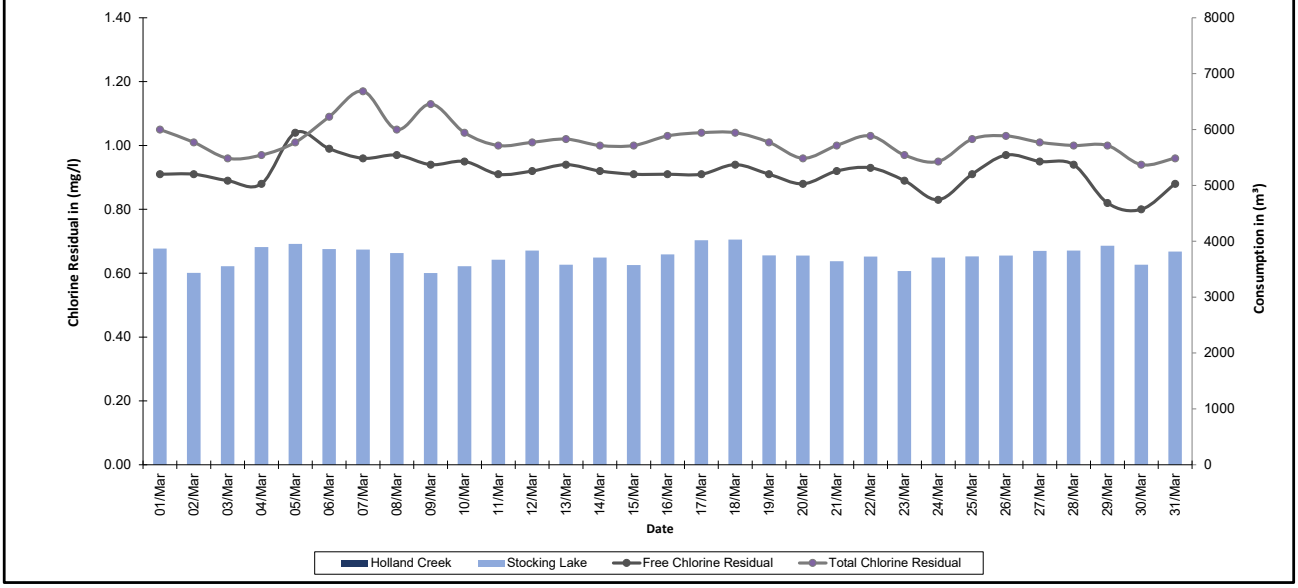
# Town of Ladysmith - Arbutus Water treatment Plant

## March 2024 - Monthly Report

| Date | Daily Flow | | | Chlorine Residual | | CT* | External Lab Testing | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Stocking Lake | Holland Creek | Combined Flow | Free | Total | | HPC | E.coli | Total Coliforms | Aluminum | THM | HAA |
| | m³ | m³ | m³ | mg/l | mg/l | Minutes·mg/l | CFU | MPN | MPN | mg/l | mg/l | mg/l |
| 01-Mar | 3869 | 0 | 3869 | 0.91 | 1.05 | 170 | | | | | | |
| 02-Mar | 3435 | 0 | 3435 | 0.91 | 1.01 | 111 | | | | | | |
| 03-Mar | 3555 | 0 | 3555 | 0.89 | 0.96 | 134 | | | | | | |
| 04-Mar | 3896 | 0 | 3896 | 0.88 | 0.97 | 223 | | | | | | |
| 05-Mar | 3953 | 0 | 3953 | 1.04 | 1.01 | 123 | < 1 | < 1 | < 1 | 0.0089 | 0.0162 | 0.0098 |
| 06-Mar | 3860 | 0 | 3860 | 0.99 | 1.09 | 18 | | | | | | |
| 07-Mar | 3851 | 0 | 3851 | 0.96 | 1.17 | 123 | | | | | | |
| 08-Mar | 3790 | 0 | 3790 | 0.97 | 1.05 | 131 | | | | | | |
| 09-Mar | 3432 | 0 | 3432 | 0.94 | 1.13 | 170 | | | | | | |
| 10-Mar | 3555 | 0 | 3555 | 0.95 | 1.04 | 132 | | | | | | |
| 11-Mar | 3670 | 0 | 3670 | 0.91 | 1.00 | 144 | | | | | | |
| 12-Mar | 3834 | 0 | 3834 | 0.92 | 1.01 | 194 | | | | | | |
| 13-Mar | 3580 | 0 | 3580 | 0.94 | 1.02 | 198 | < 1 | < 1 | < 1 | | | |
| 14-Mar | 3710 | 0 | 3710 | 0.92 | 1.00 | 137 | | | | | | |
| 15-Mar | 3574 | 0 | 3574 | 0.91 | 1.00 | 163 | | | | | | |
| 16-Mar | 3764 | 0 | 3764 | 0.91 | 1.03 | 158 | | | | | | |
| 17-Mar | 4018 | 0 | 4018 | 0.91 | 1.04 | 165 | | | | | | |
| 18-Mar | 4030 | 0 | 4030 | 0.94 | 1.04 | 126 | | | | | | |
| 19-Mar | 3746 | 0 | 3746 | 0.91 | 1.01 | 122 | | | | | | |
| 20-Mar | 3745 | 0 | 3745 | 0.88 | 0.96 | 209 | 0 | < 1 | < 1 | | | |
| 21-Mar | 3642 | 0 | 3642 | 0.92 | 1.00 | 70 | | | | | | |
| 22-Mar | 3726 | 0 | 3726 | 0.93 | 1.03 | 153 | | | | | | |
| 23-Mar | 3466 | 0 | 3466 | 0.89 | 0.97 | 132 | | | | | | |
| 24-Mar | 3708 | 0 | 3708 | 0.83 | 0.95 | 183 | | | | | | |
| 25-Mar | 3730 | 0 | 3730 | 0.91 | 1.02 | 171 | < 1 | < 1 | < 1 | | | |
| 26-Mar | 3744 | 0 | 3744 | 0.97 | 1.03 | 179 | | | | | | |
| 27-Mar | 3829 | 0 | 3829 | 0.95 | 1.01 | 144 | | | | | | |
| 28-Mar | 3833 | 0 | 3833 | 0.94 | 1.00 | 178 | | | | | | |
| 29-Mar | 3919 | 0 | 3919 | 0.82 | 1.00 | 121 | | | | | | |
| 30-Mar | 3581 | 0 | 3581 | 0.80 | 0.94 | 184 | | | | | | |
| 31-Mar | 3817 | 0 | 3817 | 0.88 | 0.96 | 295 | | | | | | |
| **Total** | 115862 | 0 | 115862 | | | | | | | | | |
| **Average** | 3737 | 0 | 3737 | 0.92 | 1.02 | 154 | < 0.75 | < 1 | < 1 | 0.0089 | 0.0162 | 0.00978 |

*CT - Recorded as the minimum value at the highest daily flow ** Manual Residual were not taken

### Arbutus WTP Consumption and Chlorine Residual



VEOLIA

InSight

# Town of Ladysmith Arbutus DWTP

## Monthly LRV and Turbidity Report

# 03/01/2024 - 04/01/2024

## LRV Monthly Average

| Asset | Parameter | Health | Avg | Std. Dev | Points | LL | LCL | %In | % between L and LL | % below LL | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 1 | LRV | | 5.0 | 0.0 | 32 | 4.25 | 4.5 | 100 % | 0 % | 0 % | # |
| UF 2 | LRV | | 5.0 | 0.0 | 32 | 4.25 | 4.5 | 100 % | 0 % | 0 % | # |
| UF 3 | LRV | | 5.0 | 0.0 | 31 | 4.25 | 4.5 | 100 % | 0 % | 0 % | # |

## LRV Daily Values

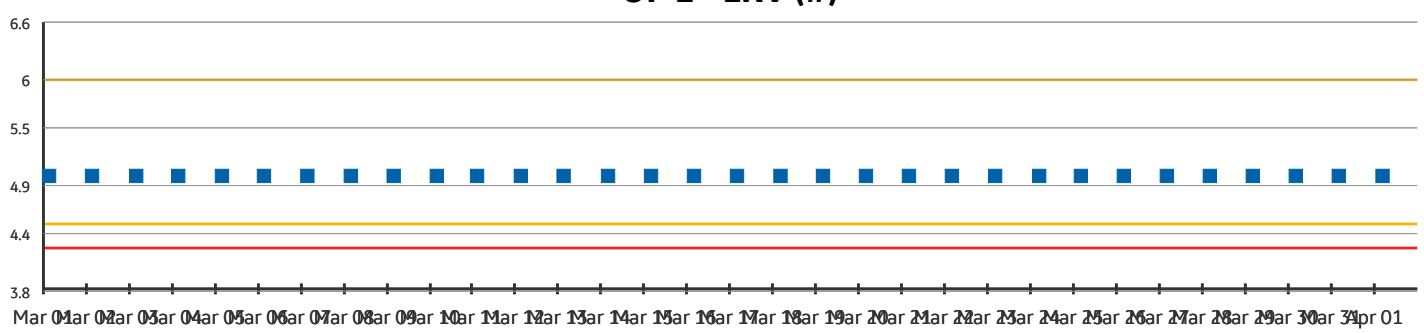
| Asset | Parameter | Mar 01 | Mar 02 | Mar 03 | Mar 04 | Mar 05 | Mar 06 | Mar 07 | Mar 08 | Mar 09 | Mar 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 1 | LRV | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| UF 2 | LRV | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| UF 3 | LRV | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |

| Asset | Mar 11 | Mar 12 | Mar 13 | Mar 14 | Mar 15 | Mar 16 | Mar 17 | Mar 18 | Mar 19 | Mar 20 | Mar 21 | Mar 22 | Mar 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 1 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| UF 2 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| UF 3 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |

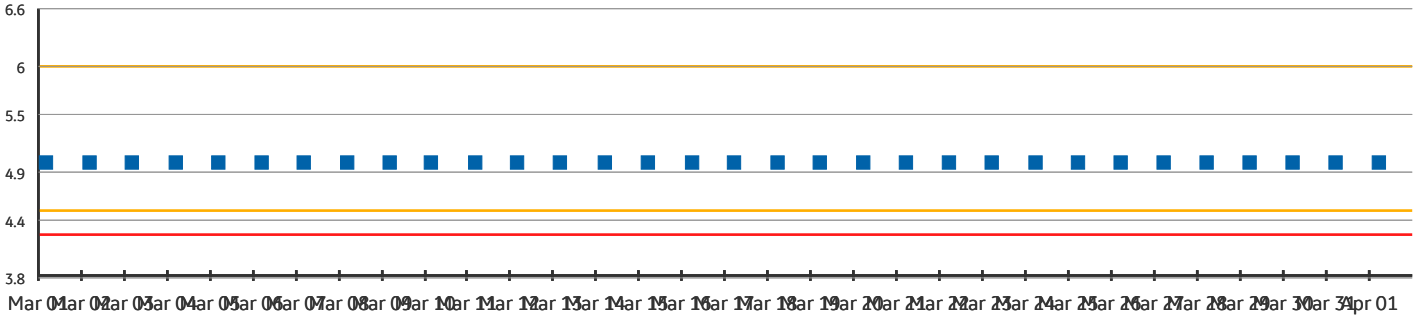
| Asset | Mar 24 | Mar 25 | Mar 26 | Mar 27 | Mar 28 | Mar 29 | Mar 30 | Mar 31 | Apr 01 |
|---|---|---|---|---|---|---|---|---|---|
| UF 1 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| UF 2 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| UF 3 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | -- |

## LRV Raw Data

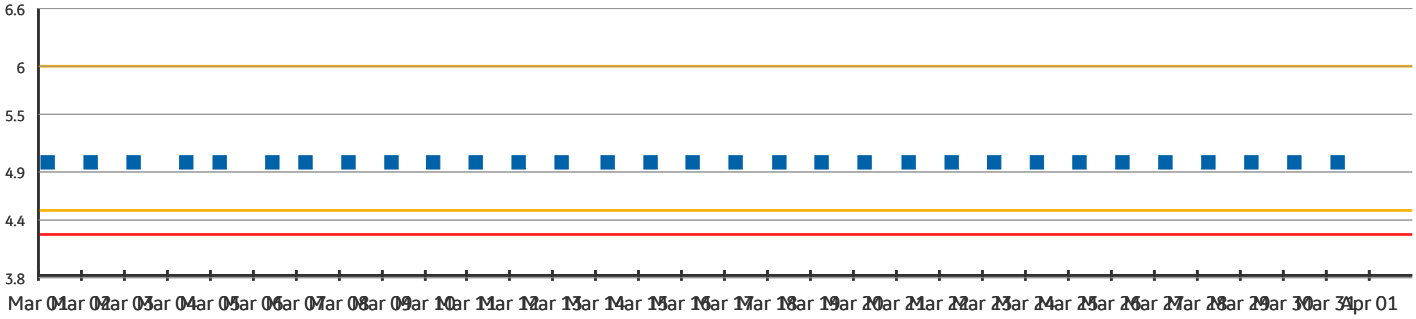
### UF 1 - LRV (#)



## UF 2 - LRV (#)




## UF 3 - LRV (#)




## Turbidity Monthly Average

| Asset | Parameter | Health | Avg | Std. Dev | Points | UCL | HH | %In | % between H and HH | % above HH | Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 1 | PermeateTurbidity | | 0.016 | 0.0 | 45161 | -- | -- | 100 % | 0 % | 0 % | NTU |
| UF 2 | PermeateTurbidity | | 0.014 | 0.0 | 45161 | -- | -- | 100 % | 0 % | 0 % | NTU |
| UF 3 | PermeateTurbidity | | 0.015 | 0.0 | 45161 | -- | -- | 100 % | 0 % | 0 % | NTU |
| UF 1 | PermeateTurbidityAfterBP | | 0.016 | 0.0 | 429 | 0.1 | 0.3 | 100 % | 0 % | 0 % | NTU |
| UF 2 | PermeateTurbidityAfterBP | | 0.014 | 0.0 | 416 | 0.1 | 0.3 | 100 % | 0 % | 0 % | NTU |
| UF 3 | PermeateTurbidityAfterBP | | 0.015 | 0.0 | 419 | 0.1 | 0.3 | 100 % | 0 % | 0 % | NTU |

## Turbidity Daily Averages

| Asset | Parameter | Mar 01 | Mar 02 | Mar 03 | Mar 04 | Mar 05 | Mar 06 | Mar 07 | Mar 08 | Mar 09 | Mar 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 1 | PermeateTurbidity | 0.013 | 0.013 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| UF 2 | PermeateTurbidity | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| UF 3 | PermeateTurbidity | 0.013 | 0.013 | 0.013 | 0.014 | 0.013 | 0.014 | 0.013 | 0.013 | 0.013 | 0.013 |
| UF 1 | PermeateTurbidityAfterBP | 0.014 | 0.014 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| UF 2 | PermeateTurbidityAfterBP | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 |
| UF 3 | PermeateTurbidityAfterBP | 0.013 | 0.013 | 0.013 | 0.014 | 0.013 | 0.014 | 0.014 | 0.014 | 0.014 | 0.014 |

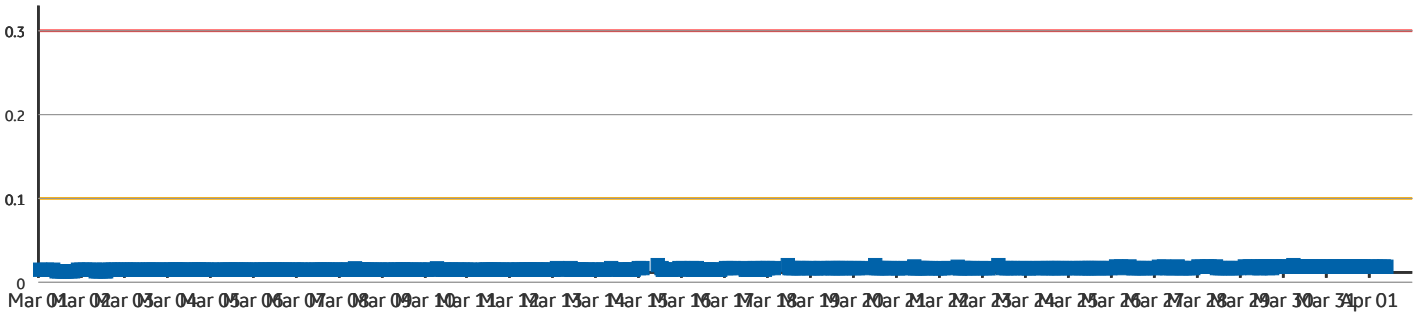
| Asset | Mar 11 | Mar 12 | Mar 13 | Mar 14 | Mar 15 | Mar 16 | Mar 17 | Mar 18 | Mar 19 | Mar 20 | Mar 21 | Mar 22 | Mar 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 1 | 0.015 | 0.015 | 0.015 | 0.015 | 0.016 | 0.015 | 0.016 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
| UF 2 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.013 | 0.014 | 0.015 | 0.015 | 0.015 | 0.015 |
| UF 3 | 0.013 | 0.014 | 0.013 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| UF 1 | 0.015 | 0.015 | 0.015 | 0.015 | 0.016 | 0.015 | 0.016 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
| UF 2 | 0.013 | 0.014 | 0.013 | 0.014 | 0.013 | 0.013 | 0.014 | 0.014 | 0.014 | 0.015 | 0.015 | 0.015 | 0.015 |

| Asset | Mar 11 | Mar 12 | Mar 13 | Mar 14 | Mar 15 | Mar 16 | Mar 17 | Mar 18 | Mar 19 | Mar 20 | Mar 21 | Mar 22 | Mar 23 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UF 3 | 0.014 | 0.014 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |

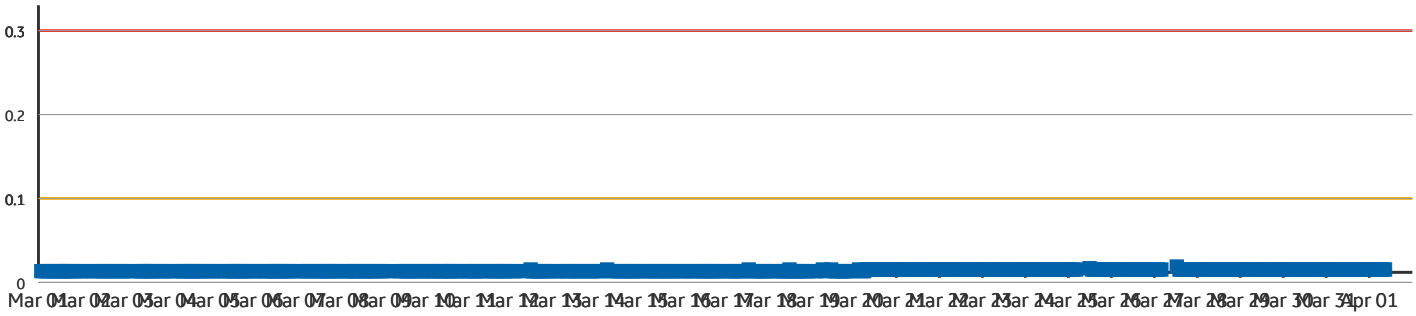
| Asset | Mar 24 | Mar 25 | Mar 26 | Mar 27 | Mar 28 | Mar 29 | Mar 30 | Mar 31 | Apr 01 |
|---|---|---|---|---|---|---|---|---|---|
| UF 1 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 | 0.018 | 0.019 | 0.019 | 0.019 |
| UF 2 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| UF 3 | 0.015 | 0.015 | 0.015 | 0.015 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |
| UF 1 | 0.017 | 0.017 | 0.017 | 0.017 | 0.018 | 0.018 | 0.019 | 0.019 | 0.019 |
| UF 2 | 0.015 | 0.015 | 0.015 | 0.016 | 0.015 | 0.015 | 0.015 | 0.015 | 0.015 |
| UF 3 | 0.016 | 0.016 | 0.016 | 0.016 | 0.017 | 0.017 | 0.017 | 0.017 | 0.017 |

## Turbidity Raw Data

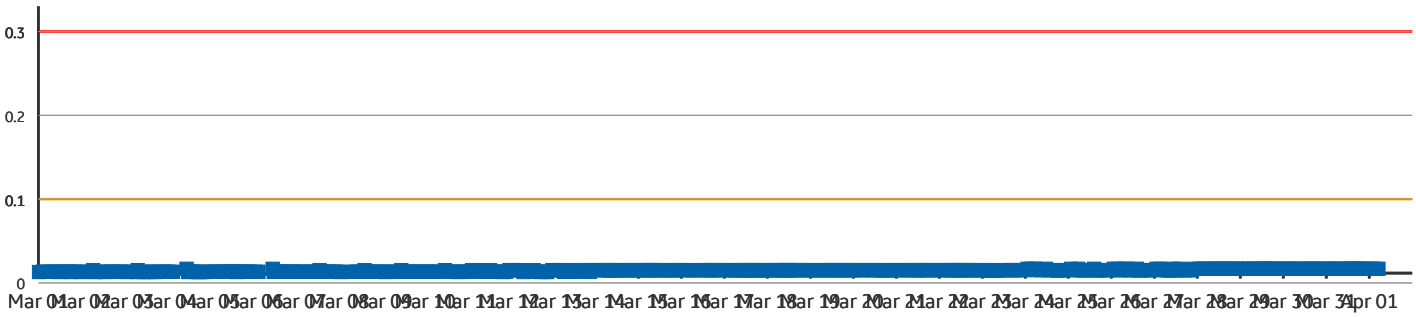
### UF 1 - PermeateTurbidityAfterBP (NTU)




### UF 2 - PermeateTurbidityAfterBP (NTU)




### UF 3 - PermeateTurbidityAfterBP (NTU)



# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A4614** | Page | : 1 of 3 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby BC Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Monthly Sampling | Date Samples Received | : 06-Mar-2024 12:10 |
| PO | : 10880 | Date Analysis Commenced | : 07-Mar-2024 |
| C-O-C number | : ---- | Issue Date | : 11-Mar-2024 16:52 |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Organics, Burnaby, British Columbia |
| Sanja Risticevic | Department Manager - LCMS | LCMS, Waterloo, Ontario |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| µg/L | micrograms per litre |
| mg/L | milligrams per litre |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID: Treated Water (post reservoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time: 05-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| | | | | | VA24A4614-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **Aluminum, total** | 7429-90-5 | E420/VA | 0.0030 | mg/L | 0.0089 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds [THMs]** | | | | | | | | | |
| **Bromodichloromethane** | 75-27-4 | E611B/VA | 1.0 | µg/L | 1.2 | ---- | ---- | ---- | ---- |
| **Bromoform** | 75-25-2 | E611B/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| **Chloroform** | 67-66-3 | E611B/VA | 1.0 | µg/L | 15.0 | ---- | ---- | ---- | ---- |
| **Dibromochloromethane** | 124-48-1 | E611B/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- |
| **Trihalomethanes [THMs], total** | ---- | E611B/VA | 2.0 | µg/L | 16.2 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds [THMs] Surrogates** | | | | | | | | | |
| **Bromofluorobenzene, 4-** | 460-00-4 | E611B/VA | 1.0 | % | 101 | ---- | ---- | ---- | ---- |
| **Difluorobenzene, 1,4-** | 540-36-3 | E611B/VA | 1.0 | % | 97.8 | ---- | ---- | ---- | ---- |
| **Haloacetic Acids** | | | | | | | | | |
| **Bromochloroacetic acid** | 5589-96-8 | E750/WT | 1.00 | µg/L | <1.00 | ---- | ---- | ---- | ---- |
| **Dibromoacetic acid** | 631-64-1 | E750/WT | 1.00 | µg/L | <1.00 | ---- | ---- | ---- | ---- |
| **Dichloroacetic acid** | 79-43-6 | E750/WT | 1.00 | µg/L | 4.83 | ---- | ---- | ---- | ---- |
| **Monobromoacetic acid** | 79-08-3 | E750/WT | 1.00 | µg/L | <1.00 | ---- | ---- | ---- | ---- |
| **Monochloroacetic acid** | 79-11-8 | E750/WT | 1.00 | µg/L | <1.00 | ---- | ---- | ---- | ---- |
| **Trichloroacetic acid** | 76-03-9 | E750/WT | 1.00 | µg/L | 4.95 | ---- | ---- | ---- | ---- |
| **Haloacetic acids, total [HAA5]** | n/a | E750/WT | 5.00 | µg/L | 9.78 | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A4614** | Page | : 1 of 5 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby, British Columbia Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Monthly Sampling | Date Samples Received | : 06-Mar-2024 12:10 |
| PO | : 10880 | Issue Date | : 11-Mar-2024 16:51 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## *Outliers : Analysis Holding Time Compliance (Breaches)*

- No Analysis Holding Time Outliers exist.

## *Outliers : Frequency of Quality Control Samples*

- No Quality Control Sample Frequency Outliers occur.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A4606** | Page | : 1 of 3 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby BC Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 06-Mar-2024 12:10 |
| PO | : 10880 | Date Analysis Commenced | : 06-Mar-2024 |
| C-O-C number | : ---- | Issue Date | : 12-Mar-2024 13:32 |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Kate Dimitrova | Supervisor - Inorganic | Inorganics, Burnaby, British Columbia |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Microbiology, Burnaby, British Columbia |

## General Comments

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Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| µS/cm | microsiemens per centimetre |
| CFU/mL | colony forming units per millilitre |
| CU | colour units (1 cu = 1 mg/l pt) |
| mg/L | milligrams per litre |
| MPN/100mL | most probable number per hundred millilitres |
| NTU | nephelometric turbidity units |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

**Exceeded Recommended Holding Time prior to receipt at the lab for Microbiology analysis.**

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | Client sample ID | Raw Water | DAF Effluent | UF Effluent | Treated Water (post reservoir) | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Client sampling date / time | 05-Mar-2024 10:30 | 05-Mar-2024 10:30 | 05-Mar-2024 10:30 | 05-Mar-2024 10:30 | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | VA24A4606-001 | VA24A4606-002 | VA24A4606-003 | VA24A4606-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Physical Tests** | | | | | | | | | |
| Alkalinity, total (as CaCO3) | ---- | E290/VA | 1.0 | mg/L | ---- | ---- | ---- | 16.3 | ---- |
| Colour, true | ---- | E329/VA | 5.0 | CU | ---- | ---- | ---- | <5.0 | ---- |
| Conductivity | ---- | E100/VA | 2.0 | µS/cm | ---- | ---- | ---- | 67.3 | ---- |
| pH | ---- | E108/VA | 0.10 | pH units | ---- | ---- | ---- | 7.55 | ---- |
| Turbidity | ---- | E121/VA | 0.10 | NTU | ---- | ---- | ---- | <0.10 | ---- |
| **Organic / Inorganic Carbon** | | | | | | | | | |
| Carbon, dissolved organic [DOC] | ---- | E358-L/VA | 0.50 | mg/L | 2.70 | 1.13 | 1.18 | ---- | ---- |
| Carbon, total organic [TOC] | ---- | E355-L/VA | 0.50 | mg/L | 3.92 | 2.08 | 1.52 | ---- | ---- |
| **Microbiological Tests** | | | | | | | | | |
| Heterotrophic plate count [HPC] | ---- | E020/VA | 1 | CFU/mL | ---- | ---- | ---- | <1 | ---- |
| Coliforms, Escherichia coli [E. coli] | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |
| Coliforms, total | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A4606** | Page | : 1 of 7 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby, British Columbia Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 06-Mar-2024 12:10 |
| PO | : 10880 | Issue Date | : 12-Mar-2024 13:34 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A5304** | Page | : 1 of 3 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby BC Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 14-Mar-2024 10:05 |
| PO | : PO #10880 | Date Analysis Commenced | : 14-Mar-2024 |
| C-O-C number | : ---- | Issue Date | : 19-Mar-2024 22:48 |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Microbiology, Burnaby, British Columbia |
| Leon Yang | Analyst | Inorganics, Burnaby, British Columbia |
| Monica Ko | Lab Assistant | Microbiology, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| µS/cm | microsiemens per centimetre |
| CFU/mL | colony forming units per millilitre |
| CU | colour units (1 cu = 1 mg/l pt) |
| mg/L | milligrams per litre |
| MPN/100mL | most probable number per hundred millilitres |
| NTU | nephelometric turbidity units |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID: Raw Water | DAF Effluent | UF Effluent | Treated Water (post reservoir) | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 13-Mar-2024 10:30 | 13-Mar-2024 10:30 | 13-Mar-2024 10:30 | 13-Mar-2024 10:30 | ---- |
| | | | | | VA24A5304-001 | VA24A5304-002 | VA24A5304-003 | VA24A5304-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Physical Tests** | | | | | | | | | |
| **Alkalinity, total (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | ---- | ---- | ---- | 15.8 | ---- |
| **Colour, true** | ---- | E329/VA | 5.0 | CU | ---- | ---- | ---- | <5.0 | ---- |
| **Conductivity** | ---- | E100/VA | 2.0 | µS/cm | ---- | ---- | ---- | 66.2 | ---- |
| **pH** | ---- | E108/VA | 0.10 | pH units | ---- | ---- | ---- | 7.55 | ---- |
| **Turbidity** | ---- | E121/VA | 0.10 | NTU | ---- | ---- | ---- | <0.10 | ---- |
| **Organic / Inorganic Carbon** | | | | | | | | | |
| **Carbon, dissolved organic [DOC]** | ---- | E358-L/VA | 0.50 | mg/L | 2.74 | 1.25 | 1.18 | ---- | ---- |
| **Carbon, total organic [TOC]** | ---- | E355-L/VA | 0.50 | mg/L | 3.02 | 1.32 | 1.10 | ---- | ---- |
| **Microbiological Tests** | | | | | | | | | |
| **Heterotrophic plate count [HPC]** | ---- | E020/VA | 1 | CFU/mL | ---- | ---- | ---- | <1 | ---- |
| **Coliforms, Escherichia coli [E. coli]** | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |
| **Coliforms, total** | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A5304** | Page | : 1 of 7 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby, British Columbia Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 14-Mar-2024 10:05 |
| PO | : PO #10880 | Issue Date | : 19-Mar-2024 22:48 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A5948** | Page | : 1 of 11 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby BC Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Yearly Sampling | Date Samples Received | : 20-Mar-2024 12:00 |
| PO | : PO #10916 | Date Analysis Commenced | : 21-Mar-2024 |
| C-O-C number | : ---- | Issue Date | : 09-Apr-2024 16:45 |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Amaninder Dhillon | Team Lead - Semi-Volatile Instrumentation | Organics, Waterloo, Ontario |
| Jon Fisher | Production Manager, Environmental | LCMS, Waterloo, Ontario |
| Kelly Fischer | Technical Specialist | Inorganics, Waterloo, Ontario |
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Natalia Bobretsova | | Limnology, Winnipeg, Manitoba |
| Owen Cheng | | Metals, Burnaby, British Columbia |
| Paul Cushing | Team Leader - Organics | Inorganics, Burnaby, British Columbia |
| Paul Cushing | Team Leader - Organics | Organics, Burnaby, British Columbia |
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| Sorina Motea | Laboratory Analyst | Organics, Calgary, Alberta |
| Stephanie Pinheiro | Team Leader - LCMS | LCMS, Waterloo, Ontario |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

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Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| µg/L | micrograms per litre |
| cells/mL | cells per millilitre |
| mg/L | milligrams per litre |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Sample Comments

| *Sample* | Client Id | *Comment* |
|---|---|---|
| VA24A5948-001 | Treated Water (post resevoir) | No blue-green algae observed. |

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *DLB* | *Detection Limit Raised. Analyte detected at comparable level in Method Blank.* |
| *DLM* | *Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).* |
| *PEHT* | *Parameter exceeded recommended holding time prior to analysis.* |

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID: Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time: 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| | | | | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | Result | ---- | ---- | ---- | ---- |
| **Physical Tests** | | | | | | | | | |
| **Hardness (as CaCO3), from total Ca/Mg** | ---- | EC100A/VA | 0.60 | mg/L | 9.69 | ---- | ---- | ---- | ---- |
| **pH** | ---- | E108/VA | 0.10 | pH units | 7.41 | ---- | ---- | ---- | ---- |
| **Anions and Nutrients** | | | | | | | | | |
| **Bromide** | 24959-67-9 | E235.Br-L/VA | 0.050 | mg/L | <0.050 | ---- | ---- | ---- | ---- |
| **Chloride** | 16887-00-6 | E235.Cl/VA | 0.50 | mg/L | 8.16 | ---- | ---- | ---- | ---- |
| **Fluoride** | 16984-48-8 | E235.F/VA | 0.020 | mg/L | <0.020 | ---- | ---- | ---- | ---- |
| **Nitrate (as N)** | 14797-55-8 | E235.NO3-L/VA | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **Nitrite (as N)** | 14797-65-0 | E235.NO2-L/VA | 0.0010 | mg/L | <0.0010 | ---- | ---- | ---- | ---- |
| **Sulfate (as SO4)** | 14808-79-8 | E235.SO4/VA | 0.30 | mg/L | 1.97 | ---- | ---- | ---- | ---- |
| **Cyanides** | | | | | | | | | |
| **Cyanide, strong acid dissociable (Total)** | ---- | E333/VA | 0.0050 | mg/L | <0.0050 | ---- | ---- | ---- | ---- |
| **Taxonomy** | | | | | | | | | |
| **Blue-green algae cell count, total** | ---- | E921A/WP | 1 | cells/mL | <1 | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | |
| **Aluminum, total** | 7429-90-5 | E420/VA | 0.0030 | mg/L | 0.0080 | ---- | ---- | ---- | ---- |
| **Antimony, total** | 7440-36-0 | E420/VA | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **Arsenic, total** | 7440-38-2 | E420/VA | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **Barium, total** | 7440-39-3 | E420/VA | 0.00010 | mg/L | 0.00291 | ---- | ---- | ---- | ---- |
| **Beryllium, total** | 7440-41-7 | E420/VA | 0.000100 | mg/L | <0.000100 | ---- | ---- | ---- | ---- |
| **Bismuth, total** | 7440-69-9 | E420/VA | 0.000050 | mg/L | <0.000050 | ---- | ---- | ---- | ---- |
| **Boron, total** | 7440-42-8 | E420/VA | 0.010 | mg/L | 0.018 | ---- | ---- | ---- | ---- |
| **Cadmium, total** | 7440-43-9 | E420/VA | 0.0000050 | mg/L | <0.0000050 | ---- | ---- | ---- | ---- |
| **Calcium, total** | 7440-70-2 | E420/VA | 0.050 | mg/L | 3.14 | ---- | ---- | ---- | ---- |
| **Cesium, total** | 7440-46-2 | E420/VA | 0.000010 | mg/L | <0.000010 | ---- | ---- | ---- | ---- |
| **Chromium, total** | 7440-47-3 | E420/VA | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **Cobalt, total** | 7440-48-4 | E420/VA | 0.00010 | mg/L | <0.00010 | ---- | ---- | ---- | ---- |
| **Copper, total** | 7440-50-8 | E420/VA | 0.00050 | mg/L | <0.00050 | ---- | ---- | ---- | ---- |
| **Iron, total** | 7439-89-6 | E420/VA | 0.010 | mg/L | <0.010 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Total Metals** | | | | | | | | | | |
| **Lead, total** | 7439-92-1 | E420/VA | 0.000050 | mg/L | | <0.000050 | ---- | ---- | ---- | ---- |
| **Lithium, total** | 7439-93-2 | E420/VA | 0.0010 | mg/L | | <0.0010 | ---- | ---- | ---- | ---- |
| **Magnesium, total** | 7439-95-4 | E420/VA | 0.0050 | mg/L | | 0.449 | ---- | ---- | ---- | ---- |
| **Manganese, total** | 7439-96-5 | E420/VA | 0.00010 | mg/L | | 0.00056 | ---- | ---- | ---- | ---- |
| **Mercury, total** | 7439-97-6 | E508/VA | 0.0000050 | mg/L | | <0.0000050 | ---- | ---- | ---- | ---- |
| **Molybdenum, total** | 7439-98-7 | E420/VA | 0.000050 | mg/L | | 0.000134 | ---- | ---- | ---- | ---- |
| **Nickel, total** | 7440-02-0 | E420/VA | 0.00050 | mg/L | | <0.00050 | ---- | ---- | ---- | ---- |
| **Phosphorus, total** | 7723-14-0 | E420/VA | 0.050 | mg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Potassium, total** | 7440-09-7 | E420/VA | 0.050 | mg/L | | 0.245 | ---- | ---- | ---- | ---- |
| **Rubidium, total** | 7440-17-7 | E420/VA | 0.00020 | mg/L | | 0.00057 | ---- | ---- | ---- | ---- |
| **Selenium, total** | 7782-49-2 | E420/VA | 0.000050 | mg/L | | <0.000050 | ---- | ---- | ---- | ---- |
| **Silicon, total** | 7440-21-3 | E420/VA | 0.10 | mg/L | | 2.03 | ---- | ---- | ---- | ---- |
| **Silver, total** | 7440-22-4 | E420/VA | 0.000010 | mg/L | | <0.000010 | ---- | ---- | ---- | ---- |
| **Sodium, total** | 7440-23-5 | E420/VA | 0.050 | mg/L | | 8.93 | ---- | ---- | ---- | ---- |
| **Strontium, total** | 7440-24-6 | E420/VA | 0.00020 | mg/L | | 0.00987 | ---- | ---- | ---- | ---- |
| **Sulfur, total** | 7704-34-9 | E420/VA | 0.50 | mg/L | | 0.68 | ---- | ---- | ---- | ---- |
| **Tellurium, total** | 13494-80-9 | E420/VA | 0.00020 | mg/L | | <0.00020 | ---- | ---- | ---- | ---- |
| **Thallium, total** | 7440-28-0 | E420/VA | 0.000010 | mg/L | | <0.000010 | ---- | ---- | ---- | ---- |
| **Thorium, total** | 7440-29-1 | E420/VA | 0.00010 | mg/L | | <0.00010 | ---- | ---- | ---- | ---- |
| **Tin, total** | 7440-31-5 | E420/VA | 0.00010 | mg/L | | <0.00010 | ---- | ---- | ---- | ---- |
| **Titanium, total** | 7440-32-6 | E420/VA | 0.00030 | mg/L | | <0.00030 | ---- | ---- | ---- | ---- |
| **Tungsten, total** | 7440-33-7 | E420/VA | 0.00010 | mg/L | | <0.00010 | ---- | ---- | ---- | ---- |
| **Uranium, total** | 7440-61-1 | E420/VA | 0.000010 | mg/L | | <0.000010 | ---- | ---- | ---- | ---- |
| **Vanadium, total** | 7440-62-2 | E420/VA | 0.00050 | mg/L | | <0.00050 | ---- | ---- | ---- | ---- |
| **Zinc, total** | 7440-66-6 | E420/VA | 0.0030 | mg/L | | <0.0030 | ---- | ---- | ---- | ---- |
| **Zirconium, total** | 7440-67-7 | E420/VA | 0.00020 | mg/L | | <0.00020 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds** | | | | | | | | | | |
| **Chlorobenzene** | 108-90-7 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| **Chloromethane** | 74-87-3 | E611N/VA | 5.0 | µg/L | | <5.0 | ---- | ---- | ---- | ---- |
| **Dichlorobenzene, 1,2-** | 95-50-1 | E611N/VA | 0.50 | µg/L | | <0.50 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | VA24A5948-001 | -------- | -------- | -------- | -------- | |
| | | | | | Result | ---- | ---- | ---- | ---- | |
| **Volatile Organic Compounds** | | | | | | | | | | |
| Dichlorobenzene, 1,3- | 541-73-1 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichlorobenzene, 1,4- | 106-46-7 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloropropane, 1,2- | 78-87-5 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloropropylene, cis+trans-1,3- | 542-75-6 | E611N/VA | 1.5 | µg/L | <1.5 | ---- | ---- | ---- | ---- | |
| Dichloropropylene, cis-1,3- | 10061-01-5 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | E611N/VA | 0.20 | µg/L | <0.20 | ---- | ---- | ---- | ---- | |
| Trichloroethane, 1,1,2- | 79-00-5 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Trichlorofluoromethane | 75-69-4 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| **Volatile Organic Compounds [Drycleaning]** | | | | | | | | | | |
| Carbon tetrachloride | 56-23-5 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Chloroethane | 75-00-3 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloroethane, 1,1- | 75-34-3 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloroethylene, 1,1- | 75-35-4 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloroethylene, cis-1,2- | 156-59-2 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloroethylene, trans-1,2- | 156-60-5 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloromethane | 75-09-2 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dichloropropylene, trans-1,3- | 10061-02-6 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Tetrachloroethylene | 127-18-4 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Trichloroethane, 1,1,1- | 71-55-6 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Trichloroethylene | 79-01-6 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Vinyl chloride | 75-01-4 | E611N/VA | 0.40 | µg/L | <0.40 | ---- | ---- | ---- | ---- | |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | | |
| Benzene | 71-43-2 | E611N/VA | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- | |
| Butadiene, 1,3- | 106-99-0 | E611N/VA | 0.20 | µg/L | <0.20 | ---- | ---- | ---- | ---- | |
| Cymene, p- | 99-87-6 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Decane, n- | 124-18-5 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Dibromoethane, 1,2- | 106-93-4 | E611N/VA | 0.20 | µg/L | <0.20 | ---- | ---- | ---- | ---- | |
| Dichloroethane, 1,2- | 107-06-2 | E611N/VA | 1.0 | µg/L | <1.0 | ---- | ---- | ---- | ---- | |
| Ethylbenzene | 100-41-4 | E611N/VA | 0.50 | µg/L | <0.50 | ---- | ---- | ---- | ---- | |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds [Fuels]** | | | | | | | | | | |
| Hexane, n- | 110-54-3 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Isopropylbenzene | 98-82-8 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Methylcyclohexane | 108-87-2 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Methyl-tert-butyl ether [MTBE] | 1634-04-4 | E611N/VA | 0.50 | µg/L | | <0.50 | ---- | ---- | ---- | ---- |
| Propylbenzene, n- | 103-65-1 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Styrene | 100-42-5 | E611N/VA | 0.50 | µg/L | | <0.50 | ---- | ---- | ---- | ---- |
| Toluene | 108-88-3 | E611N/VA | 0.40 | µg/L | | <0.40 | ---- | ---- | ---- | ---- |
| Trimethylbenzene, 1,2,4- | 95-63-6 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Trimethylbenzene, 1,3,5- | 108-67-8 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Xylene, m+p- | 179601-23-1 | E611N/VA | 0.40 | µg/L | | <0.40 | ---- | ---- | ---- | ---- |
| Xylene, o- | 95-47-6 | E611N/VA | 0.30 | µg/L | | <0.30 | ---- | ---- | ---- | ---- |
| Xylenes, total | 1330-20-7 | E611N/VA | 0.50 | µg/L | | <0.50 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds [THMs]** | | | | | | | | | | |
| Bromodichloromethane | 75-27-4 | E611N/VA | 1.0 | µg/L | | 1.4 | ---- | ---- | ---- | ---- |
| Bromoform | 75-25-2 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| Chloroform | 67-66-3 | E611N/VA | 1.0 | µg/L | | 11.7 | ---- | ---- | ---- | ---- |
| Dibromochloromethane | 124-48-1 | E611N/VA | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| **Hydrocarbons** | | | | | | | | | | |
| VHw (C6-C10) | ---- | E581.VH+F1/VA | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| VPHw | ---- | EC580A/VA | 100 | µg/L | | <100 | ---- | ---- | ---- | ---- |
| **Hydrocarbons Surrogates** | | | | | | | | | | |
| Dichlorotoluene, 3,4- | 95-75-0 | E581.VH+F1/VA | 1.0 | % | | 105 | ---- | ---- | ---- | ---- |
| **Volatile Organic Compounds Surrogates** | | | | | | | | | | |
| Bromofluorobenzene, 4- | 460-00-4 | E611N/VA | 1.0 | % | | 98.6 | ---- | ---- | ---- | ---- |
| Difluorobenzene, 1,4- | 540-36-3 | E611N/VA | 1.0 | % | | 102 | ---- | ---- | ---- | ---- |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | |
| Acenaphthene | 83-32-9 | E641A/CG | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |
| Acenaphthylene | 208-96-8 | E641A/CG | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | VA24A5948-001 | -------- | -------- | -------- | -------- | |
| | | | | | Result | ---- | ---- | ---- | ---- | |
| **Polycyclic Aromatic Hydrocarbons** | | | | | | | | | | |
| Acridine | 260-94-6 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Anthracene | 120-12-7 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Benz(a)anthracene | 56-55-3 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Benzo(a)pyrene | 50-32-8 | E641A/CG | 0.0050 | µg/L | <0.0050 | ---- | ---- | ---- | ---- | |
| Benzo(b+j)fluoranthene | n/a | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Benzo(b+j+k)fluoranthene | n/a | E641A/CG | 0.015 | µg/L | <0.015 | ---- | ---- | ---- | ---- | |
| Benzo(g,h,i)perylene | 191-24-2 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Benzo(k)fluoranthene | 207-08-9 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Chrysene | 218-01-9 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Dibenz(a,h)anthracene | 53-70-3 | E641A/CG | 0.0050 | µg/L | <0.0050 | ---- | ---- | ---- | ---- | |
| Fluoranthene | 206-44-0 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Fluorene | 86-73-7 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Indeno(1,2,3-c,d)pyrene | 193-39-5 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Methylnaphthalene, 1- | 90-12-0 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Methylnaphthalene, 1+2- | ---- | E641A/CG | 0.015 | µg/L | <0.015 | ---- | ---- | ---- | ---- | |
| Methylnaphthalene, 2- | 91-57-6 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Naphthalene | 91-20-3 | E641A/CG | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- | |
| Phenanthrene | 85-01-8 | E641A/CG | 0.020 | µg/L | <0.020 | ---- | ---- | ---- | ---- | |
| Pyrene | 129-00-0 | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| Quinoline | 91-22-5 | E641A/CG | 0.050 | µg/L | <0.050 | ---- | ---- | ---- | ---- | |
| B(a)P total potency equivalents [B(a)P TPE] | ---- | E641A/CG | 0.010 | µg/L | <0.010 | ---- | ---- | ---- | ---- | |
| PAHs, high molecular weight (BC AWQ) | n/a | E641A/CG | 0.030 | µg/L | <0.030 | ---- | ---- | ---- | ---- | |
| PAHs, low molecular weight (BC AWQ) | n/a | E641A/CG | 0.060 | µg/L | <0.060 | ---- | ---- | ---- | ---- | |
| PAHs, total (EPA 16) | n/a | E641A/CG | 0.065 | µg/L | <0.065 | ---- | ---- | ---- | ---- | |
| **Polycyclic Aromatic Hydrocarbons Surrogates** | | | | | | | | | | |
| Chrysene-d12 | 1719-03-5 | E641A/CG | 0.1 | % | 106 | ---- | ---- | ---- | ---- | |
| Naphthalene-d8 | 1146-65-2 | E641A/CG | 0.1 | % | 123 | ---- | ---- | ---- | ---- | |
| Phenanthrene-d10 | 1517-22-2 | E641A/CG | 0.1 | % | 101 | ---- | ---- | ---- | ---- | |
| **Disinfectant By-Products** | | | | | | | | | | |
| Bromate | 15541-45-4 | E722A/WT | 0.30 | µg/L | 0.39 | ---- | ---- | ---- | ---- | |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **DIsinfectant By-Products** | | | | | | | | | | |
| Chlorate | 14866-68-3 | E409.CLO3/WT | 0.010 | mg/L | | 0.022 | ---- | ---- | ---- | ---- |
| Chlorite | 14998-27-7 | E409.CLO2/WT | 0.010 | mg/L | | <0.010 | ---- | ---- | ---- | ---- |
| **Semi-Volatile Organics** | | | | | | | | | | |
| Nitrosodimethylamine, N- [NDMA] | 62-75-9 | E725-T/WT | 0.00090 | µg/L | | <0.00135 DLB | ---- | ---- | ---- | ---- |
| **Per- and Perfluoroalkyl Substances (PFAS)** | | | | | | | | | | |
| Perfluorooctanesulfonic acid [PFOS] | 1763-23-1 | E745/WT | 0.020 | µg/L | | <0.020 | ---- | ---- | ---- | ---- |
| Perfluorooctanoic acid [PFOA] | 335-67-1 | E745/WT | 0.020 | µg/L | | <0.020 | ---- | ---- | ---- | ---- |
| **Per- and Perfluoroalkyl Substances (PFAS) Surrogates** | | | | | | | | | | |
| Perfluorooctanesulfonic acid [13C8-PFOS] | 265893-05-6 | E745/WT | 0.01 | % | | 96.0 | ---- | ---- | ---- | ---- |
| **Chlorinated Phenolics** | | | | | | | | | | |
| Chlorophenol, 2- | 95-57-8 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Chlorophenol, 3- | 108-43-0 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Chlorophenol, 4- | 106-48-9 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorophenol, 2,3- | 576-24-9 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorophenol, 2,4- + 2,5- | ---- | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorophenol, 2,6- | 87-65-0 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorophenol, 3,4- | 95-77-2 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorophenol, 3,5- | 591-35-5 | E651A/VA | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Methylphenol, 4-chloro-3- | 59-50-7 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Pentachlorophenol [PCP] | 87-86-5 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Tetrachlorophenol, 2,3,4,5- | 4901-51-3 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Tetrachlorophenol, 2,3,5,6- | 935-95-5 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Trichlorophenol, 2,3,4- | 15950-66-0 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Trichlorophenol, 2,3,5- | 933-78-8 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Trichlorophenol, 2,3,6- | 933-75-5 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Trichlorophenol, 2,4,5- | 95-95-4 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Trichlorophenol, 2,4,6- | 88-06-2 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Chlorinated Phenolics** | | | | | | | | | | |
| Trichlorophenol, 3,4,5- | 609-19-8 | E651A/VA | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| **Phenolics Surrogates** | | | | | | | | | | |
| Chlorophenol-d4, 2- | 93951-73-6 | E651A/VA | 0.1 | % | | 96.4 | ---- | ---- | ---- | ---- |
| Dichlorophenol-d3, 2,4- | 93951-74-7 | E651A/VA | 0.1 | % | | 91.8 | ---- | ---- | ---- | ---- |
| Tribromophenol, 2,4,6- | 118-79-6 | E651A/VA | 0.1 | % | | 97.4 | ---- | ---- | ---- | ---- |
| **Organochlorine Pesticides** | | | | | | | | | | |
| Toxaphene, total | 8001-35-2 | E660C/WT | 0.50 | µg/L | | <0.50 | ---- | ---- | ---- | ---- |
| **Organochlorine Pesticides Surrogates** | | | | | | | | | | |
| Decachlorobiphenyl | 2051-24-3 | E660C/WT | 0.1 | % | | 89.0 | ---- | ---- | ---- | ---- |
| Tetrachloro-m-xylene | 877-09-8 | E660C/WT | 0.1 | % | | 72.8 | ---- | ---- | ---- | ---- |
| **Herbicides** | | | | | | | | | | |
| Acetic acid, 2-methyl-4-chlorophenoxy- [MCPA] | 94-74-6 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Alachlor | 15972-60-8 | E755/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Ametryn | 834-12-8 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| Asulam | 3337-71-1 | E706A/WT | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |
| Atrazine | 1912-24-9 | E755/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Atrazine + N-dealkylated metabolites | ---- | E755/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Atrazine-desethyl | 6190-65-4 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| Brodifacoum | 56073-10-0 | E706A/WT | 0.010 | µg/L | | <0.100 DLM | ---- | ---- | ---- | ---- |
| Bromacil | 314-40-9 | E706A/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Bromoxynil | 1689-84-5 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Butanoic acid, 4-(4-chloro-2-methylphenoxy)- [MCPB] | 94-81-5 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Clopyralid | 1702-17-6 | E706A/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Cyanazine | 21725-46-2 | E755/WT | 0.100 | µg/L | | <0.100 | ---- | ---- | ---- | ---- |
| Dicamba | 1918-00-9 | E706A/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| Dichlorophenoxy(2,4-)butyric acid, 4- [2,4-DB] | 94-82-6 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorophenoxyacetic acid, 2,4- [2,4-D] | 94-75-7 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Dichlorprop [2,4-DP] | 120-36-5 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| Diclofop-methyl | 51338-27-3 | E755/WT | 0.100 | µg/L | | <0.100 | ---- | ---- | ---- | ---- |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Herbicides** | | | | | | | | | | |
| **Diflufenican** | 83164-33-4 | E706A/WT | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |
| **Dinoseb** | 88-85-7 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Diquat (ion)** | 2764-72-9 | E723A/WT | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| **Ethalfluralin** | 55283-68-6 | E756/WT | 0.10 | µg/L | | <0.10 PEHT | ---- | ---- | ---- | ---- |
| **Fluazifop-p-butyl** | 79241-46-6 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Glyphosate** | 1071-83-6 | E716B-L/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| **Linuron** | 330-55-2 | E706A/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| **Mecoprop [MCPP]** | 95-65-2 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Metolachlor** | 51218-45-2 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Metribuzin** | 21087-64-9 | E755/WT | 0.100 | µg/L | | <0.100 | ---- | ---- | ---- | ---- |
| **Nicarbazin** | 330-95-0 | E706A/WT | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |
| **Oryzalin** | 19044-88-3 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Paraquat (as dichloride)** | 1910-42-5 | E723A/WT | 1.0 | µg/L | | <1.0 | ---- | ---- | ---- | ---- |
| **Picloram** | 1918-02-1 | E706A/WT | 0.10 | µg/L | | <0.10 | ---- | ---- | ---- | ---- |
| **Prometon** | 1610-18-0 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Prometryn** | 7287-19-6 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Propanil** | 709-98-8 | E706A/WT | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |
| **Propazine** | 139-40-2 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Simazine** | 122-34-9 | E755/WT | 0.100 | µg/L | | <0.100 | ---- | ---- | ---- | ---- |
| **Terbacil** | 5902-51-2 | E706A/WT | 0.010 | µg/L | | <0.010 | ---- | ---- | ---- | ---- |
| **Terbutryn** | 886-50-0 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Triallate** | 2303-17-5 | E755/WT | 0.100 | µg/L | | <0.100 | ---- | ---- | ---- | ---- |
| **Trichlorophenoxyacetic acid, 2,4,5- [2,4,5-T]** | 93-76-5 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Trichlorophenoxypropionic acid, 2,4,5- [2,4,5-TP]** | 93-72-1 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Triclopyr** | 55335-06-3 | E706A/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Trifluralin** | 1582-09-8 | E756/WT | 0.10 | µg/L | | <0.10 PEHT | ---- | ---- | ---- | ---- |
| **Herbicides Surrogates** | | | | | | | | | | |
| **Dichlorophenylacetic acid, 2,4-** | 19719-28-9 | E706A/WT | 1.0 | % | | 108 | ---- | ---- | ---- | ---- |
| **Insecticides** | | | | | | | | | | |

## Analytical Results

| Sub-Matrix: Water (Matrix: Water) | | | | | Client sample ID | Treated Water (post resevoir) | ---- | ---- | ---- | ---- |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Client sampling date / time | 19-Mar-2024 10:30 | ---- | ---- | ---- | ---- |
| Analyte | CAS Number | Method/Lab | LOR | Unit | | VA24A5948-001 | -------- | -------- | -------- | -------- |
| | | | | | | Result | ---- | ---- | ---- | ---- |
| **Insecticides** | | | | | | | | | | |
| **Azinphos-methyl** | 86-50-0 | E755/WT | 0.100 | µg/L | | <0.100 | ---- | ---- | ---- | ---- |
| **Bendiocarb** | 22781-23-3 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Carbaryl** | 63-25-2 | E755/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Carbofuran** | 1563-66-2 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Chlorpyrifos** | 2921-88-2 | E756/WT | 0.10 | µg/L | | <0.10 PEHT | ---- | ---- | ---- | ---- |
| **Diazinon** | 333-41-5 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Dimethoate** | 60-51-5 | E755/WT | 0.050 | µg/L | | <0.050 | ---- | ---- | ---- | ---- |
| **Malathion** | 121-75-5 | E755/WT | 0.0250 | µg/L | | <0.0250 | ---- | ---- | ---- | ---- |
| **Parathion** | 56-38-2 | E756/WT | 0.10 | µg/L | | <0.10 PEHT | ---- | ---- | ---- | ---- |
| **Parathion-methyl** | 298-00-0 | E756/WT | 0.10 | µg/L | | <0.10 PEHT | ---- | ---- | ---- | ---- |
| **Phorate** | 298-02-2 | E755/WT | 0.250 | µg/L | | <0.250 | ---- | ---- | ---- | ---- |
| **Temephos** | 3383-96-8 | E755/WT | 0.250 | µg/L | | <0.250 | ---- | ---- | ---- | ---- |
| **Terbufos** | 13071-79-9 | E755/WT | 0.50 | µg/L | | <0.50 | ---- | ---- | ---- | ---- |
| **Nitrosamines Surrogates** | | | | | | | | | | |
| **Nitrosodimethylamine-d6, N-** | 17829-05-9 | E725-T/WT | 0.00090 | % | | 97.2 | ---- | ---- | ---- | ---- |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A5948** | Page | : 1 of 15 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby, British Columbia Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Yearly Sampling | Date Samples Received | : 20-Mar-2024 12:00 |
| PO | : PO #10916 | Issue Date | : 09-Apr-2024 16:45 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : ---- | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 1 | | |
| No. of samples analysed | : 1 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

**Key**

**Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.**
**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
**DQO: Data Quality Objective.**
**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- Method Blank value outliers occur - please see following pages for full details.
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A5953** | Page | : 1 of 3 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby BC Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 21-Mar-2024 10:00 |
| PO | : PO #10916 | Date Analysis Commenced | : 21-Mar-2024 |
| C-O-C number | : ---- | Issue Date | : 27-Mar-2024 17:24 |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Kevin Duarte | Supervisor - Metals ICP Instrumentation | Microbiology, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Inorganics, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

| *Unit* | *Description* |
|---|---|
| µS/cm | microsiemens per centimetre |
| CFU/mL | colony forming units per millilitre |
| CU | colour units (1 cu = 1 mg/l pt) |
| mg/L | milligrams per litre |
| MPN/100mL | most probable number per hundred millilitres |
| NTU | nephelometric turbidity units |
| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *SFP* | *Sample was filtered and preserved at the laboratory.* |

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID: Raw Water | DAF Effluent | UF Effluent | Treated Water (post reservoir) | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 20-Mar-2024 10:30 | 20-Mar-2024 10:30 | 20-Mar-2024 10:30 | 20-Mar-2024 10:30 | ---- |
| | | | | | VA24A5953-001 | VA24A5953-002 | VA24A5953-003 | VA24A5953-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Physical Tests** | | | | | | | | | |
| **Alkalinity, total (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | ---- | ---- | ---- | 16.0 | ---- |
| **Colour, true** | ---- | E329/VA | 5.0 | CU | ---- | ---- | ---- | <5.0 | ---- |
| **Conductivity** | ---- | E100/VA | 2.0 | µS/cm | ---- | ---- | ---- | 65.1 | ---- |
| **pH** | ---- | E108/VA | 0.10 | pH units | ---- | ---- | ---- | 7.30 | ---- |
| **Turbidity** | ---- | E121/VA | 0.10 | NTU | ---- | ---- | ---- | <0.10 | ---- |
| **Organic / Inorganic Carbon** | | | | | | | | | |
| **Carbon, dissolved organic [DOC]** | ---- | E358-L/VA | 0.50 | mg/L | 3.31 | 1.23 SFP | 1.25 SFP | ---- | ---- |
| **Carbon, total organic [TOC]** | ---- | E355-L/VA | 0.50 | mg/L | 2.94 | 1.34 | 1.30 | ---- | ---- |
| **Microbiological Tests** | | | | | | | | | |
| **Heterotrophic plate count [HPC]** | ---- | E020/VA | 1 | CFU/mL | ---- | ---- | ---- | 0 | ---- |
| **Coliforms, Escherichia coli [E. coli]** | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |
| **Coliforms, total** | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A5953** | Page | : 1 of 8 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby, British Columbia Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 21-Mar-2024 10:00 |
| PO | : PO #10916 | Issue Date | : 27-Mar-2024 17:20 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

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**CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.**
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**LOR: Limit of Reporting (detection limit).**
**RPD: Relative Percent Difference.**

## *Workorder Comments*

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## *Outliers : Analysis Holding Time Compliance (Breaches)*

- Analysis Holding Time Outliers exist - please see following pages for full details.

## *Outliers : Frequency of Quality Control Samples*

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

# CERTIFICATE OF ANALYSIS

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A6302** | Page | : 1 of 3 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby BC Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 26-Mar-2024 12:00 |
| PO | : 10880 | Date Analysis Commenced | : 26-Mar-2024 |
| C-O-C number | : ---- | Issue Date | : 02-Apr-2024 08:44 |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

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- Analytical Results

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## *Signatories*

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| *Signatories* | *Position* | *Laboratory Department* |
|---|---|---|
| Brieanna Allen | Production/Validation Manager | Microbiology, Burnaby, British Columbia |
| Kim Jensen | Department Manager - Metals | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Inorganics, Burnaby, British Columbia |
| Miles Gropen | Department Manager - Inorganics | Microbiology, Burnaby, British Columbia |

## General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

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| pH units | pH units |

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

## Workorder Comments

**Sample(s) 004: Exceeded Recommended Holding Time prior to receipt at the lab for HPC analysis.**

## Qualifiers

| *Qualifier* | *Description* |
|---|---|
| *HTD* | *Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.* |
| *SFP* | *Sample was filtered and preserved at the laboratory.* |

## Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

| Analyte | CAS Number | Method/Lab | LOR | Unit | Client sample ID: Raw Water | DAF Effluent | UF Effluent | Treated Water (post reservoir) | ---- |
|---|---|---|---|---|---|---|---|---|---|
| Client sampling date / time | | | | | 25-Mar-2024 08:30 | 25-Mar-2024 08:30 | 25-Mar-2024 08:30 | 25-Mar-2024 08:30 | ---- |
| | | | | | VA24A6302-001 | VA24A6302-002 | VA24A6302-003 | VA24A6302-004 | -------- |
| | | | | | Result | Result | Result | Result | ---- |
| **Physical Tests** | | | | | | | | | |
| **Alkalinity, total (as CaCO3)** | ---- | E290/VA | 1.0 | mg/L | ---- | ---- | ---- | 15.8 | ---- |
| **Colour, true** | ---- | E329/VA | 5.0 | CU | ---- | ---- | ---- | <5.0 | ---- |
| **Conductivity** | ---- | E100/VA | 2.0 | µS/cm | ---- | ---- | ---- | 65.6 | ---- |
| **pH** | ---- | E108/VA | 0.10 | pH units | ---- | ---- | ---- | 7.40 | ---- |
| **Turbidity** | ---- | E121/VA | 0.10 | NTU | ---- | ---- | ---- | <0.10 | ---- |
| **Organic / Inorganic Carbon** | | | | | | | | | |
| **Carbon, dissolved organic [DOC]** | ---- | E358-L/VA | 0.50 | mg/L | 2.76 HTD, SFP | 1.35 HTD, SFP | 1.25 HTD, SFP | ---- | ---- |
| **Carbon, total organic [TOC]** | ---- | E355-L/VA | 0.50 | mg/L | 2.40 | 1.21 | 1.00 | ---- | ---- |
| **Microbiological Tests** | | | | | | | | | |
| **Heterotrophic plate count [HPC]** | ---- | E020/VA | 1 | CFU/mL | ---- | ---- | ---- | <1 | ---- |
| **Coliforms, Escherichia coli [E. coli]** | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |
| **Coliforms, total** | ---- | E010/VA | 1 | MPN/100mL | ---- | ---- | ---- | <1 | ---- |

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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# QUALITY CONTROL INTERPRETIVE REPORT

| | | | |
|---|---|---|---|
| **Work Order** | : **VA24A6302** | Page | : 1 of 7 |
| Client | : **Town of Ladysmith** | Laboratory | : ALS Environmental - Vancouver |
| Contact | : Shawn Baker | Account Manager | : Thomas Chang |
| Address | : 410 Esplanade PO Box 220<br>Ladysmith BC Canada V9G 1A2 | Address | : 8081 Lougheed Highway<br>Burnaby, British Columbia Canada V5A 1W9 |
| Telephone | : ---- | Telephone | : +1 604 253 4188 |
| Project | : Arbutus Water Treatment Plant - Weekly Sampling | Date Samples Received | : 26-Mar-2024 12:00 |
| PO | : 10880 | Issue Date | : 02-Apr-2024 08:44 |
| C-O-C number | : ---- | | |
| Sampler | : ---- | | |
| Site | : Town of Ladysmith | | |
| Quote number | : VA22-GMSM100-001 Tender# 2022-IS-20 | | |
| No. of samples received | : 4 | | |
| No. of samples analysed | : 4 | | |

**This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.**

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## *Summary of Outliers*

### *Outliers : Quality Control Samples*

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

### *Outliers: Reference Material (RM) Samples*

- No Reference Material (RM) Sample outliers occur.

## Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

## Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.