



Real-Time Water Quality Deployment Report

Paddy's Pond at Outlet

August 24, 2023 to September 22, 2023



Government of Newfoundland & Labrador
Department of Environment and Climate Change
Water Resources Management Division
St. John's, NL, A1B 4J6 Canada

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General

The Department of Environment and Climate Change, Water Resources Management Division staff monitor water quality in real-time at Paddy's Pond at outlet to Three Arm Pond (47.488129N, 52.893809W).

Due to timing issues and communication failure, data transmission was lost on September 14, 2023, at 07:30 and continued log file issues were observed. As a result, no data collection, interpretation, or statistical analysis could be completed from September 14, 2023, to September 22, 2023.



Figure 1: Paddy's Pond at Outlet Real-Time Water Quality Station location

Maintenance and Calibration of Instrument

As part of the Quality Assurance and Quality Control protocol (QAQC), 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.

Upon deployment, a QA/QC Sonde is temporarily deployed *in situ*, adjacent to the Field Sonde. Depending on the degree of difference between each parameter from the Field and QA/QC sondes, a qualitative rank is assigned (See Table 1). The possible ranks, from most to least

desirable, are Excellent, Good, Fair, Marginal, and Poor. A grab sample is also taken for additional confirmation of conditions at deployment and to allow for future modelling studies.

Table 1: Ranking classifications for deployment and removal

| Parameter | Rank | | | | |
|---------------------------------|-----------|----------------|----------------|--------------|--------|
| | Excellent | Good | Fair | Marginal | Poor |
| Temperature (°C) | <=+/-0.2 | >+/-0.2 to 0.5 | >+/-0.5 to 0.8 | >+/-0.8 to 1 | <+/-1 |
| pH (unit) | <=+/-0.2 | >+/-0.2 to 0.5 | >+/-0.5 to 0.8 | >+/-0.8 to 1 | >+/-1 |
| Sp. Conductance (µS/cm) | <=+/-3 | >+/-3 to 10 | >+/-10 to 15 | >+/-15 to 20 | >+/-20 |
| Sp. Conductance > 35 µS/cm (%) | <=+/-3 | >+/-3 to 10 | >+/-10 to 15 | >+/-15 to 20 | >+/-20 |
| Dissolved Oxygen (mg/L) (% Sat) | <=+/-0.3 | >+/-0.3 to 0.5 | >+/-0.5 to 0.8 | >+/-0.8 to 1 | >+/-1 |
| Turbidity <40 NTU (NTU) | <=+/-2 | >+/-2 to 5 | >+/-5 to 8 | >+/-8 to 10 | >+/-10 |
| Turbidity > 40 NTU (%) | <=+/-5 | >+/-5 to 10 | >+/-10 to 15 | >+/-15 to 20 | >+/-20 |

At the end of a deployment period, a freshly cleaned and calibrated QA/QC Sonde is placed *in situ*, adjacent to the Field Sonde. Deployment and removal comparison rankings for the station at Paddy's Pond deployed from August 24, 2023, to September 22, 2023, are summarized in Table 2.

Table 2: Qualitative QA/QC comparison rankings for Paddy's Pond at outlet station August 24, 2023 through September 22, 2023.

| Station | Date | Action | Comparison Ranking | | | | |
|------------------------|------------|------------------------------------|--------------------|------|--------------|------------------|-----------|
| | | | Temperature | pH | Conductivity | Dissolved Oxygen | Turbidity |
| Paddy's Pond at Outlet | 2023-08-24 | Deployment | Good | Poor | Fair | Excellent | Excellent |
| | 2023-08-24 | Grab Sample #2023-1713-00-SI-SP | N/A | Fair | Marginal | N/A | Excellent |
| | 2023-09-22 | Removal | Good | Good | Good | Excellent | Excellent |

- On August 24, 2023, a real-time water quality monitoring instrument was deployed at the station Paddy's Pond at Outlet. The instrument was deployed for a period of 29 days and was removed on September 22, 2023, due to data transmission issues.
- Comparison rankings between the Quality Assurance/Quality Control (QAQC) instrument and the field instrument at Paddy's Pond outlet on August 24, 2023, reveal alignment in some parameters but discrepancies in others. Both instruments agree on temperature, dissolved oxygen, and turbidity, ranking them as 'Good' or 'Excellent', indicating accurate and reliable measurements. However, there are disparities in pH and conductivity rankings, with the field instrument showing a 'Poor' ranking for pH and a 'Fair' ranking for

conductivity. Given the 'Fair' comparison ranking for pH between grab sample (#2023-1713-00-SI-SP) and the field sonde, this indicates the likelihood that insufficient time to acclimate to existing water conditions was provided to the QAQC instrument. Grab sample comparison rankings were also provided for conductivity and turbidity as 'Marginal' and 'Excellent' respectively.

- At the time of removal, the field instrument ranked 'Excellent' for dissolved oxygen and turbidity, indicating consistent measurements, as well as 'Good' for temperature, pH and conductivity.

DATA INTERPRETATION

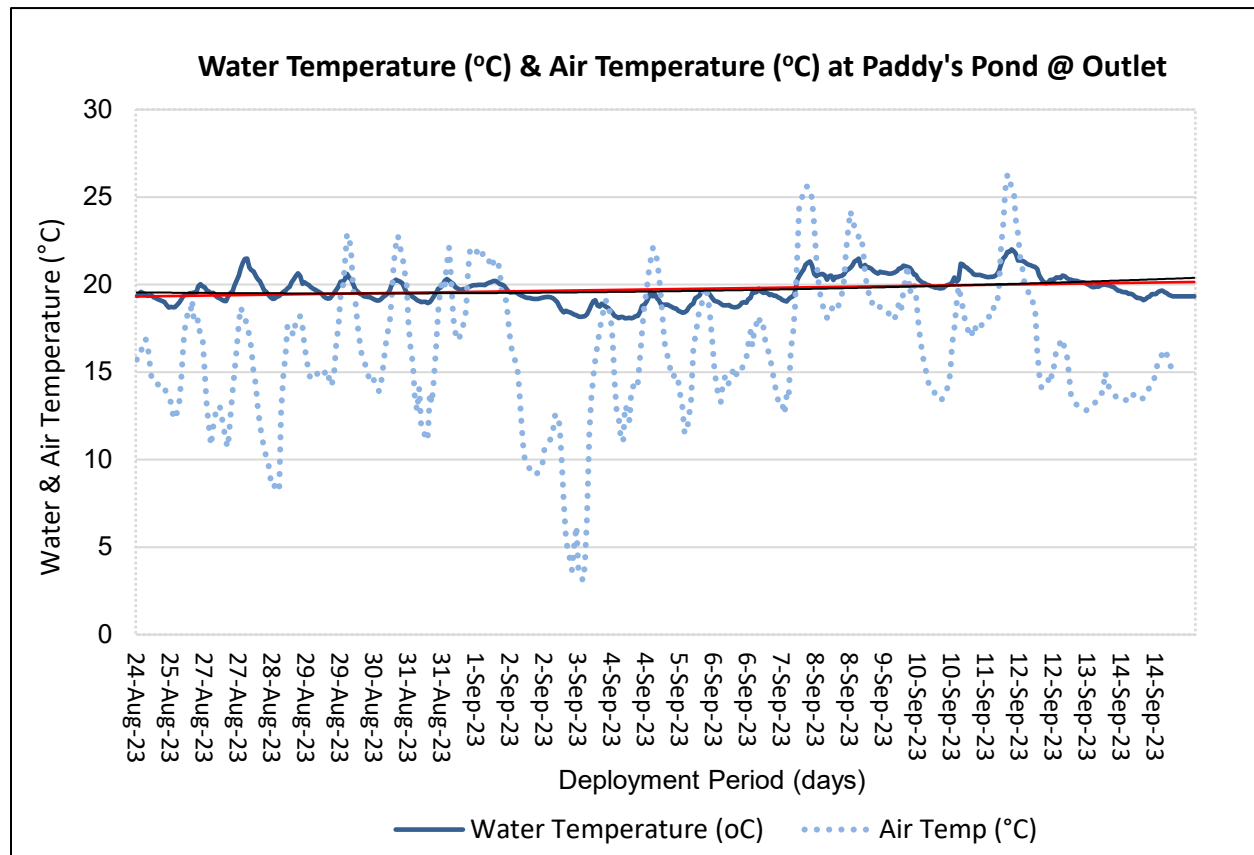
The following graphs and discussion illustrate water quality data obtained hourly from August 24, 2023, through September 14, 2023 at Paddy's Pond at outlet to Three Arm Pond, St. John's, NL. Data from September 14 to 22 is not available.

Stage is not monitored at this station to date and as such cannot be discussed with respect to other monitored water quality parameters. All data used in the preparation of the graphs and subsequent discussion adhere to this stringent QA/QC protocol.

Mean daily temperature and total precipitation data was obtained from the Department of Environment and Climate Change Canada (ECCC) historical weather data at https://climate.weather.gc.ca/historical_data/search_historic_data_e.html and can be found illustrated in Appendix A. Gaps in available daily data were removed for graphing purposes.

Water Temperature

- Water Temperature is a major factor used to describe water quality. Temperature has major implications on both the ecology and chemistry of a water body, governing processes such as the metabolic rate of aquatic plants and animals and the degree of dissolved oxygen saturation.
- It should be noted that the temperature sensor on any sonde is the most important. All other parameters can be broken down into three groups: temperature dependent, temperature compensated and temperature independent. As the temperature sensor is not isolated from the rest of the sonde, the entire sonde must be at the same temperature before the 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.



| Mean | Median | Min | Max |
|-------|--------|-------|-------|
| 19.73 | 19.60 | 18.07 | 22.01 |

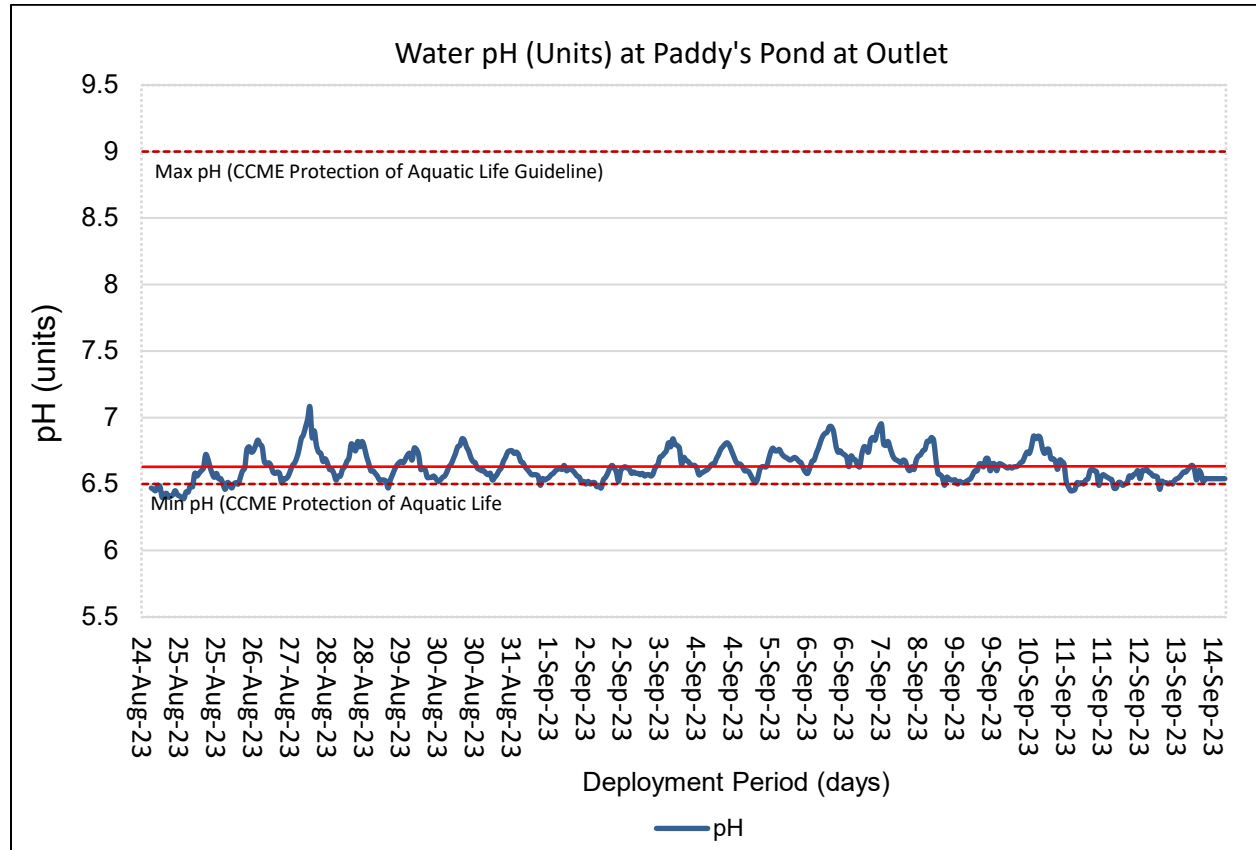
Figure 2: Water temperature (°C) values at Paddy's Pond at Outlet.

- Over the 29-day deployment period, water temperature fluctuated naturally in correlation to air temperature. The mean temperature was 19.73°C with a median of 19.60°C suggests that the majority of temperature readings cluster around this value.
- Minimum water temperature of 18.07°C was observed on September 3, 2023, and a maximum water temperature of 22.01°C was observed on September 10, 2023 (Figure 2).
- Water temperature remained stable during the deployment with a minimal increasing trend in correlation to summer air temperatures.
- A distinctive natural diurnal variation pattern in water temperature was observed. This pattern was characterized by significant fluctuations between daytime and nighttime temperatures, as expected during the summer season. Daytime temperatures typically rose due to solar radiation and warm air temperatures, while nighttime temperatures tended to decrease as heat dissipated into the atmosphere. These diurnal variations reflect the dynamic

interplay between solar heating, atmospheric conditions, and water body characteristics, contributing to the overall thermal dynamics of the aquatic environment.

pH

- pH is used to give an indication of the acidity or basicity of a solution. A pH of seven (7) denotes a neutral solution while lower values are acidic and higher values are basic. Technically, the pH of a solution indicates the availability of protons to react with molecules dissolved in water. Such reactions can affect how molecules function chemically and metabolically.
- pH values are temperature dependant as well as influenced by photosynthesis and respiration by aquatic organisms. The concentration of dissolved carbon dioxide in the water throughout the day, especially overnight when oxygen production is reduced relative to carbon dioxide levels. Carbon dioxide dissolved in water yields a slightly acidic solution.



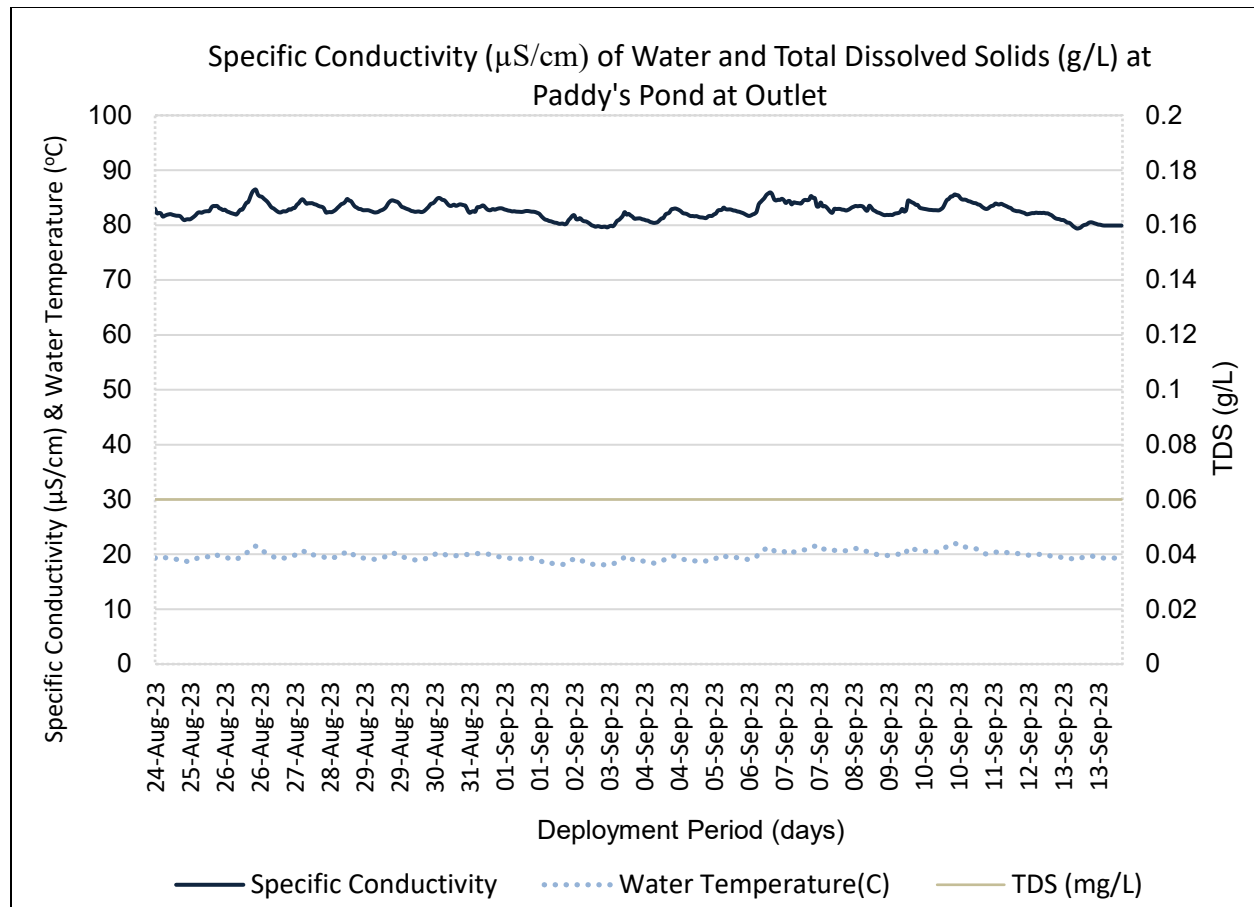
| Mean | Median | Min | Max |
|------|--------|------|------|
| 6.63 | 6.61 | 6.39 | 7.08 |

Figure 3: pH (pH units) at Paddy's Pond at outlet from August 24, 2023, through September 14, 2023.

- Throughout the deployment period, the pH value trend (shown in red) was uniform, however minimal variability within 6.39 to 7.08 pH units was observed during peak day-time pH levels. A mean unit value of 6.63 and median of 6.61 units (Figure 3) was determined through statistical analysis.
- Most pH values were near or above the CCME Protection of Aquatic Life minimum pH guideline of 6.5 units and below the maximum pH CCME Protection of Aquatic Life guideline (horizontal dashed lines). It must be noted that these are national guidelines and do not reflect the peculiarities of Newfoundland geology. This guideline provides a basis for the overall health of the waterbody. Paddy's Pond at Outlet pH values were slightly below the minimum guideline but historically typical for this waterbody. Other pH reducing influences include lower water temperatures and the addition of more acidic rainwater and/or snowmelt runoff during precipitation events. (See Figure 7 – Appendix A).
- Diurnal variation pattern was visible throughout the deployment period. The magnitude of variation correlates to daily water temperature range, length of days and fluctuations in photosynthesis and respiration rates. Inconsistencies to the diurnal variation pattern, as seen on August 31-September 2, 2023, September 9, 2023, and September 12-14, 2023, is likely the result of an increase in precipitation events as seen in Appendix A - Figure 7. The addition of cool precipitation can decrease water temperature, lowering the concentration of dissolved ions and specific conductivity.

Specific Conductivity

- Conductivity relates to the ease of passing an electric charge – or resistance – through a solution. Conductivity is highly influenced by the concentration of dissolved ions in solution: distilled water has zero conductivity (infinite resistance) while salty solutions have high conductivity (low resistance). Specific Conductivity is corrected to 25°C to allow comparison across variable temperatures.



| Mean | Median | Min | Max |
|------|--------|------|------|
| 28.6 | 82.6 | 79.4 | 86.4 |

Figure 4: Specific Conductivity (µS/cm) values at Paddy's Pond at Outlet.

- Conductivity remained stable during the deployment period, with a slight dip between September 1-6, 2023, and September 13, 2023, in correlation with a decrease in water temperature and precipitation events (Figure 7 in Appendix A).
- Inconsistencies to the diurnal variation pattern, as seen on August 31, 2023, September 7-8, 2023, and September 12, 2023, are likely the result of an increase in precipitation events as seen in Appendix A - Figure 7. The addition of cool precipitation can decrease water temperature, lowering the concentration of dissolved ions and specific conductivity.
- Given the isolated station location, sources of disturbances that may affect conductivity are considered minimal.
- The calculated Total Dissolved Solids (TDS) value was consistent at 0.0600 g/L throughout the deployment period.

Dissolved Oxygen

- Dissolved oxygen is a metabolic requirement of aquatic plants and animals. The concentration of oxygen in water depends on many factors, especially temperature – the saturation of oxygen in water is inversely proportional to water temperature. Oxygen concentrations also tend to be higher in flowing water compared to still, lake environments. Low oxygen concentrations can give an indication of excessive decomposition of organic matter or the presence of oxidizing materials.

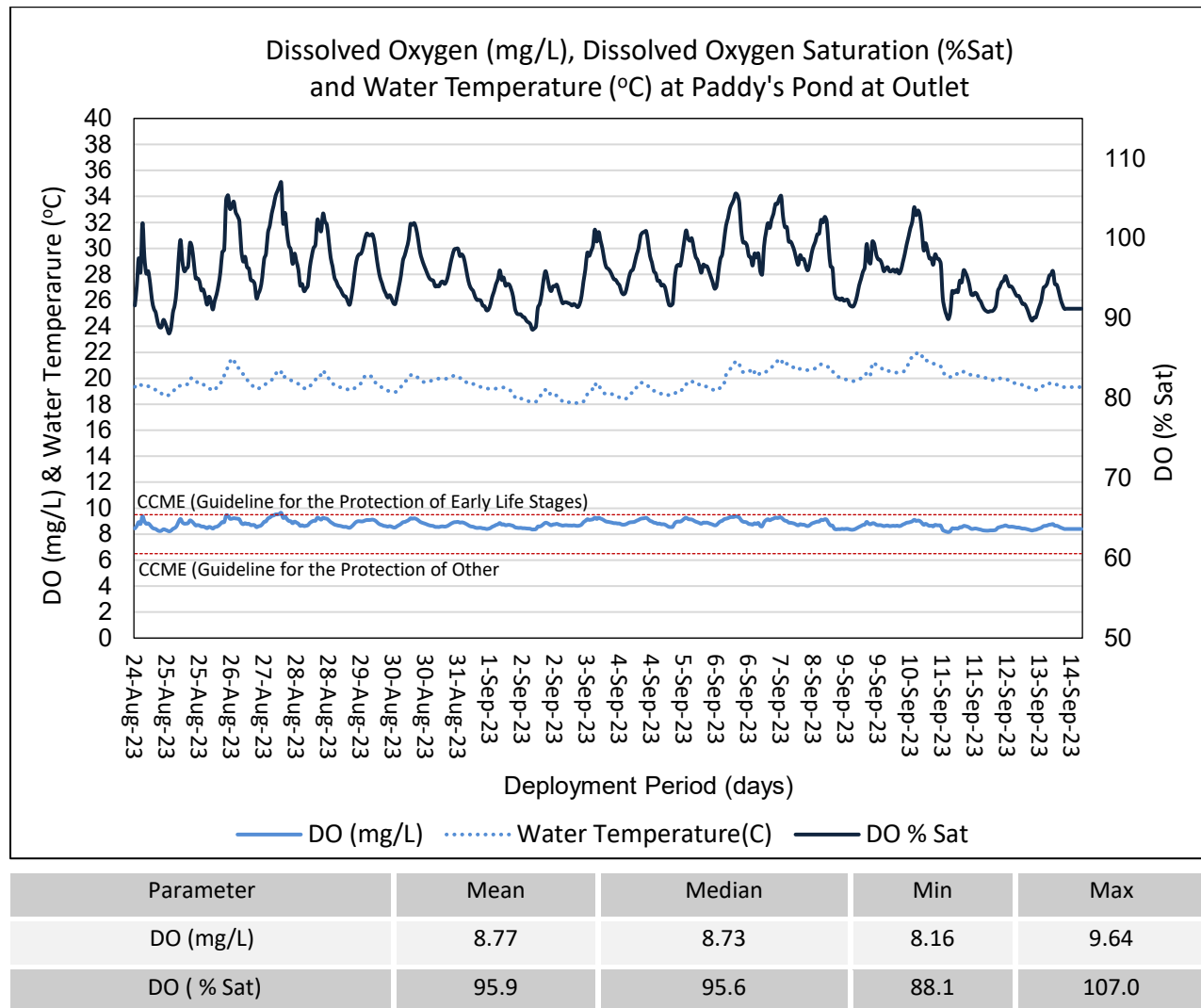


Figure 5: Dissolved Oxygen (mg/L & Percent (%) Saturation) values at Paddy's Pond at Outlet.

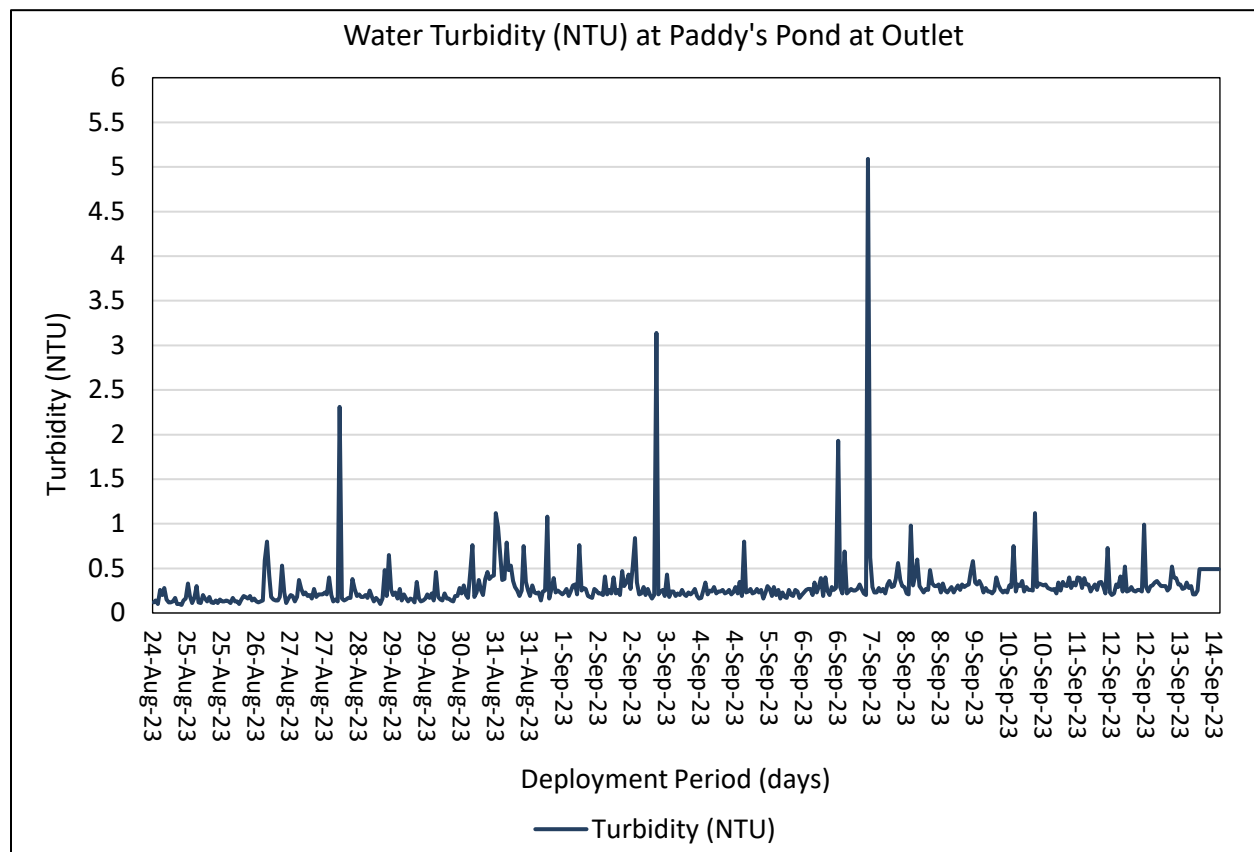
- In correlation with increasing water temperatures, dissolved oxygen (DO) concentrations (mg/L) had a uniform and stable trend throughout the 29-day deployment period. A maximum DO of 9.64 mg/L (107.0 %Sat) to a minimum DO of 8.16 mg/L (88.1 %Sat) were observed. Dissolved oxygen (% Saturation) readings of greater than 100% air saturation can

occur in ambient water because of the production of pure oxygen by photosynthetically-active organisms and/or because of non-ideal equilibration of dissolved oxygen between the water and the air above it.

- A consistent diurnal variation pattern was observed throughout the deployment period due to temperature ranges from day to night. Variations can be influenced by water depth during deployment as shallow water temperatures will change more rapidly, especially in a lake environment such as Paddy's Pond. As well as linked to the daily range of water temperature, duration of daylight, and fluctuations in rates of photosynthesis and respiration.
- The dissolved oxygen values were at and below the CCME Guideline for the Protection of Early Life Stages (9.5 mg/L) and remained above the CCME Guideline for the Protection of Other Life Stages (6.5mg/L) for the entire deployment period.

Turbidity

- Turbidity is typically caused by fine suspended solids such as silt, clay, or organic material. Consistently high levels of turbidity tend to block sunlight penetration into a waterbody, discouraging plant growth. High turbidity can also damage the delicate respiratory organs of aquatic animals and cover spawning areas.



| Mean | Median | Min | Max |
|------|--------|-----|-----|
| 0.3 | 0.3 | 0.1 | 5.1 |

Figure 6: Water turbidity (NTU) values at Paddy's Pond at Outlet during deployment period through August 24, 2023, to September 14, 2023.

- Turbidity values range from 0.1 to 5.1 NTU, with a mean of 0.3 NTU and a median value of 0.3 NTU (Figure 6).
- Turbidity measurements throughout the deployment period indicated very low turbidity. This is consistent with historical data for this location.
- Turbidity spikes above the baseline, as seen on September 7, 2023 (5.1 NTU), are likely the result of a precipitation events (Figure 7 – Appendix A).

APPENDIX A : MEAN DAILY TEMPERATURE AND TOTAL PRECIPITATION

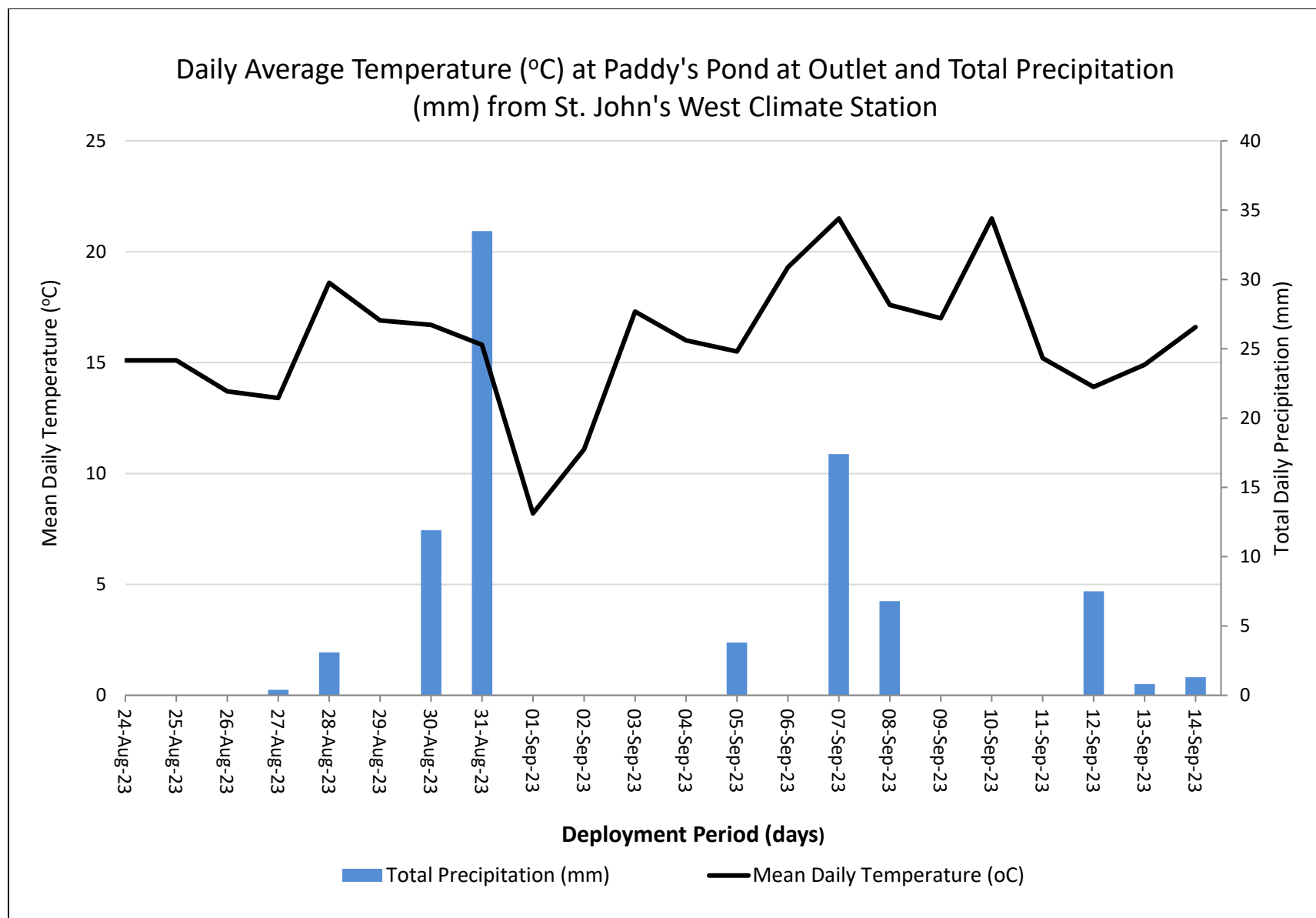


Figure 7: Mean daily air temperature and total precipitation at St. John's West near Paddy's Pond August 24, 2023 to September 14, 2023.

APPENDIX B : QA/QC GRAB SAMPLE FIELD RESULTS



Your P.O. #: 220028978-9
 Site Location: PADDY'S POND @ OUTLET
 Your C.O.C. #: n/a, 2023-1713-00-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: 2023/09/13
 Report #: R7809500
 Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3Q2868

Received: 2023/08/25, 10:01

Sample Matrix: Water
 # Samples Received: 1

| Analyses | Quantity | Date | | Laboratory Method | Analytical Method |
|--------------------------------------|----------|------------|------------|-------------------|---------------------|
| | | Extracted | Analyzed | | |
| Alkalinity | 1 | N/A | 2023/09/11 | ATL SOP 00142 | SM 24 2320 B |
| Anions (1) | 1 | N/A | 2023/09/05 | CAM SOP-00435 | SM 23 4110 B m |
| Colour | 1 | N/A | 2023/09/12 | ATL SOP 00020 | SM 24 2120C m |
| Organic carbon - Diss (DOC) (2) | 1 | N/A | 2023/09/09 | ATL SOP 00203 | SM 24 5310B m |
| Conductance - water | 1 | N/A | 2023/09/11 | ATL SOP 00004 | SM 24 2510B m |
| Fluoride | 1 | N/A | 2023/09/11 | ATL SOP 00043 | SM 24 4500-F- C m |
| Hardness (calculated as CaCO3) | 1 | N/A | 2023/09/12 | ATL SOP 00048 | Auto Calc |
| Mercury - Total (CVAA,LL) | 1 | 2023/09/08 | 2023/09/11 | ATL SOP 00026 | EPA 245.1 R3 m |
| Metals Water Total MS | 1 | 2023/09/05 | 2023/09/07 | ATL SOP 00058 | EPA 6020B R2 m |
| Nitrogen Ammonia - water | 1 | N/A | 2023/09/11 | ATL SOP 00015 | EPA 350.1 R2 m |
| Nitrogen - Nitrate + Nitrite | 1 | N/A | 2023/09/12 | ATL SOP 00016 | USGS I-2547-11m |
| Nitrogen - Nitrite | 1 | N/A | 2023/09/12 | ATL SOP 00017 | SM 24 4500-NO2- B m |
| Nitrogen - Nitrate (as N) | 1 | N/A | 2023/09/13 | ATL SOP 00018 | ASTM D3867-16 |
| pH (3) | 1 | N/A | 2023/09/11 | ATL SOP 00003 | SM 24 4500-H+ B m |
| Calculated TDS (DW Pkg) | 1 | N/A | 2023/09/12 | N/A | Auto Calc |
| Total Kjeldahl Nitrogen in Water (1) | 1 | 2023/09/01 | 2023/09/07 | CAM SOP-00938 | OMOE E3516 m |
| Organic carbon - Total (TOC) (2) | 1 | N/A | 2023/09/01 | ATL SOP 00203 | SM 24 5310B m |
| Total Phosphorus (Colourimetric) (1) | 1 | 2023/09/01 | 2023/09/05 | CAM SOP-00407 | SM 23 4500-P I |
| Total Suspended Solids | 1 | 2023/08/31 | 2023/09/01 | ATL SOP 00007 | SM 24 2540D m |
| Turbidity | 1 | N/A | 2023/09/08 | 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. #: 220028978-9
Site Location: PADDY'S POND @ OUTLET
Your C.O.C. #: n/a, 2023-1713-00-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: 2023/09/13
Report #: R7809500
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C3Q2868
Received: 2023/08/25, 10:01

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 #: C3Q2868
Report Date: 2023/09/13

NL Department of Environment, Climate Change and
Municipalities

Site Location: PADDY'S POND @ OUTLET

Your P.O. #: 220028978-9

Sampler Initials: LB

| Sample Details/Parameters | MAC | Result | RDL | UNITS | Extracted | Analyzed | By | Batch |
|--|-------|--------------------|----------|-------|------------|------------|-----|---------|
| WVC287 PADDY'S POND @ OUTLET | | | | | | | | |
| Sampling Date | | 2023/08/24 12:40 | | | | | | |
| Matrix | | W | | | | | | |
| Sample # | | 2023-1713-00-SI-SP | | | | | | |
| Registration # | | SA-0000 | | | | | | |
| RESULTS OF ANALYSES OF WATER | | | | | | | | |
| Calculated Parameters | | | | | | | | |
| Hardness (CaCO3) | - | 9.1 | 1.0 | mg/L | N/A | 2023/09/12 | | 8882777 |
| Nitrate (N) | 10 | 0.055 | 0.050 | mg/L | N/A | 2023/09/13 | | 8882780 |
| Total dissolved solids (calc., EC) | - | 55 | 1.0 | mg/L | N/A | 2023/09/12 | | 8882954 |
| Inorganics | | | | | | | | |
| Conductivity | - | 99 | 1.0 | uS/cm | N/A | 2023/09/11 | LJV | 8907514 |
| Chloride (Cl-) | - | 24 | 1.0 | mg/L | N/A | 2023/09/05 | LKH | 8890928 |
| Bromide (Br-) | - | ND | 1.0 | mg/L | N/A | 2023/09/05 | LKH | 8890928 |
| Sulphate (SO4) | - | 2.6 | 1.0 | mg/L | N/A | 2023/09/05 | LKH | 8890928 |
| Total Alkalinity (Total as CaCO3) | - | 5.1 | 2.0 | mg/L | N/A | 2023/09/11 | LJV | 8907515 |
| Colour | - | 16 | 5.0 | TCU | N/A | 2023/09/12 | MCN | 8911062 |
| Dissolved Fluoride (F-) | 1.5 | ND | 0.10 | mg/L | N/A | 2023/09/11 | LJV | 8907516 |
| Total Kjeldahl Nitrogen (TKN) | - | 0.19 | 0.10 | mg/L | 2023/09/01 | 2023/09/07 | KJP | 8893408 |
| Nitrate + Nitrite (N) | - | 0.055 | 0.050 | mg/L | N/A | 2023/09/12 | MCN | 8911058 |
| Nitrite (N) | 1 | ND | 0.010 | mg/L | N/A | 2023/09/12 | MCN | 8910190 |
| Nitrogen (Ammonia Nitrogen) | - | 0.058 | 0.050 | mg/L | N/A | 2023/09/11 | HGV | 8908169 |
| Dissolved Organic Carbon (C) | - | 3.9 | 0.50 | mg/L | N/A | 2023/09/09 | ACK | 8904541 |
| Total Organic Carbon (C) | - | 3.7 | 0.50 | mg/L | N/A | 2023/09/01 | ACK | 8891751 |
| pH | | 6.60 | | pH | N/A | 2023/09/11 | LJV | 8907513 |
| Total Phosphorus | - | 0.007 | 0.004 | mg/L | 2023/09/01 | 2023/09/05 | SPC | 8892341 |
| Total Suspended Solids | - | 3.6 | 2.0 | mg/L | 2023/08/31 | 2023/09/01 | ZZH | 8888790 |
| Turbidity | - | 0.62 | 0.10 | NTU | N/A | 2023/09/08 | LJV | 8903745 |
| MERCURY BY COLD VAPOUR AA (WATER) | | | | | | | | |
| Metals | | | | | | | | |
| Total Mercury (Hg) | 0.001 | ND | 0.000013 | mg/L | 2023/09/08 | 2023/09/11 | SGK | 8904082 |

MAC: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Septemeber 2022

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.

Malathion updated January 24, 2023



BUREAU
VERITAS

Bureau Veritas Job #: C3Q2868
Report Date: 2023/09/13

NL Department of Environment, Climate Change and
Municipalities

Site Location: PADDY'S POND @ OUTLET

Your P.O. #: 220028978-9

Sampler Initials: LB

| Sample Details/Parameters | MAC | Result | RDL | UNITS | Extracted | Analyzed | By | Batch |
|-----------------------------------|--------------|--------------------|----------|-------|------------|------------|-----|---------|
| WVC287 PADDY'S POND @ OUTLET | | | | | | | | |
| Sampling Date | | 2023/08/24 12:40 | | | | | | |
| Matrix | | W | | | | | | |
| Sample # | | 2023-1713-00-SI-SP | | | | | | |
| Registration # | | SA-0000 | | | | | | |
| ELEMENTS BY ICP/MS (WATER) | | | | | | | | |
| Metals | | | | | | | | |
| Total Aluminum (Al) | 2.9 | 0.083 | 0.0050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Antimony (Sb) | 0.006 | ND | 0.0010 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Arsenic (As) | 0.010 | ND | 0.0010 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Barium (Ba) | 2.0 | 0.0030 | 0.0010 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Boron (B) | 5 | ND | 0.050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Cadmium (Cd) | 0.007 | ND | 0.000010 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Calcium (Ca) | - | 2.5 | 0.10 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Chromium (Cr) | 0.05 | ND | 0.0010 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Copper (Cu) | 2 | 0.00060 | 0.00050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Iron (Fe) | - | 0.17 | 0.050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Lead (Pb) | 0.005 | ND | 0.00050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Magnesium (Mg) | - | 0.69 | 0.10 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Manganese (Mn) | 0.12 | 0.15(1) | 0.0020 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Nickel (Ni) | - | ND | 0.0020 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Phosphorus (P) | - | ND | 0.10 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Potassium (K) | - | 0.43 | 0.10 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Selenium (Se) | 0.05 | ND | 0.00050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Sodium (Na) | - | 13 | 0.10 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Strontium (Sr) | 7.0 | 0.0083 | 0.0020 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Uranium (U) | 0.02 | ND | 0.00010 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |
| Total Zinc (Zn) | - | ND | 0.0050 | mg/L | 2023/09/05 | 2023/09/07 | MTZ | 8895869 |

(1) POTENTIAL EXCEEDANCE FOR PARAMETER

MAC: Guideline - Summary of Guidelines for Canadian Drinking Water Quality (SGCDWQ), Health Canada, Septemeber 2022

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.

Malathion updated January 24, 2023



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Bureau Veritas Job #: C3Q2868
Report Date: 2023/09/13

NL Department of Environment, Climate Change and
Municipalities
Site Location: PADDY'S POND @ OUTLET
Your P.O. #: 220028978-9
Sampler Initials: LB

GENERAL COMMENTS

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

| | |
|-----------|--------|
| Package 1 | 18.0°C |
|-----------|--------|

Results relate only to the items tested.



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VALIDATION SIGNATURE PAGE

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

Anastasiya Hamanov, Scientific Specialist

Colleen Acker, B.Sc, Scientific Service Specialist

Janah Rhyno, Scientific Specialist

Mike MacGillivray, Scientific Specialist (Inorganics)

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