

Mobile Environmental Monitoring Platform (MEMP) Deployment Report
Hodge River - Town of Whitbourne
NLENMP0004

2025-04-30 to 2025-12-01



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

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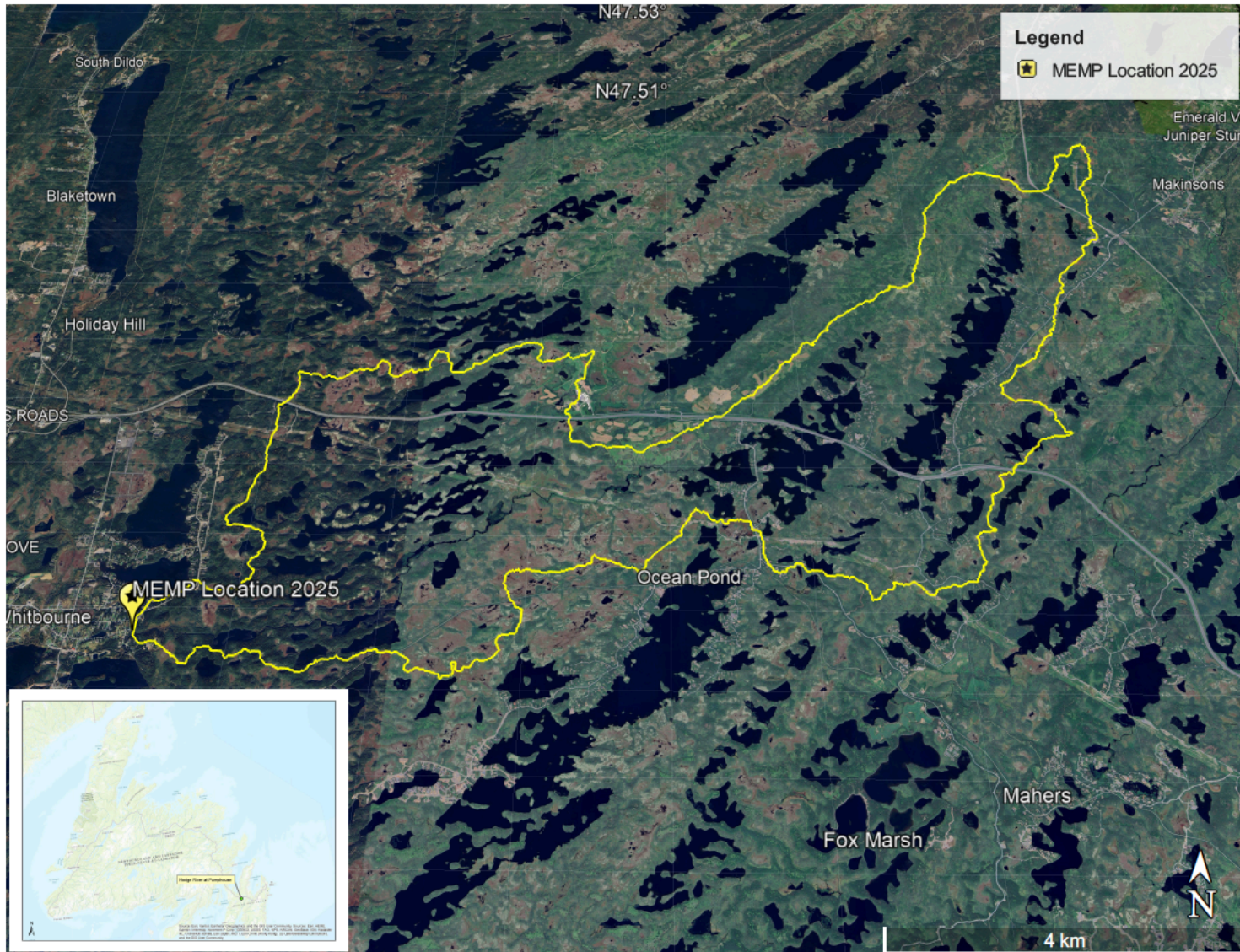
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Hodge River at Pumphouse, Whitbourne, NL



The Water Resources Management Division (WRMD) deployed a Mobile Environmental Monitoring Platform (MEMP) on the Hodge River in the Town of Whitbourne from April 30 to December 1, 2025.

The site was selected due to its location within a flood-prone area and its importance as part of the municipal drinking water supply.

The MEMP was equipped with integrated water quality, water quantity, and climate monitoring instrumentation, enabling the collection of continuous, multi-parameter data under a wide range of hydrologic and meteorological conditions.

Monitoring covered key seasonal periods, including spring freshet, summer low-flow conditions, and fall storm events. Data collected during the deployment support improved understanding of hydrological behaviour, assessment of potential impacts to drinking water quality, and enhanced watershed monitoring, contributing to informed decision-making for flood risk management and drinking water source protection.



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. 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	$\leq \pm 0.3$ mg/L	$\leq \pm 0.31 - 0.5$ mg/L	$\leq \pm 0.51 - 0.8$ mg/L	$\leq \pm 0.81 - 1$ mg/L	$> \pm 1$ mg/L
pH	$\leq \pm 0.2$ units	$\leq \pm 0.21 - 0.5$ units	$\leq \pm 0.51 - 0.8$ units	$\leq \pm 0.81 - 1$ units	$> \pm 1$ units
Water Temperature	$\leq \pm 0.2^\circ\text{C}$	$\leq \pm 0.21 - 0.5^\circ\text{C}$	$\leq \pm 0.51 - 0.8^\circ\text{C}$	$\leq \pm 0.81 - 1^\circ\text{C}$	$> \pm 1^\circ\text{C}$
Specific Conductance	$\leq \pm 3$ $\mu\text{S}/\text{cm}$ or $\leq \pm 3\%$, whichever is greater	$\leq \pm 3.1 - 10$ $\mu\text{S}/\text{cm}$ or $\leq \pm 3.1 - 10\%$, whichever is greater	$\leq \pm 10 - 15$ $\mu\text{S}/\text{cm}$ or $\leq \pm 10.1 - 15\%$, whichever is greater	$\leq \pm 15.1 - 20$ $\mu\text{S}/\text{cm}$ or $\leq \pm 15.1 - 20\%$, whichever is greater	$> \pm 20$ $\mu\text{S}/\text{cm}$ or $> \pm 20\%$, whichever is greater
Turbidity	$\leq \pm 2$ turbidity units or $\leq \pm 5\%$, whichever is greater	$\leq \pm 2.1 - 5$ turbidity units or $\leq \pm 5.1 - 10\%$, whichever is greater	$\leq \pm 5.1 - 8$ turbidity units or $\leq \pm 10.1 - 15\%$, whichever is greater	$\leq \pm 8.1 - 10$ turbidity units or $\leq \pm 15.1 - 20\%$, whichever is greater	$> \pm 10$ turbidity units or $> \pm 20\%$, whichever is greater

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



DATE	PARAMETERS	DEPLOYMENT RANK	REMOVAL RANK	GRAB SAMPLE RANK
Wednesday, April 30, 2025	Dissolved Oxygen (mg/l)	Excellent		
Wednesday, April 30, 2025	Turbidity (NTU)	Excellent		Excellent
Wednesday, April 30, 2025	pH	Excellent		Good
Wednesday, April 30, 2025	Specific Conductivity (µS/cm)	Excellent		Poor
Wednesday, April 30, 2025	Temperature (°C)	Good		
Friday, July 04, 2025	Dissolved Oxygen (mg/l)	Excellent	Excellent	
Friday, July 04, 2025	Turbidity (NTU)	Excellent	Excellent	Excellent
Friday, July 04, 2025	Specific Conductivity (µS/cm)	Excellent	Good	Good
Friday, July 04, 2025	Temperature (°C)	Good	Good	
Friday, July 04, 2025	pH	Good	Poor	Excellent
Wednesday, September 03, 2025	Dissolved Oxygen (mg/l)	Excellent	Excellent	
Wednesday, September 03, 2025	Turbidity (NTU)	Excellent	Excellent	
Wednesday, September 03, 2025	pH	Excellent	Excellent	Good
Wednesday, September 03, 2025	Temperature (°C)	Good	Good	
Wednesday, September 03, 2025	Specific Conductivity (µS/cm)	Good	Good	Excellent
Monday, December 01, 2025	pH		Excellent	Excellent
Monday, December 01, 2025	Turbidity (NTU)		Fair	Fair
Monday, December 01, 2025	Specific Conductivity (µS/cm)		Good	Good
Monday, December 01, 2025	Dissolved Oxygen (mg/l)		Poor	
Monday, December 01, 2025	Temperature (°C)		Poor	

Quality assurance and quality control (QA/QC) checks were conducted during the 2025 Mobile Environmental Monitoring Platform (MEMP) deployment on the Hodge River to evaluate the performance of field water quality instrumentation. QA/QC activities included comparisons between the field sonde and a QA/QC sonde at deployment, mid-season, and removal, as well as grab sample comparisons where applicable.

Deployment and mid-season QA/QC checks, completed on April 30, July 4, and September 3, 2025, indicated predominantly 'Good' to 'Excellent' agreement between the field and QA/QC sondes for most measured parameters, including temperature, pH, specific conductivity, dissolved oxygen (mg/L), and turbidity. These results confirm acceptable sensor performance throughout the majority of the deployment period and across a range of hydrologic and seasonal conditions.

Removal QA/QC checks, conducted during site visits and at the end of the deployment period, showed increased variability, with agreement rankings ranging from 'Good' to 'Poor' for some parameters. Reduced agreement at removal is consistent with sensor drift, biofouling, and changing field conditions over extended deployment periods and is commonly observed during end-of-season QA/QC assessments.

Grab sample comparisons demonstrated generally 'Good' to 'Excellent' agreement with sonde measurements for pH, specific conductivity, and turbidity. Overall, QA/QC results indicate that the 2025 water quality data collected at this site are of acceptable quality for assessing seasonal conditions and supporting watershed monitoring, flood risk assessment, and drinking water source protection objectives.

Water Temperature

14.67

Average (°C)

15.36

Median (°C)

2.84

Minimum (°C)

29.53

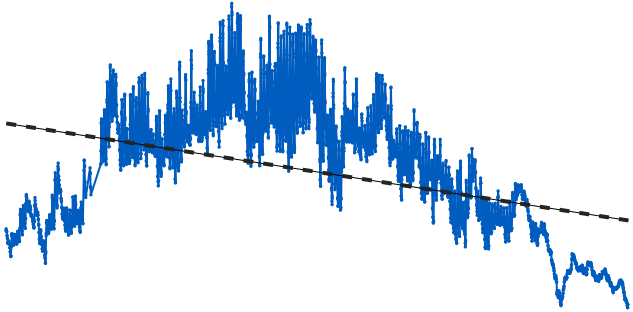
Maximum (°C)



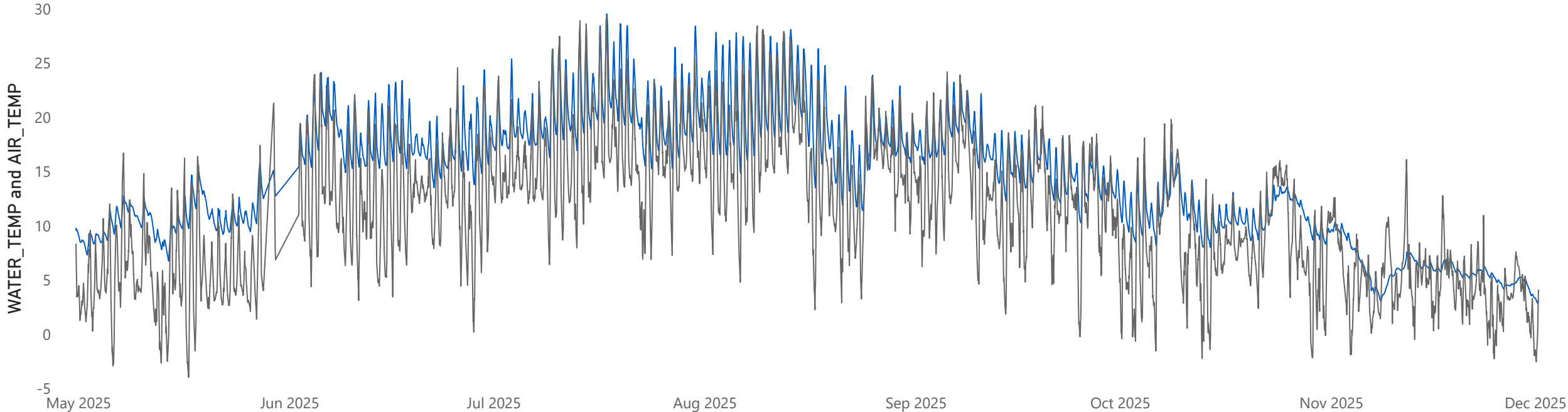
Water temperature is an important parameter for wildlife. Many organisms cannot regulate their own temperatures, and rely on surrounding air and water temperatures. Water temperature may be affected by inputs from industry or by modifying natural conditions like clearing trees and other vegetation, which 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 2025-04-30 until 2025-12-01. The minimum water temperature, 2.84°C, occurred on 2025-12-01. The maximum water temperature, 29.53°C, occurred on 2025-07-17. The average water temperature was 14.67 °C with peaks in mid-August corresponding to warmer air temperatures. Water temperature usually falls overnight and rises during the day, known as diurnal variation. Over the deployment period, a clear downward trend was observed, reflecting the seasonal transition from late summer into early fall as air temperatures declined.

Water Temperature Trendline



● WATER_TEMP ● AIR_TEMP



pH

6.88
Average pH

6.90
Median pH

6.31
Minimum pH

8.11
Maximum pH

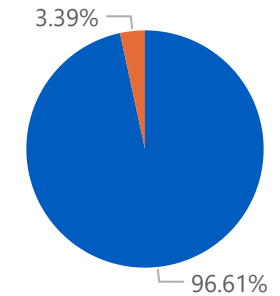


pH relates to the free hydrogen ions in water and it is a measure of acidity in water. A pH of 7 indicates a neutral pH, below 7 is considered acidic, and above 7 is considered basic. The [Canadian Council of Ministers of the Environment](#) (CCME) Freshwater Aquatic Life guideline provides a basis by 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](#).

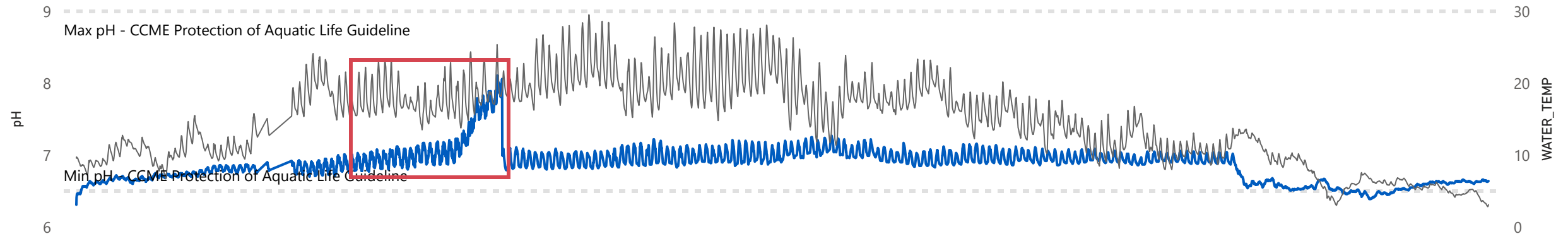
pH data for this deployment was collected from 2025-04-30 until 2025-12-01. The minimum pH, 6.31, occurred on 2025-04-30. The maximum pH, 8.11, occurred on 2025-07-03. Daily fluctuations are common due to changes in temperature and photosynthesizing of aquatic plants. pH was stable throughout this deployment period. pH sensor drift was observed from mid-June to July 4, 2025, when the instrument was replaced with a freshly calibrated instrument. A sudden decrease in pH was observed from 2025-10-23 until the end of the deployment period due to significant precipitation events. Values during the deployment are within the CCME guidelines for the Protection of Aquatic Life (between 6.5 and 9 pH units) for 96.61% and fell below the guidelines (3.39%) due to the addition of cool, acidic rainfall.

CCME Freshwater Aquatic Life Guideline

● Within Guidelines ● Below Guidelines



● pH ● WATER_TEMP



Climate data from MEMP

● PRECIP (mm) ● Level (m)



Specific Conductivity

77.35

Average $\mu\text{S}/\text{cm}$

77.20

Median $\mu\text{S}/\text{cm}$

56.41

Minumum $\mu\text{S}/\text{cm}$

93.40

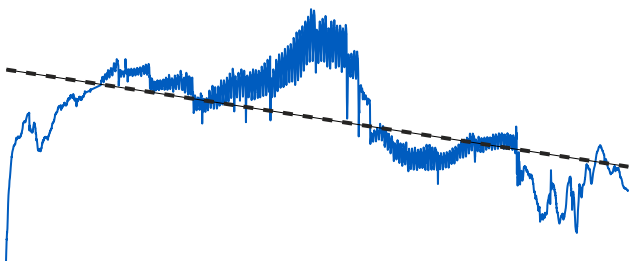
Maximum $\mu\text{S}/\text{cm}$



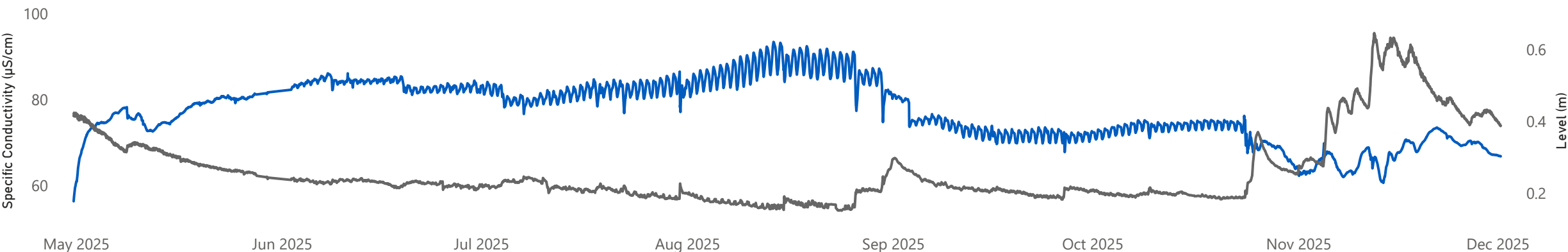
Conductivity relates to the ability of an electric charge to pass through a solution. Pure water has low conductance and water with dissolved ions has higher conductance. Specific conductance is corrected to 25°C to allow comparison across temperatures. Water parameter maps can be found on the [Water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

Specific conductivity in Hodge River showed a gradual increase from April 30 through mid-August 2025, rising from approximately 56 $\mu\text{S}/\text{cm}$ at the start of the deployment to peak values near 93 $\mu\text{S}/\text{cm}$. After mid-August, conductivity began to decline overall, dropping through September and remaining lower and relatively steady through October. In November, conductivity became more variable as several rain events and increases in stage influenced the river, with conductivity generally decreasing during higher-flow periods due to dilution, then partially recovering as conditions stabilized. Overall, the data show a seasonal rise in conductivity during the drier spring and summer period, followed by lower and more variable values in the fall when precipitation and runoff had a stronger influence on river conditions.

Specific Conductivity Trendline

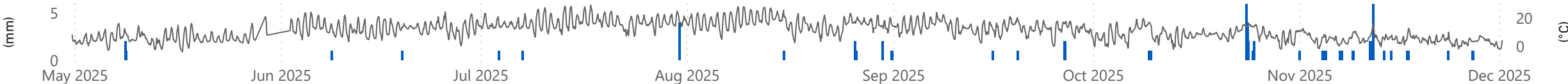


● Specific Conductivity ($\mu\text{S}/\text{cm}$) ● Level (m)



Climate data from MEMP

● PRECIP (mm) ● Air Temp (°C)



Dissolved Oxygen Concentration and Saturation

9.93	9.74	6.46	13.63
Average (mg/L)	Median (mg/L)	Minimum (mg/L)	Maximum (mg/L)

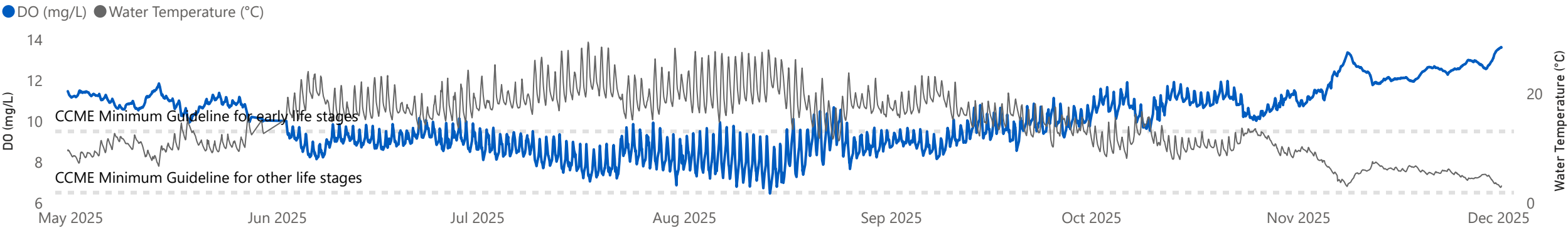
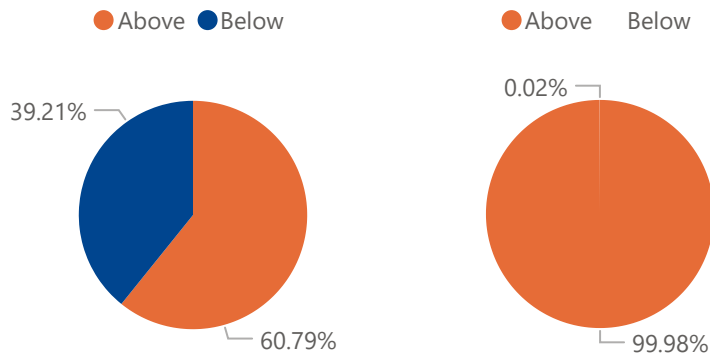


Dissolved oxygen (DO) in water is crucial for aquatic life. The [CCME \(Canadian Council of Ministers of the Environment\)](#) Freshwater Aquatic Life guidelines provide a basis by which to judge the overall health of waterways. The minimum guideline for early life stages in cold water is 9.5 mg/L and 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.

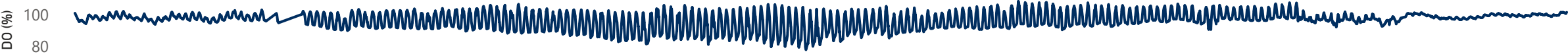
Dissolved oxygen (DO) concentrations from April 30 to December 1, 2025 exhibited a clear seasonal pattern closely linked to water temperature and hydrological conditions. DO levels were highest in the spring, generally ranging between 10–12 mg/L, before gradually declining through early summer and reaching their lowest values in mid- to late summer (approximately 6.5–9 mg/L) as water temperatures increased. During this period, pronounced daily fluctuations are observed, reflecting biological activity such as photosynthesis and respiration. From late August into the fall, DO concentrations began to recover as water temperatures decreased, with values steadily increasing through September and October. By November and into early December, DO reached some of the highest levels of the deployment (up to ~13.6 mg/L), corresponding with colder water temperatures and increased mixing.

Values fell below the minimum threshold for early life stages in cold water (9.5 mg/L) during the warmer summer months (39.21%), while remained above the guideline for other life stages (6.5 mg/L). Overall, DO conditions improved significantly during the fall, with concentrations consistently exceeding both guideline thresholds as cooler temperatures supported higher oxygen availability.

CCME Early Life Stages Guideline CCME Other Life Stages Guideline



Percent Saturation (%)



Turbidity

1.15
Average (NTU)

0.34
Median (NTU)

0.00
Minimum (NTU)

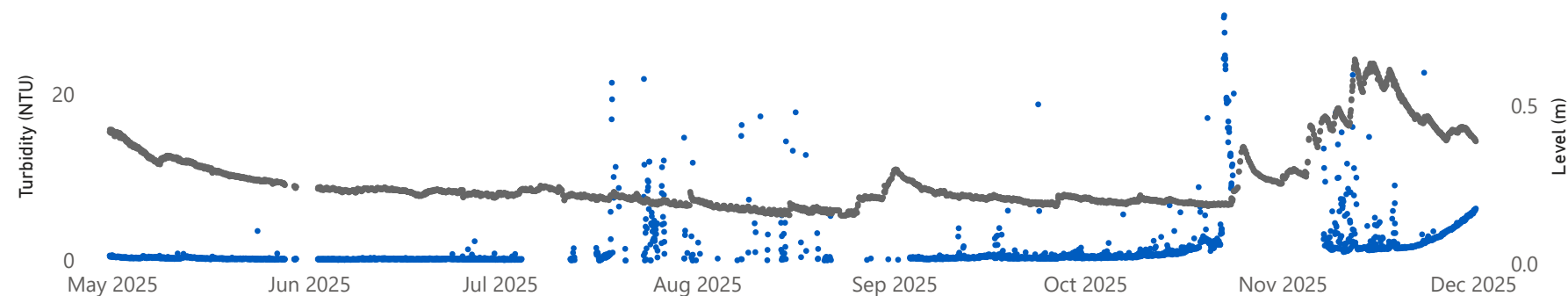
29.41
Maximum (NTU)



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.

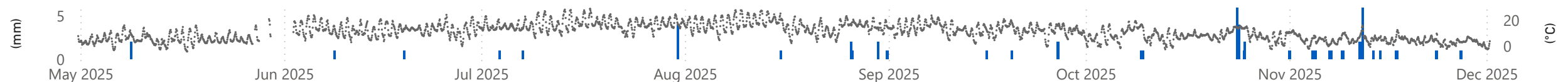
For statistical purposes, values greater than 30 NTU were removed. Turbidity at the site from April 30 to December 1, 2025 was generally low, with an average of 1.15 NTU and a median of 0.34 NTU, indicating that baseline conditions were typically clear throughout most of the monitoring period. The minimum recorded value was 0.00 NTU, while a maximum of 29.41 NTU occurred during a spike in early November. For much of the deployment, turbidity remained near zero, with intermittent increases observed primarily from mid-summer onward. These elevated values were partly associated with precipitation events and corresponding increases in water level. However, significant vegetation growth around the sensor became a dominant influence over time, contributing to persistently elevated readings by interfering with the optical sensor and trapping fine sediments. This buildup likely resulted in erroneous turbidity values during certain periods. Overall, while natural event-driven spikes were observed, vegetation growth had a notable impact on data quality and contributed to elevated turbidity measurements later in the deployment.

● Turbidity (NTU) ● Level (m)



Climate data from MEMP

● PRECIP (mm) ● Air Temperature (°C)

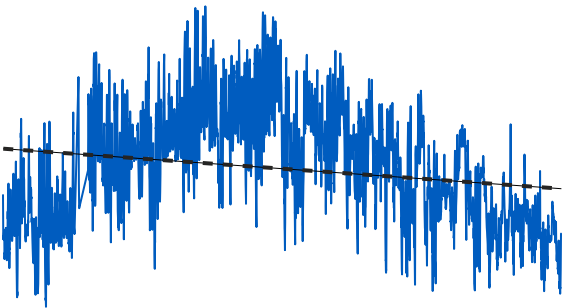


Meteorological and Hydrometric Data

*Climate data obtained from MEMP



Air Temperature Trendline



11.17

Average (°C)

11.14

Median (°C)

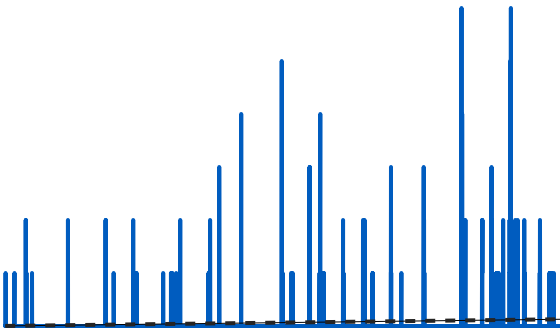
-3.99

Minimum (°C)

29.08

Maximum (°C)

Precipitation Trendline



0.02

Average (mm/hr)

0

Median (mm/hr)

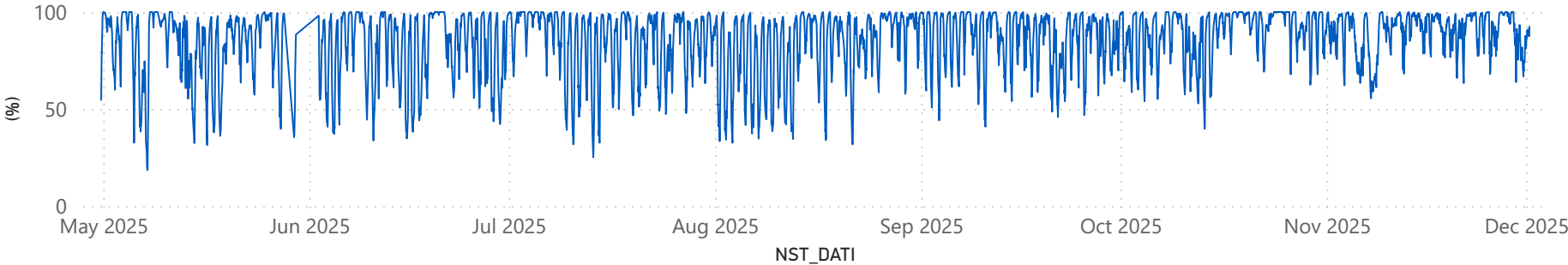
0

Minimum (mm/hr)

6

Maximum (mm/hr)

Relative Humidity (%)



85.27

Average (%)

91.80

Median (%)

18.44

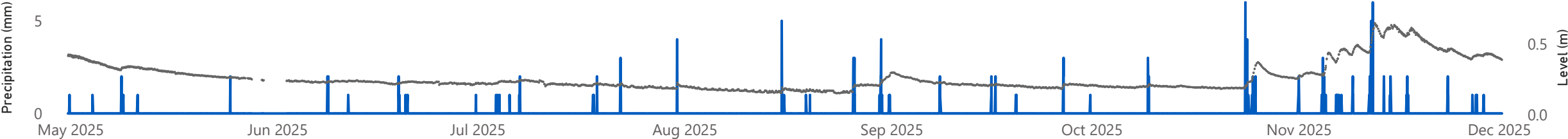
Minimum (%)

100.00

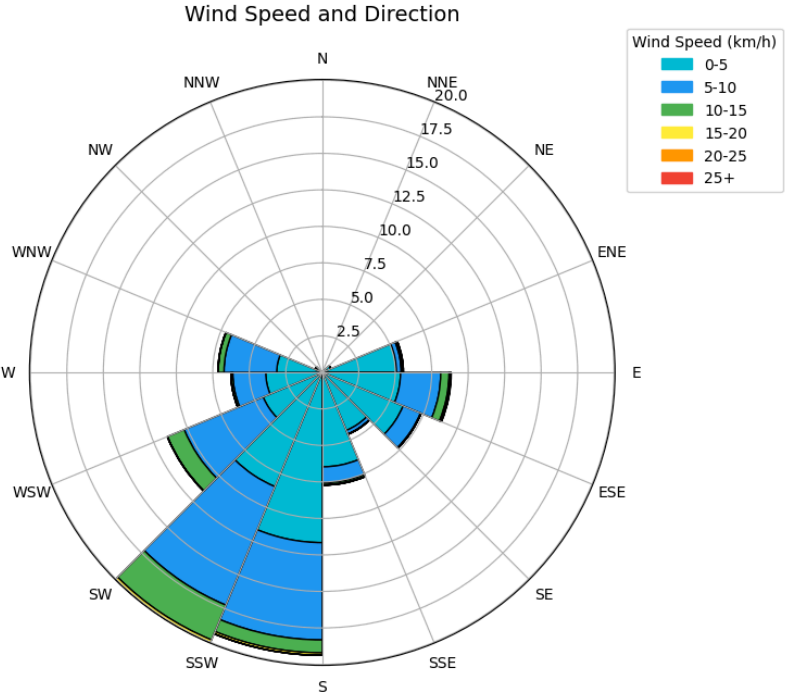
Maximum (%)

Precipitation (mm) and Level (m) by NST_DATI

● Precipitation (mm) ● Level (m)



Wind Speed & Direction

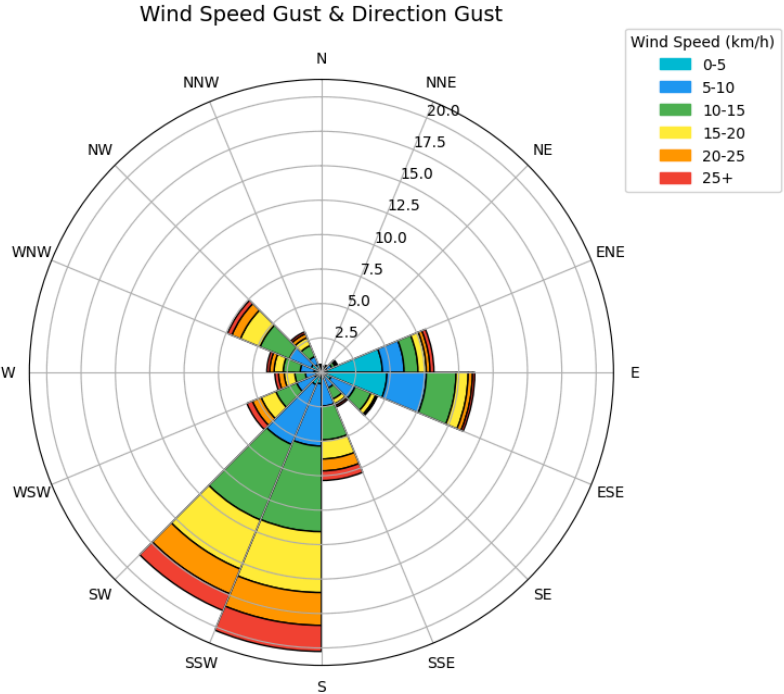


4.69
Average kmh

0.00
Minimum kmh

26.53
Maximum kmh

4.19
Median of WIND_...



12.38
Average Gust kmh

0.00
Minimum Gust kmh

55.53
Maximum Gust kmh

11.50
Median Gist kmh

Wind conditions at the Hodge River Pumphouse site in the Town of Whitbourne from April 30 to December 1, 2025 were characterized by a consistent prevailing wind direction from the south to south-southwest sectors. Wind speed and direction data indicate that most observations fell within the moderate range of approximately 5 to 15 km/h, with lower and higher wind speeds occurring less frequently. Contributions from other directional sectors, including westerly, easterly, and northerly winds, were present but minor in comparison.

The wind speed gust and direction gust data show a similar directional distribution, with peak gusts also predominantly originating from the south-southwest. Gust events were associated with higher wind speed categories than the average conditions, with multiple occurrences exceeding 20 km/h. Despite this increase in intensity, gusts remained largely aligned with the dominant southerly flow pattern.

Overall, the agreement between average wind conditions and gust data indicates a stable and well-defined prevailing wind regime at the site during the monitoring period, with periodic higher-intensity gust events occurring within the same dominant directions.

In addition to the continuous water level data collected at the station, a total of five streamflow measurements were obtained at varying water levels using a FlowTracker. These measurements were primarily collected to compile water quantity data for an upcoming flood study.

For the collected data to be suitable for a flood study, a vertical control survey was also completed at the site. This survey was done to relate locally referenced stage measurements to a standard vertical datum (e.g., CGVD2013). The survey was completed on two occasions to ensure accurate and consistent results. Both surveys were undertaken using Real -Time Kinematic (RTK) survey equipment. RTK observations were then processed using Precise Post Processing (PPP). All collected data, including RTK observations, were compiled and given to the consultants undertaking the flood study.

In addition to flood study applications, streamflow data was also collected to support WRMD staff’s ongoing efforts to evaluate approaches for developing rating curves at gauged rivers. The measurements were used to create a preliminary rating curve in Excel and were also applied within British Columbia’s HydRA rating curve tool. This was done to essentially compare methods and determine a path forward for our gauged rivers regarding rating curves and flow measurements.

RTK Water Level Survey Interpretation

A high-precision GNSS survey was completed at the Hodge River near the Town pumphouse in August and November 2025 to establish accurate water-surface elevations relative to a permanent ground reference. Measurements show that the average river water level at the monitoring location increased from approximately 56.02 m (CGVD2013) in August to 56.15 m in November, representing a rise of about 0.13 m (13 cm) over this period. The survey methodology used repeated measurements and independent positioning techniques to ensure reliability, with an estimated uncertainty of $\pm 2\text{--}3$ cm for relative water-level change. This observed increase therefore exceeds measurement uncertainty and represents a real and measurable rise in river level. The results provide the Town with a defensible benchmark for tracking future water-level changes and assessing potential implications for infrastructure, erosion, and flood risk near the pumphouse area.

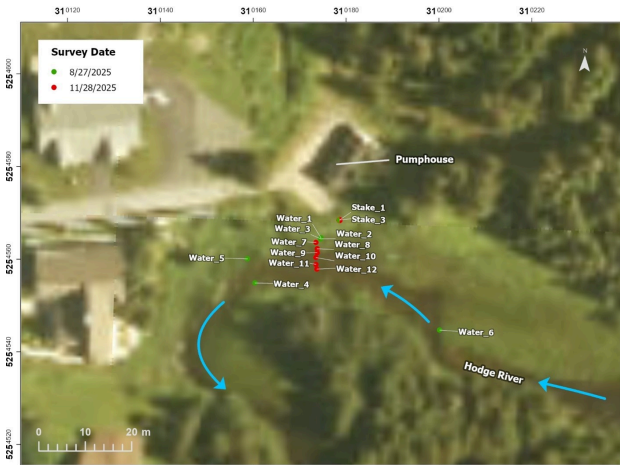
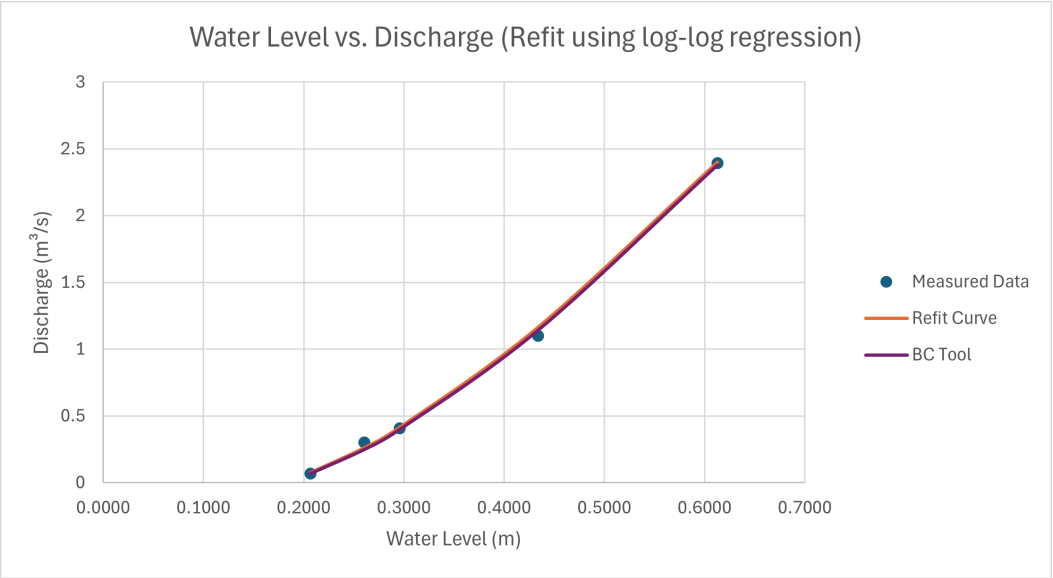
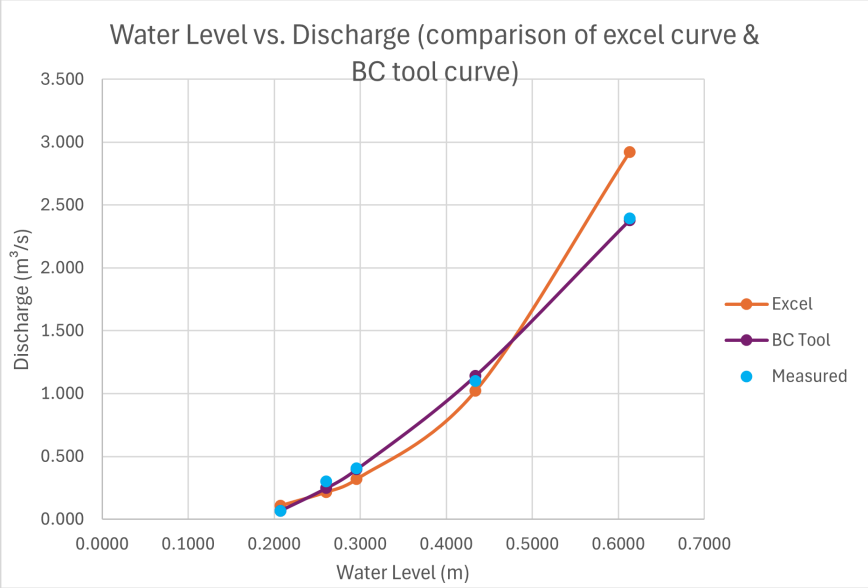


Figure 1. RTK survey point location. Conducted August 27, 2025, & November 28, 2025



Figure 2. Survey locations (4) & water points collected at each location were averaged.

Rating Curve Evaluation



Streamflow data was also collected to support WRMD staff’s ongoing efforts to evaluate approaches for developing rating curves at gauged rivers. The measurements were used to create a preliminary rating curve in Excel and were also applied within British Columbia’s HyDRA rating curve tool. This was done to essentially compare methods and determine a path forward for our monitored rivers regarding rating curves and flow measurements.

Measured water-level and discharge data collected between August and November 2025 were used to evaluate and refine the stage–discharge (rating) relationship for the Hodge River. Observed flows ranged from approximately 0.07 m³/s at low water levels (~0.21 m) to 2.39 m³/s at higher stages (~0.61 m). Comparison of measured discharges with the existing rating curve showed good agreement at low to moderate flows, but increasing divergence at higher water levels, where the original curve tended to either over- or under-estimate discharge depending on stage. A refitted power-law rating equation based on the measured data provides improved consistency across the observed range and more accurately represents flow conditions during elevated water levels. These results indicate that the updated rating relationship offers a more reliable tool for estimating river discharge from water-level observations, supporting improved flood assessment, flow monitoring, and infrastructure planning for the Town of Whitbourne.

Conclusions



A Mobile Environmental Monitoring Platform (MEMP) was deployed on the Hodge River in the Town of Whitbourne on 2025-04-30 to 2025-12-01. The system collected continuous water quality, meteorological, and hydrometric data.

- **Water Temperature** ranged from 2.84 °C to 29.53 °C, with an average of 14.67 °C. Temperatures followed expected seasonal and diurnal patterns, with peak values occurring during summer months and a steady decline into fall, closely tracking air temperature trends.
- **pH** values ranged from 6.31 to 8.11, with an average of 6.88. Conditions remained generally stable throughout the deployment and were within CCME Guidelines for the Protection of Aquatic Life for the majority of the monitoring period. Short-term decreases observed in the fall were associated with precipitation events and the influence of cooler, more acidic runoff.
- **Specific Conductivity** ranged from 56.41 to 93.40 $\mu\text{S}/\text{cm}$, with an average of 77.35 $\mu\text{S}/\text{cm}$. Conductivity increased gradually through spring and summer under lower flow conditions and decreased into the fall as precipitation and runoff resulted in dilution.
- **Dissolved Oxygen** ranged from 6.46 to 13.63 mg/L, with an average of 9.93 mg/L. DO concentrations exhibited a strong seasonal relationship with temperature, with lower values observed during warmer summer conditions and recovery through the fall as temperatures declined. Values remained above the CCME guideline for other life stages (6.5 mg/L) throughout the deployment but fell below the early life stage guideline (9.5 mg/L) during warmer periods.
- **Turbidity** ranged from 0.00 to 29.41 NTU, with an average of 1.15 NTU. Baseline conditions were generally low, indicating good water clarity. Elevated turbidity events were associated with precipitation and increased stage; however, some sustained elevated values were likely influenced by sediment and vegetation accumulation within the sonde casing, affecting sensor performance.
- **Meteorological and Hydrometric Conditions** show that temperature variation and precipitation events, with resulting increases in water level had a direct influence on water quality parameters, particularly turbidity, conductivity, and pH.
- **Hydrometric and Rating Curve Analysis** demonstrated that measured flows aligned well with existing rating relationships at low to moderate flows, with improved accuracy achieved through updated curve fitting at higher stages. Survey results confirmed a measurable increase in water level between summer and fall, supporting ongoing flood risk assessment efforts.

Overall, the MEMP deployment provided a comprehensive dataset capturing seasonal variability and hydrologic responses within the Hodge River system. The collected data support improved understanding of watershed dynamics, drinking water source protection, and flood risk management within the Town of Whitbourne.

Appendix 1

Grab Sample Results



Your P.O. #: 224006869-5

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, 2025-1805-00-SI-SP, 2025-1806-00-SI-SP, 2025-1807-00-SI-SP, 2025-1706-00-SI-SP

Report Date: 2025/05/21
Report #: R8541841
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C552595

Received: 2025/05/09, 09:43

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2025/05/15	ATL SOP 00142	SM 24 2320 B
Anions (1)	1	N/A	2025/05/14	CAM SOP-00435	SM 24 4110 B m
Anions (1)	3	N/A	2025/05/16	CAM SOP-00435	SM 24 4110 B m
Colour	4	N/A	2025/05/20	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	4	N/A	2025/05/14	ATL SOP 00203	SM 24 5310B m
Conductance - water	4	N/A	2025/05/15	ATL SOP 00004	SM 24 2510B m
Fluoride	4	N/A	2025/05/15	ATL SOP 00043	SM 24 4500-F- C m
Hardness (calculated as CaCO ₃)	3	N/A	2025/05/13	ATL SOP 00048	Auto Calc
Hardness (calculated as CaCO ₃)	1	N/A	2025/05/16	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	4	2025/05/15	2025/05/15	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2025/05/12	2025/05/12	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2025/05/12	2025/05/13	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2025/05/13	2025/05/13	ATL SOP 00058	EPA 6020B R2 m
Metals Water Total MS	1	2025/05/13	2025/05/14	ATL SOP 00058	EPA 6020B R2 m
Nitrogen Ammonia - water	4	N/A	2025/05/16	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	4	N/A	2025/05/20	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	4	N/A	2025/05/20	ATL SOP 00017	SM 24 4500-NO ₂ - B m
Nitrogen - Nitrate (as N)	4	N/A	2025/05/20	ATL SOP 00018	ASTM D3867-16
pH (3)	4	N/A	2025/05/15	ATL SOP 00003	SM 24 4500-H+ B m
Calculated TDS (DW Pkg)	4	N/A	2025/05/16	N/A	Auto Calc
Total Kjeldahl Nitrogen - calculated	4	2025/05/09	2025/05/20	Auto Calc	Auto Calc
Nitrogen - Total	4	N/A	2025/05/14	ATL SOP-00208	ASTM D8083 m
Organic carbon - Total (TOC) (2)	4	N/A	2025/05/13	ATL SOP 00203	SM 24 5310B m
Total Phosphorus (Colourimetric) (1)	4	2025/05/13	2025/05/14	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	4	2025/05/13	2025/05/14	ATL SOP 00007	SM 24 2540D m
Turbidity	4	N/A	2025/05/16	ATL SOP 00011	EPA 180.1 R2 m

Remarks:



Your P.O. #: 224006869-5

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, 2025-1805-00-SI-SP, 2025-1806-00-SI-SP, 2025-1807-00-SI-SP, 2025-1706-00-SI-SP

Report Date: 2025/05/21

Report #: R8541841

Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C552595

Received: 2025/05/09, 09:43

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(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. #: 224006869-5

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, 2025-1805-00-SI-SP, 2025-1806-00-SI-SP, 2025-1807-00-SI-SP, 2025-1706-00-SI-SP

Report Date: 2025/05/21
Report #: R8541841
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C552595

Received: 2025/05/09, 09:43

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Alyson Lawrence, Project Manager

Email: alyson.lawrence@bureauveritas.com

Phone# (902)440-8951

=====

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.



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		AQRX99		
Sampling Date		2025/05/08		
COC Number		2025-1706-00-SI-SP		
Sample #		2025-1706-00-SI-SP		
Registration #		SA-0000		
	UNITS	HODGE RIVER @PUMPHOUSE	RDL	QC Batch

Calculated Parameters				
Hardness (CaCO ₃)	mg/L	8.7	1.0	9925564
Total Kjeldahl Nitrogen (TKN)	mg/L	ND	0.10	9925676
Nitrate (N)	mg/L	ND	0.050	9925567
Total dissolved solids (calc., EC)	mg/L	43	1.0	9925675
Inorganics				
Total Alkalinity (Total as CaCO ₃)	mg/L	4.6	2.0	9929402
Colour	TCU	38	5.0	9930419
Dissolved Fluoride (F ⁻)	mg/L	ND	0.10	9929403
Nitrate + Nitrite (N)	mg/L	ND	0.050	9930416
Nitrite (N)	mg/L	ND	0.010	9930413
Nitrogen (Ammonia Nitrogen)	mg/L	ND	0.050	9929473
Total Nitrogen (N)	mg/L	ND	0.10	9927842
Dissolved Organic Carbon (C)	mg/L	5.1	0.50	9928281
Total Organic Carbon (C)	mg/L	5.5	0.50	9927514
pH	pH	6.77		9929394
Total Phosphorus	mg/L	0.013	0.004	9928045
Total Suspended Solids	mg/L	1.0	1.0	9927871
Turbidity	NTU	0.54	0.10	9930386
Conductivity	uS/cm	78	1.0	9929400
Chloride (Cl ⁻)	mg/L	18	1.0	9928165
Bromide (Br ⁻)	mg/L	ND	1.0	9928165
Sulphate (SO ₄)	mg/L	1.5	1.0	9928165
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				
ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



ELEMENTS BY ICP/MS (WATER)

Bureau Veritas ID		AQRX99		
Sampling Date		2025/05/08		
COC Number		2025-1706-00-SI-SP		
Sample #		2025-1706-00-SI-SP		
Registration #		SA-0000		
	UNITS	HODGE RIVER @PUMPHOUSE	RDL	QC Batch
Metals				
Total Aluminum (Al)	mg/L	0.050	0.0050	9926803
Total Antimony (Sb)	mg/L	0.0013	0.0010	9926803
Total Arsenic (As)	mg/L	ND	0.0010	9926803
Total Barium (Ba)	mg/L	ND	0.0010	9926803
Total Boron (B)	mg/L	ND	0.050	9926803
Total Cadmium (Cd)	mg/L	ND	0.000010	9926803
Total Calcium (Ca)	mg/L	2.2	0.10	9926803
Total Chromium (Cr)	mg/L	ND	0.0010	9926803
Total Copper (Cu)	mg/L	ND	0.00050	9926803
Total Iron (Fe)	mg/L	0.11	0.050	9926803
Total Lead (Pb)	mg/L	ND	0.00050	9926803
Total Magnesium (Mg)	mg/L	0.79	0.10	9926803
Total Manganese (Mn)	mg/L	0.028	0.0020	9926803
Total Nickel (Ni)	mg/L	ND	0.0020	9926803
Total Phosphorus (P)	mg/L	ND	0.10	9926803
Total Potassium (K)	mg/L	0.27	0.10	9926803
Total Selenium (Se)	mg/L	ND	0.00050	9926803
Total Sodium (Na)	mg/L	10	0.10	9926803
Total Strontium (Sr)	mg/L	0.0077	0.0020	9926803
Total Uranium (U)	mg/L	ND	0.00010	9926803
Total Zinc (Zn)	mg/L	0.0069	0.0050	9926803
RDL = Reportable Detection Limit QC Batch = Quality Control Batch ND = Not Detected at a concentration equal or greater than the indicated Detection Limit.				



GENERAL COMMENTS

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

Package 1	4.5°C
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Sample AQRX96, Metals Water Total MS: Test repeated.

Sample AQRX98, Metals Water Total MS: Test repeated.

Results relate only to the items tested.



**BUREAU
VERITAS**

Bureau Veritas Job #: C552595
Report Date: 2025/05/21

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9926577	MOA	Matrix Spike	Total Aluminum (Al)	2025/05/12		96	%	80 - 120
			Total Antimony (Sb)	2025/05/12		102	%	80 - 120
			Total Arsenic (As)	2025/05/12		102	%	80 - 120
			Total Barium (Ba)	2025/05/12		95	%	80 - 120
			Total Boron (B)	2025/05/12		95	%	80 - 120
			Total Cadmium (Cd)	2025/05/12		99	%	80 - 120
			Total Calcium (Ca)	2025/05/12		100	%	80 - 120
			Total Copper (Cu)	2025/05/12		101	%	80 - 120
			Total Lead (Pb)	2025/05/12		98	%	80 - 120
			Total Magnesium (Mg)	2025/05/12		97	%	80 - 120
			Total Manganese (Mn)	2025/05/12		104	%	80 - 120
			Total Nickel (Ni)	2025/05/12		99	%	80 - 120
			Total Phosphorus (P)	2025/05/12		100	%	80 - 120
			Total Potassium (K)	2025/05/12		98	%	80 - 120
			Total Selenium (Se)	2025/05/12		101	%	80 - 120
			Total Sodium (Na)	2025/05/12		NC	%	80 - 120
			Total Strontium (Sr)	2025/05/12		95	%	80 - 120
			Total Uranium (U)	2025/05/12		102	%	80 - 120
			Total Zinc (Zn)	2025/05/12		101	%	80 - 120
9926577	MOA	Spiked Blank	Total Aluminum (Al)	2025/05/12		98	%	80 - 120
			Total Antimony (Sb)	2025/05/12		104	%	80 - 120
			Total Arsenic (As)	2025/05/12		104	%	80 - 120
			Total Barium (Ba)	2025/05/12		96	%	80 - 120
			Total Boron (B)	2025/05/12		92	%	80 - 120
			Total Cadmium (Cd)	2025/05/12		97	%	80 - 120
			Total Calcium (Ca)	2025/05/12		98	%	80 - 120
			Total Copper (Cu)	2025/05/12		101	%	80 - 120
			Total Lead (Pb)	2025/05/12		98	%	80 - 120
			Total Magnesium (Mg)	2025/05/12		102	%	80 - 120
			Total Manganese (Mn)	2025/05/12		102	%	80 - 120
			Total Nickel (Ni)	2025/05/12		104	%	80 - 120
			Total Phosphorus (P)	2025/05/12		100	%	80 - 120
			Total Potassium (K)	2025/05/12		95	%	80 - 120
			Total Selenium (Se)	2025/05/12		101	%	80 - 120
			Total Sodium (Na)	2025/05/12		100	%	80 - 120
			Total Strontium (Sr)	2025/05/12		101	%	80 - 120
			Total Uranium (U)	2025/05/12		107	%	80 - 120
			Total Zinc (Zn)	2025/05/12		101	%	80 - 120
9926577	MOA	Method Blank	Total Aluminum (Al)	2025/05/12	ND, RDL=0.0050		mg/L	
			Total Antimony (Sb)	2025/05/12	ND, RDL=0.0010		mg/L	
			Total Arsenic (As)	2025/05/12	ND, RDL=0.0010		mg/L	
			Total Barium (Ba)	2025/05/12	ND, RDL=0.0010		mg/L	
			Total Boron (B)	2025/05/12	ND, RDL=0.050		mg/L	
			Total Cadmium (Cd)	2025/05/12	ND, RDL=0.000010		mg/L	
			Total Calcium (Ca)	2025/05/12	ND, RDL=0.10		mg/L	



**BUREAU
VERITAS**

Bureau Veritas Job #: C552595
Report Date: 2025/05/21

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Copper (Cu)	2025/05/12	ND, RDL=0.00050		mg/L	
			Total Lead (Pb)	2025/05/12	ND, RDL=0.00050		mg/L	
			Total Magnesium (Mg)	2025/05/12	ND, RDL=0.10		mg/L	
			Total Manganese (Mn)	2025/05/12	ND, RDL=0.0020		mg/L	
			Total Nickel (Ni)	2025/05/12	ND, RDL=0.0020		mg/L	
			Total Phosphorus (P)	2025/05/12	ND, RDL=0.10		mg/L	
			Total Potassium (K)	2025/05/12	ND, RDL=0.10		mg/L	
			Total Selenium (Se)	2025/05/12	ND, RDL=0.00050		mg/L	
			Total Sodium (Na)	2025/05/12	ND, RDL=0.10		mg/L	
			Total Strontium (Sr)	2025/05/12	ND, RDL=0.0020		mg/L	
			Total Uranium (U)	2025/05/12	ND, RDL=0.00010		mg/L	
			Total Zinc (Zn)	2025/05/12	ND, RDL=0.0050		mg/L	
9926577	MOA	RPD	Total Sodium (Na)	2025/05/12	1.7		%	20
9926803	MTZ	Matrix Spike	Total Aluminum (Al)	2025/05/13		99	%	80 - 120
			Total Antimony (Sb)	2025/05/13		103	%	80 - 120
			Total Arsenic (As)	2025/05/13		101	%	80 - 120
			Total Barium (Ba)	2025/05/13		95	%	80 - 120
			Total Boron (B)	2025/05/13		90	%	80 - 120
			Total Cadmium (Cd)	2025/05/13		96	%	80 - 120
			Total Calcium (Ca)	2025/05/13		101	%	80 - 120
			Total Chromium (Cr)	2025/05/13		94	%	80 - 120
			Total Copper (Cu)	2025/05/13		96	%	80 - 120
			Total Iron (Fe)	2025/05/13		103	%	80 - 120
			Total Lead (Pb)	2025/05/13		95	%	80 - 120
			Total Magnesium (Mg)	2025/05/13		103	%	80 - 120
			Total Manganese (Mn)	2025/05/13		97	%	80 - 120
			Total Nickel (Ni)	2025/05/13		98	%	80 - 120
			Total Phosphorus (P)	2025/05/13		103	%	80 - 120
			Total Potassium (K)	2025/05/13		98	%	80 - 120
			Total Selenium (Se)	2025/05/13		98	%	80 - 120
			Total Sodium (Na)	2025/05/13		NC	%	80 - 120
			Total Strontium (Sr)	2025/05/13		99	%	80 - 120
			Total Uranium (U)	2025/05/13		107	%	80 - 120
			Total Zinc (Zn)	2025/05/13		97	%	80 - 120
9926803	MTZ	Spiked Blank	Total Aluminum (Al)	2025/05/13		100	%	80 - 120
			Total Antimony (Sb)	2025/05/13		103	%	80 - 120
			Total Arsenic (As)	2025/05/13		101	%	80 - 120
			Total Barium (Ba)	2025/05/13		94	%	80 - 120
			Total Boron (B)	2025/05/13		90	%	80 - 120
			Total Cadmium (Cd)	2025/05/13		96	%	80 - 120
			Total Calcium (Ca)	2025/05/13		102	%	80 - 120



**BUREAU
VERITAS**

Bureau Veritas Job #: C552595
Report Date: 2025/05/21

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9926803	MTZ	Method Blank	Total Chromium (Cr)	2025/05/13		94	%	80 - 120
			Total Copper (Cu)	2025/05/13		99	%	80 - 120
			Total Iron (Fe)	2025/05/13		103	%	80 - 120
			Total Lead (Pb)	2025/05/13		97	%	80 - 120
			Total Magnesium (Mg)	2025/05/13		102	%	80 - 120
			Total Manganese (Mn)	2025/05/13		99	%	80 - 120
			Total Nickel (Ni)	2025/05/13		101	%	80 - 120
			Total Phosphorus (P)	2025/05/13		104	%	80 - 120
			Total Potassium (K)	2025/05/13		99	%	80 - 120
			Total Selenium (Se)	2025/05/13		98	%	80 - 120
			Total Sodium (Na)	2025/05/13		100	%	80 - 120
			Total Strontium (Sr)	2025/05/13		99	%	80 - 120
			Total Uranium (U)	2025/05/13		107	%	80 - 120
			Total Zinc (Zn)	2025/05/13		98	%	80 - 120
			Total Aluminum (Al)	2025/05/13	ND, RDL=0.0050		mg/L	
			Total Antimony (Sb)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Arsenic (As)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Barium (Ba)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Boron (B)	2025/05/13	ND, RDL=0.050		mg/L	
			Total Cadmium (Cd)	2025/05/13	ND, RDL=0.000010		mg/L	
			Total Calcium (Ca)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Chromium (Cr)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Copper (Cu)	2025/05/13	ND, RDL=0.00050		mg/L	
			Total Iron (Fe)	2025/05/13	ND, RDL=0.050		mg/L	
			Total Lead (Pb)	2025/05/13	ND, RDL=0.00050		mg/L	
			Total Magnesium (Mg)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Manganese (Mn)	2025/05/13	ND, RDL=0.0020		mg/L	
			Total Nickel (Ni)	2025/05/13	ND, RDL=0.0020		mg/L	
			Total Phosphorus (P)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Potassium (K)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Selenium (Se)	2025/05/13	ND, RDL=0.00050		mg/L	
			Total Sodium (Na)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Strontium (Sr)	2025/05/13	ND, RDL=0.0020		mg/L	
			Total Uranium (U)	2025/05/13	ND, RDL=0.00010		mg/L	



**BUREAU
VERITAS**

Bureau Veritas Job #: C552595
Report Date: 2025/05/21

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LH

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9926803	MTZ	RPD	Total Zinc (Zn)	2025/05/13	ND, RDL=0.0050		mg/L	
			Total Arsenic (As)	2025/05/13	6.3		%	20
			Total Iron (Fe)	2025/05/13	4.6		%	20
9927411	MTZ	Matrix Spike [AQRX97-06]	Total Aluminum (Al)	2025/05/13		101	%	80 - 120
			Total Antimony (Sb)	2025/05/13		104	%	80 - 120
			Total Arsenic (As)	2025/05/13		102	%	80 - 120
			Total Barium (Ba)	2025/05/13		98	%	80 - 120
			Total Boron (B)	2025/05/13		101	%	80 - 120
			Total Cadmium (Cd)	2025/05/13		100	%	80 - 120
			Total Calcium (Ca)	2025/05/13		99	%	80 - 120
			Total Chromium (Cr)	2025/05/13		101	%	80 - 120
			Total Copper (Cu)	2025/05/13		99	%	80 - 120
			Total Iron (Fe)	2025/05/13		104	%	80 - 120
			Total Lead (Pb)	2025/05/13		101	%	80 - 120
			Total Magnesium (Mg)	2025/05/13		107	%	80 - 120
			Total Manganese (Mn)	2025/05/13		99	%	80 - 120
			Total Nickel (Ni)	2025/05/13		102	%	80 - 120
			Total Phosphorus (P)	2025/05/13		104	%	80 - 120
			Total Potassium (K)	2025/05/13		99	%	80 - 120
			Total Selenium (Se)	2025/05/13		101	%	80 - 120
			Total Sodium (Na)	2025/05/13		102	%	80 - 120
			Total Strontium (Sr)	2025/05/13		101	%	80 - 120
			Total Uranium (U)	2025/05/13		105	%	80 - 120
			Total Zinc (Zn)	2025/05/13		99	%	80 - 120
9927411	MTZ	Spiked Blank	Total Aluminum (Al)	2025/05/13		101	%	80 - 120
			Total Antimony (Sb)	2025/05/13		102	%	80 - 120
			Total Arsenic (As)	2025/05/13		99	%	80 - 120
			Total Barium (Ba)	2025/05/13		97	%	80 - 120
			Total Boron (B)	2025/05/13		100	%	80 - 120
			Total Cadmium (Cd)	2025/05/13		98	%	80 - 120
			Total Calcium (Ca)	2025/05/13		101	%	80 - 120
			Total Chromium (Cr)	2025/05/13		99	%	80 - 120
			Total Copper (Cu)	2025/05/13		97	%	80 - 120
			Total Iron (Fe)	2025/05/13		105	%	80 - 120
			Total Lead (Pb)	2025/05/13		99	%	80 - 120
			Total Magnesium (Mg)	2025/05/13		106	%	80 - 120
			Total Manganese (Mn)	2025/05/13		100	%	80 - 120
			Total Nickel (Ni)	2025/05/13		102	%	80 - 120
			Total Phosphorus (P)	2025/05/13		104	%	80 - 120
			Total Potassium (K)	2025/05/13		98	%	80 - 120
			Total Selenium (Se)	2025/05/13		99	%	80 - 120
			Total Sodium (Na)	2025/05/13		102	%	80 - 120
			Total Strontium (Sr)	2025/05/13		99	%	80 - 120
			Total Uranium (U)	2025/05/13		104	%	80 - 120
			Total Zinc (Zn)	2025/05/13		97	%	80 - 120
9927411	MTZ	Method Blank	Total Aluminum (Al)	2025/05/13	ND, RDL=0.0050		mg/L	
			Total Antimony (Sb)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Arsenic (As)	2025/05/13	ND, RDL=0.0010		mg/L	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Barium (Ba)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Boron (B)	2025/05/13	ND, RDL=0.050		mg/L	
			Total Cadmium (Cd)	2025/05/13	ND, RDL=0.000010		mg/L	
			Total Calcium (Ca)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Chromium (Cr)	2025/05/13	ND, RDL=0.0010		mg/L	
			Total Copper (Cu)	2025/05/13	ND, RDL=0.00050		mg/L	
			Total Iron (Fe)	2025/05/13	ND, RDL=0.050		mg/L	
			Total Lead (Pb)	2025/05/13	ND, RDL=0.00050		mg/L	
			Total Magnesium (Mg)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Manganese (Mn)	2025/05/13	ND, RDL=0.0020		mg/L	
			Total Nickel (Ni)	2025/05/13	ND, RDL=0.0020		mg/L	
			Total Phosphorus (P)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Potassium (K)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Selenium (Se)	2025/05/13	ND, RDL=0.00050		mg/L	
			Total Sodium (Na)	2025/05/13	ND, RDL=0.10		mg/L	
			Total Strontium (Sr)	2025/05/13	ND, RDL=0.0020		mg/L	
			Total Uranium (U)	2025/05/13	ND, RDL=0.00010		mg/L	
			Total Zinc (Zn)	2025/05/13	ND, RDL=0.0050		mg/L	
			Total Aluminum (Al)	2025/05/13	3.0		%	20
			Total Antimony (Sb)	2025/05/13	NC		%	20
			Total Arsenic (As)	2025/05/13	NC		%	20
			Total Barium (Ba)	2025/05/13	2.3		%	20
			Total Boron (B)	2025/05/13	NC		%	20
			Total Cadmium (Cd)	2025/05/13	NC		%	20
			Total Calcium (Ca)	2025/05/13	1.1		%	20
			Total Chromium (Cr)	2025/05/13	NC		%	20
			Total Copper (Cu)	2025/05/13	2.8		%	20
			Total Iron (Fe)	2025/05/13	3.8		%	20
			Total Lead (Pb)	2025/05/13	1.7		%	20
			Total Magnesium (Mg)	2025/05/13	3.8		%	20
			Total Manganese (Mn)	2025/05/13	2.7		%	20
			Total Nickel (Ni)	2025/05/13	NC		%	20
			Total Phosphorus (P)	2025/05/13	NC		%	20
			Total Potassium (K)	2025/05/13	0.34		%	20
			Total Selenium (Se)	2025/05/13	NC		%	20
			Total Sodium (Na)	2025/05/13	2.9		%	20



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9927415	SSI	Matrix Spike	Total Strontium (Sr)	2025/05/13	4.8		%	20
			Total Uranium (U)	2025/05/13	NC		%	20
			Total Zinc (Zn)	2025/05/13	1.7		%	20
			Total Organic Carbon (C)	2025/05/13		95	%	85 - 115
9927415	SSI	Spiked Blank	Total Organic Carbon (C)	2025/05/13		97	%	80 - 120
9927415	SSI	Method Blank	Total Organic Carbon (C)	2025/05/13	ND, RDL=0.50		mg/L	
9927415	SSI	RPD	Total Organic Carbon (C)	2025/05/13	NC		%	15
9927416	MTZ	Matrix Spike	Total Aluminum (Al)	2025/05/14		100	%	80 - 120
			Total Antimony (Sb)	2025/05/14		103	%	80 - 120
			Total Arsenic (As)	2025/05/14		102	%	80 - 120
			Total Barium (Ba)	2025/05/14		96	%	80 - 120
			Total Boron (B)	2025/05/14		101	%	80 - 120
			Total Cadmium (Cd)	2025/05/14		100	%	80 - 120
			Total Chromium (Cr)	2025/05/14		98	%	80 - 120
			Total Copper (Cu)	2025/05/14		99	%	80 - 120
			Total Iron (Fe)	2025/05/14		106	%	80 - 120
			Total Lead (Pb)	2025/05/14		102	%	80 - 120
			Total Magnesium (Mg)	2025/05/14		107	%	80 - 120
			Total Manganese (Mn)	2025/05/14		102	%	80 - 120
			Total Nickel (Ni)	2025/05/14		102	%	80 - 120
			Total Phosphorus (P)	2025/05/14		105	%	80 - 120
			Total Potassium (K)	2025/05/14		98	%	80 - 120
			Total Selenium (Se)	2025/05/14		103	%	80 - 120
			Total Sodium (Na)	2025/05/14		103	%	80 - 120
			Total Strontium (Sr)	2025/05/14		103	%	80 - 120
			Total Uranium (U)	2025/05/14		109	%	80 - 120
			Total Zinc (Zn)	2025/05/14		100	%	80 - 120
9927416	MTZ	Spiked Blank	Total Aluminum (Al)	2025/05/14		96	%	80 - 120
			Total Antimony (Sb)	2025/05/14		100	%	80 - 120
			Total Arsenic (As)	2025/05/14		98	%	80 - 120
			Total Barium (Ba)	2025/05/14		92	%	80 - 120
			Total Boron (B)	2025/05/14		97	%	80 - 120
			Total Cadmium (Cd)	2025/05/14		96	%	80 - 120
			Total Chromium (Cr)	2025/05/14		96	%	80 - 120
			Total Copper (Cu)	2025/05/14		96	%	80 - 120
			Total Iron (Fe)	2025/05/14		101	%	80 - 120
			Total Lead (Pb)	2025/05/14		98	%	80 - 120
			Total Magnesium (Mg)	2025/05/14		103	%	80 - 120
			Total Manganese (Mn)	2025/05/14		97	%	80 - 120
			Total Nickel (Ni)	2025/05/14		98	%	80 - 120
			Total Phosphorus (P)	2025/05/14		101	%	80 - 120
			Total Potassium (K)	2025/05/14		97	%	80 - 120
			Total Selenium (Se)	2025/05/14		97	%	80 - 120
			Total Sodium (Na)	2025/05/14		98	%	80 - 120
			Total Strontium (Sr)	2025/05/14		98	%	80 - 120
			Total Uranium (U)	2025/05/14		104	%	80 - 120
			Total Zinc (Zn)	2025/05/14		98	%	80 - 120
9927416	MTZ	Method Blank	Total Aluminum (Al)	2025/05/15	ND, RDL=0.0050		mg/L	
			Total Antimony (Sb)	2025/05/15	ND, RDL=0.0010		mg/L	



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9927416	MTZ	RPD	Total Arsenic (As)	2025/05/15	ND, RDL=0.0010		mg/L	
			Total Barium (Ba)	2025/05/15	ND, RDL=0.0010		mg/L	
			Total Boron (B)	2025/05/15	ND, RDL=0.050		mg/L	
			Total Cadmium (Cd)	2025/05/15	ND, RDL=0.000010		mg/L	
			Total Chromium (Cr)	2025/05/15	ND, RDL=0.0010		mg/L	
			Total Copper (Cu)	2025/05/15	ND, RDL=0.00050		mg/L	
			Total Iron (Fe)	2025/05/15	ND, RDL=0.050		mg/L	
			Total Lead (Pb)	2025/05/15	ND, RDL=0.00050		mg/L	
			Total Magnesium (Mg)	2025/05/15	ND, RDL=0.10		mg/L	
			Total Manganese (Mn)	2025/05/15	ND, RDL=0.0020		mg/L	
			Total Nickel (Ni)	2025/05/15	ND, RDL=0.0020		mg/L	
			Total Phosphorus (P)	2025/05/15	ND, RDL=0.10		mg/L	
			Total Potassium (K)	2025/05/15	ND, RDL=0.10		mg/L	
			Total Selenium (Se)	2025/05/15	ND, RDL=0.00050		mg/L	
			Total Sodium (Na)	2025/05/15	ND, RDL=0.10		mg/L	
			Total Strontium (Sr)	2025/05/15	ND, RDL=0.0020		mg/L	
			Total Uranium (U)	2025/05/15	ND, RDL=0.00010		mg/L	
			Total Zinc (Zn)	2025/05/15	ND, RDL=0.0050		mg/L	
			Total Aluminum (Al)	2025/05/14	NC		%	20
			Total Antimony (Sb)	2025/05/14	NC		%	20
			Total Arsenic (As)	2025/05/14	NC		%	20
			Total Barium (Ba)	2025/05/14	NC		%	20
			Total Boron (B)	2025/05/14	NC		%	20
			Total Cadmium (Cd)	2025/05/14	NC		%	20
			Total Chromium (Cr)	2025/05/14	NC		%	20
			Total Copper (Cu)	2025/05/14	NC		%	20
			Total Iron (Fe)	2025/05/14	NC		%	20
			Total Lead (Pb)	2025/05/14	NC		%	20
			Total Magnesium (Mg)	2025/05/14	NC		%	20
			Total Manganese (Mn)	2025/05/14	NC		%	20
			Total Nickel (Ni)	2025/05/14	NC		%	20
			Total Phosphorus (P)	2025/05/14	NC		%	20
			Total Potassium (K)	2025/05/14	NC		%	20
			Total Selenium (Se)	2025/05/14	NC		%	20
			Total Sodium (Na)	2025/05/14	NC		%	20
			Total Strontium (Sr)	2025/05/14	NC		%	20



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Uranium (U)	2025/05/14	NC		%	20
			Total Zinc (Zn)	2025/05/14	NC		%	20
9927514	SSI	Matrix Spike	Total Organic Carbon (C)	2025/05/13		104	%	85 - 115
9927514	SSI	Spiked Blank	Total Organic Carbon (C)	2025/05/13		107	%	80 - 120
9927514	SSI	Method Blank	Total Organic Carbon (C)	2025/05/13	ND, RDL=0.50		mg/L	
9927514	SSI	RPD	Total Organic Carbon (C)	2025/05/13	NC		%	15
9927842	SSI	Matrix Spike [AQRX96-04]	Total Nitrogen (N)	2025/05/14		102	%	80 - 120
9927842	SSI	Spiked Blank	Total Nitrogen (N)	2025/05/14		98	%	85 - 115
9927842	SSI	Method Blank	Total Nitrogen (N)	2025/05/14	ND, RDL=0.10		mg/L	
9927842	SSI	RPD [AQRX96-04]	Total Nitrogen (N)	2025/05/14	NC		%	20
9927871	RD4	QC Standard	Total Suspended Solids	2025/05/14		98	%	80 - 120
9927871	RD4	Method Blank	Total Suspended Solids	2025/05/14	ND, RDL=1.0		mg/L	
9927871	RD4	RPD	Total Suspended Solids	2025/05/14	1.7		%	20
9927918	VP2	Matrix Spike	Chloride (Cl-)	2025/05/14		NC	%	80 - 120
			Bromide (Br-)	2025/05/14		104	%	80 - 120
			Sulphate (SO4)	2025/05/14		102	%	80 - 120
9927918	VP2	Spiked Blank	Chloride (Cl-)	2025/05/14		100	%	70 - 130
			Bromide (Br-)	2025/05/14		101	%	80 - 120
			Sulphate (SO4)	2025/05/14		98	%	80 - 120
9927918	VP2	Method Blank	Chloride (Cl-)	2025/05/14	ND, RDL=1.0		mg/L	
			Bromide (Br-)	2025/05/14	ND, RDL=1.0		mg/L	
			Sulphate (SO4)	2025/05/14	ND, RDL=1.0		mg/L	
9927918	VP2	RPD	Chloride (Cl-)	2025/05/14	0.47		%	20
			Bromide (Br-)	2025/05/14	NC		%	20
			Sulphate (SO4)	2025/05/14	1.7		%	20
9928045	VKH	Matrix Spike	Total Phosphorus	2025/05/14		100	%	80 - 120
9928045	VKH	QC Standard	Total Phosphorus	2025/05/14		93	%	80 - 120
9928045	VKH	Spiked Blank	Total Phosphorus	2025/05/14		101	%	80 - 120
9928045	VKH	Method Blank	Total Phosphorus	2025/05/14	ND, RDL=0.004		mg/L	
9928045	VKH	RPD	Total Phosphorus	2025/05/14	4.1		%	20
9928165	VP2	Matrix Spike	Chloride (Cl-)	2025/05/16		105	%	80 - 120
			Bromide (Br-)	2025/05/16		102	%	80 - 120
			Sulphate (SO4)	2025/05/16		102	%	80 - 120
9928165	VP2	Spiked Blank	Chloride (Cl-)	2025/05/15		99	%	70 - 130
			Bromide (Br-)	2025/05/15		102	%	80 - 120
			Sulphate (SO4)	2025/05/15		98	%	80 - 120
9928165	VP2	Method Blank	Chloride (Cl-)	2025/05/16	ND, RDL=1.0		mg/L	
			Bromide (Br-)	2025/05/16	ND, RDL=1.0		mg/L	
			Sulphate (SO4)	2025/05/16	ND, RDL=1.0		mg/L	
9928165	VP2	RPD	Bromide (Br-)	2025/05/16	NC		%	20
9928230	MOA	Matrix Spike	Total Chromium (Cr)	2025/05/14		100	%	80 - 120
			Total Iron (Fe)	2025/05/14		107	%	80 - 120



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9928230	MOA	Spiked Blank	Total Chromium (Cr)	2025/05/14		99	%	80 - 120
			Total Iron (Fe)	2025/05/14		105	%	80 - 120
9928230	MOA	Method Blank	Total Chromium (Cr)	2025/05/14	ND, RDL=0.0010		mg/L	
			Total Iron (Fe)	2025/05/14	ND, RDL=0.050		mg/L	
9928230	MOA	RPD	Total Chromium (Cr)	2025/05/14	NC		%	20
			Total Iron (Fe)	2025/05/14	5.0		%	20
9928281	SSI	Matrix Spike [AQRX96-02]	Dissolved Organic Carbon (C)	2025/05/14		100	%	85 - 115
9928281	SSI	Spiked Blank	Dissolved Organic Carbon (C)	2025/05/14		99	%	80 - 120
9928281	SSI	Method Blank	Dissolved Organic Carbon (C)	2025/05/14	ND, RDL=0.50		mg/L	
9928281	SSI	RPD [AQRX96-02]	Dissolved Organic Carbon (C)	2025/05/14	1.1		%	15
9928367	JEP	Matrix Spike	Total Mercury (Hg)	2025/05/15		100	%	80 - 120
9928367	JEP	Spiked Blank	Total Mercury (Hg)	2025/05/15		100	%	80 - 120
9928367	JEP	Method Blank	Total Mercury (Hg)	2025/05/15	ND, RDL=0.000013		mg/L	
9928367	JEP	RPD	Total Mercury (Hg)	2025/05/15	NC		%	20
9929394	M2C	Spiked Blank	pH	2025/05/15		99	%	97 - 103
9929394	M2C	RPD	pH	2025/05/15	0.30		%	N/A
9929400	M2C	Spiked Blank	Conductivity	2025/05/15		99	%	80 - 120
9929400	M2C	Method Blank	Conductivity	2025/05/15	ND, RDL=1.0		uS/cm	
9929400	M2C	RPD	Conductivity	2025/05/15	1.0		%	10
9929402	M2C	Spiked Blank	Total Alkalinity (Total as CaCO3)	2025/05/15		95	%	80 - 120
9929402	M2C	Method Blank	Total Alkalinity (Total as CaCO3)	2025/05/15	ND, RDL=2.0		mg/L	
9929402	M2C	RPD	Total Alkalinity (Total as CaCO3)	2025/05/15	2.5		%	20
9929403	M2C	Matrix Spike	Dissolved Fluoride (F-)	2025/05/15		95	%	80 - 120
9929403	M2C	Spiked Blank	Dissolved Fluoride (F-)	2025/05/15		94	%	80 - 120
9929403	M2C	Method Blank	Dissolved Fluoride (F-)	2025/05/15	ND, RDL=0.10		mg/L	
9929403	M2C	RPD	Dissolved Fluoride (F-)	2025/05/15	NC		%	20
9929473	MCN	Matrix Spike	Nitrogen (Ammonia Nitrogen)	2025/05/16		93	%	80 - 120
9929473	MCN	Spiked Blank	Nitrogen (Ammonia Nitrogen)	2025/05/16		99	%	80 - 120
9929473	MCN	Method Blank	Nitrogen (Ammonia Nitrogen)	2025/05/16	ND, RDL=0.050		mg/L	
9929473	MCN	RPD	Nitrogen (Ammonia Nitrogen)	2025/05/16	NC		%	20
9930113	MTZ	Matrix Spike	Total Calcium (Ca)	2025/05/16		100	%	80 - 120
9930113	MTZ	Spiked Blank	Total Calcium (Ca)	2025/05/16		100	%	80 - 120
9930113	MTZ	Method Blank	Total Calcium (Ca)	2025/05/16	ND, RDL=0.10		mg/L	
9930113	MTZ	RPD	Total Calcium (Ca)	2025/05/16	2.5		%	20
9930386	M2C	QC Standard	Turbidity	2025/05/16		101	%	80 - 120
9930386	M2C	Spiked Blank	Turbidity	2025/05/16		103	%	80 - 120
9930386	M2C	Method Blank	Turbidity	2025/05/16	ND, RDL=0.10		NTU	
9930386	M2C	RPD	Turbidity	2025/05/16	4.1		%	20
9930413	MCN	Matrix Spike	Nitrite (N)	2025/05/20		96	%	80 - 120
9930413	MCN	Spiked Blank	Nitrite (N)	2025/05/20		96	%	80 - 120
9930413	MCN	Method Blank	Nitrite (N)	2025/05/20	ND, RDL=0.010		mg/L	



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9930413	MCN	RPD	Nitrite (N)	2025/05/20	NC		%	20
9930416	MCN	Matrix Spike	Nitrate + Nitrite (N)	2025/05/20		99	%	80 - 120
9930416	MCN	Spiked Blank	Nitrate + Nitrite (N)	2025/05/20		101	%	80 - 120
9930416	MCN	Method Blank	Nitrate + Nitrite (N)	2025/05/20	ND, RDL=0.050		mg/L	
9930416	MCN	RPD	Nitrate + Nitrite (N)	2025/05/20	NC		%	20
9930419	MCN	Spiked Blank	Colour	2025/05/20		120	%	80 - 120
9930419	MCN	Method Blank	Colour	2025/05/20	ND, RDL=5.0		TCU	
9930419	MCN	RPD	Colour	2025/05/20	6.6		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).



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VALIDATION SIGNATURE PAGE

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

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Cristina Carriere, Senior Scientific Specialist

Janah Rhyno, 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.



Your P.O. #: 224006869-5
Site#: HODGE RIVER@ PUMPHOUSE
Your C.O.C. #: N/A, 2025-1711-00-SI-SP

Attention: Robert Richard Harvey

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CANADA A1B 4J6

Report Date: 2025/07/18
Report #: R8578436
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C580391

Received: 2025/07/07, 09:28

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2025/07/15	ATL SOP 00142	SM 24 2320 B
Anions (1)	1	N/A	2025/07/09	CAM SOP-00435	SM 24 4110 B m
Colour	1	N/A	2025/07/14	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	1	N/A	2025/07/17	ATL SOP 00203	SM 24 5310B m
Conductance - water	1	N/A	2025/07/15	ATL SOP 00004	SM 24 2510B m
Fluoride	1	N/A	2025/07/15	ATL SOP 00043	SM 24 4500-F- C m
Hardness (calculated as CaCO3)	1	N/A	2025/07/10	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2025/07/14	2025/07/14	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2025/07/09	2025/07/09	ATL SOP 00058	EPA 6020B R2 m
Nitrogen Ammonia - water	1	N/A	2025/07/14	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2025/07/14	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2025/07/14	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2025/07/14	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2025/07/15	ATL SOP 00003	SM 24 4500-H+ B m
Calculated TDS (DW Pkg)	1	N/A	2025/07/16	N/A	Auto Calc
Total Kjeldahl Nitrogen - calculated	1	2025/07/07	2025/07/14	Auto Calc	Auto Calc
Nitrogen - Total	1	N/A	2025/07/14	ATL SOP-00208	ASTM D8083 m
Organic carbon - Total (TOC) (2)	1	N/A	2025/07/17	ATL SOP 00203	SM 24 5310B m
Total Phosphorus (Colourimetric) (1)	1	2025/07/10	2025/07/14	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	1	2025/07/09	2025/07/09	ATL SOP 00007	SM 24 2540D m
Turbidity	1	N/A	2025/07/18	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. #: 224006869-5
Site#: HODGE RIVER@ PUMPHOUSE
Your C.O.C. #: N/A, 2025-1711-00-SI-SP

Attention: Robert Richard Harvey

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

Report Date: 2025/07/18
Report #: R8578436
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C580391

Received: 2025/07/07, 09:28

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Alyson Lawrence, Project Manager
Email: alyson.lawrence@bureauveritas.com
Phone# (902)440-8951

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**BUREAU
VERITAS**

Bureau Veritas Job #: C580391
Report Date: 2025/07/18

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LB

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASRF40 HODGE RIVER@ PUMPHOUSE								
Sampling Date 2025/07/04 10:35								
Matrix W								
Sample # 2025-1711-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO ₃)	-	9.8	1.0	mg/L	N/A	2025/07/10		9964170
Total Kjeldahl Nitrogen (TKN)	-	0.17	0.10	mg/L	N/A	2025/07/14		9964338
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/07/14		9964173
Total dissolved solids (calc., EC)	-	42	1.0	mg/L	N/A	2025/07/16		9964337
Inorganics								
Conductivity	-	75	1.0	uS/cm	N/A	2025/07/15	M2C	9969776
Dup.Conductivity	-	75	1.0	uS/cm	N/A	2025/07/15	M2C	9969776
Chloride (Cl ⁻)	-	17	1.0	mg/L	N/A	2025/07/09	VP2	9965662
Bromide (Br ⁻)	-	ND	1.0	mg/L	N/A	2025/07/09	VP2	9965662
Sulphate (SO ₄)	-	1.4	1.0	mg/L	N/A	2025/07/09	VP2	9965662
Total Alkalinity (Total as CaCO ₃)	-	6.8	2.0	mg/L	N/A	2025/07/15	M2C	9969784
Dup.Total Alkalinity (Total as CaCO ₃)	-	6.7	2.0	mg/L	N/A	2025/07/15	M2C	9969784
Colour	-	33	5.0	TCU	N/A	2025/07/14	EMT	9967621
Dup.Colour	-	30	5.0	TCU	N/A	2025/07/14	EMT	9967621
Dissolved Fluoride (F ⁻)	-	ND	0.10	mg/L	N/A	2025/07/15	M2C	9969786
Dup.Dissolved Fluoride (F ⁻)	-	ND	0.10	mg/L	N/A	2025/07/15	M2C	9969786
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/14	EMT	9967683
Dup.Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/07/14	EMT	9967683
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/14	EMT	9967684
Dup.Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/07/14	EMT	9967684
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/07/14	MCN	9968834
Total Nitrogen (N)	-	0.17	0.10	mg/L	N/A	2025/07/14	S6S	9968143
Dissolved Organic Carbon (C)	-	4.7	0.50	mg/L	N/A	2025/07/17	S6S	9971542
Dup.Dissolved Organic Carbon (C)	-	4.7	0.50	mg/L	N/A	2025/07/17	S6S	9971542
Total Organic Carbon (C)	-	4.6	0.50	mg/L	N/A	2025/07/17	S6S	9971532
pH	-	6.97		pH	N/A	2025/07/15	M2C	9969772
Dup.pH	-	7.00		pH	N/A	2025/07/15	M2C	9969772
Total Phosphorus	-	0.006	0.004	mg/L	2025/07/10	2025/07/14	VKH	9967228
Total Suspended Solids	-	ND	1.0	mg/L	2025/07/09	2025/07/09	ISM	9966057
Turbidity	-	0.35	0.10	NTU	N/A	2025/07/18	KMC	9971751
Dup.Turbidity	-	0.38	0.10	NTU	N/A	2025/07/18	KMC	9971751
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/07/14	2025/07/14	JEP	9967879
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	-	0.025	0.0050	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Barium (Ba)	-	ND	0.0010	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Boron (B)	-	ND	0.050	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Calcium (Ca)	-	2.3	0.10	mg/L	2025/07/09	2025/07/09	MOA	9965821



**BUREAU
VERITAS**

Bureau Veritas Job #: C580391
Report Date: 2025/07/18

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LB

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
ASRF40 HODGE RIVER@ PUMPHOUSE								
Sampling Date 2025/07/04 10:35								
Matrix W								
Sample # 2025-1711-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Copper (Cu)	-	ND	0.00050	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Iron (Fe)	-	0.27	0.050	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Magnesium (Mg)	-	0.97	0.10	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Manganese (Mn)	-	0.021	0.0020	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Potassium (K)	-	0.31	0.10	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Sodium (Na)	-	11	0.10	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Strontium (Sr)	-	0.0090	0.0020	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Uranium (U)	-	ND	0.00010	mg/L	2025/07/09	2025/07/09	MOA	9965821
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/07/09	2025/07/09	MOA	9965821



BUREAU
VERITAS

Bureau Veritas Job #: C580391

Report Date: 2025/07/18

NL Department of Environment, Climate Change and

Municipalities

Your P.O. #: 224006869-5

Sampler Initials: LB

GENERAL COMMENTS

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

Package 1	14.3°C
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Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C580391
Report Date: 2025/07/18

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5
Sampler Initials: LB

VALIDATION SIGNATURE PAGE

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

Colleen Acker, B.Sc, Scientific Service Specialist

Cristina Carriere, Senior Scientific Specialist

Ernlie Publicover, Scientific Specialist

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Your P.O. #: 224006869-5
Site#: HODGE RIVER @ PUMPHOUSE
Your C.O.C. #: N/A, 2025-1720-00-SI-SP

Attention: Robert Richard Harvey

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

Report Date: 2025/09/12
Report #: R8611735
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C5A9197

Received: 2025/09/04, 09:54

Sample Matrix: Drinking Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2025/09/09	ATL SOP 00142	SM 24 2320 B
Anions (1)	1	N/A	2025/09/12	CAM SOP-00435	SM 24 4110 B m
Colour	1	N/A	2025/09/10	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	1	N/A	2025/09/09	ATL SOP 00203	SM 24 5310B m
Conductance - water	1	N/A	2025/09/09	ATL SOP 00004	SM 24 2510B m
Fluoride	1	N/A	2025/09/09	ATL SOP 00043	SM 24 4500-F- C m
Hardness (calculated as CaCO3)	1	N/A	2025/09/09	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2025/09/08	2025/09/08	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2025/09/08	2025/09/08	ATL SOP 00058	EPA 6020B R2 m
Nitrogen Ammonia - water	1	N/A	2025/09/08	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2025/09/10	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2025/09/10	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2025/09/11	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2025/09/09	ATL SOP 00003	SM 24 4500-H+ B m
Calculated TDS (DW Pkg)	1	N/A	2025/09/10	N/A	Auto Calc
Total Kjeldahl Nitrogen - calculated	1	2025/09/05	2025/09/11	Auto Calc	Auto Calc
Nitrogen - Total	1	N/A	2025/09/10	ATL SOP-00208	ASTM D8083 m
Organic carbon - Total (TOC) (2)	1	N/A	2025/09/09	ATL SOP 00203	SM 24 5310B m
Total Phosphorus (Colourimetric) (1)	1	2025/09/10	2025/09/10	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	1	2025/09/09	2025/09/10	ATL SOP 00007	SM 24 2540D m
Turbidity	1	N/A	2025/09/09	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. #: 224006869-5
Site#: HODGE RIVER @ PUMPHOUSE
Your C.O.C. #: N/A, 2025-1720-00-SI-SP

Attention: Robert Richard Harvey

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

Report Date: 2025/09/12
Report #: R8611735
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C5A9197

Received: 2025/09/04, 09:54

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Gemarie Balatico, Project Manager

Email: Gemarie.Balatico@bureauveritas.com

Phone# (905)817-5787

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**BUREAU
VERITAS**

Bureau Veritas Job #: C5A9197
Report Date: 2025/09/12

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
AUTL50 HODGE RIVER @ PUMPHOUSE								
Sampling Date 2025/09/03 10:26								
Matrix DR								
Sample # 2025-1720-00-SI-SP								
RESULTS OF ANALYSES OF DRINKING WATER								
Calculated Parameters								
Hardness (CaCO ₃)	-	11	1.0	mg/L	N/A	2025/09/09		A004121
Total Kjeldahl Nitrogen (TKN)	-	0.24	0.10	mg/L	N/A	2025/09/11		A004248
Nitrate (N)	-	ND	0.050	mg/L	N/A	2025/09/11		A004124
Total dissolved solids (calc., EC)	-	44	1.0	mg/L	N/A	2025/09/10		A004246
Inorganics								
Conductivity	-	79	1.0	uS/cm	N/A	2025/09/09	J1A	A006095
Chloride (Cl ⁻)	-	16	1.0	mg/L	N/A	2025/09/12	RSU	A008630
Bromide (Br ⁻)	-	ND	1.0	mg/L	N/A	2025/09/12	RSU	A008630
Sulphate (SO ₄)	-	1.1	1.0	mg/L	N/A	2025/09/12	RSU	A008630
Total Alkalinity (Total as CaCO ₃)	-	ND	2.0	mg/L	N/A	2025/09/09	J1A	A006096
Colour	-	31	5.0	TCU	N/A	2025/09/10	M2C	A006158
Dissolved Fluoride (F ⁻)	-	ND	0.10	mg/L	N/A	2025/09/09	J1A	A006097
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/09/10	EMT	A006860
Nitrite (N)	-	ND	0.010	mg/L	N/A	2025/09/10	EMT	A006861
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/09/08	MCN	A005576
Total Nitrogen (N)	-	0.24	0.10	mg/L	N/A	2025/09/10	S6S	A007093
Dissolved Organic Carbon (C)	-	4.8	0.50	mg/L	N/A	2025/09/09	S6S	A006222
Total Organic Carbon (C)	-	4.9	0.50	mg/L	N/A	2025/09/09	S6S	A006069
pH	-	7.14		pH	N/A	2025/09/09	J1A	A006089
Total Phosphorus	-	ND	0.004	mg/L	2025/09/10	2025/09/10	VKH	A006771
Total Suspended Solids	-	2.6	1.0	mg/L	2025/09/09	2025/09/10	RD4	A006431
Turbidity	-	0.57	0.10	NTU	N/A	2025/09/09	J1A	A005740
MERCURY BY COLD VAPOUR AA (DRINKING WATER)								
Metals								
Total Mercury (Hg)	-	ND	0.000013	mg/L	2025/09/08	2025/09/08	JEP	A004467
ELEMENTS BY ICP/MS (DRINKING WATER)								
Metals								
Total Aluminum (Al)	-	0.023	0.0050	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Antimony (Sb)	-	ND	0.0010	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Arsenic (As)	-	ND	0.0010	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Barium (Ba)	-	ND	0.0010	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Boron (B)	-	ND	0.050	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Cadmium (Cd)	-	ND	0.000010	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Calcium (Ca)	-	2.6	0.10	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Chromium (Cr)	-	ND	0.0010	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Copper (Cu)	-	ND	0.00050	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Iron (Fe)	-	0.43	0.050	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Lead (Pb)	-	ND	0.00050	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Magnesium (Mg)	-	1.1	0.10	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Manganese (Mn)	-	0.055	0.0020	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Potassium (K)	-	0.26	0.10	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Selenium (Se)	-	ND	0.00050	mg/L	2025/09/08	2025/09/08	MOA	A005231



BUREAU
VERITAS

Bureau Veritas Job #: C5A9197
Report Date: 2025/09/12

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5

Sample Details/Parameters	A	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
AUTL50 HODGE RIVER @ PUMPHOUSE								
Sampling Date 2025/09/03 10:26								
Matrix DR								
Sample # 2025-1720-00-SI-SP								
ELEMENTS BY ICP/MS (DRINKING WATER)								
Metals								
Total Sodium (Na)	-	10	0.10	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Strontium (Sr)	-	0.011	0.0020	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Uranium (U)	-	ND	0.00010	mg/L	2025/09/08	2025/09/08	MOA	A005231
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/09/08	2025/09/08	MOA	A005231



GENERAL COMMENTS

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

Package 1	9.8°C
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Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C5A9197

Report Date: 2025/09/12

NL Department of Environment, Climate Change and
Municipalities
Your P.O. #: 224006869-5

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 Certified by Ernlie Publicover, Scientific Specialist

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Your P.O. #: 224006869-8
Site Location: HODGE RIVER @ PUMPHOUSE
Your C.O.C. #: N/A, 2025-1728-00-SI-SP

Attention: Robert Richard Harvey

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

Report Date: 2025/12/12
Report #: R8668294
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C5F3256

Received: 2025/12/03, 10:30

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2025/12/08	ATL SOP 00142	SM 24 2320 B
Anions (1)	1	N/A	2025/12/12	CAM SOP-00435	SM 24 4110 B m
Colour	1	N/A	2025/12/09	ATL SOP 00020	SM 24 2120C m
Organic carbon - Diss (DOC)-Lab Filtered (2)	1	N/A	2025/12/10	ATL SOP 00203	SM 24 5310B m
Conductance - water	1	N/A	2025/12/08	ATL SOP 00004	SM 24 2510B m
Fluoride	1	N/A	2025/12/08	ATL SOP 00043	SM 24 4500-F- C m
Hardness (calculated as CaCO3)	1	N/A	2025/12/08	ATL SOP 00048	Auto Calc
Mercury - Total (CVAA,LL)	1	2025/12/10	2025/12/10	ATL SOP 00026	EPA 245.1 R3 m
Metals Water Total MS	1	2025/12/05	2025/12/05	ATL SOP 00058	EPA 6020B R2 m
Nitrogen Ammonia - water	1	N/A	2025/12/07	ATL SOP 00015	EPA 350.1 R2 m
Nitrogen - Nitrate + Nitrite	1	N/A	2025/12/10	ATL SOP 00016	USGS I-2547-11m
Nitrogen - Nitrite	1	N/A	2025/12/09	ATL SOP 00017	SM 24 4500-NO2- B m
Nitrogen - Nitrate (as N)	1	N/A	2025/12/10	ATL SOP 00018	ASTM D3867-16
pH (3)	1	N/A	2025/12/08	ATL SOP 00003	SM 24 4500-H+ B m
Calculated TDS (DW Pkg)	1	N/A	2025/12/09	N/A	Auto Calc
Total Kjeldahl Nitrogen - calculated	1	2025/12/04	2025/12/11	Auto Calc	Auto Calc
Nitrogen - Total	1	N/A	2025/12/09	ATL SOP-00208	ASTM D8083 m
Organic carbon - Total (TOC) (2)	1	N/A	2025/12/10	ATL SOP 00203	SM 24 5310B m
Total Phosphorus Low Level Colourimetric (1)	1	2025/12/09	2025/12/10	CAM SOP-00407	SM 24 4500-P I
Total Suspended Solids	1	2025/12/08	2025/12/09	ATL SOP 00007	SM 24 2540D m
Turbidity	1	N/A	2025/12/10	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.



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Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Gemarie Balatico, Project Manager
Email: Gemarie.Balatico@bureauveritas.com
Phone# (902)440-8951

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**BUREAU
VERITAS**

Bureau Veritas Job #: C5F3256

Report Date: 2025/12/12

NL Department of Environment, Climate Change and
Municipalities

Site Location: HODGE RIVER @ PUMPHOUSE

Your P.O. #: 224006869-8

Sampler Initials: LB

Sample Details/Parameters	MAC	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
AXZU48 HODGE RIVER @ PUMPHOUSE								
Sampling Date 2025/12/01 11:36								
Matrix W								
Sample # 2025-1728-00-SI-SP								
Registration # SA-0000								
RESULTS OF ANALYSES OF WATER								
Calculated Parameters								
Hardness (CaCO ₃)	-	8.6	1.0	mg/L	N/A	2025/12/08		A067174
Total Kjeldahl Nitrogen (TKN)	-	0.14	0.10	mg/L	N/A	2025/12/11		A067288
Nitrate (N)	10	ND	0.050	mg/L	N/A	2025/12/10		A067178
Total dissolved solids (calc., EC)	-	38	1.0	mg/L	N/A	2025/12/09		A067286
Inorganics								
Conductivity	-	69	1.0	uS/cm	N/A	2025/12/08	J1A	A069201
Chloride (Cl ⁻)	-	15	1.0	mg/L	N/A	2025/12/12	RSU	A070920
Bromide (Br ⁻)	-	ND	1.0	mg/L	N/A	2025/12/12	RSU	A070920
Sulphate (SO ₄)	-	2.9	1.0	mg/L	N/A	2025/12/12	RSU	A070920
Total Alkalinity (Total as CaCO ₃)	-	5.7	2.0	mg/L	N/A	2025/12/08	J1A	A069202
Colour	-	50	5.0	TCU	N/A	2025/12/09	M2C	A070061
Dissolved Fluoride (F ⁻)	1.5	ND	0.10	mg/L	N/A	2025/12/08	J1A	A069203
Nitrate + Nitrite (N)	-	ND	0.050	mg/L	N/A	2025/12/10	MCN	A070064
Nitrite (N)	1	ND	0.010	mg/L	N/A	2025/12/09	MCN	A070065
Nitrogen (Ammonia Nitrogen)	-	ND	0.050	mg/L	N/A	2025/12/07	KMC	A068967
Total Nitrogen (N)	-	0.14	0.10	mg/L	N/A	2025/12/09	S6S	A069282
Dissolved Organic Carbon (C)	-	6.6	0.50	mg/L	N/A	2025/12/10	S6S	A070094
Total Organic Carbon (C)	-	6.8	0.50	mg/L	N/A	2025/12/10	S6S	A070444
pH		6.75		pH	N/A	2025/12/08	J1A	A069199
Total Phosphorus	-	0.005	0.004	mg/L	2025/12/09	2025/12/10	VKH	A069700
Total Suspended Solids	-	ND	1.0	mg/L	2025/12/08	2025/12/09	RD4	A069072
Turbidity	-	0.67	0.10	NTU	N/A	2025/12/10	J1A	A070480
MERCURY BY COLD VAPOUR AA (WATER)								
Metals								
Total Mercury (Hg)	0.001	ND	0.000013	mg/L	2025/12/10	2025/12/10	JEP	A070417

MAC: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, December 2025

MAC= Maximum Acceptable Concentration (MAC) - established for substances that are known or suspected to cause adverse effects on health.

AO= Aesthetic Objectives (AO) - apply to characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for supplying good quality water.

If Screening Levels (SL) for gross alpha or gross beta are exceeded then concentration of the specific radionuclides of the CWQG should be analyzed.

Note 1 Turbidity guideline value of 0.3 NTU based on conventional treatment system. For slow sand or diatomaceous earth filtration 1.0 NTU and for membrane filtration 0.1 NTU.

Note 2 Aluminum guideline value of 0.1 mg/L is for treatment plants using aluminum-based coagulants, 0.2mg/L applies to other types of treatment systems.

December 2025 - updated PFAS guidelines



**BUREAU
VERITAS**

Bureau Veritas Job #: C5F3256

Report Date: 2025/12/12

NL Department of Environment, Climate Change and
Municipalities

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Sampler Initials: LB

Sample Details/Parameters	MAC	Result	RDL	UNITS	Extracted	Analyzed	By	Batch
AXZU48 HODGE RIVER @ PUMPHOUSE								
Sampling Date 2025/12/01 11:36								
Matrix W								
Sample # 2025-1728-00-SI-SP								
Registration # SA-0000								
ELEMENTS BY ICP/MS (WATER)								
Metals								
Total Aluminum (Al)	2.9	0.071	0.0050	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Antimony (Sb)	0.006	ND	0.0010	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Arsenic (As)	0.010	ND	0.0010	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Barium (Ba)	2.0	0.0011	0.0010	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Boron (B)	5	ND	0.050	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Cadmium (Cd)	0.007	ND	0.000010	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Calcium (Ca)	-	2.0	0.10	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Chromium (Cr)	0.05	ND	0.0010	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Copper (Cu)	2	ND	0.00050	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Iron (Fe)	-	0.15	0.050	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Lead (Pb)	0.005	ND	0.00050	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Magnesium (Mg)	-	0.87	0.10	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Manganese (Mn)	0.12	0.020	0.0020	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Nickel (Ni)	-	ND	0.0020	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Phosphorus (P)	-	ND	0.10	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Potassium (K)	-	0.29	0.10	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Selenium (Se)	0.05	ND	0.00050	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Sodium (Na)	-	9.3	0.10	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Strontium (Sr)	7.0	0.0075	0.0020	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Uranium (U)	0.02	ND	0.00010	mg/L	2025/12/05	2025/12/05	JHY	A067875
Total Zinc (Zn)	-	ND	0.0050	mg/L	2025/12/05	2025/12/05	JHY	A067875

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December 2025 - updated PFAS guidelines



GENERAL COMMENTS

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

Package 1	-2.7°C
Package 2	-1.4°C
Package 3	-1.7°C
Package 4	-2.7°C
Package 5	-2.4°C
Package 6	-1.7°C
Package 7	-4.1°C
Package 8	-3.7°C
Package 9	-4.4°C
Package 10	-2.7°C
Package 11	-4.4°C
Package 12	0.3°C

Results relate only to the items tested.



BUREAU
VERITAS

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Site Location: HODGE RIVER @ PUMPHOUSE

Your P.O. #: 224006869-8

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

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