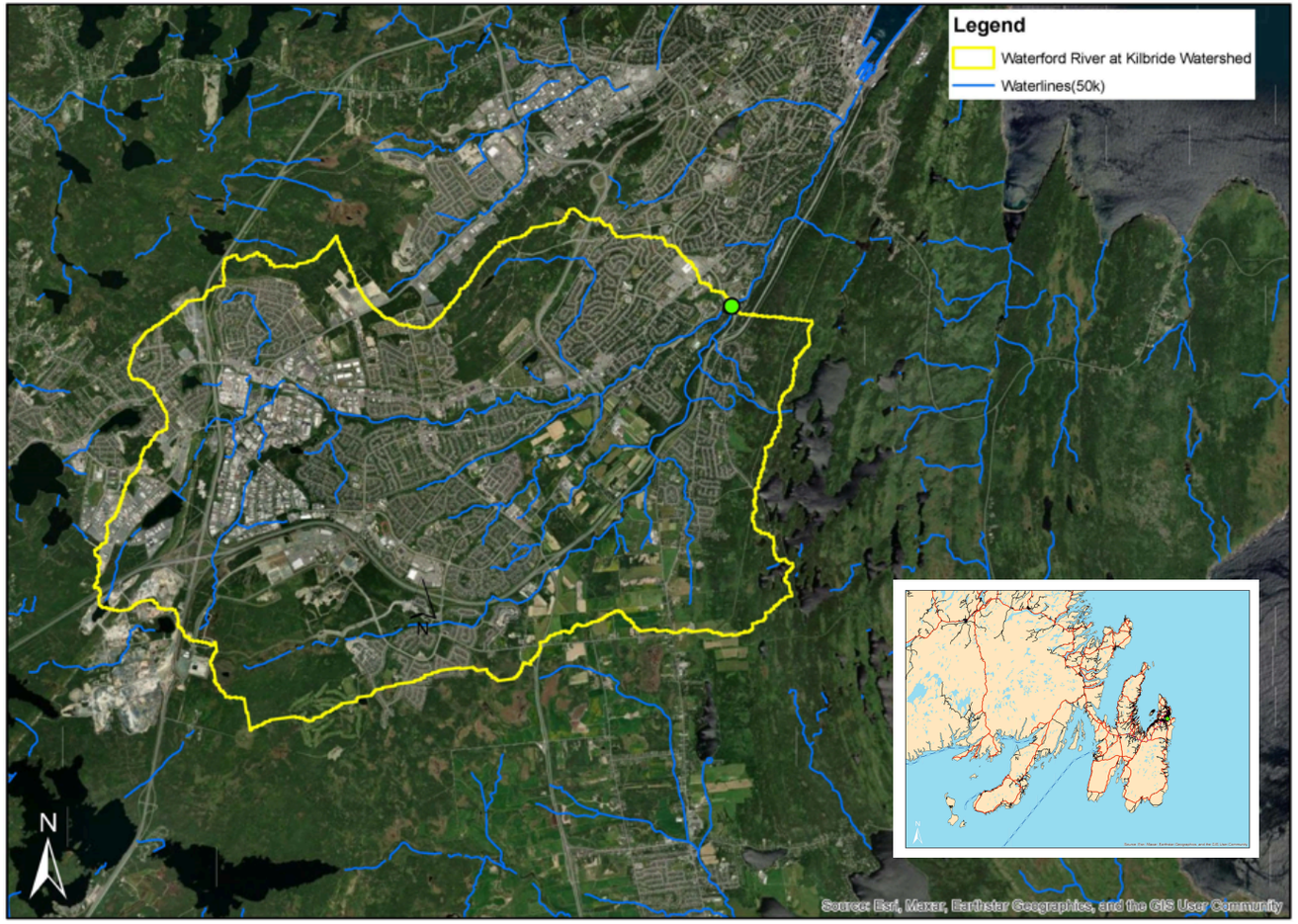
Real Time Water Quality Deployment Report
Waterford River at Kilbride
NF02ZM0009

2024-11-29 to 2025-01-21

Government of Newfoundland & Labrador
Department of Environment & Climate Change
Water Resources Management Division

Waterford River at Kilbride NF02ZM009



Waterford River at Kilbride NF02ZM0009

The Water Resources Management Division (WRMD), in partnership with Water Survey of Canada - Environment and Climate Change Canada (WSC-ECCC), maintain a real-time water quality and water quantity monitoring station on Waterford River at Kilbride.

The purpose of the real-time water quality station is to monitor, process and publish real-time water quality data.

On 11/29/2024, a clean and calibrated real-time water quality monitoring instrument was deployed at the station Waterford River at Kilbride. The instrument was deployed for a period of 54 days and was removed on 01/21/2025 .

Quality Assurance and Quality Control

As part of the Quality Assurance and Quality Control protocol (QA/QC), an assessment of the reliability of data recorded by an instrument is made at the beginning and end of the deployment period. The procedure is based on the approach used by the United States Geological Survey. Water Survey Canada operates the hydrometric component of this station. Due to differences in protocols, Water Survey Canada hydrometric data is quality controlled on a less frequent basis than water quality data. The hydrometric data shown in this report is provisional and has not undergone quality control checks. Corrected hydrometric data can be obtained at https://wateroffice.ec.gc.ca/ or upon request to Water Survey Canada.

Parameter	Excellent	Good	Fair	Marginal	Poor
Dissolved oxygen	≤ ± 0.3 mg/L	≤ ± 0.31 -0.5 mg/L	≤ ± 0.51 - 0.8 mg/L	≤ ± 0.81 - 1 mg/L	> ± 1 mg/L
pH	≤ ± 0.2 units	≤ ± 0.21 - 0.5 units	≤ ± 0.51 - 0.8 units	≤ ± 0.81 - 1 units	> ± 1 units
Specific Conductance	≤ ± 3 µS/cm or ≤ ± 3%, whichever is greater	≤ ± 3.1-10 µS/cm or ≤ ± 3.1-10%, whichever is greater	≤ ± 10 - 15 µS/cm or ≤ ± 10.1-15 %, whichever is greater	≤ ± 15.1 - 20 µS/cm or ≤ ± 15.1-20 %, whichever is greater	> ± 20 µS/cm or > ± 20 %, whichever is greater
Turbidity	≤ ± 2 turbidity units or ≤ ± 5%, whichever is greater	≤ ± 2.1-5 turbidity units or ≤ ± 5.1-10 %, whichever is greater	≤ ± 5.1-8 turbidity units or ≤ ± 10.1-15 %, whichever is greater	≤ ± 8.1-10 turbidity units or ≤ ± 15.1-20 %, whichever is greater	> ± 10 turbidity units or > ± 20 %, whichever is greater
Water Temperature	≤ ± 0.2°C	≤ ± 0.21 - 0.5°C	≤ ± 0.51 - 0.8°C	≤ ± 0.81 - 1°C	> ± 1°C

At deployment and removal, a QA/QC Sonde is temporarily deployed adjacent to the Field Sonde. Values for temperature, pH, conductivity, dissolved oxygen and turbidity are compared between the two instruments**.** Based on the degree of difference between parameters recorded by the Field Sonde and QA/QC Sonde at deployment and at removal, a qualitative statement is made on the data quality.

There are a few circumstances which may cause QA/QC rankings below excellent, including the placement of the QA/QC sonde in relation to the field sonde, the amount of time each sonde was given to stabilize before readings were recorded, and deteriorating performance of one of the sensors.

The temperature sensor on any sonde is the most important. All other parameters can be divided into subgroups of: temperature dependent, temperature compensated, and temperature independent. Due to the temperature sensor's location on the sonde, the entire sonde must be at a constant temperature before the temperature sensor will stabilize. The values may take some time to climb to the appropriate reading; if a reading is taken too soon it may not accurately portray the water body.

QAQC Rankings

Parameter	Deployment Ranks	Removal Ranks	Grab Sample Ranks
Dissolved Oxygen (mg/l)	Fair	Excellent	
Temperature ('C)	Excellent	Excellent	
Specific Conductivity (µS/cm)	Good	Fair	Excellent
pH	Excellent	Good	Excellent
Turbidity (NTU)	Excellent	Marginal	Excellent

At deployment, when compared to the QA/QC sonde, all parameters ranked either 'good' or 'excellent', with exception to dissolved oxygen, which ranked 'fair'. Upon removal, DO and temperature ranked 'excellent', while pH ranked 'good' and specific conductivity and turbidity ranked 'fair' and 'marginal' respectively.

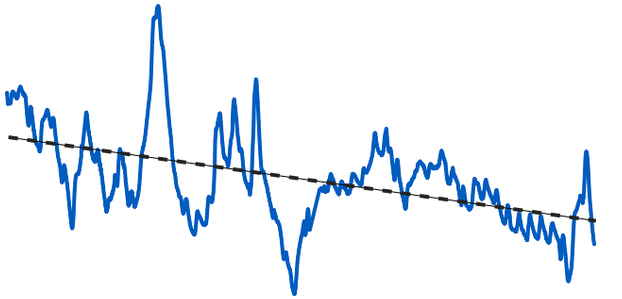
Water Temperature

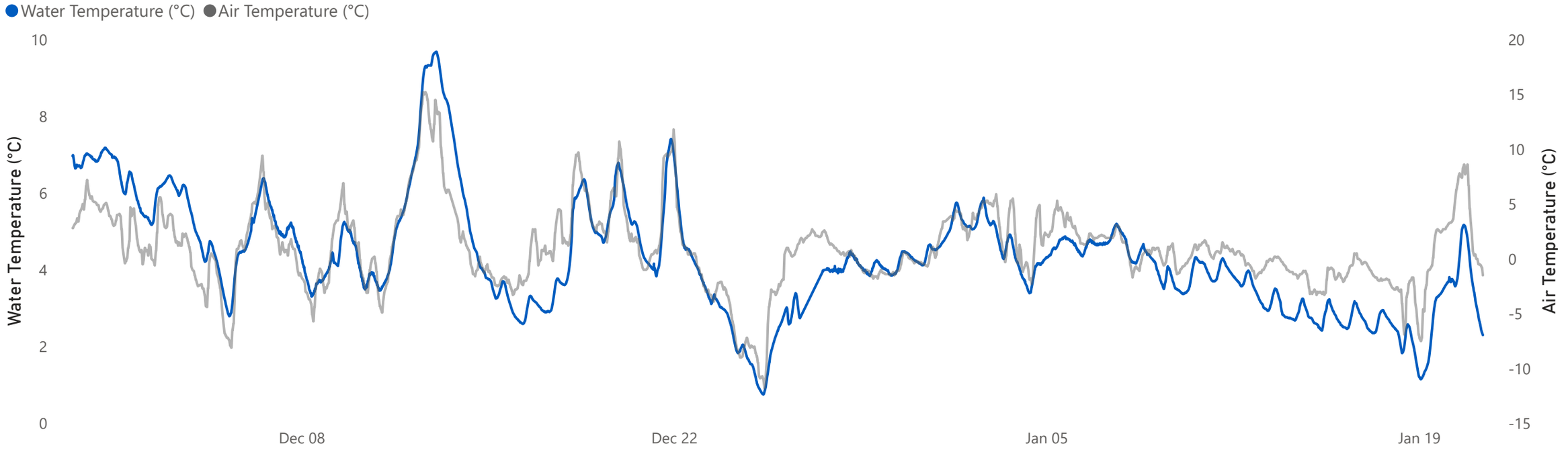
4.30	4.18	0.75	9.68
Average (°C)	Median (°C)	Minimum (°C)	Maximum (°C)

Water temperature is an important parameter for wildlife. Many organisms cannot regulate their own temperatures, and rely on surrounding air and water temperatures. Water temperature may be affected by inputs from industry or by modifying natural conditions like clearing trees and other vegetation, which eliminates the canopy protection they offer. Water temperature also affects other parameters monitored including dissolved oxygen and specific conductivity.

Water temperature data for this deployment was collected from 2024-11-29 until 2025-01-21. The minimum water temperature, 0.75°C, occurred on 2024-12-25. The maximum water temperature, 9.68°C, occurred on 2024-12-13. The average water temperature was 4.30 °C. Water temperature usually falls overnight and rises during the day, known as diurnal variation. Water temperature decreased over the deployment period in correlation with seasonal (fall to winter) air temperatures.

Water Temperature Trendline





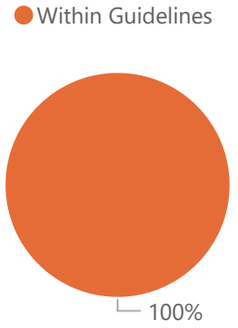
pH

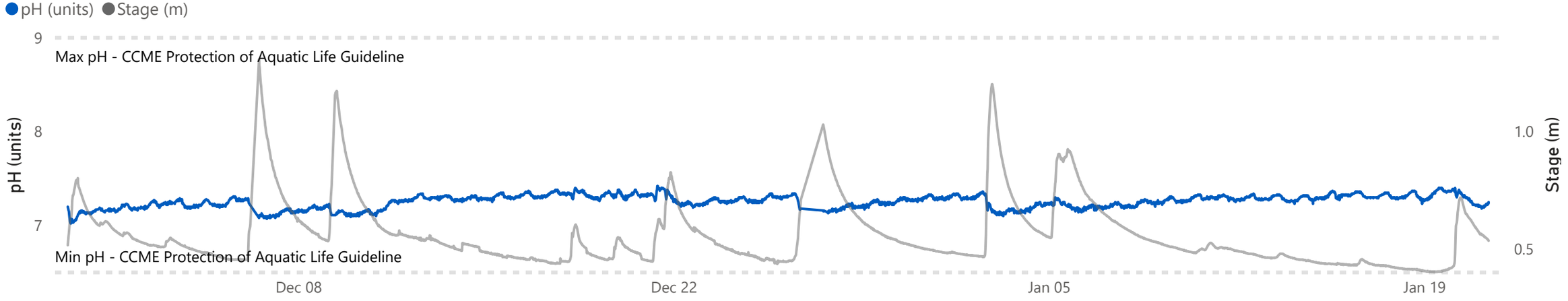
7.26	7.27	7.02	7.42
Average pH	Median pH	Minimum pH	Maximum pH

pH relates to the free hydrogen ions in water and it is a measure of acidity in water. A pH of 7 indicates a neutral pH, below 7 is considered acidic, and above 7 is considered basic. The Canadian Council of Ministers of the Environment (CCME) Freshwater Aquatic Life guideline provides a basis by which to judge the overall health of the brook. Their freshwater guidelines recommend a minimum pH of 6.5 and a maximum pH of 9.0; however, many rivers in Newfoundland and Labrador are naturally more acidic due to the local geology. Water parameter maps can be found on the Water Resources Management website.

pH data for this deployment was collected from 2024-11-29 until 2025-01-21. The minimum pH, 7.02 pH units, occurred on 2024-11-29 . The maximum pH, 7.42 pH units, occurred on 2024-12-21. Daily fluctuations are common due to changes in temperature and photosynthesizing of aquatic plants. During the deployment period, the overall pH remained relatively stable, showing a gradual increasing trend over time. However, temporary declines in pH were observed following precipitation events, likely due to the influx of more acidic rainwater, All values during the deployment are within the CCME guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units).

CCME Freshwater Aquatic Life Guideline





Climate data from St. John's West Climate Station

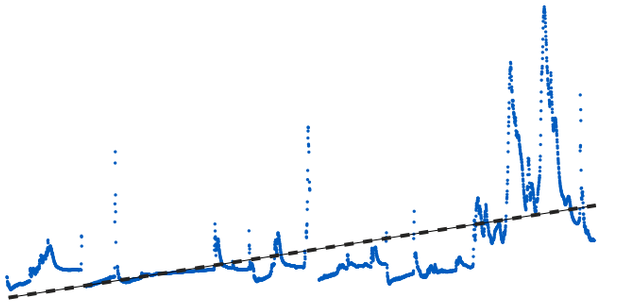
Specific Conductivity

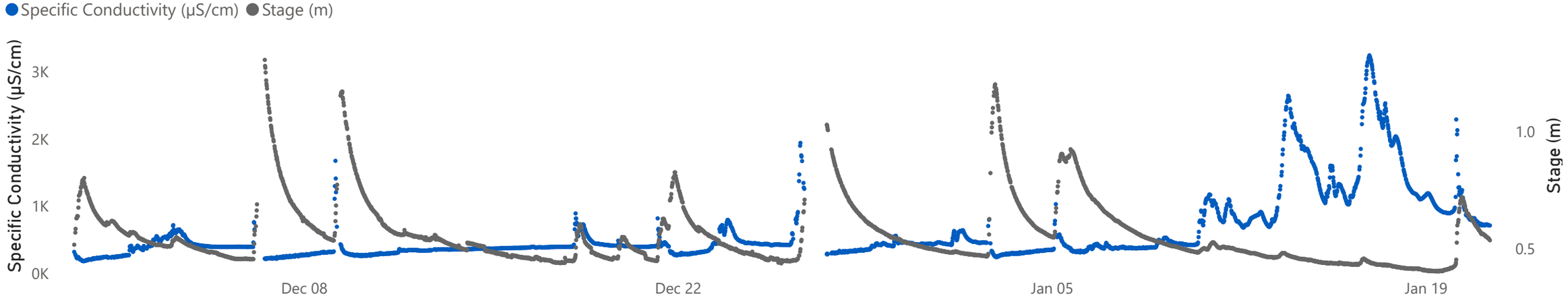
600.10	408.42	181.95	3.25K
Average µS/cm	Median µS/cm	Minumum µS/cm	Maximum µS/cm

Conductivity relates to the ability of an electric charge to pass through a solution. Pure water has low conductance and water with dissolved ions has higher conductance. Specific conductance is corrected to 25°C to allow comparison across temperatures. Water parameter maps can be found on the Water Resources Management website.

Specific conductance data for this deployment was collected from 2024-11-29 until 2025-01-21. The minimum specific conductance, 181.95 µS/cm, occurred on 2024-11-29 . The maximum specific conductance, 3,247.90 µS/cm, occurred on 2025-01-16. Precipitation and specific conductivity are correlated. During a precipitation event, the amount of water in the river increases, this dilutes the solids that are present, decreasing the conductivity. The specific conductivity trend increased minimally over the deployment period. Sudden spikes and decreases were observed due to precipitation events and runoff containing high concentrations of dissolved salts, minerals and other conductive substances. This is expected as Waterford River is an urban river and road salts and other de-icing substances are utilized during winter months.

Specific Conductivity Trendline





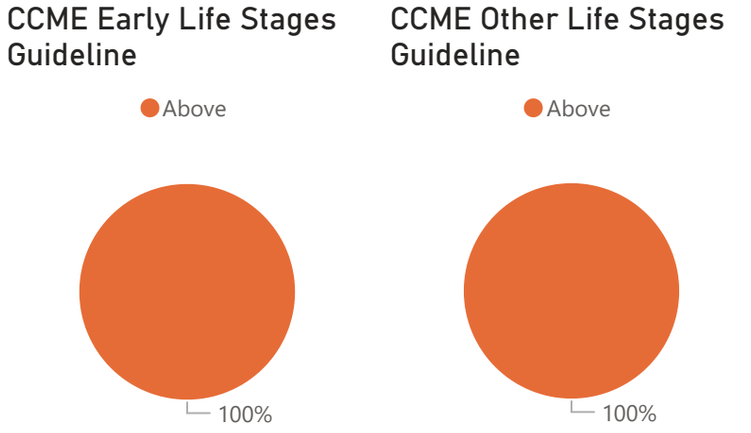
Climate data from St. John's West Climate Station

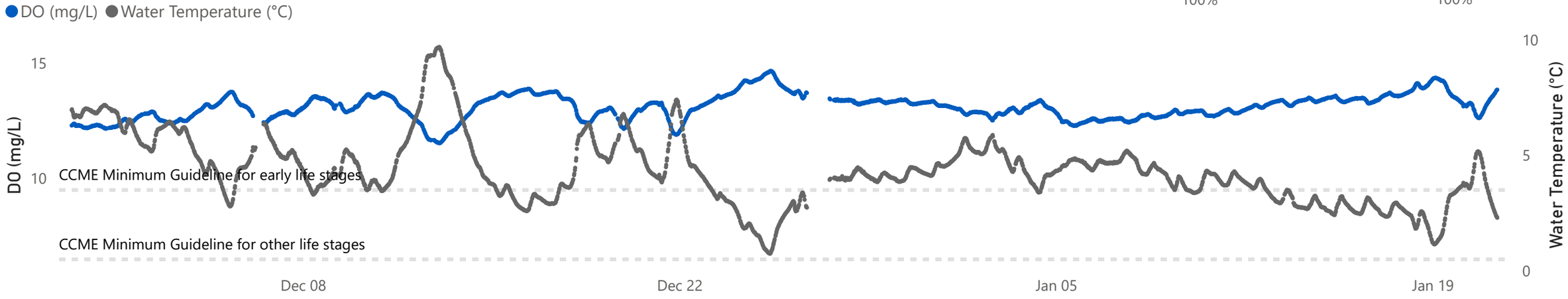
Dissolved Oxygen Concentration and Saturation

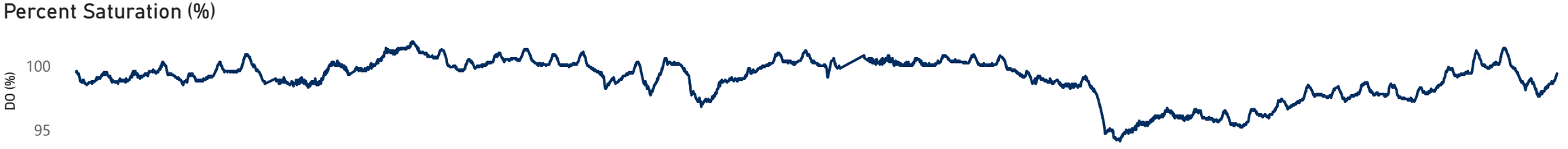
13.10	13.13	11.53	14.65
Average (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)

Dissolved oxygen (DO) in water is crucial for aquatic life. The CCME (Canadian Council of Ministers of the Environment) Freshwater Aquatic Life guidelines provide a basis by which to judge the overall health of waterways. The minimum guideline for early life stages in cold water is 9.5 mg/L and the minimum guideline for other life stages is 6.5 mg/L. DO and water temperatures are correlated; colder waters can hold higher concentrations of DO than warm waters.

DO data for this deployment was collected from 2024-11-29 until 2025-01-21. The minimum DO reading, 11.53 mg/L, occurred on 2024-12-13. The maximum DO reading, 14.65 mg/L, occurred on 2024-12-25. Dissolved oxygen content fluctuates diurnally and displays an inverse relationship to water temperature. Dissolved oxygen was variable throughout the deployment period in correlation with changing air temperatures. As water temperature began to decrease in January, DO began to increase. Dissolved oxygen concentrations stayed above the Guidelines for the Protection of Early Life Stages for Cold Water Biota and Other Life Stages for the entirety of the monitoring period.







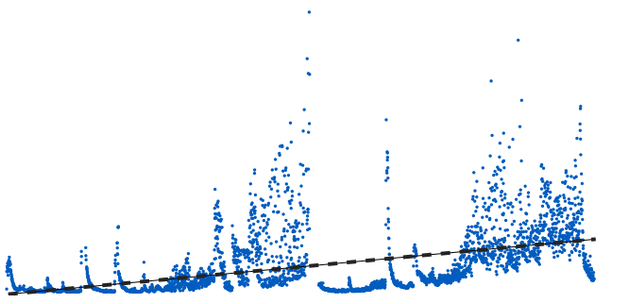
Turbidity

19.49	9.08	0.00	217.77
Average (NTU)	Median (NTU)	Minimum (NTU)	Maximum (NTU)

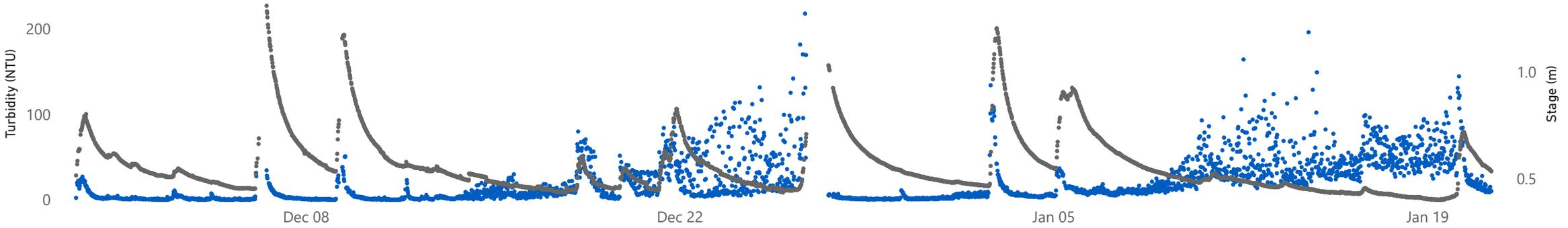
Water turbidity is characterized by the cloudiness or haziness caused by suspended particles and can significantly impact water quality. High turbidity reduces light penetration, hindering photosynthesis and affecting aquatic vegetation growth and habitat suitability. It can lead to temperature fluctuations, oxygen depletion from microbial decomposition of organic matter, and sedimentation, smothering benthic habitats and compromising biodiversity.

Turbidity data for this deployment was collected from 2024-11-29 until 2025-01-21. The minimum turbidity was 0.00 NTUs. The maximum turbidity, 217.77 NTUs, occurred on 2024-12-26. Overall turbidity, with an average of 19.49 NTU, indicates relatively clear water conditions with occasions of elevated cloudiness. Turbidity spikes occurred infrequently, for short periods of time, and generally corresponded to precipitation events and subsequently an increase in stage. From 2024-12-19 to 2024-12-26, a noticeable accumulation of sediments and organic matter was observed. This accumulation was later disrupted and washed out by a precipitation event, likely due to increased water flow and turbulence. Similarly, accumulation occurred again from 2025-01-09, continuing until the end of the deployment period. These accumulation and subsequent flushing events had a significant impact on the statistical analysis.

Turbidity Trendline



Turbidity (NTU) Stage (m)



Climate data from St. John's West Climate Station

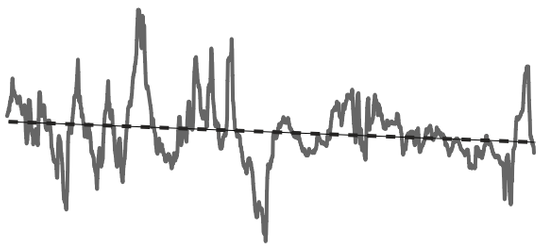
Precipitation (mm) Air Temperature (°C)

Meteorological and Hydrometric Data

*Climate data obtained from St. John's West Station

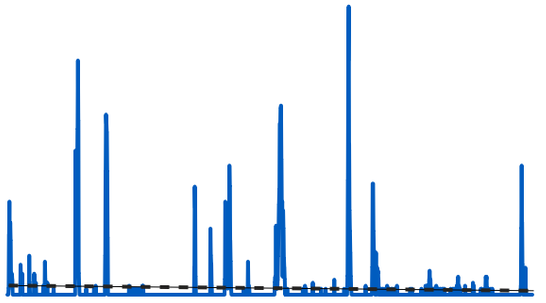
Newfoundland Labrador

Air Temperature Trendline

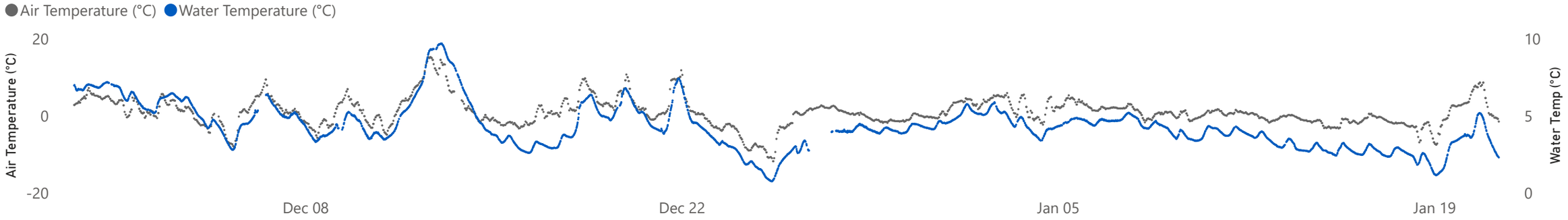


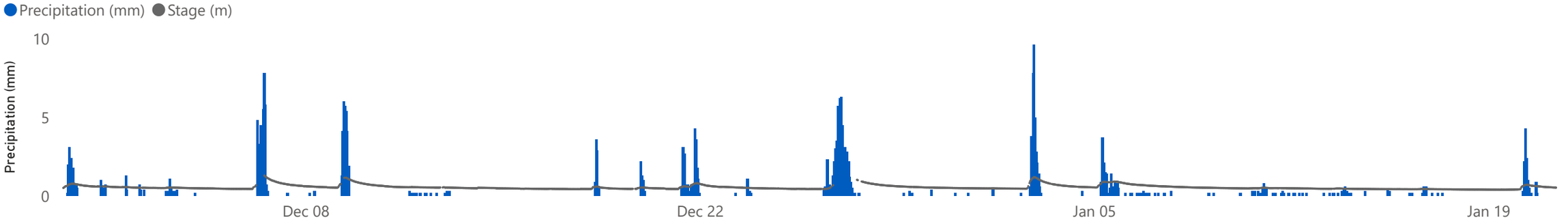
0.94	0.70
Average (°C)	Median (°C)
-11.80	15.20
Minimum (°C)	Maximum (°C)

Precipitation Trendline



0.22	0.00
Average (mm/hr)	Median (mm/hr)
0.00	9.60
Minimum (mm/hr)	Maximum (mm/hr)





Conclusions

- **A new Aqua TROLL 800 (s/n 1173755) was provided by In-Situ Inc. due to the irreparable damage to the previous instrument. This clean and calibrated instrument was deployed at the Waterford River at Kilbride water quality monitoring station on November 29, 2024 and removed on January 21, 2025.**

- **In most cases, weather related events or increases/decreases in water level explain parameter fluctuations. All values recorded were within ranges as suggested by the CCME Guidelines for the Protection of Aquatic Life for pH and dissolved oxygen.**

- **Water temperature corresponded with ambient air temperatures, ranging between 0.75°C and 9.68°C.**

- **pH values were all within the recommended CCME Guidelines for the Protection of Aquatic Life. pH ranged between 7.02 to 7.42 pH units.**

- **Specific conductivity increased gradually over the course of the deployment period, ranging from 181.95 and 3247.90 µS/cm.**

- **Dissolved oxygen values were above the minimum CCME Guideline for the Protection of Aquatic Life for Cold Water Biota at Other Life Stages of 6.5 mg/l and the CCME Guideline for the Protection of Aquatic Life for Cold Water Biota at Early Life Stages of 9.5 mg/l.**

- **Turbidity values were stable over the course of the deployment period with exception to the temporary accumulation of sediment and organic matter. Levels were generally low with multiple spikes. Values ranged from 0.0 to 217.77 NTU.**

- **Stage was stable throughout the deployment period with some temporary increases during and after precipitation events.**

- **With the exception of water quantity data (stage), all data used in the preparation of the graphs and subsequent discussion adhere to this stringent QA/QC protocol. Water Survey of Canada is responsible for QA/QC of water quantity data. Corrected data can be obtained upon request.**

Appendix 1
Grab Sample Results

Your P.O. #: 224006869-3

Attention: Robert Richard Harvey

NL Department of Environment, Climate Change and Municipalities
Water Resources
PO Box 8700
St. John's, NL
CANADA A1B 4J6

Your C.O.C. #: N/A, 2024-1720-SI-SP, 2024-1721-SI-SP

Report Date: 2024/12/09
Report #: R8437769
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4AP705
Received: 2024/11/29, 10:22

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	2	N/A	2024/12/04	ATL SOP 00142	SM 24 2320 B
Anions (1)	1	N/A	2024/12/03	CAM SOP-00435	SM 23 4110 B m
Anions (1)	1	N/A	2024/12/06	CAM SOP-00435	SM 23 4110 B m
Colour	2	N/A	2024/12/05	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	1	N/A	2024/12/05	ATL SOP 00203	SM 24 5310B m
Organic carbon - Diss (DOC)-Lab Filtered (2)	1	N/A	2024/12/06	ATL SOP 00203	SM 24 5310B m
Conductance - water	2	N/A	2024/12/04	ATL SOP 00004	SM 24 2510B m
Fluoride	2	N/A	2024/12/04	ATL SOP 00043	SM 24 4500-F- C m
Hardness (calculated as CaCO3)	2	N/A	2024/12/03	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	2	2024/12/06	2024/12/06	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2024/12/02	2024/12/02	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2024/12/03	2024/12/03	ATL SOP 00058	EPA 6020B R2 m
Nitrogen Ammonia - water	2	N/A	2024/12/04	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	2	N/A	2024/12/05	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	2	N/A	2024/12/05	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	2	N/A	2024/12/06	ATL SOP 00018	ASTM D3867-16
pH (3)	2	N/A	2024/12/04	ATL SOP 00003	SM 24 4500-H+ B m
Calculated TDS (DW Pkg)	2	N/A	2024/12/05	N/A	Auto Calc
Total Kjeldahl Nitrogen in Water (1)	2	2024/12/04	2024/12/04	CAM SOP-00938	SM 4500-N B m
Organic carbon - Total (TOC) (2)	1	N/A	2024/12/04	ATL SOP 00203	SM 24 5310B m
Organic carbon - Total (TOC) (2)	1	N/A	2024/12/05	ATL SOP 00203	SM 24 5310B m
Total Phosphorus (Colourimetric) (1)	2	2024/12/04	2024/12/04	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	2	2024/12/03	2024/12/05	ATL SOP 00007	SM 24 2540D m
Turbidity	2	N/A	2024/12/05	ATL SOP 00011	EPA 180.1 R2 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

(1) This test was performed by Bureau Veritas Mississauga, 6740 Campobello Rd , Mississauga, ON, L5N 2L8
(2) TOC / DOC present in the sample should be considered as non-purgeable TOC / DOC.
(3) The APHA Standard Method requires pH to be analyzed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the APHA Standard Method holding time.

Your P.O. #: 224006869-3

Attention: Robert Richard Harvey

NL Department of Environment, Climate Change and Municipalities
Water Resources
PO Box 8700
St. John's, NL
CANADA A1B 4J6

Your C.O.C. #: N/A, 2024-1720-SI-SP, 2024-1721-SI-SP

Report Date: 2024/12/09
Report #: R8437769
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4AP705
Received: 2024/11/29, 10:22

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Maryann Comeau, Customer Experience Supervisor/PM
Email: Maryann.COMEAU@bureauveritas.com
Phone# (902)420-0203 Ext:298

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.

Bureau Veritas Job #: C4AP705
Report Date: 2024/12/09

NL Department of Environment, Climate Change and Municipalities
Your P.O. #: 224006869-3
Sampler Initials: LB

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
AKGW66 WATERFORD RIVER @KILLBRIDE								
Sampling Date 2024/11/28 11:37								
Matrix W								
Sample # 2024-1721-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO3)	-	25	1.0	mg/L	N/A	2024/12/03		9796473
Nitrate (N)	-	1.0	0.050	mg/L	N/A	2024/12/06		9796479
Total dissolved solids (calc., EC)	-	180	1.0	mg/L	N/A	2024/12/05		9796779
Inorganics								
Conductivity	-	330	1.0	uS/cm	N/A	2024/12/04	M2C	9805069
Chloride (Cl-)	-	73	1.0	mg/L	N/A	2024/12/06	SUR	9801249
Bromide (Br-)	-	ND	1.0	mg/L	N/A	2024/12/06	SUR	9801249
Sulphate (SO4)	-	15	1.0	mg/L	N/A	2024/12/06	SUR	9801249
Total Alkalinity (Total as CaCO3)	-	15	2.0	mg/L	N/A	2024/12/04	M2C	9805070
Colour	-	34	5.0	TCU	N/A	2024/12/05	EMT	9805181
Dup.Colour	-	34	5.0	TCU	N/A	2024/12/05	EMT	9805181
Dissolved Fluoride (F-)	-	ND	0.10	mg/L	N/A	2024/12/04	M2C	9805072
Total Kjeldahl Nitrogen (TKN)	-	0.34	0.10	mg/L	2024/12/04	2024/12/04	RTY	9805585
Nitrate + Nitrite (N)	-	1.0	0.050	mg/L	N/A	2024/12/05	EMT	9807598
Dup.Nitrate + Nitrite (N)	-	1.0	0.050	mg/L	N/A	2024/12/05	EMT	9807598
Nitrite (N)	-	ND	0.010	mg/L	N/A	2024/12/05	EMT	9807599
Dup.Nitrite (N)	-	0.013	0.010	mg/L	N/A	2024/12/05	EMT	9807599
Nitrogen (Ammonia Nitrogen)	-	0.052	0.050	mg/L	N/A	2024/12/04	MCN	9803212
Dissolved Organic Carbon (C)	-	5.0	0.50	mg/L	N/A	2024/12/06	ACK	9808934
Dup.Dissolved Organic Carbon (C)	-	4.9	0.50	mg/L	N/A	2024/12/06	ACK	9808934
Total Organic Carbon (C)	-	5.4	0.50	mg/L	N/A	2024/12/05	ACK	9806019
pH	-	7.32		pH	N/A	2024/12/04	M2C	9805058
Total Phosphorus	-	0.029	0.004	mg/L	2024/12/04	2024/12/04	VKH	9806000
Total Suspended Solids	-	2.2	1.0	mg/L	2024/12/03	2024/12/05	ISM	9802054
Turbidity	-	3.2	0.10	NTU	N/A	2024/12/05	M2C	9808302
Dup.Turbidity	-	3.4	0.10	NTU	N/A	2024/12/05	M2C	9808302
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2024/12/06	2024/12/06	JEP	9807891
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.14	0.0050	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Antimony (Sb)	-	ND	0.0010	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Arsenic (As)	-	ND	0.0010	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Barium (Ba)	-	0.010	0.0010	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Boron (B)	-	ND	0.050	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Cadmium (Cd)	-	0.000016	0.000010	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Calcium (Ca)	-	7.6	0.10	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Chromium (Cr)	-	ND	0.0010	mg/L	2024/12/03	2024/12/03	MTZ	9801996

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C4AP705
Report Date: 2024/12/09

NL Department of Environment, Climate Change and Municipalities
Your P.O. #: 224006869-3
Sampler Initials: LB

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
AKGW66 WATERFORD RIVER @KILLBRIDE								
Sampling Date 2024/11/28 11:37								
Matrix W								
Sample # 2024-1721-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Copper (Cu)	-	0.0025	0.00050	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Iron (Fe)	-	0.27	0.050	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Lead (Pb)	-	ND	0.00050	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Magnesium (Mg)	-	1.4	0.10	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Manganese (Mn)	-	0.064	0.0020	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Nickel (Ni)	-	ND	0.0020	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Phosphorus (P)	-	ND	0.10	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Potassium (K)	-	1.5	0.10	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Selenium (Se)	-	ND	0.00050	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Sodium (Na)	-	48	0.10	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Strontium (Sr)	-	0.028	0.0020	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Uranium (U)	-	ND	0.00010	mg/L	2024/12/03	2024/12/03	MTZ	9801996
Total Zinc (Zn)	-	0.0098	0.0050	mg/L	2024/12/03	2024/12/03	MTZ	9801996

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

NL Department of Environment, Climate Change and Municipalities
Your P.O. #: 224006869-3
Sampler Initials: LB

GENERAL COMMENTS

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

Package 1	7.7°C

Results relate only to the items tested.

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com

Bureau Veritas Job #: C4AP705
Report Date: 2024/12/09

NL Department of Environment, Climate Change and Municipalities
Your P.O. #: 224006869-3
Sampler Initials: LB

VALIDATION SIGNATURE PAGE

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

Ernlie Publicover, Scientific Specialist

Louise Harding, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Suzanne Rogers, General Manager responsible for Nova Scotia Environmental laboratory operations.

Bureau Veritas 200 Bluewater Rd, Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.bvna.com