# Nutimik Lake Public Water System
# PWS 155.00

## Public Water System Annual Report

## 2021

**Public Water System Annual Report**
**-2021-**

Name of the Public Water System: **Nutimik Lake**
Name of the Legal Owner: **Manitoba Conservation and Climate**
Contact Person: **Stewart McDermid**
Phone: **(204) 345-3987**
Fax: **(204) 369-5341**
Email: **stewart.mcdermid@gov.mb.ca**
Website:
Name of Operators: **Stewart McDermid, Operator in Charge**
**Water Treatment Class II Water Distribution Class II Wastewater Treatment Class II Wastewater Collection Class II**
Phone during business hours: **(204) 369-3153**
Emergency number: **Stewart McDermid (204) 340-1819 -or- (204) 345-3987 -or- (204) 369-3153:**
**Sean Nedohin: (204)369-3156**
Date prepared: **January 20, 2022**
Prepared By: **Stewart McDermid Water and Wastewater Operator.**

**Table of Contents**

**Introduction:**
The 2021 Public Water System Annual Report summarizes the ability of the Nutimik Lake Water Treatment Plant to produce and provide safe potable water. The Nutimik Lake Public Water System Operates from mid May to the thanksgiving long weekend (mid October) dependant on weather conditions for start up and shut down.

**1. Description of the Water System**

**1.1 Water Supply Source**

The Nutimik Lake Water Treatment Plant Public Water System provides water to a population of approximately 1000 residents. Treated water from the water treatment plant does not meet all health and aesthetic objectives as stated in the *Guidelines for Canadian Drinking Water Quality* as well as all provincial regulations. The Nutimik Lake Water Treatment Plant draws its supply water from groundwater wells in close location to the facility. The Water Treatment Plant wells are approximately 50 feet deep. The water is then pumped into the Water Treatment Plant situated on the banks of the Nutimik Lake.

**1.2 Water Treatment Processes**

Treated water from the water treatment plant does not meet all health and aesthetic objectives as stated in the *Guidelines for Canadian Drinking Water Quality* as well as all provincial regulations. The water exceeds the maximum acceptable concentration (MAC) for manganese and the aesthetic objective for iron. Water is pumped from the two wells into the water treatment plant. Chlorine is injected into the water and it is held in a series of reservoirs to meet the required contact time for primary disinfection. There is three 1250 Gallon retention tanks, for a total volume of 3750 gallons of treated water.

**1.3 Water Treatment and Distribution Capacities**

We treat approximately 2722 us gallons daily on average. Our plant has a maximum treatment capacity of 30 litres per minute. Treated water is sent into the distribution system via two 3hp distribution pumps. Distribution system pressure is maintained at between 55-60psi using frequency drive pumps and a pressure relief system.

**1.4 Distribution System**

The distribution system consists of 65 water connections. With an average day demand of 2722 us gallons. Two 3hp distribution pumps deliver water to the distribution system. Distribution system pressure is maintained at between 55-60psi using frequency drive pumps and a pressure relief system. Service Connections include a bulk fill station located north of the nutimik maintenance yard. Other service connections include the nutimik maintenance shop and adjacent bunk houses and cooking facilities. New Nutimik campground takes up the bulk of service connections which include, six modern washrooms, shower building, campground office and numerous taps for pail filling throughout the campground. Old nutimik campground has one modern washroom, Blueberry campground also has one modern washroom.

### 1.5 System Classification and Certification

A Class 1 Water Treatment Facility
A Class 1 Water Distribution System
A Class 1 Wastewater Collection System
A Class 1 Wastewater Treatment Facility

These facilities have been classified under The Environment Act's Water and Wastewater Facility Operators Regulation.

## 2. Disinfection System in Use

The Nutimik Lake Water Treatment Plant uses liquid chlorine as our disinfection method. Disinfection is the selective destruction or inactivation of potential disease-causing organisms in water. As per the *Drinking Water Safety Act,* the Nutimik lake Public Water System must ensure that we maintain a free disinfectant residual of at least 0.5 mg of free chlorine per litre of water is detectable at the point where water enters the distribution system, after a minimum contact time of 20 minutes and 0.1 mg of free chlorine per litre of water is detectable at all times at any point in the distribution network.

### 2.1 Type of Disinfection System Used

The Nutimik Lake Water Treatment Plant disinfects using liquid chlorine in a 12% concentration. Chlorine is added to the system using a Chlorine pump. Liquid is pumped from a brine tank.

### 2.2 Need for Redundancy and Monitoring

The "Drinking Water and Safety Act" requires that disinfection is continuously maintained. To ensure this we use modern reliable chlorine pumps, As well spare chlorinators are kept in stock as well as a supply of spare chlorine and some spare parts, which are more prone to failure or need replacing. Disinfectant total and free residuals are checked and recorded daily at the water treatment plant and bi-weekly at points throughout the distribution system. Results are recorded on the appropriate monitoring forms and are sent to the regional Drinking Water Officer at the end of each month.

### 2.3 Disinfectant Residual Overall Performance and Results

For the year 2021 The Nutimik Lake Public Water System has met almost all of the regulatory requirements for treated water and for distributed water.

## 3. List of Water Quality Standards

The Province of Manitoba has adopted a number of water quality standards from the *Guidelines for Canadian Drinking Water Quality,* developed by Health Canada. The parameters are health-based

and they express the maximum acceptable concentrations for drinking water. Concentration values in excess of the standards constitute a possible health-related issue and require corrective actions. The 2021 results for the Nutimik Lake Public Water System are summarized in the following tables:

3.1 Disinfection Monitoring and Reporting

| **Regulatory Requirement** | | **Nutimik Lake Water System Performance** |
|---|---|---|
| Free Chlorine Residual entering the Distribution System | >0.5 mg/L | Fully meets requirements |
| Frequency of Testing | Daily | Fully meets requirements |
| Free Chlorine Residual in the Distribution System | >0.1 mg/L | Fully meets requirements |
| Frequency of Testing | Bi-Weekly | Fully meets requirements |
| Report Submissions | Monthly | Month of October was late being received. |

3.2 Bacteriological Monitoring and Reporting

| **Regulatory Requirement** | | **Nutimik Lake Water System Performance** |
|---|---|---|
| Number of Raw/Incoming Water Samples | 13 | 5 out of 6 months fully compliant |
| Number of Treated Water Samples | 13 | 5 out of 6 months fully compliant |
| Number of Distribution Water Samples | 13 | 5 out of 6 months fully compliant |
| Frequency of Testing | Bi-weekly | 5 out of 6 months fully compliant |

| | | |
|---|---|---|
| Total Coliform (TC) Present in Water Samples | 0 TC per 100mL | Fully meets requirements |
| E. Coli (EC) Present in Water Samples | 0 EC per 100mL | Fully meets requirements |

**4. Chemistry Results**

| | | |
|---|---|---|
| Chemistry Sampling Frequency | 2021 | Fully meets requirements |
| Chemistry Standards | 2021 | Nutimik public water system exceeds the Maximum allowable concentration of manganese in drinking water which is Less than or equal to 0.12 mg/L |

**5. Water System Alterations, Incidents and Corrective Actions, non compliance issues.**

| |
|---|
| **Date: May 2022** |
| **Incident:** Failure to submit bacteriological samples at the frequency specified in your operating licence |
| **Date: October 2022** |
| **Incident:** Failure to submit monthly monitoring reports in accordance with the operating licence |

*Note failure to submit bacteriological samples at the frequency specified or the required number of samples, results in additional non-compliance with other terms and conditions of the operating licence. This includes the applicable bacteriological standards, disinfection standard and monitoring requirements, and other requirements applicable to the location of the missed sample.

**5.1 Water Hook-Ups**

During 2021 there were no new hook-ups to our water system.

**6. Drinking Water Safety Orders on Water System and Corrective Actions Taken**

On August 10, 2021, a Drinking Water Quality Advisory came into effect on our water system. The level of manganese present in the water does not fall in to the approved maximum allowable concentration of drinking water standards in Canada. Plans are in early stages to put in necessary equipment and proper permitting to be done to install the needed infrastructure to remove the manganese from the drinking water. . Recent changes from health Canada regarding the maximum allowable concentration of manganese in drinking water has changed putting the nutimik lake public water system on a drinking water advisory due to higher levels of manganese in the water.

Guidelines for Canadian Drinking Water Quality Health Canada established a health-based maximum acceptable concentration (MAC) for manganese and lowered the aesthetic objective (AO) for manganese in 2019. The MAC for total manganese in drinking water is 0.12 mg/L (120 ug/L) for water entering and within the distribution system and at the consumer's tap. The MAC was established based on studies that suggest an association between manganese in drinking water and neurological effects in children. The AO was lowered to 0.02 mg/L (20 µg/L) for treated water entering the distribution system. Manganese in drinking water is often related to discoloured water complaints. The AO of 0.02 mg/L is intended to prevent build up in the distribution system, minimize discoloured water complaints and improve consumer confidence in drinking water. For more information please click the following link. https://www.gov.mb.ca/sd/pubs/water/drinking_water/manganese.pdf

**7. Boil Water Advisories Issued on Water System and Corrective Actions Taken**

No boil water Advisories where issued in 2021

**8. Warnings Issued or Charges Laid on Water System in Accordance with The Drinking Water Safety Act**

None.

**9. Major Expenses Incurred in 2021**

No Major expenses incurred 2021

**10. Anticipated Future Major Cost Items, System Expansion and/or Increased Production**

As stated previously in this report, the Nutimik Lake Water Treatment Plant is in need of an upgrade to ensure all health and aesthetic objectives as stated in the *Guidelines for Canadian Drinking Water Quality* and provincial regulations are met. Greensand filtration is one of the best options to successfully remove iron and manganese. In addition of properly sized filters also comes the need for wastewater treatment of the backwash water these type of filters produce. A holding tank for winter operation will be installed as well as a sewer line connecting to existing lift station with back flow prevention for summer time operation of disposal of the waste. All this work is to be done by a licensed engineering and construction company to be decided.

Manitoba
Environment, Climate and Parks

February 1, 2022

## 2021 Annual Compliance Audit

| | |
|---|---|
| **Water System:**<br>NUTIMIK LAKE CAMPGROUND - PWS | **Code:**<br>155.00 |
| **Water System Owner:**<br>Conservation and Climate | **Address:**<br>Box 50 - 200 Saulteaux Crescent, Winnipeg, MB R3J 3W3 |
| **Operating Licence:**<br>PWS-09-317-02 A | **Expiry Date:**<br>November 30, 2021 |
| **Water System Assessment Due Date:**<br>September 1, 2026 | |
| **Public Water System Annual Report Due Date:**<br>March 31, 2022 | **Advisory Notification Plan Due Date:**<br>May 1, 2022 |

1) This report documents compliance of the Nutimik Lake Campground Public Water System for the period from May 13 to October 12, 2021.

2) This report provides specific information on the non-compliance incidents identified in the summary below.

3) Other than the information provided in this report, the water supplier has complied with The Drinking Water Safety Act, its supporting regulations, and the terms and conditions of the water system's current operating licence.

4) This report is based on information submitted by the water supplier, agents of the water supplier, and / or the Province of Manitoba.

5) Where non-compliance items are identified, the issues do not necessarily translate into increased public health risk. The Office of Drinking Water uses processes, including boil water advisories, to notify water users of a public health risk.

# Non-compliance with Treatment Standards:

| Standard | Location of Standard Non-compliance | Non-compliance Type |
|---|---|---|
| Manganese | Treated | No Treatment Barrier |
| Manganese | Distribution | No Treatment Barrier |

## Non-compliance Incidents:

| Date | Incident | Outcome |
|---|---|---|
| May | Failure to submit bacteriological samples at the frequency specified in your operating licence | Non-compliant |
| October | Failure to submit monthly monitoring reports in accordance with the operating licence | Non-compliant |

*Note failure to submit bacteriological samples at the frequency specified or the required number of samples, results in additional non-compliance with other terms and conditions of the operating licence. This includes the applicable bacteriological standards, disinfection standard and monitoring requirements, and other requirements applicable to the location of the missed sample.

If you have any questions, please do not hesitate to contact me at (204) 371-3885.

Sincerely,

Shannon Ganter
Regional Drinking Water Officer

## Physical Tests (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID | L2470739-1 | L2470739-2 |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 | 06-JUL-20 |
| | | | | Sampled Time | 12:50 | 12:50 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW | LAKE NUTIMIK CAMPGROUND 2 - TREATED |
| Colour, True | CU | 15 | - | | 23.7 | 18.5 |
| Conductivity | umhos/cm | - | - | | 869 | 830 |
| Hardness (as CaCO3) | mg/L | - | - | | 529 HTC | 477 HTC |
| Langelier Index (4 C) | No Unit | - | - | | 0.88 | 0.88 |
| Langelier Index (60 C) | No Unit | - | - | | 1.6 | 1.6 |
| pH | pH units | 7.00-10.5 | - | | 7.93 | 7.97 |
| Total Dissolved Solids | mg/L | 500 | - | | 535 | 499 |
| Transmittance, UV (254 nm) | %T/cm | - | - | | 82.0 | 85.9 |
| Turbidity | NTU | - | - | | 25.0 | 4.20 |

**Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

## Anions and Nutrients (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID | L2470739-1 | L2470739-2 |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 | 06-JUL-20 |
| | | | | Sampled Time | 12:50 | 12:50 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW | LAKE NUTIMIK CAMPGROUND 2 - TREATED |
| Alkalinity, Total (as CaCO3) | mg/L | - | - | | 499 | 462 |
| Ammonia, Total (as N) | mg/L | - | - | | 0.106 | <0.010 |
| Bicarbonate (HCO3) | mg/L | - | - | | 609 | 563 |
| Bromide (Br) | mg/L | - | - | | 0.070 | 0.011 |
| Carbonate (CO3) | mg/L | - | - | | <0.60 | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | | 13.0 | 22.8 |
| Fluoride (F) | mg/L | - | 1.5 | | 1.05 | 1.02 |
| Hydroxide (OH) | mg/L | - | - | | <0.34 | <0.34 |
| Iodide (I) | mg/L | - | - | | <0.20 | <0.20 |
| Nitrate (as N) | mg/L | - | 10 | | <0.0050 | <0.0050 |
| Nitrite (as N) | mg/L | - | 1 | | <0.0010 | <0.0010 |
| Total Kjeldahl Nitrogen | mg/L | - | - | | <0.20 | <0.20 |
| Total Nitrogen | mg/L | - | - | | <0.20 | <0.20 |
| Sulfate (SO4) | mg/L | 500 | - | | 27.8 | 24.3 |
| Anion Sum | me/L | - | - | | 11.0 | 10.4 |
| Cation Sum | me/L | - | - | | 11.3 | 10.3 |
| Cation - Anion Balance | % | - | - | | 1.5 | -0.4 |

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Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Organic / Inorganic Carbon (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2470739-1<br>Sampled Date: 06-JUL-20<br>Sampled Time: 12:50<br>Sample ID: LAKE NUTIMIK CAMPGROUND 1 - RAW | ALS ID: L2470739-2<br>Sampled Date: 06-JUL-20<br>Sampled Time: 12:50<br>Sample ID: LAKE NUTIMIK CAMPGROUND 2 - TREATED |
|---|---|---|---|---|---|
| Dissolved Organic Carbon | mg/L | - | - | 6.08 | 6.09 |
| Total Inorganic Carbon | mg/L | - | - | 91.3 | 86.5 |
| Total Organic Carbon | mg/L | - | - | 5.59 | 5.08 |

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**Total Metals (WATER)**

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2470739-1<br>Sampled Date: 06-JUL-20<br>Sampled Time: 12:50<br>Sample ID: LAKE NUTIMIK CAMPGROUND 1 - RAW | ALS ID: L2470739-2<br>Sampled Date: 06-JUL-20<br>Sampled Time: 12:50<br>Sample ID: LAKE NUTIMIK CAMPGROUND 2 - TREATED | ALS ID: L2470739-3<br>Sampled Date: 06-JUL-20<br>Sampled Time: 12:50<br>Sample ID: LAKE NUTIMIK CAMPGROUND 3 - DISTRIBUTION |
|---|---|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | - | <0.0030 | <0.0030 | <0.0030 |
| Antimony (Sb)-Total | mg/L | - | 0.006 | <0.00010 | <0.00010 | <0.00010 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00129 | 0.00134 | 0.00069 |
| Barium (Ba)-Total | mg/L | - | 2 | 0.0665 | 0.0638 | 0.0625 |
| Beryllium (Be)-Total | mg/L | - | - | <0.00010 | <0.00010 | <0.00010 |
| Bismuth (Bi)-Total | mg/L | - | - | <0.000050 | <0.000050 | <0.000050 |
| Boron (B)-Total | mg/L | - | 5 | 0.049 | 0.045 | 0.042 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | <0.0000050 | <0.0000050 | 0.0000155 |
| Calcium (Ca)-Total | mg/L | - | - | 100 | 96.2 | 92.6 |
| Cesium (Cs)-Total | mg/L | - | - | 0.000015 | 0.000018 | 0.000017 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | <0.00010 | <0.00010 | <0.00010 |
| Cobalt (Co)-Total | mg/L | - | - | <0.00010 | 0.00028 | 0.00010 |
| Copper (Cu)-Total | mg/L | 1 | 2 | 0.00188 | 0.0307 | 0.0102 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 1.74 | 2.02 | 0.891 |
| Lead (Pb)-Total | mg/L | - | 0.005 | 0.000088 | 0.000429 | 0.000309 |
| Lithium (Li)-Total | mg/L | - | - | 0.0446 | 0.0402 | 0.0385 |
| Magnesium (Mg)-Total | mg/L | - | - | 67.8 | 57.5 | 54.3 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.412 | 0.362 | 0.0778 |
| Molybdenum (Mo)-Total | mg/L | - | - | 0.00532 | 0.00526 | 0.00494 |
| Nickel (Ni)-Total | mg/L | - | - | <0.00050 | 0.00099 | <0.00050 |
| Phosphorus (P)-Total | mg/L | - | - | <0.050 | <0.050 | <0.030 |
| Potassium (K)-Total | mg/L | - | - | 4.53 | 4.19 | 4.15 |
| Rubidium (Rb)-Total | mg/L | - | - | 0.00369 | 0.00389 | 0.00428 |
| Selenium (Se)-Total | mg/L | - | 0.05 | 0.000070 | 0.000068 | 0.000078 |
| Silicon (Si)-Total | mg/L | - | - | 9.38 | 10.4 | 11.4 |
| Silver (Ag)-Total | mg/L | - | - | <0.000010 | 0.000198 | <0.000010 |
| Sodium (Na)-Total | mg/L | 200 | - | 14.2 | 16.0 | 15.9 |
| Strontium (Sr)-Total | mg/L | - | 7 | 0.336 | 0.313 | 0.306 |
| Sulfur (S)-Total | mg/L | - | - | | | 8.74 |
| Tellurium (Te)-Total | mg/L | - | - | <0.00020 | <0.00020 | <0.00020 |
| Thallium (Tl)-Total | mg/L | - | - | <0.000010 | <0.000010 | <0.000010 |
| Thorium (Th)-Total | mg/L | - | - | <0.00010 | <0.00010 | <0.00010 |
| Tin (Sn)-Total | mg/L | - | - | <0.00010 | <0.00010 | <0.00010 |

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# ANALYTICAL REPORT

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID / Sampled Date / Sampled Time / Sample ID: L2470739-1 / 06-JUL-20 / 12:50 / LAKE NUTIMIK CAMPGROUND 1 - RAW | L2470739-2 / 06-JUL-20 / 12:50 / LAKE NUTIMIK CAMPGROUND 2 - TREATED | L2470739-3 / 06-JUL-20 / 12:50 / LAKE NUTIMIK CAMPGROUND 3 - DISTRIBUTION |
|---|---|---|---|---|---|---|
| Titanium (Ti)-Total | mg/L | - | - | 0.00097 | 0.00064 | <0.00030 |
| Tungsten (W)-Total | mg/L | - | - | <0.00010 | <0.00010 | <0.00010 |
| Uranium (U)-Total | mg/L | - | 0.02 | 0.0184 | 0.0154 | 0.0129 |
| Vanadium (V)-Total | mg/L | - | - | 0.00056 | 0.00066 | <0.00050 |
| Zinc (Zn)-Total | mg/L | 5 | - | 0.0075 | 0.0077 | 0.0304 |
| Zirconium (Zr)-Total | mg/L | - | - | 0.00063 | 0.00059 | 0.00022 |

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## Physical Tests (WATER)

| | | | | ALS ID | L2470730-1 | |
|---|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 | |
| | | | | Sampled Time | 13:00 | |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW WELL 2 | |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | | |
| Colour, True | CU | 15 | - | | 8.2 | |
| Conductivity | umhos/cm | - | - | | 710 | |
| Hardness (as CaCO3) | mg/L | - | - | | 415 | HTC |
| Langelier Index (4 C) | No Unit | - | - | | 0.74 | |
| Langelier Index (60 C) | No Unit | - | - | | 1.5 | |
| pH | pH units | 7.00-10.5 | - | | 7.94 | |
| Total Dissolved Solids | mg/L | 500 | - | | 411 | |
| Transmittance, UV (254 nm) | %T/cm | - | - | | 87.7 | |
| Turbidity | NTU | - | - | | 15.9 | |

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## Anions and Nutrients (WATER)

| | | | | ALS ID | L2470730-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 |
| | | | | Sampled Time | 13:00 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW WELL 2 |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Alkalinity, Total (as CaCO3) | mg/L | - | - | | 378 |
| Ammonia, Total (as N) | mg/L | - | - | | 0.038 |
| Bicarbonate (HCO3) | mg/L | - | - | | 461 |
| Bromide (Br) | mg/L | - | - | | 0.093 |
| Carbonate (CO3) | mg/L | - | - | | <0.60 |
| Chloride (Cl) | mg/L | 250 | - | | 28.8 |
| Fluoride (F) | mg/L | - | 1.5 | | 1.01 |
| Hydroxide (OH) | mg/L | - | - | | <0.34 |
| Iodide (I) | mg/L | - | - | | <0.20 |
| Nitrate (as N) | mg/L | - | 10 | | <0.0050 |
| Nitrite (as N) | mg/L | - | 1 | | <0.0010 |
| Total Kjeldahl Nitrogen | mg/L | - | - | | <0.20 |
| Total Nitrogen | mg/L | - | - | | <0.20 |
| Sulfate (SO4) | mg/L | 500 | - | | 17.8 |
| Anion Sum | me/L | - | - | | 8.79 |
| Cation Sum | me/L | - | - | | 8.87 |
| Cation - Anion Balance | % | - | - | | 0.4 |

**Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)**
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## Organic / Inorganic Carbon (WATER)

| | | | | ALS ID | L2470730-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 |
| | | | | Sampled Time | 13:00 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW WELL 2 |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Dissolved Organic Carbon | mg/L | - | - | | 4.57 |
| Total Inorganic Carbon | mg/L | - | - | | 73.1 |
| Total Organic Carbon | mg/L | - | - | | 3.97 |

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# ANALYTICAL REPORT

## Total Metals (WATER)

| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | ALS ID: L2470730-1<br>Sampled Date: 06-JUL-20<br>Sampled Time: 13:00<br>Sample ID: LAKE NUTIMIK CAMPGROUND 1 - RAW WELL 2 |
|---|---|---|---|---|
| Aluminum (Al)-Total | mg/L | 0.1 | - | <0.0030 |
| Antimony (Sb)-Total | mg/L | - | 0.006 | <0.00010 |
| Arsenic (As)-Total | mg/L | - | 0.01 | 0.00112 |
| Barium (Ba)-Total | mg/L | - | 2 | 0.0607 |
| Beryllium (Be)-Total | mg/L | - | - | <0.00010 |
| Bismuth (Bi)-Total | mg/L | - | - | <0.000050 |
| Boron (B)-Total | mg/L | - | 5 | 0.041 |
| Cadmium (Cd)-Total | mg/L | - | 0.005 | <0.0000050 |
| Calcium (Ca)-Total | mg/L | - | - | 87.6 |
| Cesium (Cs)-Total | mg/L | - | - | 0.000022 |
| Chromium (Cr)-Total | mg/L | - | 0.05 | <0.00010 |
| Cobalt (Co)-Total | mg/L | - | - | 0.00082 |
| Copper (Cu)-Total | mg/L | 1 | 2 | <0.00050 |
| Iron (Fe)-Total | mg/L | 0.3 | - | 1.28 |
| Lead (Pb)-Total | mg/L | - | 0.005 | <0.000050 |
| Lithium (Li)-Total | mg/L | - | - | 0.0329 |
| Magnesium (Mg)-Total | mg/L | - | - | 47.7 |
| Manganese (Mn)-Total | mg/L | 0.02 | 0.12 | 0.234 |
| Molybdenum (Mo)-Total | mg/L | - | - | 0.00535 |
| Nickel (Ni)-Total | mg/L | - | - | 0.00169 |
| Phosphorus (P)-Total | mg/L | - | - | <0.050 |
| Potassium (K)-Total | mg/L | - | - | 3.67 |
| Rubidium (Rb)-Total | mg/L | - | - | 0.00470 |
| Selenium (Se)-Total | mg/L | - | 0.05 | <0.000050 |
| Silicon (Si)-Total | mg/L | - | - | 10.7 |
| Silver (Ag)-Total | mg/L | - | - | <0.000010 |
| Sodium (Na)-Total | mg/L | 200 | - | 10.9 |
| Strontium (Sr)-Total | mg/L | - | 7 | 0.249 |
| Tellurium (Te)-Total | mg/L | - | - | <0.00020 |
| Thallium (Tl)-Total | mg/L | - | - | <0.000010 |
| Thorium (Th)-Total | mg/L | - | - | <0.00010 |
| Tin (Sn)-Total | mg/L | - | - | <0.00010 |
| Titanium (Ti)-Total | mg/L | - | - | 0.00039 |

**Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)**
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

## Total Metals (WATER)

| | | | | ALS ID | L2470730-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 |
| | | | | Sampled Time | 13:00 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW WELL 2 |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Tungsten (W)-Total | mg/L | - | - | | <0.00010 |
| Uranium (U)-Total | mg/L | - | 0.02 | | 0.00979 |
| Vanadium (V)-Total | mg/L | - | - | | 0.00051 |
| Zinc (Zn)-Total | mg/L | 5 | - | | 0.0033 |
| Zirconium (Zr)-Total | mg/L | - | - | | 0.00030 |

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## Volatile Organic Compounds (WATER)

| | | | | ALS ID | L2470730-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 |
| | | | | Sampled Time | 13:00 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 - RAW WELL 2 |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Benzene | mg/L | - | 0.005 | | <0.00050 |
| 1,1-dichloroethene | mg/L | - | 0.014 | | <0.00050 |
| Dichloromethane | mg/L | - | 0.05 | | <0.0050 |
| Ethylbenzene | mg/L | 0.0016 | 0.14 | | <0.00050 |
| MTBE | mg/L | 0.015 | - | | <0.00050 |
| 1,1,1,2-Tetrachloroethane | mg/L | - | - | | <0.00050 |
| 1,1,2,2-Tetrachloroethane | mg/L | - | - | | <0.00050 |
| Tetrachloroethene | mg/L | - | 0.01 | | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | | <0.00050 |
| 1,1,1-Trichloroethane | mg/L | - | - | | <0.00050 |
| 1,1,2-Trichloroethane | mg/L | - | - | | <0.00050 |
| Trichloroethene | mg/L | - | 0.005 | | <0.00050 |
| o-Xylene | mg/L | - | - | | <0.00050 |
| M+P-Xylenes | mg/L | - | - | | <0.00040 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | | <0.00064 |

**Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)**
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## Volatile Organic Compounds (WATER)

| | | | | ALS ID | L2470735-1 |
|---|---|---|---|---|---|
| | | | | Sampled Date | 06-JUL-20 |
| | | | | Sampled Time | 13:00 |
| | | | | Sample ID | LAKE NUTIMIK CAMPGROUND 1 -RAW |
| Analyte | Unit | Guide Limit #1 | Guide Limit #2 | | |
| Benzene | mg/L | - | 0.005 | | <0.00050 |
| 1,1-dichloroethene | mg/L | - | 0.014 | | <0.00050 |
| Dichloromethane | mg/L | - | 0.05 | | <0.0050 |
| Ethylbenzene | mg/L | 0.0016 | 0.14 | | <0.00050 |
| MTBE | mg/L | 0.015 | - | | <0.00050 |
| 1,1,1,2-Tetrachloroethane | mg/L | - | - | | <0.00050 |
| 1,1,2,2-Tetrachloroethane | mg/L | - | - | | <0.00050 |
| Tetrachloroethene | mg/L | - | 0.01 | | <0.00050 |
| Toluene | mg/L | 0.024 | 0.06 | | <0.00050 |
| 1,1,1-Trichloroethane | mg/L | - | - | | <0.00050 |
| 1,1,2-Trichloroethane | mg/L | - | - | | <0.00050 |
| Trichloroethene | mg/L | - | 0.005 | | <0.00050 |
| o-Xylene | mg/L | - | - | | <0.00050 |
| M+P-Xylenes | mg/L | - | - | | <0.00040 |
| Xylenes (Total) | mg/L | 0.02 | 0.09 | | <0.00064 |

**Federal Guidelines for Canadian Drinking Water Quality (JAN, 2020)**
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