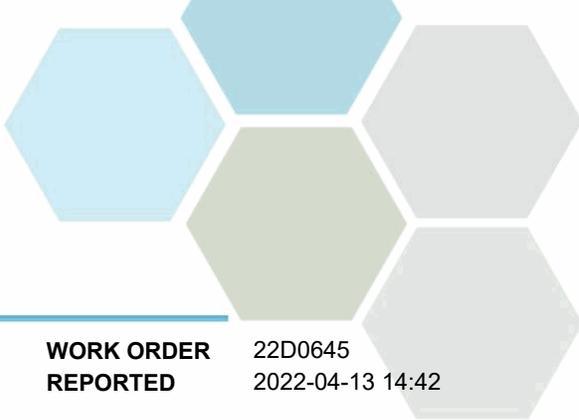
Chloride	99.2	0.10	mg/L	2022-04-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	0.0131	0.0050	mg/L	2022-04-07	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	0.474	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	0.081	0.050	mg/L	2022-04-08	
Conductivity (EC)	1050	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	0.474	0.050	mg/L	2022-04-11	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

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

MW-14 (22D0645-04) | Matrix: Water | Sampled: 2022-04-05 10:15, Continued

General Parameters, Continued

pH	7.06	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	0.695	0.0050	mg/L	2022-04-11	
Turbidity	23.1	0.10	NTU	2022-04-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	
------------------	-----	---	------------	------------	--

Total Metals

Sodium, total	81.2	0.10	mg/L	2022-04-10	
---------------	------	------	------	------------	--

MW-18 (22D0645-05) | Matrix: Water | Sampled: 2022-04-05 09:10

Anions

Chloride	111	0.10	mg/L	2022-04-07	
Nitrate (as N)	2.14	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	0.0178	0.0050	mg/L	2022-04-07	

Calculated Parameters

Nitrate+Nitrite (as N)	2.14	0.0100	mg/L	N/A	
Nitrogen, Total	2.59	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-04-08	
Conductivity (EC)	887	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	0.448	0.050	mg/L	2022-04-11	
pH	7.23	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	0.603	0.0050	mg/L	2022-04-11	
Turbidity	40.0	0.10	NTU	2022-04-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	
------------------	-----	---	------------	------------	--

Total Metals

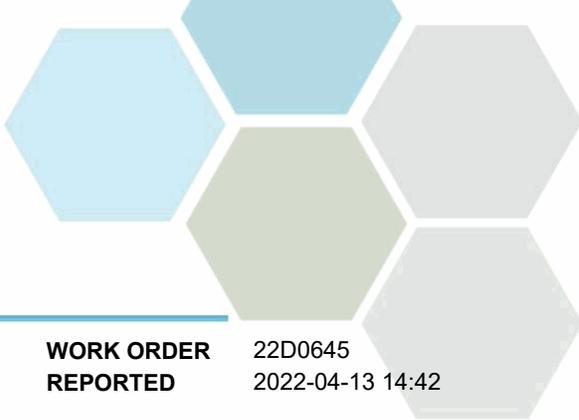
Sodium, total	88.7	0.10	mg/L	2022-04-10	
---------------	------	------	------	------------	--

Field Blank (22D0645-06) | Matrix: Water | Sampled: 2022-04-05 09:20

Anions

Chloride	< 0.10	0.10	mg/L	2022-04-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-04-07	

Calculated Parameters



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

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

Field Blank (22D0645-06) | Matrix: Water | Sampled: 2022-04-05 09:20, Continued

Calculated Parameters, Continued

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-04-08	
Conductivity (EC)	< 2.0	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-04-11	
pH	5.48	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-04-11	
Turbidity	< 0.10	0.10	NTU	2022-04-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	
------------------	-----	---	------------	------------	--

Total Metals

Sodium, total	< 0.10	0.10	mg/L	2022-04-10	
---------------	--------	------	------	------------	--

Equipment Blank (22D0645-07) | Matrix: Water | Sampled: 2022-04-05 09:20

Anions

Chloride	0.38	0.10	mg/L	2022-04-07	
Nitrate (as N)	0.018	0.010	mg/L	2022-04-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-04-07	

Calculated Parameters

Nitrate+Nitrite (as N)	0.0178	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	

General Parameters

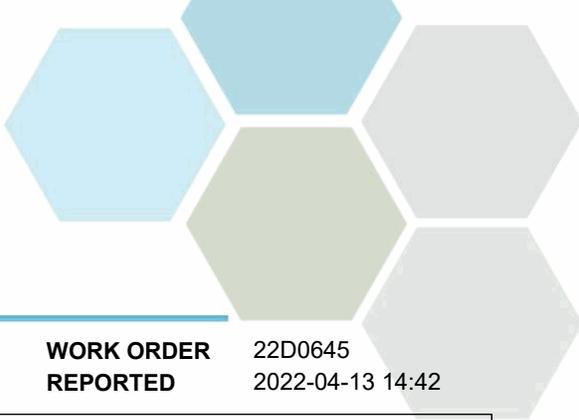
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-04-08	
Conductivity (EC)	10.8	2.0	µS/cm	2022-04-12	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-04-11	
pH	6.44	0.10	pH units	2022-04-12	HT2
Phosphorus, Total (as P)	0.0065	0.0050	mg/L	2022-04-11	
Turbidity	< 0.10	0.10	NTU	2022-04-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	1	MPN/100 mL	2022-04-06	
------------------	-----	---	------------	------------	--

Total Metals

Sodium, total	< 0.10	0.10	mg/L	2022-04-11	
---------------	--------	------	------	------------	--



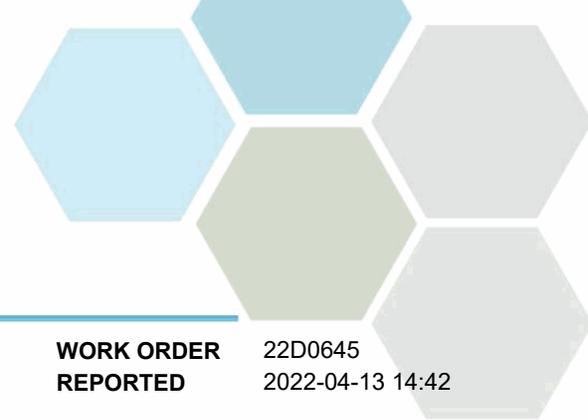
TEST RESULTS

REPORTED TO Lake Country, District of (Wastewater)
PROJECT Monitoring Wells

WORK ORDER 22D0645
REPORTED 2022-04-13 14:42

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 Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

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
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 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
Turbidity in Water	SM 2130 B (2017)	Nephelometry	✓	Kelowna

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

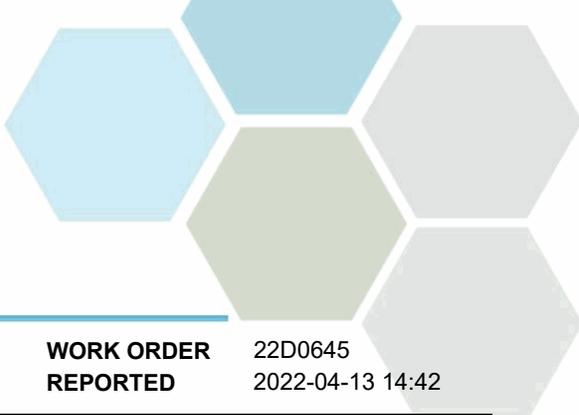
Glossary of Terms:

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
MPN/100 mL	Most Probable Number per 100 millilitres
NTU	Nephelometric Turbidity Units
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater) Monitoring Wells

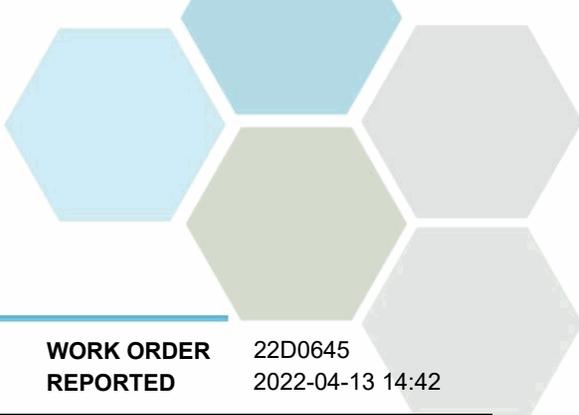
WORK ORDER REPORTED 22D0645
2022-04-13 14:42

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2D0573									
Blank (B2D0573-BLK1)			Prepared: 2022-04-07, Analyzed: 2022-04-07						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2D0573-BLK2)			Prepared: 2022-04-08, Analyzed: 2022-04-08						
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							
LCS (B2D0573-BS1)			Prepared: 2022-04-07, Analyzed: 2022-04-07						
Chloride	15.5	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	3.86	0.010 mg/L	4.00		96	90-110			
Nitrite (as N)	1.97	0.010 mg/L	2.00		99	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2D0573-BS2)			Prepared: 2022-04-08, Analyzed: 2022-04-08						
Chloride	15.5	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	3.83	0.010 mg/L	4.00		96	90-110			
Nitrite (as N)	1.93	0.010 mg/L	2.00		96	85-115			
Phosphate (as P)	1.02	0.0050 mg/L	1.00		102	80-120			
General Parameters, Batch B2D0650									
Blank (B2D0650-BLK1)			Prepared: 2022-04-07, Analyzed: 2022-04-07						
Turbidity	< 0.10	0.10 NTU							
LCS (B2D0650-BS1)			Prepared: 2022-04-07, Analyzed: 2022-04-07						
Turbidity	38.6	0.10 NTU	40.0		96	90-110			
General Parameters, Batch B2D0809									
Blank (B2D0809-BLK1)			Prepared: 2022-04-07, Analyzed: 2022-04-11						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							

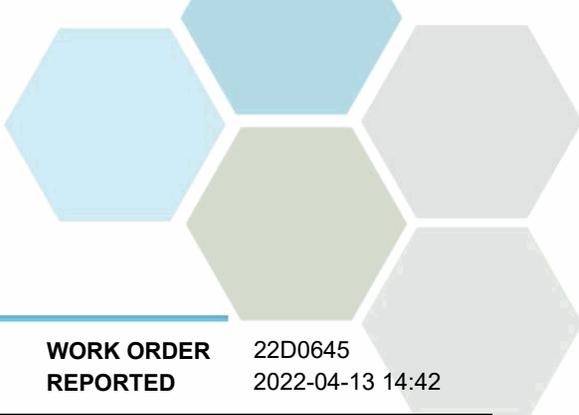


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2D0809, Continued									
Blank (B2D0809-BLK2)			Prepared: 2022-04-07, Analyzed: 2022-04-11						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2D0809-BS1)			Prepared: 2022-04-07, Analyzed: 2022-04-11						
Phosphorus, Total (as P)	0.0899	0.0050 mg/L	0.100		90	85-115			
LCS (B2D0809-BS2)			Prepared: 2022-04-07, Analyzed: 2022-04-11						
Phosphorus, Total (as P)	0.0893	0.0050 mg/L	0.100		89	85-115			
General Parameters, Batch B2D0876									
Blank (B2D0876-BLK1)			Prepared: 2022-04-08, Analyzed: 2022-04-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2D0876-BS1)			Prepared: 2022-04-08, Analyzed: 2022-04-08						
Ammonia, Total (as N)	0.983	0.050 mg/L	1.00		98	90-115			
Duplicate (B2D0876-DUP1)			Source: 22D0645-01		Prepared: 2022-04-08, Analyzed: 2022-04-08				
Ammonia, Total (as N)	< 0.050	0.050 mg/L		< 0.050					15
Matrix Spike (B2D0876-MS1)			Source: 22D0645-01		Prepared: 2022-04-08, Analyzed: 2022-04-08				
Ammonia, Total (as N)	0.274	0.050 mg/L	0.250	< 0.050	103	75-125			
General Parameters, Batch B2D0909									
Blank (B2D0909-BLK1)			Prepared: 2022-04-08, Analyzed: 2022-04-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2D0909-BLK2)			Prepared: 2022-04-08, Analyzed: 2022-04-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2D0909-BS1)			Prepared: 2022-04-08, Analyzed: 2022-04-11						
Nitrogen, Total Kjeldahl	0.949	0.050 mg/L	1.00		95	85-115			
LCS (B2D0909-BS2)			Prepared: 2022-04-08, Analyzed: 2022-04-11						
Nitrogen, Total Kjeldahl	0.954	0.050 mg/L	1.00		95	85-115			
Duplicate (B2D0909-DUP1)			Source: 22D0645-02		Prepared: 2022-04-08, Analyzed: 2022-04-11				
Nitrogen, Total Kjeldahl	0.146	0.050 mg/L		0.154					15
Matrix Spike (B2D0909-MS1)			Source: 22D0645-02		Prepared: 2022-04-08, Analyzed: 2022-04-11				
Nitrogen, Total Kjeldahl	2.34	0.100 mg/L	2.00	0.154	109	65-135			
General Parameters, Batch B2D1177									
Blank (B2D1177-BLK1)			Prepared: 2022-04-12, Analyzed: 2022-04-12						
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B2D1177-BLK2)			Prepared: 2022-04-13, Analyzed: 2022-04-13						
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B2D1177-BS1)			Prepared: 2022-04-13, Analyzed: 2022-04-13						
Conductivity (EC)	1410	2.0 µS/cm	1410		100	95-105			
LCS (B2D1177-BS2)			Prepared: 2022-04-13, Analyzed: 2022-04-13						
Conductivity (EC)	1430	2.0 µS/cm	1410		102	95-105			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater) Monitoring Wells

WORK ORDER REPORTED 22D0645
2022-04-13 14:42

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2D1177, Continued									
Reference (B2D1177-SRM1)				Prepared: 2022-04-13, Analyzed: 2022-04-13					
pH	7.06	0.10 pH units	7.01		101	98-102			
Reference (B2D1177-SRM2)				Prepared: 2022-04-13, Analyzed: 2022-04-13					
pH	7.06	0.10 pH units	7.01		101	98-102			
Microbiological Parameters, Batch B2D0504									
Blank (B2D0504-BLK1)				Prepared: 2022-04-06, Analyzed: 2022-04-06					
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2D0504-BLK2)				Prepared: 2022-04-06, Analyzed: 2022-04-06					
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2D0504-BLK3)				Prepared: 2022-04-06, Analyzed: 2022-04-06					
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Total Metals, Batch B2D1045									
Blank (B2D1045-BLK1)				Prepared: 2022-04-10, Analyzed: 2022-04-10					
Sodium, total	< 0.10	0.10 mg/L							
LCS (B2D1045-BS1)				Prepared: 2022-04-10, Analyzed: 2022-04-10					
Sodium, total	1.95	0.10 mg/L	2.00		97	80-120			
Reference (B2D1045-SRM1)				Prepared: 2022-04-10, Analyzed: 2022-04-10					
Sodium, total	0.63	0.10 mg/L	0.490		129	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22J2559
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-10-19 14:45 / 8.5°C
PO NUMBER	104395-10-9007	COC NUMBER	44853.32833
PROJECT	Lake Country WWTP		
PROJECT INFO			

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

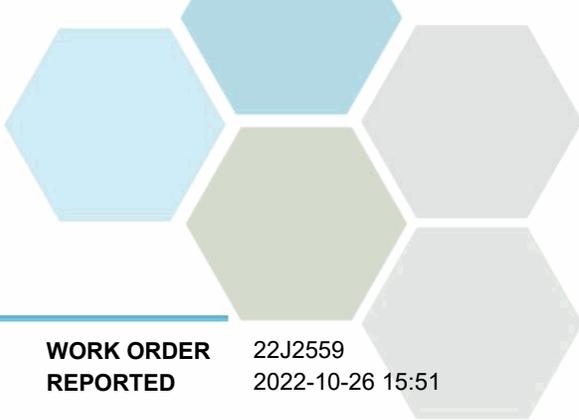
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

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

MW-2 (22J2559-01) | Matrix: Water | Sampled: 2022-10-19 13:43

Anions

Chloride	6.44	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	0.986	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	

Calculated Parameters

Nitrate+Nitrite (as N)	0.986	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	1.12	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-20	
Conductivity (EC)	366	N/A	2.0	µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.132	N/A	0.050	mg/L	2022-10-25	
pH	7.97	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.0150	N/A	0.0050	mg/L	2022-10-24	
Turbidity	1.96	OG < 1	0.10	NTU	2022-10-20	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	14.4	AO ≤ 200	0.10	mg/L	2022-10-23	
---------------	------	----------	------	------	------------	--

MW-10 (22J2559-02) | Matrix: Water | Sampled: 2022-10-19 14:05

Anions

Chloride	98.2	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	2.32	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	

Calculated Parameters

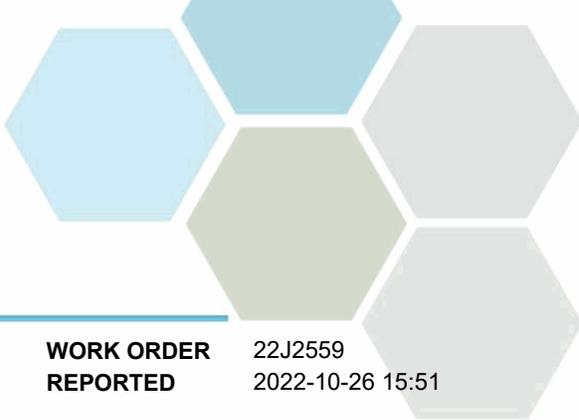
Nitrate+Nitrite (as N)	2.32	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	2.51	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-20	
Conductivity (EC)	824	N/A	2.0	µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.189	N/A	0.050	mg/L	2022-10-25	
pH	7.99	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.0428	N/A	0.0050	mg/L	2022-10-24	
Turbidity	5.62	OG < 1	0.10	NTU	2022-10-20	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
------------------	-----	---------	---	------------	------------	--



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

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

MW-10 (22J2559-02) | Matrix: Water | Sampled: 2022-10-19 14:05, Continued

Total Metals

Sodium, total	66.3	AO ≤ 200	0.10	mg/L	2022-10-23	
---------------	------	----------	------	------	------------	--

MW-12 (22J2559-03) | Matrix: Water | Sampled: 2022-10-19 11:35

Anions

Chloride	108	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	3.38	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	

Calculated Parameters

Nitrate+Nitrite (as N)	3.38	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	3.66	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-20	
Conductivity (EC)	884	N/A	2.0	µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.277	N/A	0.050	mg/L	2022-10-25	
pH	7.98	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.0407	N/A	0.0050	mg/L	2022-10-24	
Turbidity	1.75	OG < 1	0.10	NTU	2022-10-20	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	83.6	AO ≤ 200	0.10	mg/L	2022-10-23	
---------------	------	----------	------	------	------------	--

MW-14 (22J2559-04) | Matrix: Water | Sampled: 2022-10-19 11:10

Anions

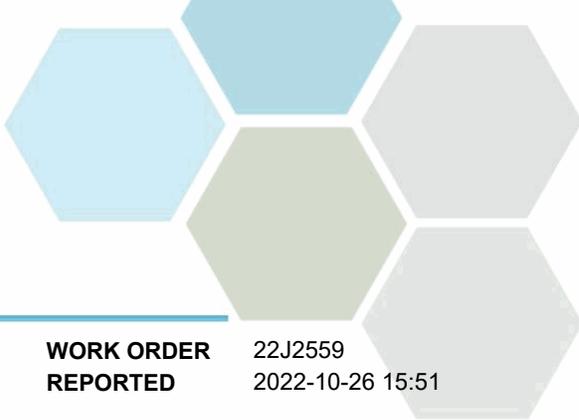
Chloride	107	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.527	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	0.093	None Required	0.050	mg/L	2022-10-20	
Conductivity (EC)	1120	N/A	2.0	µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.527	N/A	0.050	mg/L	2022-10-25	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

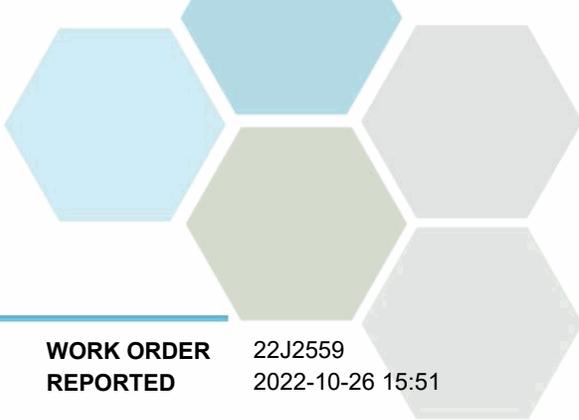
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
MW-14 (22J2559-04) Matrix: Water Sampled: 2022-10-19 11:10, Continued						
<i>General Parameters, Continued</i>						
pH	7.89	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.286	N/A	0.0050	mg/L	2022-10-24	
Turbidity	6.40	OG < 1	0.10	NTU	2022-10-20	
<i>Microbiological Parameters</i>						
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
<i>Total Metals</i>						
Sodium, total	77.2	AO ≤ 200	0.10	mg/L	2022-10-23	

MW-18 (22J2559-05) | Matrix: Water | Sampled: 2022-10-19 13:25

<i>Anions</i>						
Chloride	110	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	1.85	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	
<i>Calculated Parameters</i>						
Nitrate+Nitrite (as N)	1.85	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	2.82	N/A	0.0500	mg/L	N/A	
<i>General Parameters</i>						
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-20	
Conductivity (EC)	870	N/A	2.0	µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.968	N/A	0.050	mg/L	2022-10-25	
pH	8.08	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	5.96	N/A	0.0050	mg/L	2022-10-24	
Turbidity	210	OG < 1	0.10	NTU	2022-10-20	
<i>Microbiological Parameters</i>						
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
<i>Total Metals</i>						
Sodium, total	76.2	AO ≤ 200	0.10	mg/L	2022-10-23	

Amry East Well (22J2559-06) | Matrix: Water | Sampled: 2022-10-19 10:28

<i>Anions</i>						
Chloride	34.5	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	4.75	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	
<i>Calculated Parameters</i>						



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

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

Amry East Well (22J2559-06) | Matrix: Water | Sampled: 2022-10-19 10:28, Continued

Calculated Parameters, Continued

Nitrate+Nitrite (as N)	4.75	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	4.97	N/A	0.0500 mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2022-10-20	
BOD, 5-day	< 5.7	N/A	2.0 mg/L	2022-10-25	
Conductivity (EC)	634	N/A	2.0 µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.224	N/A	0.050 mg/L	2022-10-25	
pH	8.04	7.0-10.5	0.10 pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.0150	N/A	0.0050 mg/L	2022-10-24	
Turbidity	0.25	OG < 1	0.10 NTU	2022-10-20	

Microbiological Parameters

Coliforms, Total (Q-Tray)	3	MAC = 0	1 MPN/100 mL	2022-10-20	
Coliforms, Fecal (Q-Tray)	< 1	N/A	1 MPN/100 mL	2022-10-20	

Total Metals

Sodium, total	29.1	AO ≤ 200	0.10 mg/L	2022-10-23	
---------------	------	----------	-----------	------------	--

Amry West Well (22J2559-07) | Matrix: Water | Sampled: 2022-10-19 09:50

Anions

Chloride	20.2	AO ≤ 250	0.10 mg/L	2022-10-21	
Nitrate (as N)	0.140	MAC = 10	0.010 mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2022-10-21	

Calculated Parameters

Nitrate+Nitrite (as N)	0.140	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.260	N/A	0.0500 mg/L	N/A	

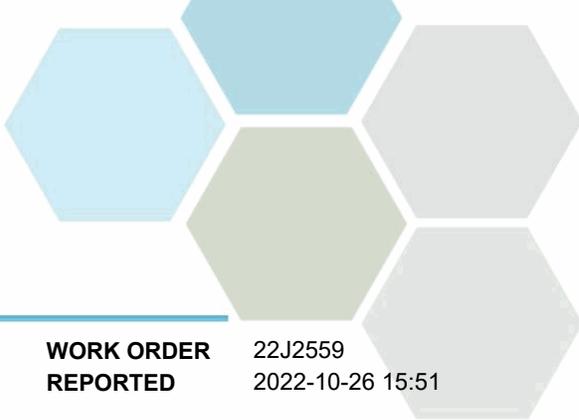
General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2022-10-20	
BOD, 5-day	< 5.7	N/A	2.0 mg/L	2022-10-25	
Conductivity (EC)	514	N/A	2.0 µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	0.120	N/A	0.050 mg/L	2022-10-25	
pH	8.08	7.0-10.5	0.10 pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.0782	N/A	0.0050 mg/L	2022-10-24	
Turbidity	0.73	OG < 1	0.10 NTU	2022-10-20	

Microbiological Parameters

Coliforms, Total (Q-Tray)	< 1	MAC = 0	1 MPN/100 mL	2022-10-20	
Coliforms, Fecal (Q-Tray)	< 1	N/A	1 MPN/100 mL	2022-10-20	

Total Metals



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

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

Amry West Well (22J2559-07) | Matrix: Water | Sampled: 2022-10-19 09:50, Continued

Total Metals, Continued

Sodium, total	31.6	AO ≤ 200	0.10	mg/L	2022-10-23	
---------------	------	----------	------	------	------------	--

Field Blank (22J2559-08) | Matrix: Water | Sampled: 2022-10-19 13:35

Anions

Chloride	< 0.10	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-20	
BOD, 5-day	< 5.7	N/A	2.0	mg/L	2022-10-25	
Conductivity (EC)	< 2.0	N/A	2.0	µS/cm	2022-10-24	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2022-10-25	
pH	7.61	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-24	
Turbidity	< 0.10	OG < 1	0.10	NTU	2022-10-20	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	< 0.10	AO ≤ 200	0.10	mg/L	2022-10-23	
---------------	--------	----------	------	------	------------	--

Equipment Blank (22J2559-09) | Matrix: Water | Sampled: 2022-10-19 14:15

Anions

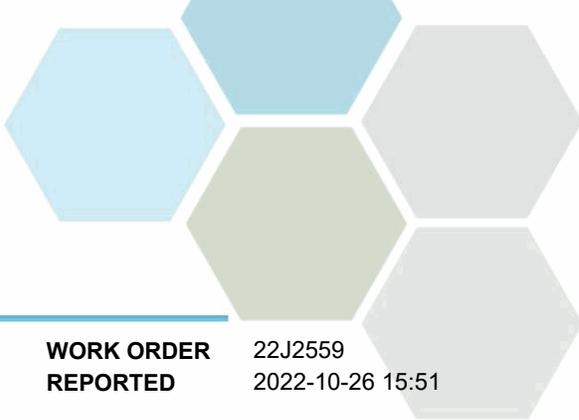
Chloride	0.42	AO ≤ 250	0.10	mg/L	2022-10-21	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2022-10-21	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-21	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-21	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.0910	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-20	
Conductivity (EC)	8.8	N/A	2.0	µS/cm	2022-10-24	RE2



TEST RESULTS

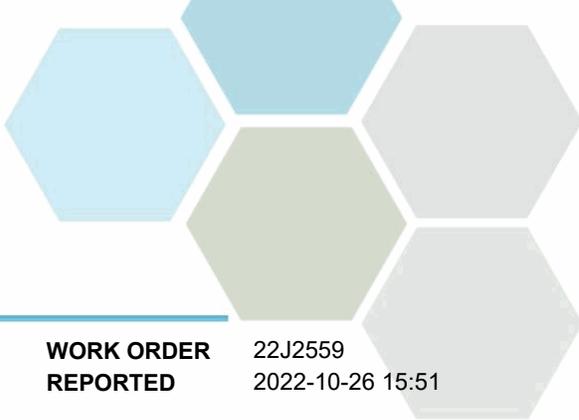
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Equipment Blank (22J2559-09) Matrix: Water Sampled: 2022-10-19 14:15, Continued						
<i>General Parameters, Continued</i>						
Nitrogen, Total Kjeldahl	0.091	N/A	0.050	mg/L	2022-10-25	
pH	6.80	7.0-10.5	0.10	pH units	2022-10-24	HT2
Phosphorus, Total (as P)	0.0065	N/A	0.0050	mg/L	2022-10-24	RE2
Turbidity	0.20	OG < 1	0.10	NTU	2022-10-20	RE2
<i>Microbiological Parameters</i>						
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-20	
<i>Total Metals</i>						
Sodium, total	0.96	AO ≤ 200	0.10	mg/L	2022-10-24	RE2

Sample Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
RE2 Result was confirmed by re-analysis prior to reporting.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

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
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
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
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
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2017)	Nephelometry	✓	Kelowna

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

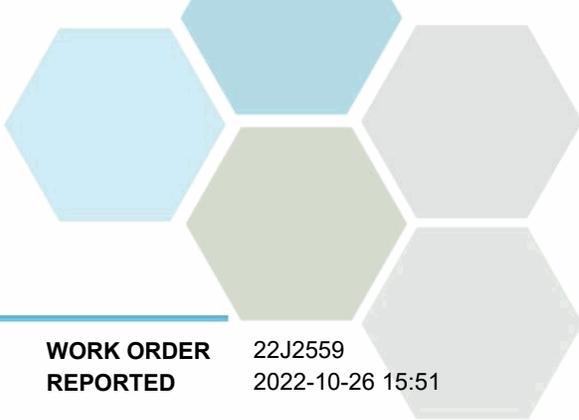
Glossary of Terms:

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
MPN/100 mL	Most Probable Number per 100 millilitres
NTU	Nephelometric Turbidity Units
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 \(Health Canada, June 2019\)](#)

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 Lake Country, District of (Wastewater)
Lake Country WWTP

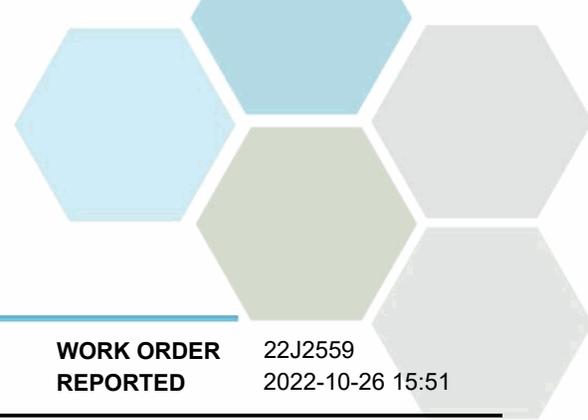
WORK ORDER REPORTED 22J2559
2022-10-26 15:51

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: bwhitehead@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 Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

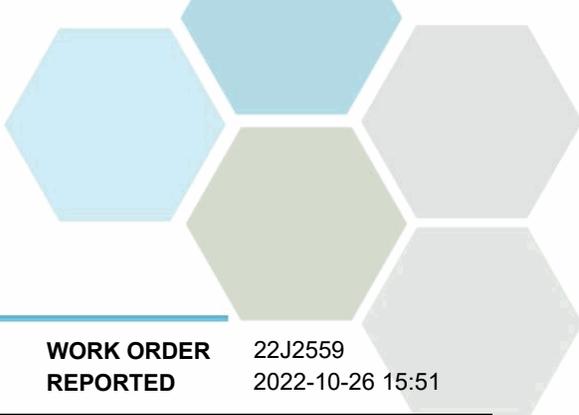
The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J2271									
Blank (B2J2271-BLK1)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J2271-BLK2)			Prepared: 2022-10-21, Analyzed: 2022-10-21						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J2271-BLK3)			Prepared: 2022-10-22, Analyzed: 2022-10-22						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2J2271-BS1)			Prepared: 2022-10-21, Analyzed: 2022-10-21						
Chloride	15.6	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	3.92	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.80	0.010 mg/L	2.00		90	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			
LCS (B2J2271-BS2)			Prepared: 2022-10-21, Analyzed: 2022-10-21						
Chloride	15.4	0.10 mg/L	16.0		96	90-110			
Nitrate (as N)	4.03	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.88	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	1.06	0.0050 mg/L	1.00		106	80-120			
LCS (B2J2271-BS3)			Prepared: 2022-10-22, Analyzed: 2022-10-22						
Chloride	15.6	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	4.02	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	1.85	0.010 mg/L	2.00		93	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			

General Parameters, Batch B2J2325

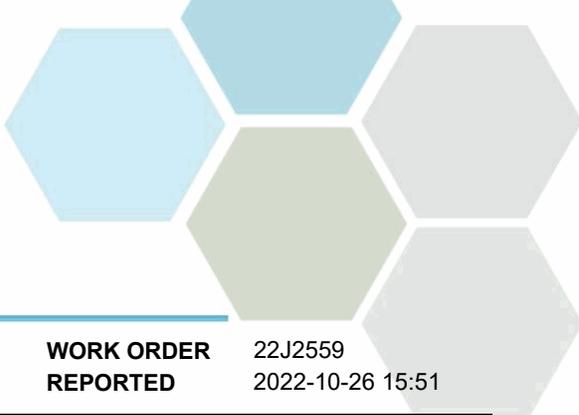


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J2325, Continued									
Blank (B2J2325-BLK1)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J2325-BLK2)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J2325-BLK3)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J2325-BLK4)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2J2325-BS1)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	0.942	0.050 mg/L	1.00		94	90-115			
LCS (B2J2325-BS2)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	0.946	0.050 mg/L	1.00		95	90-115			
LCS (B2J2325-BS3)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	0.951	0.050 mg/L	1.00		95	90-115			
LCS (B2J2325-BS4)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Ammonia, Total (as N)	0.931	0.050 mg/L	1.00		93	90-115			
General Parameters, Batch B2J2334									
Blank (B2J2334-BLK1)			Prepared: 2022-10-20, Analyzed: 2022-10-25						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2J2334-BS1)			Prepared: 2022-10-20, Analyzed: 2022-10-25						
BOD, 5-day	183	47.4 mg/L	198		92	85-115			
General Parameters, Batch B2J2380									
Blank (B2J2380-BLK1)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Turbidity	< 0.10	0.10 NTU							
LCS (B2J2380-BS1)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Turbidity	42.3	0.10 NTU	40.0		106	90-110			
Duplicate (B2J2380-DUP1)			Prepared: 2022-10-20, Analyzed: 2022-10-20						
Turbidity	206	0.10 NTU		210			2	15	
General Parameters, Batch B2J2692									
Blank (B2J2692-BLK1)			Prepared: 2022-10-24, Analyzed: 2022-10-24						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J2692-BLK2)			Prepared: 2022-10-24, Analyzed: 2022-10-24						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2J2692-BS1)			Prepared: 2022-10-24, Analyzed: 2022-10-24						
Phosphorus, Total (as P)	0.105	0.0050 mg/L	0.100		105	85-115			
LCS (B2J2692-BS2)			Prepared: 2022-10-24, Analyzed: 2022-10-24						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			

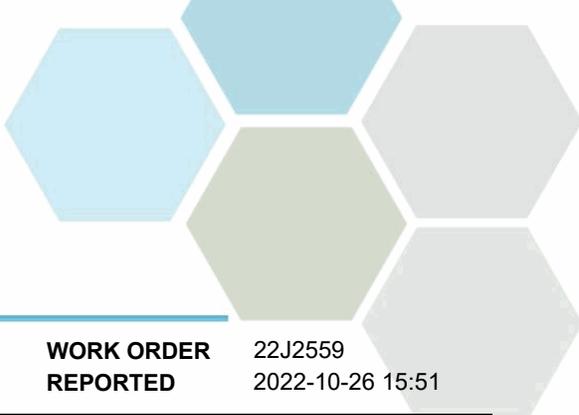


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J2692, Continued									
Duplicate (B2J2692-DUP2)		Source: 22J2559-06		Prepared: 2022-10-24, Analyzed: 2022-10-24					
Phosphorus, Total (as P)	0.0147	0.0050 mg/L		0.0150				15	
Matrix Spike (B2J2692-MS2)		Source: 22J2559-06		Prepared: 2022-10-24, Analyzed: 2022-10-24					
Phosphorus, Total (as P)	0.125	0.0050 mg/L	0.102	0.0150	108	70-125			
General Parameters, Batch B2J2693									
Blank (B2J2693-BLK1)		Prepared: 2022-10-24, Analyzed: 2022-10-24							
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B2J2693-BS2)		Prepared: 2022-10-24, Analyzed: 2022-10-24							
Conductivity (EC)	1410	2.0 µS/cm	1410		100	95-105			
Reference (B2J2693-SRM1)		Prepared: 2022-10-24, Analyzed: 2022-10-24							
pH	7.03	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2J2743									
Blank (B2J2743-BLK1)		Prepared: 2022-10-24, Analyzed: 2022-10-25							
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2J2743-BS1)		Prepared: 2022-10-24, Analyzed: 2022-10-25							
Nitrogen, Total Kjeldahl	1.03	0.050 mg/L	1.00		103	85-115			
Microbiological Parameters, Batch B2J2338									
Blank (B2J2338-BLK1)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J2338-BLK2)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J2338-BLK3)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J2338-BLK4)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J2338-BLK5)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J2338-BLK6)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J2338-BLK7)		Prepared: 2022-10-20, Analyzed: 2022-10-20							
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2J2338-DUP1)		Source: 22J2559-01		Prepared: 2022-10-20, Analyzed: 2022-10-20					
E. coli (Q-Tray)	< 1	1 MPN/100 mL		< 1				80	
Duplicate (B2J2338-DUP2)		Source: 22J2559-02		Prepared: 2022-10-20, Analyzed: 2022-10-20					
E. coli (Q-Tray)	< 1	1 MPN/100 mL		< 1				80	



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J2559
2022-10-26 15:51

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Microbiological Parameters, Batch B2J2338, Continued

Duplicate (B2J2338-DUP3)		Source: 22J2559-03		Prepared: 2022-10-20, Analyzed: 2022-10-20					
E. coli (Q-Tray)	< 1	1 MPN/100 mL	< 1					80	

Total Metals, Batch B2J2659

Blank (B2J2659-BLK1)		Prepared: 2022-10-23, Analyzed: 2022-10-23							
Sodium, total	< 0.10	0.10 mg/L							

LCS (B2J2659-BS1)		Prepared: 2022-10-23, Analyzed: 2022-10-23							
Sodium, total	3.81	0.10 mg/L	4.00	95	80-120				

QC Qualifiers:

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



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22D3549
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-04-28 13:45 / 12.5°C
PO NUMBER		COC NUMBER	44679.30386
PROJECT	Lake Country WWTP		
PROJECT INFO			

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.

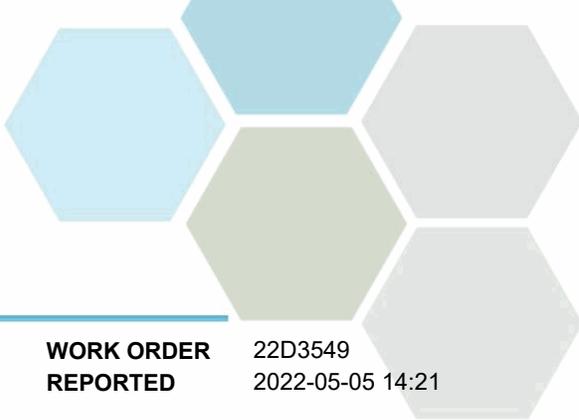
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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

10101A Kunschuh Rd (22D3549-01) | Matrix: Water | Sampled: 2022-04-28 11:25

Anions

Chloride	77.3	AO ≤ 250	0.10 mg/L	2022-04-30	
Nitrate (as N)	3.29	MAC = 10	0.010 mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-04-30	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	3.29	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	3.52	N/A	0.0500 mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2022-05-01	
Conductivity (EC)	741	N/A	2.0 µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.232	N/A	0.050 mg/L	2022-05-04	
pH	7.28	7.0-10.5	0.10 pH units	2022-05-02	HT2
Phosphorus, Total (as P)	0.0126	N/A	0.0050 mg/L	2022-05-04	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1 MPN/100 mL	2022-04-29	
------------------	-----	---------	--------------	------------	--

Total Metals

Sodium, total	53.9	AO ≤ 200	0.10 mg/L	2022-05-02	
---------------	------	----------	-----------	------------	--

10050 McCarthy Rd (22D3549-02) | Matrix: Water | Sampled: 2022-04-28 11:10

Anions

Chloride	0.45	AO ≤ 250	0.10 mg/L	2022-04-30	
Nitrate (as N)	0.018	MAC = 10	0.010 mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-04-30	
Phosphate (as P)	0.0979	N/A	0.0050 mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	0.0179	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	0.375	N/A	0.0500 mg/L	N/A	

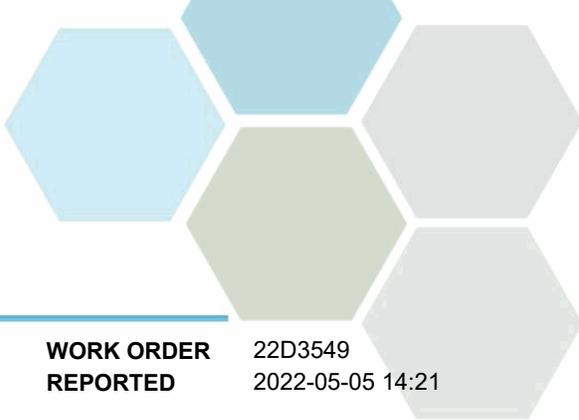
General Parameters

Ammonia, Total (as N)	0.246	None Required	0.050 mg/L	2022-05-01	
Conductivity (EC)	264	N/A	2.0 µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.357	N/A	0.050 mg/L	2022-05-04	
pH	8.13	7.0-10.5	0.10 pH units	2022-05-02	HT2
Phosphorus, Total (as P)	0.247	N/A	0.0050 mg/L	2022-05-04	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1 MPN/100 mL	2022-04-29	
------------------	-----	---------	--------------	------------	--

Total Metals



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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

10050 McCarthy Rd (22D3549-02) | Matrix: Water | Sampled: 2022-04-28 11:10, Continued

Total Metals, Continued

Sodium, total	8.33	AO ≤ 200	0.10	mg/L	2022-05-02	
---------------	------	----------	------	------	------------	--

9989 Bottom Wood Lake Rd (22D3549-03) | Matrix: Water | Sampled: 2022-04-28 11:55

Anions

Chloride	43.7	AO ≤ 250	0.10	mg/L	2022-04-30	
Nitrate (as N)	4.52	MAC = 10	0.010	mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-04-30	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	4.52	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	4.78	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-05-01	
Conductivity (EC)	445	N/A	2.0	µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.267	N/A	0.050	mg/L	2022-05-04	
pH	7.31	7.0-10.5	0.10	pH units	2022-05-02	HT2
Phosphorus, Total (as P)	0.0117	N/A	0.0050	mg/L	2022-05-04	

Microbiological Parameters

E. coli (Q-Tray)	36	MAC = 0	1	MPN/100 mL	2022-04-29	
------------------	----	---------	---	------------	------------	--

Total Metals

Sodium, total	21.0	AO ≤ 200	0.10	mg/L	2022-05-02	
---------------	------	----------	------	------	------------	--

9991 McCarthy Rd (22D3549-04) | Matrix: Water | Sampled: 2022-04-28 11:00

Anions

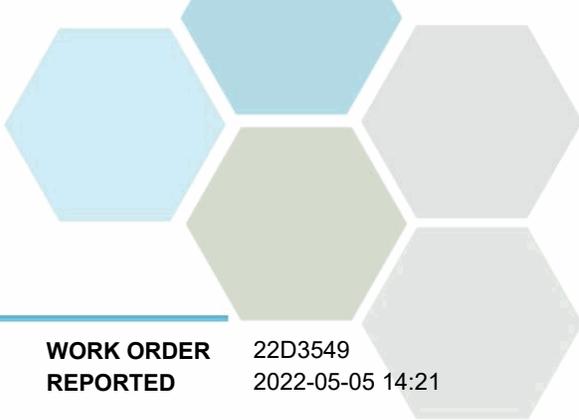
Chloride	78.7	AO ≤ 250	0.10	mg/L	2022-04-30	
Nitrate (as N)	4.19	MAC = 10	0.010	mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-04-30	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	4.19	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	4.45	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-05-01	
Conductivity (EC)	767	N/A	2.0	µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.266	N/A	0.050	mg/L	2022-05-04	
pH	7.41	7.0-10.5	0.10	pH units	2022-05-02	HT2



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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

9991 McCarthy Rd (22D3549-04) | Matrix: Water | Sampled: 2022-04-28 11:00, Continued

General Parameters, Continued

Phosphorus, Total (as P)	0.0163	N/A	0.0050	mg/L	2022-05-04	
--------------------------	--------	-----	--------	------	------------	--

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-04-29	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	54.6	AO ≤ 200	0.10	mg/L	2022-05-02	
---------------	------	----------	------	------	------------	--

9815 McCarthy Rd (22D3549-05) | Matrix: Water | Sampled: 2022-04-28 10:35

Anions

Chloride	100	AO ≤ 250	0.10	mg/L	2022-04-30	
Nitrate (as N)	3.97	MAC = 10	0.010	mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-04-30	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	3.97	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	4.20	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-05-01	
Conductivity (EC)	883	N/A	2.0	µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.228	N/A	0.050	mg/L	2022-05-04	
pH	7.66	7.0-10.5	0.10	pH units	2022-05-02	HT2
Phosphorus, Total (as P)	0.0125	N/A	0.0050	mg/L	2022-05-04	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-04-29	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	70.9	AO ≤ 200	0.10	mg/L	2022-05-02	
---------------	------	----------	------	------	------------	--

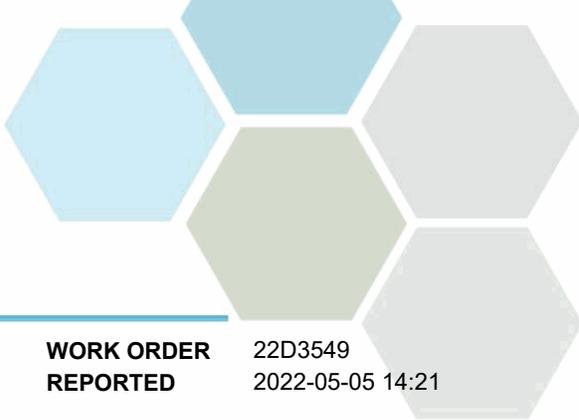
10101B Kunschuh Rd (22D3549-06) | Matrix: Water | Sampled: 2022-04-28 11:40

Anions

Chloride	111	AO ≤ 250	0.10	mg/L	2022-04-30	
Nitrate (as N)	1.58	MAC = 10	0.010	mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-04-30	
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	1.58	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	1.99	N/A	0.0500	mg/L	N/A	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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

10101B Kunschuh Rd (22D3549-06) | Matrix: Water | Sampled: 2022-04-28 11:40, Continued

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2022-05-01	
Conductivity (EC)	857	N/A	2.0 µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.410	N/A	0.050 mg/L	2022-05-04	
pH	7.71	7.0-10.5	0.10 pH units	2022-05-02	HT2
Phosphorus, Total (as P)	0.0059	N/A	0.0050 mg/L	2022-05-04	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1 MPN/100 mL	2022-04-29	
------------------	-----	---------	--------------	------------	--

Total Metals

Sodium, total	69.7	AO ≤ 200	0.10 mg/L	2022-05-02	
---------------	-------------	----------	-----------	------------	--

Duplicate (22D3549-07) | Matrix: Water | Sampled: 2022-04-28 11:25

Anions

Chloride	80.2	AO ≤ 250	0.10 mg/L	2022-04-30	
Nitrate (as N)	3.33	MAC = 10	0.010 mg/L	2022-04-30	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-04-30	
Phosphate (as P)	< 0.0050	N/A	0.0050 mg/L	2022-04-30	

Calculated Parameters

Nitrate+Nitrite (as N)	3.33	N/A	0.0100 mg/L	N/A	
Nitrogen, Total	3.68	N/A	0.0500 mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050 mg/L	2022-05-01	
Conductivity (EC)	746	N/A	2.0 µS/cm	2022-05-02	
Nitrogen, Total Kjeldahl	0.344	N/A	0.050 mg/L	2022-05-04	
pH	7.43	7.0-10.5	0.10 pH units	2022-05-02	HT2
Phosphorus, Total (as P)	0.0121	N/A	0.0050 mg/L	2022-05-04	

Microbiological Parameters

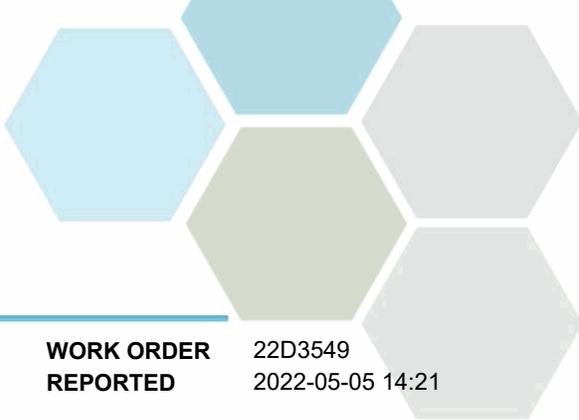
E. coli (Q-Tray)	< 1	MAC = 0	1 MPN/100 mL	2022-04-29	
------------------	-----	---------	--------------	------------	--

Total Metals

Sodium, total	52.0	AO ≤ 200	0.10 mg/L	2022-05-02	
---------------	-------------	----------	-----------	------------	--

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 Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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
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 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

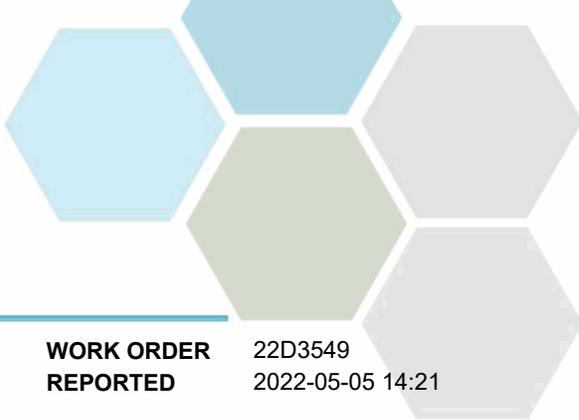
Glossary of Terms:

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
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

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 Lake Country, District of (Wastewater)
Lake Country WWTP

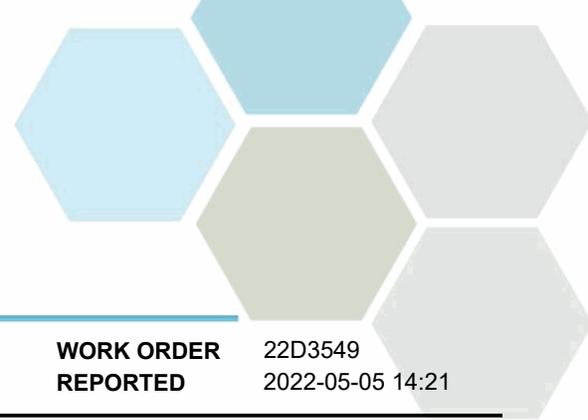
WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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: bwhitehead@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 Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

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:

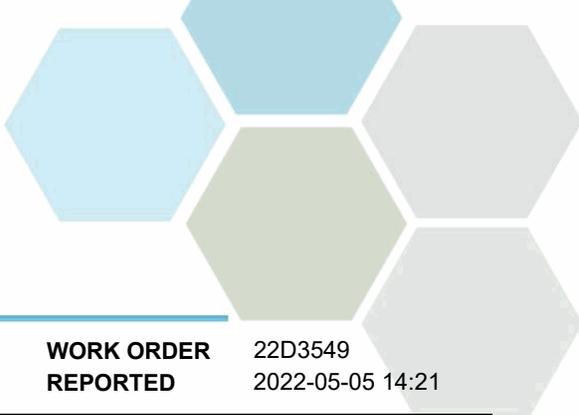
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected 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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2D2976									
Blank (B2D2976-BLK2)			Prepared: 2022-04-29, Analyzed: 2022-04-30						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2D2976-BLK3)			Prepared: 2022-04-29, Analyzed: 2022-04-30						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2D2976-BS1)			Prepared: 2022-04-29, Analyzed: 2022-04-30						
Chloride	15.6	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	3.89	0.010 mg/L	4.00		97	90-110			
Nitrite (as N)	2.05	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2D2976-BS2)			Prepared: 2022-04-29, Analyzed: 2022-04-30						
Chloride	15.5	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	3.90	0.010 mg/L	4.00		97	90-110			
Nitrite (as N)	2.00	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	0.933	0.0050 mg/L	1.00		93	80-120			
LCS (B2D2976-BS3)			Prepared: 2022-04-29, Analyzed: 2022-04-30						
Chloride	15.6	0.10 mg/L	16.0		97	90-110			
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			
Phosphate (as P)	1.07	0.0050 mg/L	1.00		107	80-120			

General Parameters, Batch B2E0004

Blank (B2E0004-BLK1)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2E0004-BLK2)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

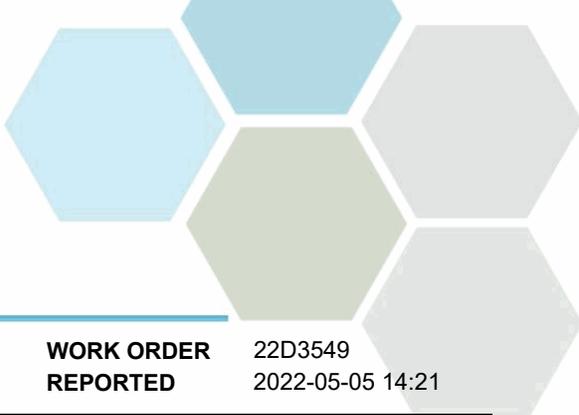


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2E0004, Continued									
Blank (B2E0004-BLK3)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2E0004-BLK4)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2E0004-BS1)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	0.961	0.050 mg/L	1.00		96	90-115			
LCS (B2E0004-BS2)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	1.01	0.050 mg/L	1.00		101	90-115			
LCS (B2E0004-BS3)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	0.997	0.050 mg/L	1.00		100	90-115			
LCS (B2E0004-BS4)			Prepared: 2022-05-01, Analyzed: 2022-05-01						
Ammonia, Total (as N)	0.970	0.050 mg/L	1.00		97	90-115			
General Parameters, Batch B2E0149									
Blank (B2E0149-BLK1)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B2E0149-BLK2)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B2E0149-BLK3)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B2E0149-BS4)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Conductivity (EC)	1440	2.0 µS/cm	1410		102	95-105			
LCS (B2E0149-BS5)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Conductivity (EC)	1430	2.0 µS/cm	1410		101	95-105			
LCS (B2E0149-BS6)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Conductivity (EC)	1430	2.0 µS/cm	1410		102	95-105			
Reference (B2E0149-SRM1)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
pH	6.97	0.10 pH units	7.01		99	98-102			
Reference (B2E0149-SRM2)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
pH	6.97	0.10 pH units	7.01		99	98-102			
Reference (B2E0149-SRM3)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
pH	6.98	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2E0270									
Blank (B2E0270-BLK1)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2E0270-BLK2)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2E0270-BS1)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Nitrogen, Total Kjeldahl	1.11	0.050 mg/L	1.00		111	85-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22D3549
2022-05-05 14:21

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2E0270, Continued									
LCS (B2E0270-BS2)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			
General Parameters, Batch B2E0341									
Blank (B2E0341-BLK2)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E0341-BLK3)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E0341-BS2)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2E0341-BS3)			Prepared: 2022-05-03, Analyzed: 2022-05-04						
Phosphorus, Total (as P)	0.111	0.0050 mg/L	0.100		111	85-115			
Duplicate (B2E0341-DUP2)			Source: 22D3549-02		Prepared: 2022-05-03, Analyzed: 2022-05-04				
Phosphorus, Total (as P)	0.244	0.0050 mg/L		0.247			1	15	
Matrix Spike (B2E0341-MS2)			Source: 22D3549-02		Prepared: 2022-05-03, Analyzed: 2022-05-04				
Phosphorus, Total (as P)	0.355	0.0050 mg/L	0.102	0.247	106	70-125			
Microbiological Parameters, Batch B2D2970									
Blank (B2D2970-BLK1)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2D2970-BLK2)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2D2970-BLK3)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2D2970-BLK4)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Total Metals, Batch B2E0011									
Blank (B2E0011-BLK1)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Sodium, total	< 0.10	0.10 mg/L							
LCS (B2E0011-BS1)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Sodium, total	2.19	0.10 mg/L	2.00		110	80-120			
Reference (B2E0011-SRM1)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Sodium, total	0.83	0.10 mg/L	0.490		170	70-130			CAR, SRM

QC Qualifiers:

CAR Result is biased high due to carryover from previous sample.
SRM Recovery of one or more analytes on Standard Reference Material (SRM) analysis are outside of control limits.



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22J0528
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-10-04 14:40 / 18.8°C
PO NUMBER		REPORTED	2022-10-12 15:23
PROJECT	Lake Country WWTP	COC NUMBER	44838.35543
PROJECT INFO			

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

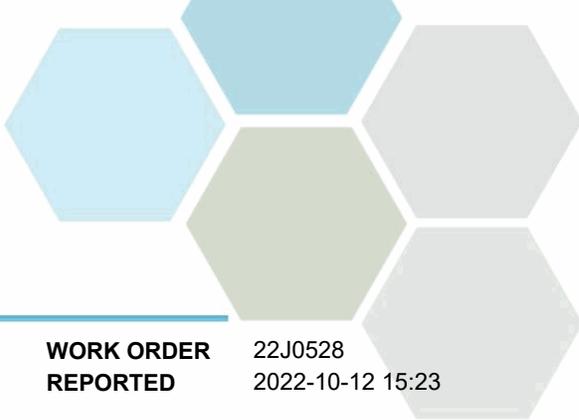
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

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

10101A Kunschuh Rd (22J0528-01) | Matrix: Water | Sampled: 2022-10-04 13:55

Anions

Chloride	88.9	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	3.88	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-09	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	3.88	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	4.22	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	771	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	0.338	N/A	0.050	mg/L	2022-10-10	
pH	7.51	7.0-10.5	0.10	pH units	2022-10-07	HT2
Phosphorus, Total (as P)	0.0130	N/A	0.0050	mg/L	2022-10-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	54.2	AO ≤ 200	0.10	mg/L	2022-10-11	
---------------	------	----------	------	------	------------	--

10050 McCarthy Rd (22J0528-02) | Matrix: Water | Sampled: 2022-10-04 13:40

Anions

Chloride	0.52	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	0.014	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	0.154	N/A	0.0050	mg/L	2022-10-09	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	0.0141	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.304	N/A	0.0500	mg/L	N/A	

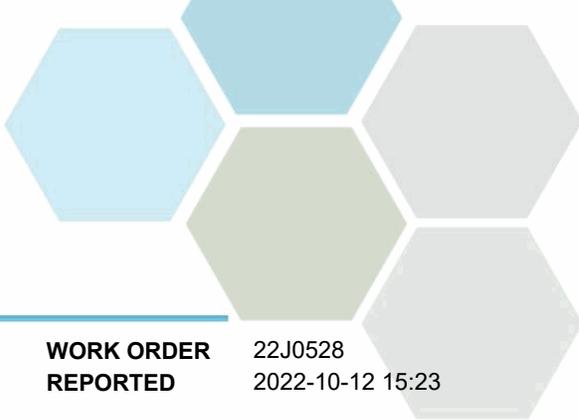
General Parameters

Ammonia, Total (as N)	0.231	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	272	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	0.290	N/A	0.050	mg/L	2022-10-10	
pH	8.19	7.0-10.5	0.10	pH units	2022-10-07	HT2
Phosphorus, Total (as P)	0.229	N/A	0.0050	mg/L	2022-10-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
------------------	-----	---------	---	------------	------------	--

Total Metals



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

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

10050 McCarthy Rd (22J0528-02) | Matrix: Water | Sampled: 2022-10-04 13:40, Continued

Total Metals, Continued

Sodium, total	8.17	AO ≤ 200	0.10	mg/L	2022-10-11	
---------------	------	----------	------	------	------------	--

9989 Bottom Wood Lake Rd (22J0528-03) | Matrix: Water | Sampled: 2022-10-04 14:15

Anions

Chloride	41.9	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	4.43	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-09	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	4.43	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	4.71	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	428	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	0.287	N/A	0.050	mg/L	2022-10-10	
pH	7.29	7.0-10.5	0.10	pH units	2022-10-07	HT2
Phosphorus, Total (as P)	0.0097	N/A	0.0050	mg/L	2022-10-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	20.2	AO ≤ 200	0.10	mg/L	2022-10-11	
---------------	------	----------	------	------	------------	--

9991 McCarthy Rd (22J0528-04) | Matrix: Water | Sampled: 2022-10-04 13:30

Anions

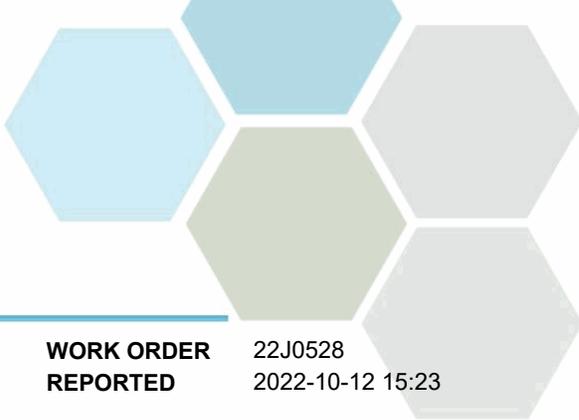
Chloride	91.8	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	4.42	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	0.014	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-09	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	4.43	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	4.66	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	795	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	0.227	N/A	0.050	mg/L	2022-10-10	
pH	7.85	7.0-10.5	0.10	pH units	2022-10-07	HT2



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

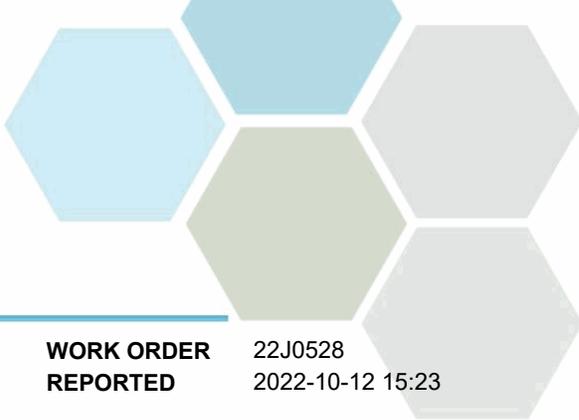
Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
9991 McCarthy Rd (22J0528-04) Matrix: Water Sampled: 2022-10-04 13:30, Continued						
<i>General Parameters, Continued</i>						
Phosphorus, Total (as P)	0.0097	N/A	0.0050	mg/L	2022-10-07	
<i>Microbiological Parameters</i>						
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
<i>Total Metals</i>						
Sodium, total	57.3	AO ≤ 200	0.10	mg/L	2022-10-11	

9815 McCarthy Rd (22J0528-05) | Matrix: Water | Sampled: 2022-10-04 13:15

<i>Anions</i>						
Chloride	106	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	4.28	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-09	HT1
<i>Calculated Parameters</i>						
Nitrate+Nitrite (as N)	4.28	N/A	0.0100	mg/L		N/A
Nitrogen, Total	4.48	N/A	0.0500	mg/L		N/A
<i>General Parameters</i>						
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	861	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	0.202	N/A	0.050	mg/L	2022-10-10	
pH	7.72	7.0-10.5	0.10	pH units	2022-10-07	HT2
Phosphorus, Total (as P)	0.0107	N/A	0.0050	mg/L	2022-10-07	
<i>Microbiological Parameters</i>						
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
<i>Total Metals</i>						
Sodium, total	73.6	AO ≤ 200	0.10	mg/L	2022-10-11	

10101B Kunschuh Rd (22J0528-06) | Matrix: Water | Sampled: 2022-10-04 00:00 To 2022-10-04 14:00

<i>Anions</i>						
Chloride	124	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	1.88	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-09	HT1
<i>Calculated Parameters</i>						
Nitrate+Nitrite (as N)	1.88	N/A	0.0100	mg/L		N/A
Nitrogen, Total	2.05	N/A	0.0500	mg/L		N/A



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

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

10101B Kunschuh Rd (22J0528-06) | Matrix: Water | Sampled: 2022-10-04 00:00 To 2022-10-04 14:00, Continued

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	855	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	0.170	N/A	0.050	mg/L	2022-10-10	
pH	7.84	7.0-10.5	0.10	pH units	2022-10-07	HT2
Phosphorus, Total (as P)	0.0052	N/A	0.0050	mg/L	2022-10-07	

Microbiological Parameters

E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	77.5	AO ≤ 200	0.10	mg/L	2022-10-11	
---------------	-------------	----------	------	------	------------	--

Field Blank (22J0528-07) | Matrix: Water | Sampled: 2022-10-04 13:20

Anions

Chloride	< 0.10	AO ≤ 250	0.10	mg/L	2022-10-09	
Nitrate (as N)	< 0.010	MAC = 10	0.010	mg/L	2022-10-09	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-10-09	HT1
Phosphate (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-09	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	

General Parameters

Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2022-10-06	
Conductivity (EC)	2.8	N/A	2.0	µS/cm	2022-10-07	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2022-10-10	
pH	7.02	7.0-10.5	0.10	pH units	2022-10-07	HT2
Phosphorus, Total (as P)	< 0.0050	N/A	0.0050	mg/L	2022-10-07	

Microbiological Parameters

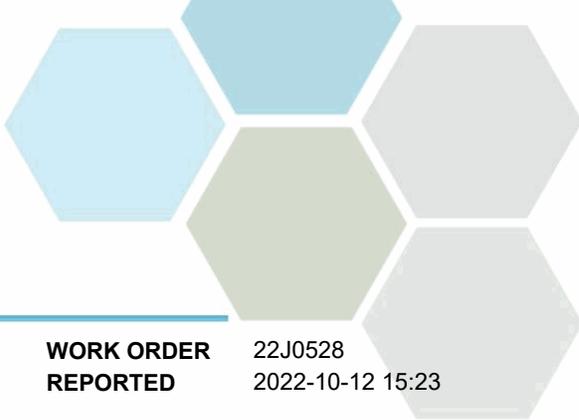
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-10-05	
------------------	-----	---------	---	------------	------------	--

Total Metals

Sodium, total	< 0.10	AO ≤ 200	0.10	mg/L	2022-10-11	
---------------	--------	----------	------	------	------------	--

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 Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

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
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
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
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

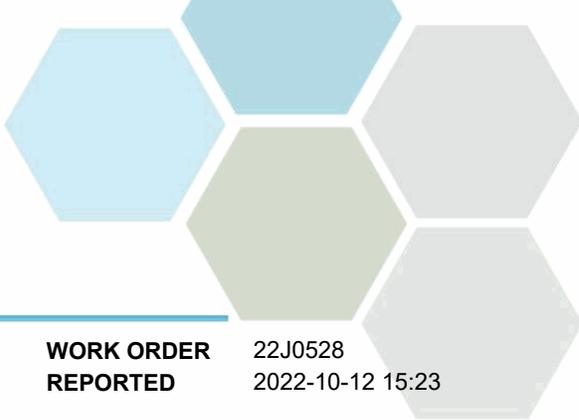
Glossary of Terms:

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
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 PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

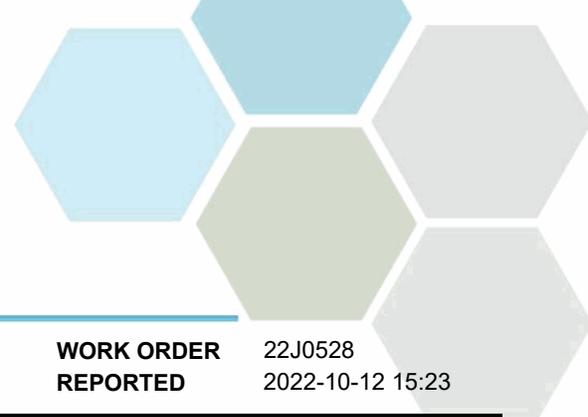
WORK ORDER REPORTED 22J0528
2022-10-12 15:23

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 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: bwhitehead@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 Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

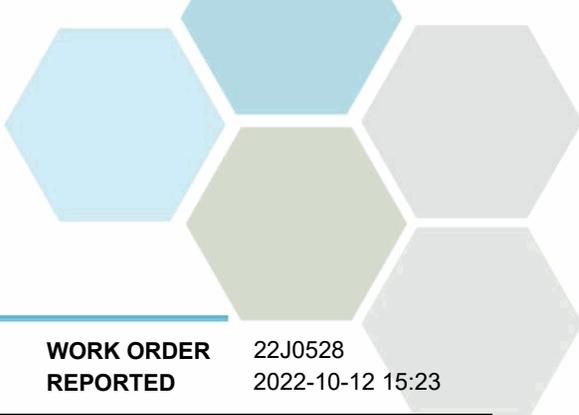
The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J0585									
Blank (B2J0585-BLK1)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
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							
Blank (B2J0585-BLK2)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
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							
LCS (B2J0585-BS1)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
Chloride	15.7	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	3.93	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.81	0.010 mg/L	2.00		91	85-115			
Phosphate (as P)	1.14	0.0050 mg/L	1.00		114	80-120			
LCS (B2J0585-BS2)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	3.93	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.82	0.010 mg/L	2.00		91	85-115			
Phosphate (as P)	1.07	0.0050 mg/L	1.00		107	80-120			
Duplicate (B2J0585-DUP1)			Source: 22J0528-02		Prepared: 2022-10-09, Analyzed: 2022-10-09				
Chloride	0.46	0.10 mg/L		0.52			13	10	
Nitrate (as N)	0.012	0.010 mg/L		0.014				10	
Nitrite (as N)	< 0.010	0.010 mg/L		< 0.010				15	
Phosphate (as P)	0.144	0.0050 mg/L		0.154			7	20	
Matrix Spike (B2J0585-MS1)			Source: 22J0528-02		Prepared: 2022-10-09, Analyzed: 2022-10-09				
Chloride	15.9	0.10 mg/L	16.0	0.52	96	75-125			
Nitrate (as N)	3.90	0.010 mg/L	4.00	0.014	97	75-125			
Nitrite (as N)	1.84	0.010 mg/L	2.00	< 0.010	92	80-120			
Phosphate (as P)	1.11	0.0050 mg/L	1.00	0.154	95	70-130			

General Parameters, Batch B2J0628



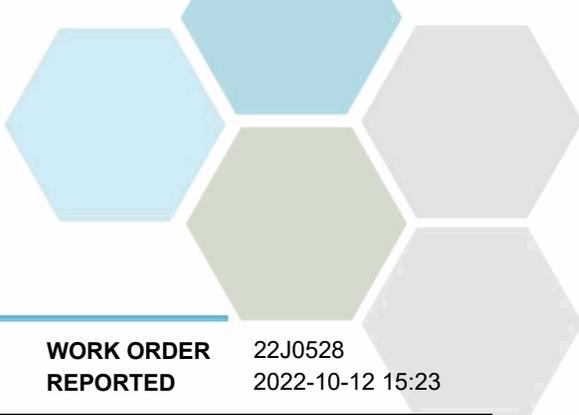
APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J0628, Continued									
Blank (B2J0628-BLK1)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J0628-BLK2)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J0628-BLK3)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J0628-BLK4)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J0628-BLK5)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2J0628-BS1)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	0.929	0.050 mg/L	1.00		93	90-115			
LCS (B2J0628-BS2)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	0.935	0.050 mg/L	1.00		94	90-115			
LCS (B2J0628-BS3)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	0.921	0.050 mg/L	1.00		92	90-115			
LCS (B2J0628-BS4)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	0.944	0.050 mg/L	1.00		94	90-115			
LCS (B2J0628-BS5)			Prepared: 2022-10-06, Analyzed: 2022-10-06						
Ammonia, Total (as N)	0.929	0.050 mg/L	1.00		93	90-115			
General Parameters, Batch B2J0731									
Blank (B2J0731-BLK1)			Prepared: 2022-10-06, Analyzed: 2022-10-07						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J0731-BLK2)			Prepared: 2022-10-06, Analyzed: 2022-10-07						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J0731-BLK3)			Prepared: 2022-10-06, Analyzed: 2022-10-07						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2J0731-BS1)			Prepared: 2022-10-06, Analyzed: 2022-10-07						
Phosphorus, Total (as P)	0.105	0.0050 mg/L	0.100		105	85-115			
LCS (B2J0731-BS2)			Prepared: 2022-10-06, Analyzed: 2022-10-07						
Phosphorus, Total (as P)	0.104	0.0050 mg/L	0.100		104	85-115			
LCS (B2J0731-BS3)			Prepared: 2022-10-06, Analyzed: 2022-10-07						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
Duplicate (B2J0731-DUP3)			Source: 22J0528-02		Prepared: 2022-10-06, Analyzed: 2022-10-07				
Phosphorus, Total (as P)	0.229	0.0050 mg/L		0.229			< 1	15	
Matrix Spike (B2J0731-MS3)			Source: 22J0528-02		Prepared: 2022-10-06, Analyzed: 2022-10-07				
Phosphorus, Total (as P)	0.331	0.0050 mg/L	0.102	0.229	100	70-125			

General Parameters, Batch B2J0824



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Lake Country WWTP

WORK ORDER REPORTED 22J0528
2022-10-12 15:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J0824, Continued									
Blank (B2J0824-BLK1)			Prepared: 2022-10-07, Analyzed: 2022-10-10						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2J0824-BLK2)			Prepared: 2022-10-07, Analyzed: 2022-10-10						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2J0824-BS1)			Prepared: 2022-10-07, Analyzed: 2022-10-10						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
LCS (B2J0824-BS2)			Prepared: 2022-10-07, Analyzed: 2022-10-10						
Nitrogen, Total Kjeldahl	1.00	0.050 mg/L	1.00		100	85-115			
General Parameters, Batch B2J0900									
Blank (B2J0900-BLK1)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B2J0900-BLK2)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B2J0900-BS3)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Conductivity (EC)	1410	2.0 µS/cm	1410		100	95-105			
LCS (B2J0900-BS4)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Conductivity (EC)	1430	2.0 µS/cm	1410		101	95-105			
Reference (B2J0900-SRM1)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2J0900-SRM2)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
pH	7.03	0.10 pH units	7.01		100	98-102			
Microbiological Parameters, Batch B2J0484									
Blank (B2J0484-BLK2)			Prepared: 2022-10-05, Analyzed: 2022-10-05						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J0484-BLK3)			Prepared: 2022-10-05, Analyzed: 2022-10-05						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J0484-BLK4)			Prepared: 2022-10-05, Analyzed: 2022-10-05						
E. coli (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2J0484-DUP3)			Source: 22J0528-01			Prepared: 2022-10-05, Analyzed: 2022-10-05			
E. coli (Q-Tray)	< 1	1 MPN/100 mL		< 1				80	
Total Metals, Batch B2J1024									
Blank (B2J1024-BLK1)			Prepared: 2022-10-11, Analyzed: 2022-10-11						
Sodium, total	< 0.10	0.10 mg/L							
LCS (B2J1024-BS1)			Prepared: 2022-10-11, Analyzed: 2022-10-11						
Sodium, total	4.31	0.10 mg/L	4.00		108	80-120			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22L0460
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-12-06 10:42 / 7.4°C 2022-12-12 17:35
PO NUMBER		COC NUMBER	44901.32068
PROJECT	Raw Influent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

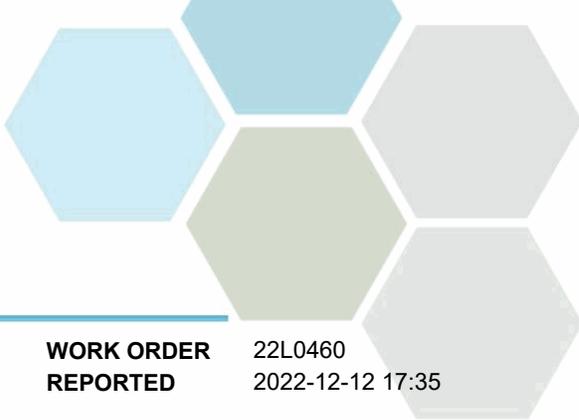
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

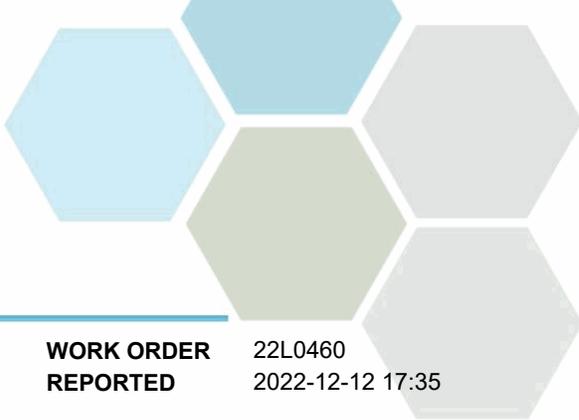
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22L0460
2022-12-12 17:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22L0460-01) Matrix: Wastewater Sampled: 2022-12-06 09:30					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-12-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-12-07	
Phosphate (as P)	2.74	0.0050	mg/L	2022-12-07	
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	71.8	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	343	1.0	mg/L	2022-12-07	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Bicarbonate (as CaCO3)	343	1.0	mg/L	2022-12-07	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Ammonia, Total (as N)	57.2	0.050	mg/L	2022-12-08	
BOD, 5-day	124	2.0	mg/L	2022-12-12	
BOD, 5-day Carbonaceous	195	2.0	mg/L	2022-12-12	
Nitrogen, Total Kjeldahl	71.8	0.050	mg/L	2022-12-09	
pH	8.13	0.10	pH units	2022-12-07	HT2
Phosphorus, Total (as P)	7.62	0.0050	mg/L	2022-12-09	
Solids, Total Suspended	172	2.0	mg/L	2022-12-08	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22L0460
2022-12-12 17:35

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

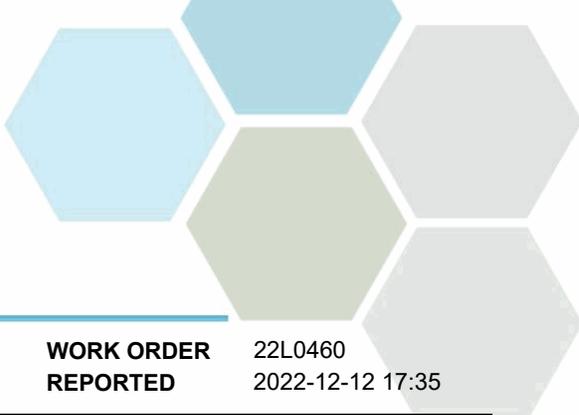
Glossary of Terms:

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
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 received 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.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

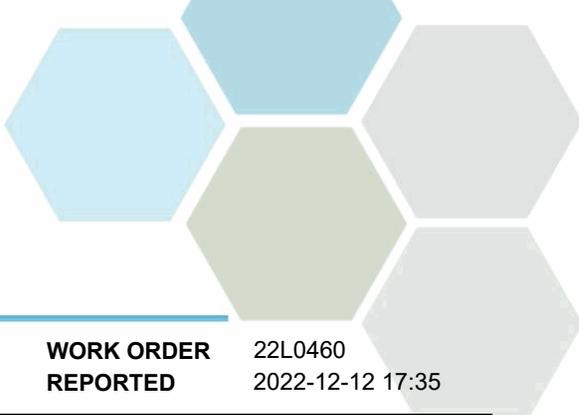
WORK ORDER REPORTED 22L0460
2022-12-12 17:35

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

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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2L0562									
Blank (B2L0562-BLK1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2L0562-BLK2)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2L0562-BS1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
Nitrate (as N)	4.19	0.010 mg/L	4.00		105	90-110			
Nitrite (as N)	1.81	0.010 mg/L	2.00		90	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2L0562-BS2)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Nitrate (as N)	4.07	0.010 mg/L	4.00		102	90-110			
Nitrite (as N)	1.96	0.010 mg/L	2.00		98	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
General Parameters, Batch B2L0640									
Blank (B2L0640-BLK1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
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							
LCS (B2L0640-BS1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
Alkalinity, Total (as CaCO3)	104	1.0 mg/L	100		104	80-120			
Duplicate (B2L0640-DUP1)			Source: 22L0460-01 Prepared: 2022-12-07, Analyzed: 2022-12-07						
Alkalinity, Total (as CaCO3)	345	1.0 mg/L		343			< 1	10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L		< 1.0					10
Alkalinity, Bicarbonate (as CaCO3)	345	1.0 mg/L		343			< 1	10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L		< 1.0					10

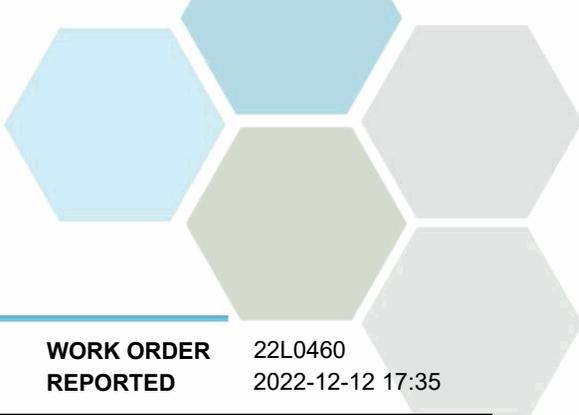


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22L0460
2022-12-12 17:35

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2L0640, Continued									
Duplicate (B2L0640-DUP1), Continued		Source: 22L0460-01		Prepared: 2022-12-07, Analyzed: 2022-12-07					
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L		< 1.0					10
pH	8.11	0.10 pH units		8.13			< 1		4
Reference (B2L0640-SRM1)		Prepared: 2022-12-07, Analyzed: 2022-12-07							
pH	7.01	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2L0673									
Blank (B2L0673-BLK1)		Prepared: 2022-12-08, Analyzed: 2022-12-08							
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2L0673-BS1)		Prepared: 2022-12-08, Analyzed: 2022-12-08							
Solids, Total Suspended	95.0	10.0 mg/L	100		95	85-115			
General Parameters, Batch B2L0708									
Blank (B2L0708-BLK1)		Prepared: 2022-12-07, Analyzed: 2022-12-12							
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2L0708-BS1)		Prepared: 2022-12-07, Analyzed: 2022-12-12							
BOD, 5-day	170	2.0 mg/L	198		86	85-115			
General Parameters, Batch B2L0709									
Blank (B2L0709-BLK1)		Prepared: 2022-12-07, Analyzed: 2022-12-12							
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2L0709-BS1)		Prepared: 2022-12-07, Analyzed: 2022-12-12							
BOD, 5-day Carbonaceous	190	37.7 mg/L	198		96	85-115			
General Parameters, Batch B2L0836									
Blank (B2L0836-BLK1)		Prepared: 2022-12-08, Analyzed: 2022-12-09							
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2L0836-BLK2)		Prepared: 2022-12-08, Analyzed: 2022-12-09							
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2L0836-BS1)		Prepared: 2022-12-08, Analyzed: 2022-12-09							
Nitrogen, Total Kjeldahl	1.03	0.050 mg/L	1.00		103	85-115			
LCS (B2L0836-BS2)		Prepared: 2022-12-08, Analyzed: 2022-12-09							
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
General Parameters, Batch B2L0853									
Blank (B2L0853-BLK1)		Prepared: 2022-12-08, Analyzed: 2022-12-08							
Ammonia, Total (as N)	0.042	0.020 mg/L							
Blank (B2L0853-BLK2)		Prepared: 2022-12-08, Analyzed: 2022-12-08							
Ammonia, Total (as N)	0.048	0.020 mg/L							
LCS (B2L0853-BS1)		Prepared: 2022-12-08, Analyzed: 2022-12-08							
Ammonia, Total (as N)	1.07	0.020 mg/L	1.00		107	90-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22L0460
2022-12-12 17:35

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2L0853, Continued									
LCS (B2L0853-BS2)					Prepared: 2022-12-08, Analyzed: 2022-12-08				
Ammonia, Total (as N)	1.06	0.020 mg/L	1.00		106	90-115			
General Parameters, Batch B2L0882									
Blank (B2L0882-BLK2)					Prepared: 2022-12-08, Analyzed: 2022-12-09				
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2L0882-BLK3)					Prepared: 2022-12-08, Analyzed: 2022-12-09				
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2L0882-BS2)					Prepared: 2022-12-08, Analyzed: 2022-12-09				
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
LCS (B2L0882-BS3)					Prepared: 2022-12-08, Analyzed: 2022-12-09				
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22L0461
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-12-06 10:42 / 7.4°C 2022-12-12 14:23
PO NUMBER		COC NUMBER	44901.32068
PROJECT	Final Effluent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

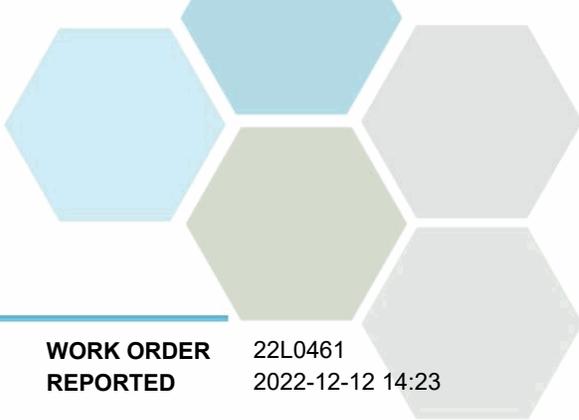
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22L0461
2022-12-12 14:23

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

Final Effluent (E233626) (22L0461-01) | Matrix: Wastewater | Sampled: 2022-12-06 08:50

Anions

Chloride	125	0.10	mg/L	2022-12-07	
Nitrate (as N)	1.44	0.010	mg/L	2022-12-07	
Nitrite (as N)	0.147	0.010	mg/L	2022-12-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-12-07	

Calculated Parameters

Nitrate+Nitrite (as N)	1.59	0.0100	mg/L	N/A	
Nitrogen, Total	3.64	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	190	1.0	mg/L	2022-12-07	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Bicarbonate (as CaCO3)	190	1.0	mg/L	2022-12-07	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Ammonia, Total (as N)	0.517	0.050	mg/L	2022-12-08	
BOD, 5-day Carbonaceous	< 7.0	2.0	mg/L	2022-12-12	
Nitrogen, Total Kjeldahl	2.04	0.050	mg/L	2022-12-09	
pH	7.30	0.10	pH units	2022-12-07	HT2
Phosphorus, Total (as P)	0.233	0.0050	mg/L	2022-12-09	
Solids, Total Suspended	4.0	2.0	mg/L	2022-12-08	

Microbiological Parameters

Coliforms, Total (Q-Tray)	199000	1	MPN/100 mL	2022-12-06	
Coliforms, Fecal (Q-Tray)	27600	1	MPN/100 mL	2022-12-06	

Trip Blank (22L0461-02) | Matrix: Water | Sampled: 2022-12-06 08:22

Anions

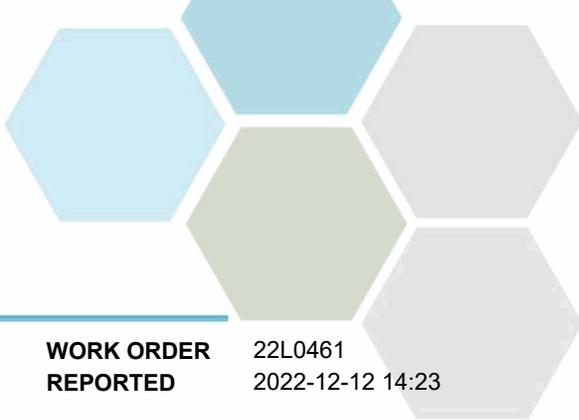
Chloride	< 0.10	0.10	mg/L	2022-12-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-12-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-12-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-12-07	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-12-07	



TEST RESULTS

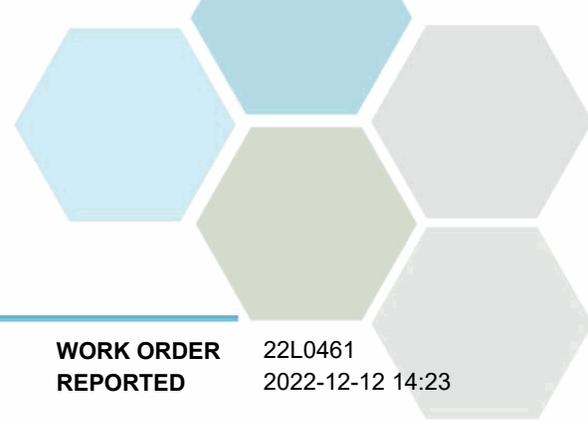
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22L0461
2022-12-12 14:23

Analyte	Result	RL	Units	Analyzed	Qualifier
Trip Blank (22L0461-02) Matrix: Water Sampled: 2022-12-06 08:22, Continued					
<i>General Parameters, Continued</i>					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-12-08	
BOD, 5-day Carbonaceous	< 7.0	2.0	mg/L	2022-12-12	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-12-09	
pH	5.47	0.10	pH units	2022-12-07	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-12-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-12-08	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-12-06	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-12-06	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22L0461
2022-12-12 14:23

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

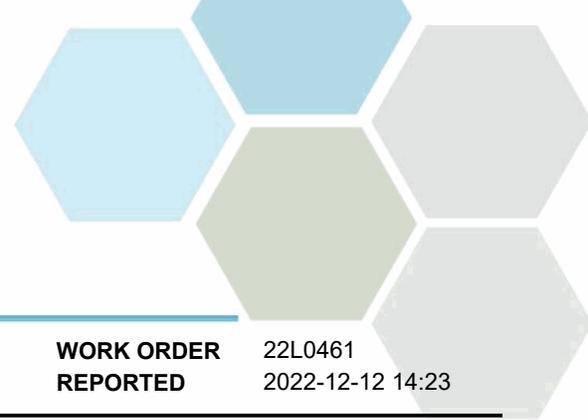
Glossary of Terms:

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
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

General Comments:

The results in this report apply to the received 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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22L0461
2022-12-12 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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

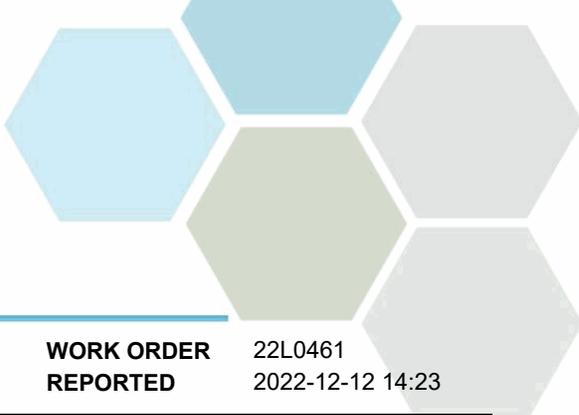
Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Anions, Batch B2L0562

Blank (B2L0562-BLK1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2L0562-BLK2)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
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							
LCS (B2L0562-BS1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
Chloride	15.5	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	4.19	0.010 mg/L	4.00		105	90-110			
Nitrite (as N)	1.81	0.010 mg/L	2.00		90	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2L0562-BS2)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Chloride	15.5	0.10 mg/L	16.0		97	90-110			
Nitrate (as N)	4.07	0.010 mg/L	4.00		102	90-110			
Nitrite (as N)	1.96	0.010 mg/L	2.00		98	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			

General Parameters, Batch B2L0640

Blank (B2L0640-BLK1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
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							
LCS (B2L0640-BS1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
Alkalinity, Total (as CaCO3)	104	1.0 mg/L	100		104	80-120			

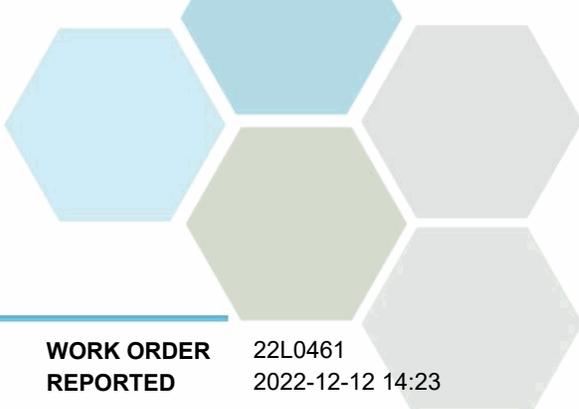


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22L0461
2022-12-12 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2L0640, Continued									
Reference (B2L0640-SRM1)			Prepared: 2022-12-07, Analyzed: 2022-12-07						
pH	7.01	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2L0673									
Blank (B2L0673-BLK1)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2L0673-BS1)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Solids, Total Suspended	95.0	10.0 mg/L	100		95	85-115			
General Parameters, Batch B2L0709									
Blank (B2L0709-BLK1)			Prepared: 2022-12-07, Analyzed: 2022-12-12						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2L0709-BS1)			Prepared: 2022-12-07, Analyzed: 2022-12-12						
BOD, 5-day Carbonaceous	190	37.7 mg/L	198		96	85-115			
General Parameters, Batch B2L0836									
Blank (B2L0836-BLK1)			Prepared: 2022-12-08, Analyzed: 2022-12-09						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2L0836-BLK2)			Prepared: 2022-12-08, Analyzed: 2022-12-09						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2L0836-BS1)			Prepared: 2022-12-08, Analyzed: 2022-12-09						
Nitrogen, Total Kjeldahl	1.03	0.050 mg/L	1.00		103	85-115			
LCS (B2L0836-BS2)			Prepared: 2022-12-08, Analyzed: 2022-12-09						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
General Parameters, Batch B2L0853									
Blank (B2L0853-BLK1)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Ammonia, Total (as N)	0.042	0.020 mg/L							
Blank (B2L0853-BLK2)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Ammonia, Total (as N)	0.048	0.020 mg/L							
LCS (B2L0853-BS1)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Ammonia, Total (as N)	1.07	0.020 mg/L	1.00		107	90-115			
LCS (B2L0853-BS2)			Prepared: 2022-12-08, Analyzed: 2022-12-08						
Ammonia, Total (as N)	1.06	0.020 mg/L	1.00		106	90-115			
General Parameters, Batch B2L0882									
Blank (B2L0882-BLK2)			Prepared: 2022-12-08, Analyzed: 2022-12-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2L0882-BLK3)			Prepared: 2022-12-08, Analyzed: 2022-12-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22L0461
2022-12-12 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2L0882, Continued

LCS (B2L0882-BS2)				Prepared: 2022-12-08, Analyzed: 2022-12-09					
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
LCS (B2L0882-BS3)				Prepared: 2022-12-08, Analyzed: 2022-12-09					
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			

Microbiological Parameters, Batch B2L0524

Blank (B2L0524-BLK1)				Prepared: 2022-12-06, Analyzed: 2022-12-06					
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2L0524-BLK2)				Prepared: 2022-12-06, Analyzed: 2022-12-06					
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2L0524-BLK3)				Prepared: 2022-12-06, Analyzed: 2022-12-06					
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2L0524-BLK4)				Prepared: 2022-12-06, Analyzed: 2022-12-06					
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							

CERTIFICATE OF ANALYSIS

REPORTED TO Lake Country, District of (Wastewater)
4062 Beaver Lake Rd
LAKE COUNTRY, BC V4V 1T5

ATTENTION Davin Larsen

PO NUMBER

PROJECT BioSolids- PE14651

PROJECT INFO Lake Country WWTP

WORK ORDER 22L0462

RECEIVED / TEMP REPORTED 2022-12-06 10:42 / 7.4°C
2022-12-13 17:03

COC NUMBER 44901.32068

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

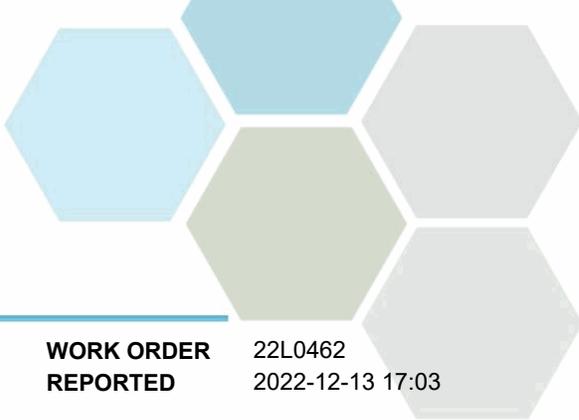
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22L0462
2022-12-13 17:03

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

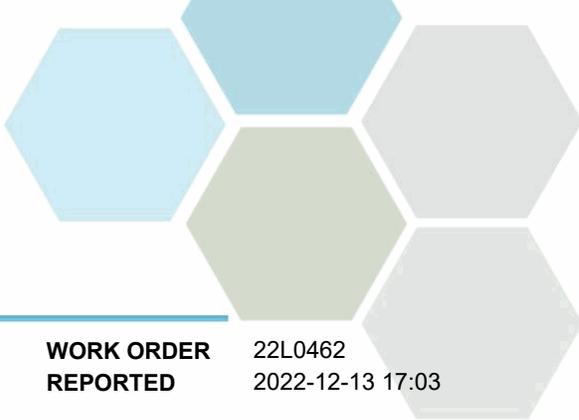
Biosolids (E233628) (22L0462-01) | Matrix: Sludge | Sampled: 2022-12-06 09:30

General Parameters

Moisture	76.5	1.0	% wet	2022-12-08	
Nitrogen, Total Kjeldahl	4.56	0.0004	% dry	2022-12-08	
pH (1:2 H2O Solution)	5.79	0.10	pH units	2022-12-09	MASS2
Solids, Total	16.5	0.1	% wet	2022-12-12	
Solids, Volatile	86.2	0.1	% dry	2022-12-12	

Strong Acid Leachable Metals

Aluminum	1170	40	mg/kg dry	2022-12-12	
Antimony	0.98	0.10	mg/kg dry	2022-12-12	
Arsenic	1.31	0.30	mg/kg dry	2022-12-12	
Barium	55.8	1.0	mg/kg dry	2022-12-12	
Beryllium	< 0.10	0.10	mg/kg dry	2022-12-12	
Bismuth	18.4	0.10	mg/kg dry	2022-12-12	
Boron	14.7	2.0	mg/kg dry	2022-12-12	
Cadmium	0.839	0.040	mg/kg dry	2022-12-12	
Calcium	8730	100	mg/kg dry	2022-12-12	
Chromium	7.4	1.0	mg/kg dry	2022-12-12	
Cobalt	1.15	0.10	mg/kg dry	2022-12-12	
Copper	290	0.40	mg/kg dry	2022-12-12	
Iron	2390	20	mg/kg dry	2022-12-12	
Lead	4.84	0.20	mg/kg dry	2022-12-12	
Lithium	0.69	0.10	mg/kg dry	2022-12-12	
Magnesium	5200	10	mg/kg dry	2022-12-12	
Manganese	73.8	0.40	mg/kg dry	2022-12-12	
Mercury	0.301	0.040	mg/kg dry	2022-12-12	
Molybdenum	6.92	0.10	mg/kg dry	2022-12-12	
Nickel	7.28	0.60	mg/kg dry	2022-12-12	
Phosphorus	18900	10	mg/kg dry	2022-12-12	
Potassium	6000	40	mg/kg dry	2022-12-12	
Selenium	3.02	0.20	mg/kg dry	2022-12-12	
Silver	0.94	0.10	mg/kg dry	2022-12-12	
Sodium	729	50	mg/kg dry	2022-12-12	
Strontium	52.8	0.20	mg/kg dry	2022-12-12	
Sulfur	5100	1000	mg/kg dry	2022-12-12	
Tellurium	< 0.10	0.10	mg/kg dry	2022-12-12	
Thallium	< 0.10	0.10	mg/kg dry	2022-12-12	
Thorium	< 0.50	0.50	mg/kg dry	2022-12-12	
Tin	10.8	0.20	mg/kg dry	2022-12-12	
Titanium	52.0	1.0	mg/kg dry	2022-12-12	
Tungsten	0.65	0.20	mg/kg dry	2022-12-12	
Uranium	8.27	0.050	mg/kg dry	2022-12-12	
Vanadium	3.9	1.0	mg/kg dry	2022-12-12	
Zinc	417	2.0	mg/kg dry	2022-12-12	



TEST RESULTS

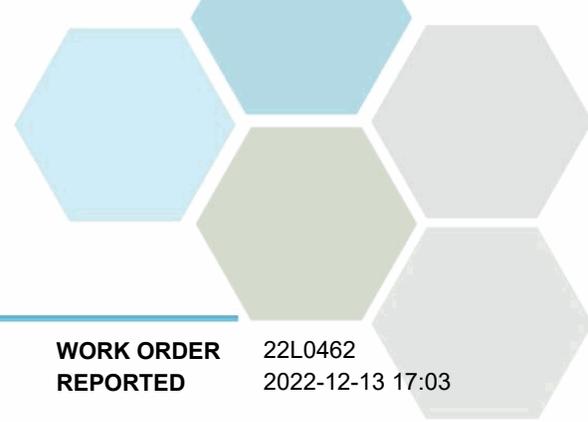
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22L0462
2022-12-13 17:03

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22L0462-01) Matrix: Sludge Sampled: 2022-12-06 09:30, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	5.4	2.0	mg/kg dry	2022-12-12	

Sample Qualifiers:

MASS2 The ratio of water to sample for pH analysis is greater than 2:1 due to limited sample. Results may be biased low.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22L0462
2022-12-13 17:03

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

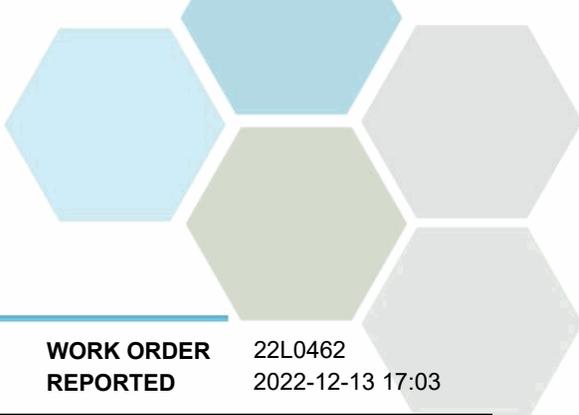
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 received 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.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22L0462
2022-12-13 17:03

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2L0662

Duplicate (B2L0662-DUP1)		Source: 22L0462-01		Prepared: 2022-12-07, Analyzed: 2022-12-09					
pH (1:2 H2O Solution)	5.78	0.10	pH units	5.79			< 1	10	

General Parameters, Batch B2L0684

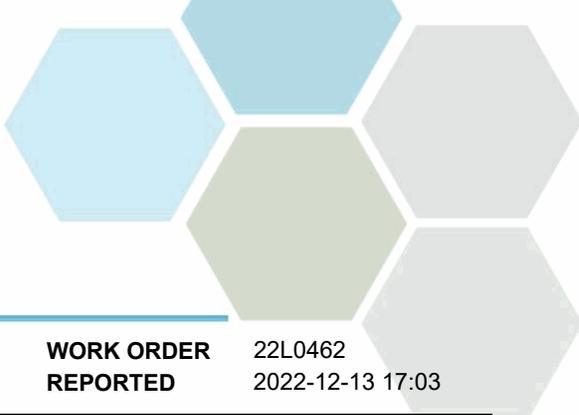
Blank (B2L0684-BLK1)		Prepared: 2022-12-07, Analyzed: 2022-12-08							
Nitrogen, Total Kjeldahl	< 0.010	0.010	% wet						
Duplicate (B2L0684-DUP1)		Source: 22L0462-01		Prepared: 2022-12-07, Analyzed: 2022-12-08					
Nitrogen, Total Kjeldahl	4.54	0.0004	% dry	4.56			< 1	25	
Reference (B2L0684-SRM1)		Prepared: 2022-12-07, Analyzed: 2022-12-08							
Nitrogen, Total Kjeldahl	0.170	0.010	% wet	0.197	86	58.8-150			

General Parameters, Batch B2L0790

Reference (B2L0790-SRM1)		Prepared: 2022-12-12, Analyzed: 2022-12-12							
Solids, Total	86.9	0.1	% wet	87.0	100	80-120			
Solids, Volatile	2.4	0.1	% dry	2.58	93	80-200			

Strong Acid Leachable Metals, Batch B2L1184

Blank (B2L1184-BLK1)		Prepared: 2022-12-12, Analyzed: 2022-12-12							
Aluminum	< 40	40	mg/kg dry						
Antimony	< 0.10	0.10	mg/kg dry						
Arsenic	< 0.30	0.30	mg/kg dry						
Barium	< 1.0	1.0	mg/kg dry						
Beryllium	< 0.10	0.10	mg/kg dry						
Bismuth	< 0.10	0.10	mg/kg dry						
Boron	< 2.0	2.0	mg/kg dry						
Cadmium	< 0.040	0.040	mg/kg dry						
Calcium	< 100	100	mg/kg dry						
Chromium	< 1.0	1.0	mg/kg dry						
Cobalt	< 0.10	0.10	mg/kg dry						
Copper	< 0.40	0.40	mg/kg dry						
Iron	< 20	20	mg/kg dry						



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22L0462
2022-12-13 17:03

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2L1184, Continued

Blank (B2L1184-BLK1), Continued

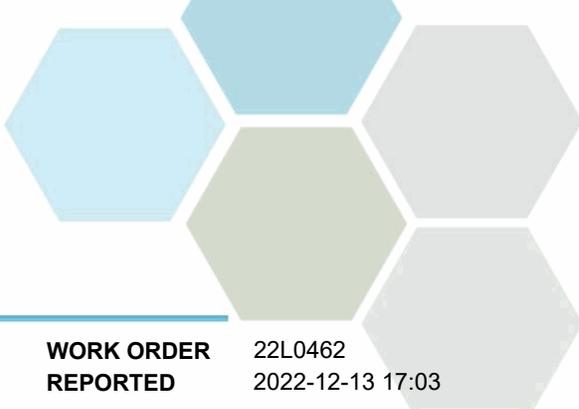
Prepared: 2022-12-12, Analyzed: 2022-12-12

Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2L1184-BS1)

Prepared: 2022-12-12, Analyzed: 2022-12-12

Aluminum	1010	40 mg/kg dry	1000		101	80-120			
Antimony	9.74	0.10 mg/kg dry	10.0		97	80-120			
Arsenic	9.58	0.30 mg/kg dry	10.0		96	80-120			
Barium	9.6	1.0 mg/kg dry	10.0		96	80-120			
Beryllium	9.74	0.10 mg/kg dry	10.0		97	80-120			
Bismuth	9.98	0.10 mg/kg dry	10.0		100	80-120			
Boron	9.7	2.0 mg/kg dry	10.0		97	80-120			
Cadmium	9.64	0.040 mg/kg dry	10.0		96	80-120			
Calcium	1010	100 mg/kg dry	1000		101	80-120			
Chromium	10.1	1.0 mg/kg dry	10.0		101	80-120			
Cobalt	10.1	0.10 mg/kg dry	10.0		101	80-120			
Copper	10.1	0.40 mg/kg dry	10.0		101	80-120			
Iron	1020	20 mg/kg dry	1000		102	80-120			
Lead	10.1	0.20 mg/kg dry	10.0		101	80-120			
Lithium	9.12	0.10 mg/kg dry	10.0		91	80-120			
Magnesium	985	10 mg/kg dry	1000		98	80-120			
Manganese	10.2	0.40 mg/kg dry	10.0		102	80-120			
Mercury	1.02	0.040 mg/kg dry	1.00		102	80-120			
Molybdenum	9.81	0.10 mg/kg dry	10.0		98	80-120			
Nickel	9.84	0.60 mg/kg dry	10.0		98	80-120			
Phosphorus	1000	10 mg/kg dry	1000		100	80-120			
Potassium	1030	40 mg/kg dry	1000		103	80-120			
Selenium	9.99	0.20 mg/kg dry	10.0		100	80-120			
Silver	9.80	0.10 mg/kg dry	10.0		98	80-120			
Sodium	1000	50 mg/kg dry	1000		100	80-120			
Strontium	9.77	0.20 mg/kg dry	10.0		98	80-120			
Sulfur	9980	1000 mg/kg dry	10000		100	80-120			
Tellurium	9.51	0.10 mg/kg dry	10.0		95	80-120			
Thallium	10.0	0.10 mg/kg dry	10.0		100	80-120			
Thorium	10.3	0.50 mg/kg dry	10.0		103	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22L0462
2022-12-13 17:03

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2L1184, Continued

LCS (B2L1184-BS1), Continued				Prepared: 2022-12-12, Analyzed: 2022-12-12					
Tin	9.70	0.20 mg/kg dry	10.0		97	80-120			
Titanium	10.5	1.0 mg/kg dry	10.0		105	80-120			
Tungsten	10.3	0.20 mg/kg dry	10.0		103	80-120			
Uranium	10.2	0.050 mg/kg dry	10.0		102	80-120			
Vanadium	10.1	1.0 mg/kg dry	10.0		101	80-120			
Zinc	10.0	2.0 mg/kg dry	10.0		100	80-120			
Zirconium	9.8	2.0 mg/kg dry	10.0		98	80-120			

Reference (B2L1184-SRM1)				Prepared: 2022-12-12, Analyzed: 2022-12-12					
Aluminum	12300	40 mg/kg dry	11500		107	70-130			
Antimony	0.66	0.10 mg/kg dry	0.724		91	70-130			
Arsenic	84.1	0.30 mg/kg dry	82.1		102	70-130			
Barium	43.9	1.0 mg/kg dry	40.0		110	70-130			
Beryllium	0.37	0.10 mg/kg dry	0.369		101	70-130			
Calcium	5430	100 mg/kg dry	5170		105	70-130			
Chromium	66.0	1.0 mg/kg dry	63.1		105	70-130			
Cobalt	10.7	0.10 mg/kg dry	10.4		103	70-130			
Copper	20.4	0.40 mg/kg dry	19.8		103	70-130			
Iron	20100	20 mg/kg dry	20200		99	70-130			
Lead	16.6	0.20 mg/kg dry	17.3		96	70-130			
Magnesium	6160	10 mg/kg dry	6090		101	70-130			
Manganese	320	0.40 mg/kg dry	315		102	70-130			
Mercury	0.104	0.040 mg/kg dry	0.110		95	70-130			
Molybdenum	0.60	0.10 mg/kg dry	0.619		96	70-130			
Nickel	31.7	0.60 mg/kg dry	31.7		100	70-130			
Phosphorus	435	10 mg/kg dry	420		104	70-130			
Silver	1.72	0.10 mg/kg dry	1.75		98	70-130			
Strontium	23.5	0.20 mg/kg dry	20.3		116	70-130			
Titanium	785	1.0 mg/kg dry	645		122	70-130			
Uranium	1.15	0.050 mg/kg dry	1.18		97	70-130			
Vanadium	36.4	1.0 mg/kg dry	33.5		109	70-130			
Zinc	39.9	2.0 mg/kg dry	40.2		99	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22K1931
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-11-15 11:43 / 7.9°C 2022-11-22 13:14
PO NUMBER		COC NUMBER	44880.40785
PROJECT	Raw Influent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

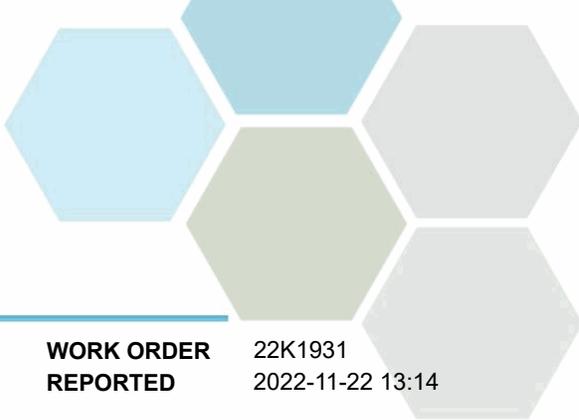
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

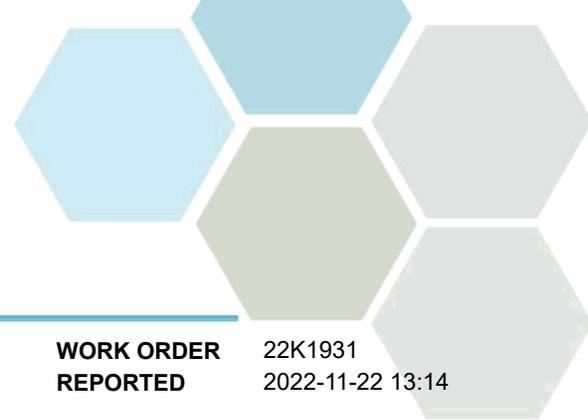
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22K1931
2022-11-22 13:14

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22K1931-01) Matrix: Wastewater Sampled: 2022-11-15 10:20					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-11-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-11-18	
Phosphate (as P)	3.81	0.0050	mg/L	2022-11-18	RA5
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	79.9	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	305	1.0	mg/L	2022-11-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Alkalinity, Bicarbonate (as CaCO3)	305	1.0	mg/L	2022-11-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Ammonia, Total (as N)	57.4	0.050	mg/L	2022-11-17	
BOD, 5-day	780	2.0	mg/L	2022-11-21	
BOD, 5-day Carbonaceous	443	2.0	mg/L	2022-11-22	
Nitrogen, Total Kjeldahl	79.9	0.050	mg/L	2022-11-21	
pH	7.38	0.10	pH units	2022-11-18	HT2
Phosphorus, Total (as P)	8.91	0.0050	mg/L	2022-11-18	
Solids, Total Suspended	326	2.0	mg/L	2022-11-18	

Sample Qualifiers:

- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- RA5 The sample cannot be accurately quantified due to matrix interference. Result is Semi-Quantitative.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22K1931
2022-11-22 13:14

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

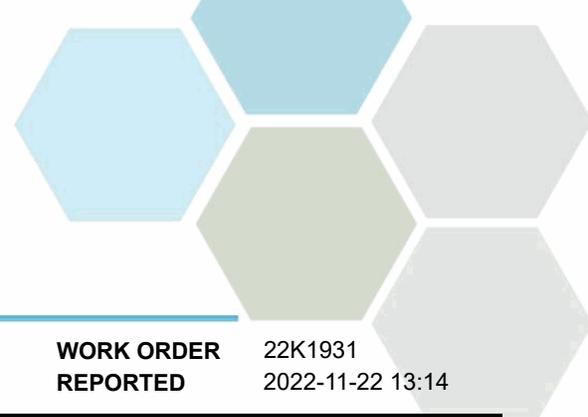
Glossary of Terms:

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
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 received 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.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

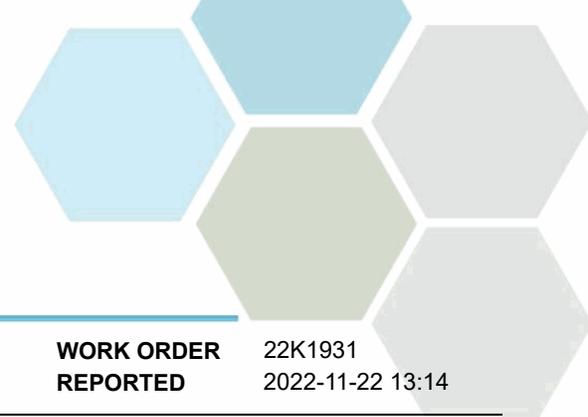
WORK ORDER REPORTED 22K1931
2022-11-22 13:14

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

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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2K1716									
Blank (B2K1716-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2K1716-BLK2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2K1716-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Nitrate (as N)	4.04	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.87	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			
LCS (B2K1716-BS2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Nitrate (as N)	4.12	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	1.85	0.010 mg/L	2.00		93	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			
General Parameters, Batch B2K1780									
Blank (B2K1780-BLK1)			Prepared: 2022-11-16, Analyzed: 2022-11-21						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2K1780-BS1)			Prepared: 2022-11-16, Analyzed: 2022-11-21						
BOD, 5-day	193	49.8 mg/L	198		98	85-115			
General Parameters, Batch B2K1888									
Blank (B2K1888-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2K1888-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Solids, Total Suspended	96.0	10.0 mg/L	100		96	85-115			

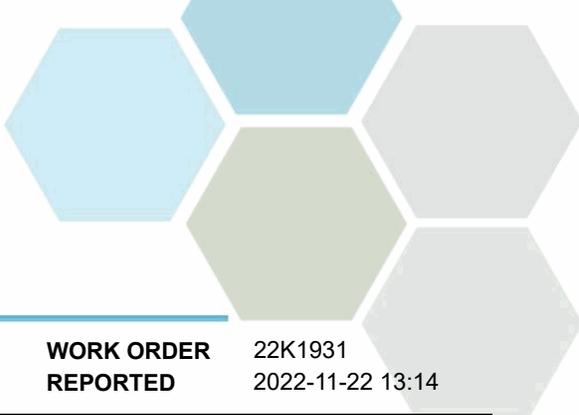


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22K1931
2022-11-22 13:14

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2K1897									
Blank (B2K1897-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2K1897-BLK2)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2K1897-BLK3)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2K1897-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	0.973	0.050 mg/L	1.00		97	90-115			
LCS (B2K1897-BS2)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	0.978	0.050 mg/L	1.00		98	90-115			
LCS (B2K1897-BS3)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	0.983	0.050 mg/L	1.00		98	90-115			
General Parameters, Batch B2K1972									
Blank (B2K1972-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-22						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2K1972-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-22						
BOD, 5-day Carbonaceous	192	38.7 mg/L	198		97	85-115			
General Parameters, Batch B2K1986									
Blank (B2K1986-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2K1986-BLK2)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2K1986-BLK3)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2K1986-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2K1986-BS2)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2K1986-BS3)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
General Parameters, Batch B2K2047									
Blank (B2K2047-BLK1)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Alkalinity, Total (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0 mg/L							
Blank (B2K2047-BLK2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Alkalinity, Total (as CaCO ₃)	< 1.0	1.0 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22K1931
2022-11-22 13:14

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2K2047, Continued									
Blank (B2K2047-BLK2), Continued					Prepared: 2022-11-18, Analyzed: 2022-11-18				
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							
LCS (B2K2047-BS1)					Prepared: 2022-11-18, Analyzed: 2022-11-18				
Alkalinity, Total (as CaCO3)	108	1.0 mg/L	100		108	80-120			
LCS (B2K2047-BS2)					Prepared: 2022-11-18, Analyzed: 2022-11-18				
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
Reference (B2K2047-SRM1)					Prepared: 2022-11-18, Analyzed: 2022-11-18				
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2K2047-SRM2)					Prepared: 2022-11-18, Analyzed: 2022-11-18				
pH	7.02	0.10 pH units	7.01		100	98-102			

General Parameters, Batch B2K2227

Blank (B2K2227-BLK1)					Prepared: 2022-11-20, Analyzed: 2022-11-21				
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2K2227-BLK2)					Prepared: 2022-11-20, Analyzed: 2022-11-21				
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2K2227-BS1)					Prepared: 2022-11-20, Analyzed: 2022-11-21				
Nitrogen, Total Kjeldahl	1.10	0.050 mg/L	1.00		110	85-115			
LCS (B2K2227-BS2)					Prepared: 2022-11-20, Analyzed: 2022-11-21				
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22K1929
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-11-15 11:43 / 7.9°C
PO NUMBER		REPORTED	2022-11-22 13:11
PROJECT	Final Effluent- PE14651	COC NUMBER	44880.40785
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

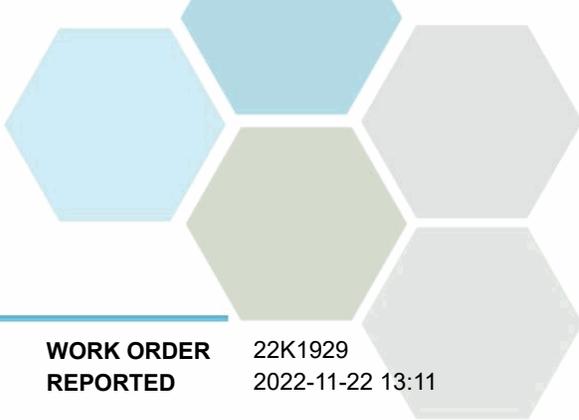
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22K1929
2022-11-22 13:11

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

Final Effluent (E233626) (22K1929-01) | Matrix: Wastewater | Sampled: 2022-11-15 10:05

Anions

Chloride	108	0.10	mg/L	2022-11-18	
Nitrate (as N)	1.42	0.010	mg/L	2022-11-18	
Nitrite (as N)	0.198	0.010	mg/L	2022-11-18	
Phosphate (as P)	0.0053	0.0050	mg/L	2022-11-18	

Calculated Parameters

Nitrate+Nitrite (as N)	1.62	0.0100	mg/L	N/A	
Nitrogen, Total	4.26	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	184	1.0	mg/L	2022-11-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Alkalinity, Bicarbonate (as CaCO3)	184	1.0	mg/L	2022-11-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Ammonia, Total (as N)	0.833	0.050	mg/L	2022-11-18	
BOD, 5-day Carbonaceous	< 4.6	2.0	mg/L	2022-11-22	
Nitrogen, Total Kjeldahl	2.64	0.050	mg/L	2022-11-21	
pH	7.95	0.10	pH units	2022-11-18	HT2
Phosphorus, Total (as P)	0.269	0.0050	mg/L	2022-11-18	
Solids, Total Suspended	4.6	2.0	mg/L	2022-11-18	

Microbiological Parameters

Coliforms, Total (Q-Tray)	46100	1	MPN/100 mL	2022-11-16	
Coliforms, Fecal (Q-Tray)	8410	1	MPN/100 mL	2022-11-16	

Duplicate (22K1929-02) | Matrix: Water | Sampled: 2022-11-15 10:05

Anions

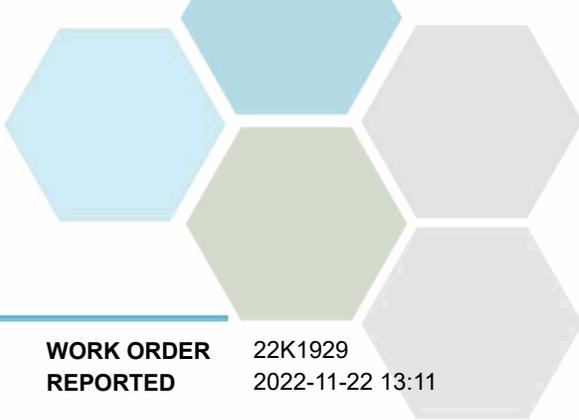
Chloride	113	0.10	mg/L	2022-11-18	
Nitrate (as N)	1.43	0.010	mg/L	2022-11-18	
Nitrite (as N)	0.208	0.010	mg/L	2022-11-18	
Phosphate (as P)	0.0052	0.0050	mg/L	2022-11-18	

Calculated Parameters

Nitrate+Nitrite (as N)	1.64	0.0100	mg/L	N/A	
Nitrogen, Total	4.25	0.0500	mg/L	N/A	
Nitrogen, Organic	1.78	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	179	1.0	mg/L	2022-11-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	
Alkalinity, Bicarbonate (as CaCO3)	179	1.0	mg/L	2022-11-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-11-18	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22K1929
2022-11-22 13:11

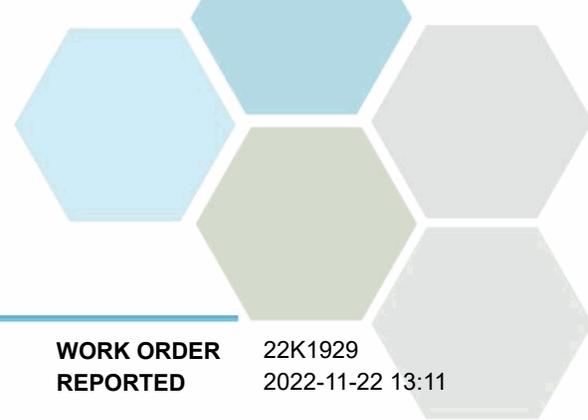
Analyte	Result	RL	Units	Analyzed	Qualifier
Duplicate (22K1929-02) Matrix: Water Sampled: 2022-11-15 10:05, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2022-11-18	
Ammonia, Total (as N)	0.841	0.050	mg/L	2022-11-18	
BOD, 5-day Carbonaceous	< 4.6	2.0	mg/L	2022-11-22	
Nitrogen, Total Kjeldahl	2.62	0.050	mg/L	2022-11-21	
pH	7.80	0.10	pH units	2022-11-18	HT2
Phosphorus, Total (as P)	0.264	0.0050	mg/L	2022-11-18	
Solids, Total Suspended	4.0	2.0	mg/L	2022-11-18	

Microbiological Parameters

Coliforms, Total (Q-Tray)	38700	1	MPN/100 mL	2022-11-16	
Coliforms, Fecal (Q-Tray)	7610	1	MPN/100 mL	2022-11-16	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22K1929
2022-11-22 13:11

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

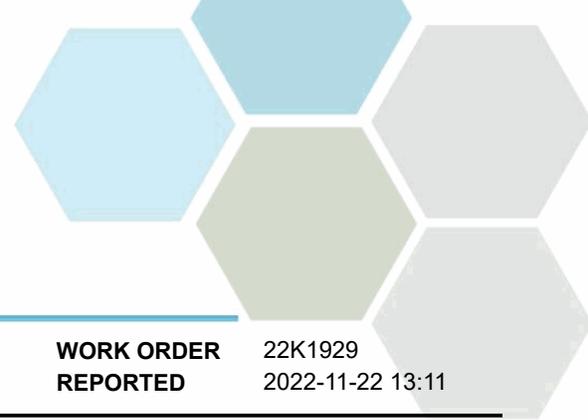
Glossary of Terms:

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
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

General Comments:

The results in this report apply to the received 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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22K1929
2022-11-22 13:11

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

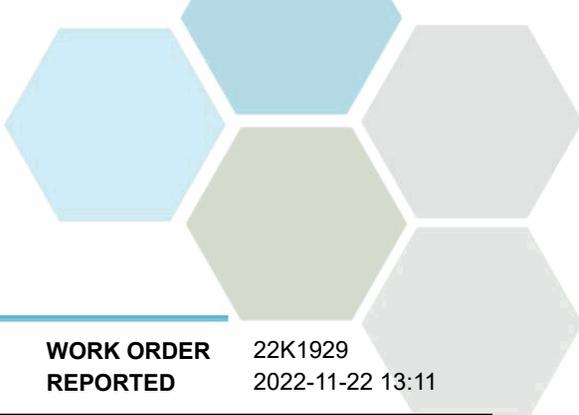
Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2K1716									
Blank (B2K1716-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2K1716-BLK2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2K1716-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.04	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.87	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			
LCS (B2K1716-BS2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Chloride	15.9	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.12	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	1.85	0.010 mg/L	2.00		93	85-115			
Phosphate (as P)	1.01	0.0050 mg/L	1.00		101	80-120			

General Parameters, Batch B2K1888

Blank (B2K1888-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2K1888-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Solids, Total Suspended	96.0	10.0 mg/L	100		96	85-115			

General Parameters, Batch B2K1897

Blank (B2K1897-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

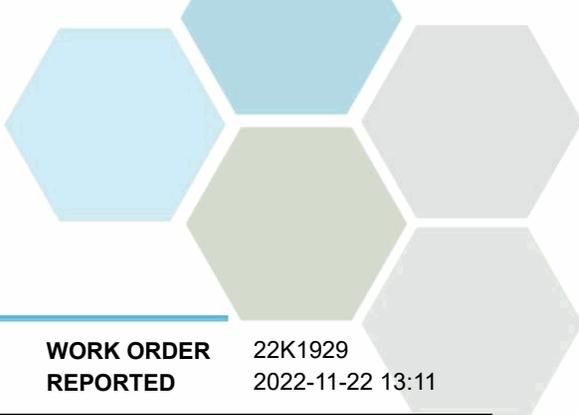


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22K1929
2022-11-22 13:11

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2K1897, Continued									
Blank (B2K1897-BLK2)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2K1897-BLK3)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2K1897-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	0.973	0.050 mg/L	1.00		97	90-115			
LCS (B2K1897-BS2)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	0.978	0.050 mg/L	1.00		98	90-115			
LCS (B2K1897-BS3)			Prepared: 2022-11-17, Analyzed: 2022-11-17						
Ammonia, Total (as N)	0.983	0.050 mg/L	1.00		98	90-115			
General Parameters, Batch B2K1972									
Blank (B2K1972-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-22						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2K1972-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-22						
BOD, 5-day Carbonaceous	192	38.7 mg/L	198		97	85-115			
General Parameters, Batch B2K1986									
Blank (B2K1986-BLK1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2K1986-BLK2)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2K1986-BLK3)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2K1986-BS1)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2K1986-BS2)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2K1986-BS3)			Prepared: 2022-11-17, Analyzed: 2022-11-18						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
General Parameters, Batch B2K2047									
Blank (B2K2047-BLK1)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
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							
Blank (B2K2047-BLK2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
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							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22K1929
2022-11-22 13:11

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2K2047, Continued									
Blank (B2K2047-BLK2), Continued			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
LCS (B2K2047-BS1)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Alkalinity, Total (as CaCO3)	108	1.0 mg/L	100		108	80-120			
LCS (B2K2047-BS2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
Reference (B2K2047-SRM1)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2K2047-SRM2)			Prepared: 2022-11-18, Analyzed: 2022-11-18						
pH	7.02	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2K2227									
Blank (B2K2227-BLK1)			Prepared: 2022-11-20, Analyzed: 2022-11-21						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2K2227-BLK2)			Prepared: 2022-11-20, Analyzed: 2022-11-21						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2K2227-BS1)			Prepared: 2022-11-20, Analyzed: 2022-11-21						
Nitrogen, Total Kjeldahl	1.10	0.050 mg/L	1.00		110	85-115			
LCS (B2K2227-BS2)			Prepared: 2022-11-20, Analyzed: 2022-11-21						
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			
Microbiological Parameters, Batch B2K1733									
Blank (B2K1733-BLK1)			Prepared: 2022-11-16, Analyzed: 2022-11-16						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2K1733-BLK2)			Prepared: 2022-11-16, Analyzed: 2022-11-16						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2K1733-BLK3)			Prepared: 2022-11-16, Analyzed: 2022-11-16						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2K1733-BLK4)			Prepared: 2022-11-16, Analyzed: 2022-11-16						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2K1733-BLK5)			Prepared: 2022-11-16, Analyzed: 2022-11-16						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2K1733-BLK6)			Prepared: 2022-11-16, Analyzed: 2022-11-16						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22K1926
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-11-15 11:43 / 7.8°C 2022-11-22 16:06
PO NUMBER		COC NUMBER	44880.40785
PROJECT	BioSolids- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

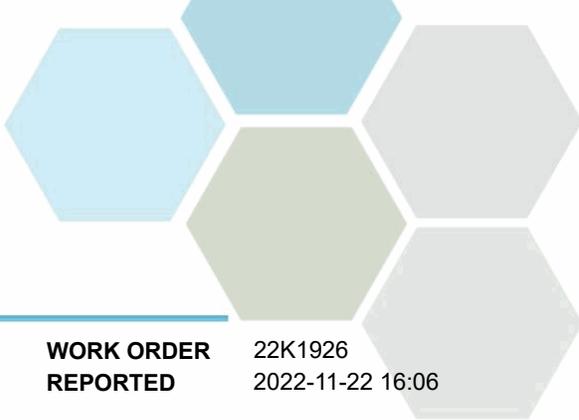
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22K1926
2022-11-22 16:06

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

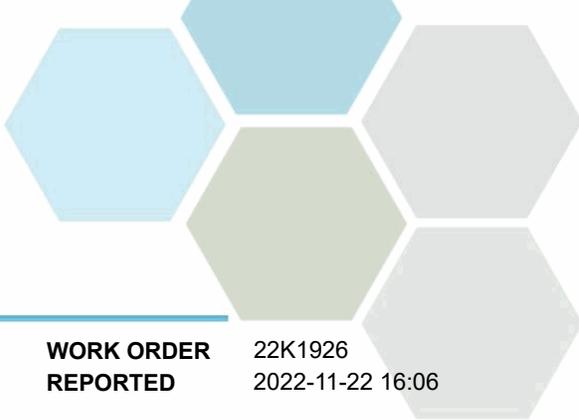
Biosolids (E233628) (22K1926-01) | Matrix: Sludge | Sampled: 2022-11-15 08:30

General Parameters

Moisture	77.9	1.0	% wet	2022-11-20	
Nitrogen, Total Kjeldahl	4.64	0.0004	% dry	2022-11-20	
pH (1:2 H2O Solution)	5.60	0.10	pH units	2022-11-20	PH1
Solids, Total	22.1	0.1	% wet	2022-11-20	
Solids, Volatile	85.6	0.1	% dry	2022-11-22	

Strong Acid Leachable Metals

Aluminum	1780	40	mg/kg dry	2022-11-21	
Antimony	1.17	0.10	mg/kg dry	2022-11-21	
Arsenic	1.65	0.30	mg/kg dry	2022-11-21	
Barium	89.7	1.0	mg/kg dry	2022-11-21	
Beryllium	< 0.10	0.10	mg/kg dry	2022-11-21	
Bismuth	21.2	0.10	mg/kg dry	2022-11-21	
Boron	14.3	2.0	mg/kg dry	2022-11-21	
Cadmium	1.13	0.040	mg/kg dry	2022-11-21	
Calcium	12200	100	mg/kg dry	2022-11-21	
Chromium	11.1	1.0	mg/kg dry	2022-11-21	
Cobalt	1.31	0.10	mg/kg dry	2022-11-21	
Copper	390	0.40	mg/kg dry	2022-11-21	
Iron	3010	20	mg/kg dry	2022-11-21	
Lead	7.20	0.20	mg/kg dry	2022-11-21	
Lithium	1.01	0.10	mg/kg dry	2022-11-21	
Magnesium	4220	10	mg/kg dry	2022-11-21	
Manganese	77.8	0.40	mg/kg dry	2022-11-21	
Mercury	0.406	0.040	mg/kg dry	2022-11-21	
Molybdenum	9.61	0.10	mg/kg dry	2022-11-21	
Nickel	10.1	0.60	mg/kg dry	2022-11-21	
Phosphorus	15000	10	mg/kg dry	2022-11-21	
Potassium	4130	40	mg/kg dry	2022-11-21	
Selenium	3.15	0.20	mg/kg dry	2022-11-21	
Silver	1.63	0.10	mg/kg dry	2022-11-21	
Sodium	598	50	mg/kg dry	2022-11-21	
Strontium	53.9	0.20	mg/kg dry	2022-11-21	
Sulfur	6210	1000	mg/kg dry	2022-11-21	
Tellurium	< 0.10	0.10	mg/kg dry	2022-11-21	
Thallium	< 0.10	0.10	mg/kg dry	2022-11-21	
Thorium	< 0.50	0.50	mg/kg dry	2022-11-21	
Tin	16.7	0.20	mg/kg dry	2022-11-21	
Titanium	52.2	1.0	mg/kg dry	2022-11-21	
Tungsten	0.48	0.20	mg/kg dry	2022-11-21	
Uranium	7.69	0.050	mg/kg dry	2022-11-21	
Vanadium	5.4	1.0	mg/kg dry	2022-11-21	
Zinc	666	2.0	mg/kg dry	2022-11-21	



TEST RESULTS

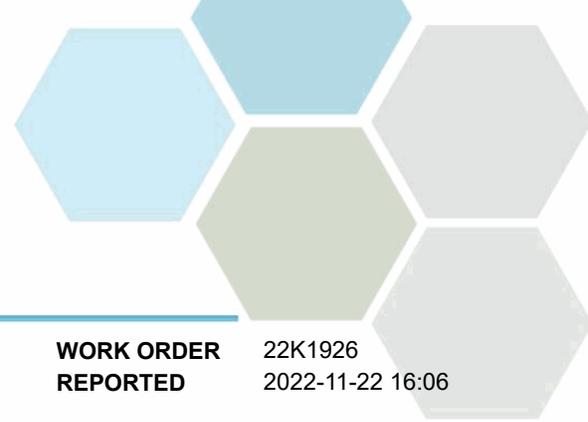
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22K1926
2022-11-22 16:06

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22K1926-01) Matrix: Sludge Sampled: 2022-11-15 08:30, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	3.1	2.0	mg/kg dry	2022-11-21	

Sample Qualifiers:

PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22K1926
2022-11-22 16:06

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

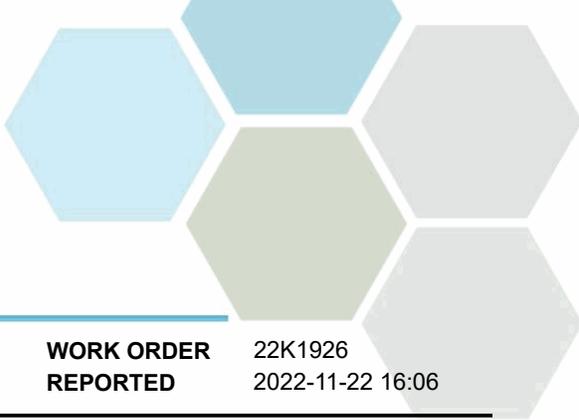
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 received 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.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22K1926
2022-11-22 16:06

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2K2078

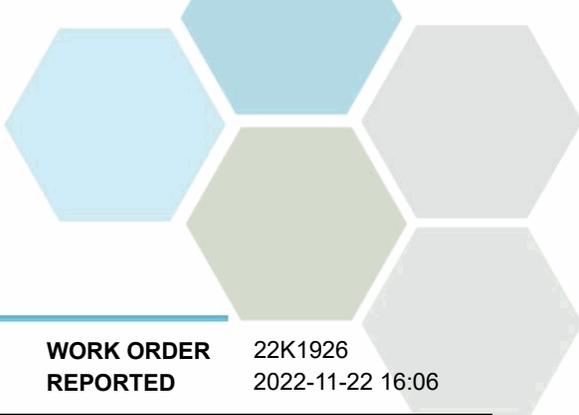
Blank (B2K2078-BLK1)		Prepared: 2022-11-18, Analyzed: 2022-11-20							
Nitrogen, Total Kjeldahl	< 0.010	0.010 % wet							
Duplicate (B2K2078-DUP1)		Source: 22K1926-01		Prepared: 2022-11-18, Analyzed: 2022-11-20					
Nitrogen, Total Kjeldahl	4.45	0.0004 % dry		4.64			4	25	
Reference (B2K2078-SRM1)		Prepared: 2022-11-18, Analyzed: 2022-11-20							
Nitrogen, Total Kjeldahl	0.256	0.010 % wet	0.197		130	58.8-150			

General Parameters, Batch B2K2328

Reference (B2K2328-SRM1)		Prepared: 2022-11-22, Analyzed: 2022-11-22							
Solids, Total	87.5	0.1 % wet	87.0		101	80-120			
Solids, Volatile	2.8	0.1 % dry	2.58		109	80-200			

Strong Acid Leachable Metals, Batch B2K2334

Blank (B2K2334-BLK1)		Prepared: 2022-11-21, Analyzed: 2022-11-21							
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							



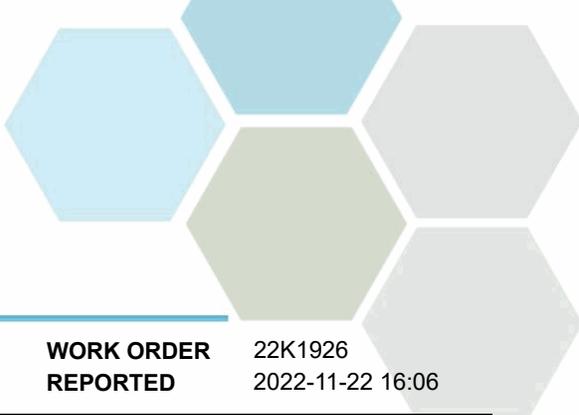
APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22K1926
2022-11-22 16:06

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2K2334, Continued									
Blank (B2K2334-BLK1), Continued					Prepared: 2022-11-21, Analyzed: 2022-11-21				
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2K2334-BS1)					Prepared: 2022-11-21, Analyzed: 2022-11-21				
Aluminum	947	40 mg/kg dry	1000		95	80-120			
Antimony	9.29	0.10 mg/kg dry	10.0		93	80-120			
Arsenic	9.55	0.30 mg/kg dry	10.0		95	80-120			
Barium	9.6	1.0 mg/kg dry	10.0		96	80-120			
Beryllium	10.4	0.10 mg/kg dry	10.0		104	80-120			
Bismuth	9.04	0.10 mg/kg dry	10.0		90	80-120			
Boron	10.7	2.0 mg/kg dry	10.0		107	80-120			
Cadmium	9.43	0.040 mg/kg dry	10.0		94	80-120			
Calcium	984	100 mg/kg dry	1000		98	80-120			
Chromium	9.8	1.0 mg/kg dry	10.0		98	80-120			
Cobalt	9.78	0.10 mg/kg dry	10.0		98	80-120			
Copper	9.76	0.40 mg/kg dry	10.0		98	80-120			
Iron	974	20 mg/kg dry	1000		97	80-120			
Lead	9.38	0.20 mg/kg dry	10.0		94	80-120			
Lithium	9.74	0.10 mg/kg dry	10.0		97	80-120			
Magnesium	980	10 mg/kg dry	1000		98	80-120			
Manganese	9.65	0.40 mg/kg dry	10.0		96	80-120			
Mercury	0.917	0.040 mg/kg dry	1.00		92	80-120			
Molybdenum	9.50	0.10 mg/kg dry	10.0		95	80-120			
Nickel	9.65	0.60 mg/kg dry	10.0		96	80-120			
Phosphorus	940	10 mg/kg dry	1000		94	80-120			
Potassium	934	40 mg/kg dry	1000		93	80-120			
Selenium	9.84	0.20 mg/kg dry	10.0		98	80-120			
Silver	9.76	0.10 mg/kg dry	10.0		98	80-120			
Sodium	968	50 mg/kg dry	1000		97	80-120			
Strontium	9.55	0.20 mg/kg dry	10.0		96	80-120			
Sulfur	9830	1000 mg/kg dry	10000		98	80-120			
Tellurium	9.07	0.10 mg/kg dry	10.0		91	80-120			
Thallium	9.21	0.10 mg/kg dry	10.0		92	80-120			
Thorium	9.72	0.50 mg/kg dry	10.0		97	80-120			
Tin	9.51	0.20 mg/kg dry	10.0		95	80-120			
Titanium	9.7	1.0 mg/kg dry	10.0		97	80-120			
Tungsten	9.30	0.20 mg/kg dry	10.0		93	80-120			
Uranium	9.64	0.050 mg/kg dry	10.0		96	80-120			
Vanadium	9.8	1.0 mg/kg dry	10.0		98	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22K1926
2022-11-22 16:06

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2K2334, Continued

LCS (B2K2334-BS1), Continued				Prepared: 2022-11-21, Analyzed: 2022-11-21					
Zinc	9.8	2.0 mg/kg dry	10.0		98	80-120			
Zirconium	9.6	2.0 mg/kg dry	10.0		96	80-120			

Reference (B2K2334-SRM1)				Prepared: 2022-11-21, Analyzed: 2022-11-21					
Aluminum	11600	40 mg/kg dry	11500		101	70-130			
Antimony	0.63	0.10 mg/kg dry	0.724		87	70-130			
Arsenic	87.3	0.30 mg/kg dry	82.1		106	70-130			
Barium	39.2	1.0 mg/kg dry	40.0		98	70-130			
Beryllium	0.40	0.10 mg/kg dry	0.369		109	70-130			
Calcium	5420	100 mg/kg dry	5170		105	70-130			
Chromium	65.6	1.0 mg/kg dry	63.1		104	70-130			
Cobalt	10.7	0.10 mg/kg dry	10.4		103	70-130			
Copper	21.1	0.40 mg/kg dry	19.8		106	70-130			
Iron	20800	20 mg/kg dry	20200		103	70-130			
Lead	16.3	0.20 mg/kg dry	17.3		94	70-130			
Magnesium	6140	10 mg/kg dry	6090		101	70-130			
Manganese	319	0.40 mg/kg dry	315		101	70-130			
Mercury	0.116	0.040 mg/kg dry	0.110		105	70-130			
Molybdenum	0.61	0.10 mg/kg dry	0.619		99	70-130			
Nickel	32.4	0.60 mg/kg dry	31.7		102	70-130			
Phosphorus	446	10 mg/kg dry	420		106	70-130			
Silver	1.63	0.10 mg/kg dry	1.75		93	70-130			
Strontium	20.7	0.20 mg/kg dry	20.3		102	70-130			
Titanium	704	1.0 mg/kg dry	645		109	70-130			
Uranium	1.12	0.050 mg/kg dry	1.18		95	70-130			
Vanadium	36.0	1.0 mg/kg dry	33.5		108	70-130			
Zinc	39.4	2.0 mg/kg dry	40.2		98	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22J0847
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-10-06 11:10 / 16.1°C 2022-10-14 12:15
PO NUMBER		COC NUMBER	44840.32011
PROJECT	Raw Influent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

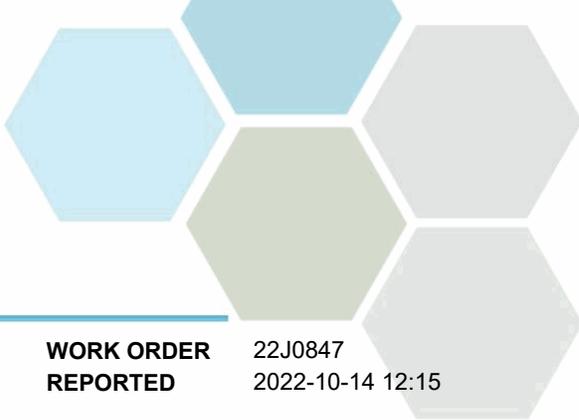
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

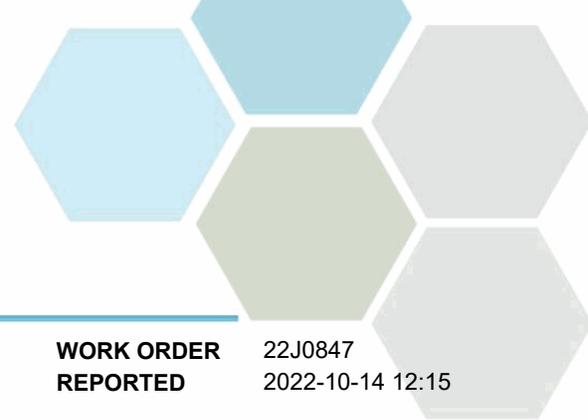
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22J0847
2022-10-14 12:15

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22J0847-01) Matrix: Wastewater Sampled: 2022-10-06 10:45					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-10-11	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-10-11	HT1
Phosphate (as P)	4.88	0.0050	mg/L	2022-10-11	HT1
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	88.0	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	361	1.0	mg/L	2022-10-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Bicarbonate (as CaCO3)	361	1.0	mg/L	2022-10-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Ammonia, Total (as N)	61.7	0.050	mg/L	2022-10-12	
BOD, 5-day	375	2.0	mg/L	2022-10-13	
BOD, 5-day Carbonaceous	316	2.0	mg/L	2022-10-13	
Nitrogen, Total Kjeldahl	88.0	0.050	mg/L	2022-10-14	
pH	7.68	0.10	pH units	2022-10-13	HT2
Phosphorus, Total (as P)	10.5	0.0050	mg/L	2022-10-13	
Solids, Total Suspended	296	2.0	mg/L	2022-10-14	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22J0847
2022-10-14 12:15

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
Biochemical Oxygen Demand, Carbonaceous 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
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

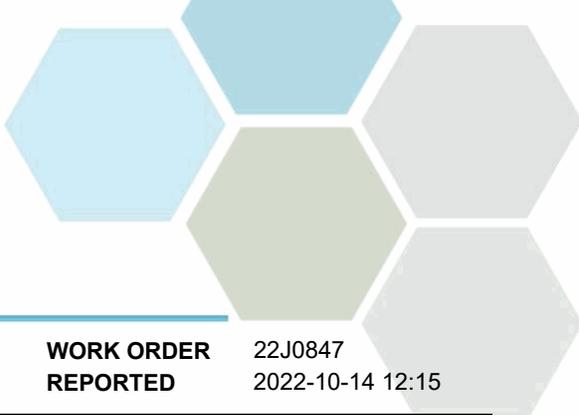
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

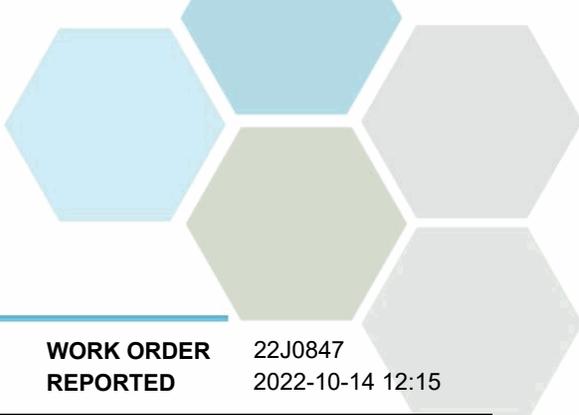
WORK ORDER REPORTED 22J0847
2022-10-14 12:15

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J0751									
Blank (B2J0751-BLK1)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK2)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK3)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK4)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK5)			Prepared: 2022-10-11, Analyzed: 2022-10-11						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0030	0.0030 mg/L							
LCS (B2J0751-BS1)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
Nitrate (as N)	3.91	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.83	0.010 mg/L	2.00		91	85-115			
Phosphate (as P)	1.04	0.0030 mg/L	1.00		104	80-120			
LCS (B2J0751-BS2)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Nitrate (as N)	3.94	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.06	0.0030 mg/L	1.00		106	80-120			
LCS (B2J0751-BS3)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Nitrate (as N)	3.92	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.87	0.010 mg/L	2.00		93	85-115			

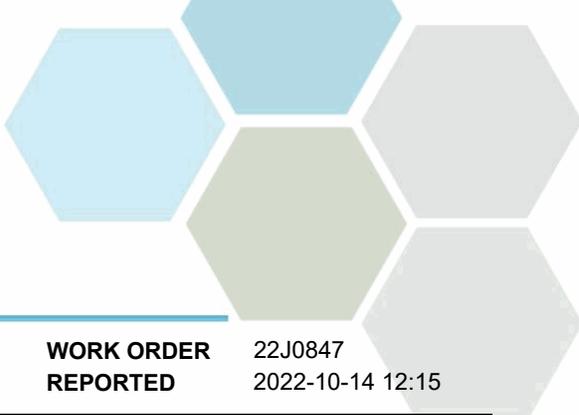


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22J0847
2022-10-14 12:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J0751, Continued									
LCS (B2J0751-BS3), Continued			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Phosphate (as P)	1.08	0.0030 mg/L	1.00		108	80-120			
LCS (B2J0751-BS4)			Prepared: 2022-10-11, Analyzed: 2022-10-11						
Nitrate (as N)	3.93	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.88	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	1.08	0.0030 mg/L	1.00		108	80-120			
LCS (B2J0751-BS5)			Prepared: 2022-10-11, Analyzed: 2022-10-11						
Nitrate (as N)	3.94	0.010 mg/L	4.00		99	90-110			
Nitrite (as N)	1.84	0.010 mg/L	2.00		92	85-115			
Phosphate (as P)	0.981	0.0030 mg/L	1.00		98	80-120			
General Parameters, Batch B2J0948									
Blank (B2J0948-BLK1)			Prepared: 2022-10-08, Analyzed: 2022-10-13						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2J0948-BS1)			Prepared: 2022-10-08, Analyzed: 2022-10-13						
BOD, 5-day	204	48.5 mg/L	198		103	85-115			
General Parameters, Batch B2J0949									
Blank (B2J0949-BLK1)			Prepared: 2022-10-08, Analyzed: 2022-10-13						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2J0949-BS1)			Prepared: 2022-10-08, Analyzed: 2022-10-13						
BOD, 5-day Carbonaceous	198	46.5 mg/L	198		100	85-115			
General Parameters, Batch B2J1208									
Blank (B2J1208-BLK1)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK2)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK3)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK4)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK5)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2J1208-BS1)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.951	0.050 mg/L	1.00		95	90-115			
LCS (B2J1208-BS2)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.962	0.050 mg/L	1.00		96	90-115			
LCS (B2J1208-BS3)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.958	0.050 mg/L	1.00		96	90-115			
LCS (B2J1208-BS4)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.972	0.050 mg/L	1.00		97	90-115			

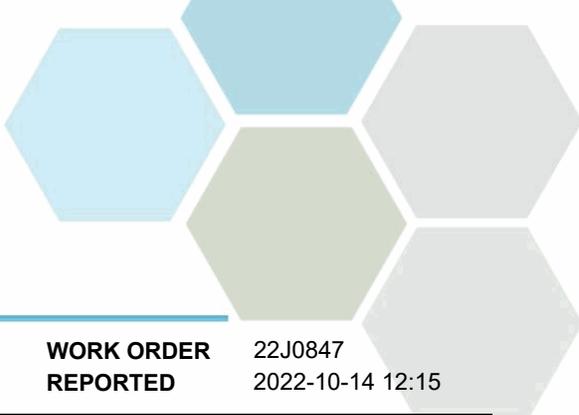


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22J0847
2022-10-14 12:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J1208, Continued									
LCS (B2J1208-BS5)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.957	0.050 mg/L	1.00		96	90-115			
General Parameters, Batch B2J1293									
Blank (B2J1293-BLK1)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2J1293-BLK2)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2J1293-BS1)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	0.989	0.050 mg/L	1.00		99	85-115			
LCS (B2J1293-BS2)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	0.993	0.050 mg/L	1.00		99	85-115			
General Parameters, Batch B2J1307									
Blank (B2J1307-BLK1)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J1307-BLK3)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2J1307-BS1)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	0.114	0.0050 mg/L	0.100		114	85-115			
LCS (B2J1307-BS3)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
General Parameters, Batch B2J1348									
Blank (B2J1348-BLK1)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
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							
Blank (B2J1348-BLK2)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
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							
Blank (B2J1348-BLK3)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	2.4	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	2.4	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Blank (B2J1348-BLK4)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22J0847
2022-10-14 12:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier	
General Parameters, Batch B2J1348, Continued										
Blank (B2J1348-BLK4), Continued			Prepared: 2022-10-13, Analyzed: 2022-10-13							
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								
LCS (B2J1348-BS1)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120				
LCS (B2J1348-BS2)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120				
LCS (B2J1348-BS3)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
Alkalinity, Total (as CaCO3)	99.4	1.0 mg/L	100		99	80-120				
LCS (B2J1348-BS7)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
Alkalinity, Total (as CaCO3)	97.2	1.0 mg/L	100		97	80-120				
Duplicate (B2J1348-DUP1)			Source: 22J0847-01				Prepared: 2022-10-13, Analyzed: 2022-10-13			
Alkalinity, Total (as CaCO3)	362	1.0 mg/L		361			< 1	10		
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L		< 1.0				10		
Alkalinity, Bicarbonate (as CaCO3)	362	1.0 mg/L		361			< 1	10		
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L		< 1.0				10		
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L		< 1.0				10		
Reference (B2J1348-SRM1)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
pH	7.03	0.10 pH units	7.01		100	98-102				
Reference (B2J1348-SRM2)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
pH	7.03	0.10 pH units	7.01		100	98-102				
Reference (B2J1348-SRM3)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
pH	7.04	0.10 pH units	7.01		100	98-102				
Reference (B2J1348-SRM4)			Prepared: 2022-10-13, Analyzed: 2022-10-13							
pH	7.03	0.10 pH units	7.01		100	98-102				
General Parameters, Batch B2J1436										
Blank (B2J1436-BLK1)			Prepared: 2022-10-13, Analyzed: 2022-10-14							
Solids, Total Suspended	< 2.0	2.0 mg/L								
LCS (B2J1436-BS1)			Prepared: 2022-10-13, Analyzed: 2022-10-14							
Solids, Total Suspended	91.0	10.0 mg/L	100		91	85-115				

CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22J0851
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-10-06 11:10 / 16.1°C
PO NUMBER		REPORTED	2022-10-14 12:17
PROJECT	Final Effluent- PE14651	COC NUMBER	44840.32011
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

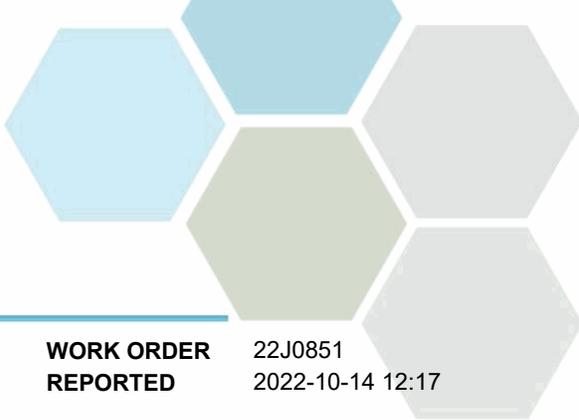
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22J0851
2022-10-14 12:17

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

Final Effluent (E233626) (22J0851-01) | Matrix: Wastewater | Sampled: 2022-10-06 10:20

Anions

Chloride	124	0.10	mg/L	2022-10-11	
Nitrate (as N)	2.77	0.010	mg/L	2022-10-11	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-10-11	HT1
Phosphate (as P)	0.0132	0.0050	mg/L	2022-10-11	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	2.77	0.0100	mg/L	N/A	
Nitrogen, Total	4.64	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	171	1.0	mg/L	2022-10-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Bicarbonate (as CaCO3)	171	1.0	mg/L	2022-10-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Ammonia, Total (as N)	0.237	0.050	mg/L	2022-10-12	
BOD, 5-day Carbonaceous	3.0	2.0	mg/L	2022-10-13	
Nitrogen, Total Kjeldahl	1.87	0.050	mg/L	2022-10-14	
pH	7.63	0.10	pH units	2022-10-13	HT2
Phosphorus, Total (as P)	0.211	0.0050	mg/L	2022-10-13	
Solids, Total Suspended	3.0	2.0	mg/L	2022-10-14	

Microbiological Parameters

Coliforms, Total (Q-Tray)	54800	1	MPN/100 mL	2022-10-07	
Coliforms, Fecal (Q-Tray)	7540	1	MPN/100 mL	2022-10-07	

Field Blank (22J0851-02) | Matrix: Water | Sampled: 2022-10-06 10:40

Anions

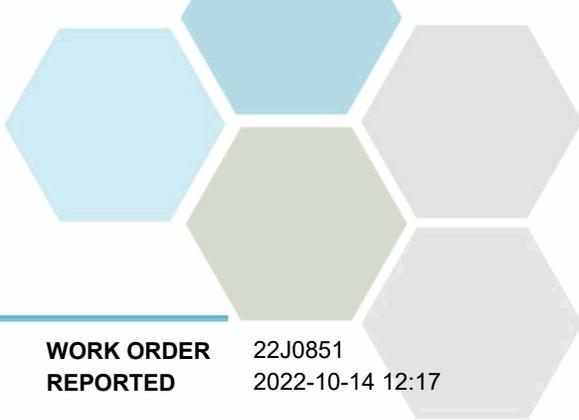
Chloride	< 0.10	0.10	mg/L	2022-10-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-10-11	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-10-11	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-10-11	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-10-13	



TEST RESULTS

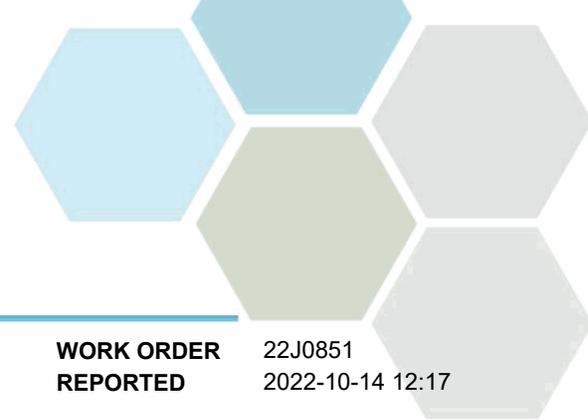
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22J0851
2022-10-14 12:17

Analyte	Result	RL	Units	Analyzed	Qualifier
Field Blank (22J0851-02) Matrix: Water Sampled: 2022-10-06 10:40, Continued					
<i>General Parameters, Continued</i>					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-10-12	
BOD, 5-day Carbonaceous	< 2.8	2.0	mg/L	2022-10-13	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-10-14	
pH	5.40	0.10	pH units	2022-10-13	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-10-13	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-10-14	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-10-07	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-10-07	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22J0851
2022-10-14 12:17

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

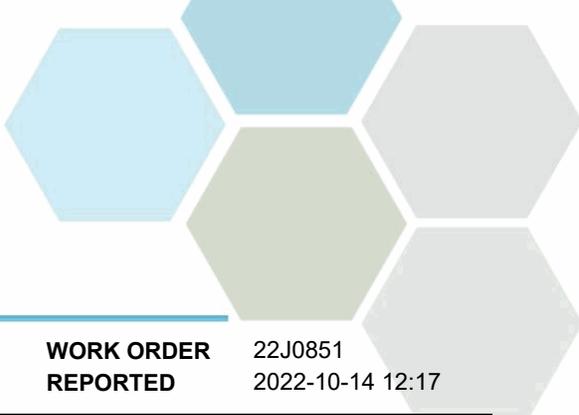
Glossary of Terms:

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
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

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

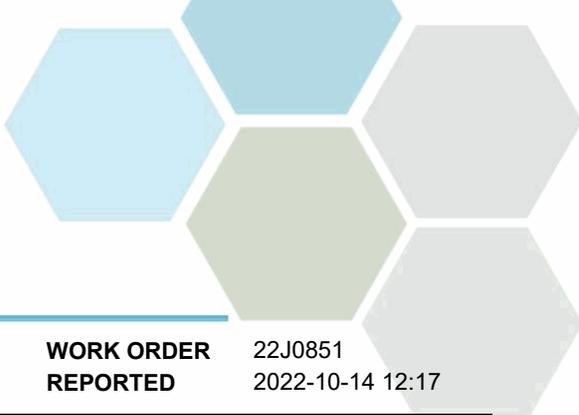
WORK ORDER REPORTED 22J0851
2022-10-14 12:17

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

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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J0751									
Blank (B2J0751-BLK1)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
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)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK2)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
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)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK3)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
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)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK4)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
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)	< 0.0030	0.0030 mg/L							
Blank (B2J0751-BLK5)			Prepared: 2022-10-11, Analyzed: 2022-10-11						
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)	< 0.0030	0.0030 mg/L							
LCS (B2J0751-BS1)			Prepared: 2022-10-09, Analyzed: 2022-10-09						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	3.91	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.83	0.010 mg/L	2.00		91	85-115			
Phosphate (as P)	1.04	0.0030 mg/L	1.00		104	80-120			
LCS (B2J0751-BS2)			Prepared: 2022-10-10, Analyzed: 2022-10-10						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			

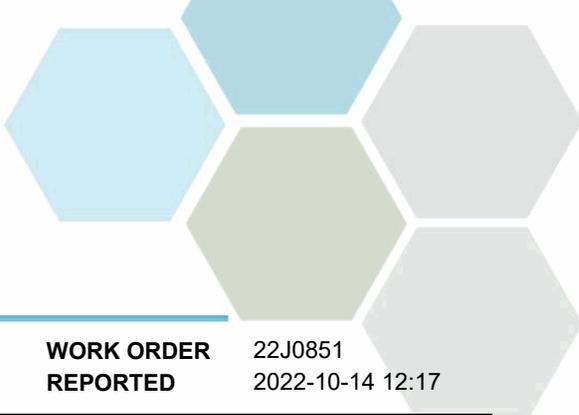


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22J0851
2022-10-14 12:17

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2J0751, Continued									
LCS (B2J0751-BS2), Continued					Prepared: 2022-10-10, Analyzed: 2022-10-10				
Nitrate (as N)	3.94	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.06	0.0030 mg/L	1.00		106	80-120			
LCS (B2J0751-BS3)					Prepared: 2022-10-10, Analyzed: 2022-10-10				
Chloride	15.6	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	3.92	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.87	0.010 mg/L	2.00		93	85-115			
Phosphate (as P)	1.08	0.0030 mg/L	1.00		108	80-120			
LCS (B2J0751-BS4)					Prepared: 2022-10-11, Analyzed: 2022-10-11				
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	3.93	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.88	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	1.08	0.0030 mg/L	1.00		108	80-120			
LCS (B2J0751-BS5)					Prepared: 2022-10-11, Analyzed: 2022-10-11				
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	3.94	0.010 mg/L	4.00		99	90-110			
Nitrite (as N)	1.84	0.010 mg/L	2.00		92	85-115			
Phosphate (as P)	0.981	0.0030 mg/L	1.00		98	80-120			
General Parameters, Batch B2J0949									
Blank (B2J0949-BLK1)					Prepared: 2022-10-08, Analyzed: 2022-10-13				
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2J0949-BS1)					Prepared: 2022-10-08, Analyzed: 2022-10-13				
BOD, 5-day Carbonaceous	198	46.5 mg/L	198		100	85-115			
General Parameters, Batch B2J1208									
Blank (B2J1208-BLK1)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK2)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK3)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK4)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2J1208-BLK5)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2J1208-BS1)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	0.951	0.050 mg/L	1.00		95	90-115			
LCS (B2J1208-BS2)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	0.962	0.050 mg/L	1.00		96	90-115			
LCS (B2J1208-BS3)					Prepared: 2022-10-12, Analyzed: 2022-10-12				
Ammonia, Total (as N)	0.958	0.050 mg/L	1.00		96	90-115			

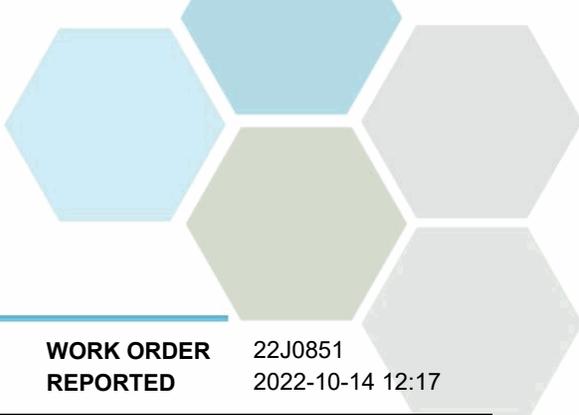


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22J0851
2022-10-14 12:17

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2J1208, Continued									
LCS (B2J1208-BS4)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.972	0.050 mg/L	1.00		97	90-115			
LCS (B2J1208-BS5)			Prepared: 2022-10-12, Analyzed: 2022-10-12						
Ammonia, Total (as N)	0.957	0.050 mg/L	1.00		96	90-115			
General Parameters, Batch B2J1293									
Blank (B2J1293-BLK1)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2J1293-BLK2)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2J1293-BS1)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	0.989	0.050 mg/L	1.00		99	85-115			
LCS (B2J1293-BS2)			Prepared: 2022-10-12, Analyzed: 2022-10-14						
Nitrogen, Total Kjeldahl	0.993	0.050 mg/L	1.00		99	85-115			
General Parameters, Batch B2J1307									
Blank (B2J1307-BLK1)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2J1307-BLK3)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2J1307-BS1)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	0.114	0.0050 mg/L	0.100		114	85-115			
LCS (B2J1307-BS3)			Prepared: 2022-10-12, Analyzed: 2022-10-13						
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
General Parameters, Batch B2J1348									
Blank (B2J1348-BLK1)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
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							
Blank (B2J1348-BLK2)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
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							
Blank (B2J1348-BLK3)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	2.4	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	2.4	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22J0851
2022-10-14 12:17

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2J1348, Continued

Blank (B2J1348-BLK4)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
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							
LCS (B2J1348-BS1)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
LCS (B2J1348-BS2)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
LCS (B2J1348-BS3)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	99.4	1.0 mg/L	100		99	80-120			
LCS (B2J1348-BS7)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
Alkalinity, Total (as CaCO3)	97.2	1.0 mg/L	100		97	80-120			
Reference (B2J1348-SRM1)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2J1348-SRM2)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2J1348-SRM3)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
pH	7.04	0.10 pH units	7.01		100	98-102			
Reference (B2J1348-SRM4)			Prepared: 2022-10-13, Analyzed: 2022-10-13						
pH	7.03	0.10 pH units	7.01		100	98-102			

General Parameters, Batch B2J1436

Blank (B2J1436-BLK1)			Prepared: 2022-10-13, Analyzed: 2022-10-14						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2J1436-BS1)			Prepared: 2022-10-13, Analyzed: 2022-10-14						
Solids, Total Suspended	91.0	10.0 mg/L	100		91	85-115			

Microbiological Parameters, Batch B2J0830

Blank (B2J0830-BLK1)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J0830-BLK2)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J0830-BLK3)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2J0830-BLK4)			Prepared: 2022-10-07, Analyzed: 2022-10-07						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							

CERTIFICATE OF ANALYSIS

REPORTED TO Lake Country, District of (Wastewater)
4062 Beaver Lake Rd
LAKE COUNTRY, BC V4V 1T5

ATTENTION Davin Larsen

PO NUMBER

PROJECT BioSolids- PE14651

PROJECT INFO Lake Country WWTP

WORK ORDER 22J0849

RECEIVED / TEMP 2022-10-06 11:10 / 16.1°C

REPORTED 2022-10-14 16:45

COC NUMBER 44840.32011

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

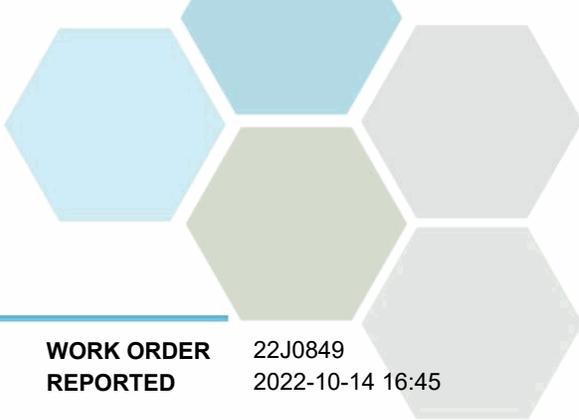
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22J0849
2022-10-14 16:45

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

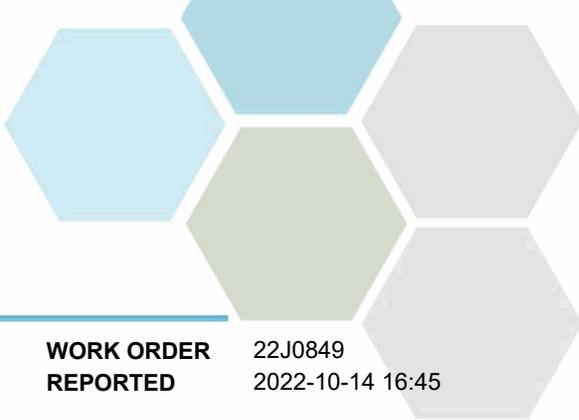
Biosolids (E233628) (22J0849-01) | Matrix: Sludge | Sampled: 2022-10-06 09:15

General Parameters

Moisture	79.6	1.0	% wet	2022-10-10	
Nitrogen, Total Kjeldahl	4.90	0.0004	% dry	2022-10-12	
pH (1:2 H2O Solution)	5.45	0.10	pH units	2022-10-12	PH1
Solids, Total	21.0	0.1	% wet	2022-10-12	
Solids, Volatile	86.3	0.1	% dry	2022-10-12	

Strong Acid Leachable Metals

Aluminum	2070	40	mg/kg dry	2022-10-14	
Antimony	1.62	0.10	mg/kg dry	2022-10-14	
Arsenic	1.78	0.30	mg/kg dry	2022-10-14	
Barium	106	1.0	mg/kg dry	2022-10-14	
Beryllium	< 0.10	0.10	mg/kg dry	2022-10-14	
Bismuth	25.8	0.10	mg/kg dry	2022-10-14	
Boron	14.8	2.0	mg/kg dry	2022-10-14	
Cadmium	1.23	0.040	mg/kg dry	2022-10-14	
Calcium	11100	100	mg/kg dry	2022-10-14	
Chromium	11.5	1.0	mg/kg dry	2022-10-14	
Cobalt	1.32	0.10	mg/kg dry	2022-10-14	
Copper	398	0.40	mg/kg dry	2022-10-14	
Iron	2960	20	mg/kg dry	2022-10-14	
Lead	9.99	0.20	mg/kg dry	2022-10-14	
Lithium	0.86	0.10	mg/kg dry	2022-10-14	
Magnesium	3120	10	mg/kg dry	2022-10-14	
Manganese	185	0.40	mg/kg dry	2022-10-14	
Mercury	0.465	0.040	mg/kg dry	2022-10-14	
Molybdenum	9.69	0.10	mg/kg dry	2022-10-14	
Nickel	10.2	0.60	mg/kg dry	2022-10-14	
Phosphorus	12000	10	mg/kg dry	2022-10-14	
Potassium	2770	40	mg/kg dry	2022-10-14	
Selenium	3.17	0.20	mg/kg dry	2022-10-14	
Silver	1.68	0.10	mg/kg dry	2022-10-14	
Sodium	586	50	mg/kg dry	2022-10-14	
Strontium	49.1	0.20	mg/kg dry	2022-10-14	
Sulfur	5810	1000	mg/kg dry	2022-10-14	
Tellurium	< 0.10	0.10	mg/kg dry	2022-10-14	
Thallium	< 0.10	0.10	mg/kg dry	2022-10-14	
Thorium	< 0.50	0.50	mg/kg dry	2022-10-14	
Tin	17.1	0.20	mg/kg dry	2022-10-14	
Titanium	46.1	1.0	mg/kg dry	2022-10-14	
Tungsten	0.58	0.20	mg/kg dry	2022-10-14	
Uranium	7.25	0.050	mg/kg dry	2022-10-14	
Vanadium	5.2	1.0	mg/kg dry	2022-10-14	
Zinc	792	2.0	mg/kg dry	2022-10-14	



TEST RESULTS

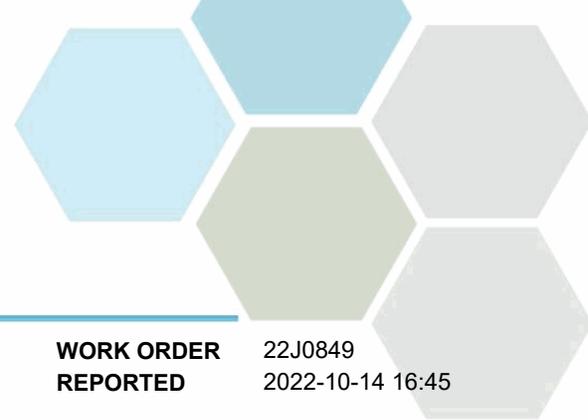
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22J0849
2022-10-14 16:45

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22J0849-01) Matrix: Sludge Sampled: 2022-10-06 09:15, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	3.8	2.0	mg/kg dry	2022-10-14	

Sample Qualifiers:

PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22J0849
2022-10-14 16:45

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

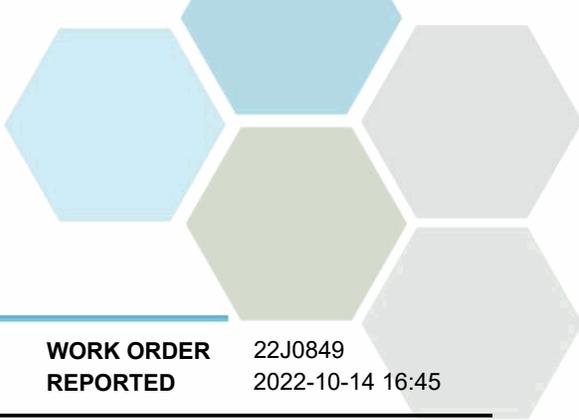
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22J0849
2022-10-14 16:45

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2J0851

Reference (B2J0851-SRM1)	Prepared: 2022-10-10, Analyzed: 2022-10-10								
Moisture	99.0	1.0 % wet	6.5		99	80-120			

General Parameters, Batch B2J0962

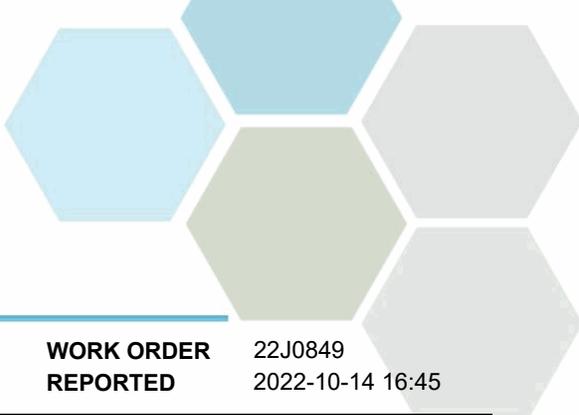
Duplicate (B2J0962-DUP1)	Source: 22J0849-01	Prepared: 2022-10-08, Analyzed: 2022-10-12							
pH (1:2 H2O Solution)	5.49	0.10 pH units		5.45			< 1	2	

General Parameters, Batch B2J1118

Reference (B2J1118-SRM1)	Prepared: 2022-10-12, Analyzed: 2022-10-12								
Solids, Total	91.4	0.1 % wet	93.5		98	80-120			
Solids, Volatile	4.4	0.1 % dry	4.00		109	80-200			

Strong Acid Leachable Metals, Batch B2J1517

Blank (B2J1517-BLK1)	Prepared: 2022-10-14, Analyzed: 2022-10-14								
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22J0849
2022-10-14 16:45

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2J1517, Continued

Blank (B2J1517-BLK1), Continued

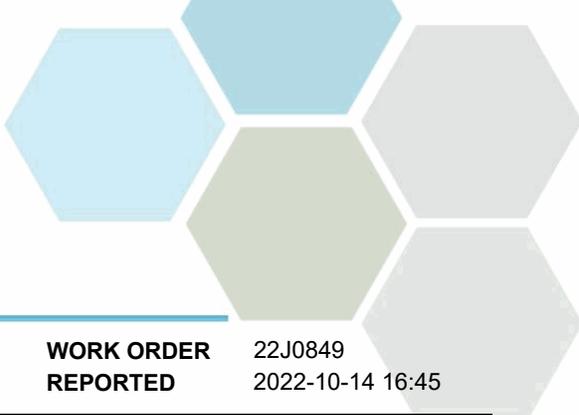
Prepared: 2022-10-14, Analyzed: 2022-10-14

Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	0.25	0.20 mg/kg dry							BLK
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2J1517-BS1)

Prepared: 2022-10-14, Analyzed: 2022-10-14

Aluminum	986	40 mg/kg dry	1000		99	80-120			
Antimony	9.78	0.10 mg/kg dry	10.0		98	80-120			
Arsenic	9.67	0.30 mg/kg dry	10.0		97	80-120			
Barium	10.1	1.0 mg/kg dry	10.0		101	80-120			
Beryllium	9.49	0.10 mg/kg dry	10.0		95	80-120			
Bismuth	9.80	0.10 mg/kg dry	10.0		98	80-120			
Boron	9.9	2.0 mg/kg dry	10.0		99	80-120			
Cadmium	9.75	0.040 mg/kg dry	10.0		98	80-120			
Calcium	1010	100 mg/kg dry	1000		101	80-120			
Chromium	9.7	1.0 mg/kg dry	10.0		97	80-120			
Cobalt	9.64	0.10 mg/kg dry	10.0		96	80-120			
Copper	9.67	0.40 mg/kg dry	10.0		97	80-120			
Iron	985	20 mg/kg dry	1000		99	80-120			
Lead	9.95	0.20 mg/kg dry	10.0		99	80-120			
Lithium	9.51	0.10 mg/kg dry	10.0		95	80-120			
Magnesium	969	10 mg/kg dry	1000		97	80-120			
Manganese	9.88	0.40 mg/kg dry	10.0		99	80-120			
Mercury	0.960	0.040 mg/kg dry	1.00		96	80-120			
Molybdenum	9.80	0.10 mg/kg dry	10.0		98	80-120			
Nickel	9.81	0.60 mg/kg dry	10.0		98	80-120			
Phosphorus	977	10 mg/kg dry	1000		98	80-120			
Potassium	982	40 mg/kg dry	1000		98	80-120			
Selenium	9.24	0.20 mg/kg dry	10.0		92	80-120			
Silver	9.92	0.10 mg/kg dry	10.0		99	80-120			
Sodium	959	50 mg/kg dry	1000		96	80-120			
Strontium	9.86	0.20 mg/kg dry	10.0		99	80-120			
Sulfur	9660	1000 mg/kg dry	10000		97	80-120			
Tellurium	9.61	0.10 mg/kg dry	10.0		96	80-120			
Thallium	9.79	0.10 mg/kg dry	10.0		98	80-120			
Thorium	9.72	0.50 mg/kg dry	10.0		97	80-120			
Tin	9.85	0.20 mg/kg dry	10.0		98	80-120			
Titanium	9.8	1.0 mg/kg dry	10.0		98	80-120			
Tungsten	9.97	0.20 mg/kg dry	10.0		100	80-120			
Uranium	9.87	0.050 mg/kg dry	10.0		99	80-120			
Vanadium	9.8	1.0 mg/kg dry	10.0		98	80-120			
Zinc	9.8	2.0 mg/kg dry	10.0		98	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22J0849
2022-10-14 16:45

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2J1517, Continued									
LCS (B2J1517-BS1), Continued					Prepared: 2022-10-14, Analyzed: 2022-10-14				
Zirconium	9.8	2.0 mg/kg dry	10.0		98	80-120			
Reference (B2J1517-SRM1)					Prepared: 2022-10-14, Analyzed: 2022-10-14				
Aluminum	11700	40 mg/kg dry	11500		102	70-130			
Antimony	0.67	0.10 mg/kg dry	0.724		93	70-130			
Arsenic	82.6	0.30 mg/kg dry	82.1		101	70-130			
Barium	42.2	1.0 mg/kg dry	40.0		106	70-130			
Beryllium	0.36	0.10 mg/kg dry	0.369		98	70-130			
Calcium	4920	100 mg/kg dry	5170		95	70-130			
Chromium	63.6	1.0 mg/kg dry	63.1		101	70-130			
Cobalt	10.2	0.10 mg/kg dry	10.4		98	70-130			
Copper	19.0	0.40 mg/kg dry	19.8		96	70-130			
Iron	19600	20 mg/kg dry	20200		97	70-130			
Lead	16.2	0.20 mg/kg dry	17.3		93	70-130			
Magnesium	5930	10 mg/kg dry	6090		97	70-130			
Manganese	310	0.40 mg/kg dry	315		99	70-130			
Mercury	0.116	0.040 mg/kg dry	0.110		106	70-130			
Molybdenum	0.59	0.10 mg/kg dry	0.619		95	70-130			
Nickel	32.3	0.60 mg/kg dry	31.7		102	70-130			
Phosphorus	418	10 mg/kg dry	420		100	70-130			
Silver	1.55	0.10 mg/kg dry	1.75		89	70-130			
Strontium	23.0	0.20 mg/kg dry	20.3		113	70-130			
Titanium	743	1.0 mg/kg dry	645		115	70-130			
Uranium	1.16	0.050 mg/kg dry	1.18		98	70-130			
Vanadium	35.6	1.0 mg/kg dry	33.5		106	70-130			
Zinc	39.5	2.0 mg/kg dry	40.2		98	70-130			

QC Qualifiers:

BLK Analyte concentration in the Method Blank is above the Reporting Limit (RL).



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	2211447
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-09-12 11:51 / 18.7°C
PO NUMBER	104395-10-9007	COC NUMBER	44816.40844
PROJECT	Raw Influent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

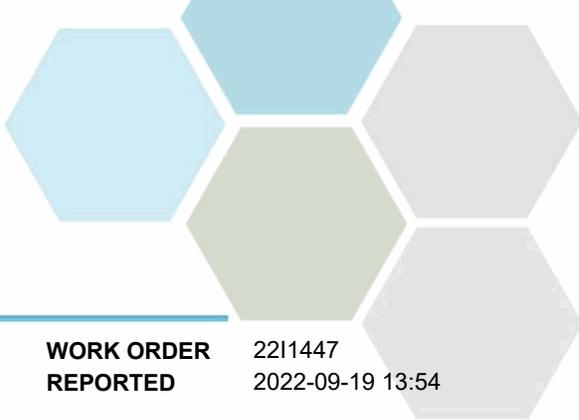
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

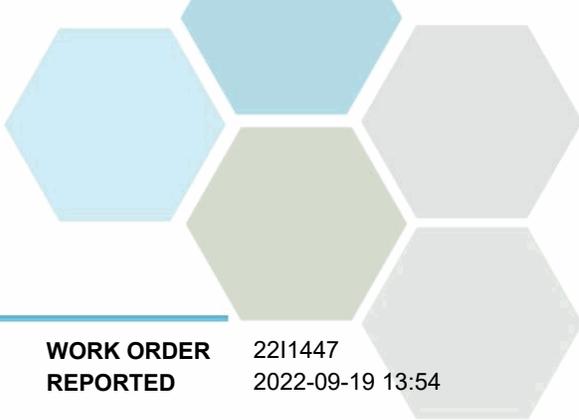
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 2211447
2022-09-19 13:54

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (2211447-01) Matrix: Wastewater Sampled: 2022-09-12 10:15					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-09-16	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-09-16	HT1
Phosphate (as P)	4.51	0.0050	mg/L	2022-09-16	HT1
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	86.2	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	444	1.0	mg/L	2022-09-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Alkalinity, Bicarbonate (as CaCO3)	444	1.0	mg/L	2022-09-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Ammonia, Total (as N)	57.4	0.050	mg/L	2022-09-16	
BOD, 5-day	319	2.0	mg/L	2022-09-19	
BOD, 5-day Carbonaceous	308	2.0	mg/L	2022-09-19	
Nitrogen, Total Kjeldahl	86.2	0.050	mg/L	2022-09-16	
pH	7.63	0.10	pH units	2022-09-18	HT2
Phosphorus, Total (as P)	10.6	0.0050	mg/L	2022-09-16	
Solids, Total Suspended	282	2.0	mg/L	2022-09-14	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 2211447
2022-09-19 13:54

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

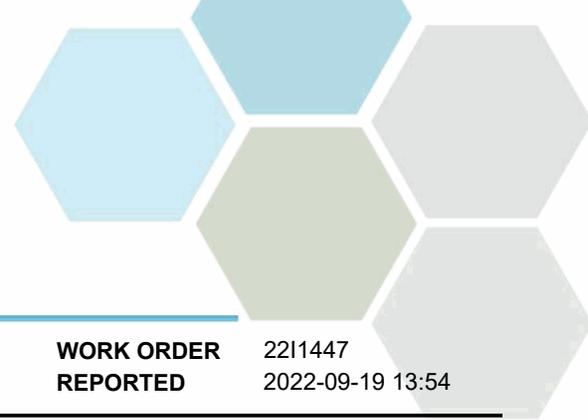
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

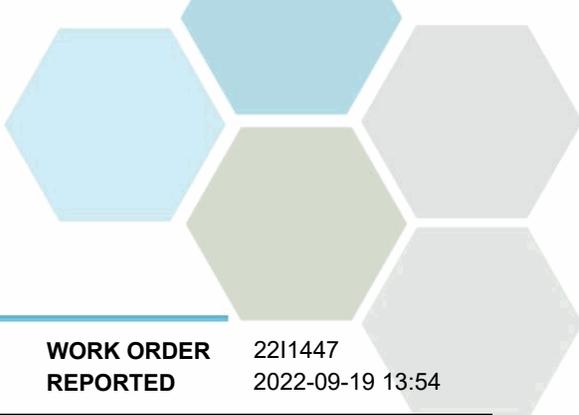
WORK ORDER REPORTED 2211447
2022-09-19 13:54

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B211325									
Blank (B211325-BLK2)			Prepared: 2022-09-17, Analyzed: 2022-09-17						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B211325-BS1)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.94	0.010 mg/L	2.00		97	85-115			
Phosphate (as P)	1.00	0.0050 mg/L	1.00		100	80-120			
LCS (B211325-BS2)			Prepared: 2022-09-17, Analyzed: 2022-09-17						
Nitrate (as N)	4.18	0.010 mg/L	4.00		105	90-110			
Nitrite (as N)	1.94	0.010 mg/L	2.00		97	85-115			
Phosphate (as P)	1.06	0.0050 mg/L	1.00		106	80-120			
General Parameters, Batch B211543									
Blank (B211543-BLK1)			Prepared: 2022-09-14, Analyzed: 2022-09-19						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B211543-BS1)			Prepared: 2022-09-14, Analyzed: 2022-09-19						
BOD, 5-day	214	46.7 mg/L	198		108	85-115			
General Parameters, Batch B211546									
Blank (B211546-BLK1)			Prepared: 2022-09-14, Analyzed: 2022-09-19						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B211546-BS1)			Prepared: 2022-09-14, Analyzed: 2022-09-19						
BOD, 5-day Carbonaceous	180	32.5 mg/L	198		91	85-115			
General Parameters, Batch B211562									
Blank (B211562-BLK1)			Prepared: 2022-09-14, Analyzed: 2022-09-14						
Solids, Total Suspended	< 2.0	2.0 mg/L							

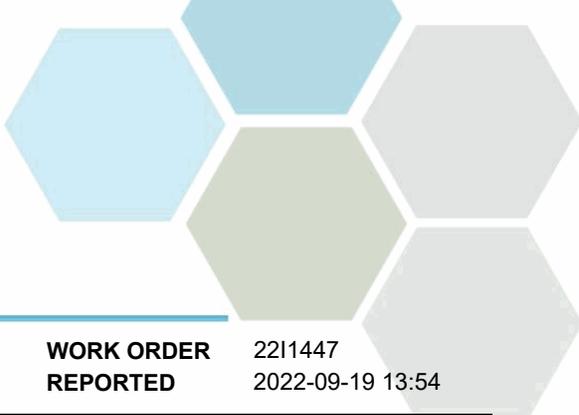


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 2211447
2022-09-19 13:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B211562, Continued									
LCS (B211562-BS1)			Prepared: 2022-09-14, Analyzed: 2022-09-14						
Solids, Total Suspended	90.0	10.0 mg/L	100		90	85-115			
General Parameters, Batch B211721									
Blank (B211721-BLK1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B211721-BLK2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B211721-BS1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
LCS (B211721-BS2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
General Parameters, Batch B211765									
Blank (B211765-BLK1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B211765-BLK2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B211765-BLK3)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B211765-BS1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
LCS (B211765-BS2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
LCS (B211765-BS3)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
General Parameters, Batch B211835									
Blank (B211835-BLK1)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B211835-BLK2)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B211835-BLK3)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B211835-BLK4)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B211835-BS1)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.941	0.050 mg/L	1.00		94	90-115			
LCS (B211835-BS2)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.901	0.050 mg/L	1.00		90	90-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 2211447
2022-09-19 13:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B211835, Continued									
LCS (B211835-BS3)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.929	0.050 mg/L	1.00		93	90-115			
LCS (B211835-BS4)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.932	0.050 mg/L	1.00		93	90-115			
General Parameters, Batch B211996									
Blank (B211996-BLK1)			Prepared: 2022-09-18, Analyzed: 2022-09-18						
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							
Blank (B211996-BLK2)			Prepared: 2022-09-18, Analyzed: 2022-09-18						
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							
LCS (B211996-BS1)			Prepared: 2022-09-18, Analyzed: 2022-09-18						
Alkalinity, Total (as CaCO3)	111	1.0 mg/L	100		111	80-120			
LCS (B211996-BS2)			Prepared: 2022-09-18, Analyzed: 2022-09-18						
Alkalinity, Total (as CaCO3)	112	1.0 mg/L	100		112	80-120			
Duplicate (B211996-DUP2)			Source: 2211447-01		Prepared: 2022-09-18, Analyzed: 2022-09-18				
Alkalinity, Total (as CaCO3)	445	1.0 mg/L		444			< 1	10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L		< 1.0				10	
Alkalinity, Bicarbonate (as CaCO3)	445	1.0 mg/L		444			< 1	10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L		< 1.0				10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L		< 1.0				10	
pH	7.64	0.10 pH units		7.63			< 1	4	
Reference (B211996-SRM1)			Prepared: 2022-09-18, Analyzed: 2022-09-18						
pH	7.02	0.10 pH units	7.01		100	98-102			
Reference (B211996-SRM2)			Prepared: 2022-09-18, Analyzed: 2022-09-18						
pH	7.03	0.10 pH units	7.01		100	98-102			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	2211449
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-09-12 11:51 / 18.1°C
PO NUMBER	104395-109007	COC NUMBER	44816.40844
PROJECT	Final Effluent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

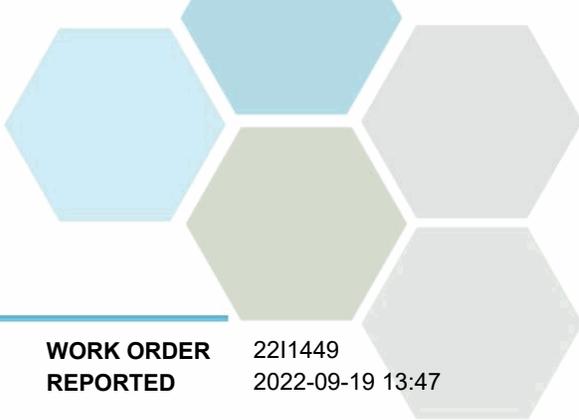
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 2211449
2022-09-19 13:47

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

Final Effluent (E233626) (2211449-01) | Matrix: Wastewater | Sampled: 2022-09-12 10:00

Anions

Chloride	133	0.10	mg/L	2022-09-16	
Nitrate (as N)	2.21	0.010	mg/L	2022-09-16	HT1
Nitrite (as N)	0.146	0.010	mg/L	2022-09-16	HT1
Phosphate (as P)	0.0323	0.0050	mg/L	2022-09-16	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	2.36	0.0100	mg/L	N/A	
Nitrogen, Total	4.74	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	194	1.0	mg/L	2022-09-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Alkalinity, Bicarbonate (as CaCO3)	194	1.0	mg/L	2022-09-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Ammonia, Total (as N)	0.732	0.050	mg/L	2022-09-16	
BOD, 5-day Carbonaceous	4.6	2.0	mg/L	2022-09-19	
Nitrogen, Total Kjeldahl	2.38	0.050	mg/L	2022-09-16	
pH	7.73	0.10	pH units	2022-09-18	HT2
Phosphorus, Total (as P)	0.241	0.0050	mg/L	2022-09-16	
Solids, Total Suspended	4.2	2.0	mg/L	2022-09-14	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-09-13	
Coliforms, Fecal (Q-Tray)	36500	1	MPN/100 mL	2022-09-13	

Duplicate (2211449-02) | Matrix: Water | Sampled: 2022-09-12 10:00

Anions

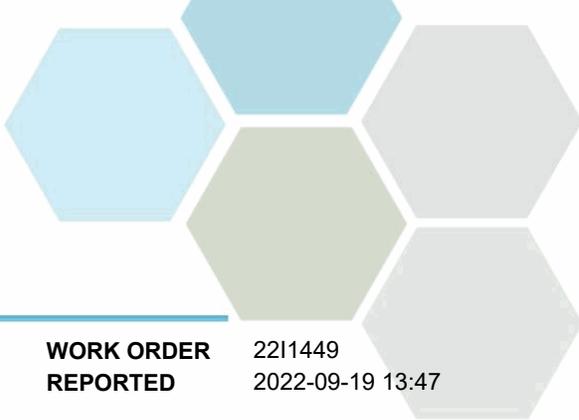
Chloride	126	0.10	mg/L	2022-09-16	
Nitrate (as N)	2.18	0.010	mg/L	2022-09-16	HT1
Nitrite (as N)	0.147	0.010	mg/L	2022-09-16	HT1
Phosphate (as P)	0.0284	0.0050	mg/L	2022-09-16	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	2.33	0.0100	mg/L	N/A	
Nitrogen, Total	4.74	0.0500	mg/L	N/A	
Nitrogen, Organic	1.70	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	194	1.0	mg/L	2022-09-18	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Alkalinity, Bicarbonate (as CaCO3)	194	1.0	mg/L	2022-09-18	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 2211449
2022-09-19 13:47

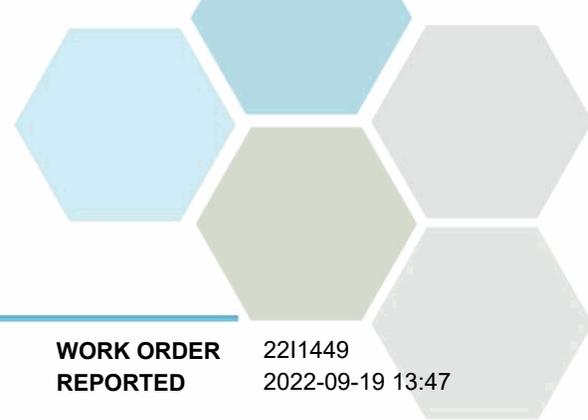
Analyte	Result	RL	Units	Analyzed	Qualifier
Duplicate (2211449-02) Matrix: Water Sampled: 2022-09-12 10:00, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-09-18	
Ammonia, Total (as N)	0.712	0.050	mg/L	2022-09-16	
BOD, 5-day Carbonaceous	3.3	2.0	mg/L	2022-09-19	
Nitrogen, Total Kjeldahl	2.41	0.050	mg/L	2022-09-16	
pH	7.83	0.10	pH units	2022-09-18	HT2
Phosphorus, Total (as P)	0.243	0.0050	mg/L	2022-09-16	
Solids, Total Suspended	3.8	2.0	mg/L	2022-09-14	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-09-13	
Coliforms, Fecal (Q-Tray)	32600	1	MPN/100 mL	2022-09-13	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 2211449
2022-09-19 13:47

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

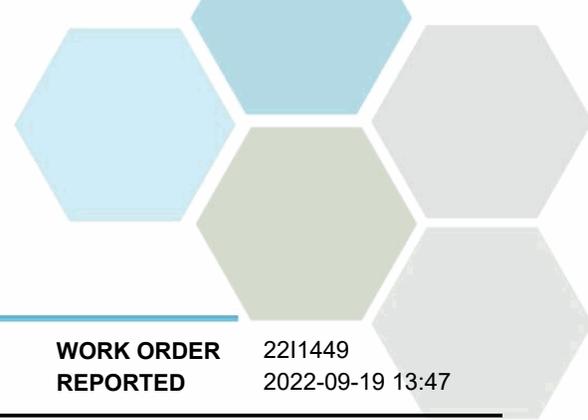
Glossary of Terms:

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
>	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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 2211449
2022-09-19 13:47

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Anions, Batch B211325

Blank (B211325-BLK2)		Prepared: 2022-09-17, Analyzed: 2022-09-17							
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							

LCS (B211325-BS1)		Prepared: 2022-09-16, Analyzed: 2022-09-16							
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.05	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	1.94	0.010 mg/L	2.00		97	85-115			
Phosphate (as P)	1.00	0.0050 mg/L	1.00		100	80-120			

LCS (B211325-BS2)		Prepared: 2022-09-17, Analyzed: 2022-09-17							
Chloride	16.3	0.10 mg/L	16.0		102	90-110			
Nitrate (as N)	4.18	0.010 mg/L	4.00		105	90-110			
Nitrite (as N)	1.94	0.010 mg/L	2.00		97	85-115			
Phosphate (as P)	1.06	0.0050 mg/L	1.00		106	80-120			

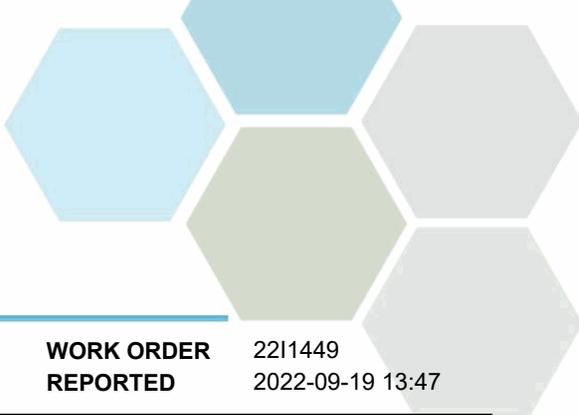
General Parameters, Batch B211546

Blank (B211546-BLK1)		Prepared: 2022-09-14, Analyzed: 2022-09-19							
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B211546-BS1)		Prepared: 2022-09-14, Analyzed: 2022-09-19							
BOD, 5-day Carbonaceous	180	32.5 mg/L	198		91	85-115			

General Parameters, Batch B211562

Blank (B211562-BLK1)		Prepared: 2022-09-14, Analyzed: 2022-09-14							
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B211562-BS1)		Prepared: 2022-09-14, Analyzed: 2022-09-14							
Solids, Total Suspended	90.0	10.0 mg/L	100		90	85-115			

General Parameters, Batch B211721

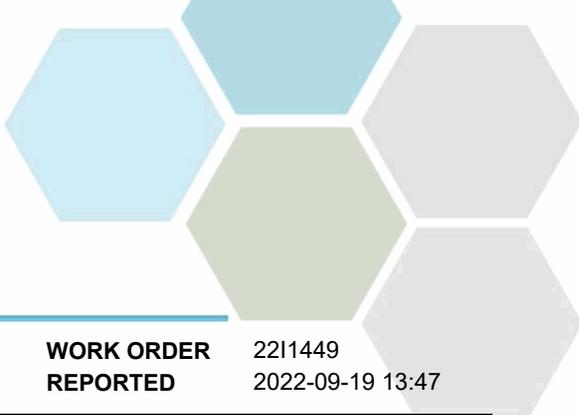


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 2211449
2022-09-19 13:47

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B211721, Continued									
Blank (B211721-BLK1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B211721-BLK2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B211721-BS1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
LCS (B211721-BS2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
General Parameters, Batch B211765									
Blank (B211765-BLK1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B211765-BLK2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B211765-BLK3)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B211765-BS1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	0.107	0.0050 mg/L	0.100		107	85-115			
LCS (B211765-BS2)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
LCS (B211765-BS3)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
General Parameters, Batch B211835									
Blank (B211835-BLK1)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B211835-BLK2)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B211835-BLK3)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B211835-BLK4)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B211835-BS1)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.941	0.050 mg/L	1.00		94	90-115			
LCS (B211835-BS2)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.901	0.050 mg/L	1.00		90	90-115			
LCS (B211835-BS3)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.929	0.050 mg/L	1.00		93	90-115			
LCS (B211835-BS4)			Prepared: 2022-09-16, Analyzed: 2022-09-16						
Ammonia, Total (as N)	0.932	0.050 mg/L	1.00		93	90-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 2211449
2022-09-19 13:47

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2I1996									
Blank (B2I1996-BLK1)					Prepared: 2022-09-18, Analyzed: 2022-09-18				
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							
Blank (B2I1996-BLK2)					Prepared: 2022-09-18, Analyzed: 2022-09-18				
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							
LCS (B2I1996-BS1)					Prepared: 2022-09-18, Analyzed: 2022-09-18				
Alkalinity, Total (as CaCO3)	111	1.0 mg/L	100		111	80-120			
LCS (B2I1996-BS2)					Prepared: 2022-09-18, Analyzed: 2022-09-18				
Alkalinity, Total (as CaCO3)	112	1.0 mg/L	100		112	80-120			
Reference (B2I1996-SRM1)					Prepared: 2022-09-18, Analyzed: 2022-09-18				
pH	7.02	0.10 pH units	7.01		100	98-102			
Reference (B2I1996-SRM2)					Prepared: 2022-09-18, Analyzed: 2022-09-18				
pH	7.03	0.10 pH units	7.01		100	98-102			
Microbiological Parameters, Batch B2I1346									
Blank (B2I1346-BLK1)					Prepared: 2022-09-13, Analyzed: 2022-09-13				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2I1346-BLK2)					Prepared: 2022-09-13, Analyzed: 2022-09-13				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2I1346-BLK3)					Prepared: 2022-09-13, Analyzed: 2022-09-13				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2I1346-BLK4)					Prepared: 2022-09-13, Analyzed: 2022-09-13				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2I1346-BLK5)					Prepared: 2022-09-13, Analyzed: 2022-09-13				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	2211452
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-09-12 11:51 / 18.7°C
PO NUMBER	104395-10-9007	COC NUMBER	44816.40844
PROJECT	BioSolids- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

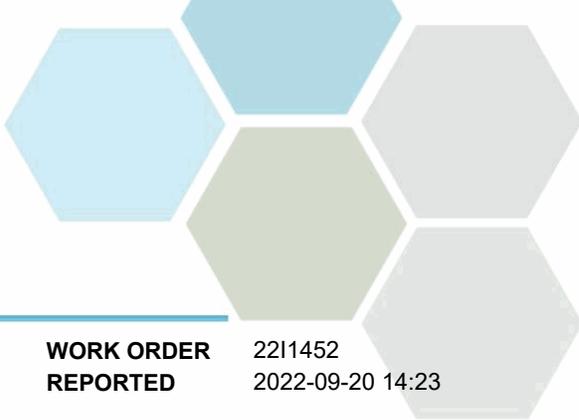
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 14:23

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

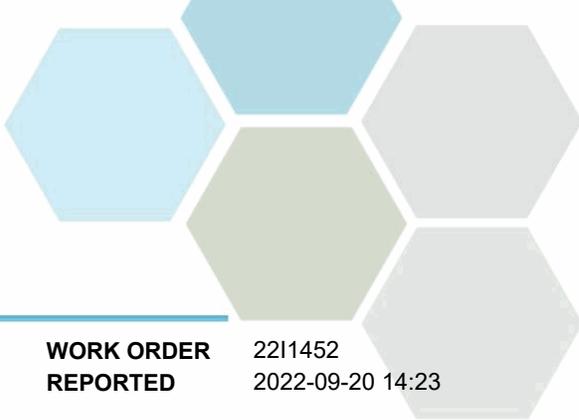
Biosolids (E233628) (2211452-01) | Matrix: Sludge | Sampled: 2022-09-12 08:50

General Parameters

Moisture	79.9	1.0	% wet	2022-09-16	
Nitrogen, Total Kjeldahl	4.69	0.0004	% dry	2022-09-16	
pH (1:2 H2O Solution)	5.64	0.10	pH units	2022-09-16	PH1
Solids, Total	20.1	0.1	% wet	2022-09-16	
Solids, Volatile	83.8	0.1	% dry	2022-09-19	

Strong Acid Leachable Metals

Aluminum	2840	40	mg/kg dry	2022-09-16	
Antimony	1.44	0.10	mg/kg dry	2022-09-16	
Arsenic	1.88	0.30	mg/kg dry	2022-09-16	
Barium	117	1.0	mg/kg dry	2022-09-16	
Beryllium	< 0.10	0.10	mg/kg dry	2022-09-16	
Bismuth	28.6	0.10	mg/kg dry	2022-09-16	
Boron	11.3	2.0	mg/kg dry	2022-09-16	
Cadmium	1.06	0.040	mg/kg dry	2022-09-16	
Calcium	12400	100	mg/kg dry	2022-09-16	
Chromium	13.3	1.0	mg/kg dry	2022-09-16	
Cobalt	1.49	0.10	mg/kg dry	2022-09-16	
Copper	368	0.40	mg/kg dry	2022-09-16	
Iron	3230	20	mg/kg dry	2022-09-16	
Lead	10.9	0.20	mg/kg dry	2022-09-16	
Lithium	1.03	0.10	mg/kg dry	2022-09-16	
Magnesium	3820	10	mg/kg dry	2022-09-16	
Manganese	150	0.40	mg/kg dry	2022-09-16	
Mercury	0.419	0.040	mg/kg dry	2022-09-16	
Molybdenum	12.3	0.10	mg/kg dry	2022-09-16	
Nickel	10.3	0.60	mg/kg dry	2022-09-16	
Phosphorus	15100	10	mg/kg dry	2022-09-16	
Potassium	3640	40	mg/kg dry	2022-09-16	
Selenium	4.02	0.20	mg/kg dry	2022-09-16	
Silver	1.88	0.10	mg/kg dry	2022-09-16	
Sodium	624	50	mg/kg dry	2022-09-16	
Strontium	60.2	0.20	mg/kg dry	2022-09-16	
Sulfur	5960	1000	mg/kg dry	2022-09-16	
Tellurium	< 0.10	0.10	mg/kg dry	2022-09-16	
Thallium	< 0.10	0.10	mg/kg dry	2022-09-16	
Thorium	< 0.50	0.50	mg/kg dry	2022-09-16	
Tin	17.8	0.20	mg/kg dry	2022-09-16	
Titanium	62.3	1.0	mg/kg dry	2022-09-16	
Tungsten	0.62	0.20	mg/kg dry	2022-09-16	
Uranium	8.71	0.050	mg/kg dry	2022-09-16	
Vanadium	6.0	1.0	mg/kg dry	2022-09-16	
Zinc	739	2.0	mg/kg dry	2022-09-16	



TEST RESULTS

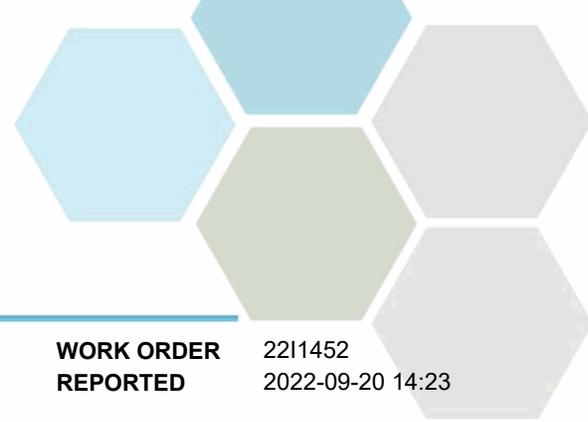
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 14:23

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (2211452-01) Matrix: Sludge Sampled: 2022-09-12 08:50, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	3.4	2.0	mg/kg dry	2022-09-16	

Sample Qualifiers:

PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 14:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

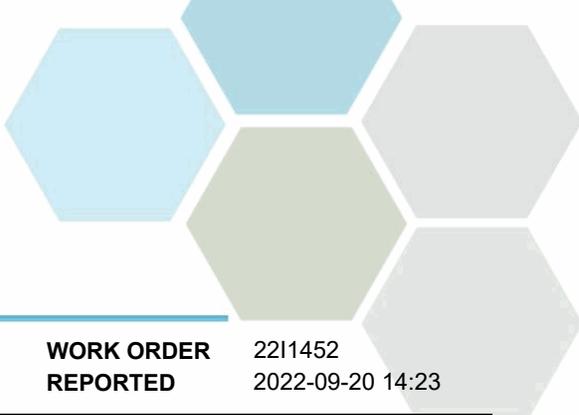
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B211595

Reference (B211595-SRM1)	Prepared: 2022-09-16, Analyzed: 2022-09-16								
Moisture	99.0	1.0 % wet	6.5		99	80-120			

General Parameters, Batch B211609

Duplicate (B211609-DUP1)	Source: 2211452-01	Prepared: 2022-09-16, Analyzed: 2022-09-16							
pH (1:2 H2O Solution)	5.63	0.10 pH units		5.64			< 1	2	

General Parameters, Batch B211876

Blank (B211876-BLK1)	Prepared: 2022-09-16, Analyzed: 2022-09-16								
Nitrogen, Total Kjeldahl	< 0.010	0.010 % wet							

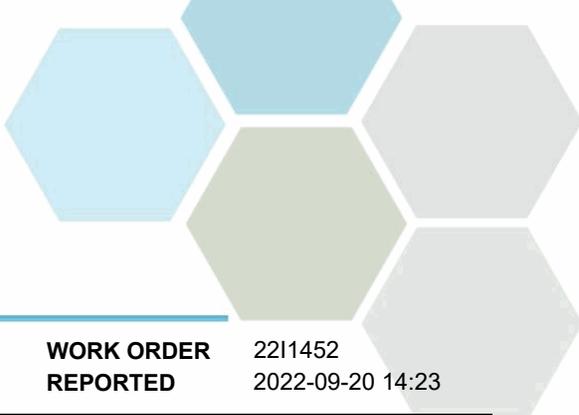
Reference (B211876-SRM1)	Prepared: 2022-09-16, Analyzed: 2022-09-16								
Nitrogen, Total Kjeldahl	0.224	0.010 % wet	0.281		80	58.8-150			

General Parameters, Batch B212052

Reference (B212052-SRM1)	Prepared: 2022-09-19, Analyzed: 2022-09-19								
Solids, Total	92.3	0.1 % wet	93.5		99	80-120			
Solids, Volatile	3.8	0.1 % dry	4.00		95	80-200			

Strong Acid Leachable Metals, Batch B211741

Blank (B211741-BLK1)	Prepared: 2022-09-15, Analyzed: 2022-09-16								
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B211741, Continued

Blank (B211741-BLK1), Continued

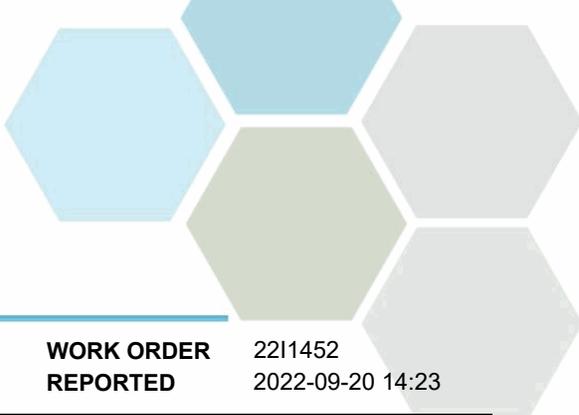
Prepared: 2022-09-15, Analyzed: 2022-09-16

Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B211741-BS1)

Prepared: 2022-09-15, Analyzed: 2022-09-16

Aluminum	948	40 mg/kg dry	1000		95	80-120			
Antimony	9.35	0.10 mg/kg dry	10.0		93	80-120			
Arsenic	9.58	0.30 mg/kg dry	10.0		96	80-120			
Barium	9.6	1.0 mg/kg dry	10.0		96	80-120			
Beryllium	9.53	0.10 mg/kg dry	10.0		95	80-120			
Bismuth	9.45	0.10 mg/kg dry	10.0		94	80-120			
Boron	9.9	2.0 mg/kg dry	10.0		99	80-120			
Cadmium	9.45	0.040 mg/kg dry	10.0		95	80-120			
Calcium	938	100 mg/kg dry	1000		94	80-120			
Chromium	9.7	1.0 mg/kg dry	10.0		97	80-120			
Cobalt	9.67	0.10 mg/kg dry	10.0		97	80-120			
Copper	9.55	0.40 mg/kg dry	10.0		96	80-120			
Iron	950	20 mg/kg dry	1000		95	80-120			
Lead	9.38	0.20 mg/kg dry	10.0		94	80-120			
Lithium	9.19	0.10 mg/kg dry	10.0		92	80-120			
Magnesium	956	10 mg/kg dry	1000		96	80-120			
Manganese	9.56	0.40 mg/kg dry	10.0		96	80-120			
Mercury	0.937	0.040 mg/kg dry	1.00		94	80-120			
Molybdenum	9.49	0.10 mg/kg dry	10.0		95	80-120			
Nickel	9.62	0.60 mg/kg dry	10.0		96	80-120			
Phosphorus	956	10 mg/kg dry	1000		96	80-120			
Potassium	942	40 mg/kg dry	1000		94	80-120			
Selenium	9.75	0.20 mg/kg dry	10.0		98	80-120			
Silver	8.82	0.10 mg/kg dry	10.0		88	80-120			
Sodium	940	50 mg/kg dry	1000		94	80-120			
Strontium	9.61	0.20 mg/kg dry	10.0		96	80-120			
Sulfur	9610	1000 mg/kg dry	10000		96	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 14:23

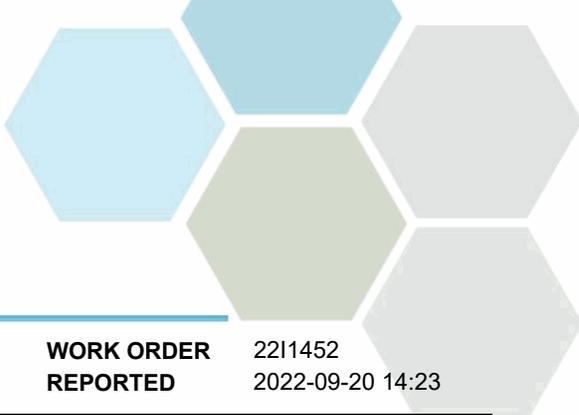
Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B211741, Continued

LCS (B211741-BS1), Continued			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Tellurium	9.14	0.10 mg/kg dry	10.0		91	80-120			
Thallium	9.59	0.10 mg/kg dry	10.0		96	80-120			
Thorium	9.79	0.50 mg/kg dry	10.0		98	80-120			
Tin	9.38	0.20 mg/kg dry	10.0		94	80-120			
Titanium	10.0	1.0 mg/kg dry	10.0		100	80-120			
Tungsten	9.47	0.20 mg/kg dry	10.0		95	80-120			
Uranium	9.51	0.050 mg/kg dry	10.0		95	80-120			
Vanadium	9.8	1.0 mg/kg dry	10.0		98	80-120			
Zinc	9.3	2.0 mg/kg dry	10.0		93	80-120			
Zirconium	9.4	2.0 mg/kg dry	10.0		94	80-120			

Duplicate (B211741-DUP1)			Source: 2211452-01		Prepared: 2022-09-15, Analyzed: 2022-09-16				
Aluminum	2730	40 mg/kg dry		2840			4	40	
Antimony	1.38	0.10 mg/kg dry		1.44			4	30	
Arsenic	1.88	0.30 mg/kg dry		1.88			< 1	30	
Barium	114	1.0 mg/kg dry		117			2	40	
Beryllium	< 0.10	0.10 mg/kg dry		< 0.10				30	
Bismuth	28.7	0.10 mg/kg dry		28.6			< 1	30	
Boron	11.4	2.0 mg/kg dry		11.3			< 1	30	
Cadmium	1.02	0.040 mg/kg dry		1.06			4	30	
Calcium	12600	100 mg/kg dry		12400			1	30	
Chromium	13.2	1.0 mg/kg dry		13.3			1	30	
Cobalt	1.45	0.10 mg/kg dry		1.49			2	30	
Copper	356	0.40 mg/kg dry		368			3	30	
Iron	3160	20 mg/kg dry		3230			2	30	
Lead	9.99	0.20 mg/kg dry		10.9			8	40	
Lithium	1.04	0.10 mg/kg dry		1.03			< 1	30	
Magnesium	3720	10 mg/kg dry		3820			3	30	
Manganese	147	0.40 mg/kg dry		150			2	30	
Mercury	0.415	0.040 mg/kg dry		0.419			1	40	
Molybdenum	12.0	0.10 mg/kg dry		12.3			3	40	
Nickel	10.3	0.60 mg/kg dry		10.3			< 1	30	
Phosphorus	14700	10 mg/kg dry		15100			3	30	
Potassium	3550	40 mg/kg dry		3640			2	40	
Selenium	3.99	0.20 mg/kg dry		4.02			< 1	30	
Silver	1.67	0.10 mg/kg dry		1.88			12	40	
Sodium	607	50 mg/kg dry		624			3	40	
Strontium	57.9	0.20 mg/kg dry		60.2			4	40	
Sulfur	5890	1000 mg/kg dry		5960			1	30	
Tellurium	< 0.10	0.10 mg/kg dry		< 0.10				30	
Thallium	< 0.10	0.10 mg/kg dry		< 0.10				30	
Thorium	< 0.50	0.50 mg/kg dry		< 0.50				30	
Tin	17.3	0.20 mg/kg dry		17.8			2	40	
Titanium	50.4	1.0 mg/kg dry		62.3			21	40	
Tungsten	0.51	0.20 mg/kg dry		0.62				40	
Uranium	8.52	0.050 mg/kg dry		8.71			2	30	
Vanadium	5.9	1.0 mg/kg dry		6.0			2	30	
Zinc	717	2.0 mg/kg dry		739			3	30	
Zirconium	3.5	2.0 mg/kg dry		3.4				40	

Reference (B211741-SRM1)			Prepared: 2022-09-15, Analyzed: 2022-09-16						
Aluminum	10700	40 mg/kg dry	11500		93	70-130			
Antimony	0.59	0.10 mg/kg dry	0.724		81	70-130			
Arsenic	78.7	0.30 mg/kg dry	82.1		96	70-130			
Barium	34.6	1.0 mg/kg dry	40.0		86	70-130			
Beryllium	0.34	0.10 mg/kg dry	0.369		93	70-130			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 2211452
2022-09-20 14:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B211741, Continued

Reference (B211741-SRM1), Continued	Prepared: 2022-09-15, Analyzed: 2022-09-16								
Calcium	4840	100 mg/kg dry	5170		94	70-130			
Chromium	59.4	1.0 mg/kg dry	63.1		94	70-130			
Cobalt	9.79	0.10 mg/kg dry	10.4		94	70-130			
Copper	18.5	0.40 mg/kg dry	19.8		93	70-130			
Iron	18200	20 mg/kg dry	20200		90	70-130			
Lead	15.4	0.20 mg/kg dry	17.3		89	70-130			
Magnesium	5600	10 mg/kg dry	6090		92	70-130			
Manganese	282	0.40 mg/kg dry	315		90	70-130			
Mercury	0.106	0.040 mg/kg dry	0.110		97	70-130			
Molybdenum	0.54	0.10 mg/kg dry	0.619		87	70-130			
Nickel	29.5	0.60 mg/kg dry	31.7		93	70-130			
Phosphorus	413	10 mg/kg dry	420		98	70-130			
Silver	1.38	0.10 mg/kg dry	1.75		79	70-130			
Strontium	18.3	0.20 mg/kg dry	20.3		90	70-130			
Titanium	625	1.0 mg/kg dry	645		97	70-130			
Uranium	0.979	0.050 mg/kg dry	1.18		83	70-130			
Vanadium	32.9	1.0 mg/kg dry	33.5		98	70-130			
Zinc	35.2	2.0 mg/kg dry	40.2		87	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22H0795
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-08-05 10:44 / 20.1°C
PO NUMBER		REPORTED	2022-08-17 17:41
PROJECT	Final Effluent- PE14651	COC NUMBER	44778.32176
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

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

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (22H0795-01) Matrix: Water Sampled: 2022-08-05 09:55					
<i>Anions</i>					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-08-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-08-07	
Phosphate (as P)	4.84	0.0050	mg/L	2022-08-07	
<i>Calculated Parameters</i>					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	84.9	2.00	mg/L	N/A	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	446	1.0	mg/L	2022-08-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Bicarbonate (as CaCO3)	446	1.0	mg/L	2022-08-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Ammonia, Total (as N)	60.4	0.050	mg/L	2022-08-08	
BOD, 5-day	341	2.0	mg/L	2022-08-10	HT1
BOD, 5-day Carbonaceous	359	2.0	mg/L	2022-08-10	HT1
Nitrogen, Total Kjeldahl	84.9	0.050	mg/L	2022-08-10	
pH	8.05	0.10	pH units	2022-08-08	HT2
Phosphorus, Total (as P)	10.1	0.0050	mg/L	2022-08-09	
Solids, Total Suspended	328	2.0	mg/L	2022-10-08	

Final Effluent (22H0795-02) | Matrix: Water | Sampled: 2022-08-05 10:10

<i>Anions</i>					
Chloride	108	0.10	mg/L	2022-08-07	
Nitrate (as N)	1.41	0.010	mg/L	2022-08-07	
Nitrite (as N)	0.053	0.010	mg/L	2022-08-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-08-07	
<i>Calculated Parameters</i>					
Nitrate+Nitrite (as N)	1.46	0.0100	mg/L	N/A	
Nitrogen, Total	3.66	0.0500	mg/L	N/A	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	207	1.0	mg/L	2022-08-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Bicarbonate (as CaCO3)	207	1.0	mg/L	2022-08-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Ammonia, Total (as N)	0.567	0.050	mg/L	2022-08-08	
BOD, 5-day Carbonaceous	< 7.0	2.0	mg/L	2022-08-10	HT1
Nitrogen, Total Kjeldahl	2.20	0.050	mg/L	2022-08-10	
pH	8.03	0.10	pH units	2022-08-08	HT2



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL	Units	Analyzed	Qualifier
Final Effluent (22H0795-02) Matrix: Water Sampled: 2022-08-05 10:10, Continued					
<i>General Parameters, Continued</i>					
Phosphorus, Total (as P)	0.212	0.0050	mg/L	2022-08-09	
Solids, Total Suspended	3.6	2.0	mg/L	2022-10-08	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	> 2420	1	MPN/100 mL	2022-08-05	
Coliforms, Fecal (Q-Tray)	> 2420	1	MPN/100 mL	2022-08-05	

Trip Blank (22H0795-03) | Matrix: Water | Sampled: 2022-08-05 08:00

Anions

Chloride	< 0.10	0.10	mg/L	2022-08-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-08-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-08-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-08-07	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	1.2	1.0	mg/L	2022-08-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Bicarbonate (as CaCO3)	1.2	1.0	mg/L	2022-08-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-08-08	
BOD, 5-day Carbonaceous	< 7.0	2.0	mg/L	2022-08-10	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-08-10	
pH	6.25	0.10	pH units	2022-08-08	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-08-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-10-08	

Microbiological Parameters

Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-08-05	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-08-05	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

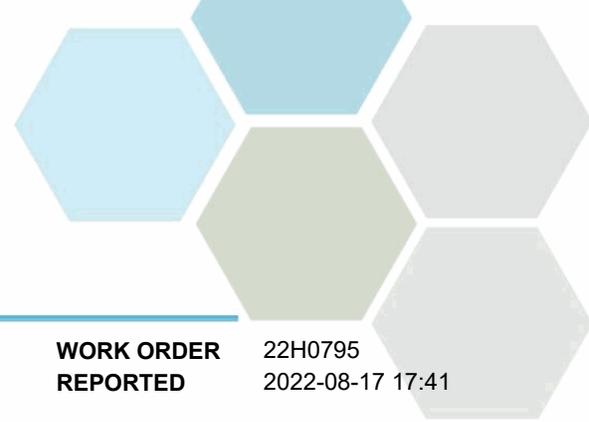
WORK ORDER REPORTED 22H0795
2022-08-17 17:41

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
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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
>	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2H0647									
Blank (B2H0647-BLK1)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2H0647-BLK2)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2H0647-BS1)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	3.94	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.91	0.010 mg/L	2.00		95	85-115			
Phosphate (as P)	0.959	0.0050 mg/L	1.00		96	80-120			
LCS (B2H0647-BS2)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	15.7	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	1.88	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	0.980	0.0050 mg/L	1.00		98	80-120			
Duplicate (B2H0647-DUP2)			Source: 22H0795-02		Prepared: 2022-08-07, Analyzed: 2022-08-07				
Chloride	107	0.10 mg/L		108			< 1	10	
Nitrate (as N)	1.41	0.010 mg/L		1.41			< 1	10	
Nitrite (as N)	0.053	0.010 mg/L		0.053			< 1	15	
Phosphate (as P)	< 0.0050	0.0050 mg/L		< 0.0050				20	
Matrix Spike (B2H0647-MS2)			Source: 22H0795-02		Prepared: 2022-08-07, Analyzed: 2022-08-07				
Chloride	126	0.10 mg/L	16.0	108	111	75-125			
Nitrate (as N)	5.32	0.010 mg/L	4.00	1.41	98	75-125			
Nitrite (as N)	1.90	0.010 mg/L	2.00	0.053	92	80-120			
Phosphate (as P)	0.798	0.0050 mg/L	1.00	< 0.0050	80	70-130			

General Parameters, Batch B2H0561



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2H0561, Continued									
Blank (B2H0561-BLK1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2H0561-BS1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day	226	35.8 mg/L	198		114	85-115			
General Parameters, Batch B2H0567									
Blank (B2H0567-BLK1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2H0567-BS1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day Carbonaceous	228	24.4 mg/L	198		115	85-115			
General Parameters, Batch B2H0756									
Blank (B2H0756-BLK1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
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							
Blank (B2H0756-BLK2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
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							
LCS (B2H0756-BS1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Alkalinity, Total (as CaCO3)	109	1.0 mg/L	100		109	80-120			
LCS (B2H0756-BS2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Alkalinity, Total (as CaCO3)	109	1.0 mg/L	100		109	80-120			
Reference (B2H0756-SRM1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
pH	7.05	0.10 pH units	7.01		101	98-102			
Reference (B2H0756-SRM2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
pH	7.05	0.10 pH units	7.01		101	98-102			
General Parameters, Batch B2H0765									
Blank (B2H0765-BLK1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2H0765-BLK2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2H0765-BLK3)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2H0765-BLK4)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2H0765, Continued									
LCS (B2H0765-BS1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.914	0.050 mg/L	1.00		91	90-115			
LCS (B2H0765-BS2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.917	0.050 mg/L	1.00		92	90-115			
LCS (B2H0765-BS3)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.938	0.050 mg/L	1.00		94	90-115			
LCS (B2H0765-BS4)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.903	0.050 mg/L	1.00		90	90-115			
General Parameters, Batch B2H0845									
Blank (B2H0845-BLK1)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2H0845-BLK2)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2H0845-BS1)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	0.0913	0.0050 mg/L	0.100		91	85-115			
LCS (B2H0845-BS2)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	0.0914	0.0050 mg/L	0.100		91	85-115			
General Parameters, Batch B2H0970									
Blank (B2H0970-BLK1)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2H0970-BLK2)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2H0970-BS1)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
LCS (B2H0970-BS2)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
General Parameters, Batch B2H1075									
Blank (B2H1075-BLK1)			Prepared: 2022-08-10, Analyzed: 2022-10-08						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2H1075-BS1)			Prepared: 2022-08-10, Analyzed: 2022-10-08						
Solids, Total Suspended	115	10.0 mg/L	100		115	85-115			
Microbiological Parameters, Batch B2H0578									
Blank (B2H0578-BLK1)			Prepared: 2022-08-05, Analyzed: 2022-08-05						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2H0578-BLK2)			Prepared: 2022-08-05, Analyzed: 2022-08-05						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22H0795
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-08-05 10:44 / 20.1°C
PO NUMBER		REPORTED	2022-08-17 17:41
PROJECT	Final Effluent- PE14651	COC NUMBER	44778.32176
PROJECT INFO	Lake Country WWTP		

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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

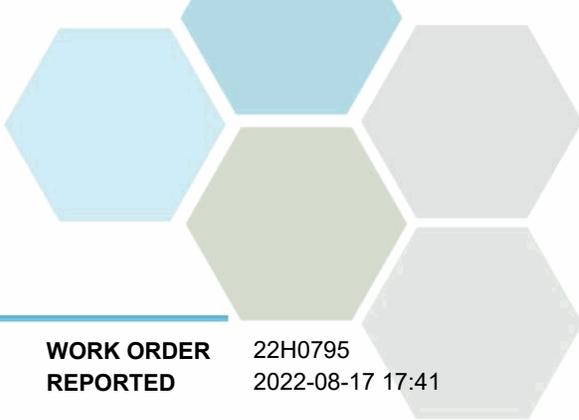
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

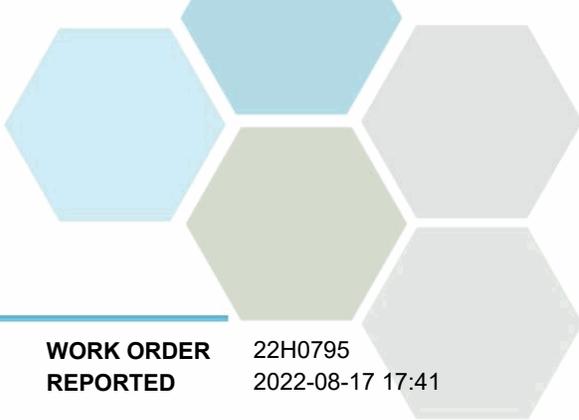
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (22H0795-01) Matrix: Water Sampled: 2022-08-05 09:55					
<i>Anions</i>					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-08-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-08-07	
Phosphate (as P)	4.84	0.0050	mg/L	2022-08-07	
<i>Calculated Parameters</i>					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	84.9	2.00	mg/L	N/A	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	446	1.0	mg/L	2022-08-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Bicarbonate (as CaCO3)	446	1.0	mg/L	2022-08-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Ammonia, Total (as N)	60.4	0.050	mg/L	2022-08-08	
BOD, 5-day	341	2.0	mg/L	2022-08-10	HT1
BOD, 5-day Carbonaceous	359	2.0	mg/L	2022-08-10	HT1
Nitrogen, Total Kjeldahl	84.9	0.050	mg/L	2022-08-10	
pH	8.05	0.10	pH units	2022-08-08	HT2
Phosphorus, Total (as P)	10.1	0.0050	mg/L	2022-08-09	
Solids, Total Suspended	328	2.0	mg/L	2022-10-08	

Final Effluent (22H0795-02) | Matrix: Water | Sampled: 2022-08-05 10:10

<i>Anions</i>					
Chloride	108	0.10	mg/L	2022-08-07	
Nitrate (as N)	1.41	0.010	mg/L	2022-08-07	
Nitrite (as N)	0.053	0.010	mg/L	2022-08-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-08-07	
<i>Calculated Parameters</i>					
Nitrate+Nitrite (as N)	1.46	0.0100	mg/L	N/A	
Nitrogen, Total	3.66	0.0500	mg/L	N/A	
<i>General Parameters</i>					
Alkalinity, Total (as CaCO3)	207	1.0	mg/L	2022-08-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Bicarbonate (as CaCO3)	207	1.0	mg/L	2022-08-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Ammonia, Total (as N)	0.567	0.050	mg/L	2022-08-08	
BOD, 5-day Carbonaceous	< 7.0	2.0	mg/L	2022-08-10	HT1
Nitrogen, Total Kjeldahl	2.20	0.050	mg/L	2022-08-10	
pH	8.03	0.10	pH units	2022-08-08	HT2



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL	Units	Analyzed	Qualifier
Final Effluent (22H0795-02) Matrix: Water Sampled: 2022-08-05 10:10, Continued					
<i>General Parameters, Continued</i>					
Phosphorus, Total (as P)	0.212	0.0050	mg/L	2022-08-09	
Solids, Total Suspended	3.6	2.0	mg/L	2022-10-08	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	> 2420	1	MPN/100 mL	2022-08-05	
Coliforms, Fecal (Q-Tray)	> 2420	1	MPN/100 mL	2022-08-05	

Trip Blank (22H0795-03) | Matrix: Water | Sampled: 2022-08-05 08:00

Anions

Chloride	< 0.10	0.10	mg/L	2022-08-07	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-08-07	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-08-07	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-08-07	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	

General Parameters

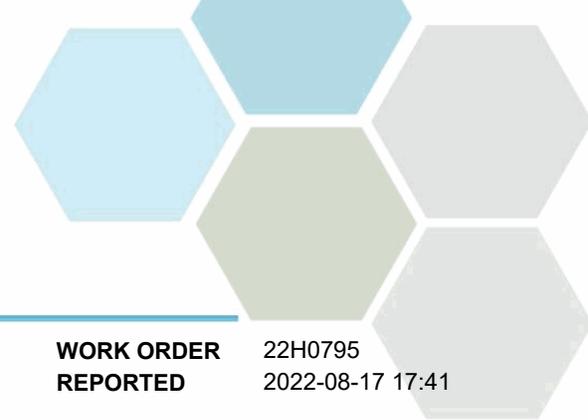
Alkalinity, Total (as CaCO3)	1.2	1.0	mg/L	2022-08-08	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Bicarbonate (as CaCO3)	1.2	1.0	mg/L	2022-08-08	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-08-08	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-08-08	
BOD, 5-day Carbonaceous	< 7.0	2.0	mg/L	2022-08-10	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-08-10	
pH	6.25	0.10	pH units	2022-08-08	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-08-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-10-08	

Microbiological Parameters

Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-08-05	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-08-05	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

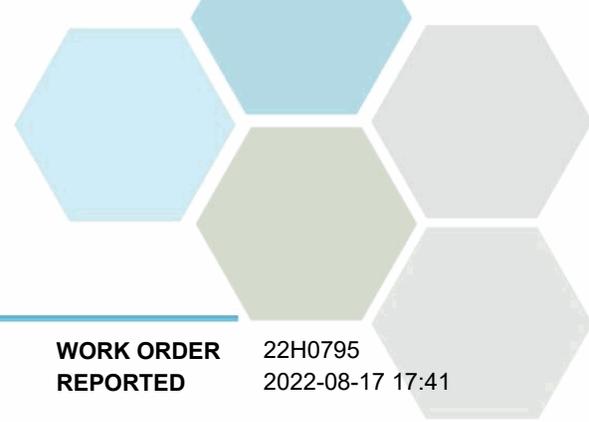
WORK ORDER REPORTED 22H0795
2022-08-17 17:41

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
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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
>	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
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2H0647									
Blank (B2H0647-BLK1)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2H0647-BLK2)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2H0647-BS1)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	3.94	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	1.91	0.010 mg/L	2.00		95	85-115			
Phosphate (as P)	0.959	0.0050 mg/L	1.00		96	80-120			
LCS (B2H0647-BS2)			Prepared: 2022-08-07, Analyzed: 2022-08-07						
Chloride	15.7	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	1.88	0.010 mg/L	2.00		94	85-115			
Phosphate (as P)	0.980	0.0050 mg/L	1.00		98	80-120			
Duplicate (B2H0647-DUP2)			Source: 22H0795-02		Prepared: 2022-08-07, Analyzed: 2022-08-07				
Chloride	107	0.10 mg/L		108			< 1	10	
Nitrate (as N)	1.41	0.010 mg/L		1.41			< 1	10	
Nitrite (as N)	0.053	0.010 mg/L		0.053			< 1	15	
Phosphate (as P)	< 0.0050	0.0050 mg/L		< 0.0050				20	
Matrix Spike (B2H0647-MS2)			Source: 22H0795-02		Prepared: 2022-08-07, Analyzed: 2022-08-07				
Chloride	126	0.10 mg/L	16.0	108	111	75-125			
Nitrate (as N)	5.32	0.010 mg/L	4.00	1.41	98	75-125			
Nitrite (as N)	1.90	0.010 mg/L	2.00	0.053	92	80-120			
Phosphate (as P)	0.798	0.0050 mg/L	1.00	< 0.0050	80	70-130			

General Parameters, Batch B2H0561



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2H0561, Continued									
Blank (B2H0561-BLK1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2H0561-BS1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day	226	35.8 mg/L	198		114	85-115			
General Parameters, Batch B2H0567									
Blank (B2H0567-BLK1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2H0567-BS1)			Prepared: 2022-08-05, Analyzed: 2022-08-10						
BOD, 5-day Carbonaceous	228	24.4 mg/L	198		115	85-115			
General Parameters, Batch B2H0756									
Blank (B2H0756-BLK1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
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							
Blank (B2H0756-BLK2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
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							
LCS (B2H0756-BS1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Alkalinity, Total (as CaCO3)	109	1.0 mg/L	100		109	80-120			
LCS (B2H0756-BS2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Alkalinity, Total (as CaCO3)	109	1.0 mg/L	100		109	80-120			
Reference (B2H0756-SRM1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
pH	7.05	0.10 pH units	7.01		101	98-102			
Reference (B2H0756-SRM2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
pH	7.05	0.10 pH units	7.01		101	98-102			
General Parameters, Batch B2H0765									
Blank (B2H0765-BLK1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2H0765-BLK2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2H0765-BLK3)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2H0765-BLK4)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22H0795
2022-08-17 17:41

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2H0765, Continued									
LCS (B2H0765-BS1)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.914	0.050 mg/L	1.00		91	90-115			
LCS (B2H0765-BS2)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.917	0.050 mg/L	1.00		92	90-115			
LCS (B2H0765-BS3)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.938	0.050 mg/L	1.00		94	90-115			
LCS (B2H0765-BS4)			Prepared: 2022-08-08, Analyzed: 2022-08-08						
Ammonia, Total (as N)	0.903	0.050 mg/L	1.00		90	90-115			
General Parameters, Batch B2H0845									
Blank (B2H0845-BLK1)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2H0845-BLK2)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2H0845-BS1)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	0.0913	0.0050 mg/L	0.100		91	85-115			
LCS (B2H0845-BS2)			Prepared: 2022-08-08, Analyzed: 2022-08-09						
Phosphorus, Total (as P)	0.0914	0.0050 mg/L	0.100		91	85-115			
General Parameters, Batch B2H0970									
Blank (B2H0970-BLK1)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2H0970-BLK2)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2H0970-BS1)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
LCS (B2H0970-BS2)			Prepared: 2022-08-09, Analyzed: 2022-08-10						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
General Parameters, Batch B2H1075									
Blank (B2H1075-BLK1)			Prepared: 2022-08-10, Analyzed: 2022-10-08						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2H1075-BS1)			Prepared: 2022-08-10, Analyzed: 2022-10-08						
Solids, Total Suspended	115	10.0 mg/L	100		115	85-115			
Microbiological Parameters, Batch B2H0578									
Blank (B2H0578-BLK1)			Prepared: 2022-08-05, Analyzed: 2022-08-05						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2H0578-BLK2)			Prepared: 2022-08-05, Analyzed: 2022-08-05						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22H0799
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-08-05 10:44 / 20.1°C 2022-08-12 14:25
PO NUMBER		COC NUMBER	44778.32176
PROJECT	BioSolids- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

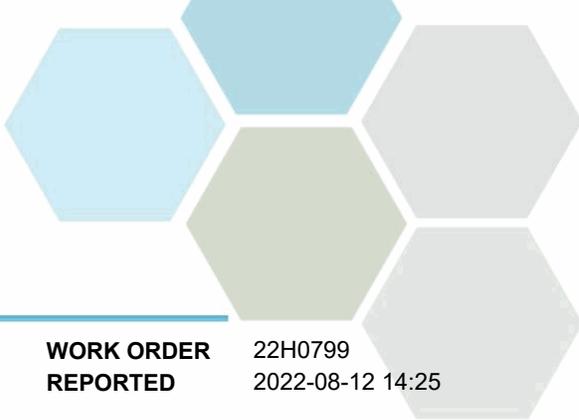
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22H0799
2022-08-12 14:25

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

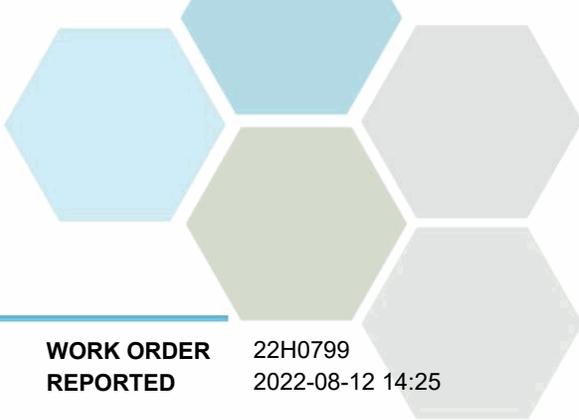
Biosolids (E233628) (22H0799-01) | Matrix: Sludge | Sampled: 2022-08-05 08:30

General Parameters

Moisture	82.0	1.0	% wet	2022-08-10	
Nitrogen, Total Kjeldahl	5.14	0.0004	% dry	2022-08-12	
pH (1:2 H2O Solution)	5.51	0.10	pH units	2022-08-11	PH1
Solids, Total	18.0	0.1	% wet	2022-08-10	
Solids, Volatile	84.2	0.1	% dry	2022-08-10	

Strong Acid Leachable Metals

Aluminum	1810	40	mg/kg dry	2022-08-12	
Antimony	1.48	0.10	mg/kg dry	2022-08-12	
Arsenic	1.83	0.30	mg/kg dry	2022-08-12	
Barium	96.8	1.0	mg/kg dry	2022-08-12	
Beryllium	< 0.10	0.10	mg/kg dry	2022-08-12	
Bismuth	26.0	0.10	mg/kg dry	2022-08-12	
Boron	< 10.0	2.0	mg/kg dry	2022-08-12	RA3
Cadmium	0.971	0.040	mg/kg dry	2022-08-12	
Calcium	9940	100	mg/kg dry	2022-08-12	
Chromium	13.1	1.0	mg/kg dry	2022-08-12	
Cobalt	1.56	0.10	mg/kg dry	2022-08-12	
Copper	386	0.40	mg/kg dry	2022-08-12	
Iron	3070	20	mg/kg dry	2022-08-12	
Lead	7.49	0.20	mg/kg dry	2022-08-12	
Lithium	0.99	0.10	mg/kg dry	2022-08-12	
Magnesium	3800	10	mg/kg dry	2022-08-12	
Manganese	111	0.40	mg/kg dry	2022-08-12	
Mercury	0.329	0.040	mg/kg dry	2022-08-12	
Molybdenum	11.4	0.10	mg/kg dry	2022-08-12	
Nickel	10.3	0.60	mg/kg dry	2022-08-12	
Phosphorus	14800	10	mg/kg dry	2022-08-12	
Potassium	4310	40	mg/kg dry	2022-08-12	
Selenium	3.01	0.20	mg/kg dry	2022-08-12	
Silver	1.25	0.10	mg/kg dry	2022-08-12	
Sodium	567	50	mg/kg dry	2022-08-12	
Strontium	49.1	0.20	mg/kg dry	2022-08-12	
Sulfur	5920	1000	mg/kg dry	2022-08-12	
Tellurium	< 0.10	0.10	mg/kg dry	2022-08-12	
Thallium	< 0.10	0.10	mg/kg dry	2022-08-12	
Thorium	< 0.50	0.50	mg/kg dry	2022-08-12	
Tin	14.7	0.20	mg/kg dry	2022-08-12	
Titanium	45.7	1.0	mg/kg dry	2022-08-12	
Tungsten	0.56	0.20	mg/kg dry	2022-08-12	
Uranium	8.43	0.050	mg/kg dry	2022-08-12	
Vanadium	5.0	1.0	mg/kg dry	2022-08-12	
Zinc	705	2.0	mg/kg dry	2022-08-12	



TEST RESULTS

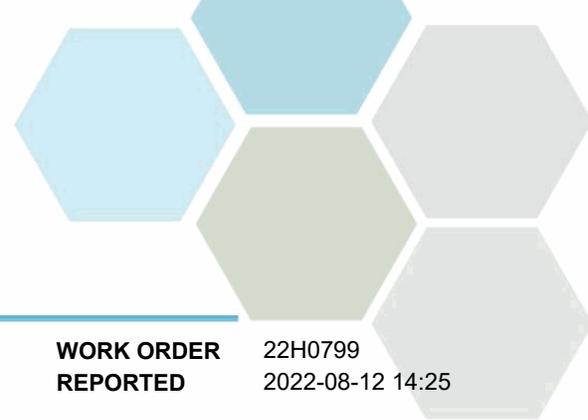
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22H0799
2022-08-12 14:25

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22H0799-01) Matrix: Sludge Sampled: 2022-08-05 08:30, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	< 4.0	2.0	mg/kg dry	2022-08-12	RA1

Sample Qualifiers:

- PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix
- RA1 The Reporting Limit has been raised due to matrix interference.
- RA3 The Reporting Limit has been raised due to comparable level detected in the blank(s).



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22H0799
2022-08-12 14:25

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		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)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22H0799
2022-08-12 14:25

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2H0918

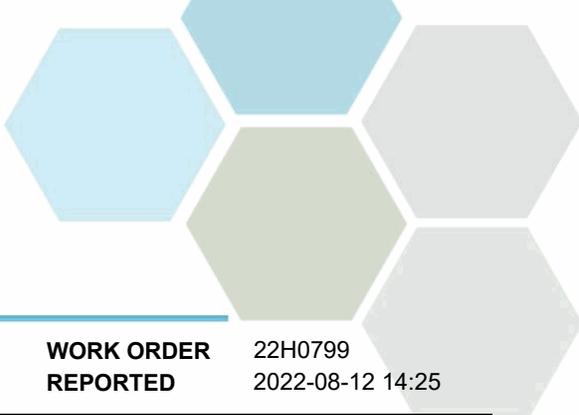
Reference (B2H0918-SRM1)	Prepared: 2022-08-10, Analyzed: 2022-08-10								
Moisture	99.0	1.0 % wet	6.5		100	80-120			

General Parameters, Batch B2H0967

Duplicate (B2H0967-DUP1)	Source: 22H0799-01		Prepared: 2022-08-10, Analyzed: 2022-08-10						
Solids, Total	17.9	0.1 % wet		18.0			< 1	7.5	
Solids, Volatile	83.8	0.1 % dry		84.2			< 1	15	
Reference (B2H0967-SRM1)	Prepared: 2022-08-10, Analyzed: 2022-08-10								
Solids, Total	93.3	0.1 % wet	93.5		100	80-120			
Solids, Volatile	3.6	0.1 % dry	4.00		90	80-200			

Strong Acid Leachable Metals, Batch B2H1439

Blank (B2H1439-BLK1)	Prepared: 2022-08-11, Analyzed: 2022-08-12								
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22H0799
2022-08-12 14:25

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2H1439, Continued

Blank (B2H1439-BLK1), Continued

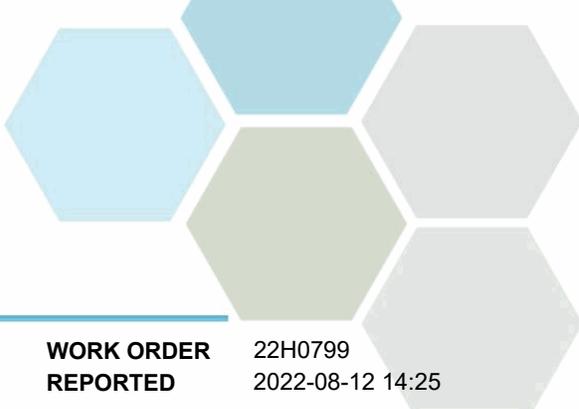
Prepared: 2022-08-11, Analyzed: 2022-08-12

Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2H1439-BS1)

Prepared: 2022-08-11, Analyzed: 2022-08-12

Aluminum	966	40 mg/kg dry	1000		97	80-120			
Antimony	9.29	0.10 mg/kg dry	10.0		93	80-120			
Arsenic	9.69	0.30 mg/kg dry	10.0		97	80-120			
Barium	9.2	1.0 mg/kg dry	10.0		92	80-120			
Beryllium	9.52	0.10 mg/kg dry	10.0		95	80-120			
Bismuth	9.64	0.10 mg/kg dry	10.0		96	80-120			
Boron	10.1	2.0 mg/kg dry	10.0		101	80-120			
Cadmium	9.27	0.040 mg/kg dry	10.0		93	80-120			
Calcium	957	100 mg/kg dry	1000		96	80-120			
Chromium	9.6	1.0 mg/kg dry	10.0		96	80-120			
Cobalt	9.60	0.10 mg/kg dry	10.0		96	80-120			
Copper	9.52	0.40 mg/kg dry	10.0		95	80-120			
Iron	963	20 mg/kg dry	1000		96	80-120			
Lead	9.69	0.20 mg/kg dry	10.0		97	80-120			
Lithium	9.35	0.10 mg/kg dry	10.0		93	80-120			
Magnesium	957	10 mg/kg dry	1000		96	80-120			
Manganese	9.70	0.40 mg/kg dry	10.0		97	80-120			
Mercury	0.967	0.040 mg/kg dry	1.00		97	80-120			
Molybdenum	9.52	0.10 mg/kg dry	10.0		95	80-120			
Nickel	9.54	0.60 mg/kg dry	10.0		95	80-120			
Phosphorus	964	10 mg/kg dry	1000		96	80-120			
Potassium	961	40 mg/kg dry	1000		96	80-120			
Selenium	9.68	0.20 mg/kg dry	10.0		97	80-120			
Silver	9.35	0.10 mg/kg dry	10.0		94	80-120			
Sodium	968	50 mg/kg dry	1000		97	80-120			
Strontium	9.43	0.20 mg/kg dry	10.0		94	80-120			
Sulfur	9930	1000 mg/kg dry	10000		99	80-120			
Tellurium	9.04	0.10 mg/kg dry	10.0		90	80-120			
Thallium	9.60	0.10 mg/kg dry	10.0		96	80-120			
Thorium	9.66	0.50 mg/kg dry	10.0		97	80-120			
Tin	9.40	0.20 mg/kg dry	10.0		94	80-120			
Titanium	9.8	1.0 mg/kg dry	10.0		98	80-120			
Tungsten	9.89	0.20 mg/kg dry	10.0		99	80-120			
Uranium	9.89	0.050 mg/kg dry	10.0		99	80-120			
Vanadium	9.5	1.0 mg/kg dry	10.0		95	80-120			
Zinc	9.6	2.0 mg/kg dry	10.0		96	80-120			
Zirconium	9.6	2.0 mg/kg dry	10.0		96	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22H0799
2022-08-12 14:25

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2H1439, Continued

Reference (B2H1439-SRM1)

Prepared: 2022-08-11, Analyzed: 2022-08-12

Aluminum	11200	40 mg/kg dry	11500		97	70-130			
Antimony	0.65	0.10 mg/kg dry	0.724		90	70-130			
Arsenic	83.8	0.30 mg/kg dry	82.1		102	70-130			
Barium	42.5	1.0 mg/kg dry	40.0		106	70-130			
Beryllium	0.38	0.10 mg/kg dry	0.369		102	70-130			
Calcium	5010	100 mg/kg dry	5170		97	70-130			
Chromium	64.4	1.0 mg/kg dry	63.1		102	70-130			
Cobalt	10.5	0.10 mg/kg dry	10.4		101	70-130			
Copper	20.7	0.40 mg/kg dry	19.8		105	70-130			
Iron	19700	20 mg/kg dry	20200		97	70-130			
Lead	16.6	0.20 mg/kg dry	17.3		96	70-130			
Magnesium	6070	10 mg/kg dry	6090		100	70-130			
Manganese	309	0.40 mg/kg dry	315		98	70-130			
Mercury	0.112	0.040 mg/kg dry	0.110		102	70-130			
Molybdenum	0.62	0.10 mg/kg dry	0.619		100	70-130			
Nickel	32.3	0.60 mg/kg dry	31.7		102	70-130			
Phosphorus	419	10 mg/kg dry	420		100	70-130			
Silver	1.50	0.10 mg/kg dry	1.75		86	70-130			
Strontium	18.1	0.20 mg/kg dry	20.3		89	70-130			
Titanium	615	1.0 mg/kg dry	645		95	70-130			
Uranium	1.14	0.050 mg/kg dry	1.18		96	70-130			
Vanadium	34.3	1.0 mg/kg dry	33.5		102	70-130			
Zinc	37.0	2.0 mg/kg dry	40.2		92	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22G1146
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-07-11 12:57 / 14.7°C 2022-07-18 14:59
PO NUMBER		COC NUMBER	44753.38676
PROJECT	Raw Influent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

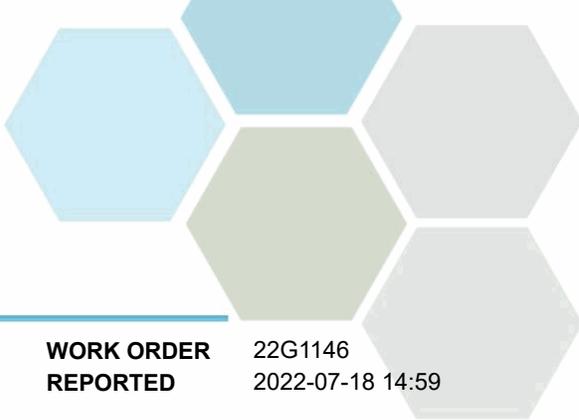
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

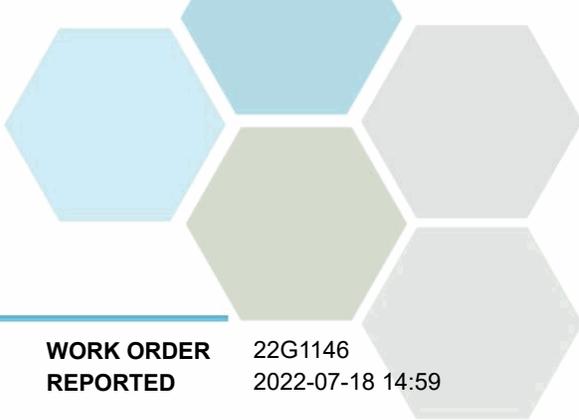
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22G1146
2022-07-18 14:59

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22G1146-01) Matrix: Wastewater Sampled: 2022-07-11 10:00					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-07-13	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-07-13	
Phosphate (as P)	4.76	0.0050	mg/L	2022-07-13	
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	74.9	5.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	461	1.0	mg/L	2022-07-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Alkalinity, Bicarbonate (as CaCO3)	461	1.0	mg/L	2022-07-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Ammonia, Total (as N)	65.4	0.050	mg/L	2022-07-15	
BOD, 5-day	225	2.0	mg/L	2022-07-18	
BOD, 5-day Carbonaceous	206	2.0	mg/L	2022-07-18	
Nitrogen, Total Kjeldahl	74.9	0.050	mg/L	2022-07-17	
pH	8.01	0.10	pH units	2022-07-13	HT2
Phosphorus, Total (as P)	9.98	0.0050	mg/L	2022-07-13	
Solids, Total Suspended	173	2.0	mg/L	2022-07-16	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22G1146
2022-07-18 14:59

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

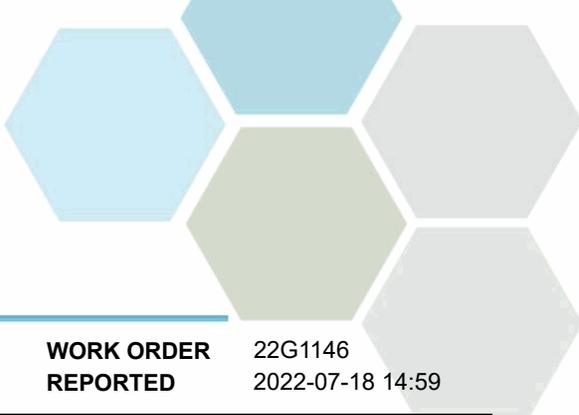
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

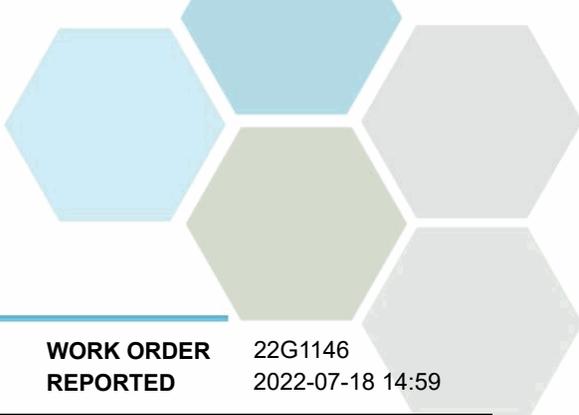
WORK ORDER REPORTED 22G1146
2022-07-18 14:59

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2G1235									
Blank (B2G1235-BLK1)			Prepared: 2022-07-12, Analyzed: 2022-07-12						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2G1235-BLK2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2G1235-BS1)			Prepared: 2022-07-12, Analyzed: 2022-07-12						
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)	1.03	0.0050 mg/L	1.00		103	80-120			
LCS (B2G1235-BS2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Nitrate (as N)	4.04	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.00	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.00	0.0050 mg/L	1.00		100	80-120			
General Parameters, Batch B2G1297									
Blank (B2G1297-BLK2)			Prepared: 2022-07-12, Analyzed: 2022-07-13						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
LCS (B2G1297-BS2)			Prepared: 2022-07-12, Analyzed: 2022-07-13						
Phosphorus, Total (as P)	0.106	0.0020 mg/L	0.100		106	85-115			
General Parameters, Batch B2G1305									
Blank (B2G1305-BLK1)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Alkalinity, Total (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0 mg/L							

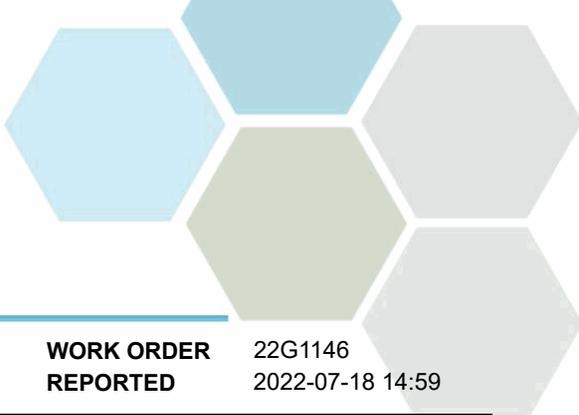


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22G1146
2022-07-18 14:59

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2G1305, Continued									
Blank (B2G1305-BLK2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Alkalinity, Total (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0 mg/L							
LCS (B2G1305-BS1)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Alkalinity, Total (as CaCO ₃)	110	1.0 mg/L	100		110	80-120			
LCS (B2G1305-BS2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Alkalinity, Total (as CaCO ₃)	110	1.0 mg/L	100		110	80-120			
Reference (B2G1305-SRM1)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2G1305-SRM2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
pH	7.02	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2G1442									
Blank (B2G1442-BLK1)			Prepared: 2022-07-13, Analyzed: 2022-07-18						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2G1442-BS1)			Prepared: 2022-07-13, Analyzed: 2022-07-18						
BOD, 5-day	164	46.4 mg/L	180		91	85-115			
General Parameters, Batch B2G1444									
Blank (B2G1444-BLK1)			Prepared: 2022-07-13, Analyzed: 2022-07-18						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2G1444-BS1)			Prepared: 2022-07-13, Analyzed: 2022-07-18						
BOD, 5-day Carbonaceous	162	36.0 mg/L	180		90	85-115			
General Parameters, Batch B2G1658									
Blank (B2G1658-BLK1)			Prepared: 2022-07-14, Analyzed: 2022-07-17						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2G1658-BLK2)			Prepared: 2022-07-14, Analyzed: 2022-07-17						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2G1658-BS1)			Prepared: 2022-07-14, Analyzed: 2022-07-17						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
LCS (B2G1658-BS2)			Prepared: 2022-07-14, Analyzed: 2022-07-17						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
General Parameters, Batch B2G1771									
Blank (B2G1771-BLK1)			Prepared: 2022-07-15, Analyzed: 2022-07-15						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2G1771-BS1)			Prepared: 2022-07-15, Analyzed: 2022-07-15						
Ammonia, Total (as N)	0.929	0.050 mg/L	1.00		93	90-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22G1146
2022-07-18 14:59

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2G1905									
Blank (B2G1905-BLK1)				Prepared: 2022-07-16, Analyzed: 2022-07-16					
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2G1905-BS1)				Prepared: 2022-07-16, Analyzed: 2022-07-16					
Solids, Total Suspended	97.0	5.0 mg/L	100		97	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22G1147
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-07-11 12:57 / 14.7°C
PO NUMBER		REPORTED	2022-07-18 15:00
PROJECT	Final Effluent- PE14651	COC NUMBER	44753.38676
PROJECT INFO	Lake Country WWTP		

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.

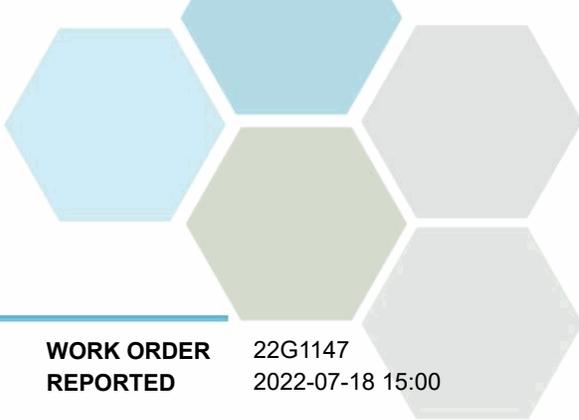
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22G1147
2022-07-18 15:00

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

Final Effluent (E233626) (22G1147-01) | Matrix: Wastewater | Sampled: 2022-07-11 09:45

Anions

Chloride	112	0.10	mg/L	2022-07-13	
Nitrate (as N)	0.609	0.010	mg/L	2022-07-13	
Nitrite (as N)	0.067	0.010	mg/L	2022-07-13	
Phosphate (as P)	0.0175	0.0050	mg/L	2022-07-13	

Calculated Parameters

Nitrate+Nitrite (as N)	0.677	0.0100	mg/L	N/A	
Nitrogen, Total	2.76	0.250	mg/L	N/A	
Nitrogen, Organic	1.78	0.250	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	209	1.0	mg/L	2022-07-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Alkalinity, Bicarbonate (as CaCO3)	209	1.0	mg/L	2022-07-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Ammonia, Total (as N)	0.301	0.050	mg/L	2022-07-15	
BOD, 5-day Carbonaceous	< 2.2	2.0	mg/L	2022-07-18	
Nitrogen, Total Kjeldahl	2.08	0.050	mg/L	2022-07-14	
pH	7.91	0.10	pH units	2022-07-13	HT2
Phosphorus, Total (as P)	0.342	0.0050	mg/L	2022-07-13	
Solids, Total Suspended	4.3	2.0	mg/L	2022-07-16	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-07-11	
Coliforms, Fecal (Q-Tray)	98000	1	MPN/100 mL	2022-07-11	

Duplicate (22G1147-02) | Matrix: Water | Sampled: 2022-07-11 09:45

Anions

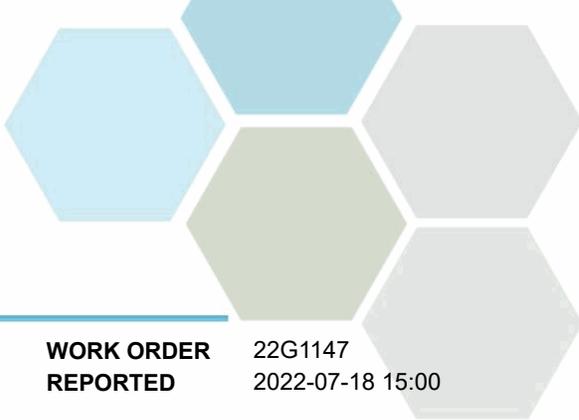
Chloride	114	0.10	mg/L	2022-07-13	
Nitrate (as N)	0.614	0.010	mg/L	2022-07-13	
Nitrite (as N)	0.069	0.010	mg/L	2022-07-13	
Phosphate (as P)	0.0147	0.0050	mg/L	2022-07-13	

Calculated Parameters

Nitrate+Nitrite (as N)	0.683	0.0100	mg/L	N/A	
Nitrogen, Total	2.90	0.250	mg/L	N/A	
Nitrogen, Organic	1.89	0.250	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	208	1.0	mg/L	2022-07-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Alkalinity, Bicarbonate (as CaCO3)	208	1.0	mg/L	2022-07-13	



TEST RESULTS

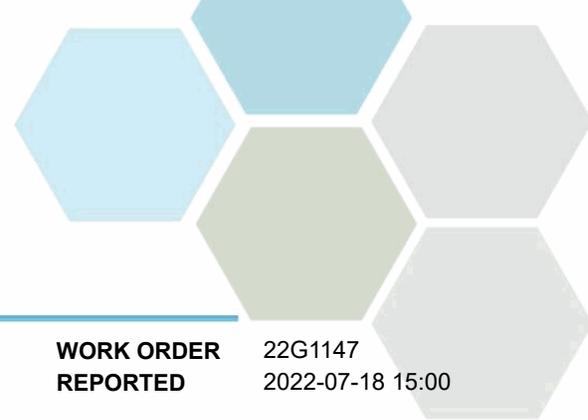
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22G1147
2022-07-18 15:00

Analyte	Result	RL	Units	Analyzed	Qualifier
Duplicate (22G1147-02) Matrix: Water Sampled: 2022-07-11 09:45, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-07-13	
Ammonia, Total (as N)	0.325	0.050	mg/L	2022-07-15	
BOD, 5-day Carbonaceous	< 2.2	2.0	mg/L	2022-07-18	
Nitrogen, Total Kjeldahl	2.22	0.050	mg/L	2022-07-14	
pH	7.91	0.10	pH units	2022-07-13	HT2
Phosphorus, Total (as P)	0.333	0.0050	mg/L	2022-07-13	
Solids, Total Suspended	4.3	2.0	mg/L	2022-07-16	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-07-11	
Coliforms, Fecal (Q-Tray)	86600	1	MPN/100 mL	2022-07-11	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22G1147
2022-07-18 15:00

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

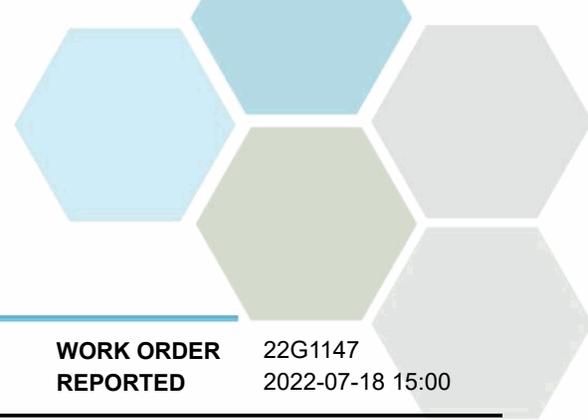
Glossary of Terms:

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
>	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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22G1147
2022-07-18 15:00

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2G1235									
Blank (B2G1235-BLK1)			Prepared: 2022-07-12, Analyzed: 2022-07-12						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2G1235-BLK2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2G1235-BS1)			Prepared: 2022-07-12, Analyzed: 2022-07-12						
Chloride	16.4	0.10 mg/L	16.0		102	90-110			
Nitrate (as N)	4.04	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.05	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	1.03	0.0050 mg/L	1.00		103	80-120			
LCS (B2G1235-BS2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Chloride	16.4	0.10 mg/L	16.0		102	90-110			
Nitrate (as N)	4.04	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.00	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.00	0.0050 mg/L	1.00		100	80-120			

General Parameters, Batch B2G1117

Blank (B2G1117-BLK1)			Prepared: 2022-07-11, Analyzed: 2022-07-14						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2G1117-BLK2)			Prepared: 2022-07-11, Analyzed: 2022-07-14						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2G1117-BS1)			Prepared: 2022-07-11, Analyzed: 2022-07-14						
Nitrogen, Total Kjeldahl	0.946	0.050 mg/L	1.00		95	85-115			
LCS (B2G1117-BS2)			Prepared: 2022-07-11, Analyzed: 2022-07-14						
Nitrogen, Total Kjeldahl	0.949	0.050 mg/L	1.00		95	85-115			

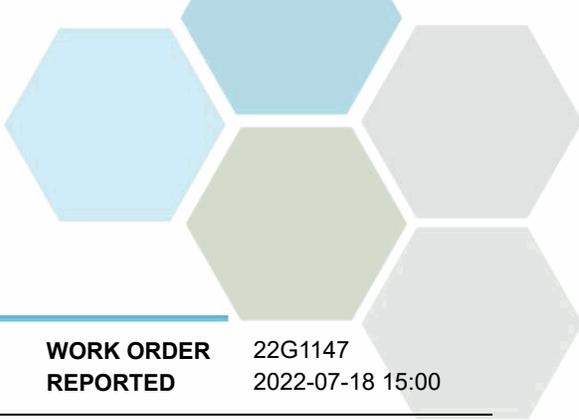


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22G1147
2022-07-18 15:00

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2G1297									
Blank (B2G1297-BLK2)			Prepared: 2022-07-12, Analyzed: 2022-07-13						
Phosphorus, Total (as P)	< 0.0020	0.0020 mg/L							
LCS (B2G1297-BS2)			Prepared: 2022-07-12, Analyzed: 2022-07-13						
Phosphorus, Total (as P)	0.106	0.0020 mg/L	0.100		106	85-115			
General Parameters, Batch B2G1305									
Blank (B2G1305-BLK1)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
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							
Blank (B2G1305-BLK2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
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							
LCS (B2G1305-BS1)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Alkalinity, Total (as CaCO3)	110	1.0 mg/L	100		110	80-120			
LCS (B2G1305-BS2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
Alkalinity, Total (as CaCO3)	110	1.0 mg/L	100		110	80-120			
Reference (B2G1305-SRM1)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2G1305-SRM2)			Prepared: 2022-07-13, Analyzed: 2022-07-13						
pH	7.02	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2G1444									
Blank (B2G1444-BLK1)			Prepared: 2022-07-13, Analyzed: 2022-07-18						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2G1444-BS1)			Prepared: 2022-07-13, Analyzed: 2022-07-18						
BOD, 5-day Carbonaceous	162	36.0 mg/L	180		90	85-115			
General Parameters, Batch B2G1771									
Blank (B2G1771-BLK1)			Prepared: 2022-07-15, Analyzed: 2022-07-15						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2G1771-BS1)			Prepared: 2022-07-15, Analyzed: 2022-07-15						
Ammonia, Total (as N)	0.929	0.050 mg/L	1.00		93	90-115			
General Parameters, Batch B2G1905									
Blank (B2G1905-BLK1)			Prepared: 2022-07-16, Analyzed: 2022-07-16						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2G1905-BS1)			Prepared: 2022-07-16, Analyzed: 2022-07-16						
Solids, Total Suspended	97.0	5.0 mg/L	100		97	85-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22G1147
2022-07-18 15:00

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2G1905, Continued									
LCS (B2G1905-BS1), Continued					Prepared: 2022-07-16, Analyzed: 2022-07-16				
Microbiological Parameters, Batch B2G1108									
Blank (B2G1108-BLK1)					Prepared: 2022-07-11, Analyzed: 2022-07-11				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2G1108-BLK2)					Prepared: 2022-07-11, Analyzed: 2022-07-11				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2G1108-DUP2)					Source: 22G1147-01 Prepared: 2022-07-11, Analyzed: 2022-07-11				
Coliforms, Fecal (Q-Tray)	81600	1 MPN/100 mL		98000			18	80	



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22F0798
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-06-06 14:28 / 16.5°C
PO NUMBER		REPORTED	2022-06-14 14:24
PROJECT	Raw Influent- PE14651	COC NUMBER	44718.31271
PROJECT INFO	Lake Country WWTP		

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.

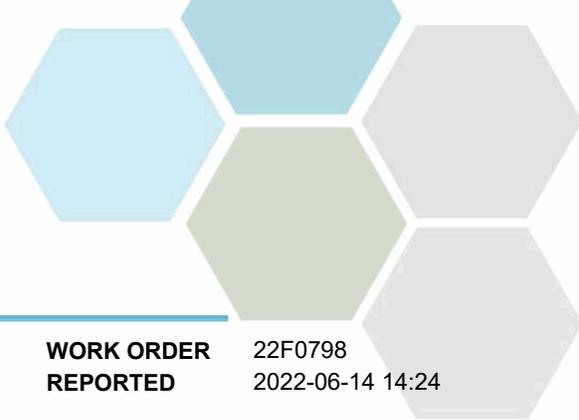
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

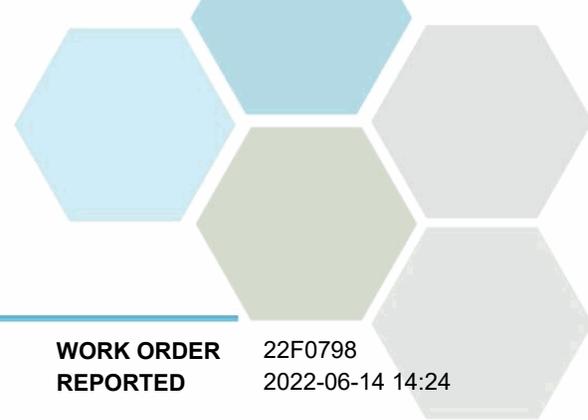
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22F0798
2022-06-14 14:24

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22F0798-01) Matrix: Wastewater Sampled: 2022-06-06 11:10					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-06-09	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-06-09	
Phosphate (as P)	4.85	0.0050	mg/L	2022-06-09	
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	70.4	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	362	1.0	mg/L	2022-06-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Bicarbonate (as CaCO3)	362	1.0	mg/L	2022-06-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Ammonia, Total (as N)	60.6	0.050	mg/L	2022-06-07	
BOD, 5-day	250	2.0	mg/L	2022-06-13	
BOD, 5-day Carbonaceous	230	2.0	mg/L	2022-06-14	
Nitrogen, Total Kjeldahl	70.4	0.050	mg/L	2022-06-13	
pH	7.91	0.10	pH units	2022-06-09	HT2
Phosphorus, Total (as P)	9.36	0.0050	mg/L	2022-06-09	
Solids, Total Suspended	190	2.0	mg/L	2022-06-08	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22F0798
2022-06-14 14:24

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

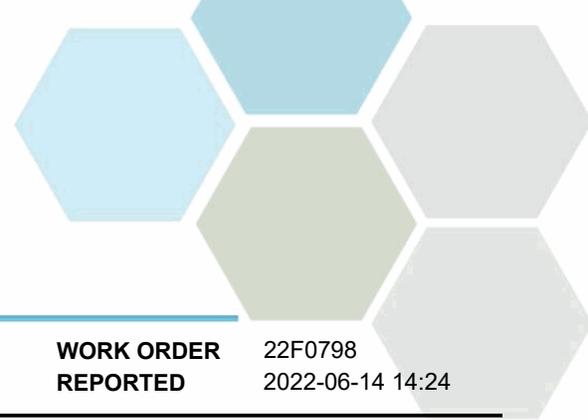
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

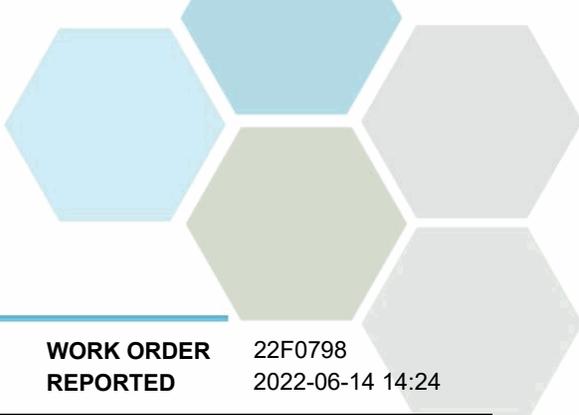
WORK ORDER REPORTED 22F0798
2022-06-14 14:24

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2F0844									
Blank (B2F0844-BLK1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2F0844-BLK2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2F0844-BS1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Nitrate (as N)	3.97	0.010 mg/L	4.00		99	90-110			
Nitrite (as N)	1.99	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2F0844-BS2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Nitrate (as N)	3.89	0.010 mg/L	4.00		97	90-110			
Nitrite (as N)	1.96	0.010 mg/L	2.00		98	85-115			
Phosphate (as P)	0.990	0.0050 mg/L	1.00		99	80-120			
General Parameters, Batch B2F0673									
Blank (B2F0673-BLK1)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2F0673-BLK2)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2F0673-BLK3)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2F0673-BLK4)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2F0673-BS1)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.925	0.050 mg/L	1.00		92	90-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22F0798
2022-06-14 14:24

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2F0673, Continued									
LCS (B2F0673-BS2)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.946	0.050 mg/L	1.00		95	90-115			
LCS (B2F0673-BS3)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.906	0.050 mg/L	1.00		91	90-115			
LCS (B2F0673-BS4)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.930	0.050 mg/L	1.00		93	90-115			
General Parameters, Batch B2F0987									
Blank (B2F0987-BLK1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2F0987-BS1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Solids, Total Suspended	88.0	10.0 mg/L	100		88	85-115			
General Parameters, Batch B2F1083									
Blank (B2F1083-BLK1)			Prepared: 2022-06-08, Analyzed: 2022-06-13						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2F1083-BS1)			Prepared: 2022-06-08, Analyzed: 2022-06-13						
BOD, 5-day	206	46.5 mg/L	180		114	85-115			
General Parameters, Batch B2F1108									
Blank (B2F1108-BLK2)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2F1108-BLK3)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2F1108-BS2)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
LCS (B2F1108-BS3)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
General Parameters, Batch B2F1179									
Blank (B2F1179-BLK1)			Prepared: 2022-06-09, Analyzed: 2022-06-14						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2F1179-BS1)			Prepared: 2022-06-09, Analyzed: 2022-06-14						
BOD, 5-day Carbonaceous	173	29.5 mg/L	180		96	85-115			
General Parameters, Batch B2F1200									
Blank (B2F1200-BLK1)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2F1200-BLK2)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22F0798
2022-06-14 14:24

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2F1200, Continued									
LCS (B2F1200-BS1)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	0.913	0.050 mg/L	1.00		91	85-115			
LCS (B2F1200-BS2)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	0.917	0.050 mg/L	1.00		92	85-115			
General Parameters, Batch B2F1267									
Blank (B2F1267-BLK1)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Alkalinity, Total (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0 mg/L							
Blank (B2F1267-BLK2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Alkalinity, Total (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0 mg/L							
LCS (B2F1267-BS1)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Alkalinity, Total (as CaCO ₃)	91.5	1.0 mg/L	100		91	80-120			
LCS (B2F1267-BS2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Alkalinity, Total (as CaCO ₃)	92.0	1.0 mg/L	100		92	80-120			
Reference (B2F1267-SRM1)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2F1267-SRM2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
pH	7.04	0.10 pH units	7.01		100	98-102			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22F0799
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-06-06 14:28 / 16.5°C
PO NUMBER		REPORTED	2022-06-14 14:25
PROJECT	Final Effluent- PE14651	COC NUMBER	44718.31271
PROJECT INFO	Lake Country WWTP		

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.

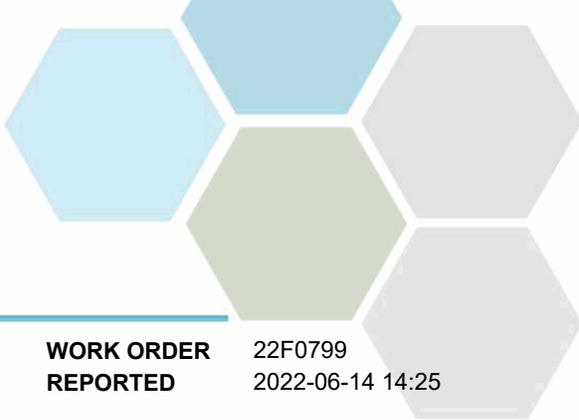
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

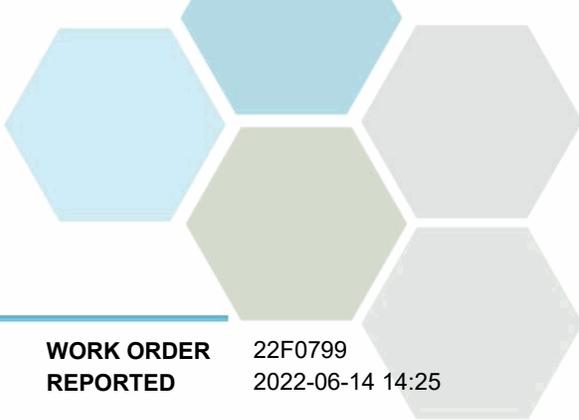
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22F0799
2022-06-14 14:25

Analyte	Result	RL	Units	Analyzed	Qualifier
Final Effluent (E233626) (22F0799-01) Matrix: Wastewater Sampled: 2022-06-06 10:55					
Anions					
Chloride	120	0.10	mg/L	2022-06-09	
Nitrate (as N)	1.08	0.010	mg/L	2022-06-09	
Nitrite (as N)	0.070	0.010	mg/L	2022-06-09	
Phosphate (as P)	0.0073	0.0050	mg/L	2022-06-09	
Calculated Parameters					
Nitrate+Nitrite (as N)	1.15	0.0100	mg/L	N/A	
Nitrogen, Total	3.02	0.100	mg/L	N/A	
Nitrogen, Organic	1.63	0.100	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	175	1.0	mg/L	2022-06-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Bicarbonate (as CaCO3)	175	1.0	mg/L	2022-06-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Ammonia, Total (as N)	0.245	0.050	mg/L	2022-06-07	
BOD, 5-day Carbonaceous	< 7.1	2.0	mg/L	2022-06-14	
Nitrogen, Total Kjeldahl	1.88	0.050	mg/L	2022-06-13	
pH	7.93	0.10	pH units	2022-06-09	HT2
Phosphorus, Total (as P)	0.314	0.0050	mg/L	2022-06-09	
Solids, Total Suspended	5.4	2.0	mg/L	2022-06-08	
Microbiological Parameters					
Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-06-07	
Coliforms, Fecal (Q-Tray)	68700	1	MPN/100 mL	2022-06-07	

Field Blank (22F0799-02) | Matrix: Wastewater | Sampled: 2022-06-06 10:55

Anions					
Chloride	< 0.10	0.10	mg/L	2022-06-10	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-06-10	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-06-10	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-06-10	HT1
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
Nitrogen, Organic	< 0.0500	0.0500	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22F0799
2022-06-14 14:25

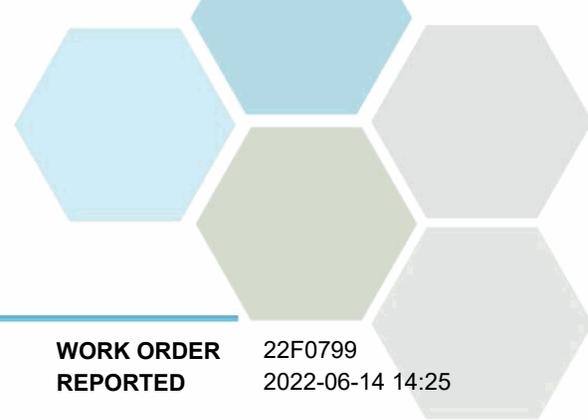
Analyte	Result	RL	Units	Analyzed	Qualifier
Field Blank (22F0799-02) Matrix: Wastewater Sampled: 2022-06-06 10:55, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-06-09	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-06-07	
BOD, 5-day Carbonaceous	< 7.1	2.0	mg/L	2022-06-14	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-06-13	
pH	5.46	0.10	pH units	2022-06-09	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-06-09	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-06-08	

Microbiological Parameters

Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-06-07	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-06-07	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22F0799
2022-06-14 14:25

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

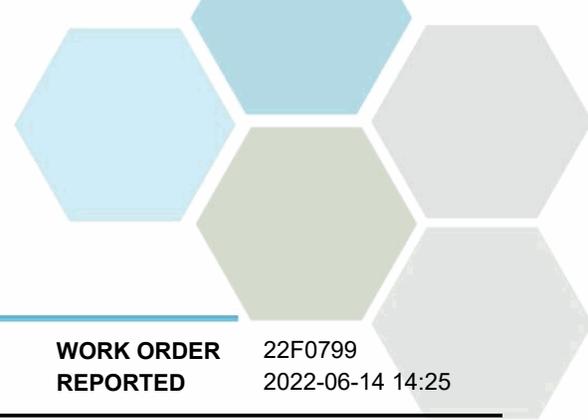
Glossary of Terms:

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
>	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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22F0799
2022-06-14 14:25

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:

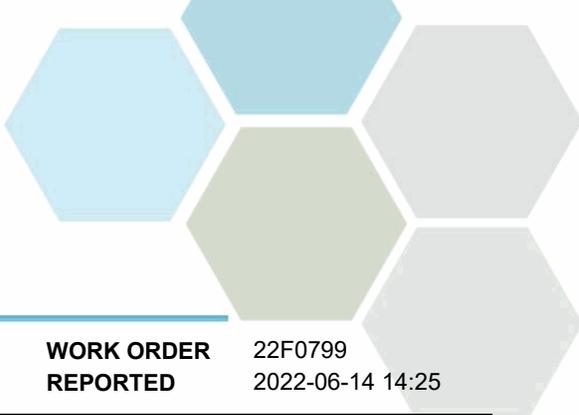
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected 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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2F0844									
Blank (B2F0844-BLK1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
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							
Blank (B2F0844-BLK2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
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							
LCS (B2F0844-BS1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	3.97	0.010 mg/L	4.00		99	90-110			
Nitrite (as N)	1.99	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2F0844-BS2)			Prepared: 2022-06-09, Analyzed: 2022-06-09						
Chloride	15.8	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	3.89	0.010 mg/L	4.00		97	90-110			
Nitrite (as N)	1.96	0.010 mg/L	2.00		98	85-115			
Phosphate (as P)	0.990	0.0050 mg/L	1.00		99	80-120			

General Parameters, Batch B2F0673

Blank (B2F0673-BLK1)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2F0673-BLK2)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2F0673-BLK3)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2F0673-BLK4)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							

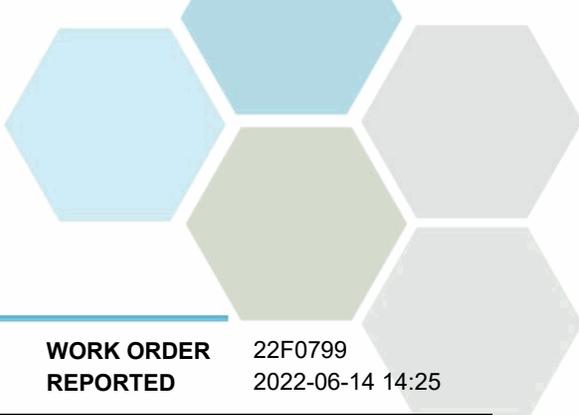


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22F0799
2022-06-14 14:25

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2F0673, Continued									
LCS (B2F0673-BS1)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.925	0.050 mg/L	1.00		92	90-115			
LCS (B2F0673-BS2)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.946	0.050 mg/L	1.00		95	90-115			
LCS (B2F0673-BS3)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.906	0.050 mg/L	1.00		91	90-115			
LCS (B2F0673-BS4)			Prepared: 2022-06-07, Analyzed: 2022-06-07						
Ammonia, Total (as N)	0.930	0.050 mg/L	1.00		93	90-115			
General Parameters, Batch B2F0987									
Blank (B2F0987-BLK1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2F0987-BS1)			Prepared: 2022-06-08, Analyzed: 2022-06-08						
Solids, Total Suspended	88.0	10.0 mg/L	100		88	85-115			
General Parameters, Batch B2F1108									
Blank (B2F1108-BLK2)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2F1108-BLK3)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2F1108-BS2)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
LCS (B2F1108-BS3)			Prepared: 2022-06-08, Analyzed: 2022-06-09						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
General Parameters, Batch B2F1179									
Blank (B2F1179-BLK1)			Prepared: 2022-06-09, Analyzed: 2022-06-14						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2F1179-BS1)			Prepared: 2022-06-09, Analyzed: 2022-06-14						
BOD, 5-day Carbonaceous	173	29.5 mg/L	180		96	85-115			
General Parameters, Batch B2F1200									
Blank (B2F1200-BLK1)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2F1200-BLK2)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2F1200-BS1)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	0.913	0.050 mg/L	1.00		91	85-115			
LCS (B2F1200-BS2)			Prepared: 2022-06-09, Analyzed: 2022-06-13						
Nitrogen, Total Kjeldahl	0.917	0.050 mg/L	1.00		92	85-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22F0799
2022-06-14 14:25

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2F1267									
Blank (B2F1267-BLK1)					Prepared: 2022-06-09, Analyzed: 2022-06-09				
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							
Blank (B2F1267-BLK2)					Prepared: 2022-06-09, Analyzed: 2022-06-09				
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							
LCS (B2F1267-BS1)					Prepared: 2022-06-09, Analyzed: 2022-06-09				
Alkalinity, Total (as CaCO3)	91.5	1.0 mg/L	100		91	80-120			
LCS (B2F1267-BS2)					Prepared: 2022-06-09, Analyzed: 2022-06-09				
Alkalinity, Total (as CaCO3)	92.0	1.0 mg/L	100		92	80-120			
Reference (B2F1267-SRM1)					Prepared: 2022-06-09, Analyzed: 2022-06-09				
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2F1267-SRM2)					Prepared: 2022-06-09, Analyzed: 2022-06-09				
pH	7.04	0.10 pH units	7.01		100	98-102			

Microbiological Parameters, Batch B2F0822

Blank (B2F0822-BLK1)					Prepared: 2022-06-07, Analyzed: 2022-06-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2F0822-BLK2)					Prepared: 2022-06-07, Analyzed: 2022-06-07				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2F0822-BLK3)					Prepared: 2022-06-07, Analyzed: 2022-06-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2F0822-BLK4)					Prepared: 2022-06-07, Analyzed: 2022-06-07				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2F0822-BLK5)					Prepared: 2022-06-07, Analyzed: 2022-06-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22F0800
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-06-06 14:28 / 16.5°C
PO NUMBER		COC NUMBER	44718.31271
PROJECT	BioSolids- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

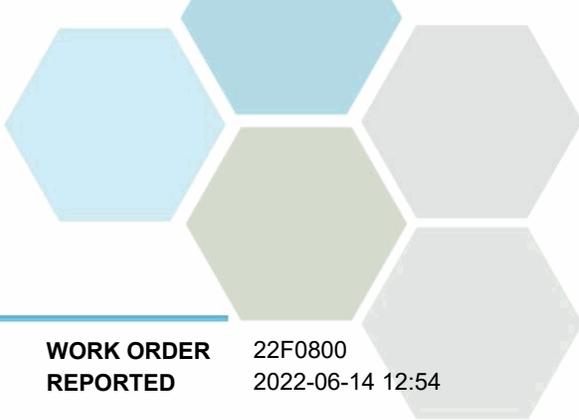
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22F0800
2022-06-14 12:54

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

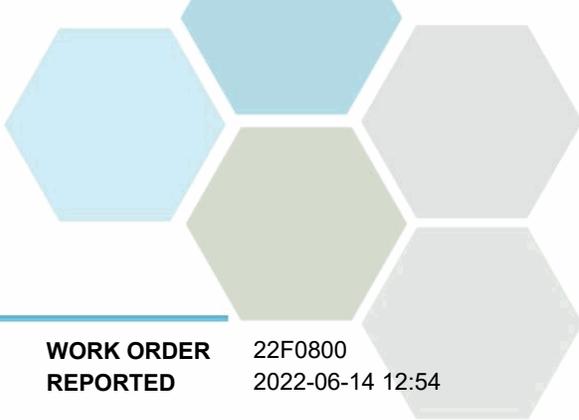
Biosolids (E233628) (22F0800-01) | Matrix: Sludge | Sampled: 2022-06-06 10:45

General Parameters

Moisture	75.3	1.0	% wet	2022-06-09	
Nitrogen, Total Kjeldahl	4.48	0.0004	% dry	2022-06-08	
pH (1:2 H2O Solution)	5.63	0.10	pH units	2022-06-08	PH1
Solids, Total	20.9	0.1	% wet	2022-06-10	
Solids, Volatile	84.6	0.1	% dry	2022-06-10	

Strong Acid Leachable Metals

Aluminum	2610	40	mg/kg dry	2022-06-13	
Antimony	2.62	0.10	mg/kg dry	2022-06-13	
Arsenic	2.26	0.30	mg/kg dry	2022-06-13	
Barium	119	1.0	mg/kg dry	2022-06-13	
Beryllium	< 0.10	0.10	mg/kg dry	2022-06-13	
Bismuth	32.2	0.10	mg/kg dry	2022-06-13	
Boron	8.1	2.0	mg/kg dry	2022-06-13	
Cadmium	1.28	0.040	mg/kg dry	2022-06-13	
Calcium	9510	100	mg/kg dry	2022-06-13	
Chromium	15.1	1.0	mg/kg dry	2022-06-13	
Cobalt	1.70	0.10	mg/kg dry	2022-06-13	
Copper	409	0.40	mg/kg dry	2022-06-13	
Iron	4180	20	mg/kg dry	2022-06-13	
Lead	13.7	0.20	mg/kg dry	2022-06-13	
Lithium	1.32	0.10	mg/kg dry	2022-06-13	
Magnesium	3650	10	mg/kg dry	2022-06-13	
Manganese	88.0	0.40	mg/kg dry	2022-06-13	
Mercury	0.439	0.040	mg/kg dry	2022-06-13	
Molybdenum	13.1	0.10	mg/kg dry	2022-06-13	
Nickel	14.8	0.60	mg/kg dry	2022-06-13	
Phosphorus	13300	10	mg/kg dry	2022-06-13	
Potassium	3890	40	mg/kg dry	2022-06-13	
Selenium	3.47	0.20	mg/kg dry	2022-06-13	
Silver	2.00	0.10	mg/kg dry	2022-06-13	
Sodium	582	50	mg/kg dry	2022-06-13	
Strontium	51.1	0.20	mg/kg dry	2022-06-13	
Sulfur	6420	1000	mg/kg dry	2022-06-13	
Tellurium	< 0.10	0.10	mg/kg dry	2022-06-13	
Thallium	< 0.10	0.10	mg/kg dry	2022-06-13	
Thorium	< 0.50	0.50	mg/kg dry	2022-06-13	
Tin	17.5	0.20	mg/kg dry	2022-06-13	
Titanium	83.2	1.0	mg/kg dry	2022-06-13	
Tungsten	0.77	0.20	mg/kg dry	2022-06-13	
Uranium	8.55	0.050	mg/kg dry	2022-06-13	
Vanadium	6.8	1.0	mg/kg dry	2022-06-13	
Zinc	798	2.0	mg/kg dry	2022-06-13	



TEST RESULTS

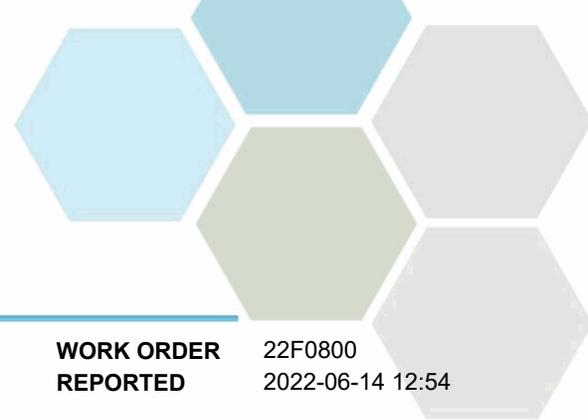
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22F0800
2022-06-14 12:54

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22F0800-01) Matrix: Sludge Sampled: 2022-06-06 10:45, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	< 4.0	2.0	mg/kg dry	2022-06-13	RA1

Sample Qualifiers:

- PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix
- RA1 The Reporting Limit has been raised due to matrix interference.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22F0800
2022-06-14 12:54

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

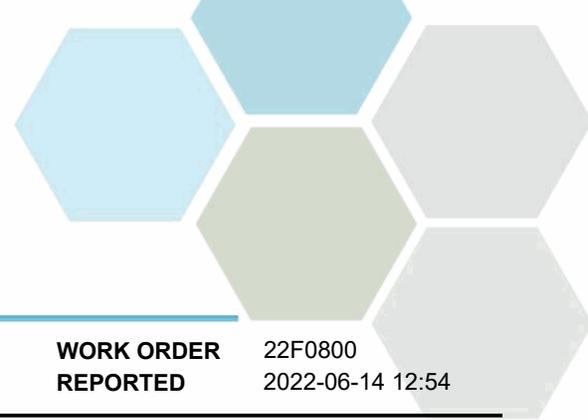
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22F0800
2022-06-14 12:54

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2F0833

Duplicate (B2F0833-DUP1)		Source: 22F0800-01		Prepared: 2022-06-07, Analyzed: 2022-06-08					
pH (1:2 H2O Solution)	5.65	0.10	pH units	5.63			< 1	10	

General Parameters, Batch B2F0853

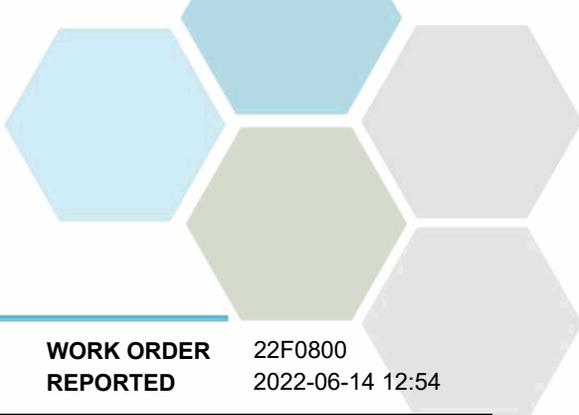
Blank (B2F0853-BLK1)		Prepared: 2022-06-07, Analyzed: 2022-06-08							
Nitrogen, Total Kjeldahl	< 0.010	0.010	% wet						
Duplicate (B2F0853-DUP1)		Source: 22F0800-01		Prepared: 2022-06-07, Analyzed: 2022-06-08					
Nitrogen, Total Kjeldahl	4.29	0.0004	% dry	4.48			4	25	
Reference (B2F0853-SRM1)		Prepared: 2022-06-07, Analyzed: 2022-06-08							
Nitrogen, Total Kjeldahl	0.254	0.010	% wet	0.281	90	58.8-150			

General Parameters, Batch B2F1209

Duplicate (B2F1209-DUP1)		Source: 22F0800-01		Prepared: 2022-06-10, Analyzed: 2022-06-10					
Solids, Total	20.9	0.1	% wet	20.9			< 1	7.5	
Solids, Volatile	84.6	0.1	% dry	84.6			< 1	15	
Reference (B2F1209-SRM1)		Prepared: 2022-06-10, Analyzed: 2022-06-10							
Solids, Total	92.2	0.1	% wet	93.5	99	80-120			
Solids, Volatile	3.0	0.1	% dry	4.00	75	80-200			

Strong Acid Leachable Metals, Batch B2F1633

Blank (B2F1633-BLK1)		Prepared: 2022-06-13, Analyzed: 2022-06-13							
Aluminum	< 40	40	mg/kg dry						
Antimony	< 0.10	0.10	mg/kg dry						
Arsenic	< 0.30	0.30	mg/kg dry						
Barium	< 1.0	1.0	mg/kg dry						
Beryllium	< 0.10	0.10	mg/kg dry						
Bismuth	< 0.10	0.10	mg/kg dry						
Boron	< 2.0	2.0	mg/kg dry						
Cadmium	< 0.040	0.040	mg/kg dry						
Calcium	< 100	100	mg/kg dry						

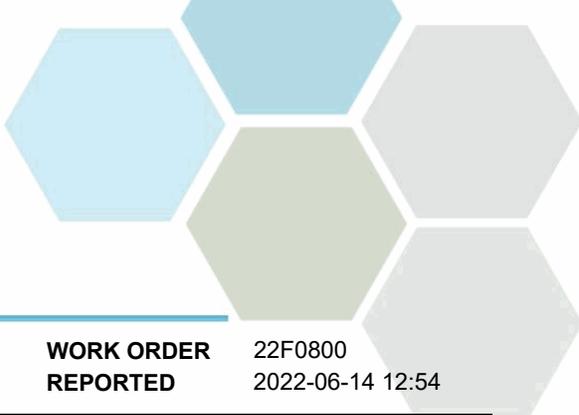


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22F0800
2022-06-14 12:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2F1633, Continued									
Blank (B2F1633-BLK1), Continued					Prepared: 2022-06-13, Analyzed: 2022-06-13				
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							
Blank (B2F1633-BLK2)					Prepared: 2022-06-13, Analyzed: 2022-06-13				
Mercury	< 0.040	0.040 mg/kg dry							
LCS (B2F1633-BS1)					Prepared: 2022-06-13, Analyzed: 2022-06-13				
Mercury	0.105	0.040 mg/kg dry	0.100		105	80-120			
LCS (B2F1633-BS2)					Prepared: 2022-06-13, Analyzed: 2022-06-13				
Aluminum	1010	40 mg/kg dry	1000		101	80-120			
Antimony	10.5	0.10 mg/kg dry	10.0		105	80-120			
Arsenic	10.5	0.30 mg/kg dry	10.0		105	80-120			
Barium	10.6	1.0 mg/kg dry	10.0		106	80-120			
Beryllium	8.50	0.10 mg/kg dry	10.0		85	80-120			
Bismuth	10.3	0.10 mg/kg dry	10.0		103	80-120			
Boron	9.0	2.0 mg/kg dry	10.0		90	80-120			
Cadmium	10.4	0.040 mg/kg dry	10.0		104	80-120			
Calcium	844	100 mg/kg dry	1000		84	80-120			
Chromium	10.3	1.0 mg/kg dry	10.0		103	80-120			
Cobalt	10.3	0.10 mg/kg dry	10.0		103	80-120			
Copper	10.4	0.40 mg/kg dry	10.0		104	80-120			
Iron	1020	20 mg/kg dry	1000		102	80-120			
Lead	10.5	0.20 mg/kg dry	10.0		105	80-120			
Lithium	8.51	0.10 mg/kg dry	10.0		85	80-120			
Magnesium	1030	10 mg/kg dry	1000		103	80-120			
Manganese	10.1	0.40 mg/kg dry	10.0		101	80-120			
Mercury	1.06	0.040 mg/kg dry	1.00		106	80-120			
Molybdenum	10.3	0.10 mg/kg dry	10.0		103	80-120			
Nickel	10.3	0.60 mg/kg dry	10.0		103	80-120			
Phosphorus	989	10 mg/kg dry	1000		99	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

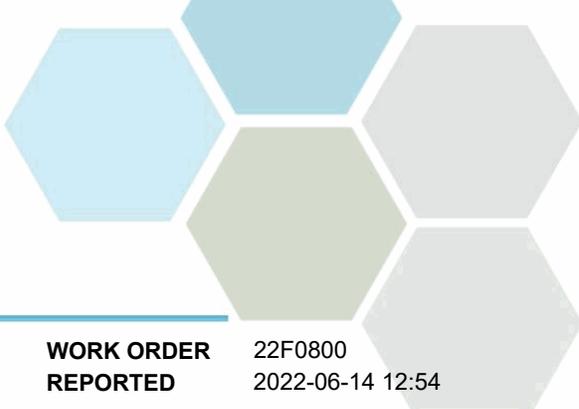
WORK ORDER REPORTED 22F0800
2022-06-14 12:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2F1633, Continued

LCS (B2F1633-BS2), Continued				Prepared: 2022-06-13, Analyzed: 2022-06-13					
Potassium	982	40 mg/kg dry	1000		98	80-120			
Selenium	9.22	0.20 mg/kg dry	10.0		92	80-120			
Silver	10.2	0.10 mg/kg dry	10.0		102	80-120			
Sodium	1020	50 mg/kg dry	1000		102	80-120			
Strontium	10.2	0.20 mg/kg dry	10.0		102	80-120			
Sulfur	9370	1000 mg/kg dry	10000		94	80-120			
Tellurium	10.2	0.10 mg/kg dry	10.0		102	80-120			
Thallium	10.1	0.10 mg/kg dry	10.0		101	80-120			
Thorium	10.6	0.50 mg/kg dry	10.0		106	80-120			
Tin	10.6	0.20 mg/kg dry	10.0		106	80-120			
Titanium	10.2	1.0 mg/kg dry	10.0		102	80-120			
Tungsten	10.8	0.20 mg/kg dry	10.0		108	80-120			
Uranium	10.8	0.050 mg/kg dry	10.0		108	80-120			
Vanadium	10.5	1.0 mg/kg dry	10.0		105	80-120			
Zinc	10.1	2.0 mg/kg dry	10.0		101	80-120			
Zirconium	10.4	2.0 mg/kg dry	10.0		104	80-120			

Duplicate (B2F1633-DUP1)				Source: 22F0800-01		Prepared: 2022-06-13, Analyzed: 2022-06-13			
Aluminum	2650	40 mg/kg dry	2610		2	21			
Antimony	1.93	0.10 mg/kg dry	2.62		30	30			
Arsenic	2.16	0.30 mg/kg dry	2.26		4	30			
Barium	120	1.0 mg/kg dry	119		< 1	35			
Beryllium	< 0.10	0.10 mg/kg dry	< 0.10			28			
Bismuth	31.2	0.10 mg/kg dry	32.2		3	30			
Boron	7.8	2.0 mg/kg dry	8.1			30			
Cadmium	1.24	0.040 mg/kg dry	1.28		3	30			
Calcium	9370	100 mg/kg dry	9510		1	29			
Chromium	14.2	1.0 mg/kg dry	15.1		6	30			
Cobalt	1.78	0.10 mg/kg dry	1.70		4	30			
Copper	409	0.40 mg/kg dry	409		< 1	30			
Iron	4300	20 mg/kg dry	4180		3	21			
Lead	13.5	0.20 mg/kg dry	13.7		2	40			
Lithium	1.33	0.10 mg/kg dry	1.32		1	22			
Magnesium	3670	10 mg/kg dry	3650		< 1	20			
Manganese	88.4	0.40 mg/kg dry	88.0		< 1	27			
Mercury	0.305	0.040 mg/kg dry	0.439		36	40			
Molybdenum	12.9	0.10 mg/kg dry	13.1		1	40			
Nickel	14.9	0.60 mg/kg dry	14.8		< 1	30			
Phosphorus	13200	10 mg/kg dry	13300		1	25			
Potassium	3850	40 mg/kg dry	3890		1	24			
Selenium	3.33	0.20 mg/kg dry	3.47		4	27			
Silver	1.76	0.10 mg/kg dry	2.00		13	40			
Sodium	576	50 mg/kg dry	582		1	27			
Strontium	51.3	0.20 mg/kg dry	51.1		< 1	30			
Sulfur	6150	1000 mg/kg dry	6420		4	28			
Tellurium	< 0.10	0.10 mg/kg dry	< 0.10			40			
Thallium	< 0.10	0.10 mg/kg dry	< 0.10			30			
Thorium	< 0.50	0.50 mg/kg dry	< 0.50			30			
Tin	17.5	0.20 mg/kg dry	17.5		< 1	40			
Titanium	68.3	1.0 mg/kg dry	83.2		20	40			
Tungsten	0.80	0.20 mg/kg dry	0.77			40			
Uranium	8.31	0.050 mg/kg dry	8.55		3	30			
Vanadium	6.7	1.0 mg/kg dry	6.8		< 1	20			
Zinc	780	2.0 mg/kg dry	798		2	30			
Zirconium	2.6	2.0 mg/kg dry	< 4.0			40			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22F0800
2022-06-14 12:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2F1633, Continued

Reference (B2F1633-SRM1)	Prepared: 2022-06-13, Analyzed: 2022-06-13								
Aluminum	13200	40 mg/kg dry	11500		114	70-130			
Antimony	0.71	0.10 mg/kg dry	0.724		99	70-130			
Arsenic	94.1	0.30 mg/kg dry	82.1		115	70-130			
Barium	48.7	1.0 mg/kg dry	40.0		122	70-130			
Beryllium	0.35	0.10 mg/kg dry	0.369		94	70-130			
Calcium	4780	100 mg/kg dry	5170		92	70-130			
Chromium	72.6	1.0 mg/kg dry	63.1		115	70-130			
Cobalt	11.7	0.10 mg/kg dry	10.4		112	70-130			
Copper	23.0	0.40 mg/kg dry	19.8		116	70-130			
Iron	21900	20 mg/kg dry	20200		109	70-130			
Lead	18.1	0.20 mg/kg dry	17.3		105	70-130			
Magnesium	6880	10 mg/kg dry	6090		113	70-130			
Manganese	342	0.40 mg/kg dry	315		109	70-130			
Mercury	0.123	0.040 mg/kg dry	0.110		112	70-130			
Molybdenum	0.69	0.10 mg/kg dry	0.619		111	70-130			
Nickel	36.2	0.60 mg/kg dry	31.7		114	70-130			
Phosphorus	482	10 mg/kg dry	420		115	70-130			
Silver	1.80	0.10 mg/kg dry	1.75		103	70-130			
Strontium	24.5	0.20 mg/kg dry	20.3		121	70-130			
Titanium	789	1.0 mg/kg dry	645		122	70-130			
Uranium	1.24	0.050 mg/kg dry	1.18		105	70-130			
Vanadium	40.0	1.0 mg/kg dry	33.5		119	70-130			
Zinc	42.7	2.0 mg/kg dry	40.2		106	70-130			

CERTIFICATE OF ANALYSIS

REPORTED TO Lake Country, District of (Wastewater)
4062 Beaver Lake Rd
LAKE COUNTRY, BC V4V 1T5

ATTENTION Davin Larsen

PO NUMBER

PROJECT Raw Influent- PE14651

PROJECT INFO Lake Country WWTP

WORK ORDER 22E0984

RECEIVED / TEMP 2022-05-09 11:03 / 14.2°C

REPORTED 2022-05-16 16:23

COC NUMBER 44690.32988

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.

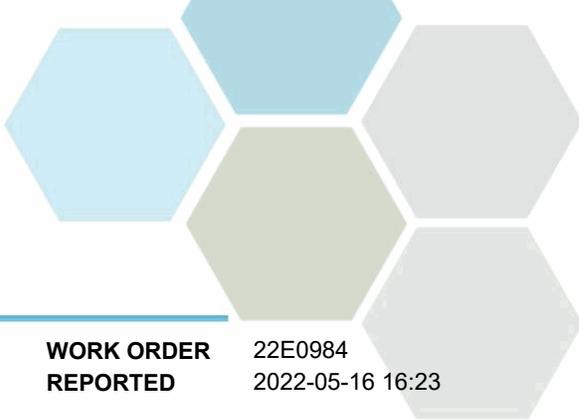
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

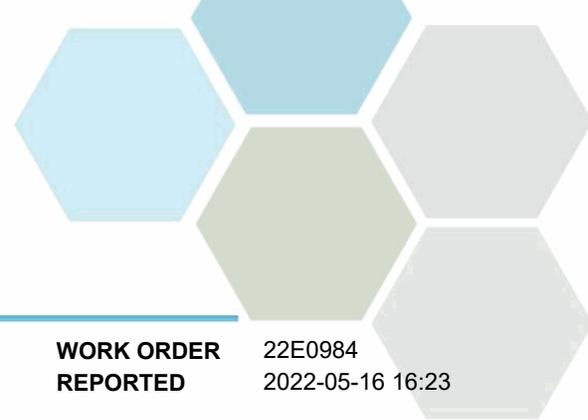
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22E0984
2022-05-16 16:23

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22E0984-01) Matrix: Wastewater Sampled: 2022-05-09 10:30					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-05-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-05-11	
Phosphate (as P)	4.74	0.0050	mg/L	2022-05-11	
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	95.2	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	432	1.0	mg/L	2022-05-10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Bicarbonate (as CaCO3)	432	1.0	mg/L	2022-05-10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Ammonia, Total (as N)	67.6	0.050	mg/L	2022-05-11	
BOD, 5-day	407	2.0	mg/L	2022-05-16	
BOD, 5-day Carbonaceous	346	2.0	mg/L	2022-05-16	
Nitrogen, Total Kjeldahl	95.2	0.050	mg/L	2022-05-13	
pH	8.03	0.10	pH units	2022-05-10	HT2
Phosphorus, Total (as P)	10.2	0.0050	mg/L	2022-05-12	
Solids, Total Suspended	300	2.0	mg/L	2022-05-13	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22E0984
2022-05-16 16:23

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

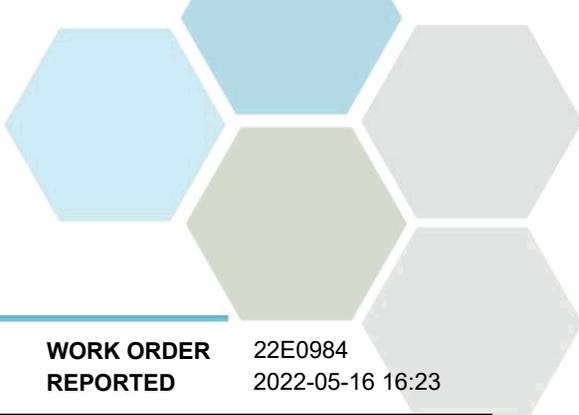
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22E0984
2022-05-16 16:23

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:

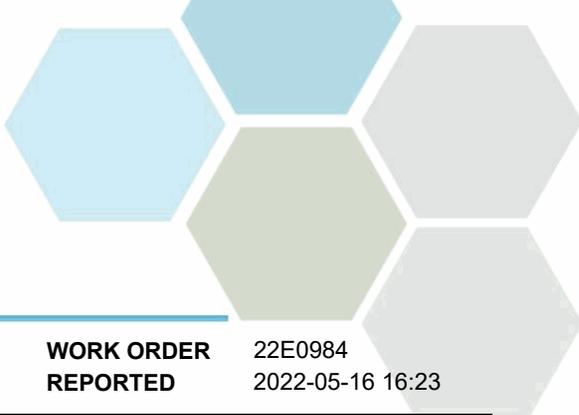
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected 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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2E1118									
Blank (B2E1118-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E1118-BLK2)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E1118-BLK3)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E1118-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Nitrate (as N)	3.93	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	0.961	0.0050 mg/L	1.00		96	80-120			
LCS (B2E1118-BS2)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Nitrate (as N)	3.91	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.02	0.010 mg/L	2.00		101	85-115			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			
LCS (B2E1118-BS3)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
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			
Phosphate (as P)	1.09	0.0050 mg/L	1.00		109	80-120			

General Parameters, Batch B2E1161

Blank (B2E1161-BLK1)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
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							

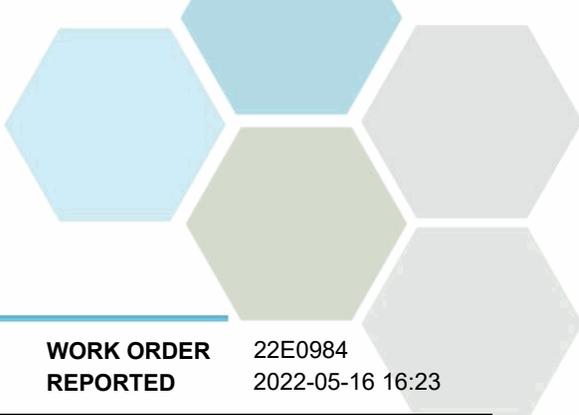


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22E0984
2022-05-16 16:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2E1161, Continued									
Blank (B2E1161-BLK1), Continued			Prepared: 2022-05-10, Analyzed: 2022-05-10						
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Blank (B2E1161-BLK2)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
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							
LCS (B2E1161-BS1)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
Alkalinity, Total (as CaCO3)	102	1.0 mg/L	100		102	80-120			
LCS (B2E1161-BS2)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
Alkalinity, Total (as CaCO3)	98.3	1.0 mg/L	100		98	80-120			
Reference (B2E1161-SRM1)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
pH	7.04	0.10 pH units	7.01		100	98-102			
Reference (B2E1161-SRM2)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
pH	7.05	0.10 pH units	7.01		101	98-102			
General Parameters, Batch B2E1267									
Blank (B2E1267-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2E1267-BLK2)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2E1267-BLK3)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2E1267-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	0.998	0.050 mg/L	1.00		100	90-115			
LCS (B2E1267-BS2)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	0.998	0.050 mg/L	1.00		100	90-115			
LCS (B2E1267-BS3)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	0.996	0.050 mg/L	1.00		100	90-115			
General Parameters, Batch B2E1287									
Blank (B2E1287-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-16						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2E1287-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-16						
BOD, 5-day	189	44.3 mg/L	180		105	85-115			
General Parameters, Batch B2E1288									
Blank (B2E1288-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-16						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2E1288-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-16						
BOD, 5-day Carbonaceous	177	33.8 mg/L	180		98	85-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22E0984
2022-05-16 16:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2E1344									
Blank (B2E1344-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E1344-BLK2)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E1344-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	0.104	0.0050 mg/L	0.100		104	85-115			
LCS (B2E1344-BS2)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	0.104	0.0050 mg/L	0.100		104	85-115			
General Parameters, Batch B2E1346									
Blank (B2E1346-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2E1346-BLK2)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2E1346-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	1.06	0.050 mg/L	1.00		106	85-115			
LCS (B2E1346-BS2)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	1.06	0.050 mg/L	1.00		106	85-115			
General Parameters, Batch B2E1524									
Blank (B2E1524-BLK1)			Prepared: 2022-05-13, Analyzed: 2022-05-13						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2E1524-BS1)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Solids, Total Suspended	87.0	2.0 mg/L	100		87	85-115			
Duplicate (B2E1524-DUP1)			Source: 22E0984-01 Prepared: 2022-05-13, Analyzed: 2022-05-13						
Solids, Total Suspended	330	2.0 mg/L		300			10	20	



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22E0985
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-05-09 11:03 / 14.2°C
PO NUMBER		REPORTED	2022-05-16 15:28
PROJECT	Final Effluent- PE14651	COC NUMBER	44690.32988
PROJECT INFO	Lake Country WWTP		

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.

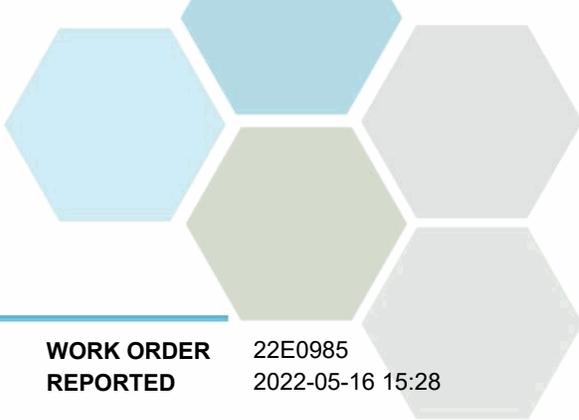
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22E0985
2022-05-16 15:28

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

Final Effluent (E233626) (22E0985-01) | Matrix: Wastewater | Sampled: 2022-05-09 10:05

Anions

Chloride	113	0.10	mg/L	2022-05-11	
Nitrate (as N)	1.43	0.010	mg/L	2022-05-11	
Nitrite (as N)	0.176	0.010	mg/L	2022-05-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-05-11	

Calculated Parameters

Nitrate+Nitrite (as N)	1.60	0.0100	mg/L	N/A	
Nitrogen, Total	6.71	0.100	mg/L	N/A	
Nitrogen, Organic	2.15	0.100	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	194	1.0	mg/L	2022-05-10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Bicarbonate (as CaCO3)	194	1.0	mg/L	2022-05-10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Ammonia, Total (as N)	2.96	0.050	mg/L	2022-05-11	
BOD, 5-day Carbonaceous	4.6	2.0	mg/L	2022-05-16	
Nitrogen, Total Kjeldahl	5.11	0.050	mg/L	2022-05-13	
pH	7.00	0.10	pH units	2022-05-10	HT2
Phosphorus, Total (as P)	0.476	0.0050	mg/L	2022-05-12	
Solids, Total Suspended	9.4	2.0	mg/L	2022-05-13	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-05-09	
Coliforms, Fecal (Q-Tray)	46100	1	MPN/100 mL	2022-05-09	

Trip Blank (22E0985-02) | Matrix: Wastewater | Sampled: 2022-05-09

Anions

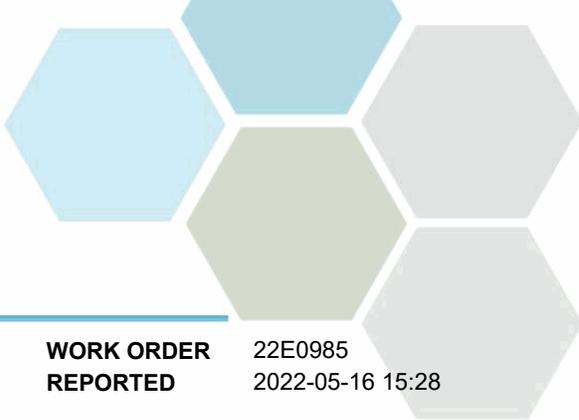
Chloride	< 0.10	0.10	mg/L	2022-05-11	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-05-11	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-05-11	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-05-11	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
Nitrogen, Organic	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-05-10	



TEST RESULTS

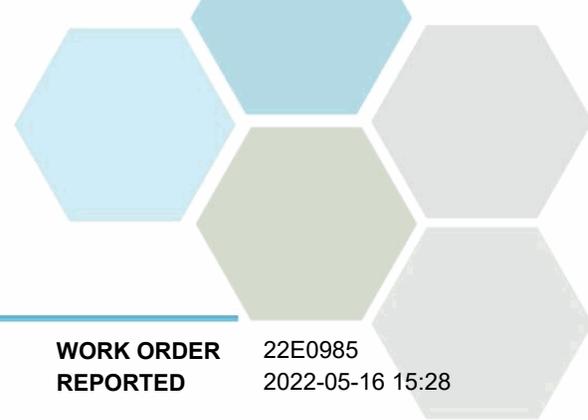
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22E0985
2022-05-16 15:28

Analyte	Result	RL	Units	Analyzed	Qualifier
Trip Blank (22E0985-02) Matrix: Wastewater Sampled: 2022-05-09, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0	mg/L	2022-05-10	
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2022-05-10	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-05-11	
BOD, 5-day Carbonaceous	< 4.1	2.0	mg/L	2022-05-16	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-05-13	
pH	4.41	0.10	pH units	2022-05-10	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-05-12	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-05-13	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-05-09	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-05-09	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22E0985
2022-05-16 15:28

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

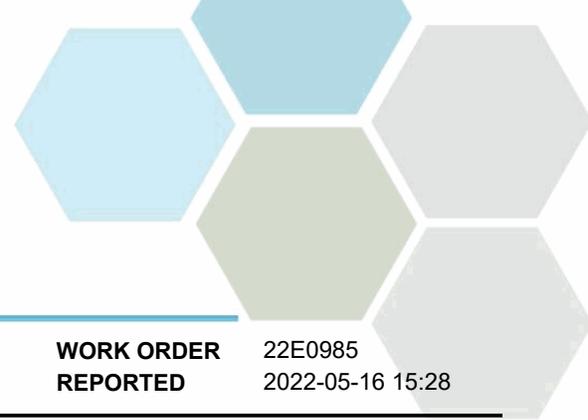
Glossary of Terms:

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
>	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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22E0985
2022-05-16 15:28

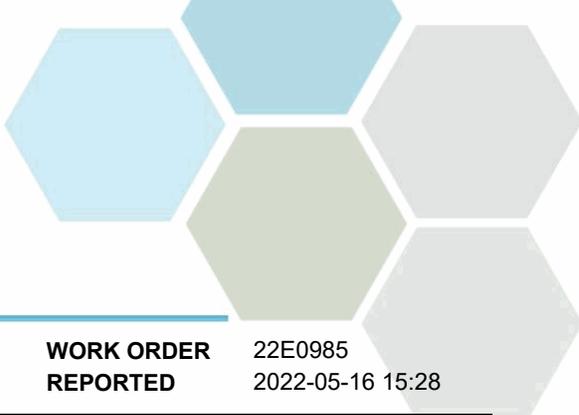
The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2E1118									
Blank (B2E1118-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
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							
Blank (B2E1118-BLK2)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E1118-BLK3)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E1118-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Chloride	15.7	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	3.93	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		100	85-115			
Phosphate (as P)	0.961	0.0050 mg/L	1.00		96	80-120			
LCS (B2E1118-BS2)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Chloride	15.7	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	3.91	0.010 mg/L	4.00		98	90-110			
Nitrite (as N)	2.02	0.010 mg/L	2.00		101	85-115			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			
LCS (B2E1118-BS3)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Chloride	15.6	0.10 mg/L	16.0		98	90-110			
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			
Phosphate (as P)	1.09	0.0050 mg/L	1.00		109	80-120			

General Parameters, Batch B2E1161

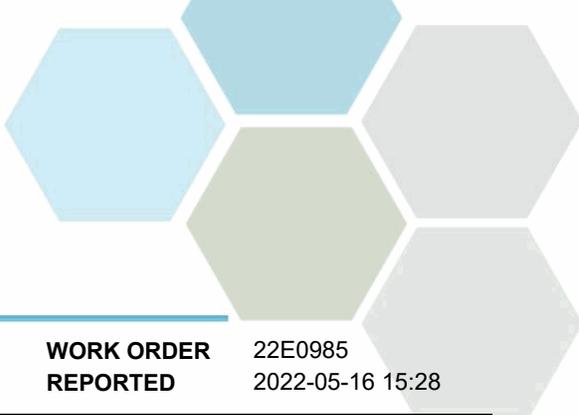


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22E0985
2022-05-16 15:28

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2E1161, Continued									
Blank (B2E1161-BLK1)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
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							
Blank (B2E1161-BLK2)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
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							
LCS (B2E1161-BS1)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
Alkalinity, Total (as CaCO3)	102	1.0 mg/L	100		102	80-120			
LCS (B2E1161-BS2)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
Alkalinity, Total (as CaCO3)	98.3	1.0 mg/L	100		98	80-120			
Reference (B2E1161-SRM1)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
pH	7.04	0.10 pH units	7.01		100	98-102			
Reference (B2E1161-SRM2)			Prepared: 2022-05-10, Analyzed: 2022-05-10						
pH	7.05	0.10 pH units	7.01		101	98-102			
General Parameters, Batch B2E1267									
Blank (B2E1267-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2E1267-BLK2)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2E1267-BLK3)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2E1267-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	0.998	0.050 mg/L	1.00		100	90-115			
LCS (B2E1267-BS2)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	0.998	0.050 mg/L	1.00		100	90-115			
LCS (B2E1267-BS3)			Prepared: 2022-05-11, Analyzed: 2022-05-11						
Ammonia, Total (as N)	0.996	0.050 mg/L	1.00		100	90-115			
General Parameters, Batch B2E1288									
Blank (B2E1288-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-16						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2E1288-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-16						
BOD, 5-day Carbonaceous	177	33.8 mg/L	180		98	85-115			
General Parameters, Batch B2E1344									



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22E0985
2022-05-16 15:28

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2E1344, Continued									
Blank (B2E1344-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E1344-BLK2)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E1344-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	0.104	0.0050 mg/L	0.100		104	85-115			
LCS (B2E1344-BS2)			Prepared: 2022-05-11, Analyzed: 2022-05-12						
Phosphorus, Total (as P)	0.104	0.0050 mg/L	0.100		104	85-115			
General Parameters, Batch B2E1346									
Blank (B2E1346-BLK1)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2E1346-BLK2)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2E1346-BS1)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	1.06	0.050 mg/L	1.00		106	85-115			
LCS (B2E1346-BS2)			Prepared: 2022-05-11, Analyzed: 2022-05-13						
Nitrogen, Total Kjeldahl	1.06	0.050 mg/L	1.00		106	85-115			
General Parameters, Batch B2E1524									
Blank (B2E1524-BLK1)			Prepared: 2022-05-13, Analyzed: 2022-05-13						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2E1524-BS1)			Prepared: 2022-05-12, Analyzed: 2022-05-12						
Solids, Total Suspended	87.0	2.0 mg/L	100		87	85-115			
Microbiological Parameters, Batch B2E1014									
Blank (B2E1014-BLK1)			Prepared: 2022-05-09, Analyzed: 2022-05-09						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2E1014-BLK2)			Prepared: 2022-05-09, Analyzed: 2022-05-09						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2E1014-DUP1)			Source: 22E0985-01		Prepared: 2022-05-09, Analyzed: 2022-05-09				
Coliforms, Total (Q-Tray)	242000	1 MPN/100 mL		> 242000			< 1	80	
Duplicate (B2E1014-DUP2)			Source: 22E0985-01		Prepared: 2022-05-09, Analyzed: 2022-05-09				
Coliforms, Fecal (Q-Tray)	48800	1 MPN/100 mL		46100			6	80	



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22E0986
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-05-09 11:03 / 14.2°C
PO NUMBER		COC NUMBER	44690.32988
PROJECT	BioSolids- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

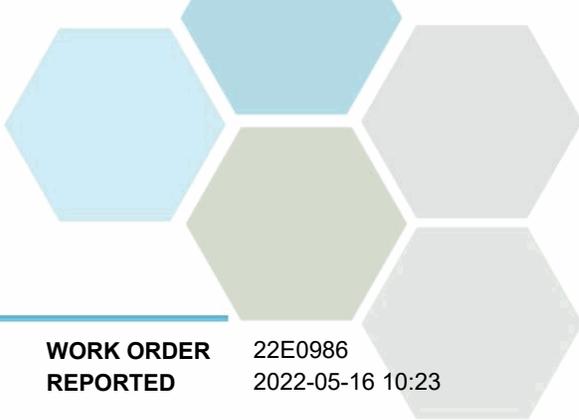
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22E0986
2022-05-16 10:23

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

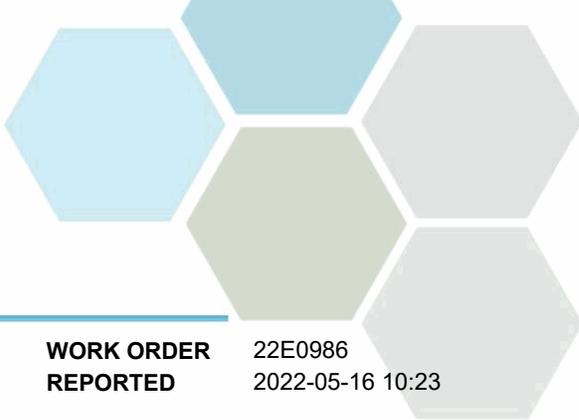
Biosolids (E233628) (22E0986-01) | Matrix: Sludge | Sampled: 2022-05-09 09:30

General Parameters

Moisture	78.7	1.0	% wet	2022-05-10	
Nitrogen, Total Kjeldahl	5.01	0.0004	% dry	2022-05-13	
pH (1:2 H2O Solution)	5.76	0.10	pH units	2022-05-13	PH1
Solids, Total	21.3	0.1	% wet	2022-05-12	
Solids, Volatile	86.4	0.1	% dry	2022-05-12	

Strong Acid Leachable Metals

Aluminum	2100	40	mg/kg dry	2022-05-13	
Antimony	0.91	0.10	mg/kg dry	2022-05-13	
Arsenic	1.30	0.30	mg/kg dry	2022-05-13	
Barium	68.0	1.0	mg/kg dry	2022-05-13	
Beryllium	< 0.10	0.10	mg/kg dry	2022-05-13	
Bismuth	19.4	0.10	mg/kg dry	2022-05-13	
Boron	8.9	2.0	mg/kg dry	2022-05-13	
Cadmium	0.807	0.040	mg/kg dry	2022-05-13	
Calcium	11100	100	mg/kg dry	2022-05-13	
Chromium	10.4	1.0	mg/kg dry	2022-05-13	
Cobalt	1.09	0.10	mg/kg dry	2022-05-13	
Copper	270	0.40	mg/kg dry	2022-05-13	
Iron	2610	20	mg/kg dry	2022-05-13	
Lead	7.73	0.20	mg/kg dry	2022-05-13	
Lithium	0.97	0.10	mg/kg dry	2022-05-13	
Magnesium	2770	10	mg/kg dry	2022-05-13	
Manganese	61.2	0.40	mg/kg dry	2022-05-13	
Mercury	0.246	0.040	mg/kg dry	2022-05-13	
Molybdenum	6.75	0.10	mg/kg dry	2022-05-13	
Nickel	8.17	0.60	mg/kg dry	2022-05-13	
Phosphorus	10300	10	mg/kg dry	2022-05-13	
Potassium	3430	40	mg/kg dry	2022-05-13	
Selenium	2.64	0.20	mg/kg dry	2022-05-13	
Silver	1.08	0.10	mg/kg dry	2022-05-13	
Sodium	631	50	mg/kg dry	2022-05-13	
Strontium	41.3	0.20	mg/kg dry	2022-05-13	
Sulfur	5230	1000	mg/kg dry	2022-05-13	
Tellurium	< 0.10	0.10	mg/kg dry	2022-05-13	
Thallium	< 0.10	0.10	mg/kg dry	2022-05-13	
Thorium	< 0.50	0.50	mg/kg dry	2022-05-13	
Tin	10.9	0.20	mg/kg dry	2022-05-13	
Titanium	36.4	1.0	mg/kg dry	2022-05-13	
Tungsten	0.45	0.20	mg/kg dry	2022-05-13	
Uranium	5.46	0.050	mg/kg dry	2022-05-13	
Vanadium	4.6	2.5	mg/kg dry	2022-05-13	
Zinc	528	2.0	mg/kg dry	2022-05-13	



TEST RESULTS

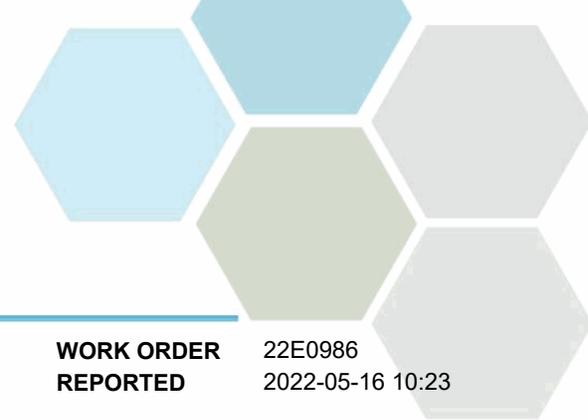
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22E0986
2022-05-16 10:23

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22E0986-01) Matrix: Sludge Sampled: 2022-05-09 09:30, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	2.6	2.0	mg/kg dry	2022-05-13	

Sample Qualifiers:

PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22E0986
2022-05-16 10:23

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

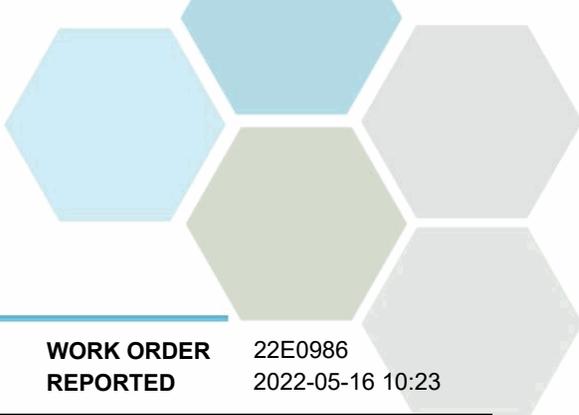
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22E0986
2022-05-16 10:23

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2E1134

Duplicate (B2E1134-DUP1)		Source: 22E0986-01		Prepared: 2022-05-10, Analyzed: 2022-05-10					
Moisture	99.0	1.0	% wet	78.7			22.8	40	
Reference (B2E1134-SRM1)				Prepared: 2022-05-10, Analyzed: 2022-05-10					
Moisture	99.0	1.0	% wet	6.5	99	80-120			

General Parameters, Batch B2E1139

Duplicate (B2E1139-DUP1)		Source: 22E0986-01		Prepared: 2022-05-12, Analyzed: 2022-05-12					
Solids, Total	21.4	0.1	% wet	21.3			< 1	7.5	
Solids, Volatile	86.3	0.1	% dry	86.4			< 1	15	
Reference (B2E1139-SRM1)				Prepared: 2022-05-12, Analyzed: 2022-05-12					
Solids, Total	92.7	0.1	% wet	93.5	99	80-120			
Solids, Volatile	3.7	0.1	% dry	4.00	93	80-200			

General Parameters, Batch B2E1374

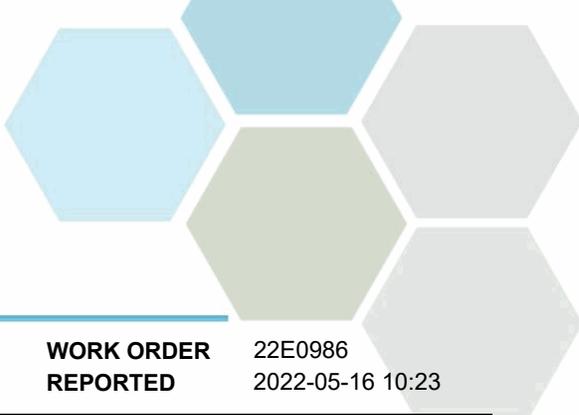
Duplicate (B2E1374-DUP1)		Source: 22E0986-01		Prepared: 2022-05-11, Analyzed: 2022-05-13					
pH (1:2 H2O Solution)	5.80	0.10	pH units	5.76			< 1	10	

General Parameters, Batch B2E1467

Blank (B2E1467-BLK1)				Prepared: 2022-05-12, Analyzed: 2022-05-13					
Nitrogen, Total Kjeldahl	< 0.010	0.010	% wet						
Reference (B2E1467-SRM1)				Prepared: 2022-05-12, Analyzed: 2022-05-13					
Nitrogen, Total Kjeldahl	0.312	0.010	% wet	0.281	111	58.8-150			

Strong Acid Leachable Metals, Batch B2E1495

Blank (B2E1495-BLK1)				Prepared: 2022-05-12, Analyzed: 2022-05-13					
Aluminum	< 40	40	mg/kg dry						
Antimony	< 0.10	0.10	mg/kg dry						
Arsenic	< 0.30	0.30	mg/kg dry						
Barium	< 1.0	1.0	mg/kg dry						



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22E0986
2022-05-16 10:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2E1495, Continued

Blank (B2E1495-BLK1), Continued

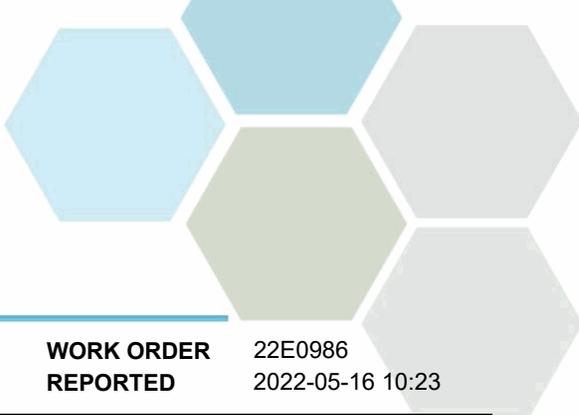
Prepared: 2022-05-12, Analyzed: 2022-05-13

Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 2.5	2.5 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2E1495-BS1)

Prepared: 2022-05-12, Analyzed: 2022-05-13

Aluminum	< 40	40 mg/kg dry	2.00		111	80-120			
Antimony	1.94	0.10 mg/kg dry	2.00		97	80-120			
Arsenic	1.97	0.30 mg/kg dry	2.00		99	80-120			
Barium	2.0	1.0 mg/kg dry	2.00		100	80-120			
Beryllium	1.94	0.10 mg/kg dry	2.00		97	80-120			
Bismuth	1.75	0.10 mg/kg dry	2.00		88	80-120			
Boron	2.3	2.0 mg/kg dry	2.00		117	80-120			
Cadmium	1.97	0.040 mg/kg dry	2.00		99	80-120			
Calcium	192	100 mg/kg dry	200		96	80-120			
Chromium	2.0	1.0 mg/kg dry	2.00		102	80-120			
Cobalt	2.02	0.10 mg/kg dry	2.00		101	80-120			
Copper	1.98	0.40 mg/kg dry	2.00		99	80-120			
Iron	206	20 mg/kg dry	200		103	80-120			
Lead	1.80	0.20 mg/kg dry	2.00		90	80-120			
Lithium	1.89	0.10 mg/kg dry	2.00		95	80-120			
Magnesium	200	10 mg/kg dry	200		100	80-120			
Manganese	2.00	0.40 mg/kg dry	2.00		100	80-120			
Mercury	0.099	0.040 mg/kg dry	0.100		99	80-120			
Molybdenum	1.97	0.10 mg/kg dry	2.00		98	80-120			
Nickel	2.02	0.60 mg/kg dry	2.00		101	80-120			
Phosphorus	195	10 mg/kg dry	200		98	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22E0986
2022-05-16 10:23

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2E1495, Continued

LCS (B2E1495-BS1), Continued				Prepared: 2022-05-12, Analyzed: 2022-05-13					
Potassium	199	40 mg/kg dry	200		99	80-120			
Selenium	1.91	0.20 mg/kg dry	2.00		95	80-120			
Silver	2.04	0.10 mg/kg dry	2.00		102	80-120			
Sodium	197	50 mg/kg dry	200		98	80-120			
Strontium	2.00	0.20 mg/kg dry	2.00		100	80-120			
Sulfur	< 1000	1000 mg/kg dry	500		93	80-120			
Tellurium	1.94	0.10 mg/kg dry	2.00		97	80-120			
Thallium	1.80	0.10 mg/kg dry	2.00		90	80-120			
Thorium	1.80	0.50 mg/kg dry	2.00		90	80-120			
Tin	2.02	0.20 mg/kg dry	2.00		101	80-120			
Titanium	2.0	1.0 mg/kg dry	2.00		100	80-120			
Tungsten	1.96	0.20 mg/kg dry	2.00		98	80-120			
Uranium	1.81	0.050 mg/kg dry	2.00		91	80-120			
Vanadium	2.1	1.0 mg/kg dry	2.00		103	80-120			
Zinc	2.0	2.0 mg/kg dry	2.00		100	80-120			
Zirconium	2.0	2.0 mg/kg dry	2.00		102	80-120			

Reference (B2E1495-SRM1)				Prepared: 2022-05-12, Analyzed: 2022-05-13					
Aluminum	11300	40 mg/kg dry	11500		99	70-130			
Antimony	0.61	0.10 mg/kg dry	0.724		84	70-130			
Arsenic	83.1	0.30 mg/kg dry	82.1		101	70-130			
Barium	43.3	1.0 mg/kg dry	40.0		108	70-130			
Beryllium	0.40	0.10 mg/kg dry	0.369		110	70-130			
Calcium	5090	100 mg/kg dry	5170		98	70-130			
Chromium	63.2	1.0 mg/kg dry	63.1		100	70-130			
Cobalt	10.3	0.10 mg/kg dry	10.4		99	70-130			
Copper	20.2	0.40 mg/kg dry	19.8		102	70-130			
Iron	19700	20 mg/kg dry	20200		98	70-130			
Lead	16.0	0.20 mg/kg dry	17.3		93	70-130			
Magnesium	5910	10 mg/kg dry	6090		97	70-130			
Manganese	304	0.40 mg/kg dry	315		97	70-130			
Mercury	0.114	0.040 mg/kg dry	0.110		104	70-130			
Molybdenum	0.60	0.10 mg/kg dry	0.619		97	70-130			
Nickel	30.7	0.60 mg/kg dry	31.7		97	70-130			
Phosphorus	420	10 mg/kg dry	420		100	70-130			
Silver	1.49	0.10 mg/kg dry	1.75		85	70-130			
Strontium	20.1	0.20 mg/kg dry	20.3		99	70-130			
Titanium	638	1.0 mg/kg dry	645		99	70-130			
Uranium	1.06	0.050 mg/kg dry	1.18		90	70-130			
Vanadium	33.9	2.5 mg/kg dry	33.5		101	70-130			
Zinc	39.9	2.0 mg/kg dry	40.2		99	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22D2832
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-04-25 12:26 / 14.2°C
PO NUMBER	104395-10-9007	REPORTED	2022-05-02 15:36
PROJECT	Raw Influent- PE14651	COC NUMBER	44676.31027
PROJECT INFO	Lake Country WWTP		

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.

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

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22D2832
2022-05-02 15:36

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22D2832-01) Matrix: Wastewater Sampled: 2022-04-25 11:15					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-04-30	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-04-30	HT1
Phosphate (as P)	5.46	0.0050	mg/L	2022-04-30	HT1
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	104	2.50	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	431	1.0	mg/L	2022-04-30	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Alkalinity, Bicarbonate (as CaCO3)	431	1.0	mg/L	2022-04-30	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Ammonia, Total (as N)	64.2	0.050	mg/L	2022-04-28	
BOD, 5-day	444	2.0	mg/L	2022-05-02	
BOD, 5-day Carbonaceous	297	2.0	mg/L	2022-05-02	
Nitrogen, Total Kjeldahl	104	0.050	mg/L	2022-05-02	
pH	7.77	0.10	pH units	2022-04-30	HT2
Phosphorus, Total (as P)	11.0	0.0050	mg/L	2022-05-02	
Solids, Total Suspended	192	2.0	mg/L	2022-04-29	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22D2832
2022-05-02 15:36

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
Biochemical Oxygen Demand, Carbonaceous 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
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

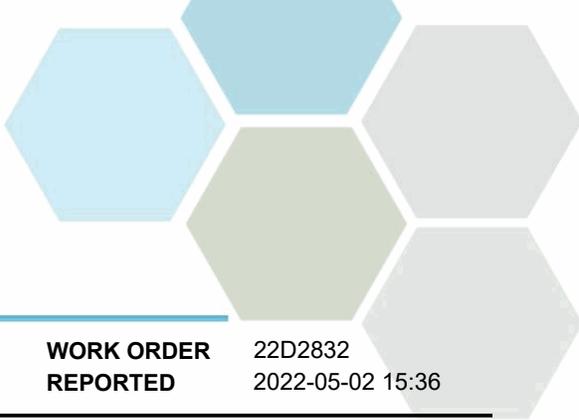
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

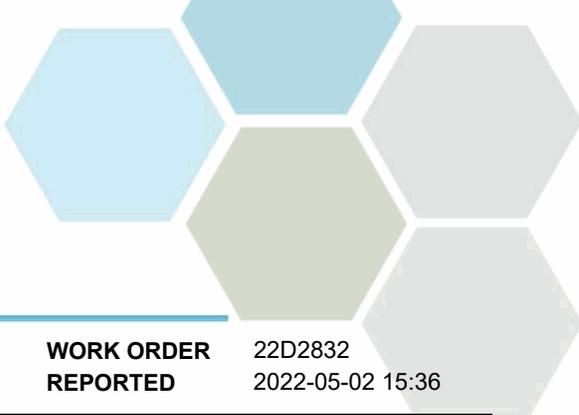
WORK ORDER REPORTED 22D2832
2022-05-02 15:36

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2D2316									
Blank (B2D2316-BLK1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2D2316-BLK2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2D2316-BS1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Nitrate (as N)	3.99	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.13	0.010 mg/L	2.00		106	85-115			
Phosphate (as P)	1.10	0.0050 mg/L	1.00		110	80-120			
LCS (B2D2316-BS2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Nitrate (as N)	4.24	0.010 mg/L	4.00		106	90-110			
Nitrite (as N)	1.98	0.010 mg/L	2.00		99	85-115			
Phosphate (as P)	1.12	0.0050 mg/L	1.00		112	80-120			
General Parameters, Batch B2D2672									
Blank (B2D2672-BLK1)			Prepared: 2022-04-27, Analyzed: 2022-05-02						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2D2672-BS1)			Prepared: 2022-04-27, Analyzed: 2022-05-02						
BOD, 5-day	183	43.4 mg/L	180		102	85-115			
General Parameters, Batch B2D2674									
Blank (B2D2674-BLK1)			Prepared: 2022-04-27, Analyzed: 2022-05-02						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2D2674-BS1)			Prepared: 2022-04-27, Analyzed: 2022-05-02						
BOD, 5-day Carbonaceous	193	2.0 mg/L	180		107	85-115			

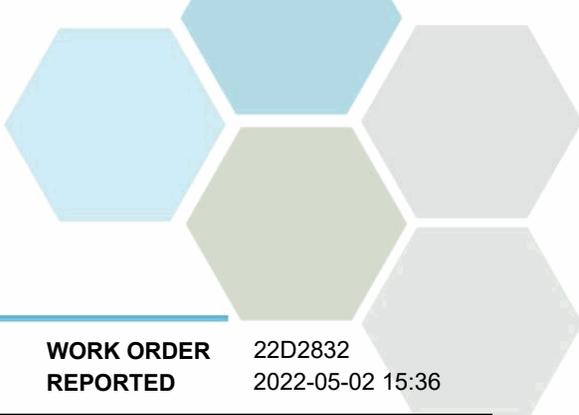


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22D2832
2022-05-02 15:36

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2D2797									
Blank (B2D2797-BLK1)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK2)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK3)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK4)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK5)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2D2797-BS1)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.983	0.050 mg/L	1.00		98	90-115			
LCS (B2D2797-BS2)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.970	0.050 mg/L	1.00		97	90-115			
LCS (B2D2797-BS3)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.965	0.050 mg/L	1.00		96	90-115			
LCS (B2D2797-BS4)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.956	0.050 mg/L	1.00		96	90-115			
LCS (B2D2797-BS5)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.960	0.050 mg/L	1.00		96	90-115			
General Parameters, Batch B2D2981									
Blank (B2D2981-BLK1)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2D2981-BS1)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
Solids, Total Suspended	92.0	5.0 mg/L	100		92	85-115			
General Parameters, Batch B2D3068									
Blank (B2D3068-BLK1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
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							
Blank (B2D3068-BLK2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
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							
Blank (B2D3068-BLK3)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
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							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22D2832
2022-05-02 15:36

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2D3068, Continued									
Blank (B2D3068-BLK3), Continued			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0 mg/L							
LCS (B2D3068-BS1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Total (as CaCO ₃)	82.9	1.0 mg/L	100		83	80-120			
LCS (B2D3068-BS2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Total (as CaCO ₃)	101	1.0 mg/L	100		101	80-120			
LCS (B2D3068-BS3)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Total (as CaCO ₃)	101	1.0 mg/L	100		101	80-120			
Reference (B2D3068-SRM1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
pH	6.98	0.10 pH units	7.01		100	98-102			
Reference (B2D3068-SRM2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
pH	7.02	0.10 pH units	7.01		100	98-102			
Reference (B2D3068-SRM3)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
pH	6.98	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2E0016									
Blank (B2E0016-BLK1)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2E0016-BLK2)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2E0016-BS1)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			
LCS (B2E0016-BS2)			Prepared: 2022-05-01, Analyzed: 2022-05-02						
Nitrogen, Total Kjeldahl	1.02	0.050 mg/L	1.00		102	85-115			
General Parameters, Batch B2E0035									
Blank (B2E0035-BLK1)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E0035-BLK2)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E0035-BLK3)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E0035-BS1)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
LCS (B2E0035-BS2)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
LCS (B2E0035-BS3)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22D2833
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-04-25 12:26 / 14.2°C
PO NUMBER	104395-10-9007	REPORTED	2022-05-02 15:04
PROJECT	Final Effluent- PE14651	COC NUMBER	44676.31027
PROJECT INFO	Lake Country WWTP		

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.

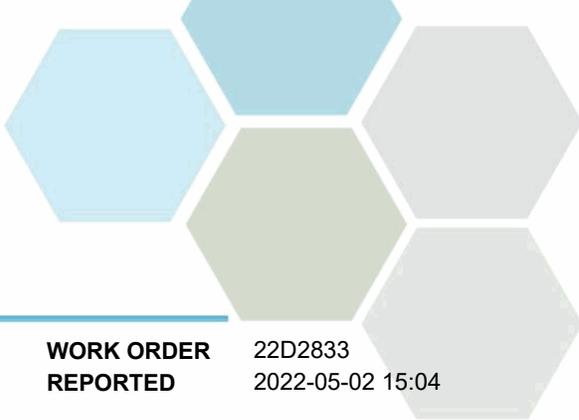
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22D2833
2022-05-02 15:04

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

Final Effluent (E233626) (22D2833-01) | Matrix: Wastewater | Sampled: 2022-04-25 11:25

Anions

Chloride	112	0.10	mg/L	2022-04-30	
Nitrate (as N)	2.42	0.010	mg/L	2022-04-30	HT1
Nitrite (as N)	0.096	0.010	mg/L	2022-04-30	HT1
Phosphate (as P)	0.0300	0.0050	mg/L	2022-04-30	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	2.52	0.0100	mg/L	N/A	
Nitrogen, Total	7.69	0.200	mg/L	N/A	
Nitrogen, Organic	1.80	0.200	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	188	1.0	mg/L	2022-04-30	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Alkalinity, Bicarbonate (as CaCO3)	188	1.0	mg/L	2022-04-30	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Ammonia, Total (as N)	3.37	0.050	mg/L	2022-04-28	
BOD, 5-day Carbonaceous	7.8	2.0	mg/L	2022-05-02	
Nitrogen, Total Kjeldahl	5.18	0.050	mg/L	2022-05-01	
pH	7.68	0.10	pH units	2022-04-30	HT2
Phosphorus, Total (as P)	0.626	0.0050	mg/L	2022-05-02	
Solids, Total Suspended	10.7	2.0	mg/L	2022-04-29	

Microbiological Parameters

Coliforms, Total (Q-Tray)	199000	1	MPN/100 mL	2022-04-25	
Coliforms, Fecal (Q-Tray)	19800	1	MPN/100 mL	2022-04-25	

Duplicate (22D2833-02) | Matrix: Water | Sampled: 2022-04-25 11:30

Anions

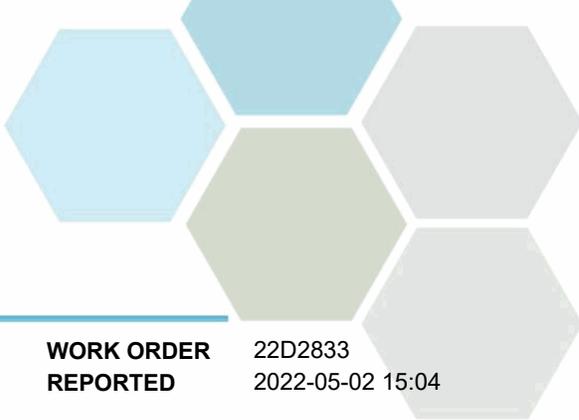
Chloride	114	0.10	mg/L	2022-05-01	
Nitrate (as N)	2.46	0.010	mg/L	2022-04-30	HT1
Nitrite (as N)	0.120	0.010	mg/L	2022-04-30	HT1
Phosphate (as P)	0.0261	0.0050	mg/L	2022-04-30	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	2.58	0.0100	mg/L	N/A	
Nitrogen, Total	8.58	0.200	mg/L	N/A	
Nitrogen, Organic	2.50	0.200	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	193	1.0	mg/L	2022-04-30	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-04-30	
Alkalinity, Bicarbonate (as CaCO3)	193	1.0	mg/L	2022-04-30	



TEST RESULTS

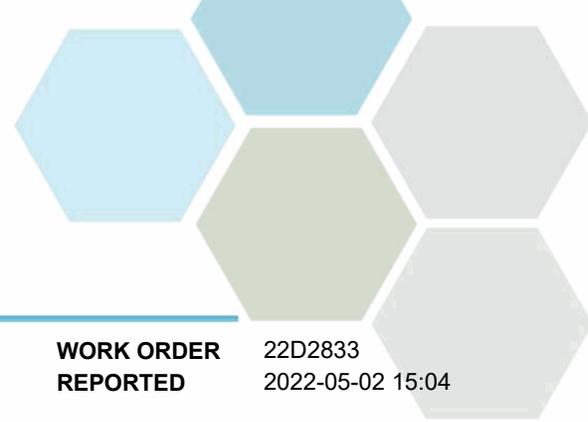
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22D2833
2022-05-02 15:04

Analyte	Result	RL	Units	Analyzed	Qualifier
Duplicate (22D2833-02) Matrix: Water Sampled: 2022-04-25 11:30, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0	mg/L	2022-04-30	
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2022-04-30	
Ammonia, Total (as N)	3.50	0.050	mg/L	2022-04-28	
BOD, 5-day Carbonaceous	5.9	2.0	mg/L	2022-05-02	
Nitrogen, Total Kjeldahl	6.00	0.050	mg/L	2022-05-01	
pH	7.42	0.10	pH units	2022-04-30	HT2
Phosphorus, Total (as P)	0.621	0.0050	mg/L	2022-05-02	
Solids, Total Suspended	10.2	2.0	mg/L	2022-04-29	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	141000	1	MPN/100 mL	2022-04-26	
Coliforms, Fecal (Q-Tray)	24200	1	MPN/100 mL	2022-04-25	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22D2833
2022-05-02 15:04

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2017)	Solids in Water, Filtered / 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

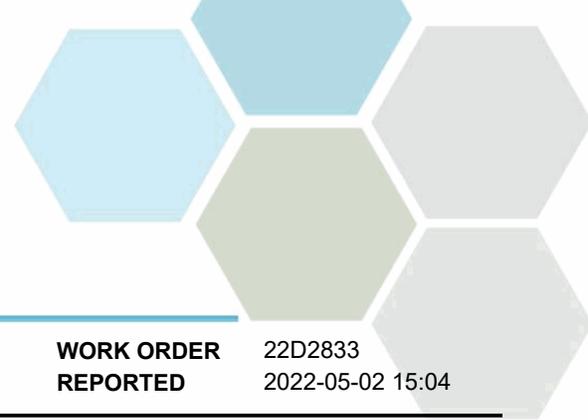
Glossary of Terms:

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
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

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22D2833
2022-05-02 15:04

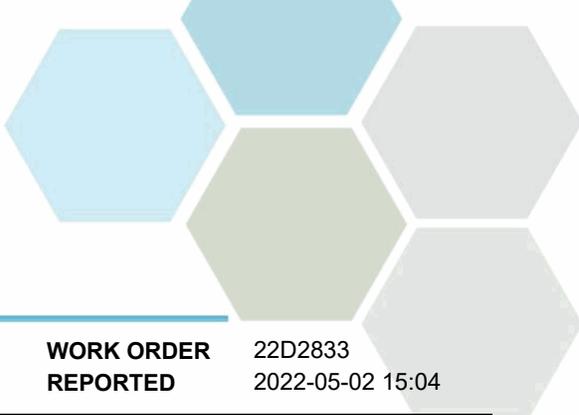
The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2D2316									
Blank (B2D2316-BLK1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2D2316-BLK2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2D2316-BS1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	3.99	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.13	0.010 mg/L	2.00		106	85-115			
Phosphate (as P)	1.10	0.0050 mg/L	1.00		110	80-120			
LCS (B2D2316-BS2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Chloride	16.3	0.10 mg/L	16.0		102	90-110			
Nitrate (as N)	4.24	0.010 mg/L	4.00		106	90-110			
Nitrite (as N)	1.98	0.010 mg/L	2.00		99	85-115			
Phosphate (as P)	1.12	0.0050 mg/L	1.00		112	80-120			
General Parameters, Batch B2D2674									
Blank (B2D2674-BLK1)			Prepared: 2022-04-27, Analyzed: 2022-05-02						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2D2674-BS1)			Prepared: 2022-04-27, Analyzed: 2022-05-02						
BOD, 5-day Carbonaceous	193	2.0 mg/L	180		107	85-115			
Duplicate (B2D2674-DUP1)			Source: 22D2833-01		Prepared: 2022-04-27, Analyzed: 2022-05-02				
BOD, 5-day Carbonaceous	8.0	2.0 mg/L		7.8				20	

General Parameters, Batch B2D2797

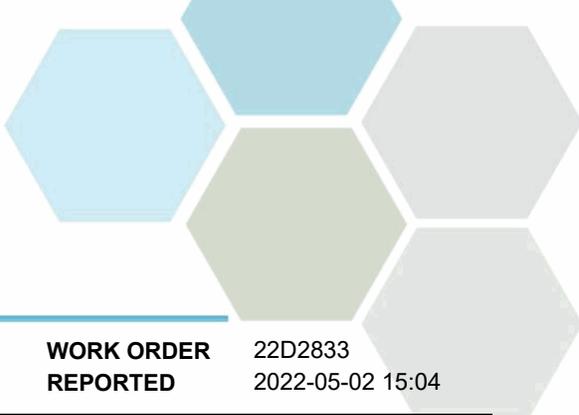


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22D2833
2022-05-02 15:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2D2797, Continued									
Blank (B2D2797-BLK1)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK2)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK3)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK4)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2D2797-BLK5)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2D2797-BS1)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.983	0.050 mg/L	1.00		98	90-115			
LCS (B2D2797-BS2)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.970	0.050 mg/L	1.00		97	90-115			
LCS (B2D2797-BS3)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.965	0.050 mg/L	1.00		96	90-115			
LCS (B2D2797-BS4)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.956	0.050 mg/L	1.00		96	90-115			
LCS (B2D2797-BS5)			Prepared: 2022-04-28, Analyzed: 2022-04-28						
Ammonia, Total (as N)	0.960	0.050 mg/L	1.00		96	90-115			
General Parameters, Batch B2D2981									
Blank (B2D2981-BLK1)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2D2981-BS1)			Prepared: 2022-04-29, Analyzed: 2022-04-29						
Solids, Total Suspended	92.0	5.0 mg/L	100		92	85-115			
General Parameters, Batch B2D3056									
Blank (B2D3056-BLK1)			Prepared: 2022-04-30, Analyzed: 2022-05-01						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2D3056-BLK2)			Prepared: 2022-04-30, Analyzed: 2022-05-01						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2D3056-BS1)			Prepared: 2022-04-30, Analyzed: 2022-05-01						
Nitrogen, Total Kjeldahl	0.967	0.050 mg/L	1.00		97	85-115			
LCS (B2D3056-BS2)			Prepared: 2022-04-30, Analyzed: 2022-05-01						
Nitrogen, Total Kjeldahl	0.945	0.050 mg/L	1.00		94	85-115			
General Parameters, Batch B2D3068									
Blank (B2D3068-BLK1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
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							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

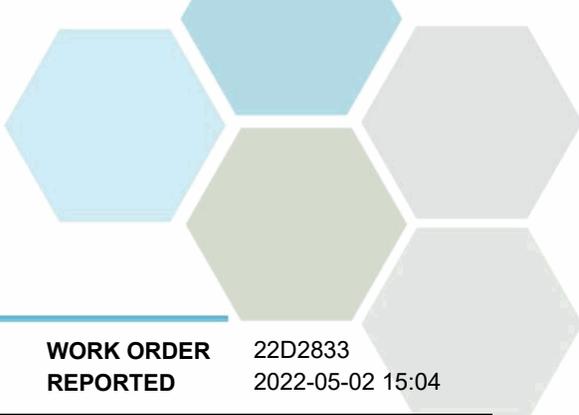
WORK ORDER REPORTED 22D2833
2022-05-02 15:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2D3068, Continued									
Blank (B2D3068-BLK1), Continued			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Blank (B2D3068-BLK2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
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							
Blank (B2D3068-BLK3)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
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							
LCS (B2D3068-BS1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Total (as CaCO3)	82.9	1.0 mg/L	100		83	80-120			
LCS (B2D3068-BS2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
LCS (B2D3068-BS3)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
Alkalinity, Total (as CaCO3)	101	1.0 mg/L	100		101	80-120			
Reference (B2D3068-SRM1)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
pH	6.98	0.10 pH units	7.01		100	98-102			
Reference (B2D3068-SRM2)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
pH	7.02	0.10 pH units	7.01		100	98-102			
Reference (B2D3068-SRM3)			Prepared: 2022-04-30, Analyzed: 2022-04-30						
pH	6.98	0.10 pH units	7.01		100	98-102			

General Parameters, Batch B2E0035

Blank (B2E0035-BLK1)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E0035-BLK2)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2E0035-BLK3)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2E0035-BS1)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
LCS (B2E0035-BS2)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
LCS (B2E0035-BS3)			Prepared: 2022-05-02, Analyzed: 2022-05-02						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			

Microbiological Parameters, Batch B2D2422



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22D2833
2022-05-02 15:04

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Microbiological Parameters, Batch B2D2422, Continued									
Blank (B2D2422-BLK1)				Prepared: 2022-04-25, Analyzed: 2022-04-25					
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2D2422-BLK2)				Prepared: 2022-04-25, Analyzed: 2022-04-25					
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2D2422-DUP1)		Source: 22D2833-02		Prepared: 2022-04-25, Analyzed: 2022-04-25					
Coliforms, Total (Q-Tray)	> 24200	1 MPN/100 mL		141000			142	80	MIC31
Duplicate (B2D2422-DUP2)		Source: 22D2833-02		Prepared: 2022-04-25, Analyzed: 2022-04-25					
Coliforms, Fecal (Q-Tray)	15500	1 MPN/100 mL		24200			44	80	

QC Qualifiers:

MIC31 The difference in logs is greater than the R value. Results valid based on plate counts.



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22D2834
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-04-25 12:26 / 14.2°C
PO NUMBER	104395-10-9009	REPORTED	2022-05-02 18:18
PROJECT	BioSolids- PE14651	COC NUMBER	44676.31027
PROJECT INFO	Lake Country WWTP		

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.

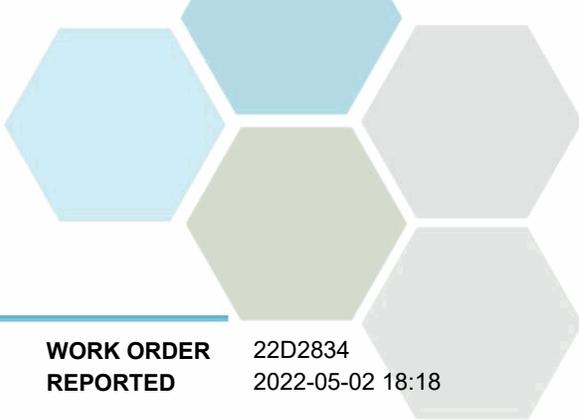
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

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

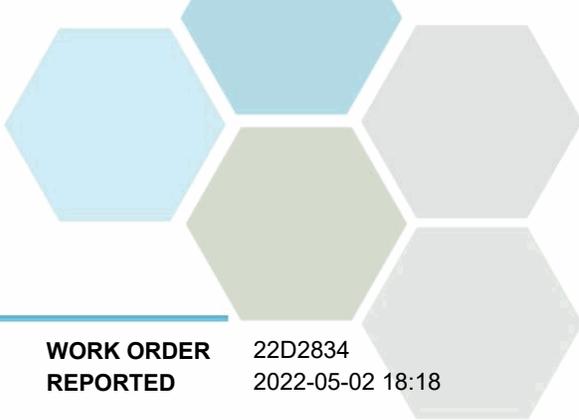
Biosolids (E233628) (22D2834-01) | Matrix: Sludge | Sampled: 2022-04-25 11:10

General Parameters

Moisture	79.6	1.0	% wet	2022-04-27	
Nitrogen, Total Kjeldahl	4.88	0.0004	% dry	2022-04-27	
pH (1:2 H2O Solution)	5.89	0.10	pH units	2022-04-27	PH1
Solids, Total	20.4	0.1	% wet	2022-04-27	
Solids, Volatile	82.5	0.1	% dry	2022-04-27	

Strong Acid Leachable Metals

Aluminum	9630	40	mg/kg dry	2022-05-02	
Antimony	2.36	0.10	mg/kg dry	2022-05-02	
Arsenic	2.41	0.30	mg/kg dry	2022-05-02	
Barium	151	1.0	mg/kg dry	2022-05-02	
Beryllium	< 0.10	0.10	mg/kg dry	2022-05-02	
Bismuth	26.3	0.10	mg/kg dry	2022-05-02	
Boron	9.0	2.0	mg/kg dry	2022-05-02	
Cadmium	1.98	0.040	mg/kg dry	2022-05-02	
Calcium	13100	100	mg/kg dry	2022-05-02	
Chromium	19.9	1.0	mg/kg dry	2022-05-02	
Cobalt	2.06	0.10	mg/kg dry	2022-05-02	
Copper	385	0.40	mg/kg dry	2022-05-02	
Iron	4740	20	mg/kg dry	2022-05-02	
Lead	11.8	0.20	mg/kg dry	2022-05-02	
Lithium	1.67	0.10	mg/kg dry	2022-05-02	
Magnesium	4070	10	mg/kg dry	2022-05-02	
Manganese	124	0.40	mg/kg dry	2022-05-02	
Mercury	0.425	0.040	mg/kg dry	2022-05-02	
Molybdenum	9.48	0.10	mg/kg dry	2022-05-02	
Nickel	14.6	0.60	mg/kg dry	2022-05-02	
Phosphorus	17000	10	mg/kg dry	2022-05-02	
Potassium	5180	40	mg/kg dry	2022-05-02	
Selenium	3.83	0.20	mg/kg dry	2022-05-02	
Silver	1.32	0.10	mg/kg dry	2022-05-02	
Sodium	758	50	mg/kg dry	2022-05-02	
Strontium	69.4	0.20	mg/kg dry	2022-05-02	
Sulfur	6920	1000	mg/kg dry	2022-05-02	
Tellurium	< 0.10	0.10	mg/kg dry	2022-05-02	
Thallium	< 0.10	0.10	mg/kg dry	2022-05-02	
Thorium	< 0.50	0.50	mg/kg dry	2022-05-02	
Tin	17.2	0.20	mg/kg dry	2022-05-02	
Titanium	82.3	1.0	mg/kg dry	2022-05-02	
Tungsten	1.85	0.20	mg/kg dry	2022-05-02	
Uranium	7.90	0.050	mg/kg dry	2022-05-02	
Vanadium	8.5	2.5	mg/kg dry	2022-05-02	
Zinc	815	2.0	mg/kg dry	2022-05-02	



TEST RESULTS

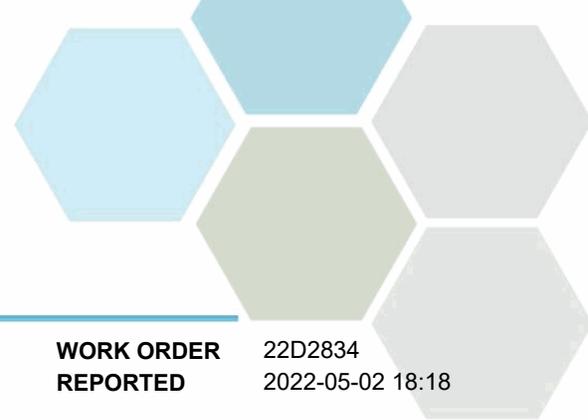
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22D2834-01) Matrix: Sludge Sampled: 2022-04-25 11:10, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	6.0	2.0	mg/kg dry	2022-05-02	

Sample Qualifiers:

PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Solids, Total in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna
Solids, Volatile in Solid	Solids in Solids / SM 2540 G (2017)	Solids in Solids / Gravimetry		Kelowna

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

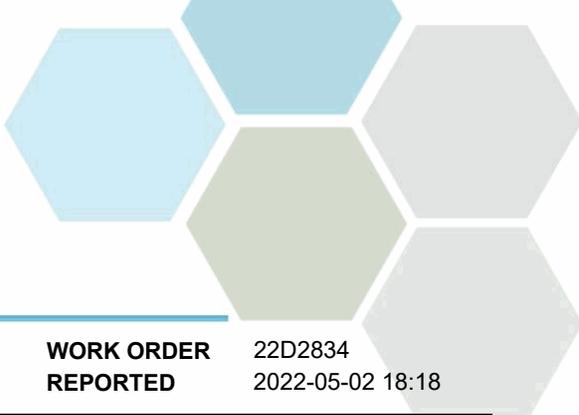
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2D2534

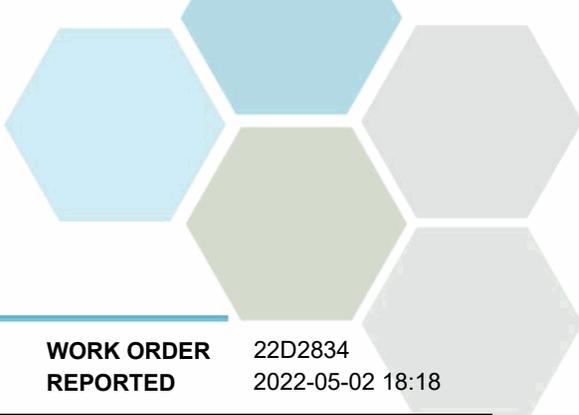
Reference (B2D2534-SRM1)	Prepared: 2022-04-27, Analyzed: 2022-04-27								
Moisture	99.0	1.0 % wet	6.5		99	80-120			
Solids, Total	92.8	0.1 % wet	93.5		99	80-120			
Solids, Volatile	3.7	0.1 % dry	4.00		94	80-200			

General Parameters, Batch B2D2550

Blank (B2D2550-BLK1)	Prepared: 2022-04-26, Analyzed: 2022-04-27								
Nitrogen, Total Kjeldahl	< 0.010	0.010 % wet							
Duplicate (B2D2550-DUP1)	Source: 22D2834-01 Prepared: 2022-04-26, Analyzed: 2022-04-27								
Nitrogen, Total Kjeldahl	4.97	0.0004 % dry	4.88		2	25			
Reference (B2D2550-SRM1)	Prepared: 2022-04-26, Analyzed: 2022-04-27								
Nitrogen, Total Kjeldahl	0.276	0.010 % wet	0.281		98	58.8-150			

Strong Acid Leachable Metals, Batch B2E0140

Blank (B2E0140-BLK1)	Prepared: 2022-05-02, Analyzed: 2022-05-02								
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							



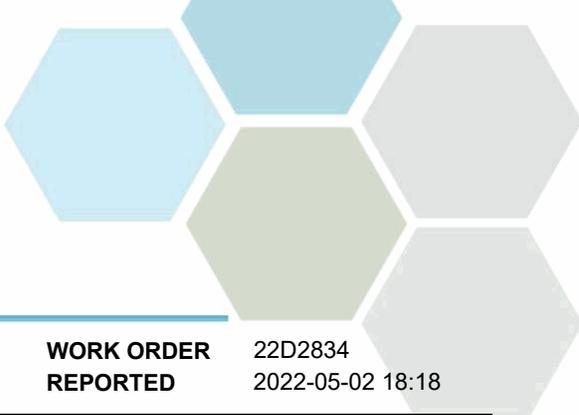
APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2E0140, Continued									
Blank (B2E0140-BLK1), Continued					Prepared: 2022-05-02, Analyzed: 2022-05-02				
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 2.5	2.5 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							BLK
Zirconium	< 2.0	2.0 mg/kg dry							

Blank (B2E0140-BLK2)					Prepared: 2022-05-02, Analyzed: 2022-05-02				
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2E0140, Continued

Blank (B2E0140-BLK2), Continued

Prepared: 2022-05-02, Analyzed: 2022-05-02

Vanadium	< 2.5	2.5 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

Blank (B2E0140-BLK3)

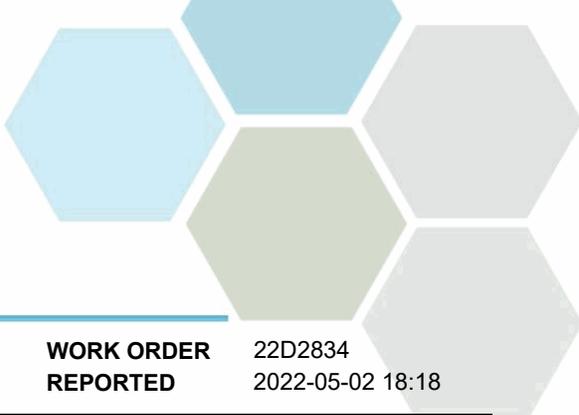
Prepared: 2022-05-02, Analyzed: 2022-05-02

Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2E0140-BS1)

Prepared: 2022-05-02, Analyzed: 2022-05-02

Aluminum	< 40	40 mg/kg dry	2.00	117	80-120
Antimony	1.95	0.10 mg/kg dry	2.00	98	80-120
Arsenic	2.03	0.30 mg/kg dry	2.00	102	80-120
Barium	2.0	1.0 mg/kg dry	2.00	100	80-120
Beryllium	2.01	0.10 mg/kg dry	2.00	100	80-120
Bismuth	1.83	0.10 mg/kg dry	2.00	91	80-120
Boron	2.2	2.0 mg/kg dry	2.00	110	80-120
Cadmium	2.01	0.040 mg/kg dry	2.00	100	80-120
Calcium	201	100 mg/kg dry	200	101	80-120
Chromium	2.1	1.0 mg/kg dry	2.00	104	80-120
Cobalt	2.07	0.10 mg/kg dry	2.00	104	80-120
Copper	2.07	0.40 mg/kg dry	2.00	103	80-120
Iron	205	20 mg/kg dry	200	102	80-120



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22D2834
2022-05-02 18:18

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2E0140, Continued									
LCS (B2E0140-BS1), Continued					Prepared: 2022-05-02, Analyzed: 2022-05-02				
Lead	1.92	0.20 mg/kg dry	2.00		96	80-120			
Lithium	1.97	0.10 mg/kg dry	2.00		98	80-120			
Magnesium	206	10 mg/kg dry	200		103	80-120			
Manganese	2.06	0.40 mg/kg dry	2.00		103	80-120			
Mercury	0.097	0.040 mg/kg dry	0.100		97	80-120			
Molybdenum	1.98	0.10 mg/kg dry	2.00		99	80-120			
Nickel	2.06	0.60 mg/kg dry	2.00		103	80-120			
Phosphorus	201	10 mg/kg dry	200		100	80-120			
Potassium	203	40 mg/kg dry	200		102	80-120			
Selenium	2.12	0.20 mg/kg dry	2.00		106	80-120			
Silver	2.06	0.10 mg/kg dry	2.00		103	80-120			
Sodium	206	50 mg/kg dry	200		103	80-120			
Strontium	2.01	0.20 mg/kg dry	2.00		101	80-120			
Sulfur	< 1000	1000 mg/kg dry	500		107	80-120			
Tellurium	1.93	0.10 mg/kg dry	2.00		97	80-120			
Thallium	1.85	0.10 mg/kg dry	2.00		92	80-120			
Thorium	1.87	0.50 mg/kg dry	2.00		94	80-120			
Tin	2.04	0.20 mg/kg dry	2.00		102	80-120			
Titanium	2.0	1.0 mg/kg dry	2.00		100	80-120			
Tungsten	1.92	0.20 mg/kg dry	2.00		96	80-120			
Uranium	1.86	0.050 mg/kg dry	2.00		93	80-120			
Vanadium	2.0	1.0 mg/kg dry	2.00		102	80-120			
Zinc	2.0	2.0 mg/kg dry	2.00		101	80-120			
Zirconium	2.1	2.0 mg/kg dry	2.00		104	80-120			

Reference (B2E0140-SRM1)					Prepared: 2022-05-02, Analyzed: 2022-05-02				
Aluminum	13500	40 mg/kg dry	11500		117	70-130			
Antimony	0.81	0.10 mg/kg dry	0.724		112	70-130			
Arsenic	93.8	0.30 mg/kg dry	82.1		114	70-130			
Barium	49.2	1.0 mg/kg dry	40.0		123	70-130			
Beryllium	0.41	0.10 mg/kg dry	0.369		110	70-130			
Calcium	5550	100 mg/kg dry	5170		107	70-130			
Chromium	72.0	1.0 mg/kg dry	63.1		114	70-130			
Cobalt	11.6	0.10 mg/kg dry	10.4		112	70-130			
Copper	22.2	0.40 mg/kg dry	19.8		112	70-130			
Iron	22000	20 mg/kg dry	20200		109	70-130			
Lead	18.1	0.20 mg/kg dry	17.3		104	70-130			
Magnesium	6690	10 mg/kg dry	6090		110	70-130			
Manganese	346	0.40 mg/kg dry	315		110	70-130			
Mercury	0.114	0.040 mg/kg dry	0.110		104	70-130			
Molybdenum	0.65	0.10 mg/kg dry	0.619		104	70-130			
Nickel	35.7	0.60 mg/kg dry	31.7		113	70-130			
Phosphorus	457	10 mg/kg dry	420		109	70-130			
Silver	1.71	0.10 mg/kg dry	1.75		98	70-130			
Strontium	24.4	0.20 mg/kg dry	20.3		120	70-130			
Titanium	822	1.0 mg/kg dry	645		127	70-130			
Uranium	1.20	0.050 mg/kg dry	1.18		102	70-130			
Vanadium	38.3	2.5 mg/kg dry	33.5		114	70-130			
Zinc	43.0	2.0 mg/kg dry	40.2		107	70-130			

QC Qualifiers:

BLK Analyte concentration in the Method Blank is above the Reporting Limit (RL).



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22C2017
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-03-14 11:30 / 11.9°C
PO NUMBER		COC NUMBER	44634.45486
PROJECT	Raw Influent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

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

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

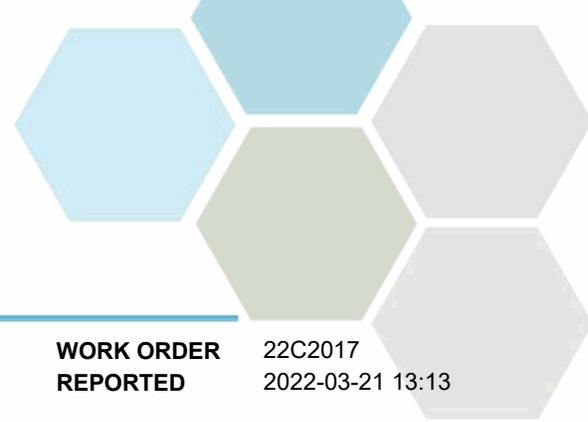
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22C2017
2022-03-21 13:13

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22C2017-01) Matrix: Wastewater Sampled: 2022-03-14 10:30					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-03-16	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-03-16	
Phosphate (as P)	4.37	0.0050	mg/L	2022-03-16	
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	94.5	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	435	1.0	mg/L	2022-03-16	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Bicarbonate (as CaCO3)	435	1.0	mg/L	2022-03-16	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Ammonia, Total (as N)	58.9	0.050	mg/L	2022-03-17	
BOD, 5-day	346	2.0	mg/L	2022-03-21	
BOD, 5-day Carbonaceous	331	2.0	mg/L	2022-03-21	
Nitrogen, Total Kjeldahl	94.5	0.050	mg/L	2022-03-18	
pH	8.05	0.10	pH units	2022-03-16	HT2
Phosphorus, Total (as P)	8.96	0.0050	mg/L	2022-03-17	
Solids, Total Suspended	278	2.0	mg/L	2022-03-17	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22C2017
2022-03-21 13:13

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22C2017
2022-03-21 13:13

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Anions, Batch B2C1665

Blank (B2C1665-BLK1)			Prepared: 2022-03-16, Analyzed: 2022-03-16						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C1665-BS1)			Prepared: 2022-03-16, Analyzed: 2022-03-16						
Nitrate (as N)	3.85	0.010 mg/L	4.00		96	90-110			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			

General Parameters, Batch B2C1704

Blank (B2C1704-BLK1)			Prepared: 2022-03-16, Analyzed: 2022-03-16						
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							
LCS (B2C1704-BS1)			Prepared: 2022-03-16, Analyzed: 2022-03-16						
Alkalinity, Total (as CaCO3)	108	1.0 mg/L	100		108	80-120			
Reference (B2C1704-SRM1)			Prepared: 2022-03-16, Analyzed: 2022-03-16						
pH	6.99	0.10 pH units	7.01		100	98-102			

General Parameters, Batch B2C1769

Blank (B2C1769-BLK1)			Prepared: 2022-03-16, Analyzed: 2022-03-21						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2C1769-BS1)			Prepared: 2022-03-16, Analyzed: 2022-03-21						
BOD, 5-day	198	34.2 mg/L	180		110	85-115			

General Parameters, Batch B2C1772



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22C2017
2022-03-21 13:13

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2C1772, Continued									
Blank (B2C1772-BLK1)			Prepared: 2022-03-16, Analyzed: 2022-03-21						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2C1772-BS1)			Prepared: 2022-03-16, Analyzed: 2022-03-21						
BOD, 5-day Carbonaceous	204	24.4 mg/L	180		113	85-115			
General Parameters, Batch B2C1870									
Blank (B2C1870-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2C1870-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Solids, Total Suspended	97.0	10.0 mg/L	100		97	85-115			
General Parameters, Batch B2C1879									
Blank (B2C1879-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C1879-BLK2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C1879-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2C1879-BS2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
General Parameters, Batch B2C1884									
Blank (B2C1884-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2C1884-BLK2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2C1884-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	0.938	0.050 mg/L	1.00		94	90-115			
LCS (B2C1884-BS2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	0.960	0.050 mg/L	1.00		96	90-115			
General Parameters, Batch B2C1979									
Blank (B2C1979-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2C1979-BLK2)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2C1979-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	0.990	0.050 mg/L	1.00		99	85-115			
LCS (B2C1979-BS2)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	0.880	0.050 mg/L	1.00		88	85-115			

CERTIFICATE OF ANALYSIS

REPORTED TO Lake Country, District of (Wastewater)
4062 Beaver Lake Rd
LAKE COUNTRY, BC V4V 1T5

ATTENTION Davin Larsen

PO NUMBER

PROJECT Final Effluent- PE14651

PROJECT INFO Lake Country WWTP

WORK ORDER 22C2018

RECEIVED / TEMP 2022-03-14 11:30 / 11.9°C

REPORTED 2022-03-21 13:14

COC NUMBER 44634.45486

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.

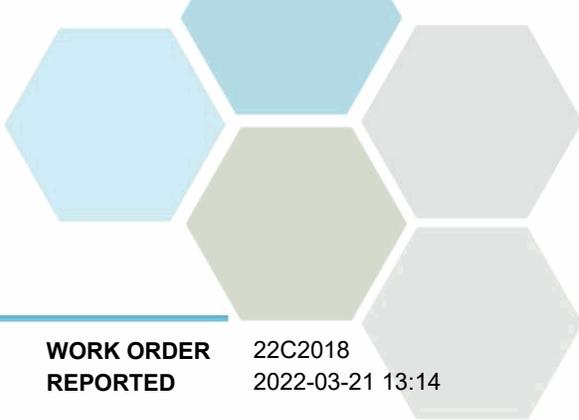
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22C2018
2022-03-21 13:14

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

Final Effluent (E233626) (22C2018-01) | Matrix: Wastewater | Sampled: 2022-03-14 10:20

Anions

Chloride	99.3	0.10	mg/L	2022-03-16	
Nitrate (as N)	1.24	0.010	mg/L	2022-03-16	
Nitrite (as N)	0.158	0.010	mg/L	2022-03-16	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-03-16	

Calculated Parameters

Nitrate+Nitrite (as N)	1.39	0.0100	mg/L	N/A	
Nitrogen, Total	11.8	0.250	mg/L	N/A	
Nitrogen, Organic	1.86	0.500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	220	1.0	mg/L	2022-03-16	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Bicarbonate (as CaCO3)	220	1.0	mg/L	2022-03-16	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Ammonia, Total (as N)	8.58	0.050	mg/L	2022-03-17	
BOD, 5-day Carbonaceous	12.0	2.0	mg/L	2022-03-21	
Nitrogen, Total Kjeldahl	10.4	0.050	mg/L	2022-03-18	
pH	7.78	0.10	pH units	2022-03-16	HT2
Phosphorus, Total (as P)	0.770	0.0050	mg/L	2022-03-17	
Solids, Total Suspended	13.9	2.0	mg/L	2022-03-17	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-03-15	
Coliforms, Fecal (Q-Tray)	46100	1	MPN/100 mL	2022-03-15	

Trip Blank (22C2018-02) | Matrix: Wastewater | Sampled: 2022-03-14

Anions

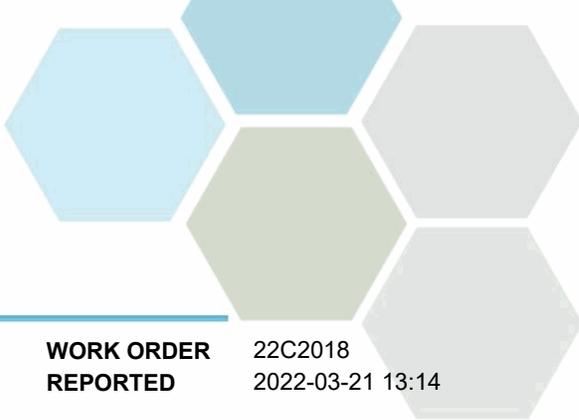
Chloride	< 0.10	0.10	mg/L	2022-03-16	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-03-16	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-03-16	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-03-16	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
Nitrogen, Organic	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-03-16	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22C2018
2022-03-21 13:14

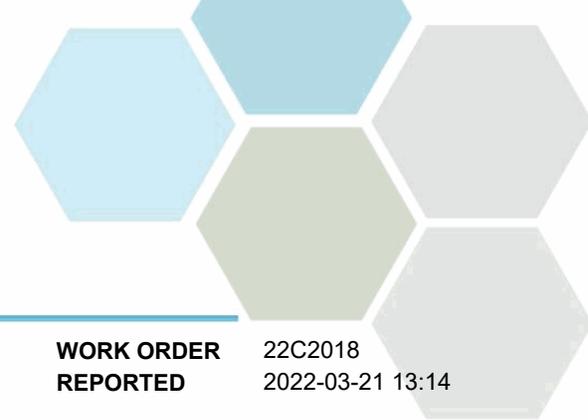
Analyte	Result	RL	Units	Analyzed	Qualifier
Trip Blank (22C2018-02) Matrix: Wastewater Sampled: 2022-03-14, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0	mg/L	2022-03-16	
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2022-03-16	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-03-17	
BOD, 5-day Carbonaceous	< 2.9	2.0	mg/L	2022-03-21	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-03-18	
pH	5.69	0.10	pH units	2022-03-16	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-03-17	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-03-17	

Microbiological Parameters

Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-03-15	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-03-15	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22C2018
2022-03-21 13:14

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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

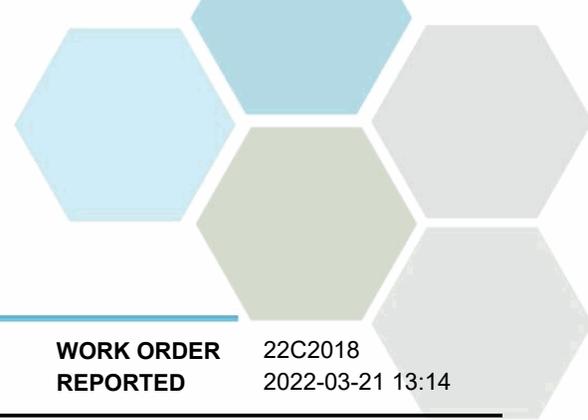
Glossary of Terms:

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
>	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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22C2018
2022-03-21 13:14

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

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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Anions, Batch B2C1665

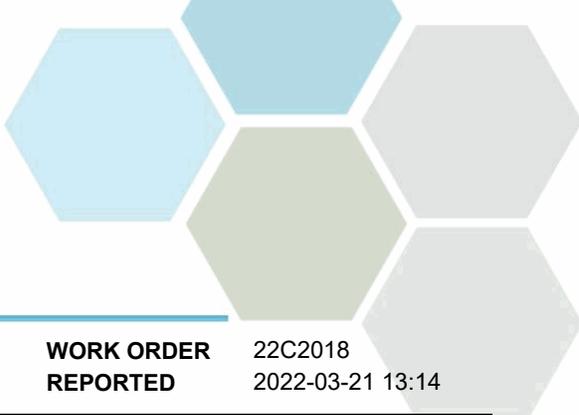
Blank (B2C1665-BLK1)		Prepared: 2022-03-16, Analyzed: 2022-03-16							
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C1665-BS1)		Prepared: 2022-03-16, Analyzed: 2022-03-16							
Chloride	15.6	0.10 mg/L	16.0		98	90-110			
Nitrate (as N)	3.85	0.010 mg/L	4.00		96	90-110			
Nitrite (as N)	2.06	0.010 mg/L	2.00		103	85-115			
Phosphate (as P)	1.05	0.0050 mg/L	1.00		105	80-120			

General Parameters, Batch B2C1704

Blank (B2C1704-BLK1)		Prepared: 2022-03-16, Analyzed: 2022-03-16							
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							
LCS (B2C1704-BS1)		Prepared: 2022-03-16, Analyzed: 2022-03-16							
Alkalinity, Total (as CaCO3)	108	1.0 mg/L	100		108	80-120			
Reference (B2C1704-SRM1)		Prepared: 2022-03-16, Analyzed: 2022-03-16							
pH	6.99	0.10 pH units	7.01		100	98-102			

General Parameters, Batch B2C1772

Blank (B2C1772-BLK1)		Prepared: 2022-03-16, Analyzed: 2022-03-21							
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2C1772-BS1)		Prepared: 2022-03-16, Analyzed: 2022-03-21							
BOD, 5-day Carbonaceous	204	24.4 mg/L	180		113	85-115			
Duplicate (B2C1772-DUP1)		Source: 22C2018-01 Prepared: 2022-03-16, Analyzed: 2022-03-21							
BOD, 5-day Carbonaceous	10.0	2.0 mg/L	12.0						

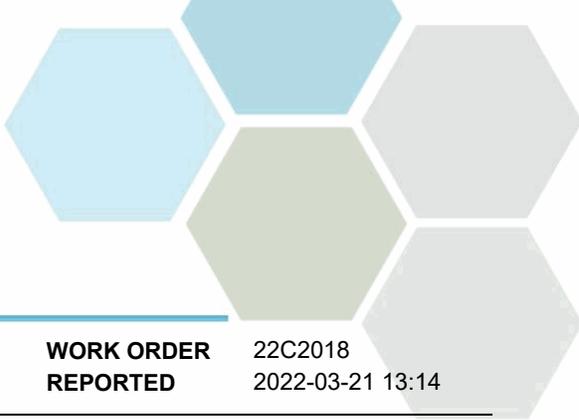


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22C2018
2022-03-21 13:14

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2C1870									
Blank (B2C1870-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2C1870-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Solids, Total Suspended	97.0	10.0 mg/L	100		97	85-115			
General Parameters, Batch B2C1879									
Blank (B2C1879-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C1879-BLK2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C1879-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	0.112	0.0050 mg/L	0.100		112	85-115			
LCS (B2C1879-BS2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Phosphorus, Total (as P)	0.108	0.0050 mg/L	0.100		108	85-115			
General Parameters, Batch B2C1884									
Blank (B2C1884-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2C1884-BLK2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2C1884-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	0.938	0.050 mg/L	1.00		94	90-115			
LCS (B2C1884-BS2)			Prepared: 2022-03-17, Analyzed: 2022-03-17						
Ammonia, Total (as N)	0.960	0.050 mg/L	1.00		96	90-115			
General Parameters, Batch B2C1979									
Blank (B2C1979-BLK1)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2C1979-BLK2)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2C1979-BS1)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	0.990	0.050 mg/L	1.00		99	85-115			
LCS (B2C1979-BS2)			Prepared: 2022-03-17, Analyzed: 2022-03-18						
Nitrogen, Total Kjeldahl	0.880	0.050 mg/L	1.00		88	85-115			
Microbiological Parameters, Batch B2C1570									
Blank (B2C1570-BLK1)			Prepared: 2022-03-15, Analyzed: 2022-03-15						
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2C1570-BLK2)			Prepared: 2022-03-15, Analyzed: 2022-03-15						
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22C2018
2022-03-21 13:14

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
<i>Microbiological Parameters, Batch B2C1570, Continued</i>									
Blank (B2C1570-BLK3)					Prepared: 2022-03-15, Analyzed: 2022-03-15				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							

CERTIFICATE OF ANALYSIS

REPORTED TO Lake Country, District of (Wastewater)
4062 Beaver Lake Rd
LAKE COUNTRY, BC V4V 1T5

ATTENTION Davin Larsen

PO NUMBER

PROJECT BioSolids- PE14651

PROJECT INFO Lake Country WWTP

WORK ORDER 22C2019

RECEIVED / TEMP 2022-03-14 11:30 / 11.9°C

REPORTED 2022-03-21 16:00

COC NUMBER 44634.45486

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.

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

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22C2019
2022-03-21 16:00

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

Biosolids (E233628) (22C2019-01) | Matrix: Sludge | Sampled: 2022-03-14 10:50

General Parameters

Moisture	79.7	1.0	% wet	2022-03-16	
Nitrogen, Total Kjeldahl	5.01	0.0004	% dry	2022-03-21	
pH (1:2 H2O Solution)	5.72	0.10	pH units	2022-03-21	PH1
Solids, Total	19.7	0.1	% wet	2022-03-21	
Solids, Volatile	82.8	0.1	% dry	2022-03-21	

Strong Acid Leachable Metals

Aluminum	2600	40	mg/kg dry	2022-03-21	
Antimony	2.05	0.10	mg/kg dry	2022-03-21	
Arsenic	1.80	0.30	mg/kg dry	2022-03-21	
Barium	105	1.0	mg/kg dry	2022-03-21	
Beryllium	< 0.10	0.10	mg/kg dry	2022-03-21	
Bismuth	23.0	0.10	mg/kg dry	2022-03-21	
Boron	9.2	2.0	mg/kg dry	2022-03-21	
Cadmium	0.857	0.040	mg/kg dry	2022-03-21	
Calcium	12100	100	mg/kg dry	2022-03-21	
Chromium	13.9	1.0	mg/kg dry	2022-03-21	
Cobalt	1.39	0.10	mg/kg dry	2022-03-21	
Copper	405	0.40	mg/kg dry	2022-03-21	
Iron	3490	20	mg/kg dry	2022-03-21	
Lead	10.5	0.20	mg/kg dry	2022-03-21	
Lithium	1.50	0.10	mg/kg dry	2022-03-21	
Magnesium	4040	10	mg/kg dry	2022-03-21	
Manganese	101	0.40	mg/kg dry	2022-03-21	
Mercury	0.431	0.040	mg/kg dry	2022-03-21	
Molybdenum	7.18	0.10	mg/kg dry	2022-03-21	
Nickel	11.1	0.60	mg/kg dry	2022-03-21	
Phosphorus	13300	10	mg/kg dry	2022-03-21	
Potassium	5480	40	mg/kg dry	2022-03-21	
Selenium	3.27	0.20	mg/kg dry	2022-03-21	
Silver	1.12	0.10	mg/kg dry	2022-03-21	
Sodium	634	50	mg/kg dry	2022-03-21	
Strontium	59.8	0.20	mg/kg dry	2022-03-21	
Sulfur	4580	1000	mg/kg dry	2022-03-21	
Tellurium	< 0.10	0.10	mg/kg dry	2022-03-21	
Thallium	< 0.10	0.10	mg/kg dry	2022-03-21	
Thorium	< 0.50	0.50	mg/kg dry	2022-03-21	
Tin	12.9	0.20	mg/kg dry	2022-03-21	
Titanium	92.3	1.0	mg/kg dry	2022-03-21	
Tungsten	0.89	0.20	mg/kg dry	2022-03-21	
Uranium	6.34	0.050	mg/kg dry	2022-03-21	
Vanadium	4.4	1.0	mg/kg dry	2022-03-21	
Zinc	520	2.0	mg/kg dry	2022-03-21	



TEST RESULTS

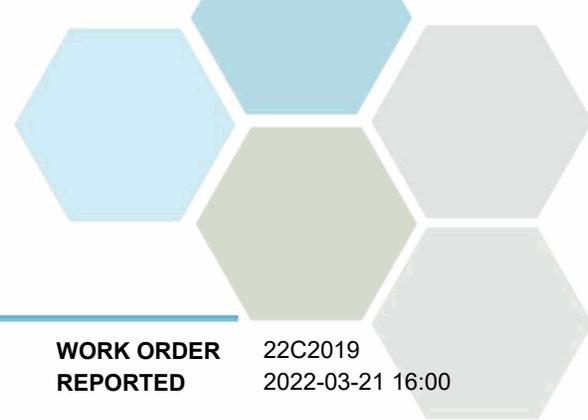
REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22C2019
2022-03-21 16:00

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22C2019-01) Matrix: Sludge Sampled: 2022-03-14 10:50, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	3.8	2.0	mg/kg dry	2022-03-21	

Sample Qualifiers:

PH1 The ratio of water to soil was greater than 2:1 due to limited sample volume or matrix



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22C2019
2022-03-21 16:00

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +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

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)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22C2019
2022-03-21 16:00

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2C1791

Reference (B2C1791-SRM1)	Prepared: 2022-03-16, Analyzed: 2022-03-16								
Moisture	99.0	1.0 % wet	6.5		99	80-120			

General Parameters, Batch B2C2062

Reference (B2C2062-SRM1)	Prepared: 2022-03-21, Analyzed: 2022-03-21								
Solids, Total	92.0	0.1 % wet	93.5		98	80-120			
Solids, Volatile	3.6	0.1 % dry	4.00		91	80-200			

General Parameters, Batch B2C2100

Blank (B2C2100-BLK1)	Prepared: 2022-03-18, Analyzed: 2022-03-21								
Nitrogen, Total Kjeldahl	< 0.010	0.010 % wet							
Duplicate (B2C2100-DUP1)	Source: 22C2019-01		Prepared: 2022-03-18, Analyzed: 2022-03-21						
Nitrogen, Total Kjeldahl	5.16	0.0004 % dry	5.01				3	25	
Reference (B2C2100-SRM1)	Prepared: 2022-03-18, Analyzed: 2022-03-21								
Nitrogen, Total Kjeldahl	0.422	0.010 % wet	0.281		150	58.8-150			

General Parameters, Batch B2C2212

Duplicate (B2C2212-DUP1)	Source: 22C2019-01		Prepared: 2022-03-20, Analyzed: 2022-03-21						
pH (1:2 H2O Solution)	5.66	0.10 pH units	5.72				1	10	

Strong Acid Leachable Metals, Batch B2C2240

Blank (B2C2240-BLK1)	Prepared: 2022-03-21, Analyzed: 2022-03-21								
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22C2019
2022-03-21 16:00

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Strong Acid Leachable Metals, Batch B2C2240, Continued

Blank (B2C2240-BLK1), Continued

Prepared: 2022-03-21, Analyzed: 2022-03-21

Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							

LCS (B2C2240-BS1)

Prepared: 2022-03-21, Analyzed: 2022-03-21

Antimony	2.07	0.10 mg/kg dry	2.00		103	80-120			
Arsenic	1.92	0.30 mg/kg dry	2.00		96	80-120			
Barium	2.0	1.0 mg/kg dry	2.00		99	80-120			
Beryllium	1.89	0.10 mg/kg dry	2.00		94	80-120			
Bismuth	2.10	0.10 mg/kg dry	2.00		105	80-120			
Boron	2.3	2.0 mg/kg dry	2.00		113	80-120			
Cadmium	2.09	0.040 mg/kg dry	2.00		105	80-120			
Calcium	216	100 mg/kg dry	200		108	80-120			
Chromium	2.0	1.0 mg/kg dry	2.00		101	80-120			
Cobalt	2.10	0.10 mg/kg dry	2.00		105	80-120			
Copper	2.33	0.40 mg/kg dry	2.00		116	80-120			
Iron	204	20 mg/kg dry	200		102	80-120			
Lead	2.19	0.20 mg/kg dry	2.00		110	80-120			
Lithium	1.95	0.10 mg/kg dry	2.00		98	80-120			
Magnesium	222	10 mg/kg dry	200		111	80-120			
Manganese	2.09	0.40 mg/kg dry	2.00		105	80-120			
Mercury	0.101	0.040 mg/kg dry	0.101		100	80-120			
Molybdenum	2.13	0.10 mg/kg dry	2.00		107	80-120			
Nickel	2.20	0.60 mg/kg dry	2.00		110	80-120			
Phosphorus	202	10 mg/kg dry	200		101	80-120			
Potassium	208	40 mg/kg dry	200		104	80-120			
Selenium	1.98	0.20 mg/kg dry	2.00		99	80-120			
Silver	2.21	0.10 mg/kg dry	2.00		110	80-120			
Sodium	234	50 mg/kg dry	200		117	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22C2019
2022-03-21 16:00

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2C2240, Continued									
LCS (B2C2240-BS1), Continued					Prepared: 2022-03-21, Analyzed: 2022-03-21				
Strontium	1.97	0.20 mg/kg dry	2.00		98	80-120			
Sulfur	< 1000	1000 mg/kg dry	500		91	80-120			
Tellurium	1.91	0.10 mg/kg dry	2.00		95	80-120			
Thallium	2.07	0.10 mg/kg dry	2.00		104	80-120			
Thorium	1.94	0.50 mg/kg dry	2.00		97	80-120			
Tin	2.14	0.20 mg/kg dry	2.00		107	80-120			
Titanium	2.1	1.0 mg/kg dry	2.00		105	80-120			
Tungsten	2.14	0.20 mg/kg dry	2.00		107	80-120			
Uranium	1.93	0.050 mg/kg dry	2.00		97	80-120			
Vanadium	2.2	1.0 mg/kg dry	2.00		108	80-120			
Zinc	2.3	2.0 mg/kg dry	2.00		116	80-120			
Zirconium	2.1	2.0 mg/kg dry	2.00		107	80-120			
Reference (B2C2240-SRM1)					Prepared: 2022-03-21, Analyzed: 2022-03-21				
Aluminum	12300	40 mg/kg dry	11500		107	70-130			
Antimony	0.71	0.10 mg/kg dry	0.724		98	70-130			
Arsenic	82.9	0.30 mg/kg dry	82.1		101	70-130			
Barium	42.9	1.0 mg/kg dry	40.0		107	70-130			
Beryllium	0.38	0.10 mg/kg dry	0.369		102	70-130			
Calcium	5110	100 mg/kg dry	5170		99	70-130			
Chromium	65.7	1.0 mg/kg dry	63.1		104	70-130			
Cobalt	11.1	0.10 mg/kg dry	10.4		107	70-130			
Copper	23.1	0.40 mg/kg dry	19.8		117	70-130			
Iron	20000	20 mg/kg dry	20200		99	70-130			
Lead	18.0	0.20 mg/kg dry	17.3		104	70-130			
Magnesium	6590	10 mg/kg dry	6090		108	70-130			
Manganese	331	0.40 mg/kg dry	315		105	70-130			
Mercury	0.120	0.040 mg/kg dry	0.110		109	70-130			
Molybdenum	0.67	0.10 mg/kg dry	0.619		109	70-130			
Nickel	34.9	0.60 mg/kg dry	31.7		110	70-130			
Phosphorus	421	10 mg/kg dry	420		100	70-130			
Silver	1.75	0.10 mg/kg dry	1.75		100	70-130			
Strontium	22.3	0.20 mg/kg dry	20.3		110	70-130			
Titanium	755	1.0 mg/kg dry	645		117	70-130			
Uranium	1.14	0.050 mg/kg dry	1.18		96	70-130			
Vanadium	32.9	1.0 mg/kg dry	33.5		98	70-130			
Zinc	40.2	2.0 mg/kg dry	40.2		100	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22B3486
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-02-28 11:35 / 11.4°C
PO NUMBER		REPORTED	2022-03-07 15:35
PROJECT	Raw Influent- PE14651	COC NUMBER	44620.35807
PROJECT INFO	Lake Country WWTP		

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.

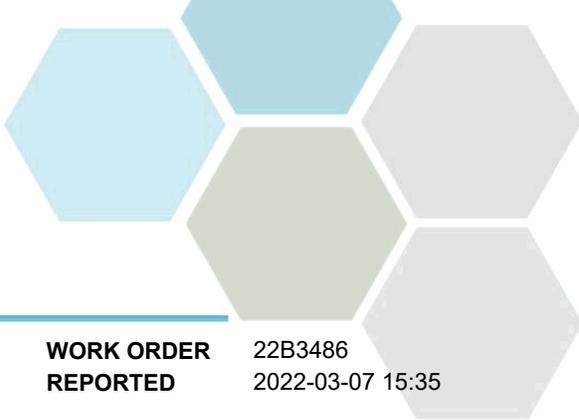
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

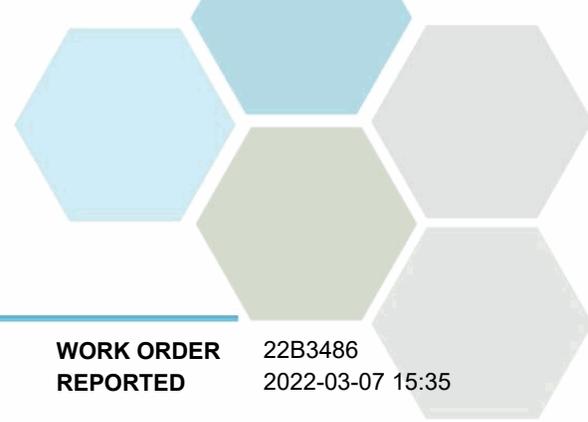
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22B3486
2022-03-07 15:35

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22B3486-01) Matrix: Wastewater Sampled: 2022-02-28 10:25					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-03-22	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2022-03-22	HT1
Phosphate (as P)	5.48	0.0050	mg/L	2022-03-22	HT1
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	139	2.00	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	393	1.0	mg/L	2022-03-03	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Alkalinity, Bicarbonate (as CaCO3)	393	1.0	mg/L	2022-03-03	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Ammonia, Total (as N)	55.3	0.050	mg/L	2022-03-03	
BOD, 5-day	280	2.0	mg/L	2022-03-07	
BOD, 5-day Carbonaceous	231	2.0	mg/L	2022-03-07	
Nitrogen, Total Kjeldahl	139	0.050	mg/L	2022-03-04	
pH	8.02	0.10	pH units	2022-03-03	HT2
Phosphorus, Total (as P)	9.77	0.0050	mg/L	2022-03-04	
Solids, Total Suspended	278	2.0	mg/L	2022-03-04	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22B3486
2022-03-07 15:35

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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

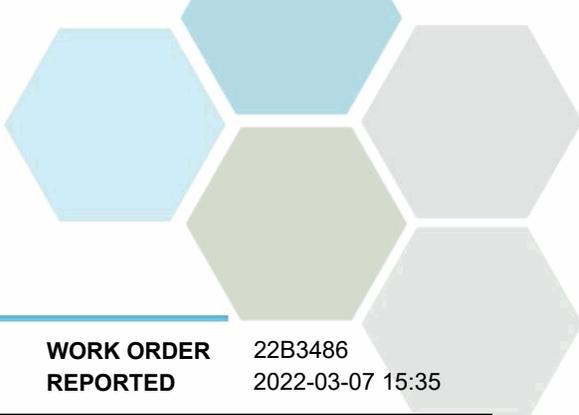
Glossary of Terms:

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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22B3486
2022-03-07 15:35

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

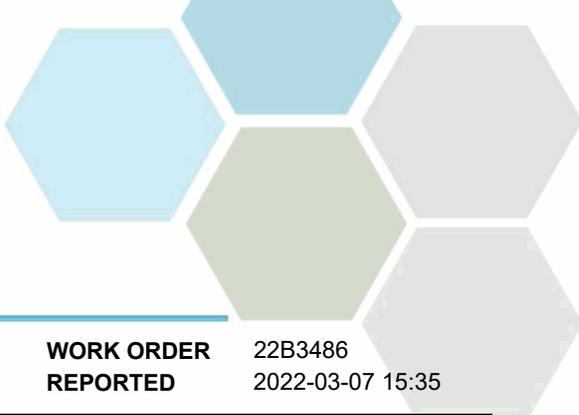
- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2C0083									
Blank (B2C0083-BLK1)			Prepared: 2022-03-22, Analyzed: 2022-03-22						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0083-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0083-BLK3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C0083-BS1)			Prepared: 2022-03-22, Analyzed: 2022-03-22						
Nitrate (as N)	4.01	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.10	0.010 mg/L	2.00		105	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2C0083-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Nitrate (as N)	4.03	0.010 mg/L	4.00		101	90-110			
Nitrite (as N)	2.03	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	1.11	0.0050 mg/L	1.00		111	80-120			
LCS (B2C0083-BS3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Nitrate (as N)	4.02	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		101	85-115			
Phosphate (as P)	1.06	0.0050 mg/L	1.00		106	80-120			

General Parameters, Batch B2C0285

Blank (B2C0285-BLK1)			Prepared: 2022-03-02, Analyzed: 2022-03-07						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2C0285-BS1)			Prepared: 2022-03-02, Analyzed: 2022-03-07						
BOD, 5-day	171	50.2 mg/L	180		95	85-115			

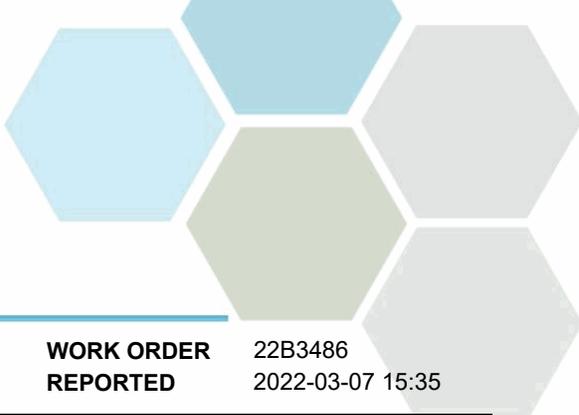


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22B3486
2022-03-07 15:35

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2C0287									
Blank (B2C0287-BLK1)			Prepared: 2022-03-02, Analyzed: 2022-03-07						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2C0287-BS1)			Prepared: 2022-03-02, Analyzed: 2022-03-07						
BOD, 5-day Carbonaceous	164	37.8 mg/L	180		91	85-115			
General Parameters, Batch B2C0354									
Blank (B2C0354-BLK1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2C0354-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2C0354-BLK3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2C0354-BS1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	0.939	0.050 mg/L	1.00		94	90-115			
LCS (B2C0354-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	0.944	0.050 mg/L	1.00		94	90-115			
LCS (B2C0354-BS3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	0.944	0.050 mg/L	1.00		94	90-115			
General Parameters, Batch B2C0420									
Blank (B2C0420-BLK1)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2C0420-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2C0420-BS1)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	0.918	0.050 mg/L	1.00		92	85-115			
LCS (B2C0420-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	0.940	0.050 mg/L	1.00		94	85-115			
General Parameters, Batch B2C0477									
Blank (B2C0477-BLK1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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							
Blank (B2C0477-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22B3486
2022-03-07 15:35

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2C0477, Continued									
Blank (B2C0477-BLK3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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							
LCS (B2C0477-BS1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
LCS (B2C0477-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
LCS (B2C0477-BS3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
Reference (B2C0477-SRM1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B2C0477-SRM2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B2C0477-SRM3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
pH	6.99	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2C0498									
Blank (B2C0498-BLK1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0498-BLK2)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0498-BLK3)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C0498-BS1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	0.102	0.0050 mg/L	0.100		102	85-115			
LCS (B2C0498-BS2)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	0.197	0.0050 mg/L	0.200		98	85-115			
LCS (B2C0498-BS3)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	0.0912	0.0050 mg/L	0.100		91	85-115			
General Parameters, Batch B2C0513									
Blank (B2C0513-BLK1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Solids, Total Suspended	< 2.0	2.0 mg/L							
Blank (B2C0513-BLK2)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2C0513-BS1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Solids, Total Suspended	96.0	22.2 mg/L	100		96	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22B3488
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-02-28 11:35 / 11.4°C
PO NUMBER		REPORTED	2022-03-07 15:21
PROJECT	Final Effluent- PE14651	COC NUMBER	44620.35807
PROJECT INFO	Lake Country WWTP		

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.

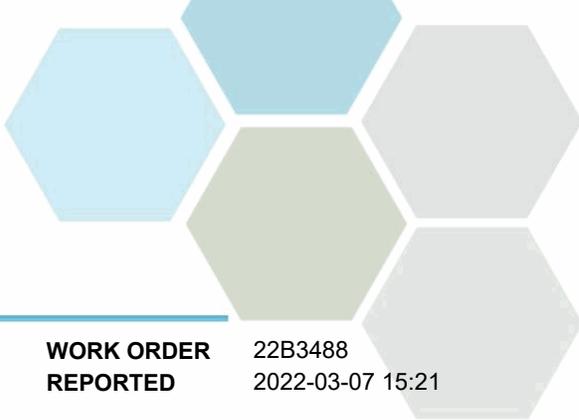
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

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

Final Effluent (E233626) (22B3488-01) | Matrix: Wastewater | Sampled: 2022-02-28 10:10

Anions

Chloride	97.4	0.10	mg/L	2022-03-22	
Nitrate (as N)	0.681	0.010	mg/L	2022-03-22	HT1
Nitrite (as N)	0.094	0.010	mg/L	2022-03-22	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-03-22	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	0.774	0.0100	mg/L	N/A	
Nitrogen, Total	14.8	0.500	mg/L	N/A	
Nitrogen, Organic	1.92	0.500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	231	1.0	mg/L	2022-03-03	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Alkalinity, Bicarbonate (as CaCO3)	231	1.0	mg/L	2022-03-03	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Ammonia, Total (as N)	12.1	0.050	mg/L	2022-03-03	
BOD, 5-day Carbonaceous	9.0	2.0	mg/L	2022-03-07	
Nitrogen, Total Kjeldahl	14.0	0.050	mg/L	2022-03-04	
pH	7.73	0.10	pH units	2022-03-03	HT2
Phosphorus, Total (as P)	0.800	0.0050	mg/L	2022-03-04	
Solids, Total Suspended	19.3	2.0	mg/L	2022-03-04	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-02-28	
Coliforms, Fecal (Q-Tray)	> 242000	1	MPN/100 mL	2022-02-28	

Duplicate (22B3488-02) | Matrix: Water | Sampled: 2022-02-28 10:15

Anions

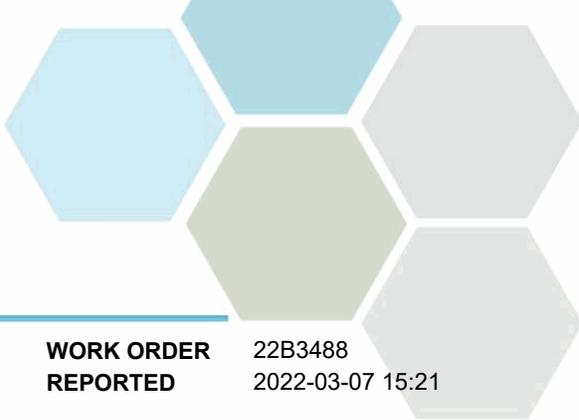
Chloride	97.6	0.10	mg/L	2022-03-22	
Nitrate (as N)	0.692	0.010	mg/L	2022-03-22	HT1
Nitrite (as N)	0.101	0.010	mg/L	2022-03-22	HT1
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-03-22	HT1

Calculated Parameters

Nitrate+Nitrite (as N)	0.793	0.0100	mg/L	N/A	
Nitrogen, Total	15.2	0.500	mg/L	N/A	
Nitrogen, Organic	2.40	0.500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	231	1.0	mg/L	2022-03-03	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-03-03	
Alkalinity, Bicarbonate (as CaCO3)	231	1.0	mg/L	2022-03-03	



TEST RESULTS

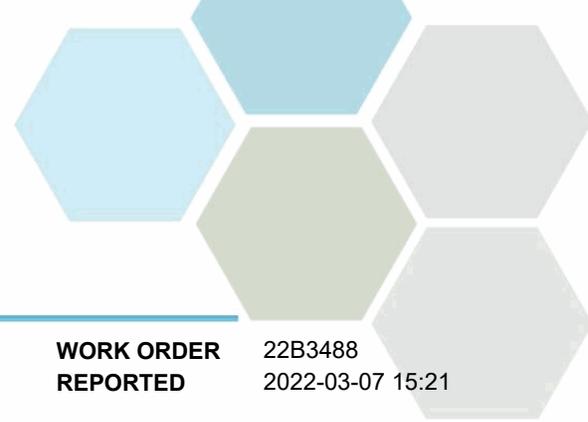
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

Analyte	Result	RL	Units	Analyzed	Qualifier
Duplicate (22B3488-02) Matrix: Water Sampled: 2022-02-28 10:15, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0	mg/L	2022-03-03	
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2022-03-03	
Ammonia, Total (as N)	12.0	0.050	mg/L	2022-03-03	
BOD, 5-day Carbonaceous	9.0	2.0	mg/L	2022-03-07	
Nitrogen, Total Kjeldahl	14.4	0.050	mg/L	2022-03-04	
pH	7.76	0.10	pH units	2022-03-03	HT2
Phosphorus, Total (as P)	0.765	0.0050	mg/L	2022-03-04	
Solids, Total Suspended	18.0	2.0	mg/L	2022-03-04	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	> 2420	1	MPN/100 mL	2022-02-28	
Coliforms, Fecal (Q-Tray)	> 2420	1	MPN/100 mL	2022-02-28	

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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

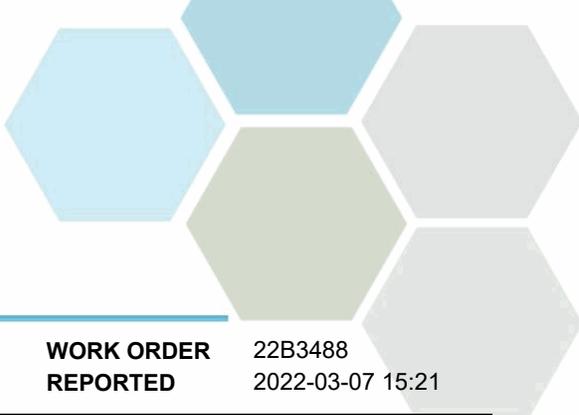
Glossary of Terms:

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
>	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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

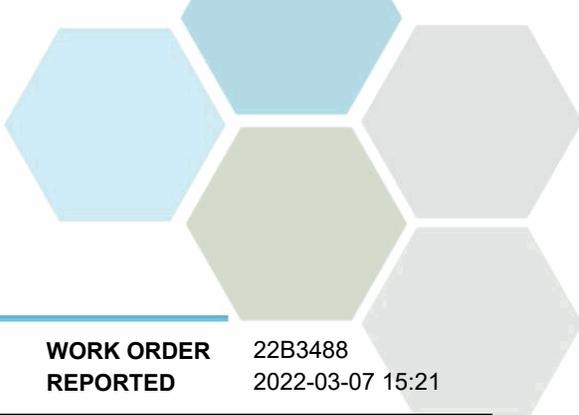
The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2C0083									
Blank (B2C0083-BLK1)			Prepared: 2022-03-22, Analyzed: 2022-03-22						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0083-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0083-BLK3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C0083-BS1)			Prepared: 2022-03-22, Analyzed: 2022-03-22						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Nitrate (as N)	4.01	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.10	0.010 mg/L	2.00		105	85-115			
Phosphate (as P)	1.08	0.0050 mg/L	1.00		108	80-120			
LCS (B2C0083-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Chloride	16.2	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)	2.03	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	1.11	0.0050 mg/L	1.00		111	80-120			
LCS (B2C0083-BS3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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)	2.01	0.010 mg/L	2.00		101	85-115			
Phosphate (as P)	1.06	0.0050 mg/L	1.00		106	80-120			

General Parameters, Batch B2C0287

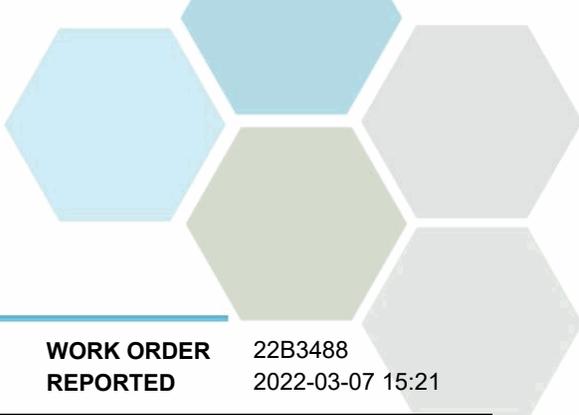


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2C0287, Continued									
Blank (B2C0287-BLK1)			Prepared: 2022-03-02, Analyzed: 2022-03-07						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2C0287-BS1)			Prepared: 2022-03-02, Analyzed: 2022-03-07						
BOD, 5-day Carbonaceous	164	37.8 mg/L	180		91	85-115			
General Parameters, Batch B2C0354									
Blank (B2C0354-BLK1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2C0354-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B2C0354-BLK3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2C0354-BS1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	0.939	0.050 mg/L	1.00		94	90-115			
LCS (B2C0354-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	0.944	0.050 mg/L	1.00		94	90-115			
LCS (B2C0354-BS3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Ammonia, Total (as N)	0.944	0.050 mg/L	1.00		94	90-115			
General Parameters, Batch B2C0420									
Blank (B2C0420-BLK1)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2C0420-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2C0420-BS1)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	0.918	0.050 mg/L	1.00		92	85-115			
LCS (B2C0420-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-04						
Nitrogen, Total Kjeldahl	0.940	0.050 mg/L	1.00		94	85-115			
General Parameters, Batch B2C0477									
Blank (B2C0477-BLK1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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							
Blank (B2C0477-BLK2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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							



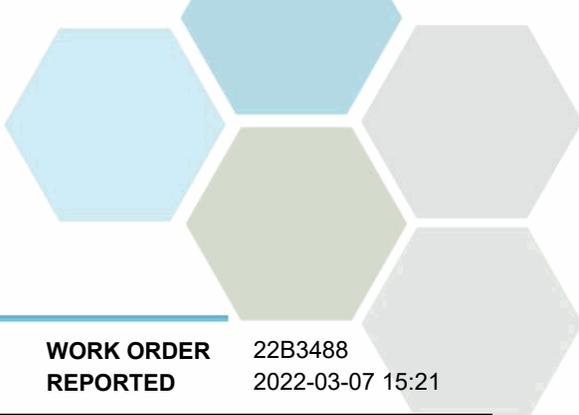
APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2C0477, Continued									
Blank (B2C0477-BLK3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
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							
LCS (B2C0477-BS1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
LCS (B2C0477-BS2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
LCS (B2C0477-BS3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
Alkalinity, Total (as CaCO3)	107	1.0 mg/L	100		107	80-120			
Reference (B2C0477-SRM1)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B2C0477-SRM2)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B2C0477-SRM3)			Prepared: 2022-03-03, Analyzed: 2022-03-03						
pH	6.99	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2C0498									
Blank (B2C0498-BLK1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0498-BLK2)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2C0498-BLK3)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2C0498-BS1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	0.102	0.0050 mg/L	0.100		102	85-115			
LCS (B2C0498-BS2)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	0.197	0.0050 mg/L	0.200		98	85-115			
LCS (B2C0498-BS3)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Phosphorus, Total (as P)	0.0912	0.0050 mg/L	0.100		91	85-115			
General Parameters, Batch B2C0513									
Blank (B2C0513-BLK1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Solids, Total Suspended	< 2.0	2.0 mg/L							
Blank (B2C0513-BLK2)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2C0513-BS1)			Prepared: 2022-03-04, Analyzed: 2022-03-04						
Solids, Total Suspended	96.0	22.2 mg/L	100		96	85-115			

Microbiological Parameters, Batch B2B2778



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22B3488
2022-03-07 15:21

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Microbiological Parameters, Batch B2B2778, Continued									
Blank (B2B2778-BLK1)				Prepared: 2022-02-28, Analyzed: 2022-02-28					
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2B2778-BLK2)				Prepared: 2022-02-28, Analyzed: 2022-02-28					
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2B2778-DUP2)		Source: 22B3488-01		Prepared: 2022-02-28, Analyzed: 2022-02-28					
Coliforms, Total (Q-Tray)	> 242000	1 MPN/100 mL		> 242000				80	
Coliforms, Fecal (Q-Tray)	199000	1 MPN/100 mL		> 242000			20	80	



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A0581
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-06 11:16 / 6.8°C
PO NUMBER		REPORTED	2022-01-13 14:12
PROJECT	Final Effluent- PE14651	COC NUMBER	44567.31979
PROJECT INFO	Lake Country WWTP		

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.

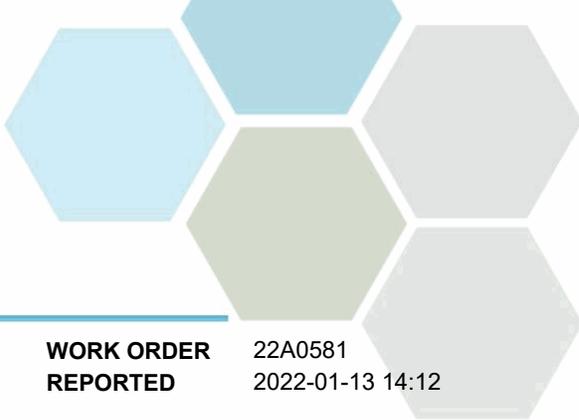
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

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

Final Effluent (E233626) (22A0581-01) | Matrix: Wastewater | Sampled: 2022-01-06 10:15

Anions

Chloride	113	0.10	mg/L	2022-01-08	
Nitrate (as N)	1.56	0.010	mg/L	2022-01-08	
Nitrite (as N)	0.106	0.010	mg/L	2022-01-08	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-01-08	

Calculated Parameters

Nitrate+Nitrite (as N)	1.66	0.0100	mg/L	N/A	
Nitrogen, Total	8.13	0.100	mg/L	N/A	
Nitrogen, Organic	2.83	0.100	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	204	1.0	mg/L	2022-01-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Bicarbonate (as CaCO3)	204	1.0	mg/L	2022-01-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Ammonia, Total (as N)	3.64	0.050	mg/L	2022-01-10	
BOD, 5-day Carbonaceous	12.2	2.0	mg/L	2022-01-12	
Nitrogen, Total Kjeldahl	6.47	0.050	mg/L	2022-01-11	
pH	6.98	0.10	pH units	2022-01-09	HT2
Phosphorus, Total (as P)	0.455	0.0050	mg/L	2022-01-12	
Solids, Total Suspended	9.5	2.0	mg/L	2022-01-11	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-01-07	
Coliforms, Fecal (Q-Tray)	≥ 81600	1	MPN/100 mL	2022-01-07	

Trip Blank (22A0581-02) | Matrix: Wastewater | Sampled: 2022-01-06 10:20

Anions

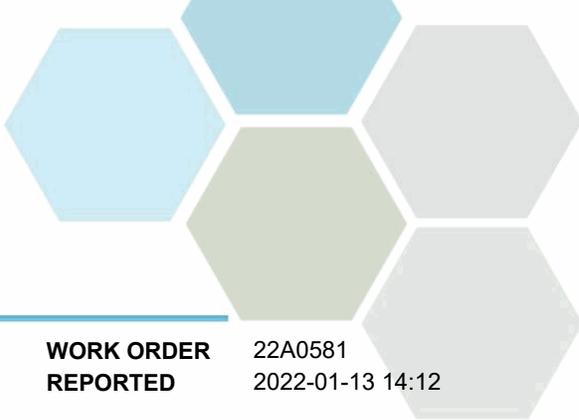
Chloride	< 0.10	0.10	mg/L	2022-01-10	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-01-09	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-01-09	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-01-09	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
Nitrogen, Organic	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	



TEST RESULTS

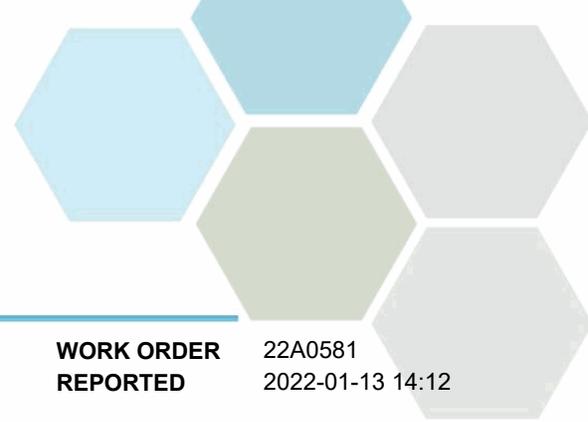
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

Analyte	Result	RL	Units	Analyzed	Qualifier
Trip Blank (22A0581-02) Matrix: Wastewater Sampled: 2022-01-06 10:20, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO ₃)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Hydroxide (as CaCO ₃)	< 1.0	1.0	mg/L	2022-01-09	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-01-10	
BOD, 5-day Carbonaceous	< 2.5	2.0	mg/L	2022-01-12	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-01-11	
pH	5.30	0.10	pH units	2022-01-09	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-01-12	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-01-11	
<i>Microbiological Parameters</i>					
Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-01-07	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-01-07	

Sample Qualifiers:

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



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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

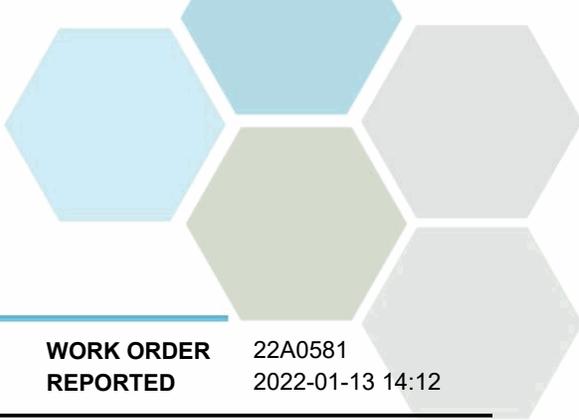
Glossary of Terms:

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
>	Greater than the specified Result
>=	Greater than or equal to 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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

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

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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Anions, Batch B2A0499

Blank (B2A0499-BLK1)			Prepared: 2022-01-08, Analyzed: 2022-01-08						
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							
LCS (B2A0499-BS1)			Prepared: 2022-01-08, Analyzed: 2022-01-08						
Chloride	15.9	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.04	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	0.886	0.0050 mg/L	1.00		89	80-120			

General Parameters, Batch B2A0467

Blank (B2A0467-BLK1)			Prepared: 2022-01-07, Analyzed: 2022-01-12						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2A0467-BS1)			Prepared: 2022-01-07, Analyzed: 2022-01-12						
BOD, 5-day Carbonaceous	182	20.4 mg/L	180		101	85-115			

General Parameters, Batch B2A0557

Blank (B2A0557-BLK1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
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							
Blank (B2A0557-BLK2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
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							

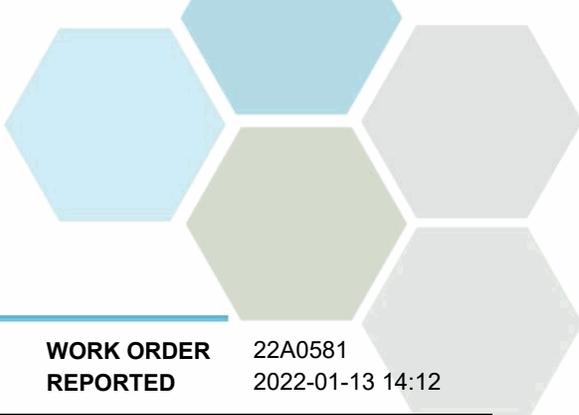


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2A0557, Continued									
LCS (B2A0557-BS1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
Alkalinity, Total (as CaCO ₃)	109	1.0 mg/L	100		109	80-120			
LCS (B2A0557-BS2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
Alkalinity, Total (as CaCO ₃)	93.4	1.0 mg/L	100		93	80-120			
Reference (B2A0557-SRM1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2A0557-SRM2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
pH	7.04	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2A0587									
Blank (B2A0587-BLK1)			Prepared: 2022-01-10, Analyzed: 2022-01-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2A0587-BS1)			Prepared: 2022-01-10, Analyzed: 2022-01-10						
Ammonia, Total (as N)	0.986	0.050 mg/L	1.00		99	90-115			
General Parameters, Batch B2A0594									
Blank (B2A0594-BLK1)			Prepared: 2022-01-11, Analyzed: 2022-01-11						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2A0594-BS1)			Prepared: 2022-01-11, Analyzed: 2022-01-11						
Solids, Total Suspended	94.0	10.0 mg/L	100		94	85-115			
General Parameters, Batch B2A0647									
Blank (B2A0647-BLK1)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2A0647-BLK2)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2A0647-BS1)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	1.07	0.050 mg/L	1.00		107	85-115			
LCS (B2A0647-BS2)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			
General Parameters, Batch B2A0809									
Blank (B2A0809-BLK1)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2A0809-BLK2)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2A0809-BS1)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
LCS (B2A0809-BS2)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Microbiological Parameters, Batch B2A0451									
Blank (B2A0451-BLK1)					Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2A0451-BLK2)					Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2A0451-BLK3)					Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2A0451-DUP2)					Source: 22A0581-01 Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Fecal (Q-Tray)	48800	1 MPN/100 mL		>= 81600			50	80	



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A0584
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-06 11:16 / 6.8°C
PO NUMBER		REPORTED	2022-01-12 11:15
PROJECT	BioSolids- PE14651	COC NUMBER	44567.31979
PROJECT INFO	Lake Country WWTP		

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.

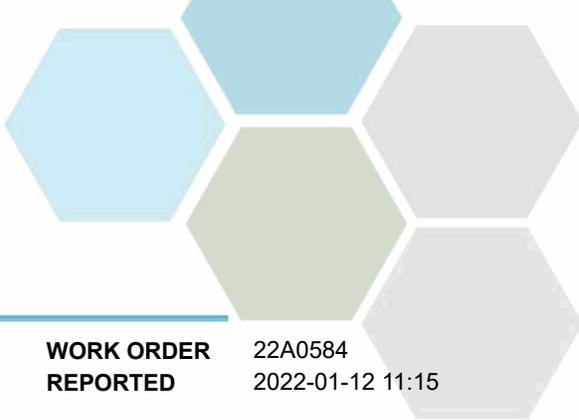
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22A0584
2022-01-12 11:15

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

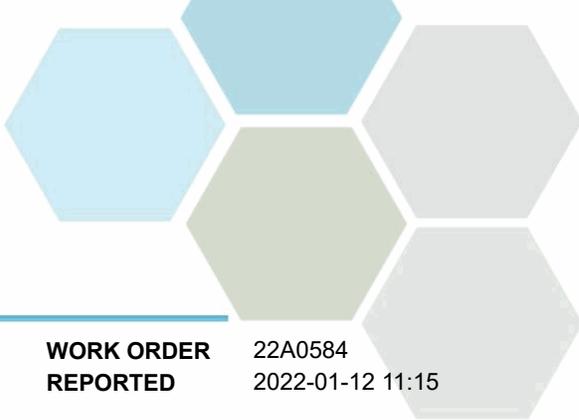
Biosolids (E233628) (22A0584-01) | Matrix: Sludge | Sampled: 2022-01-06 08:00

General Parameters

Moisture	80.4	1.0	% wet	2022-01-11	
Nitrogen, Total Kjeldahl	5.48	0.0004	% dry	2022-01-10	
pH (1:2 H2O Solution)	5.60	0.10	pH units	2022-01-09	
Solids, Total	17.2	0.1	% wet	2022-01-10	
Solids, Volatile	85.4	0.1	% dry	2022-01-10	

Strong Acid Leachable Metals

Aluminum	2090	40	mg/kg dry	2022-01-11	
Antimony	0.87	0.10	mg/kg dry	2022-01-11	
Arsenic	1.30	0.30	mg/kg dry	2022-01-11	
Barium	70.8	1.0	mg/kg dry	2022-01-11	
Beryllium	< 0.10	0.10	mg/kg dry	2022-01-11	
Bismuth	21.0	0.10	mg/kg dry	2022-01-11	
Boron	13.9	2.0	mg/kg dry	2022-01-11	
Cadmium	0.788	0.040	mg/kg dry	2022-01-11	
Calcium	10500	100	mg/kg dry	2022-01-11	
Chromium	9.4	1.0	mg/kg dry	2022-01-11	
Cobalt	0.97	0.10	mg/kg dry	2022-01-11	
Copper	238	0.40	mg/kg dry	2022-01-11	
Iron	2270	20	mg/kg dry	2022-01-11	
Lead	5.26	0.20	mg/kg dry	2022-01-11	
Lithium	0.68	0.10	mg/kg dry	2022-01-11	
Magnesium	4080	10	mg/kg dry	2022-01-11	
Manganese	108	0.40	mg/kg dry	2022-01-11	
Mercury	0.311	0.040	mg/kg dry	2022-01-11	
Molybdenum	6.96	0.10	mg/kg dry	2022-01-11	
Nickel	6.51	0.60	mg/kg dry	2022-01-11	
Phosphorus	15900	10	mg/kg dry	2022-01-11	
Potassium	4990	40	mg/kg dry	2022-01-11	
Selenium	2.42	0.20	mg/kg dry	2022-01-11	
Silver	1.10	0.10	mg/kg dry	2022-01-11	
Sodium	647	50	mg/kg dry	2022-01-11	
Strontium	64.3	0.20	mg/kg dry	2022-01-11	
Sulfur	5170	1000	mg/kg dry	2022-01-11	
Tellurium	< 0.10	0.10	mg/kg dry	2022-01-11	
Thallium	< 0.10	0.10	mg/kg dry	2022-01-11	
Thorium	< 0.50	0.50	mg/kg dry	2022-01-11	
Tin	11.6	0.20	mg/kg dry	2022-01-11	
Titanium	63.5	1.0	mg/kg dry	2022-01-11	
Tungsten	0.56	0.20	mg/kg dry	2022-01-11	
Uranium	8.30	0.050	mg/kg dry	2022-01-11	
Vanadium	3.5	1.0	mg/kg dry	2022-01-11	
Zinc	432	2.0	mg/kg dry	2022-01-11	

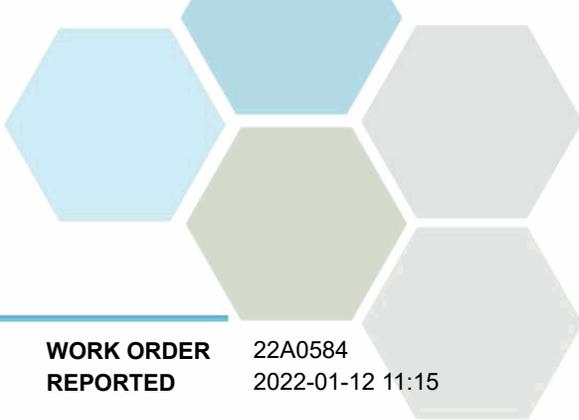


TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22A0584
2022-01-12 11:15

Analyte	Result	RL	Units	Analyzed	Qualifier
Biosolids (E233628) (22A0584-01) Matrix: Sludge Sampled: 2022-01-06 08:00, Continued					
<i>Strong Acid Leachable Metals, Continued</i>					
Zirconium	6.6		2.0 mg/kg dry	2022-01-11	



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22A0584
2022-01-12 11:15

Analysis Description	Method Ref.	Technique	Accredited	Location
Moisture in Solid	ASTM D2974-87*	Gravimetry (Dried at 105C)		N/A
Nitrogen, Total Kjeldahl in Solid	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Solid	Carter 16.2 / SM 4500-H+ B (2017)	1:2 Soil/Water Slurry / Electrometry		Kelowna
SALM in Solid	BCMOE SALM V.2 / EPA 6020B	HNO ₃ +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

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

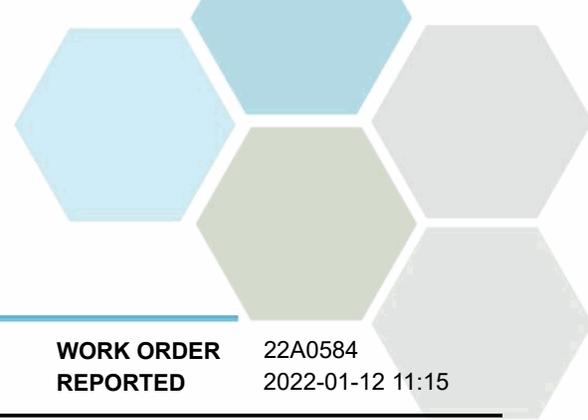
Glossary of Terms:

RL	Reporting Limit (default)
% dry	Percent (dry weight basis)
% wet	Percent (as received basis)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/kg dry	Milligrams per kilogram (dry weight basis)
pH units	pH < 7 = acidic, pH > 7 = basic
ASTM	ASTM International Test Methods
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22A0584
2022-01-12 11:15

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 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
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

General Parameters, Batch B2A0488

Reference (B2A0488-SRM1)	Prepared: 2022-01-10, Analyzed: 2022-01-10								
Solids, Total	92.9	0.1 % wet	93.5		99	80-120			

General Parameters, Batch B2A0555

Reference (B2A0555-SRM1)	Prepared: 2022-01-09, Analyzed: 2022-01-10								
Nitrogen, Total Kjeldahl	0.303	0.010 % wet	0.261		116	58.8-150			

General Parameters, Batch B2A0573

Duplicate (B2A0573-DUP1)	Source: 22A0584-01	Prepared: 2022-01-11, Analyzed: 2022-01-11							
Moisture	81.3	1.0 % wet		80.4			1.1	40	

Strong Acid Leachable Metals, Batch B2A0677

Blank (B2A0677-BLK1)	Prepared: 2022-01-11, Analyzed: 2022-01-11								
Aluminum	< 40	40 mg/kg dry							
Antimony	< 0.10	0.10 mg/kg dry							
Arsenic	< 0.30	0.30 mg/kg dry							
Barium	< 1.0	1.0 mg/kg dry							
Beryllium	< 0.10	0.10 mg/kg dry							
Bismuth	< 0.10	0.10 mg/kg dry							
Boron	< 2.0	2.0 mg/kg dry							
Cadmium	< 0.040	0.040 mg/kg dry							
Calcium	< 100	100 mg/kg dry							
Chromium	< 1.0	1.0 mg/kg dry							
Cobalt	< 0.10	0.10 mg/kg dry							
Copper	< 0.40	0.40 mg/kg dry							
Iron	< 20	20 mg/kg dry							
Lead	< 0.20	0.20 mg/kg dry							
Lithium	< 0.10	0.10 mg/kg dry							
Magnesium	< 10	10 mg/kg dry							
Manganese	< 0.40	0.40 mg/kg dry							
Mercury	< 0.040	0.040 mg/kg dry							
Molybdenum	< 0.10	0.10 mg/kg dry							
Nickel	< 0.60	0.60 mg/kg dry							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22A0584
2022-01-12 11:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2A0677, Continued									
Blank (B2A0677-BLK1), Continued					Prepared: 2022-01-11, Analyzed: 2022-01-11				
Phosphorus	< 10	10 mg/kg dry							
Potassium	< 40	40 mg/kg dry							
Selenium	< 0.20	0.20 mg/kg dry							
Silver	< 0.10	0.10 mg/kg dry							
Sodium	< 50	50 mg/kg dry							
Strontium	< 0.20	0.20 mg/kg dry							
Sulfur	< 1000	1000 mg/kg dry							
Tellurium	< 0.10	0.10 mg/kg dry							
Thallium	< 0.10	0.10 mg/kg dry							
Thorium	< 0.50	0.50 mg/kg dry							
Tin	< 0.20	0.20 mg/kg dry							
Titanium	< 1.0	1.0 mg/kg dry							
Tungsten	< 0.20	0.20 mg/kg dry							
Uranium	< 0.050	0.050 mg/kg dry							
Vanadium	< 1.0	1.0 mg/kg dry							
Zinc	< 2.0	2.0 mg/kg dry							
Zirconium	< 2.0	2.0 mg/kg dry							
LCS (B2A0677-BS1)					Prepared: 2022-01-11, Analyzed: 2022-01-11				
Antimony	2.03	0.10 mg/kg dry	2.00		102	80-120			
Arsenic	1.88	0.30 mg/kg dry	2.00		94	80-120			
Barium	1.9	1.0 mg/kg dry	2.00		93	80-120			
Beryllium	1.86	0.10 mg/kg dry	2.00		93	80-120			
Bismuth	1.92	0.10 mg/kg dry	2.00		96	80-120			
Boron	2.0	2.0 mg/kg dry	2.00		102	80-120			
Cadmium	1.91	0.040 mg/kg dry	2.00		96	80-120			
Calcium	184	100 mg/kg dry	200		92	80-120			
Chromium	1.9	1.0 mg/kg dry	2.00		97	80-120			
Cobalt	1.94	0.10 mg/kg dry	2.00		97	80-120			
Copper	1.95	0.40 mg/kg dry	2.00		97	80-120			
Iron	195	20 mg/kg dry	200		98	80-120			
Lead	2.01	0.20 mg/kg dry	2.00		100	80-120			
Lithium	1.92	0.10 mg/kg dry	2.00		96	80-120			
Magnesium	199	10 mg/kg dry	200		100	80-120			
Manganese	1.99	0.40 mg/kg dry	2.00		100	80-120			
Mercury	0.096	0.040 mg/kg dry	0.101		95	80-120			
Molybdenum	1.97	0.10 mg/kg dry	2.00		98	80-120			
Nickel	1.76	0.60 mg/kg dry	2.00		88	80-120			
Phosphorus	184	10 mg/kg dry	200		92	80-120			
Potassium	189	40 mg/kg dry	200		94	80-120			
Selenium	1.83	0.20 mg/kg dry	2.00		92	80-120			
Silver	1.97	0.10 mg/kg dry	2.00		98	80-120			
Sodium	204	50 mg/kg dry	200		102	80-120			
Strontium	1.86	0.20 mg/kg dry	2.00		93	80-120			
Sulfur	< 1000	1000 mg/kg dry	500		111	80-120			
Tellurium	1.98	0.10 mg/kg dry	2.00		99	80-120			
Thallium	1.88	0.10 mg/kg dry	2.00		94	80-120			
Thorium	1.72	0.50 mg/kg dry	2.00		86	80-120			
Tin	2.05	0.20 mg/kg dry	2.00		103	80-120			
Titanium	2.1	1.0 mg/kg dry	2.00		105	80-120			
Tungsten	1.94	0.20 mg/kg dry	2.00		97	80-120			
Uranium	1.95	0.050 mg/kg dry	2.00		98	80-120			
Vanadium	2.1	1.0 mg/kg dry	2.00		106	80-120			
Zinc	< 2.0	2.0 mg/kg dry	2.00		83	80-120			
Zirconium	< 2.0	2.0 mg/kg dry	2.00		94	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
BioSolids- PE14651

WORK ORDER REPORTED 22A0584
2022-01-12 11:15

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Strong Acid Leachable Metals, Batch B2A0677, Continued									
Reference (B2A0677-SRM1)					Prepared: 2022-01-11, Analyzed: 2022-01-11				
Aluminum	11100	40 mg/kg dry	11500		97	70-130			
Antimony	0.70	0.10 mg/kg dry	0.724		96	70-130			
Arsenic	82.5	0.30 mg/kg dry	82.1		100	70-130			
Barium	39.5	1.0 mg/kg dry	40.0		99	70-130			
Beryllium	0.37	0.10 mg/kg dry	0.369		100	70-130			
Calcium	5030	100 mg/kg dry	5170		97	70-130			
Chromium	63.9	1.0 mg/kg dry	63.1		101	70-130			
Cobalt	10.3	0.10 mg/kg dry	10.4		99	70-130			
Copper	20.4	0.40 mg/kg dry	19.8		103	70-130			
Iron	18900	20 mg/kg dry	20200		94	70-130			
Lead	16.5	0.20 mg/kg dry	17.3		96	70-130			
Magnesium	5940	10 mg/kg dry	6090		98	70-130			
Manganese	306	0.40 mg/kg dry	315		97	70-130			
Mercury	0.110	0.040 mg/kg dry	0.110		100	70-130			
Molybdenum	0.64	0.10 mg/kg dry	0.619		103	70-130			
Nickel	31.3	0.60 mg/kg dry	31.7		99	70-130			
Phosphorus	423	10 mg/kg dry	420		101	70-130			
Silver	1.52	0.10 mg/kg dry	1.75		87	70-130			
Strontium	20.7	0.20 mg/kg dry	20.3		102	70-130			
Titanium	735	1.0 mg/kg dry	645		114	70-130			
Uranium	1.10	0.050 mg/kg dry	1.18		93	70-130			
Vanadium	34.7	1.0 mg/kg dry	33.5		104	70-130			
Zinc	34.0	2.0 mg/kg dry	40.2		85	70-130			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A1604
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-17 11:11 / 9.6°C
PO NUMBER		REPORTED	2022-01-24 15:04
PROJECT	Final Effluent- PE14651	COC NUMBER	44578.44300
PROJECT INFO	Lake Country WWTP		

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.

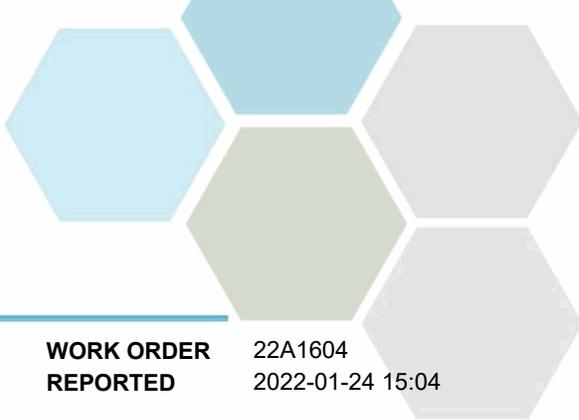
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4

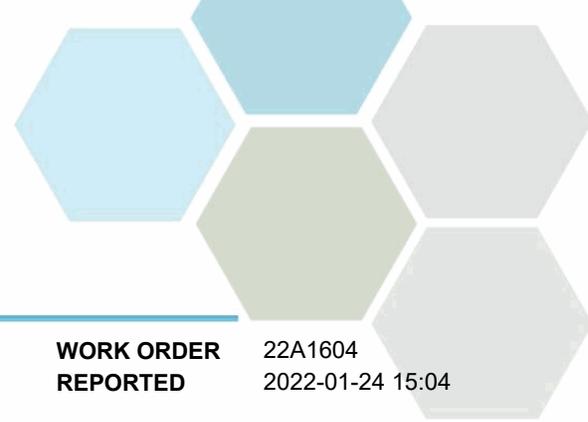


TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1604
2022-01-24 15:04

Analyte	Result	RL	Units	Analyzed	Qualifier
Final Effluent (E233626) (22A1604-01) Matrix: Wastewater Sampled: 2022-01-17 10:50					
<i>General Parameters</i>					
BOD, 5-day Carbonaceous	6.2	2.0	mg/L	2022-01-24	



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1604
2022-01-24 15:04

Analysis Description	Method Ref.	Technique	Accredited	Location
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna

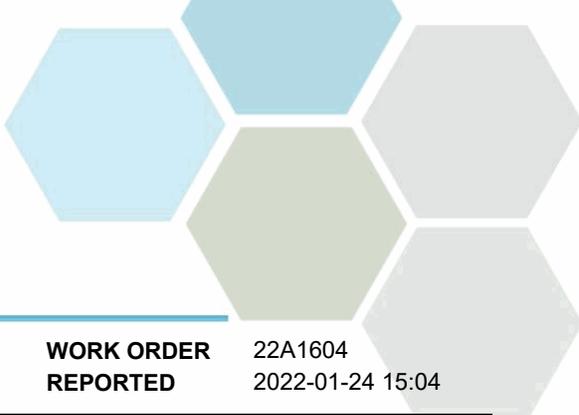
Glossary of Terms:

RL	Reporting Limit (default)
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1604
2022-01-24 15:04

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 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
General Parameters, Batch B2A1514									
Blank (B2A1514-BLK1)									
Prepared: 2022-01-19, Analyzed: 2022-01-24									
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2A1514-BS1)									
Prepared: 2022-01-19, Analyzed: 2022-01-24									
BOD, 5-day Carbonaceous	156	51.2 mg/L	180		87	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A1546
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-14 09:20 / 10.6°C
PO NUMBER		REPORTED	2022-01-20 14:51
PROJECT	Final Effluent- PE14651	COC NUMBER	44575.35824
PROJECT INFO	Lake Country WWTP		

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.

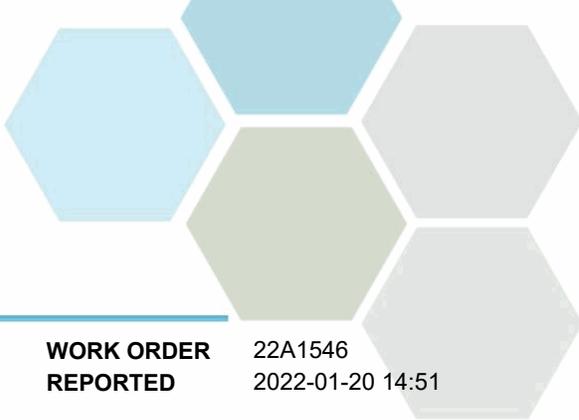
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4

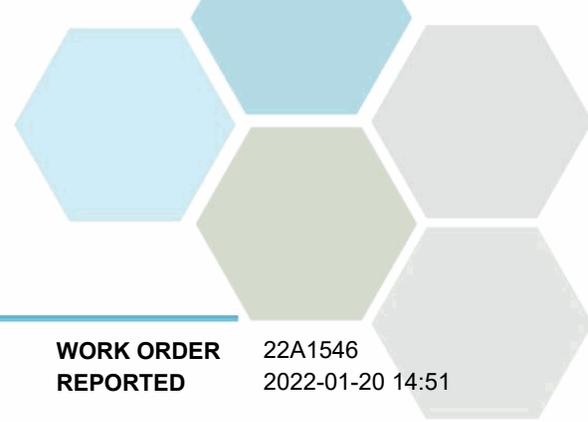


TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1546
2022-01-20 14:51

Analyte	Result	RL	Units	Analyzed	Qualifier
Final Effluent (E233626) (22A1546-01) Matrix: Wastewater Sampled: 2022-01-14 08:55					
<i>General Parameters</i>					
BOD, 5-day Carbonaceous	4.4	2.0	mg/L	2022-01-20	



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1546
2022-01-20 14:51

Analysis Description	Method Ref.	Technique	Accredited	Location
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna

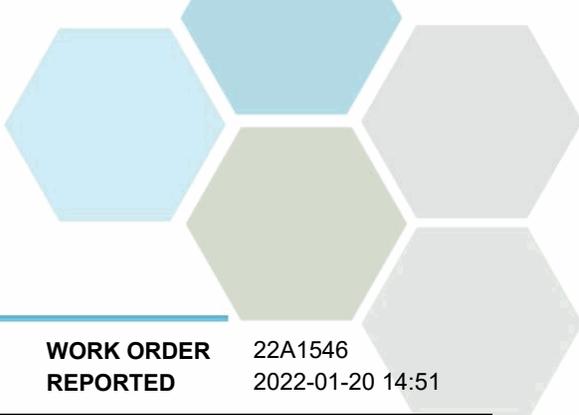
Glossary of Terms:

RL	Reporting Limit (default)
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1546
2022-01-20 14:51

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 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
General Parameters, Batch B2A1150									
Blank (B2A1150-BLK1)									
Prepared: 2022-01-15, Analyzed: 2022-01-20									
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2A1150-BS1)									
Prepared: 2022-01-15, Analyzed: 2022-01-20									
BOD, 5-day Carbonaceous	181	55.7 mg/L	180		101	85-115			



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A0578
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-06 11:16 / 6.8°C
PO NUMBER		REPORTED	2022-01-13 11:13
PROJECT	Raw Influent- PE14651	COC NUMBER	44567.31979
PROJECT INFO	Lake Country WWTP		

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.

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

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

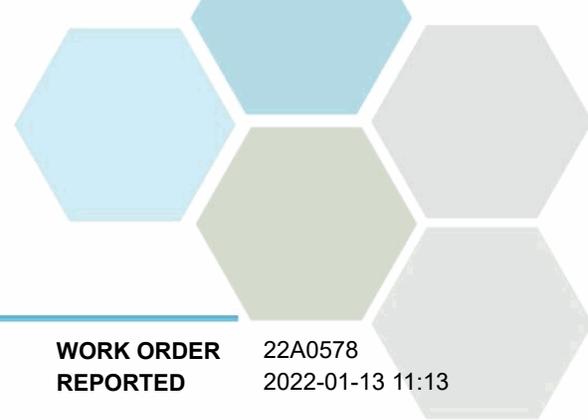
REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22A0578
2022-01-13 11:13

Analyte	Result	RL	Units	Analyzed	Qualifier
Raw Influent (E233627) (22A0578-01) Matrix: Wastewater Sampled: 2022-01-06 10:00					
Anions					
Nitrate (as N)	< 0.010	0.010	mg/L	2022-01-08	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-01-08	
Phosphate (as P)	4.99	0.0050	mg/L	2022-01-08	
Calculated Parameters					
Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	78.6	2.50	mg/L	N/A	
General Parameters					
Alkalinity, Total (as CaCO3)	378	1.0	mg/L	2022-01-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Bicarbonate (as CaCO3)	378	1.0	mg/L	2022-01-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Ammonia, Total (as N)	50.0	0.050	mg/L	2022-01-10	
BOD, 5-day	449	2.0	mg/L	2022-01-12	
BOD, 5-day Carbonaceous	462	2.0	mg/L	2022-01-12	
Nitrogen, Total Kjeldahl	78.6	0.050	mg/L	2022-01-11	
pH	7.24	0.10	pH units	2022-01-09	HT2
Phosphorus, Total (as P)	8.14	0.0050	mg/L	2022-01-12	
Solids, Total Suspended	207	2.0	mg/L	2022-01-11	

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22A0578
2022-01-13 11:13

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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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
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 or once samples expire, whichever comes first. Longer hold is possible if agreed to in writing.

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 Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22A0578
2022-01-13 11:13

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 a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B2A0499									
Blank (B2A0499-BLK1)			Prepared: 2022-01-08, Analyzed: 2022-01-08						
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2A0499-BS1)			Prepared: 2022-01-08, Analyzed: 2022-01-08						
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.04	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	0.886	0.0050 mg/L	1.00		89	80-120			
General Parameters, Batch B2A0466									
Blank (B2A0466-BLK1)			Prepared: 2022-01-07, Analyzed: 2022-01-12						
BOD, 5-day	< 2.0	2.0 mg/L							
LCS (B2A0466-BS1)			Prepared: 2022-01-07, Analyzed: 2022-01-12						
BOD, 5-day	186	43.6 mg/L	180		103	85-115			
General Parameters, Batch B2A0467									
Blank (B2A0467-BLK1)			Prepared: 2022-01-07, Analyzed: 2022-01-12						
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2A0467-BS1)			Prepared: 2022-01-07, Analyzed: 2022-01-12						
BOD, 5-day Carbonaceous	182	20.4 mg/L	180		101	85-115			
General Parameters, Batch B2A0557									
Blank (B2A0557-BLK1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
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							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22A0578
2022-01-13 11:13

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2A0557, Continued									
Blank (B2A0557-BLK2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
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							
LCS (B2A0557-BS1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
Alkalinity, Total (as CaCO3)	109	1.0 mg/L	100		109	80-120			
LCS (B2A0557-BS2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
Alkalinity, Total (as CaCO3)	93.4	1.0 mg/L	100		93	80-120			
Reference (B2A0557-SRM1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2A0557-SRM2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
pH	7.04	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2A0587									
Blank (B2A0587-BLK1)			Prepared: 2022-01-10, Analyzed: 2022-01-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2A0587-BS1)			Prepared: 2022-01-10, Analyzed: 2022-01-10						
Ammonia, Total (as N)	0.986	0.050 mg/L	1.00		99	90-115			
General Parameters, Batch B2A0594									
Blank (B2A0594-BLK1)			Prepared: 2022-01-11, Analyzed: 2022-01-11						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2A0594-BS1)			Prepared: 2022-01-11, Analyzed: 2022-01-11						
Solids, Total Suspended	94.0	10.0 mg/L	100		94	85-115			
General Parameters, Batch B2A0647									
Blank (B2A0647-BLK1)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2A0647-BLK2)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2A0647-BS1)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	1.07	0.050 mg/L	1.00		107	85-115			
LCS (B2A0647-BS2)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			
General Parameters, Batch B2A0809									
Blank (B2A0809-BLK1)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2A0809-BLK2)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Raw Influent- PE14651

WORK ORDER REPORTED 22A0578
2022-01-13 11:13

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2A0809, Continued									
LCS (B2A0809-BS1)				Prepared: 2022-01-12, Analyzed: 2022-01-12					
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
LCS (B2A0809-BS2)				Prepared: 2022-01-12, Analyzed: 2022-01-12					
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			

Appendix C – Non-Compliance Reporting



MINISTRY OF ENVIRONMENT
REGIONAL OPERATIONS BRANCH

NON-COMPLIANCE REPORTING MAILBOX
NOTIFICATION TEMPLATE

To: EnvironmentalCompliance@gov.bc.ca
Subject: 14651-NCR-20220204 Effluent flow limit
exceedance

Attention:

Non-compliance Report for Authorization # 14651

Date of Non-compliance: 2022-02-04

Location of Non-compliance [4062 beaver lake rd 50.024865, -119.385069]:

Nature of Non-compliance: Monthly permit limit for effluent flow has been exceeded. Limit is currently at 2000m³/day(daily flow averaged over the month) and the January monthly total was 2025 m³ for January 2022.

Initial Response/Actions taken: Confirmed the average for January, flows have been slowly increasing with population growth. A melting event is a possible contributor to this occurrence.

Monitoring conducted: A sudden melting event occurred in early January that saw increase in daily flow of 5 to 10%, however this was a common event across the Okanagan. City of Kelowna experienced a similar increase in flow.

Future action items: Phase 4 upgrades are underway at the DLC WWTP. In the current permit, once these upgrades are complete, the daily effluent limit will be raised to 2200m³/day, monthly average.

Contact information: Davin Larsen 250-869-5703 or dlarsen@lakecountry.bc.ca

Attachments: None.



MINISTRY OF ENVIRONMENT
REGIONAL OPERATIONS BRANCH

NON-COMPLIANCE REPORTING MAILBOX
NOTIFICATION TEMPLATE

To: EnvironmentalCompliance@gov.bc.ca
Subject: 14651-NCR-20220125 Effluent BOD exceedance

Attention: Non-compliance Report for Authorization # 14651

Date of Non-compliance: 2021-01-13

Location of Non-compliance [4062 beaver lake rd 50.024865, -119.385069]:

Nature of Non-compliance: Monthly permit limit for effluent BOD has been exceeded. Limit is currently at 10 mg/l and the accredited monthly result was 18 mg/l for January 2022.

Initial Response/Actions taken: Immediate retest was taken and results came back 4.4 mg/l, January 20, 2022.

Monitoring conducted: Cold weather conditions have shown a history of poor overall treatment when the wastewater is at 10 to 11 Celcius. In house monitoring has shown that when processing septage the additional load coming from the Centrate creates a nutrient load that the treatment plant struggles to deal with at these temperatures. The Centrate from solids process needs to be doled out in an more even fashion as to not overwhelm the facility. In this case the monthly sample was taken at a time of peak centrate loading.

Future action items: Phase 4 upgrades are underway at the DLC WWTP, which include an additional bioreactor, a second secondary clarifier and effluent filtration. All of these appurtenances should allow us to deal with additional loading without sacrificing effluent quality.

Contact information: Davin Larsen 250-869-5703 or dlarsen@lakecountry.bc.ca

Attachments: 14651-NCR-20220125-Accredited Data



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A0581
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-06 11:16 / 6.8°C
PO NUMBER		REPORTED	2022-01-13 14:12
PROJECT	Final Effluent- PE14651	COC NUMBER	44567.31979
PROJECT INFO	Lake Country WWTP		

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.

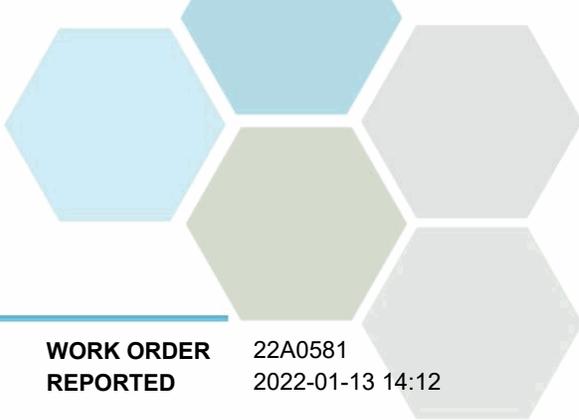
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

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

Final Effluent (E233626) (22A0581-01) | Matrix: Wastewater | Sampled: 2022-01-06 10:15

Anions

Chloride	113	0.10	mg/L	2022-01-08	
Nitrate (as N)	1.56	0.010	mg/L	2022-01-08	
Nitrite (as N)	0.106	0.010	mg/L	2022-01-08	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-01-08	

Calculated Parameters

Nitrate+Nitrite (as N)	1.66	0.0100	mg/L	N/A	
Nitrogen, Total	8.13	0.100	mg/L	N/A	
Nitrogen, Organic	2.83	0.100	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	204	1.0	mg/L	2022-01-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Bicarbonate (as CaCO3)	204	1.0	mg/L	2022-01-09	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Ammonia, Total (as N)	3.64	0.050	mg/L	2022-01-10	
BOD, 5-day Carbonaceous	12.2	2.0	mg/L	2022-01-12	
Nitrogen, Total Kjeldahl	6.47	0.050	mg/L	2022-01-11	
pH	6.98	0.10	pH units	2022-01-09	HT2
Phosphorus, Total (as P)	0.455	0.0050	mg/L	2022-01-12	
Solids, Total Suspended	9.5	2.0	mg/L	2022-01-11	

Microbiological Parameters

Coliforms, Total (Q-Tray)	> 242000	1	MPN/100 mL	2022-01-07	
Coliforms, Fecal (Q-Tray)	≥ 81600	1	MPN/100 mL	2022-01-07	

Trip Blank (22A0581-02) | Matrix: Wastewater | Sampled: 2022-01-06 10:20

Anions

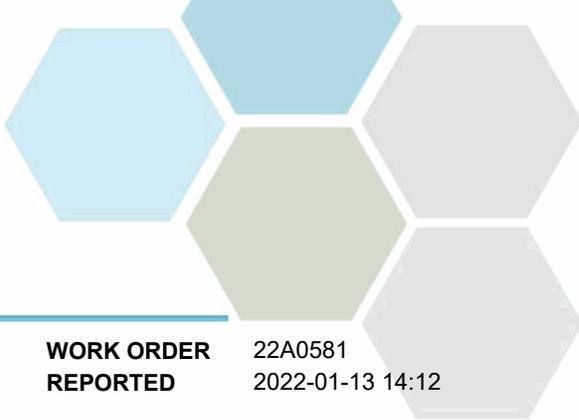
Chloride	< 0.10	0.10	mg/L	2022-01-10	
Nitrate (as N)	< 0.010	0.010	mg/L	2022-01-09	
Nitrite (as N)	< 0.010	0.010	mg/L	2022-01-09	
Phosphate (as P)	< 0.0050	0.0050	mg/L	2022-01-09	

Calculated Parameters

Nitrate+Nitrite (as N)	< 0.0100	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
Nitrogen, Organic	< 0.0500	0.0500	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	



TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

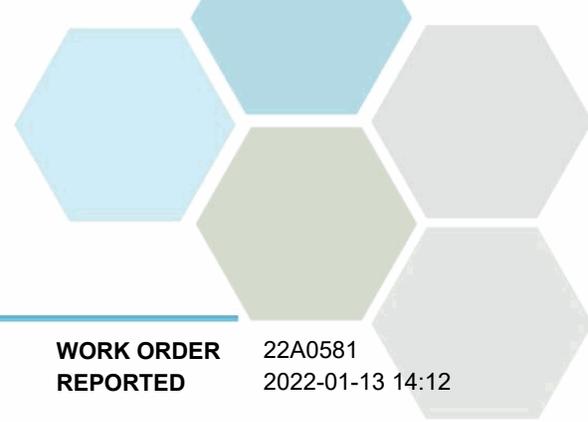
Analyte	Result	RL	Units	Analyzed	Qualifier
Trip Blank (22A0581-02) Matrix: Wastewater Sampled: 2022-01-06 10:20, Continued					
<i>General Parameters, Continued</i>					
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2022-01-09	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2022-01-10	
BOD, 5-day Carbonaceous	< 2.5	2.0	mg/L	2022-01-12	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2022-01-11	
pH	5.30	0.10	pH units	2022-01-09	HT2
Phosphorus, Total (as P)	< 0.0050	0.0050	mg/L	2022-01-12	
Solids, Total Suspended	< 2.0	2.0	mg/L	2022-01-11	

Microbiological Parameters

Coliforms, Total (Q-Tray)	< 1	1	MPN/100 mL	2022-01-07	
Coliforms, Fecal (Q-Tray)	< 1	1	MPN/100 mL	2022-01-07	

Sample Qualifiers:

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



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

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, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna
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
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2017)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2017)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	✓	Kelowna
Solids, Total 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

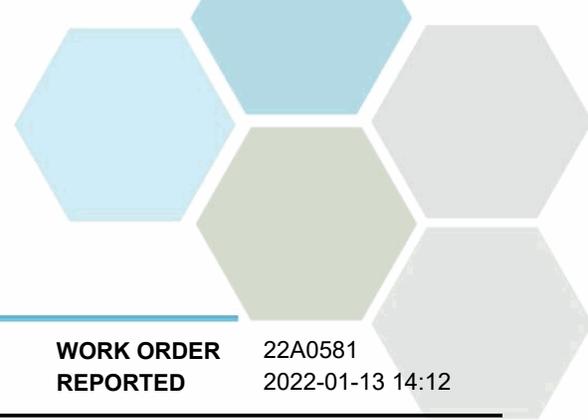
Glossary of Terms:

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
>	Greater than the specified Result
>=	Greater than or equal to 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
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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

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

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

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

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
---------	--------	----------	-------------	---------------	-------	-----------	-------	-----------	-----------

Anions, Batch B2A0499

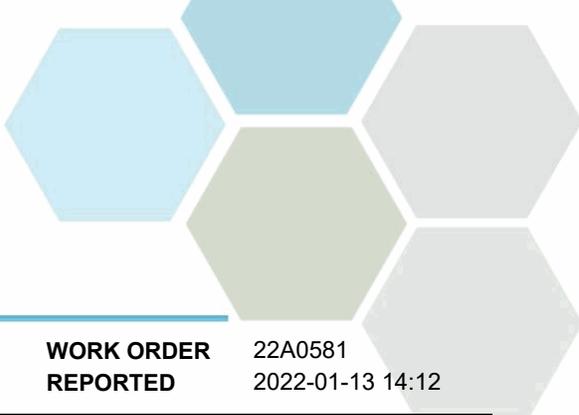
Blank (B2A0499-BLK1)		Prepared: 2022-01-08, Analyzed: 2022-01-08							
Chloride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
LCS (B2A0499-BS1)		Prepared: 2022-01-08, Analyzed: 2022-01-08							
Chloride	15.9	0.10 mg/L	16.0		99	90-110			
Nitrate (as N)	4.00	0.010 mg/L	4.00		100	90-110			
Nitrite (as N)	2.04	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	0.886	0.0050 mg/L	1.00		89	80-120			

General Parameters, Batch B2A0467

Blank (B2A0467-BLK1)		Prepared: 2022-01-07, Analyzed: 2022-01-12							
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2A0467-BS1)		Prepared: 2022-01-07, Analyzed: 2022-01-12							
BOD, 5-day Carbonaceous	182	20.4 mg/L	180		101	85-115			

General Parameters, Batch B2A0557

Blank (B2A0557-BLK1)		Prepared: 2022-01-09, Analyzed: 2022-01-09							
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							
Blank (B2A0557-BLK2)		Prepared: 2022-01-09, Analyzed: 2022-01-09							
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							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B2A0557, Continued									
LCS (B2A0557-BS1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
Alkalinity, Total (as CaCO3)	109	1.0 mg/L	100		109	80-120			
LCS (B2A0557-BS2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
Alkalinity, Total (as CaCO3)	93.4	1.0 mg/L	100		93	80-120			
Reference (B2A0557-SRM1)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
pH	7.03	0.10 pH units	7.01		100	98-102			
Reference (B2A0557-SRM2)			Prepared: 2022-01-09, Analyzed: 2022-01-09						
pH	7.04	0.10 pH units	7.01		100	98-102			
General Parameters, Batch B2A0587									
Blank (B2A0587-BLK1)			Prepared: 2022-01-10, Analyzed: 2022-01-10						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B2A0587-BS1)			Prepared: 2022-01-10, Analyzed: 2022-01-10						
Ammonia, Total (as N)	0.986	0.050 mg/L	1.00		99	90-115			
General Parameters, Batch B2A0594									
Blank (B2A0594-BLK1)			Prepared: 2022-01-11, Analyzed: 2022-01-11						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B2A0594-BS1)			Prepared: 2022-01-11, Analyzed: 2022-01-11						
Solids, Total Suspended	94.0	10.0 mg/L	100		94	85-115			
General Parameters, Batch B2A0647									
Blank (B2A0647-BLK1)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B2A0647-BLK2)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B2A0647-BS1)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	1.07	0.050 mg/L	1.00		107	85-115			
LCS (B2A0647-BS2)			Prepared: 2022-01-10, Analyzed: 2022-01-11						
Nitrogen, Total Kjeldahl	1.09	0.050 mg/L	1.00		109	85-115			
General Parameters, Batch B2A0809									
Blank (B2A0809-BLK1)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
Blank (B2A0809-BLK2)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	< 0.0050	0.0050 mg/L							
LCS (B2A0809-BS1)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			
LCS (B2A0809-BS2)			Prepared: 2022-01-12, Analyzed: 2022-01-12						
Phosphorus, Total (as P)	0.106	0.0050 mg/L	0.100		106	85-115			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A0581
2022-01-13 14:12

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Microbiological Parameters, Batch B2A0451									
Blank (B2A0451-BLK1)					Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Fecal (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2A0451-BLK2)					Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Blank (B2A0451-BLK3)					Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Total (Q-Tray)	< 1	1 MPN/100 mL							
Duplicate (B2A0451-DUP2)					Source: 22A0581-01 Prepared: 2022-01-07, Analyzed: 2022-01-07				
Coliforms, Fecal (Q-Tray)	48800	1 MPN/100 mL		>= 81600			50	80	



CERTIFICATE OF ANALYSIS

REPORTED TO	Lake Country, District of (Wastewater) 4062 Beaver Lake Rd LAKE COUNTRY, BC V4V 1T5	WORK ORDER	22A1546
ATTENTION	Davin Larsen	RECEIVED / TEMP REPORTED	2022-01-14 09:20 / 10.6°C
PO NUMBER		COC NUMBER	44575.35824
PROJECT	Final Effluent- PE14651		
PROJECT INFO	Lake Country WWTP		

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.

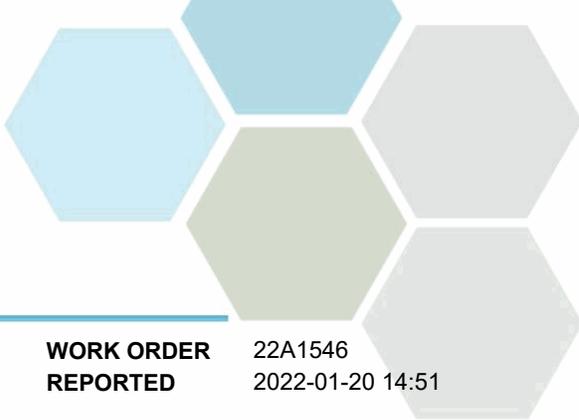
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

1-888-311-8846 | 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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4

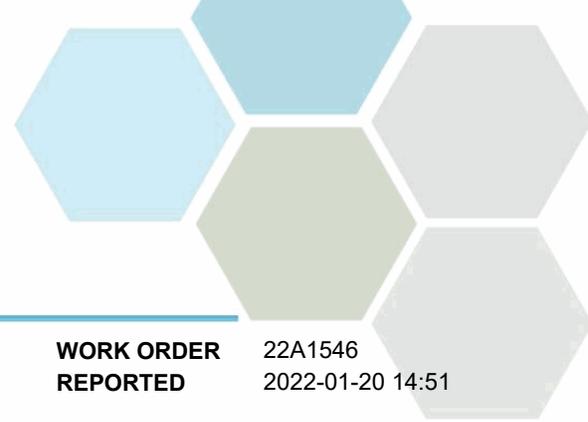


TEST RESULTS

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1546
2022-01-20 14:51

Analyte	Result	RL	Units	Analyzed	Qualifier
Final Effluent (E233626) (22A1546-01) Matrix: Wastewater Sampled: 2022-01-14 08:55					
<i>General Parameters</i>					
BOD, 5-day Carbonaceous	4.4	2.0	mg/L	2022-01-20	



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1546
2022-01-20 14:51

Analysis Description	Method Ref.	Technique	Accredited	Location
Biochemical Oxygen Demand, Carbonaceous in Water	SM 5210 B (2017)	Dissolved Oxygen Meter	✓	Kelowna

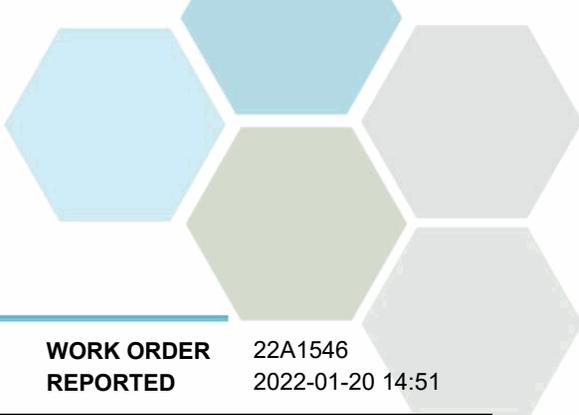
Glossary of Terms:

RL	Reporting Limit (default)
mg/L	Milligrams per litre
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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.

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 Lake Country, District of (Wastewater)
Final Effluent- PE14651

WORK ORDER REPORTED 22A1546
2022-01-20 14:51

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 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
General Parameters, Batch B2A1150									
Blank (B2A1150-BLK1)									
Prepared: 2022-01-15, Analyzed: 2022-01-20									
BOD, 5-day Carbonaceous	< 2.0	2.0 mg/L							
LCS (B2A1150-BS1)									
Prepared: 2022-01-15, Analyzed: 2022-01-20									
BOD, 5-day Carbonaceous	181	55.7 mg/L	180		101	85-115			



MINISTRY OF ENVIRONMENT
REGIONAL OPERATIONS BRANCH

NON-COMPLIANCE REPORTING MAILBOX
NOTIFICATION TEMPLATE

To: EnvironmentalCompliance@gov.bc.ca
Subject: 2021-03-23 Authorization #14651 Total Soluble Nitrogen
Exceedance

Attention:

Non-compliance Report for Authorization # 14651
Monthly permit exceedance

Date of Non-compliance: 2021-02-28 1300

Location of Non-compliance: 4062 beaver lake rd 50.024865, -119.385069

Nature of Non-compliance: Effluent TSN limit was exceeded for the month of February. The accredited results were 12.8 mg/l TSN and the limit is 10 mg/l.

Initial Response/Actions taken: This has been a common result during cold weather operations; the colder temperatures inhibits the nitrification process, which leads to poor ammonia removal. Loads of active bugs have been brought in from the City of Kelowna, to boost the Microb population and should help with ammonia removal.

Monitoring conducted: Daily inhouse monitoring in taking place to assess the effects of the loads of biomass being brought in. However cold weather continues to dampen the effects of this.

Future action items: Upgrades to the facility are currently underway that will include extended aeration that will enhance Biomass growth in cold weather condition. Additional Tankage is also being built to allow for a higher concentration of biomass that should endure cold weather conditions.

Contact information: Davin Larsen 250-869-5703 or dlarsen@lakecountry.bc.ca

Attachments: monitoring data, photos, etc.

Note: This form is intended to facilitate communication regarding non-compliance events between authorisation holders and the ministry. Submission of this form by an authorization holder does not constitute an inspection or a finding of non-compliance in accordance with ministry compliance and enforcement policy and procedure.

All reportable spills must be reported to PEP at 1-800-663-3456.

More detailed information may be required by the ministry on follow-up



MINISTRY OF ENVIRONMENT
REGIONAL OPERATIONS BRANCH

NON-COMPLIANCE REPORTING MAILBOX
NOTIFICATION TEMPLATE

To: EnvironmentalCompliance@gov.bc.ca
Subject: 2022-02-21 Authorization #14651 Sewer line break at lift station

Attention: *Non-compliance Report for Authorization # 14651
Sewer surfacing near Woodsdale lift station*

Date of Non-compliance: 2022-02-21 0800 Hrs

Location of Non-compliance [3210 Clement rd, 50.05151254293818, -119.4030648493845]:

Nature of Non-compliance: Around 820 am on February 21, 2022. A local resident call the District Utilities Department to notify there was water coming our of the road near 3210 Clement rd. It was immediately determined the leak was on a force main from the Clement sewer lift station adjacent to 3210 Clement rd. The spill was running to a street storm catchment system that consisted of a catch basin and a retention(grit seperator) tank that overflows to Wood Lake. The spill volume is estimated to be 10m3. PEP was called immediately after the flow was contained.

Initial Response/Actions taken: The leak was isolated and two vac trucks were called in to handle incoming flow to Clement Lift station. The repair to the leak was at a valve bonnet and was the result of corroded bolts. A plan is in place to replace other bolts that also show signs of corrosion.

Monitoring conducted: The storm catchment system was flushed and vac'd.

Future action items: A environmental consultant has been contacted, and will be utilized in the future for these type of events; Joanne Quarmby, Urban Systems.

Contact information: Davin Larsen 250-869-5703 or dlarsen@lakecountry.bc.ca

Attachments: monitoring data, photos, etc.

Note: This form is intended to facilitate communication regarding non-compliance events between authorisation holders and the ministry. Submission of this form by an authorization holder does not constitute an inspection or a finding of non-compliance in accordance with ministry compliance and enforcement policy and procedure.

All reportable spills must be reported to PEP at 1-800-663-3456.



MINISTRY OF ENVIRONMENT
REGIONAL OPERATIONS BRANCH

NON-COMPLIANCE REPORTING MAILBOX
NOTIFICATION TEMPLATE

To: EnvironmentalCompliance@gov.bc.ca
Subject: 2022-02-24 Authorization #14651 Effluent system disposal failure

Attention:

*Non-compliance Report for Authorization # 14651
Effluent disposal system failure*

Date of Non-compliance: 2022-02-24 1100 hrs

Location of Non-compliance [4062 beaver lake rd 50.024865, -119.385069]:

Nature of Non-compliance: shortly before noon on February 24, 2022, an operator at the District of Lake Country, was notified by the property owner at 245 Beaver lake ct. that water was surfacing near the property line between them and the Wastewater treatment plant. It was immediately determined it was treated plant effluent coming from the sub-surface disposal field that runs adjacent to the property line. About 5 m³ was the estimated volume that surfaced, and the operator was able to adjust the flow away from the subsurface field to an open basin to stop the water from surfacing. PEP was called shortly after.

Initial Response/Actions taken: The operators at the WWTP have issues determining the amount of treated effluent to send to the individual disposal areas, and in this case, too much was sent to the subsurface field, which led to the surfacing incident.

Monitoring conducted: Due to the nature of the area, the surfacing water was quickly adsorbed into the disturbed gravel as construction is taking place.

Future action items: The wastewater treatment facility is currently underway with its phase 4 upgrade. this will include additional disposal area as well as the option to send excess flow to the City of Kelowna. Timeline is estimated 6 months. the District has also contracted an Environmental consultant for these events and will be utilized when an event like this occurs going forward.

Contact information: Davin Larsen 250-869-5703 or dlarsen@lakecountry.bc.ca

Attachments: monitoring data, photos, etc.

Note: This form is intended to facilitate communication regarding non-compliance events between authorisation holders and the ministry. Submission of this form by an authorization holder does not constitute an inspection or a finding of non-compliance in accordance with ministry compliance and enforcement policy and procedure



MINISTRY OF ENVIRONMENT
REGIONAL OPERATIONS BRANCH

NON-COMPLIANCE REPORTING MAILBOX
NOTIFICATION TEMPLATE

To: EnvironmentalCompliance@gov.bc.ca
Subject: 2022-11-22 Authorization #14651 Sewer line break at lift station

Attention: Non-compliance Report for Authorization # 14651
Sewer line break

Date of Non-compliance: 2022-11-22 0700

Location of Non-compliance [3724 woodsdale rd, 50.049367 & -119.392982]:

Nature of Non-compliance: A raw sewage spill occurred during a lift station upgrade at 3724 Woodsdale rd. The upgrade included new piping outside the lift station at which sometime in the night of November 21 or morning of November 22nd the piping broke loose and raw sewage flooded the open excavation. It is uncertain how much sewage, if any, escaped the excavation, but during this low flow period of the day it is likely the volume would not amount to much.

Initial Response/Actions taken: Vac trucks were already on site as the lift station upgrade was to continue that day. Flow was stopped and the pipe repair made by the end of the day of Nov. 22nd. A hydro vac was able to remove the spill immediately and an excavator on site was able to remove contaminated soils. PEP(DGIR 223232) was called around 10 am of November 22nd, after the leak was contained.

Monitoring conducted: It is not know if foreign material escaped to an adjacent ditch, but water was sampled from the ditch on Nov 27th. Additional sampling currently taking place. Consultant (Joanne Quarmby - Urban Systems) has been contacted to review sample results. End-of-Spill report underway, and awaiting test results/consultant review.

Future action items: End of Spill report due by Dec 27th

Contact information: Davin Larsen 250-869-5703 or dlarsen@lakecountry.bc.ca

Attachments: (Photos X2)

Note: This form is intended to facilitate communication regarding non-compliance events between authorisation holders and the ministry. Submission of this form by an authorization holder does not constitute an inspection or a finding of non-compliance in accordance with ministry compliance and enforcement policy and procedure.

Appendix D - Groundwater Monitoring Report

DATE: March 3, 2023
 TO: Davin Larsen, ASCT
 FROM: Dr. Joanne Quarmby, R.P.Bio.
 FILE: 1577.0022.01
 SUBJECT: Review of 2022 Groundwater Data

1.0 INTRODUCTION

Groundwater monitoring is required as part of the 2021 operational certificate. The monitoring requirements are outlined in Section 3.2 of the operational certificate, and are summarised in Table 1.1, below. The groundwater monitoring program is implemented by District staff, with the analyses being completed at an accredited laboratory. Conductance and pH are to be field measurements. The location of the various wells can be found in the attached figure.

Table 1.1: Groundwater Monitoring Program

Site	Description	Monitoring Scope	
		Groundwater Depth	Water Quality
MW-2	Background (up-gradient) well	Monthly	Once in the spring and fall for the following parameters: sodium, chloride, conductance, ammonia, nitrate/nitrite, TKN, total nitrogen, total phosphorus, orthophosphorus, pH and <i>E. coli</i> .
MW-18	Down-gradient within treatment plant boundary	Continuous	
MW-10	Down-gradient near treatment plant boundary	Continuous	
MW-12	Down-gradient near treatment plant boundary	Continuous	
MW-14	Down-gradient, by Lodge Road	Monthly	
H1	10050 McCarthy Road	Not required	
H2	10101A Korschuh Road		
H3	9989 Bottom Wood Lake Road		
H4	10101B Korschuh Road		
H5	9815 McCarthy Road		
H6	9719 McCarthy Road		
H7	9991 McCarthy Road		

Reporting of the groundwater data is a requirement of the 2021 operational certificate. Section 4.4(b) of the operational certificate indicates that the annual report is to include a review and interpretation of the discharge and groundwater monitoring and flow data for the preceding year. This memorandum has been prepared in order to address Section 4.4(b) of the permit with respect to the groundwater data only.

2.0 GROUNDWATER LEVELS

The District provided data relating to groundwater levels in a summarised and tabulated form.

Figure 2.1 shows the monthly groundwater levels for the 5 monitoring wells. The highest groundwater levels were consistently observed at MW-10, located down-gradient near the plant boundary, with the lowest groundwater levels being observed most frequently at MW-18 (down-gradient within the plant boundary). There was no trend of decreasing groundwater levels with an increasing distance from the infiltration facilities. Slight variations in the groundwater levels were observed at MW-10 through the year. For the other 4 wells, there were periods of time when there was a noticeable decrease in the water level. This occurred in the early spring for MW-14 and in the late summer/early fall for MW-2, MW-18 and MW-12. All data points indicated that the distance to the groundwater level was over 0.5 m from the ground surface. This depth is not a requirement of the operational certificate but is taken from the Municipal Wastewater Regulation for a minimum unsaturated soil depth for a Class A or B effluent.

Figure 2.1: 2022 Groundwater Levels – Monthly Readings

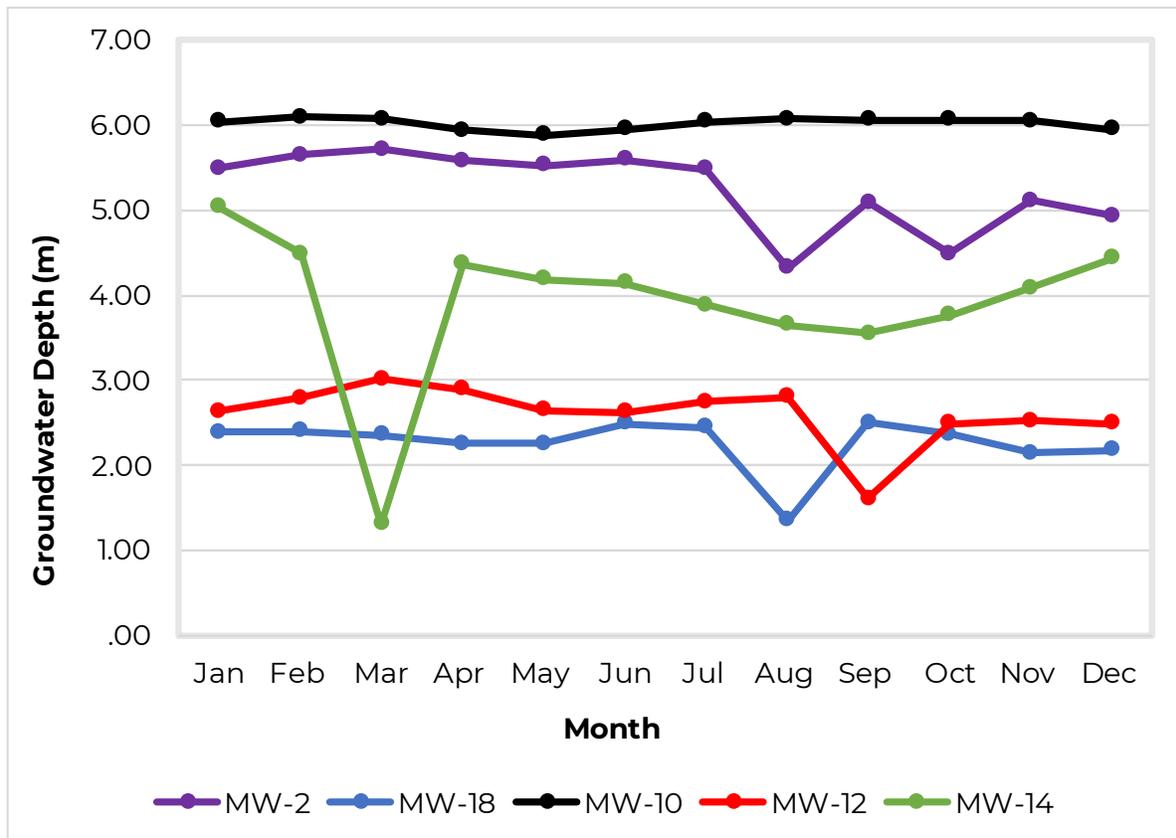
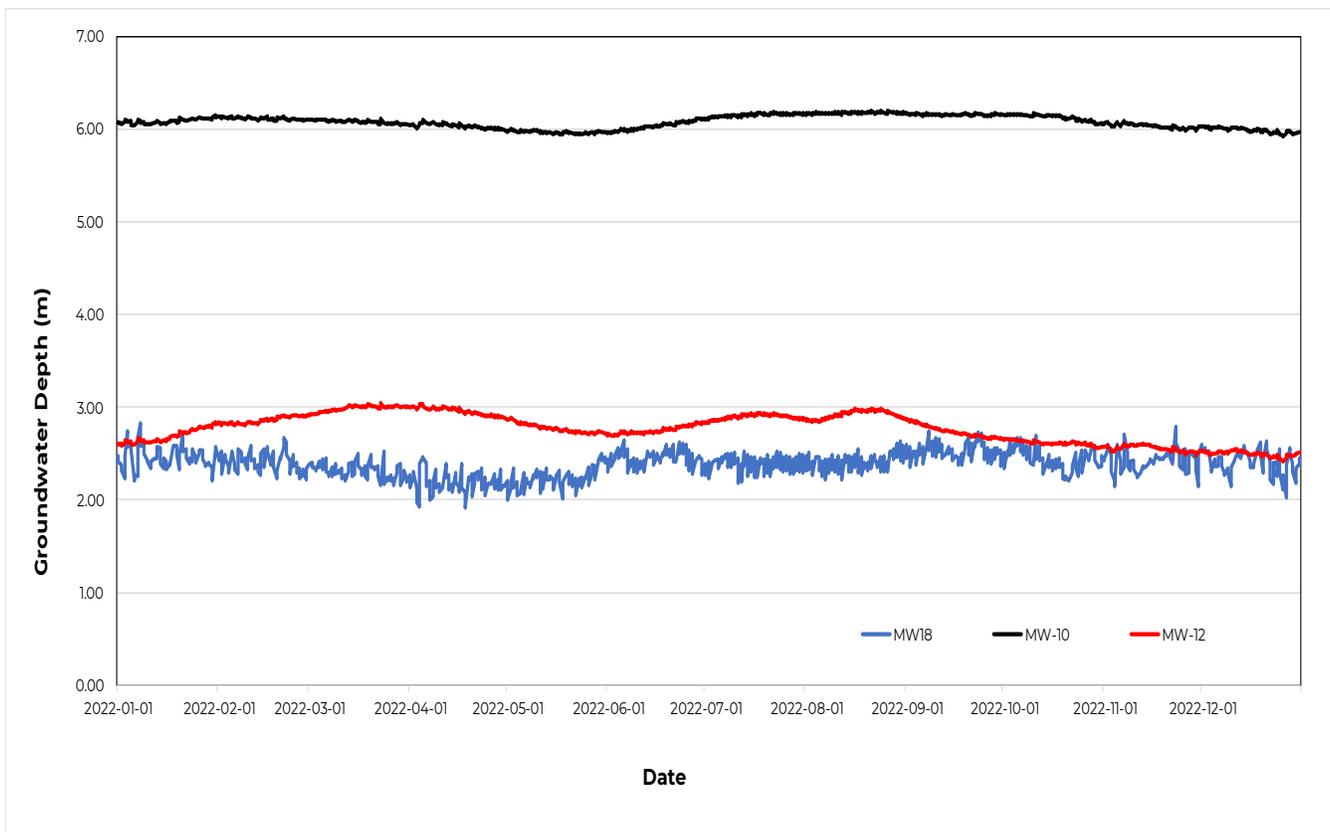


Figure 2.2. shows the water level data from the data loggers in MW-18, MW-10 and MW-12. As with the monthly data, the information from the data loggers indicate that the highest groundwater levels were observed consistently at MW-10, with similarity in the groundwater levels for MW-18 and MW-12. The decreases in the water levels for MW-12 and MW-18 observed for the monthly data were not apparent for the levels recorded by the data loggers. All data points indicated that the distance to the groundwater level was over 0.5 m from the ground surface. This depth is not a requirement of the operational certificate but is taken from the Municipal Wastewater Regulation for a minimum unsaturated soil depth for a Class A or B effluent.

Figure 2.2: 2022 Groundwater Levels – Data Logger Readings



3.0 GROUNDWATER QUALITY

3.1 DISTRICT-OWNED WELLS

The District provided the original laboratory reports for review and interpretation. The concentration of organic nitrogen was calculated using the Total Kjeldahl Nitrogen (TKN) and ammonia data, with half the detection limit being used where the data were reported to be below the analytical detection limit. The spring samples were taken on April 5th and the fall samples were taken on October 19th.

Table 3.1 summarises the spring data. Should an influence be observed from the effluent release, the expectation is that the lowest concentrations should be associated with the background well MW-2 and that the highest concentrations should be observed at MW-18 or MW-10, decreasing at MW-14 as a result of assimilation, rejuvenation and dilution as the effluent moves through the ground. Parameters which could be used to indicate the presence of effluent from the wastewater plant could include total nitrogen, nitrate, orthophosphorus, sodium, chloride, conductivity and *E. coli*. However, phosphorus can bind readily to soils, *E. coli* could be removed/die-off as the effluent passes through the soils, and sodium, chloride and conductivity could be present as a result of other inputs, such as road maintenance activities. Focusing on nitrate as the possible best tracer for the presence of effluent from the District’s discharge (although nitrate could also be present as a result of agricultural activities which occur commonly in this area), the concentrations at MW-18, MW-10 and MW-12 are higher than that in the background well MW-2, with the highest concentration being in MW-10. The concentration decreased at MW-14, with the reported concentration being below the analytical detection limit.

Table 3.1: Summary of Spring Data

Parameter	Units	Location				
		MW-2	MW-18	MW-10	MW-12	MW-14
Total Nitrogen	mg/L	1.11	2.59	3.14	2.22	0.474
TKN	mg/L	0.058	0.448	0.154	0.125	0.474
Organic Nitrogen	mg/L	0.033	0.423	0.129	0.100	0.393
Ammonia	mg/L	< 0.050	< 0.050	< 0.050	< 0.050	0.081
Nitrate	mg/L	1.05	2.14	2.98	2.09	< 0.010
Nitrite	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Phosphorus	mg/L	0.023	0.603	0.166	0.164	0.695
Orthophosphorus	mg/L	0.0069	0.0178	< 0.0050	0.0056	0.0131
Sodium	mg/L	17.3	88.7	78.9	89.2	81.2
Chloride	mg/L	7.77	111	107	102	99.2
Conductivity	µS/cm	452	887	855	853	1,050
pH	pH units	7.74	7.23	7.17	7.35	7.06
<i>E. coli</i>	MPN/100 mL	<1	<1	<1	<1	<1

Table 3.2 summarises the fall data. As with the spring data, it is reasonable to assume that an influence from the effluent release should translate to the lowest concentrations being associated with the background well MW-2, and the highest concentrations being associated with the closest down-gradient wells (MW-18 and/or MW-10), then decreasing at MW-14 as a result of assimilation, rejuvenation and dilution as the effluent moves through the ground. Given the same assumptions for the parameters of most interest, focusing on nitrate, the concentration was elevated above the background well at MW-18, MW-10 and MW-12, with the highest concentration being at MW-12. As with the spring data, the concentration decreased at MW-14 and was below the analytical detection limit.

Table 3.2: Summary of Fall Data

Parameter	Units	Location				
		MW-2	MW-18	MW-10	MW-12	MW-14
Total Nitrogen	mg/L	1.12	2.82	2.51	3.66	0.527
TKN	mg/L	0.132	0.968	0.189	0.277	0.527
Organic Nitrogen	mg/L	0.107	0.943	0.164	0.252	0.434
Ammonia	mg/L	< 0.050	< 0.050	< 0.050	< 0.050	0.093
Nitrate	mg/L	0.986	1.85	2.32	3.38	< 0.010
Nitrite	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Phosphorus	mg/L	0.0150	5.96	0.0428	0.0407	0.286
Orthophosphorus	mg/L	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Sodium	mg/L	14.4	76.2	66.3	83.6	77.2
Chloride	mg/L	6.44	110	98.2	108	107
Conductivity	µS/cm	366	870	824	884	1,120
pH	pH units	7.97	8.08	7.99	7.98	7.89
<i>E. coli</i>	MPN/100 mL	< 1	< 1	< 1	< 1	< 1

The highest concentrations were generally associated with MW-18, MW-10 and MW-12, depending on the parameter and time of year, and the lowest concentrations were typically associated with MW-2. Concentration increases that were observed at MW-18, MW-10 and/or MW-12 were followed by decreases at MW-14, with the concentrations at MW-14 generally being either the same or lower than the data reported for MW-2. The total phosphorus data for MW-18 in the fall was elevated compared with the other monitoring wells. The elevated concentration was not considered to be a factor of the effluent release, given that the turbidity was highly elevated (210 NTU) and there is a relationship between the presence of particulate phosphorus and sediments. The turbidity for all the other monitoring wells was in the order of 2 to 6 NTU.

The water quality was compared with the BC Water Quality Guidelines, focusing on groundwater uses for the most stringent of either potable or agricultural purposes, given the distance from surface water. The parameters where guidelines exist and are also of possible interest with respect to the District's effluent and public health or environmental impacts are: nitrate, chloride, conductivity, pH and *E. coli*. The outcomes are summarised in Table 3.3, with green indicating concentrations below the guideline and red indicating that at least 1 data point was above the guideline. The guideline for conductivity for irrigation is crop dependent and varies depending on the crop tolerance. The guideline ranges from 700 µS/cm for the most sensitive crops to 5,000 µS/cm for least sensitive crops. For the purpose of this assessment, a moderately tolerant crop was selected, as this type of crop also includes grasses which are expected to be a general common vegetation for the general area. For *E. coli*, there were several guidelines which range from absence up to ≤ 1,000 CFU/100 mL (general irrigation). Selection of the most stringent guideline may not be the best representative of water quality, given that it does not allow for any *E. coli* to be present and assumes that there is no disinfection of what is expected to be untreated water.

There was only one parameter (chloride) where data were higher than the most stringent guideline. Chloride concentrations were generally around the 100 mg/L at all down-gradient wells in both the spring and the fall, with some data points being above 100 mg/L and some data points being just below 100 mg/L. The higher chloride concentration at the down-gradient wells compared with MW-2 could be reflective of the influence from the effluent, given that the chloride concentration in the effluent is typically in the 100 to 130 mg/L range, but there are other anthropogenic sources of chloride in the environment, with common inputs being from road salts.

Table 3.3: Guideline Comparison

Parameter	Units	Guideline	Location				
			MW-2	MW-18	MW-10	MW-12	MW-14
Nitrate	mg/L	≤ 10 (drinking water)					
Chloride	mg/L	100 (irrigation)					
Conductivity	µS/cm	2,200 (irrigation)					
pH	pH units	5.0 to 9.5 (irrigation)					
<i>E. coli</i>	MPN/100 mL	0 (livestock in closely confined conditions with no water treatment)					

3.2 PRIVATELY-OWNED WELLS

The District provided the original laboratory reports for review and interpretation. The concentration of organic nitrogen was calculated using the TKN and ammonia data, with half the detection limit being used where the data were reported to be below the analytical detection limit. The spring samples were taken on April 28th and the fall samples were taken on October 4th. There are no data available for H6 as this site is no longer accessible and the home is no longer occupied. The property was sold and is now an industrial marijuana operation with high security. The samples for H7 were taken by the home owner, and there is no guarantee that the approach used for sampling meets the standards that are used by trained District staff.

Tables 3.4 and 3.5 summarise the spring and fall data, respectively, and include the data from MW-2 as a potential indication of background water quality. To summarise:

- For both the spring and the fall data, focusing on the privately-owned wells only, the lowest concentration was most commonly observed to occur at H1. This was also observed for the 2021 data.
- For both the spring and the fall data, the concentrations at all other house wells were generally higher than MW-2. Focusing on key parameters which can be used to track the movement of domestic wastewater effluent, total nitrogen/nitrate were the highest at H3 in both the spring and the fall, although there was little difference between the H3 and H7 in the fall. Sodium, chloride and conductivity were the highest at H4 or H5. H4 is the furthest well from the wastewater treatment plant, with H5 being one of the most closely located to the wastewater treatment plant.

- There was only one site where *E. coli* was found to be present in the well water. This was H3 for the spring monitoring event. The concentration was low, when considering what could be present in untreated domestic wastewater.

Table 3.4: Summary of Spring Data

Parameter	Units	Location						
		MW-2	H1	H2	H3	H4	H5	H7
Total Nitrogen	mg/L	1.11	0.375	3.52	4.78	1.99	4.20	4.45
TKN	mg/L	0.058	0.357	0.232	0.267	0.410	0.228	0.266
Organic Nitrogen	mg/L	0.033	0.111	0.207	0.242	0.385	0.203	0.241
Ammonia	mg/L	< 0.050	0.246	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Nitrate	mg/L	1.05	0.018	3.29	4.52	1.58	3.97	4.19
Nitrite	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total Phosphorus	mg/L	0.023	0.247	0.0126	0.0117	0.0059	0.0125	0.0163
Orthophosphorus	mg/L	0.0069	0.0979	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Sodium	mg/L	17.3	8.33	53.9	21.0	69.7	70.9	54.6
Chloride	mg/L	7.77	0.45	77.3	43.7	111.0	100.0	78.7
Conductivity	µS/cm	452	264	741	445	857	883	767
pH	pH units	7.74	8.13	7.28	7.31	7.71	7.66	7.41
<i>E. coli</i>	MPN/100 mL	< 1	< 1	< 1	36	< 1	< 1	< 1

Table 3.5: Summary of Fall Data

Parameter	Units	Location						
		MW-2	H1	H2	H3	H4	H5	H7
Total Nitrogen	mg/L	1.12	0.304	4.22	4.71	2.05	4.48	4.66
TKN	mg/L	0.132	0.290	0.338	0.287	0.170	0.202	0.227
Organic Nitrogen	mg/L	0.107	0.059	0.313	0.282	0.165	0.177	0.202
Ammonia	mg/L	< 0.050	0.231	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Nitrate	mg/L	0.986	0.014	3.88	4.43	1.88	4.28	4.42
Nitrite	mg/L	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.014
Total Phosphorus	mg/L	0.0150	0.229	0.0130	0.0097	0.0052	0.0107	0.0097
Orthophosphorus	mg/L	< 0.0050	0.154	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Sodium	mg/L	14.4	8.17	54.2	20.2	77.5	73.6	57.3
Chloride	mg/L	6.44	0.52	88.9	41.9	124.0	106.0	91.8

Table 3.5: Summary of Fall Data (continued...)

Parameter	Units	Location						
		MW-2	H1	H2	H3	H4	H5	H7
Conductivity	µS/cm	366	272	771	428	855	861	795
pH	pH units	7.97	8.19	7.51	7.29	7.84	7.72	7.85
<i>E. coli</i>	MPN/100 mL	< 1	< 1	< 1	< 1	< 1	< 1	< 1

The water quality was compared with the BC Water Quality Guidelines, focusing on groundwater uses for the most stringent of either potable or agricultural purposes, given the assumption that any water from these wells would be used to support potable and/or agricultural activities on the property. As in Section 3.1, the outcomes are summarised (Table 3.6), with green indicating concentrations below the guideline and red indicating that at least 1 data point was above the guideline. The guideline comparison is for the following parameters: nitrate, chloride, conductivity and pH, with the guideline for conductivity being based on a moderately tolerant crop. Chloride was above the guideline at H4 and H5 for at least one of the monitoring events. Chloride concentrations above the guideline was also observed in the 2021 data set for H4 (spring and fall), but not for H5. *E. coli* was above the guideline concentration for H3 during the spring only.

Table 3.6: Guideline Comparison

Parameter	Units	Guideline	Location					
			H1	H2	H3	H4	H5	H7
Nitrate	mg/L	≤ 10 (drinking water)	Green	Green	Green	Green	Green	Green
Chloride	mg/L	100 (irrigation)	Green	Green	Green	Red	Red	Green
Conductivity	µS/cm	2,200 (irrigation)	Green	Green	Green	Green	Green	Green
pH	pH units	5.0 to 9.5 (irrigation)	Green	Green	Green	Green	Green	Green
<i>E. coli</i>	MPN/100 mL	0 (livestock in closely confined conditions with no water treatment)	Green	Green	Red	Green	Green	Green

With respect to the potential for impacts as a result of the release, it is reasonable to assume that the wells more likely to be impacted would be H5 and H6, as these are the closest wells to the disposal area. The highest concentrations were typically associated with wells located further away. Given the limited information on well depth, construction, maintenance and other activities in the near vicinity (such as septic fields, livestock raising, fertilizer addition, manure stockpiles, etc.) it will continue to be challenging to clearly define if any water quality characteristics are directly related to the release from the District's wastewater treatment plant.

4.0 CONCLUSIONS AND RECOMMENDATIONS

From the information which was reviewed and evaluated, the following conclusions are drawn:

- All data points indicated that the distance to the groundwater level was over 0.5 m from the ground surface. This depth is not a requirement of the operational certificate but is taken from the Municipal Wastewater Regulation for a minimum unsaturated soil depth for a Class A or B effluent.
- For the District-owned monitoring wells, the highest concentrations tended to be associated with the three wells located within or close to the wastewater plant boundary. Focusing on nitrate as the best tracer for the District's effluent, the classic trend of the higher concentrations being closer to the point of discharge was observed in both the spring and the fall. With respect to BC Water Quality Guidelines for either potable or agricultural uses, chloride was above the most stringent guideline on at least 1 occasion for each of the down-gradient wells. It is not known whether the increase above the guideline was related to the effluent release or other factors, given that the proximity to roads and agricultural areas.
- For the privately-owned monitoring wells, there was no clear relationship between concentration and distance from the wastewater treatment plant. With respect to BC Water Quality Guidelines for either potable or agricultural uses, chloride at H4 and H5 was above the most stringent guideline on at least 1 occasion. *E. coli* was above the most stringent guideline for H3 during the spring only. Given the limited information on well depth, construction, maintenance and other activities in the near vicinity (such as septic field, livestock raising, fertilizer addition, manure stockpiles, etc.) it will continue to be challenging to clearly define if any water quality characteristics are directly related to the release from the District's wastewater treatment plant.
- Generally, there is consistency between the outcomes of the 2022 data, when compared with the 2021 data.

The following recommendations are made:

- Water quality samples from all locations should be taken on the same date, or within a day or two of each other, where possible.
- As the privately-owned well at H6 can no longer be sampled, a request should be made to the Ministry of Environment (Authorisations) to remove this well from the schedule outlined in Section 3.2 of the operational certificate. Retaining this well in the monitoring table will result in on-going non-compliance.

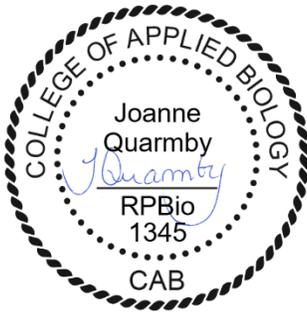
5.0 CLOSURE

Groundwater monitoring is required as part of the 2021 operational certificate and the data are to be reported annually with interpretation, as indicated in Section 4.4 of the operational certificate. The information presented in this technical memorandum aims to fulfil the requirement of Section 4.4(b) of the operational certificate.

Please do not hesitate to contact us if there are any questions or if clarification is required.

Sincerely,

URBAN SYSTEMS LTD.



Dr. Joanne Quarmby, R.P.Bio.
Water and Wastewater Specialist

/jq

U:\Projects_KEL\1577\0022\01\X-Single-File\2022 Wastewater reports\2023-03-03 MEM 2022 groundwater data final.docx

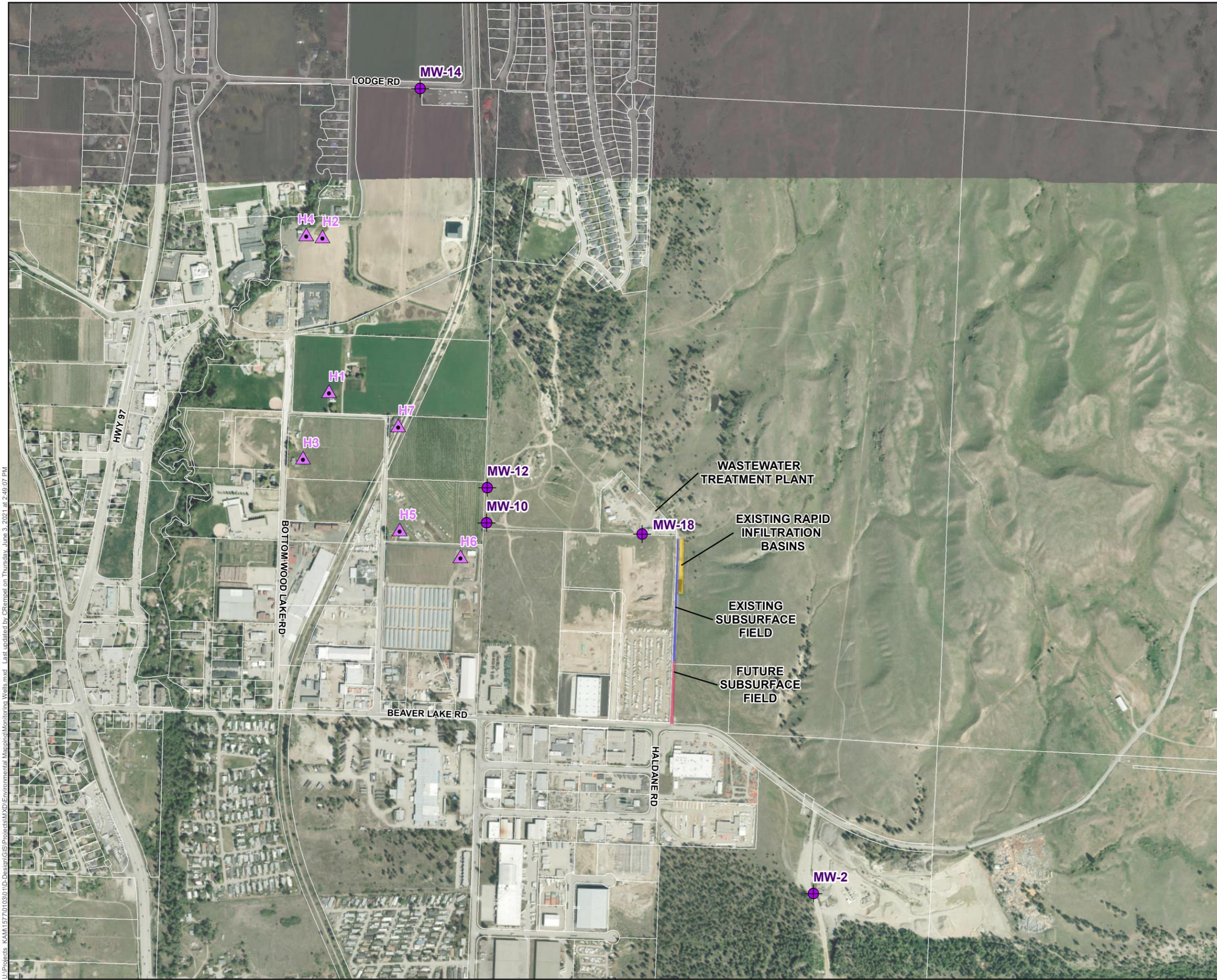


LAKE COUNTRY
Life. The Okanagan Way.

District of Lake Country
OC Amendment

Monitoring Wells

-  House Well
-  Monitoring Well



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:
NAD 1983 UTM Zone 11N

Scale:
1:9,500

Data Sources:
- Imagery provided by ESRI.
- Parcels provided by DataBC.

Project #: 1577.0103.01
Author: CR
Checked:
Status:
Revision: A
Date: 2021 / 6 / 3



U:\Projects - KAM\15770103\1D-Design\GIS\Projects\MXD\Environmental Mapping\Monitoring Wells.mxd Last updated by CRempel on Thursday, June 3, 2021 at 2:49:07 PM

Appendix E – Monitoring Wells Locations



LAKE COUNTRY

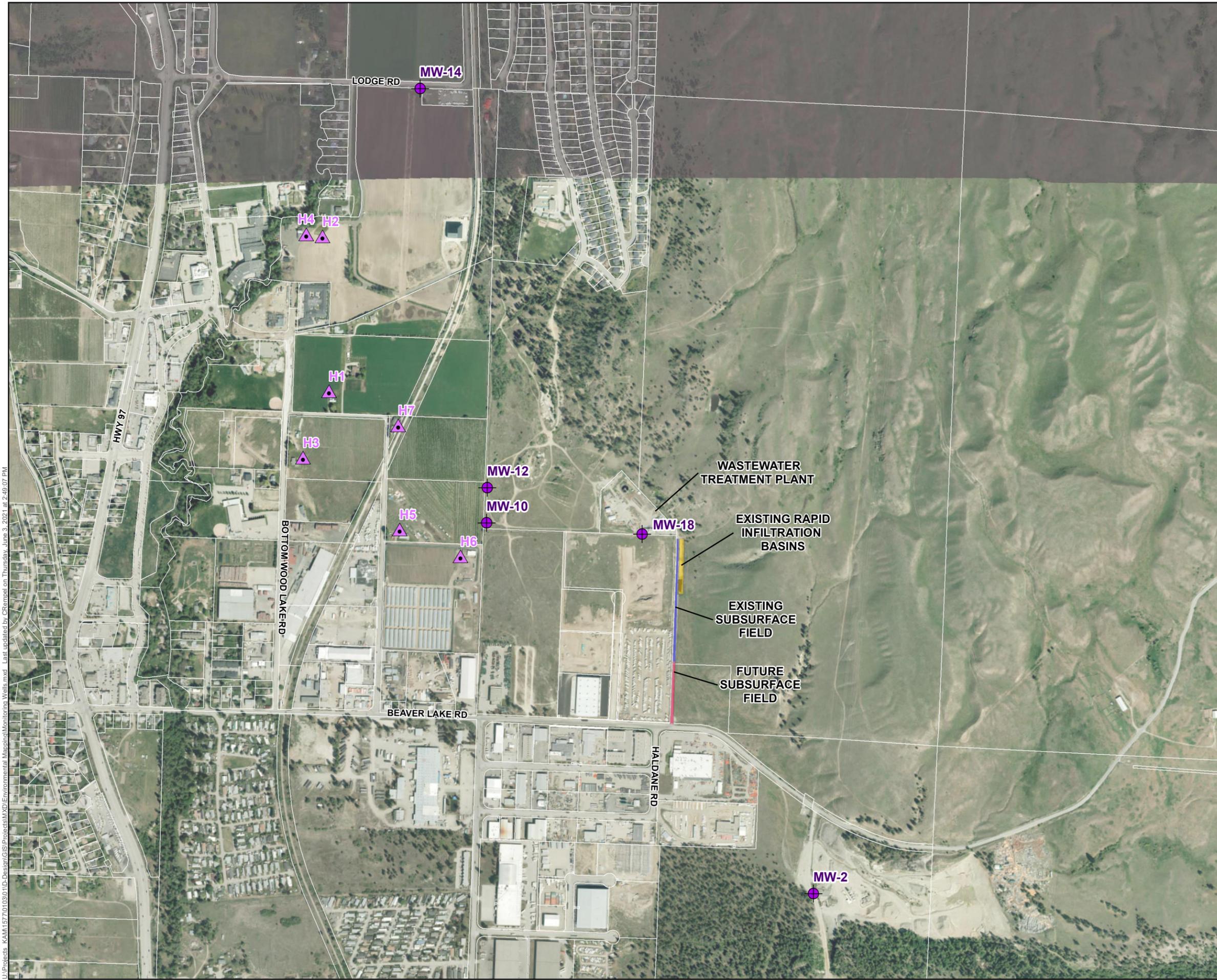
Life. The Okanagan Way.

District of Lake Country
OC Amendment

Monitoring Wells

House Well

Monitoring Well



The accuracy & completeness of information shown on this drawing is not guaranteed. It will be the responsibility of the user of the information shown on this drawing to locate & establish the precise location of all existing information whether shown or not.



Coordinate System:
NAD 1983 UTM Zone 11N

Scale:
1:9,500

Data Sources:
- Imagery provided by ESRI.
- Parcels provided by DataBC.

Project #: 1577.0103.01
Author: CR
Checked:
Status:
Revision: A
Date: 2021 / 6 / 3

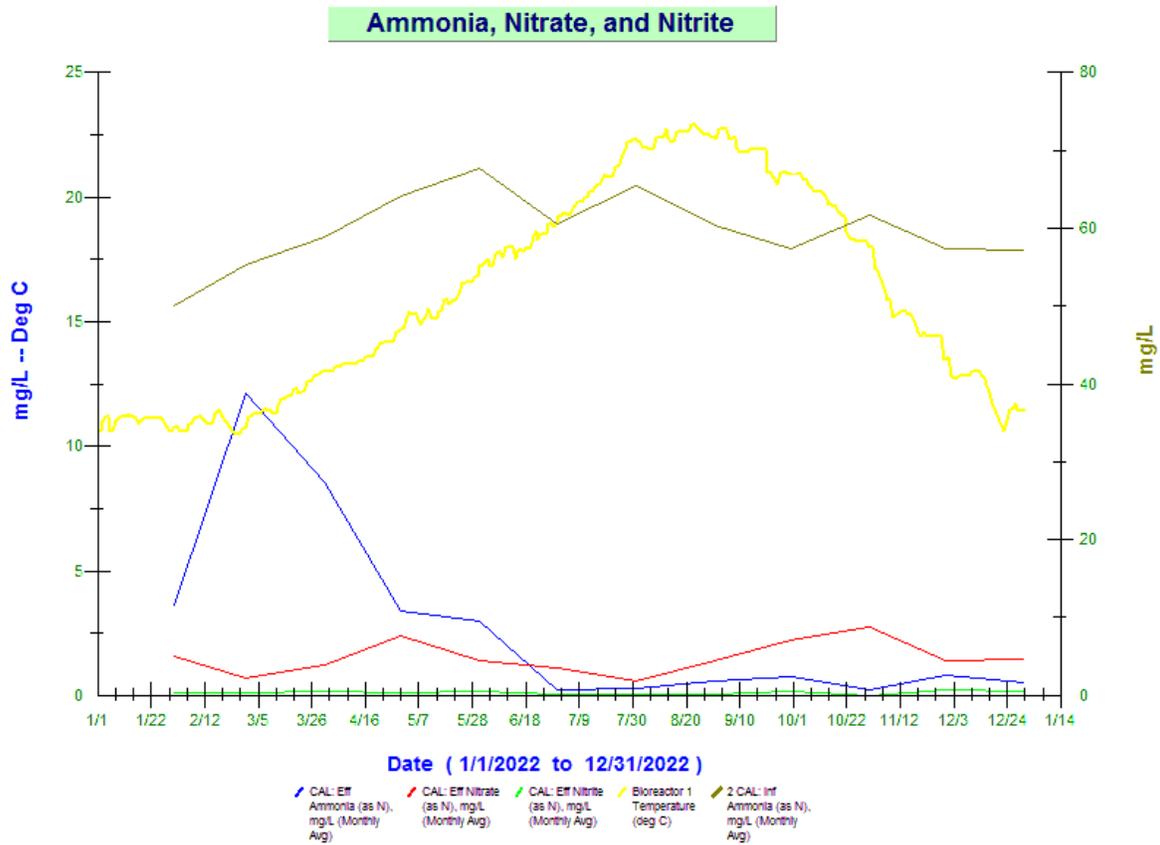


U:\Projects - KAM\15770103\1D-Design\GIS\Projects\MXD\Environmental Mapping\Monitoring Wells.mxd Last updated by CRempel on Thursday, June 3, 2021 at 2:49:07 PM

Appendix F – Plant Performance Trends

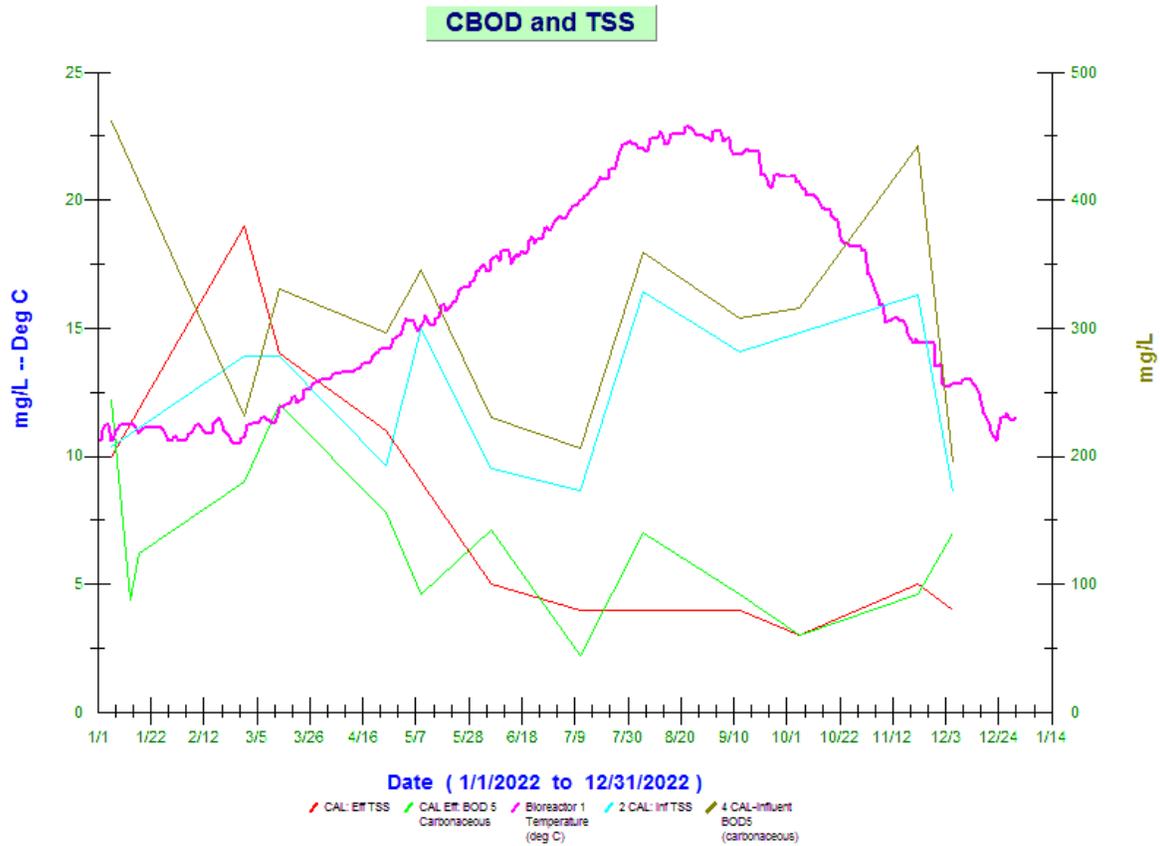
Process Performance Trends

1.1 Ammonia, Nitrate, and Nitrite



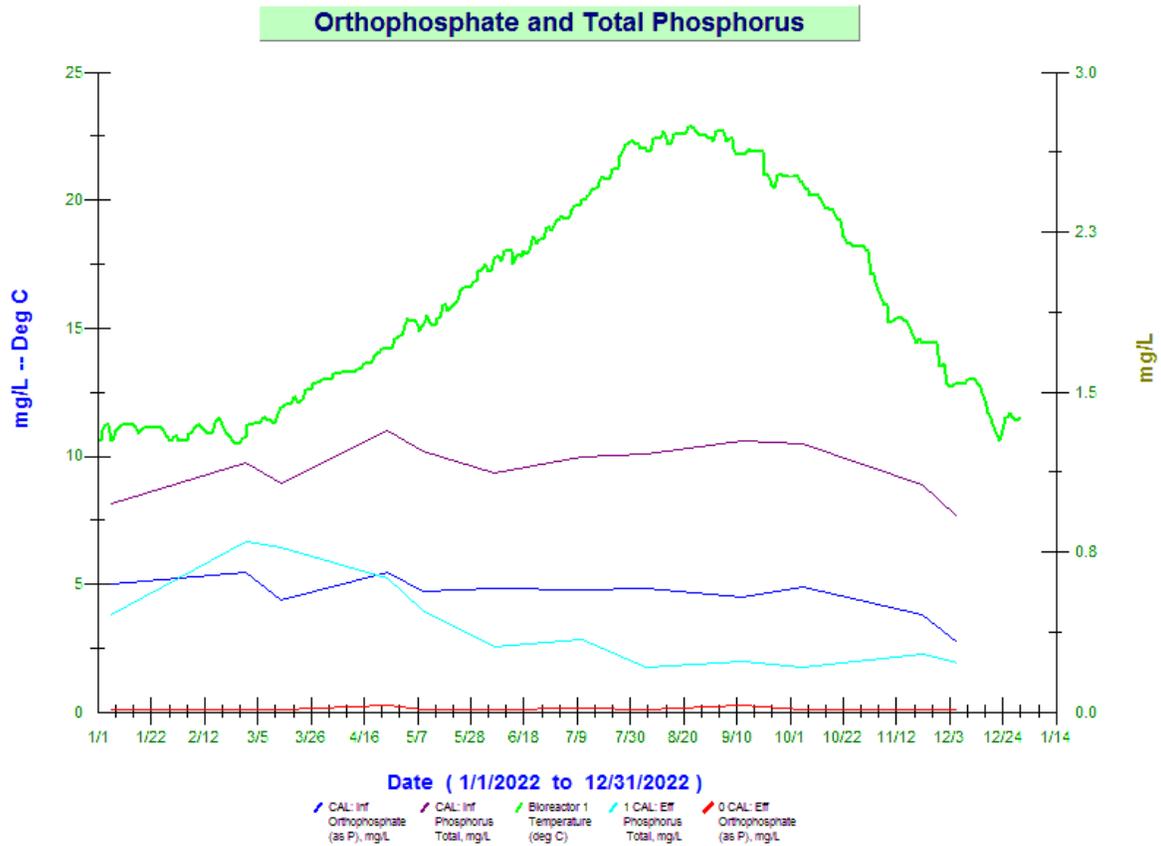
Influent ammonia is relatively consistent throughout the year with the highest concentrations occurring in the summer months. Effluent ammonia sees a dramatic peak in February of 2022 which is caused by a high relative volume of centrate, generated from the dewatering of septage, entering the treatment process. The strength of ammonia in centrate far exceeds the average municipal wastewater and therefore influences the quality of the effluent greatly. The effect of prolonged cold temperatures on the treatment process is seen in the higher concentrations of effluent ammonia in the first quarter of the year.

1.2 CBOD and TSS



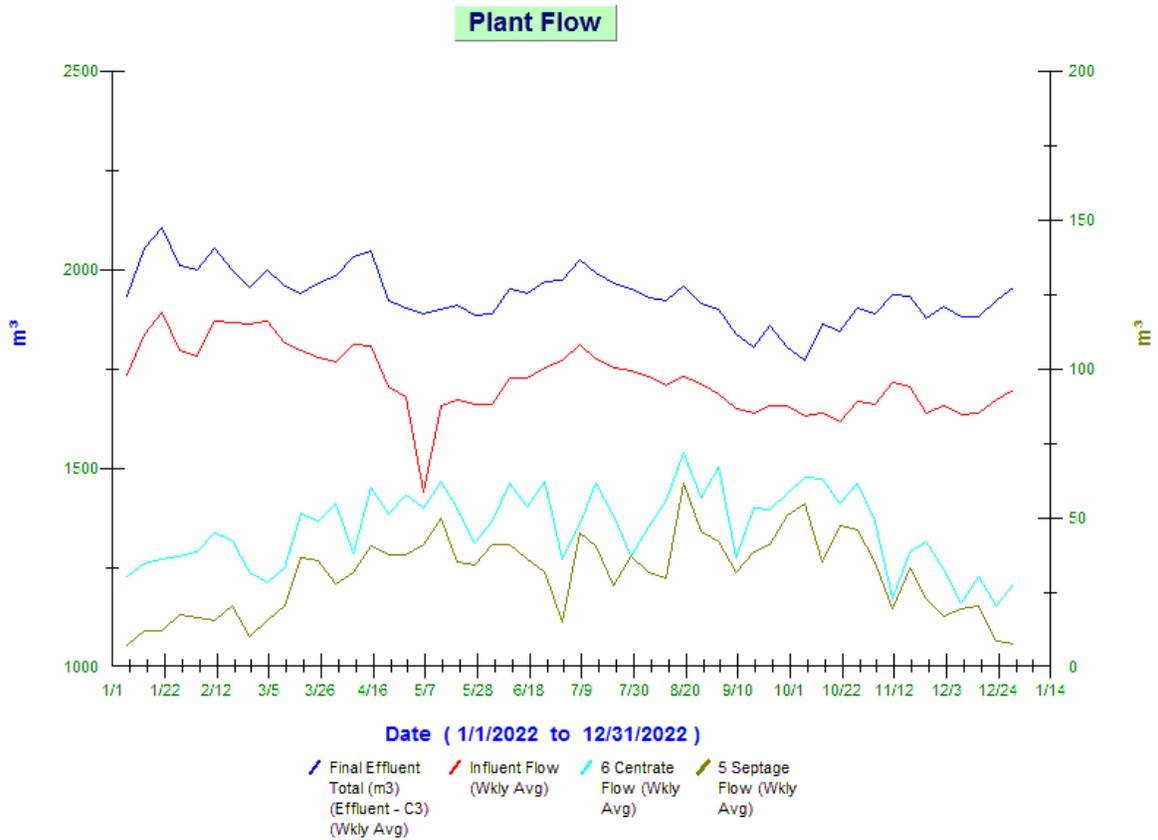
The effect of prolonged cold temperatures on the treatment process is seen in the higher concentrations of CBOD and higher TSS in the first quarter of the year, especially in March. The peak in effluent CBOD in January was proven to be an abnormality by resampling, which is reflected in the graph by the sudden decrease in CBOD in January.

1.3 Orthophosphate and Total Phosphorus



Effluent Orthophosphate is consistently low throughout the year. The effect of prolonged cold temperatures on the effluent quality can be seen in the higher concentrations of total phosphorus in the first quarter of the year.

1.4 Plant Flow



Plant flow remains relatively consistent throughout the year. Septage, and therefore centrate, flows see a slight increase during the summer months due to seasonal increase in activity related to private septage.