

March 3, 2022

NOTICE OF REGULAR MEETING

To: Mayor and Council

The Regular Meeting of Council will be held **electronically** at 7 p.m. on Tuesday March 8<sup>th</sup>, 2022.

If you are unable to be in attendance it is greatly appreciated that you notify the undersigned in advance.

Thank you.

Best regards;

Aleysha Blake  
Administrative Assistant

CORPORATION OF THE MUNICIPALITY OF CALVIN

**AGENDA**  
**REGULAR COUNCIL MEETING**  
**Tuesday March 8<sup>th</sup>, 2022 at 7:00 p.m.**  
**ELECTRONICALLY**

**1. CALL TO ORDER**

**Appointment of Clerk Pro Tempore**

**2. WRITTEN DISCLOSURE OF PECUNIARY/CONFLICT OF INTEREST**

**3. PETITIONS AND DELEGATIONS**

Joanna Baxter – Calvin Women’s Association – Presentation  
Jerry Knox – Presentation

**4. REPORTS FROM MUNICIPAL OFFICERS**

Dean Maxwell, Fire Chief  
Jacob Grove, Landfill and Recreation Manager  
Shane Conrad, Chief Building Official – Written Report ONLY

**5. REPORTS FROM COMMITTEES**

None

**6. ACTION LETTERS**

A) Minutes of Special Council Meeting

Adopt Minutes of Thursday, February 17, 2022

B) Municipality of Calvin – Recreation Dept

Resolution to Declare Two (2) Cistern Tanks Surplus

C) Municipality of Calvin – Administration

Resolution to Direct Staff to Amend the Fees and Charges By-Law

D) By-Law #2022-021

To Appoint An Interim Deputy Treasurer

E) By-Law #2022-022

To Appoint An Interim Deputy Clerk

**7. INFORMATION LETTERS**

A) Town of Gravenhurst

Dissolution of the Ontario Land Tribunal

B) Office of MPP Kinga Surma

Ontario Eliminating Licence Plate Renewal Fees Stickers (sic)

C) Town of Aurora

Letter to Premier Request to Dissolve OLT

D) The Corporation of the County of Prince Edward

“Renovictions” and other bad faith evictions

E) Township of Alwicks/Haldimand

Proclamation – Year of the Garden

F) The Federation of Northern Ontario Municipalities

2022 FONOM Conference

- |    |   |   |
|----|---|---|
| G) | Municipality of East Ferris               | North Bay French River Algonquins                                   |
| H) | North Bay-Mattawa Conservation Authority  | Calvin Attendance Letter  |
| I) | Town of Bracebridge                       | Hospital Capital Funding  |
| J) | The Corporation of the Town of Kingsville | Letter Dissolution of the Ontario Land Tribunal                     |
| K) | City of Markham                           | Resolution – Dissolve OLT   |
| L) | Town of South Bruce Peninsula             | Municipal Accommodation Tax   |
| M) | Near North Crime Stoppers                 | Thank you; Letter   |
| N) | West Lincoln                              | Letter to Premier of Ontario – Dissolution of Ontario Land Tribunal |
| O) | Town of Aurora                            | Request to Dissolve Ontario Land Tribunal (OLT)                     |
| P) | Town of Collingwood                       | Termination of Membership in the OMWA                               |

**8. INFORMATION LETTERS AVAILABLE** None

~~9. OLD AND NEW BUSINESS~~

~~10. ACCOUNTS APPROVAL REPORT~~

**11. CLOSED PORTION** As per Section 239 (2)(b) personal matters about an identifiable individual, including a municipal or local board employee; (2)(d) labour relations or employee negotiations 2(e) litigation or potential litigation and 2(f) advice that is subject to solicitor-client privilege  
 1) Municipal Administrator Position,  
 2) Employee Performance;  
 3) Stewarts Road; and  
 4) Form of Guarantee from IO for Cassellholme Redevelopment Project

**12. BUSINESS ARISING FROM CLOSED SESSION**

**13. NOTICE OF MOTION**

**14. NEW - CONFIRMATORY BY-LAW**

By-Law #2022-020 - Confirmatory By-Law

**15. ADJOURNMENT**



# Corporation of the Municipality of Calvin Council Resolution

**Date:** March 8, 2022

**Resolution Number:** [Click or tap here to enter text.](#)

**Moved By:** [Choose a name.](#)

**Seconded By:** [Choose a name.](#)

**NOW THEREFORE BE IT RESOLVED THAT:**

“Council for the Corporation of the Municipality of Calvin hereby appoint Aleysha Blake as Clerk Pro Tempore for the purpose of this Regular Council meeting of March 8, 2022. ”

**Result** [Options.](#)

**Recorded Vote:**

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Mayor Pennell	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Brooker	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Castelijn	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Cross	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Shippam	<input type="checkbox"/>	<input type="checkbox"/>



## MUNICIPALITY OF CALVIN

1355 Peddlers Dr, Mattawa, ON P0H 1V0

Tel: 705-744-2700

Fax: 705-744-0309

clerk@calvintownship.ca

### Delegation Request Form

Due to the COVID-19 pandemic, upcoming Council and Committee meetings will be held using electronic video conference.

To speak at our electronic Council meeting, you must complete this form. Upon receipt of this form, the Clerk will confirm your delegation and provide instructions on how to participate in the electronic video conference.

Council meetings are held the second & fourth Tuesday of each month at 7 pm. The requests to appear before Council must be received in writing by the Clerk NO LATER than 12:00 noon of the THURSDAY immediately preceding the scheduled Council meeting. Only one spokesperson per organization shall speak on behalf of the group at the delegation to Council.

Name & Organization: Joanna Baxter - Calvin Womens Association

Address: 512 Mount Pleasant Rd

Email Address: jebaxter512@gmail.com

Contact Telephone: 905-536-1195

Date of Meeting you are requesting for the delegation: March 8

Please state the purpose of the delegation: (Please attach Presentation if one will be given to Council)

The CWA would like to present to council a proposed idea of an outdoor pavilion over the ice rink, a concrete pad under the rink and revamped change and wash rooms.

We have attached a few pictures for inspiration but understand an ad hoc committee and financial feasibility will affect the finished project.

The Calvin Womens Association is asking permission to fundraise for this project and hopefully with government grants and community input we can make this happen











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Name & Organization: Jerry Knox

Address: 262 McLaren Drive; Rutherglen

Email Address: jerryknox9@gmail.com

Contact Telephone: 705-476-4459

Date of Meeting you are requesting for the delegation: Tuesday March 8

**Please state the purpose of the delegation: (Please attach Presentation if one will be given to Council)**

A group of property owners on Lake Talon are petitioning Bonfield Township that the operation of Short Term Rentals/Airbnb are not permitting under their existing Zoning by-law and to enforce the by-law on operations of this nature.

In an effort to be proactive, I have sent a couple letters to both Calvin and Bonfield Townships with respect to these operations. It is my understanding Council has requested that these operations be addressed in the Zoning By-law and once addressed a policy will be developed. I would like the opportunity to make a presentation on this topic at your March 8 Council meeting. A copy of my presentation will be provided in advance.

Thank You

February 16, 2022

Bonfield Township Mayor and Council c/o Deputy Clerk

Copy: Calvin Township Mayor and Council c/o Clerk-Treasurer

Paul Preston

**Re: Water Front Residential Vacation Property Rentals (Airbnb)**

Dear Mayor and Councillors:

It is my understanding the issue of Water Front Residential Property Rentals is an agenda item on the February 2022 Council meeting. As I am unable to attend this meeting, I submit this letter requesting Council to firmly deny and not permit the ongoing operation of these types of businesses within the designated Zones surrounding Lake Talon.

Although our property, 262 McLaren Drive – Lake Talon, is within the Township of Calvin, the adjacent property is within Bonfield and therefore any decision of the Township of Bonfield will impact us and others within Calvin. In a June 22, 2021 letter, I wrote to both Bonfield and Calvin Townships requesting the operation of these businesses be addressed.

It is my understanding Bonfield Township has not taken a firm stance to deny the operation of these businesses because the Zoning By-law does not specifically address them.

As noted in my June 22 letter, Airbnb's, and similar home/cottage rental operations are relatively new to the area. Under these businesses, property owners market homes/cottages for nightly or weekly, and possibly longer-term rental. These types of rental businesses are becoming more popular in our area particularly in relation to Lake Front properties. Under these circumstances, property owners rent their property, with possibly other amenities to customers for payment. These operations usually see different users renting the property on a nightly, weekly or monthly basis. The owners often hire a management firm to market and provide general housekeeping and maintenance services. In any case, these operations usually see an ongoing turnover of clients enjoying the property and can often cause conflicts with neighbouring properties and can be considered an "Obnoxious Use" of the property as described in both Calvin's and Bonfield's zoning by-law

Recognizing how these Rental properties are actually operating, there are a number of definitions within the existing By-law to determine if they are permitted within a specific zone. I would submit these businesses would fit within one or more of the following By-law definitions:

TOURIST ESTABLISHMENT means an establishment that provides sleeping accommodation, with or without meals, including a guest-house, tourist cabins, a motel, a motor court, an auto court, a hotel and all buildings operating.

TOURIST HOME means a dwelling unit excluding a hotel, motel or cabin, in which rooms or lodging are provided for hire or pay and being comprised of not more than four units.

TOURIST HOME means a dwelling unit excluding a hotel, motel or cabin, in which rooms or lodging are provided for hire or pay and being comprised of not more than four units.

MOTEL means an establishment that provides sleeping accommodation with or without supplying cooking facilities, food or other refreshments, including a motor court and auto court.

My submission today, is the Zoning By-law is intended to guide Council and the Community on what and how land can be used within specific zones and if some use is not specifically defined, then Council has the responsibility to determine how the property is actually being used and apply the intent and spirit of the by-law in determining if a specific use is permitted or not.

I further submit, the intent and provisions of the existing By-law does not permit the operation of Vacation Property Rentals, Airbnb and such, in the designated Zones Uses surrounding Lake Talon and ask Council to enforce this.

Respectfully Submitted

Jerry Knox

262 McLaren Drive

March 8, 2022  
Calvin Township Council Meeting

Presenter: Jerry Knox  
262 McLaren Drive (Lake Talon)  
705-476-4459  
[Jerryknox9@gmail.com](mailto:Jerryknox9@gmail.com)

**Topic: Short-term Rentals**

## Short-term Rentals:

- Residential properties/accommodations being rented on a daily, weekly or monthly basis.
- Often advertised through companies such as Airbnb and Vrbo.
- Different occupants, often with multiple users (i.e. 22 people in 2021 – Lake Talon)
- Catering to tourists and vacationers.
- Seem to have evolved from larger urban areas.
- Increasingly becoming more popular/common in rural and vacation areas of the province. (influenced by real estate prices as well as TV shows.)
- Unregulated and now many municipalities are trying to find ways to prohibit or control.
- Frequently owned by absentee owners, from out of community, using individuals or property management companies to maintain and operate.
- Essentially these Short Term Rentals are unregulated Commercial Businesses operating in Residential areas.

## Lake Talon:

- Numerous properties currently promoted as Short-term rentals (some in Calvin Township)
- 2021 New owners of property in Bonfield, represented to neighbours they were moving to area. Within a few weeks property being advertised through Airbnb and has had multiple different users since.
- Has created conflict and disputes between neighbours.
- Good Neighbour Association has been formed, seeking to prohibit such commercial uses in residential areas.
- 2021 sent letter to both Calvin and Bonfield.

# Impact of Short-term Rentals

- Commercial Business operating in residential areas.
- Properties not intended or designed for such use.
- Unregulated.
- Creates potential conflicts with neighbourhood.
- Obnoxious use.
- Arguably provides tourist dollars to region; however users often bring own supplies.
- Real benefit to owners and not community.
- Potential environmental impact (septic, fire controls)

## Current Calvin Township Zoning By-law

- Short-term rentals are not specifically defined or discussed.
- Arguably, one could seek to fit such operations within the definition of Bed & Breakfast, Motel, Camp, or Tourist Establishment. (arguably)
- Understand Council has asked staff to address Short-term Rentals in the Zoning By-law and to develop a policy.
- My submission is these are Commercial/recreational Operations and should not be permitted in residential areas.



## Request of Council

- Recognize these as commercial/recreational uses.
- Limit these operations in zones that permit commercial/recreational operations.
- Require Short-term rentals to be registered and licensed.
- Specifically prohibit Short-term rentals in residential areas.

Thank you!!



MUNICIPALITY OF CALVIN FIRE DEPARTMENT MONTHLY  
REPORT



PROTECTING CALVIN SINCE 1976

Report Date: Feb, 2022

Originator: Dean Maxwell/ Fire Chief

Responded alarm

Feb/15/22/11:29 MVC on Bronson LK RD.

Meeting night/Training

Feb/3/22/Meeting night: Review hose lay/Pack hose on Engine 1

Feb/10/22/Meeting night: Driver training/review firefighter 1 Training

Feb17/22/Meeting night: Review call/Review BA breathing techniques. (Rene)

Feb/24/22/Meeting night: Forcible entry/ Tool training. (Jacob)

Fleet status report

Rescue is down due to front end problems and engine 1 is cover for Rescue.

Chief report

Thanks to Butch Graft and Wayne Brown for the finishing of radio install on Engine1.

New standards for volunteer firefighter to have Level 1 firefighter training.

Dean Maxwell

**MUNICIPALITY OF CALVIN**  
**REPORT TO COUNCIL**  
**Recreation, Cemetery, Landfill JG2022-05**

REPORT DATE: 28/02/2022  
PREPARED BY: Jacob Grove; Landfill, Cemetery, Recreation Manager  
Municipal Enforcement Officer  
SUBJECT: Council Report

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**Recreation**

The rink has remained in good condition this month. There was one day the rink was closed due to warm weather. This was to allow the water on the ice surface to freeze evenly.

As we are approaching the end of the winter I have attached the Ice Building and Maintenance Manual to this report. Please review the manual and bring any concerns or possible changes to the meeting.

One of the projects I would like to do this year is repurposing the cistern room at the rink building. Once the cisterns are removed from this room, I propose that we move the recreation workshop to this area and create storage areas for all the materials that cannot freeze (paint, batteries from lawn mowers and various other products). All the items that would not be affected by the cold would be stored in the addition which would no longer need to be heated. When this is done we will have freed up some valuable storage and reduce the area at the rink building that would need to be heated in the winter months. I would like Council to declare the cistern tank surplus from the Recreation Department. I would suggest that the tanks be offered to the Roads or Fire Departments, should they have a use for them. If no department has a use for them then I would recommend they go up for sale.

Grant Research

The Ontario Trillium Fund (OTF) is offering a Capital Grant for improving community building and spaces. From an initial look at this grant it appears as though we could apply for improvements to the rink building, possibly more. The grant deadline is August 3<sup>rd</sup>, so there is time to build a good project proposal. Once better researched, a proposal will be brought forward to Council.

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**Landfill**

On February 17<sup>th</sup> we had a mechanic look at the compactor because of the issues with the hard starts. He was able to find an issue with the starter drawing too much amperage. A new starter was ordered and it was installed on February 24<sup>th</sup>.

Due to the issues with the compactor not starting the truck has not ran many days this month and the garbage has gone straight to the tipping edge.

I have attached the 2020/2021 well monitoring report. There are no significant changes from the previous report and we will continue to monitor the nitrate levels at MW9.

Respectfully submitted;

---

Jacob Grove  
Landfill, Cemetery, Recreation Manager  
Municipal Enforcement Officer  
Municipality of Calvin

---

Clerk - Treasurer  
Municipality of Calvin



# Municipality of Calvin – Ice Building and Maintenance Manual

# **Responsibilities of Staff** **and Volunteers**

## **The Ice Building and Maintenance Manual**

### **Purpose:**

To establish clear responsibilities staff and volunteers in the process of the building and the maintenance our outdoor ice skating rink.

### **Municipal Responsibilities**

1. Build and maintain the municipal outdoor ice surface in conjunction with the fire department.
2. Provide suitable training for volunteers with information on how to effectively build and maintain our outdoor ice surface, how to complete the daily inspection logs, properly manage risk, health and safety procedures, etc.
3. Deliver and sign-out any necessary equipment that may include shovels, hoses, spray nozzles, etc.
4. Post appropriate signs at the ice rink to address risk management (Attachment 3).
5. Complete a thorough review of the ice rink installation on a once a week basis and document the findings on an inspection log. Discuss any observed issues or concerns with the volunteers.
6. Respond to or appropriately direct emergency situations to the proper authorities.
7. Follow-up on concerns respecting the improper use of the ice rink.
8. Periodically check all equipment for damages, especially the hockey nets. If caught in time, a minor repair is preferable and less expensive than a major one.
9. Rink signs announcing rules and hours of operation should be fastened securely out of reach of participants. Eight to ten feet above the ground is the minimum height recommended.

### **Volunteer Responsibilities**

1. All volunteers must participate in training by Calvin staff to acknowledge their roles and responsibilities prior to the set-up and operation of an outdoor rink. Training topics will cover such aspects as proper use of equipment, maintenance and flooding techniques, managing risk and health and safety procedures and volunteer safety.
2. Volunteers are required to immediately report any serious issues, accidents or medical emergencies that they have personally observed or have been made aware of.
3. It is recommended that volunteers work in pairs throughout the winter season to help keep the ice rink properly maintained.
4. Volunteers will typically be required after 4pm on weekdays and on weekends unless otherwise requested by staff.



# **Ice Building and** **Maintenance Procedure**

## **Ice Building Procedure – TO BE COMPLETED BY STAFF**

How to lay the first sheet of ice.

1. Snow should be kept off the planned rink area to allow the frost to freeze the ground. This will ensure that there will be level ground for the rink liner to be installed.
2. The temperature must be consistently below freezing. Recommended temperature is between -10°C and -17°C.
3. Install the rink liner and add water to cover the shallowest point with 90 mm of water. It is recommended that the water be added from the fire truck versus a garden hose for a smoother ice surface.
4. Once water is completely frozen which should take approximately 3 – 4 days after initial flooding, install kick plate and cut off liner above kick plate.

## **Maintaining a Good Ice Surface**

Flood as often as possible. Build up the sheet's thickness so that on mild days the rink can withstand the sun without patches of earth showing through and chunks breaking off the surface. **Caution:** Make certain that each flood is frozen solid prior to adding another.

- The ice surface must be scraped clean of all snow, ice chips, flakes and dirt before flooding. Make sure the edge of the scraper is straight.
- It is very important, when removing the snow for the ice surface, not to block the entrance used by the machinery and/or vehicles. Throw the snow clear of this entrance. The entrance for emergency access must be kept clear at all times.
- Good ice is clean ice, not covered by dirt or litter. This is primarily a participant concern, however, proper supervision will increase awareness and lessen the maintenance frustrations. Smoking on the ice surface should be discouraged as a lit cigarette butt can melt and mar a good skating surface.
- Be aware that many individuals using the rink will be wearing boots or rubbers rather than skates. Restrict the use of salt or sand in areas such as walkways, the equipment storage area, parking lot, etc. otherwise this salt or sand will eventually end up on your rink causing you maintenance problems.
- "An Ounce of Prevention" ... Ongoing repairs to cracks and chips in the ice surface is more desirable than attempting to repair damages to the ice surface through flooding alone.

### **The Steps for Repairing a Crack, Chip or Hole are:**

1. Sweep or clean the hole of all snow or ice chips.
  2. Mix a slush mixture of snow and water.
  3. Pack the slush in the hole.
  4. Level off the slush with a shovel, trowel, hockey stick or puck, etc.
  5. (Optional) Sprinkle with a light flood of water.
  6. Keep people from skating on the spot until frozen (see diagram).
- Shell Ice ... During your flooding, whether it be on your initial sheet or ongoing throughout the winter, be aware of shell ice. Shell ice occurs when for some reason or another, an air bubble is frozen into the surface. Shell ice is characterized by a white patch of thin brittle ice that is easily broken. When broken, the layer of ice underneath is exposed.

### **How do you Deal with Shell Ice?**

1. Break the surface.
2. Remove the brittle ice completely.
3. Pack solid with a mixture of snow and water.
4. Level with shovel, trowel, hockey stick, etc. and remove excess slush.
5. Avoid stepping or skating on this area until frozen solid (see diagram).

### **Care of Equipment**

The proper care of equipment will insure that when it is required, it will be available. Consider the following hints or suggestions on proper maintenance:

- Please do not leave any equipment outdoors overnight and return the equipment to the storage room when not in service.
- Please do not leave shovels or brooms lying around.
- To drain the garden hose, please elevate the hose nearest the tap and walk towards the nozzle. Any water remaining within the hose should drain. This will minimize excess water or ice buildup in the hose.
- Please be certain that the water is shut off completely after every use.
- Please keep the storage area clean at all times.
- Please don't leave the storage area unlocked or unattended.
- If straw brooms are used for sweeping around the edges, please monitor when they begin to lose their straw. The presence of large amounts of straw when flooding reduces the quality of the ice. Please request a new broom when this begins to occur.

## Ice Problems that May Occur

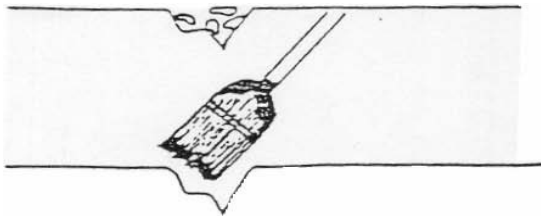
Some of the more common problems are:

1. Your nozzle doesn't fit, doesn't work or is leaking.
2. Your hose leaks or has a split.
3. Your water line is frozen or has burst.
4. Your scraper or shovel handle gets broken.
5. The storage area or ice surface has been vandalized.

The Recreation Department will provide training on general use of the equipment.

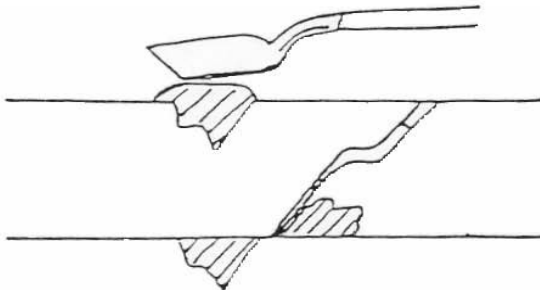
The Municipality is not responsible for the replacement or repair of damaged equipment that does not belong to the Municipality.

### How to Repair Holes, Cracks or Shell Ice



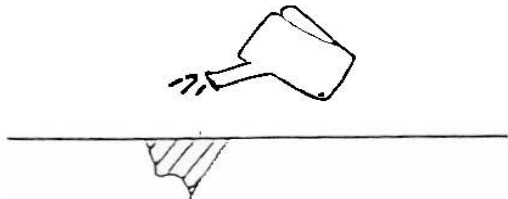
Uh Oh

Clean



Pack Slush

Level

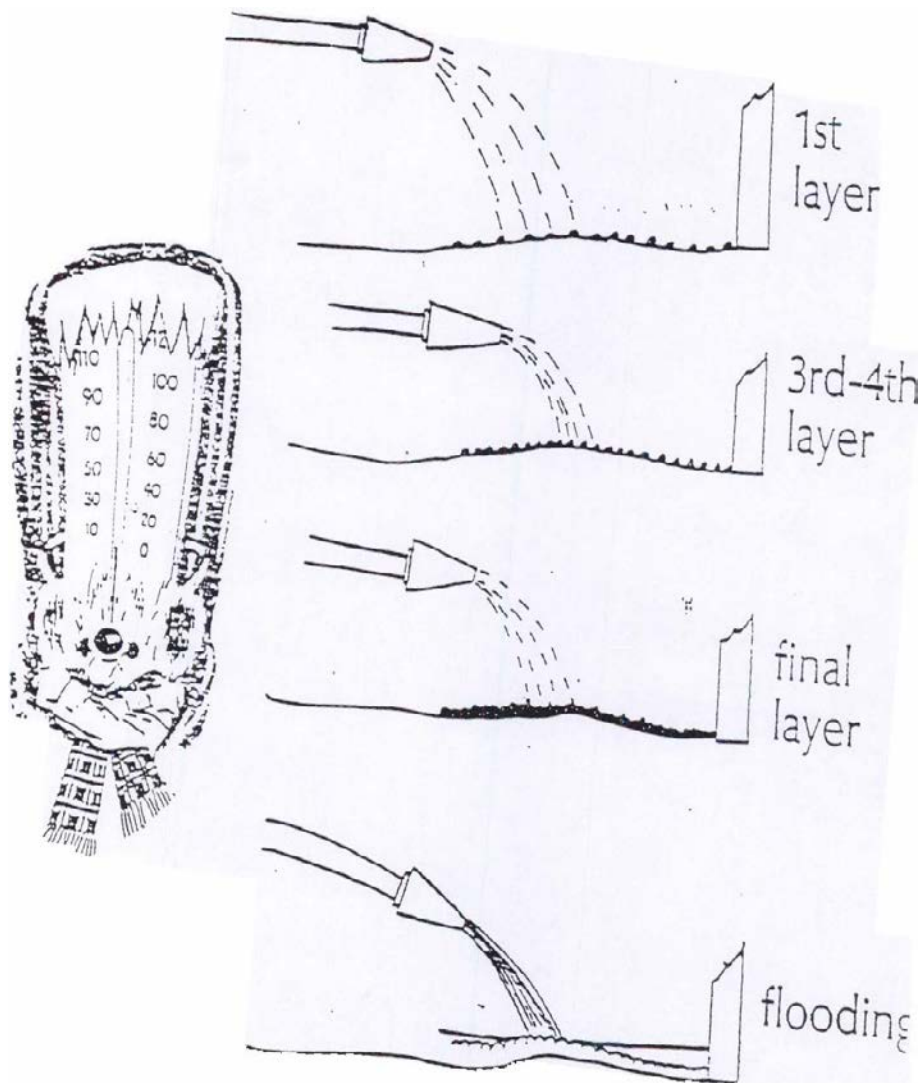


Sprinkle

No Skating

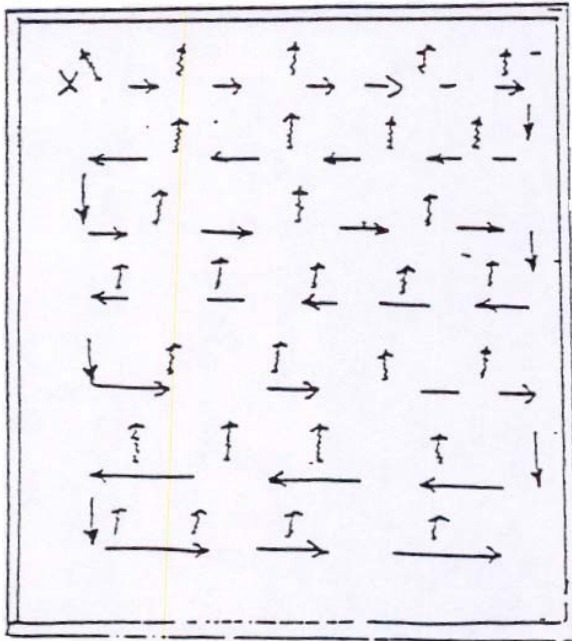


# Pebbling



## Flooding

1. Keep nozzle close to surface
2. Very little water pressure
3. A yard/pass



### Water Flow

→ → →

pattern utilized by individual flooding



**Outdoor Skating Rink Log Sheet for Municipal Staff**

<b>Location:</b>	<b>Time:</b>	<b>Day of Week:</b>	<b>Year:</b>	<b>Month</b>	<b>Day</b>
<b>Weather Conditions &amp; Temperature:</b>					
<b>Daily Average Attendance:</b> Morning: [    ]    Afternoon :[    ]    Evening: [    ]    Daily Total : [    ]					

<b>Inspected</b>	<b>Good (X)</b>	<b>Fair (X)</b>	<b>Poor (X)</b>	<b>Corrective Action Taken</b>	<b>Operator (Please Print)</b>
Ice Surface					
Rink Boards/Snow					
Perimeter of Rink					
Storage Area					
Equipment					
Garbage Containers					
Signs					
Fencing					
Parking Lot					
Walkways					
Emergency Vehicle Access					
<b>Notes:</b>					

<b>"Daily" Risk Management Report</b>				
<b>Time</b>	<b>AM</b>	<b>PM</b>	<b>Identify Condition &amp; Corrective Action Taken</b>	<b>Operator (Please Print)</b>
:				
:				
:				
:				
<b>Comments:</b> (Describe any extraordinary circumstances and action taken)				



## **What to do in case of Accident or Incident**

Deal with medical emergencies immediately by calling “911” from the nearest phone.

If a problem arises volunteers should call the appropriate Recreation Department staff at 705-744-2700, during regular working hours or 705-497-6961, after hours. On evenings and weekends volunteers will receive a call back as soon as possible from an on-duty supervisor.

In all cases, be prepared to give the following information:

1. Your name and phone number.
2. The name and location.
3. The problem – as you see it.

**Note:** It is important that all persons involved in maintaining, flooding and operating the rink carefully complete the log sheets documenting the work performed. The log sheets you provide to the Recreation Supervisor will be kept in Municipal files. This documentation, along with completed, signed accident/incident report forms will be maintained for reference should any injury become the basis of an inquiry or legal claim.

**ATTACHMENT 2**

## Outdoor Ice Rink Daily Inspection Form for Volunteers

Date/Time: \_\_\_\_\_ Volunteer Name(s): \_\_\_\_\_

Signature(s): \_\_\_\_\_ Hours Worked: \_\_\_\_\_

ITEM	ACCEPTABLE CONDITION	NATURE OF DEFECT
Perimeter Boards (Snow Clear from top and bottom of boards)		
Ice Surface Condition		
Lighting (on/off and after 5pm only)		
Parking		
Emergency Access (Access to Change Room and Rink – Clear of Snow)		
Other		

**NOTES:**

- 1) A inspection sheet must be completed and left in the designated area in the change room.
- 2) Ice Skating Rink defects shall be reported immediately. Please contact the Municipality of Calvin by e-mail at [fire@calvintownship.ca](mailto:fire@calvintownship.ca) or by telephone at 705-744-2700 or After Hours at 705-497-6961.

ATTACHMENT 3



# Outdoor Ice Skating Rink

## Rules and Regulations

- Inspect Ice surface prior to use
- Children should be supervised at all times
- Helmets and other safety equipment is strongly recommended
  - Alcohol is prohibited
  - Be considerate of others
- Hours of operation: 7:00am to Midnight

To report dangerous conditions or any damaged equipment,  
please call 705-744-2700 or after hours—705-497-6961

Prepared for  
**Municipality of Calvin**  
1355 Peddlers Drive. RR#2  
Mattawa, ON  
Canada, P0H1V0

Prepared by  
**Knight Piésold Ltd.**  
1650 Main Street West  
North Bay, Ontario  
Canada, P1B 8G5

**NB102-192/14-1**

# MUNICIPALITY OF CALVIN LANDFILL SITE

## 2020/2021 LANDFILL MONITORING REPORT

Rev	Description	Date
0	Issued in Final	February 7, 2022

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## APPENDICES

Appendix A	Certificate of Approval
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Appendix C	Laboratory Certificates of Analysis

## Abbreviations

---

AO	Aesthetic Objective
BOD	Biochemical Oxygen Demand
C of A	Certificate of Approval
COC	Chain of Custody
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
Ha	Hectare
IMAC	Interim Maximum Acceptable Concentration
KP	Knight Piésold Ltd.
LEL	Lower Explosive Limit
MAC	Maximum Acceptable Concentration
MECP	Ministry of Environment, Conservation and Parks
MOE	Ministry of the Environment
MOECC	Ministry of the Environment and Climate Change
MOEE	Ministry of Environment Energy
MW	Monitoring Well
ODWS	Ontario Drinking Water Standards
OG	Operational Guideline
ORP	Oxidation-Reduction Potential
PWQO	Provincial Water Quality Objectives
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference
RUG	Reasonable Use Guideline
SGS	SGS Canada Inc.
TDS	Total Dissolved Solids
the Municipality	Municipality of Calvin
the Site	Calvin Landfill Site
TKN	Total Kjeldahl Nitrogen
TSS	Total Suspended Solids

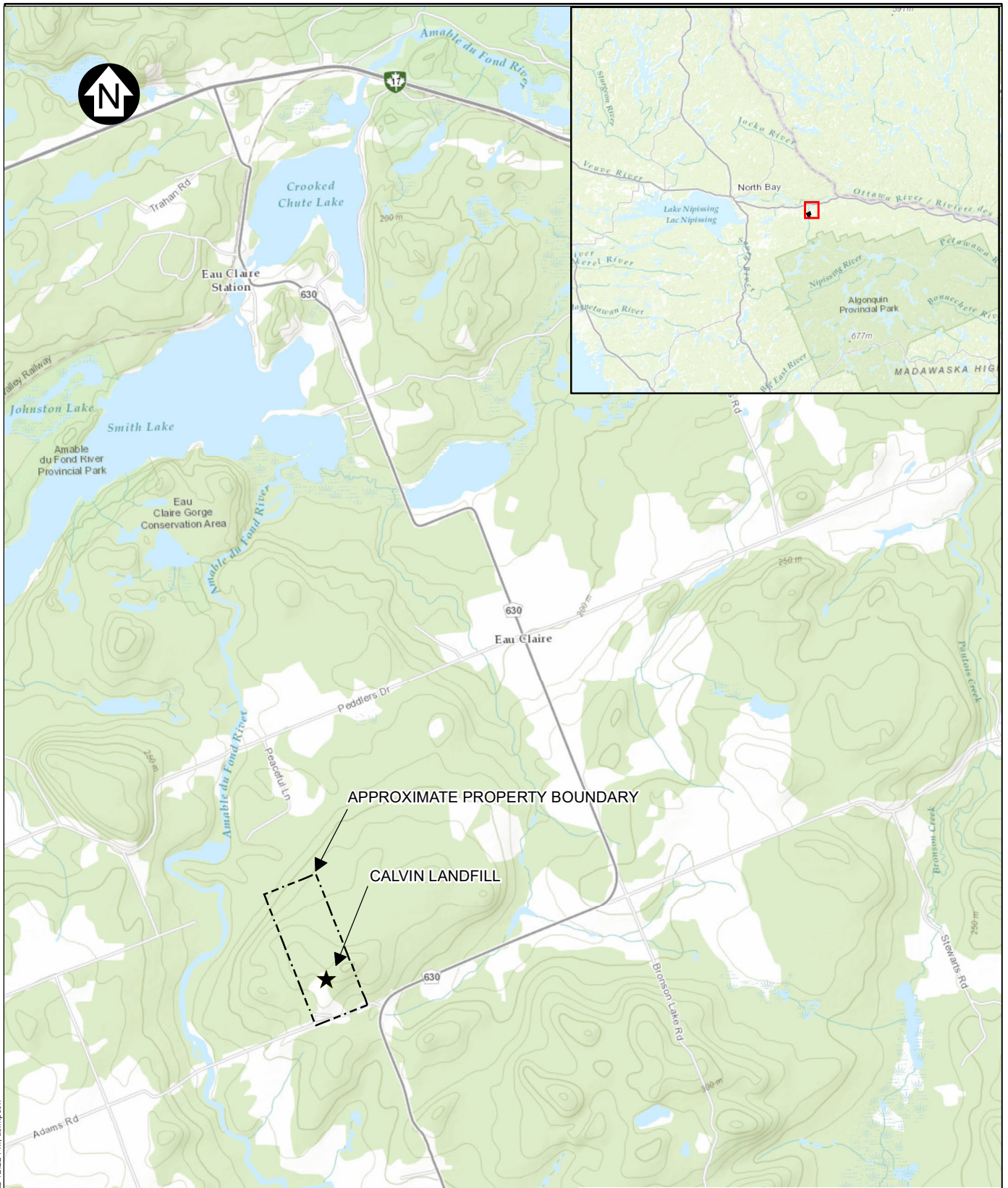
## 1.0 INTRODUCTION

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Knight Piésold Ltd. (KP) was retained by the Municipality Calvin to complete the semi-annual water quality monitoring (occurring in the spring and fall) for the 2020 and 2021 period. The results of the monitoring, over this period, are provided in this bi-annual report (one report for every two years).

The Corporation of the Municipality of Calvin (the Municipality) Landfill Site (the Site) is located at 111 Adams Road, near the community of Eau Clair, Ontario. Figure 1.1 shows the location of the Calvin Landfill. The Landfill operates under the Provisional Certificate of Approval (C of A) No. A350901 issued by the Ministry of the Environment (MOE) on March 25, 1980 (provided in Appendix A). The Landfill is approved for the landfilling of municipal waste (generated in the Municipality of Calvin) and is confined to a 2.025 hectare (ha) waste disposal area.






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- NOTES:**
1. BASE MAP: © ESRI DATA AND MAPS (ONLINE) (2017). REDLANDS, CA: ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE. ALL RIGHTS RESERVED.
  2. COORDINATE GRID IS IN METRES. COORDINATE SYSTEM: WGS 1984 UTM ZONE 17N.

MUNICIPALITY OF CALVIN									
MUNICIPALITY OF CALVIN LANDFILL SITE									
<b>PROJECT LOCATION MAP</b>									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">P/A NO.</td> <td style="font-size: small;">REF NO.</td> </tr> <tr> <td style="text-align: center;">NB102-192/14</td> <td style="text-align: center;">1</td> </tr> <tr> <td colspan="2" style="text-align: center;"><b>FIGURE 1.1</b></td> </tr> <tr> <td style="font-size: x-small;">REV</td> <td style="font-size: x-small;">0</td> </tr> </table>	P/A NO.	REF NO.	NB102-192/14	1	<b>FIGURE 1.1</b>		REV	0
P/A NO.	REF NO.								
NB102-192/14	1								
<b>FIGURE 1.1</b>									
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## 2.0 BACKGROUND INFORMATION

---

### 2.1 SITE DESCRIPTION

#### 2.1.1 SITE FEATURES

The Calvin Landfill has been in operation since 1972. The Landfill is open to receiving waste from the public on Tuesday's and Saturday's throughout the year. The Site accepts solid, non-hazardous commercial and residential waste generated in the Township of Calvin.

The Site is accessed from Adams Road through an entrance gate. When the landfill is closed, the gate is locked. There are a few small buildings on site for use in sorting recycling.

The Site is surrounded by a moderately forested area on all sides. The photo log in Appendix B provides a view of the monitoring wells in relation to the surrounding environment.

#### 2.1.2 SITE TOPOGRAPHY AND DRAINAGE

The topographic relief of the Site is moderate with a topographic high located near the northeast property boundary. The topography near the landfilling area slopes generally from north to southeast and north to south-west. The relief becomes relatively flat on the south side of the Site, at Adams Road.

The southeastern portion of the Site drains towards the southeast, converging at a small creek located across Highway 630.

There are no permanent surface water features on the Site. The nearest surface water body is the Amable du Fond River located approximately 300 m southwest of the Landfill.

#### 2.1.3 SURFICIAL GEOLOGY

Based on a review of drillhole logs, overburden throughout the Landfill area generally contains a near surface silt/clay and silty sand units, which transitions a fine to coarse grained sand with depth. The depth to bedrock varies from approximately 2 to 9 m below ground surface (m bgs) across site, becoming shallowest to the north.

### 2.2 WATER QUALITY MONITORING PROGRAM

#### 2.2.1 ASSESSMENT PROGRAM

Municipal solid wastes are defined as those wastes generated and discharged from single and multifamily dwellings. Waste commonly consists of food waste, textiles, wood and soil, garden waste, paper and plastics. This waste contains decomposable and non-decomposable materials. The decomposable materials undergo decomposition by a combination of chemical, physical, and biological processes. The by-products of this decomposition, when mixed with saturated water conditions, produces a leachate substance which can negatively impact the quality of ground and surface water. The resulting leachate can often contain characteristic elevated parameters (chloride, conductivity, biological oxygen demand, chemical oxygen demand) which are collectively referred to as leachate indicator parameters. Leachate indicator parameters can also include altered concentrations of redox sensitive elements such as dissolved

oxygen (DO), oxidation-reduction potential (ORP), iron, manganese, and nitrates which occur based on an elevated concentration of organics.

The general assessment process to determine impacts to groundwater, consists of an evaluation of the background water quality, the characteristics of the leachate, and an evaluation of whether the monitoring wells downgradient of the Landfill are indicating impacts. The severity of the impacts is determined based on the compliance to provincial standards or guidelines. Landfill groundwater impacts are typically offset through a mechanism known as natural attenuation.

Similar to groundwater, impacts to surface water are also measured by comparing upstream and downstream water quality as a means of detecting landfill impacts.

## 2.2.2 GROUNDWATER MONITORING PROGRAM

Thirteen groundwater monitoring wells and a domestic well are sampled to assess the groundwater quality at the Calvin Landfill. The locations of the wells are shown on Figure 2.1. Table 2.1 provides a summary of the monitoring well locations and the intended sampling purpose (upgradient, downgradient, leachate) for each well.

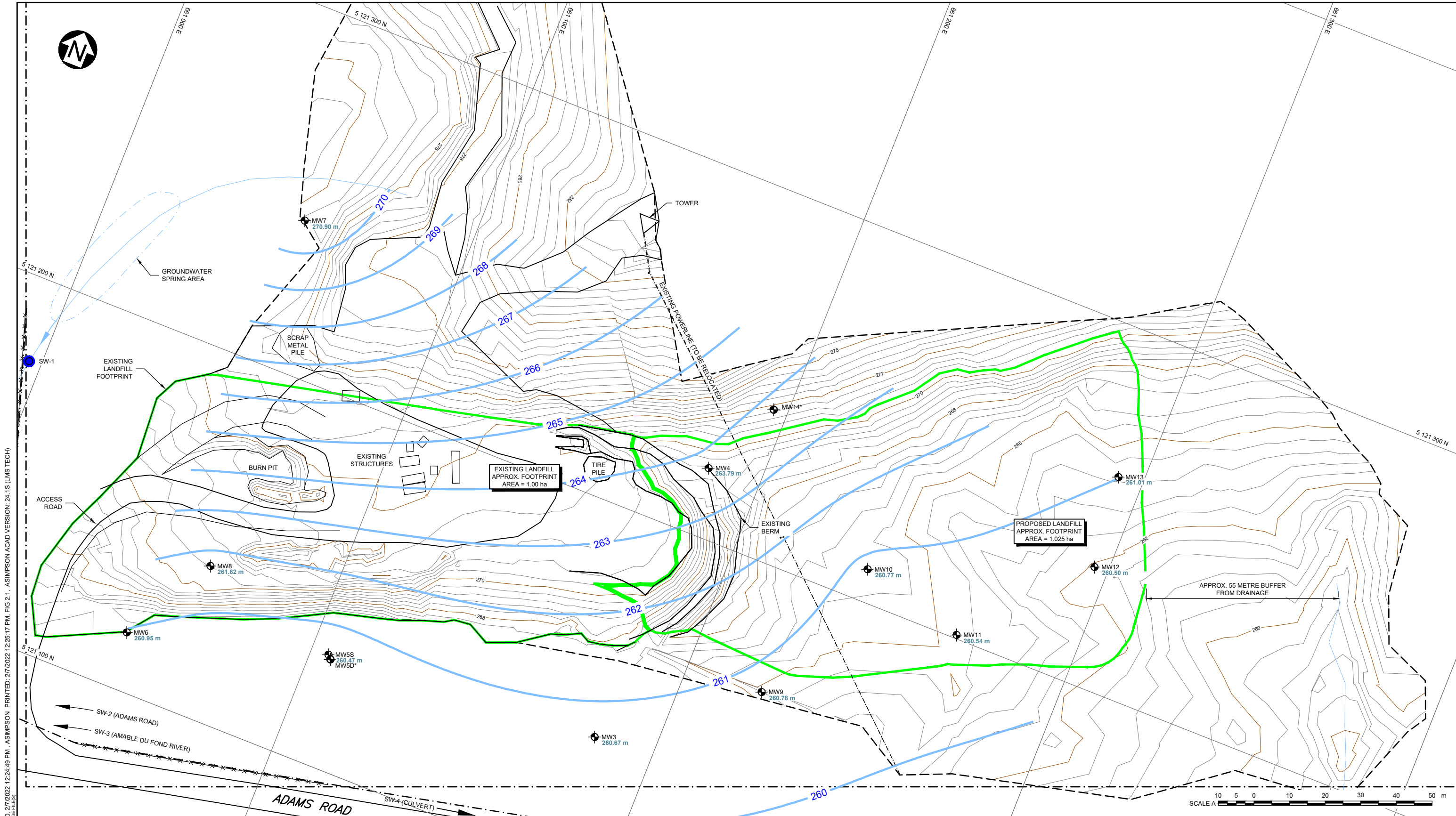
As indicated on Table 2.1, groundwater monitoring well MW7 is considered representative of background water quality as the well is located away from, and upgradient, of the waste fill area. Monitoring well MW14 is also upgradient of the Landfill, however, it is located near the waste fill area. Monitoring wells MW4 and MW8 are considered representative of leachate impacted groundwater as the wells are located within the waste fill area. Downgradient groundwater quality is determined by monitoring wells MW3, MW5S, MW5D, MW6, MW9, MW10 and MW11. Monitoring wells MW12 and MW13, located on the east side of the property, are considered cross-gradient. Drinking water quality near the Landfill is monitored at domestic water well (RES188) located west of the Landfill (188 Adams Road).

Historically groundwater flow was interpreted to be south to southeast, generally following topography.

## 2.2.3 SURFACE WATER MONITORING PROGRAM

Impacts to surface water quality are monitored through a surface water monitoring program. This program consists of the collection of four surface water samples at a similar frequency of the groundwater program (sampling in spring and fall). As mentioned in Section 2.1.2 there are no permanent surface water features within the Landfill footprint, and therefore sampling occurs at surface water features adjacent to the Landfill. A description of the sampling locations are as follows:

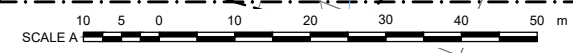
- SW-1 is collected from a small creek located to the north and upstream of the Landfill. This creek represents runoff and upwelling groundwater from a catchment area located upstream of the landfilling area. The volume of water within this creek is seasonally variable and is often too low to sample.
- SW-2 is collected from a drainage ditch located approximately 450 m west of the Landfill entrance off the north side of Adams Road. This location is considered upstream of the Landfill. This location is often dry.
- SW-3 is collected from the Amable du Fond River south of Adams Road and it is considered a background site.
- SW-4 is collected from a culvert outlet approximately 200 m east of the Landfill entrance, towards Highway 630. This location is considered downstream of the Landfill. This location is often dry.



SAVED: I:\1102\0019214\Acad\FIGS\IB02 RD\_217\2022\_12:24:49 PM .ASIMPSON PRINTED: 2/7/2022 12:25:17 PM FIG 2.1 ASIMPSON ACAD VERSION: 24.1S (LMS TECH)  
 REV: I:\1102\0019214\Acad\FIGS\IB02 RD\_217\2022\_12:24:49 PM .ASIMPSON PRINTED: 2/7/2022 12:25:17 PM FIG 2.1 ASIMPSON ACAD VERSION: 24.1S (LMS TECH)

- NOTES:**
1. COORDINATE GRID IS UTM NAD83 ZONE 17.
  2. CONTOUR INTERVAL IS 0.5 METRES.
  3. TOPOGRAPHICAL SURVEYS PROVIDED BY TALBOT SURVEYS INC.
  4. ASTERISK INDICATES GROUNDWATER ELEVATION WAS NOT USED FOR CONTOURING.

- LEGEND:**
- EXISTING LANDFILL EXTENTS
  - PROPERTY LINE
  - FENCE
  - POWERLINE
  - GROUNDWATER ELEVATION CONTOUR
  - SW1 SURFACE WATER SAMPLE LOCATION
  - ⊕ MONITORING WELL LOCATION
  - 260 m GROUNDWATER ELEVATION (SPRING 2021)



**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**SITE PLAN**

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<b>FIGURE 2.1</b>	
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**TABLE 2.1**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SUMMARY OF 2020-2021 SAMPLING LOCATIONS**

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ID	Location	Stratigraphic Unit	Easting <sup>1</sup>	Northing <sup>1</sup>	Elevation of Riser (m amsl)	PVC Stick-up (m)	Groundwater Elevation (m amsl)			
							Spring 2020	Fall 2020	Spring 2021	Fall 2021
MW3	Downgradient	Sand	661,183	5,121,137	266.0	1.1	259.7	260.2	260.7	260.1
MW4	Leachate	Sand	661,185	5,121,219	272.6	0.5	264.4	263.5	263.8	263.7
MW5D	Downgradient	Bedrock	661,106	5,121,130	265.3	0.8	261.4	260.7	261.0	260.7
MW5S	Downgradient	Sand	661,105	5,121,131	265.3	0.6	260.7	260.2	260.5	260.2
MW6	Downgradient	Sand	661,050	5,121,116	265.7	0.6	260.8	260.6	261.0	260.6
MW7	Background	Silt	661,054	5,121,242	273.5	0.8	270.9	270.8	270.9	271.2
MW8	Downgradient/ Leachate	Sand	661,065	5,121,142	271.3	0.7	261.6	261.4	261.6	261.4
MW9	Downgradient	Sand	661,222	5,121,166	265.5	0.9	260.5	259.9	260.8	259.8
MW10	Downgradient	Sand	661,237	5,121,209	266.8	1.1	259.5	260.0	260.8	259.9
MW11	Downgradient	Sand	661,267	5,121,201	265.2	0.9	260.1	259.6	260.5	259.5
MW12	Cross-gradient	Sand	661,296	5,121,233	263.1	1.0	260.1	259.5	260.5	259.4
MW13	Cross-gradient	Sand	661,293	5,121,259	265.0	0.8	260.6	260.0	261.0	260.0
MW14	Upgradient	Bedrock	661,196	5,121,241	272.5	0.9	270.3	268.8	269.8	270.5
RES-188	Residential Well	Bedrock	660,732	5,120,909	-	-	-	-	-	-
SW-1	Upstream	-	-	-	-	-	-	-	-	-
SW-2	Downstream	-	-	-	-	-	-	-	-	-
SW-3	Background	-	-	-	-	-	-	-	-	-
SW-4	Downstream	-	-	-	-	-	-	-	-	-

I:\1102\00192\14\A\Report\Report 1, Rev 0\Tables\2020-2021 Report Tables.xlsx\Table 2.1

**NOTES:**

- COORDINATES ARE REFERENCED IN UTM, NAD83 ZONE 17T.
- COORDINATES FOR RES-188 ARE APPROXIMATE.

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## 2.3 SAMPLING PROCEDURES

The following procedures were followed for the collection of groundwater samples in 2020/2021:

- Methane concentrations were measured at each well, following removal of the well cap. Methane was measured using either a Landtec GEM2000 Gas Analyzer or an RKI Eagle calibrated for methane. Methane results were recorded on field data sheets.
- Groundwater levels were measured in each well using a Solinst Water Level Meter - Model 101. Measurements were recorded on field data sheets.
- Prior to sampling, three well volumes of water were purged from each monitoring well using dedicated Waterra® tubing. If the monitoring well went dry prior to three well volumes, it was sampled within 24 hours of purging.
- In situ groundwater quality data were measured at each well using a Hanna Instruments HI98129 pH/Conductivity/TDS Tester. The instrument was calibrated each day following the manufacturer's instructions prior to use. All results were recorded on field data sheets.
- The same dedicated Waterra® tubing that was used to purge each well was used to collect the groundwater samples. Samples were collected in labelled, clean bottles provided by the laboratory.
- New nitrile gloves were used during sampling at each well.
- Field measurements were recorded on data sheets.
- Samples were kept cool with ice.
- Pertinent sampling information was recorded on a Chain of Custody (COC) form and a copy was delivered with the samples to SGS Canada Inc. (SGS).

The following procedures were followed for the collection of surface water samples in 2020/2021:

- Samples were collected in labelled, clean bottles provided by the laboratory. When a direct transfer from the surface water feature into laboratory-supplied container was not possible, an unpreserved laboratory or PET bottle was used to transfer the sample into the appropriate sample containers.
- In situ surface water quality data were measured at each well using a Hanna Instruments HI98129 pH/Conductivity/TDS Tester. The instrument was calibrated each day following the manufacturer's instructions prior to use. Results were recorded on field data sheets.
- A YSI ProODO was used to measure the oxygen content present in the surface water.
- New nitrile gloves were used during sampling at each surface water site.
- Field results were recorded on data sheets.
- Samples were kept cool with ice.
- Pertinent sampling information was recorded on a COC form, and a copy was delivered with the samples to SGS.

## 2.4 MONITORING SAMPLING PARAMETERS

A summary of the analytical and field measured parameters analyzed at each groundwater monitoring location during each sampling event is provided in Tables 2.2 and 2.3.

**Table 2.2 Groundwater - Parameters Analyzed, SGS Canada Inc.**

<b>Analytical Parameters</b>
<b>pH, Conductivity, Alkalinity</b>
<b>Dissolved Organic Carbon (DOC)</b>
<b>NH<sub>3</sub>+NH<sub>4</sub></b>
<b>TKN (Total Kjeldahl Nitrogen)</b>
<b>Anions</b>
Sulphate, Chloride, Nitrite, Nitrate
<b>Total Dissolved Solids (TDS)</b>
<b>Total Suspended Solids (TSS)</b>
<b>COD</b>
<b>Total Phenols</b>
<b>Mercury (Dissolved)</b>
<b>Dissolved Metals by ICP</b>
Hardness, Arsenic (As), Antimony (Sb), Aluminum (Al), Barium (Ba), Beryllium (Be), Bismuth (Bi), Boron (B), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silver (Ag), Sodium, (Na), Strontium (Sr), Thallium (Tl), Tin (Sn), Titanium (Ti), Vanadium (V), Zinc (Zn)
<b>VOC's (MW4 ONLY)</b>
Benzene, 1,4-Dichlorobenzene, Dichloromethane, Toluene, Vinyl chloride, MEK, Acetone
<b>Field Measured Parameters</b>
Depth to water, Depth to bottom of well
Vapour Concentrations
Temperature, pH, EC
Dissolved Oxygen (DO)

**NOTES:**

1. SGS CANADA INC. QUOTE 2020 592/ 2021-807.

**Table 2.3 Surface Water - Parameters Analyzed SGS Canada Inc.**

<b>Analytical Parameters</b>
<b>pH, Conductivity, Alkalinity</b>
<b>Dissolved Organic Carbon (DOC)</b>
<b>NH<sub>3</sub>+NH<sub>4</sub></b>
<b>Total Dissolved Solids (TDS)</b>
<b>Total Suspended Solids (TSS)</b>
<b>Biochemical Oxygen Demand (BOD)</b>
<b>Total Phenols</b>
<b>TKN (Total Kjeldahl Nitrogen)</b>
<b>Anions</b>
Sulphate, Chloride, Nitrite, Nitrate
<b>Mercury (Total)</b>
<b>Total Metals by ICP-OES/MS</b>
Hardness, Arsenic (As), Antimony (Sb), Aluminum (Al), Barium (Ba), Beryllium (Be), Bismuth (Bi), Boron (B), Cadmium (Cd), Calcium (Ca), Chromium (Cr), Cobalt (Co), Copper (Cu), Iron (Fe), Lead (Pb), Magnesium (Mg), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Phosphorus (P), Potassium (K), Selenium (Se), Silver (Ag), Sodium (Na), Strontium (Sr), Thallium (Tl), Tin (Sn), Titanium (Ti), Vanadium (V), Zinc (Zn)
<b>Field Measured Parameters</b>
Temperature, pH, EC
Dissolved Oxygen (DO)

**NOTES:**

1. SGS CANADA INC. QUOTE 2020 592/ 2021-807.



## 3.0 MONITORING PROGRAM RESULTS

---

### 3.1 APPLICABLE STANDARDS

#### 3.1.1 PROVINCIAL WATER QUALITY STANDARDS

Groundwater quality sampling results are compared to the Ontario Drinking Water Standards, Objectives and Guidelines (ODWS; MECP, 2018) to provide information for the protection of public health through the provision of safe drinking water. Standards, objectives and guidelines are considered to be the minimum level of drinking-water quality. Their intent is not to imply that allowing the degradation of high-quality water supply to the specified level or range is acceptable.

The Technical Support Document identifies the following types of standards:

- Maximum Acceptable Concentration (MAC) and Interim Maximum Acceptable Concentration (IMAC) - These criteria are related to human health and include parameters such as nitrates, nitrites, and metals barium, boron, cadmium, chromium, lead, mercury, selenium and uranium.
- Aesthetic Objectives (AO) - These criteria are not related to human health, but relate to taste, odour, or appearance of water. Parameters include DOC, TDS, turbidity, chloride, sulphate and include the metals copper, iron, manganese, sodium and zinc.
- Operational Guidelines (OG) - These guidelines are not related to human health but are intended to ensure the efficient operation of water treatment and distribution systems. Parameters of interest include pH, hardness and aluminum.

Surface water results are compared to the Provincial Water Quality Objectives (PWQO; MOEE; 1999) to provide information to protect aquatic life and recreation uses.

#### 3.1.2 DEFINING REASONABLE USE GUIDELINES (RUG)

Guideline B-7 (MOECC, 2016a) and Procedure B-7-1 (MOECC, 2016b) establishes the basis for determining the levels of contaminant discharges considered acceptable by the Ministry of Environment, Conservation and Parks (MECP).

Monitoring well MW7 has been used to establish background concentrations as per the Guideline. The Guideline utilizes the type of standard (MAC, IMAC, AO or OG) and the background concentrations to determine the maximal acceptable concentrations of parameters in adjacent properties.

### 3.2 LEACHATE CHARACTERIZATION

As previously mentioned, leachate indicator parameters are assessed through the review of water quality results of leachate wells MW4 and MW8, against background/upgradient results (MW7). When compared to upgradient monitoring well results, the following parameters are generally elevated (summary is presented in Table 3.1).

- Conductivity and total dissolved solids
- Chloride
- Calcium and Manganese
- Dissolved organic carbon (DOC)

**TABLE 3.1**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SELECT LEACHATE PARAMETERS COMPARED TO BACKGROUND WATER QUALITY**

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Parameter	MW7	MW4
	Background	Leachate
<b>Physical Tests</b>		
Conductivity $\mu\text{S}/\text{cm}$	166.8	258.3
Total Dissolved Solids (TDS)	113.5	378.5
<b>Anions</b>		
Chloride	4.8	22.3
<b>Dissolved Metals</b>		
Boron	0.030	0.7
Calcium	10.6	81.9
Iron	0.10	0.1
Manganese	0.03	3.9
<b>Organics</b>		
DOC	5.8	13.5

I:\1102\00192\14\A\Report\Report 1, Rev 0\Tables\[2020-2021 Report Tables.xlsx]Table 3.1

**NOTES:**

1. SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
2. VALUES IN mg/L UNLESS OTHERWISE INDICATED.

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### 3.3 GROUNDWATER FLOW DIRECTION

Upon review of the groundwater elevations from the eleven overburden wells, groundwater flow direction has been estimated to flow in a general south to south-east direction. The shallow groundwater table is located at approximately 260 to 270 metres above mean sea level (m amsl). Figure 2.1 provides a visual representation of the groundwater elevation contours and the general flow direction.

### 3.4 GROUNDWATER MONITORING RESULTS

The groundwater analytical results for the 2020 and 2021 period are summarized in Table 3.2. Results above ODWS and RUG are highlighted within the table. Laboratory Certificates of Analysis can be found in Appendix C.

Background water quality results from monitoring well MW7 suggest that groundwater is naturally elevated in DOC, dissolved aluminum, and dissolved manganese as concentrations are typically above ODWS.

As indicated in Table 3.2, there were no instances of health-related groundwater quality exceedances in monitoring wells downgradient of the Landfill in 2020 and 2021. There were several exceedances of aesthetic (taste/odour), or operational exceedances (hard water indicators), which do not have adverse health effects, and are found to be naturally elevated in the area. The aesthetic exceedances consist of: pH, alkalinity, hardness, manganese, dissolved iron, dissolved aluminum and DOC, most of which are also present in elevated concentrations in groundwater upgradient of the Landfill.

There were several instances where water quality concentrations exceeded Reasonable Use Guidelines (RUGs) in monitoring wells downgradient of the landfilling area. The exceedances occurred for nitrate and total dissolved solids, in several of the downgradient monitoring wells, however at concentrations below ODWS limits. RUG concentrations are considered to be the acceptable concentration limit for water quality entering adjacent properties.

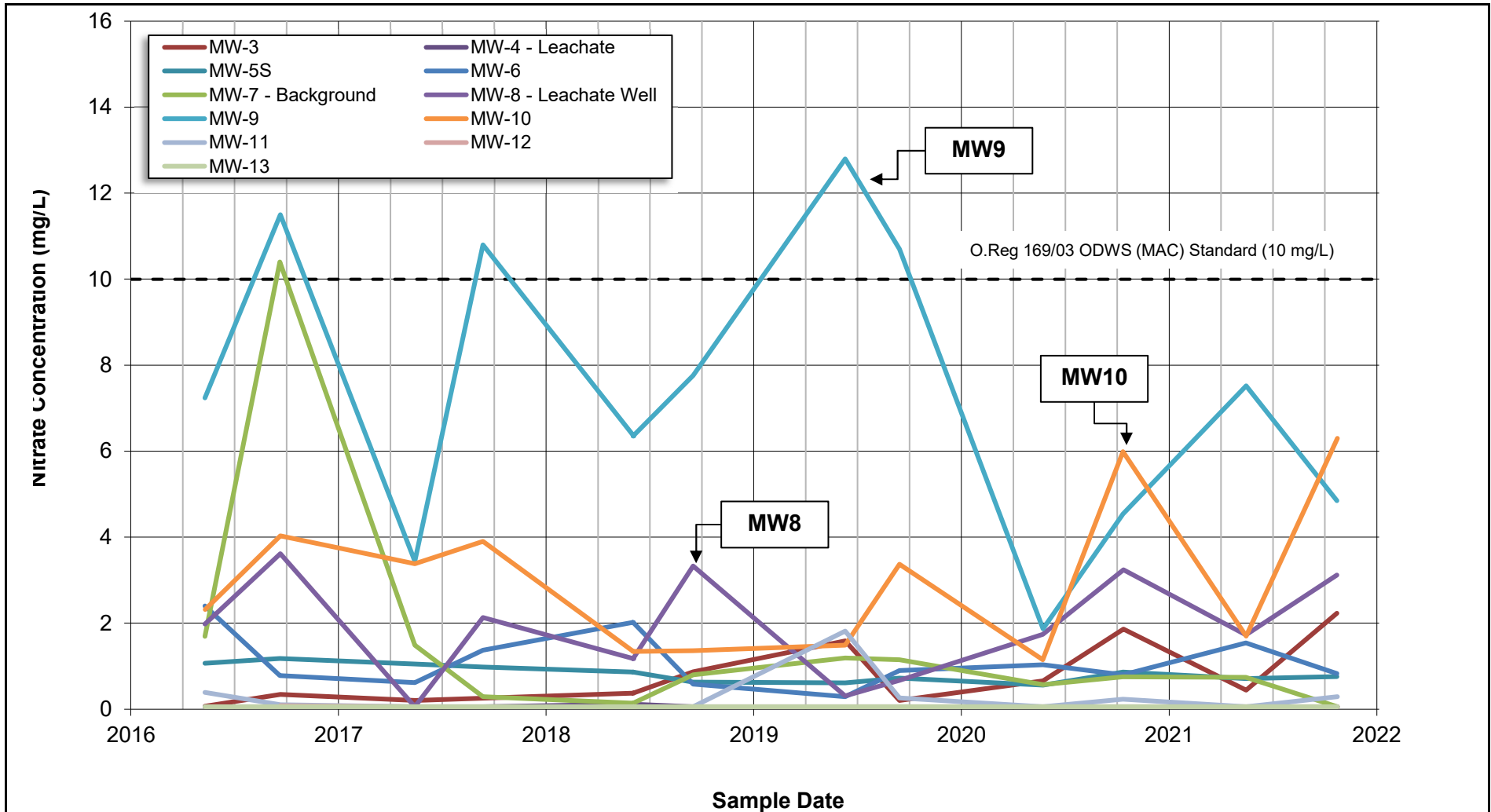
Downgradient water quality results (when compared with leachate indicator parameters) indicate minor leachate impacts. The following are notable results:

- MW10 (downgradient) had elevated concentrations of manganese, nitrate, chloride and TDS, relative to background concentrations in 2020 and 2021.
- MW9 (downgradient) had elevated concentrations for parameters such as TDS, chloride, manganese, and electrical conductivity, relative to background concentrations in 2020 and 2021.
- MW5S, MW5D (downgradient) had elevated concentrations of chloride, conductivity and manganese when compared to background concentrations in 2020 and 2021.

Nitrate concentrations are notably elevated downgradient of the Landfill at monitoring wells MW9 and MW10. Nitrates have consistently been elevated at these locations historically. A summary of the nitrate concentrations for monitoring wells downgradient of the Landfill, for the past six years is provided on Figure 3.1. As presented, nitrate concentrations exceeded ODWS at MW9 in 2016, 2017, and 2019. No exceedances were observed during the current reporting period (2020-2021).

Nitrate concentrations in groundwater near MW10 are observed to be naturally attenuating, as concentrations measured in MW11, located downgradient of MW10, are largely non-detect. An additional well is recommended to be installed downgradient of MW9, near the southern property line, if nitrate concentrations continue to be measured consistently above ODWS and RUG limits.

In general, groundwater quality results are within drinking water guidelines, with the exception of leachate well MW4 and downgradient monitoring wells MW9 and MW10. Results suggest natural attenuation is occurring sufficiently to deter offsite migration.



**NOTES:**

1. NITRATE VALUES THAT ARE LESS THAN THE REPORTING LIMIT (NON-DETECT) ARE BEING PRESENTED AT THE REPORTING LIMIT (0.06 mg/L).

MUNICIPALITY OF CALVIN	
CALVIN LANDFILL SITE	
NITRATE TEMPORAL WATER QUALITY RESULTS IN GROUNDWATER	
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	<b>FIGURE 3.1</b> REV 0

REV	DATE	DESCRIPTION	PREP'D	RVW'D
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**TABLE 3.2**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SUMMARY OF 2020/2021 GROUNDWATER QUALITY RESULTS**

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Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				Spring 2020 Maximum	Fall 2020 Maximum	Spring 2021 Maximum	Fall 2021 Maximum	MW3				MW4				MW5D				MW5S			
				26-May-20	14-Oct-20	19-May-21	27-Oct-21	Reasonable Use Guideline (Cm)				26-May-20	15-Oct-20	19-May-21	26-Oct-21	26-May-20	15-Oct-20	19-May-21	27-Oct-21	26-May-20	15-Oct-20	19-May-21	26-Oct-21	26-May-20	14-Oct-20	19-May-21	26-Oct-21
Location				Background (Cb)				Cm = Cb + x(Cr - Cb)				Downgradient				Leachate				Downgradient				Downgradient			
<b>In Situ Parameters</b>																											
Conductivity µS/cm	-	-	-	149	244	150	0.041	-	-	-	-	338	484	217	0.473	782	235	15	1.04	406	464	434	0.454	520	639	605	0.64
Depth to Water (below top of PVC) m	-	-	-	2.64	2.73	2.6	2.35	-	-	-	-	6.26	5.82	5.3	5.91	8.17	9.13	8.8	8.92	3.93	4.66	4.35	4.6	4.57	5.07	4.8	5.12
Oxygen Dissolved	-	-	-	-	8.1	4.43	9.06	-	-	-	-	-	5	6.75	8.72	-	9.91	2.79	3.78	-	4.93	6.49	4.96	-	0.42	2.82	9.29
pH	-	6.5 to 8.5	OG	6.1	5.53	6.01	6.11	-	-	-	-	7.43	6.44	6.97	6.59	6.49	6.13	6.52	6.58	7.61	7.72	7.27	7.69	6.48	6.38	6.33	6.66
Temperature °C	-	-	-	13.8	10.9	11.4	10.7	-	-	-	-	14.1	7.9	14.3	7.34	14.5	9.5	13.3	10.4	13.2	7.9	10.5	7.81	12.2	9.3	11.4	7.95
<b>Physical Tests</b>																											
Alkalinity (Total as CaCO3)	2	30 to 500	OG	35	55	44	25	-	-	-	-	173	203	108	273	350	73	414	438	185	192	172	183	205	213	198	211
Chemical Oxygen Demand	8	-	-	16	16	11	15	-	-	-	-	20	28	<8	10	96	28	91	129	<8	<8	<8	<8	10	<8	8	10
Conductivity µS/cm	2	-	-	136	300	157	74	-	-	-	-	389	393	273	568	795	162	992	943	451	432	405	420	596	584	606	574
Hardness as CaCO3	0.05	80 to 100	OG	49.9	96.3	54	24.3	-	-	-	-	136	152	90.3	194	267	54.3	330	397	219	230	200	219	258	267	244	274
pH	0.05	6.5 to 8.5	OG	6.76	7.01	6.47	6.7	-	-	-	-	7.51	7.05	7.54	6.64	7.8	6.68	6.8	7.15	8.2	8.34	8.1	7.65	8.17	7.32	7.08	6.71
Total Dissolved Solids	3	500	AO	111	169	97	77	306	335	299	289	177	226	174	383	386	97	517	514	229	217	211	254	329	366	351	386
Total Suspended Solids	2	-	-	178	165	158	284	-	-	-	-	3420	4670	27900	306	309	108	400	705	24	46	89	35	7230	263	441	530
<b>Anions</b>																											
Chloride	1	250	AO	5	4	6	4	128	127	128	127	12	11	12	25	24	2	26	37	13	12	19	20	32	31	37	36
Sulphate	1 to 2	500	AO	21	43	24	10	261	272	262	255	7	10	17	9	30	9	55	52	28	26	29	23	52	62	60	49
<b>Nutrients</b>																											
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	0.05	-	-	-	-	0.6	1.7	<0.1	2.54	16	2.8	17.8	14.9	<0.1	<0.1	<0.1	0.04	0.2	0.3	0.2	0.24
Nitrate (as N)	0.06	10	MAC	0.57	0.75	0.74	<0.06	2.93	3.06	3.06	2.52	0.66	1.86	0.44	2.23	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.56	0.86	0.71	0.76
Nitrite (as N)	0.03	1	MAC	<0.03	0.04	<0.03	<0.03	0.26	0.28	0.26	0.26	<0.03	0.16	<0.03	0.34	0.06	<0.03	0.06	0.07	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	0.7	<0.5	0.18	-	-	-	-	1.1	2.5	<0.5	2.58	16.2	3.8	18.1	16.4	<0.5	<0.5	<0.5	0.05	<0.5	1	<0.5	0.41
<b>Dissolved Metals</b>																											
Aluminum	0.001	0.1	OG	0.13	0.134	0.02	0.143	0.115	0.117	0.060	0.12	0.034	0.03	0.004	0.005	0.008	0.003	0.009	0.008	0.003	0.054	0.002	0.002	0.003	0.043	0.002	0.002
Antimony	0.0002	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	0.0018	0.0018	0.0018	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Arsenic	0.0002	0.025	IMAC	<0.0002	0.0002	0.0002	<0.0002	0.006	0.006	0.006	0.006	0.0005	0.0006	0.0003	0.0006	0.0004	<0.0002	0.0006	0.0004	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0002	0.0003	<0.0002
Barium	0.00002	1	MAC	0.0157	0.0544	0.0205	0.0112	0.262	0.291	0.265	0.258	0.101	0.177	0.0664	0.242	0.144	0.041	0.197	0.176	0.0458	0.0496	0.052	0.048	0.0712	0.0753	0.0791	0.0789
Beryllium	0.000007	-	-	0.000025	0.000045	0.00002	0.000015	-	-	-	-	0.000012	0.000011	0.000013	0.000017	0.000008	<0.000007	<0.000007	<0.000007	<0.000007	<0.000007	<0.000007	<0.000007	0.000013	0.000009	0.000008	0.00001
Bismuth	0.000007	-	-	0.000023	0.000068	<0.00001	0.00002	-	-	-	-	<0.000007	0.000021	<0.00001	<0.00001	<0.000007	0.00001	<0.00001	<0.00001	<0.000007	0.000008	<0.00001	<0.00001	<0.000007	0.000012	<0.00001	<0.00001
Boron	0.002	5	IMAC	0.008	0.019	0.059	0.032	1.26	1.26	1.29	1.27	0.271	0.276	0.102	0.356	1.19	0.068	0.885	0.807	0.067	0.064	0.059	0.057	0.235	0.184	0.184	0.21
Cadmium	0.000003	0.005	MAC	0.00002	0.000031	0.000014	0.000014	0.0013	0.0013	0.0013	0.0013	0.000051	0.000035	0.000012	-	<0.000003	0.00001	<0.000003	-	0.000018	0.000111	0.000028	-	0.00007	0.000099	0.000073	-
Calcium	0.01	-	-	8.82	19.1	10.2	4.39	-	-	-	-	31.8	35.6	21.6	47.3	81.8	15.7	105	125	50.8	52.9	48.6	53.8	70	71.9	70.3	79.2
Chromium	0.00008	0.05	MAC	0.00052	0.00031	0.00017	0.00079	0.0129	0.0127	0.0126	0.013	0.00028	0.00025	0.00023	0.00033	0.00145	0.00019	0.00173	0.00209	<0.00008	<0.00008	0.00009	<0.00008	0.00008	<0.00008	0.00011	0.00008
Cobalt	0.000004	-	-	0.000117	0.000839	0.000097	0.000137	-	-	-	-	0.000727	0.00249	0.000156	0.0041	0.0188	0.0102	0.0141	0.0188	<0.00004	0.000076	0.000026	0.000023	0.000319	0.00187	0.00126	0.0014
Copper	0.00002	1	AO	0.0022	0.0017	0.0008	0.0015	0.501	0.501	0.500	0.501	0.0063	0.0144	0.0019	0.015	0.0134	0.0004	0.0002	0.0003	0.001	0.0006	0.0002	0.0003	0.0043	0.0046	0.0024	0.0044
Iron	0.007	0.3	AO	0.09	0.206	<0.007	0.098	0.20	0.25	0.15	0.20	0.024	0.019	<0.007	<0.007	0.179	0.166	0.061	0.04	<0.007	0.044	<0.007	<0.007	<0.007	0.029	<0.007	<0.007
Lead	0.00001	0.01	MAC	0.00008	0.00007	<0.00009	<0.00009	0.0026	0.0026	0.0025	0.0025	0.00001	<0.00001	<0.00009	<0.00009	<0.00001	<0.00001	<0.00009	<0.00009	<0.00001	0.00003	<0.00009	<0.00009	<0.00001	<0.00001	<0.00009	<0.00009
Magnesium	0.001	-	-	6.77	11.8	6.94	3.23	-	-	-	-	13.7	15.5	8.86	18.3	15.3	3.64	16.1	20.6	22.4	23.8	19.1	20.5	20.2	21.2	16.7	18.6
Manganese	0.00001	0.05	AO	0.0127	0.0738	0.0209	0.00337	0.03	0.06	0.04	0.03	0.749	2.4	0.0886	2.67	3.94	1.6	4.63	5.24	0.0735	0.13	0.132	0.0894	1.39	1.84	1.61	1.73
Mercury	0.00001	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00004	0.000025	0.00025	0.00025	0.00025	<0.00001	<0.00001	<0.00001	<0.00004	<0.00001	0.00002	<0.00001	<0.00004	<0.00001	<0.00001	<0.00001	<0.00004	<0.00001	<0.00001	<0.00001	<0.00004
Molybdenum	0.00001	-	-	0.00008	0.00011	0.00013	0.00008	-	-	-	-	0.00027	0.0007	0.00013	0.00067	0.00059	0.00009	0.00026	0.00018	0.00469	0.00501	0.00484	0.00471	0.0014	0.00175	0.00144	0.00167
Nickel	0.0001	-	-	0.0019	0.0082	0.0027	0.0014	-	-	-	-	0.0021	0.0058	0.0018	0.0068	0.0035	0.0018	0.0036	0.0047	<0.0001	0.0003	0.0002	0.0002	0.001	0.0024	0.0018	0.0022
Phosphorus (Metal)	0.003	-	-	0.01	0.009	0.004	0.013	-	-	-	-	0.008	0.011	0.003	<0.003	0.008	0.003	0.006	0.009	<0.003	0.006	<0.003	<0.003	<0.003	0.008	<0.003	<0.003
Potassium	0.003	-	-	0.544	1.39	0.732	1.17	-	-	-	-	3.97	9.32	2.26	10.4	26.5	4.26	27.1	28.9	4.84	4.8	4.92	5.01	24.4	21.6	21.6	23.5
Selenium	0.00004	0																									

**TABLE 3.2**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SUMMARY OF 2020/2021 GROUNDWATER QUALITY RESULTS**

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Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				Spring 2020 Maximum	Fall 2020 Maximum	Spring 2021 Maximum	Fall 2021 Maximum	MW6				MW8				MW9			
				26-May-20	14-Oct-20	19-May-21	27-Oct-21	Reasonable Use Guideline (Cm)	26-May-20	14-Oct-20	19-May-21	26-Oct-21	26-May-20	15-Oct-20	19-May-21	26-Oct-21	26-May-20	14-Oct-20	19-May-21	26-Oct-21			
<b>Location</b>				Background (Cb)				Cm = Cb + x(Cr - Cb)				Downgradient				Downgradient				Downgradient			
<b>In Situ Parameters</b>																							
Conductivity µS/cm	-	-	-	149	244	150	0.041	-	-	-	-	289	298	289	0.271	487	583	552	0.611	362	576	703	0.737
Depth to Water (below top of PVC) m	-	-	-	2.64	2.73	2.6	2.35	-	-	-	-	4.93	5.07	4.75	5.12	9.66	9.87	9.65	9.85	4.98	5.62	4.74	5.72
Oxygen Dissolved	-	-	-	-	8.1	4.43	9.06	-	-	-	-	-	1.78	6.62	9.01	-	4.87	3.51	4.49	-	2.7	4.63	3.65
pH	-	6.5 to 8.5	OG	6.1	5.53	6.01	6.11	-	-	-	-	7.06	6.54	6.1	6.81	6.38	6.41	6.17	6.54	6.9	6.49	6.45	6.62
Temperature °C	-	-	-	13.8	10.9	11.4	10.7	-	-	-	-	12.3	8.2	8.74	7.96	14.7	9.1	11.5	8.36	13.1	8.1	10.1	7.43
<b>Physical Tests</b>																							
Alkalinity (Total as CaCO3)	2	30 to 500	OG	35	55	44	25	-	-	-	-	66	86	86	107	163	164	155	184	168	228	215	282
Chemical Oxygen Demand	8	-	-	16	16	11	15	-	-	-	-	<8	<8	<8	20	<8	<8	<8	<8	13	13	13	8
Conductivity µS/cm	2	-	-	136	300	157	74	-	-	-	-	177	224	230	233	528	537	525	546	400	665	606	660
Hardness as CaCO3	0.05	80 to 100	OG	49.9	96.3	54	24.3	-	-	-	-	83.4	134	86.4	92.7	209	235	203	259	144	209	229	282
pH	0.05	6.5 to 8.5	OG	6.76	7.01	6.47	6.7	-	-	-	-	7.65	7.72	6.78	6.72	7.43	7.2	7.14	6.59	7.78	7.44	7.07	6.69
Total Dissolved Solids	3	500	AO	111	169	97	77	306	335	299	289	94	143	154	154	291	357	269	371	191	329	403	469
Total Suspended Solids	2	-	-	178	165	158	284	-	-	-	-	4900	896	3820	383	46	14	21	77	1750	2000	4150	3460
<b>Anions</b>																							
Chloride	1	250	AO	5	4	6	4	128	127	128	127	6	5	9	5	44	32	44	32	7	9	18	18
Sulphate	1 to 2	500	AO	21	43	24	10	261	272	262	255	11	15	14	12	33	50	43	56	18	31	56	42
<b>Nutrients</b>																							
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	0.05	-	-	-	-	<0.1	<0.1	<0.1	<0.04	0.1	<0.1	<0.1	0.04	<0.1	0.5	<0.1	0.76
Nitrate (as N)	0.06	10	MAC	0.57	0.75	0.74	<0.06	2.93	3.06	3.06	2.52	1.03	0.8	1.54	0.83	1.74	3.24	1.73	3.12	1.87	4.54	7.52	4.85
Nitrite (as N)	0.03	1	MAC	<0.03	0.04	<0.03	<0.03	0.26	0.28	0.26	0.26	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.07	<0.03	0.07
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	0.7	<0.5	0.18	-	-	-	-	<0.5	<0.5	<0.5	<0.05	<0.5	0.5	<0.5	0.14	<0.5	1.5	<0.5	0.87
<b>Dissolved Metals</b>																							
Aluminum	0.001	0.1	OG	0.13	0.134	0.02	0.143	0.115	0.117	0.060	0.12	0.135	0.049	0.002	0.003	0.004	0.006	0.002	0.001	0.037	0.061	0.003	0.005
Antimony	0.0002	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.0018	0.0018	0.0018	0.0018	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Arsenic	0.0002	0.025	IMAC	<0.0002	0.0002	0.0002	<0.0002	0.006	0.006	0.006	0.006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0004	<0.0002	0.0007	0.0008	0.0009	0.0008
Barium	0.00002	1	MAC	0.0157	0.0544	0.0205	0.0112	0.262	0.291	0.265	0.258	0.0548	0.0781	0.0688	0.063	0.111	0.102	0.118	0.114	0.131	0.178	0.254	0.283
Beryllium	0.000007	-	-	0.000025	0.000045	0.00002	0.000015	-	-	-	-	0.000015	<0.000007	<0.000007	0.000008	0.000009	0.000014	0.000011	0.000007	0.000007	0.000011	0.000012	0.00001
Bismuth	0.000007	-	-	0.000023	0.000068	<0.00001	0.00002	-	-	-	-	<0.00007	0.000015	<0.00001	<0.00001	<0.00007	0.000064	<0.00001	<0.00001	<0.00007	0.000046	<0.00001	<0.00001
Boron	0.002	5	IMAC	0.008	0.019	0.059	0.032	1.26	1.26	1.29	1.27	0.027	0.037	0.035	0.029	0.14	0.171	0.125	0.209	0.602	0.619	0.517	0.706
Cadmium	0.000003	0.005	MAC	0.00002	0.000031	0.000014	0.000014	0.0013	0.0013	0.0013	0.0013	0.000011	0.000022	0.000013	-	<0.000003	0.00001	0.000029	-	0.000027	0.000038	0.000021	-
Calcium	0.01	-	-	8.82	19.1	10.2	4.39	-	-	-	-	18.2	27.1	19.9	20.8	61.5	65.8	60.5	77.2	37.4	54.9	62.2	78.4
Chromium	0.00008	0.05	MAC	0.00052	0.00031	0.00017	0.00079	0.0129	0.0127	0.0126	0.013	0.00047	0.00032	0.00048	0.00031	0.00016	0.00015	0.00036	0.00038	0.00022	0.00029	0.00025	0.00031
Cobalt	0.000004	-	-	0.000117	0.000839	0.000097	0.000137	-	-	-	-	0.000093	0.000107	0.000054	0.000069	0.000209	0.000337	0.000074	0.000139	0.00008	0.00123	0.000643	0.00106
Copper	0.00002	1	AO	0.0022	0.0017	0.0008	0.0015	0.501	0.501	0.500	0.501	0.0013	0.0007	0.0004	0.0004	0.0084	0.0017	0.0014	0.0013	0.0092	0.0132	0.0088	0.0123
Iron	0.007	0.3	AO	0.09	0.206	<0.007	0.098	0.20	0.25	0.15	0.20	0.121	0.194	<0.007	<0.007	0.01	<0.007	<0.007	<0.007	0.019	0.04	<0.007	<0.007
Lead	0.00001	0.01	MAC	0.00008	0.00007	<0.00009	<0.00009	0.0026	0.0026	0.0025	0.0025	0.00006	<0.00001	<0.00009	<0.00009	<0.00001	<0.00001	<0.00009	<0.00009	0.00004	0.00002	<0.00009	<0.00009
Magnesium	0.001	-	-	6.77	11.8	6.94	3.23	-	-	-	-	9.21	16	8.9	9.91	13.4	17.1	12.7	16.1	12.3	17.5	17.9	21.1
Manganese	0.00001	0.05	AO	0.0127	0.0738	0.0209	0.00337	0.03	0.06	0.04	0.03	0.00281	0.00208	0.00089	0.001	0.0267	0.0813	0.0897	0.00803	0.0172	0.0704	0.0227	0.0713
Mercury	0.00001	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00004	0.00025	0.00025	0.00025	0.00025	<0.00001	<0.00001	0.00002	<0.00004	<0.00001	<0.00001	<0.00001	<0.00004	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	0.00001	-	-	0.00008	0.00011	0.00013	0.00008	-	-	-	-	0.00055	0.00088	0.00071	0.00077	0.00017	0.00015	0.00019	0.00019	0.00082	0.00077	0.0005	0.00077
Nickel	0.0001	-	-	0.0019	0.0082	0.0027	0.0014	-	-	-	-	<0.0001	0.0007	0.0003	0.0005	<0.0001	0.0005	0.0006	0.0005	0.0002	0.0018	0.0012	0.0015
Phosphorus (Metal)	0.003	-	-	0.01	0.009	0.004	0.013	-	-	-	-	0.007	0.011	<0.003	<0.003	0.003	0.006	<0.003	0.004	0.003	0.009	<0.003	0.005
Potassium	0.003	-	-	0.544	1.39	0.732	1.17	-	-	-	-	2.39	2.98	2.59	2.66	16.5	12	14.3	14.4	23.4	27.6	31.1	38.8
Selenium	0.00004	0.01	MAC	0.00009	0.00005	<0.00004	0.00006	0.0026	0.0025	0.0025	0.0025	0.00004	<0.00004	0.00008	0.00009	0.00012	0.00013	0.00008	0.00013	0.00014	0.00013	0.00016	0.00017
Silver	0.000050	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	0.00009	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Sodium	0.01	200	AO	7.69	9.64	7.75	6.78	104	105	104	103	11.7	14.4	13.3	11	20.3	22.8	23.3	20.4	23.3	28.1	18.7	26.7
Strontium	0.00002	-	-	0.0749	0.184	0.0999	0.0318	-	-	-	-	0.143	0.212	0.177	0.165	0.426	0.44	0.468	0.469	0.516	0.6	0.984	0.733
Thallium	0.000005	-	-	0.000009	0.000009	<0.000005	<0.000005	-	-	-	-	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.000019	0.000042	0.000027	0.000048
Tin	0.00006	-	-	<0.00006	<0.00006	<0.00006	<0.00006	-	-	-	-	0.00019	<0.00006	0.00037	<0.00006	0.00016	<0.00006	0.00008	<0.00006	0.00011	0.00011	0.00011	0.00011
Titanium	0.00005	-	-	0.00546	0.00767	0.00044																	

**TABLE 3.2**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SUMMARY OF 2020/2021 GROUNDWATER QUALITY RESULTS**

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Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AIO/OG parameters, and 0.25 for MAC)	MW7				Spring 2020 Maximum	Fall 2020 Maximum	Spring 2021 Maximum	Fall 2021 Maximum	MW10				MW11				MW12			
				26-May-20	14-Oct-20	19-May-21	27-Oct-21	Reasonable Use Guideline (Cm)				26-May-20	14-Oct-20	19-May-21	27-Oct-21	26-May-20	14-Oct-20	19-May-21	27-Oct-21	26-May-20	14-Oct-20	19-May-21	27-Oct-21
				Background (Cb)				Cm = Cb + x(Cr - Cb)				Downgradient				Downgradient				Cross-gradient			
<b>In Situ Parameters</b>																							
Conductivity µS/cm	-	-	-	149	244	150	0.041	-	-	-	-	482	685	481	0.549	57	71	64	0.91	33	36	41	0.041
Depth to Water (below top of PVC) m	-	-	-	2.64	2.73	2.6	2.35	-	-	-	-	7.32	6.8	6.00	6.92	5.11	5.61	4.7	5.76	3.04	3.6	2.6	3.69
Oxygen Dissolved	-	-	-	-	8.1	4.43	9.06	-	-	-	-	-	0.61	2.49	3.31	-	9.83	8.41	9.36	-	9.84	9.37	9.4
pH	-	6.5 to 8.5	OG	6.1	5.53	6.01	6.11	-	-	-	-	6.09	5.57	6.06	5.93	7.11	6	6.57	6.32	6.87	5.83	6.04	5.29
Temperature °C	-	-	-	13.8	10.9	11.4	10.7	-	-	-	-	16.9	11.8	14.3	11.6	14.5	8	9.75	8.48	12.7	8.73	8.73	10
<b>Physical Tests</b>																							
Alkalinity (Total as CaCO3)	2	30 to 500	OG	35	55	44	25	-	-	-	-	113	56	79	57	22	23	22	29	9	9	12	9
Chemical Oxygen Demand	8	-	-	16	16	11	15	-	-	-	-	23	25	17	14	9	<8	<8	<8	14	<8	<8	12
Conductivity µS/cm	2	-	-	136	300	157	74	-	-	-	-	518	720	550	548	64	67	56	85	38	35	38	33
Hardness as CaCO3	0.05	80 to 100	OG	49.9	96.3	54	24.3	-	-	-	-	131	174	143	173	20.4	21.3	20.2	35.9	11.9	10.8	14	11.9
pH	0.05	6.5 to 8.5	OG	6.76	7.01	6.47	6.7	-	-	-	-	7.28	6.3	6.58	6.69	7.5	6.83	6.74	6.37	6.71	6.6	6.33	6.5
Total Dissolved Solids	3	500	AO	111	169	97	77	306	335	299	289	266	463	403	386	<30	<30	40	77	63	51	63	57
Total Suspended Solids	2	-	-	178	165	158	284	-	-	-	-	2670	584	2570	1410	14000	1100	8490	2670	12100	3290	16000	5780
<b>Anions</b>																							
Chloride	1	250	AO	5	4	6	4	128	127	128	127	43	60	32	42	1	2	<1	2	2	1	<1	2
Sulphate	1 to 2	500	AO	21	43	24	10	261	272	262	255	87	160	120	100	8	13	7	7	6	12	7	5
<b>Nutrients</b>																							
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	0.05	-	-	-	-	0.7	0.2	1	0.43	<0.1	<0.1	<0.1	<0.04	<0.1	<0.1	<0.1	<0.04
Nitrate (as N)	0.06	10	MAC	0.57	0.75	0.74	<0.06	2.93	3.06	3.06	2.52	1.15	5.99	1.7	6.3	<0.06	0.23	<0.06	0.29	<0.06	<0.06	<0.06	<0.06
Nitrite (as N)	0.03	1	MAC	<0.03	0.04	<0.03	<0.03	0.26	0.28	0.26	0.26	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	0.7	<0.5	0.18	-	-	-	-	1.3	1.2	1.3	0.99	<0.5	<0.5	<0.5	0.08	<0.5	0.5	<0.5	0.12
<b>Dissolved Metals</b>																							
Aluminum	0.001	0.1	OG	0.13	0.134	0.02	0.143	0.115	0.117	0.060	0.12	0.035	0.075	0.02	0.017	0.377	0.262	0.007	0.007	0.477	0.361	0.012	0.021
Antimony	0.0002	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.0018	0.0018	0.0018	0.0018	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009
Arsenic	0.0002	0.025	IMAC	<0.0002	0.0002	0.0002	<0.0002	0.006	0.006	0.006	0.006	0.0008	0.0008	0.0009	0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Barium	0.00002	1	MAC	0.0157	0.0544	0.0205	0.0112	0.262	0.291	0.265	0.268	0.123	0.13	0.143	0.111	0.0147	0.0121	0.00618	0.0084	0.0138	0.00931	0.00411	0.00399
Beryllium	0.000007	-	-	0.000025	0.000045	0.00002	0.000015	-	-	-	-	0.000048	0.000097	0.000064	0.000058	0.000032	0.000028	0.000011	0.000013	0.00004	0.000028	0.00001	0.000013
Bismuth	0.000007	-	-	0.000023	0.000068	<0.00001	0.00002	-	-	-	-	0.000023	0.000037	<0.00001	<0.00001	0.000012	0.000026	<0.00001	<0.00001	0.000013	0.000042	<0.00001	0.00001
Boron	0.002	5	IMAC	0.008	0.019	0.059	0.032	1.26	1.26	1.29	1.27	0.736	0.828	0.529	0.672	0.032	0.038	0.039	0.041	0.005	0.011	0.037	0.03
Cadmium	0.000003	0.005	MAC	0.00002	0.000031	0.000014	0.000014	0.0013	0.0013	0.0013	0.0013	0.000119	0.000157	0.000136	-	0.000007	0.000007	0.000008	-	<0.000003	0.000006	0.000006	-
Calcium	0.01	-	-	8.82	19.1	10.2	4.39	-	-	-	-	36.7	49.7	42.1	51.9	5.48	5.46	5.63	9.93	3.2	2.81	3.81	3.37
Chromium	0.00008	0.05	MAC	0.00052	0.00031	0.00017	0.00079	0.0129	0.0127	0.0126	0.013	0.00039	0.00053	0.00045	0.00031	0.0005	0.00021	0.00014	0.00016	0.00086	0.00067	0.00018	0.00018
Cobalt	0.000004	-	-	0.000117	0.000839	0.000097	0.000137	-	-	-	-	0.00134	0.00129	0.0014	0.00105	0.000121	0.000137	0.000029	0.000034	0.000271	0.000296	0.000084	0.000051
Copper	0.00002	1	AO	0.0022	0.0017	0.0008	0.0015	0.501	0.501	0.500	0.501	0.0074	0.0055	0.0054	0.0036	0.0028	0.0018	0.0004	0.0005	0.0029	0.0022	0.0003	0.0004
Iron	0.007	0.3	AO	0.09	0.206	<0.007	0.098	0.20	0.25	0.15	0.20	0.024	0.045	0.011	0.007	0.227	0.404	0.342	<0.007	<0.007	<0.007	<0.007	0.01
Lead	0.00001	0.01	MAC	0.00008	0.00007	<0.00009	<0.00009	0.0026	0.0026	0.0025	0.0025	0.00003	<0.00001	<0.00009	<0.00009	0.00017	0.00008	<0.00009	<0.00009	0.00033	0.0002	<0.00009	<0.00009
Magnesium	0.001	-	-	6.77	11.8	6.94	3.23	-	-	-	-	9.62	12.1	9.18	10.5	1.64	1.86	1.48	2.7	0.949	0.919	1.09	0.852
Manganese	0.00001	0.05	AO	0.0127	0.0738	0.0209	0.00337	0.03	0.06	0.04	0.03	2.28	1.25	1.82	1.73	0.00361	0.00282	0.00104	0.00081	0.00858	0.00764	0.00225	0.00181
Mercury	0.00001	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00004	0.00025	0.00025	0.00025	0.00025	0.00002	0.00001	<0.00001	<0.00004	<0.00001	<0.00001	<0.00001	<0.00004	<0.00001	<0.00001	<0.00001	<0.00004
Molybdenum	0.00001	-	-	0.00008	0.00011	0.00013	0.00008	-	-	-	-	0.00045	0.00019	0.00033	0.00021	0.00025	0.00015	0.00031	0.0003	0.00014	0.00012	0.00009	0.00013
Nickel	0.0001	-	-	0.0019	0.0082	0.0027	0.0014	-	-	-	-	0.0015	0.0026	0.0021	0.0017	<0.0001	0.0006	0.0003	0.0004	<0.0001	0.0008	0.0002	0.0001
Phosphorus (Metal)	0.003	-	-	0.01	0.009	0.004	0.013	-	-	-	-	0.008	0.012	0.004	<0.003	0.007	0.007	<0.003	<0.003	0.009	0.014	<0.003	0.009
Potassium	0.003	-	-	0.544	1.39	0.732	1.17	-	-	-	-	7.23	4.83	8.6	5.68	0.795	0.748	0.703	1.04	0.512	0.47	0.523	0.573
Selenium	0.00004	0.01	MAC	0.00009	0.00005	<0.00004	0.00006	0.0026	0.0025	0.0025	0.0025	0.00019	0.00019	0.00015	0.00012	0.00007	0.00006	<0.00004	0.00006	0.00005	<0.00004	0.00004	<0.00004
Silver	0.000050	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Sodium	0.01	200	AO	7.69	9.64	7.75	6.78	104	105	104	103	52.8	82.1	50.2	50.7	4.26	5.26	2.9	3.41	1.69	2.16	2.52	2.19
Strontium	0.00002	-	-	0.0749	0.184	0.0999	0.0318	-	-	-	-	0.468	0.631	0.626	0.634	0.0449	0.0472	0.0481	0.0672	0.031	0.0302	0.0377	0.0302
Thallium	0.000005	-	-	0.000009	0.000009	<0.000005	<0.000005	-	-	-	-	0.000051	0.000048	0.000054	0.000042	<0.000005	0.000005	<0.000005	<0.000005	0.000008	0.000006	<0.000005	<0.000005
Tin	0.00006	-	-	<0.00006	<0.00006	<0.00006	<0.00006	-	-	-	-	0.00059	0.00015	0.00012	0.00011	0.00017	<0.00006	<0.00006	<0.00006	0.00031	<0.00006	<0.00006	<0.00006
Titanium	0.00005	-	-	0.00546	0.00767	0.00044	0.00523	-	-	-	-	0.00112	0.0										



**TABLE 3.2**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SUMMARY OF 2020/2021 GROUNDWATER QUALITY RESULTS**

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Parameter	RL	ODWS (Cr)	Standard or Objective (x = 0.5 for AO/OG parameters, and 0.25 for MAC)	MW7				Spring 2020 Maximum	Fall 2020 Maximum	Spring 2021 Maximum	Fall 2021 Maximum	MW13				MW14				RES-188			
				26-May-20	14-Oct-20	19-May-21	27-Oct-21	Reasonable Use Guideline (Cm)				26-May-20	14-Oct-20	19-May-21	27-Oct-21	26-May-20	15-Oct-20	19-May-21	27-Oct-21	26-May-20	14-Oct-20	-	-
<b>In Situ Parameters</b>				Background (Cb)				Cm = Cb + x(Cr - Cb)				Cross-gradient				Upgradient				Residential Well			
Conductivity µS/cm	-	-	-	149	244	150	0.041	-	-	-	-	40	64	174	0.059	187	82	42	0.77	-	-	-	-
Depth to Water (below top of PVC) m	-	-	-	2.64	2.73	2.6	2.35	-	-	-	-	4.4	4.93	3.94	4.95	2.25	3.73	2.7	2.08	-	-	-	-
Oxygen Dissolved	-	-	-	-	8.1	4.43	9.06	-	-	-	-	-	8.49	9.7	10.5	-	6.3	9	6.89	-	-	-	-
pH	-	6.5 to 8.5	OG	6.1	5.53	6.01	6.11	-	-	-	-	7.06	6.11	5.44	6.32	5.32	6.44	7.65	6.21	-	-	-	-
Temperature °C	-	-	-	13.8	10.9	11.4	10.7	-	-	-	-	13.1	8.5	9.6	8.58	12.8	10.5	12.7	10.6	-	-	-	-
<b>Physical Tests</b>																							
Alkalinity (Total as CaCO3)	2	30 to 500	OG	35	55	44	25	-	-	-	-	16	23	14	23	10	27	9	12	76	75	-	-
Chemical Oxygen Demand	8	-	-	16	16	11	15	-	-	-	-	8	<8	<8	<8	<8	<8	<8	<8	<8	<8	-	-
Conductivity µS/cm	2	-	-	136	300	157	74	-	-	-	-	48	59	42	59	42	81	37	47	182	172	-	-
Hardness as CaCO3	0.05	80 to 100	OG	49.9	96.3	54	24.3	-	-	-	-	16.4	23.8	16.1	23.4	14.7	36.5	13.2	16	82.9	78.3	N/S	N/S
pH	0.05	6.5 to 8.5	OG	6.76	7.01	6.47	6.7	-	-	-	-	7.04	6.97	6.56	6.83	6.82	7.22	6.39	6.16	7.81	8.13	-	-
Total Dissolved Solids	3	500	AO	111	169	97	77	306	335	299	289	<30	49	54	63	<30	74	43	49	66	100	-	-
Total Suspended Solids	2	-	-	178	165	158	284	-	-	-	-	408	209	1400	179	375	334	245	117	<2	<2	-	-
<b>Anions</b>																							
Chloride	1	250	AO	5	4	6	4	128	127	128	127	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	N/S	N/S
Sulphate	1 to 2	500	AO	21	43	24	10	261	272	262	255	4	12	4	5	5	9	5	5	13	14	-	-
<b>Nutrients</b>																							
Ammonia (Total)	0.1	-	-	<0.1	<0.1	<0.1	0.05	-	-	-	-	<0.1	<0.1	<0.1	<0.04	<0.1	<0.1	<0.1	<0.04	<0.1	<0.1	N/S	N/S
Nitrate (as N)	0.06	10	MAC	0.57	0.75	0.74	<0.06	2.93	3.06	3.06	2.52	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	-	-
Nitrite (as N)	0.03	1	MAC	<0.03	0.04	<0.03	<0.03	0.26	0.28	0.26	0.26	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	-	-
Nitrogen Kjeldahl (Total)	0.5	-	-	<0.5	0.7	<0.5	0.18	-	-	-	-	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	-	-
<b>Dissolved Metals</b>																							
Aluminum	0.001	0.1	OG	0.13	0.134	0.02	0.143	0.115	0.117	0.060	0.12	0.041	0.121	0.016	0.011	0.038	0.083	0.013	0.017	<0.001	0.002	-	-
Antimony	0.0002	0.006	IMAC	<0.0009	<0.0009	<0.0009	<0.0009	0.0018	0.0018	0.0018	0.0018	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0009	<0.0013
Arsenic	0.0002	0.025	IMAC	<0.0002	0.0002	0.0002	<0.0002	0.006	0.006	0.006	0.006	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Barium	0.00002	1	MAC	0.0157	0.0544	0.0205	0.0112	0.262	0.291	0.265	0.258	0.00438	0.00782	0.00466	0.00739	0.0136	0.0252	0.0139	0.0191	0.0127	0.0125	-	-
Beryllium	0.000007	-	-	0.000025	0.000045	0.00002	0.000015	-	-	-	-	0.000018	0.000019	0.000014	0.000018	0.000027	0.000023	0.000028	0.000042	<0.000007	<0.000007	-	-
Bismuth	0.000007	-	-	0.000023	0.000068	<0.00001	0.00002	-	-	-	-	<0.000007	0.000014	<0.00001	0.00002	<0.000007	0.000021	<0.00001	<0.00001	<0.000007	0.000011	-	-
Boron	0.002	5	IMAC	0.008	0.019	0.059	0.032	1.26	1.26	1.29	1.27	0.006	0.01	0.001	0.008	0.002	0.007	0.01	0.005	0.034	0.023	-	-
Cadmium	0.000003	0.005	MAC	0.00002	0.000031	0.000014	0.000014	0.0013	0.0013	0.0013	0.0013	0.000007	0.000007	0.000004	-	0.000041	0.000102	0.000039	-	<0.000003	0.000003	-	-
Calcium	0.01	-	-	8.82	19.1	10.2	4.39	-	-	-	-	4.66	6.33	4.72	6.77	4.24	9.07	3.91	4.82	21.5	20.4	-	-
Chromium	0.00008	0.05	MAC	0.00052	0.00031	0.00017	0.00079	0.0129	0.0127	0.0126	0.013	0.001	<0.00008	0.00017	<0.00008	0.00019	0.00011	0.00014	0.00014	<0.00008	<0.00008	-	-
Cobalt	0.000004	-	-	0.000117	0.000839	0.000097	0.000137	-	-	-	-	0.000018	0.000139	0.000023	0.000044	0.000526	0.00024	0.000051	0.000303	<0.000004	0.000022	-	-
Copper	0.00002	1	AO	0.0022	0.0017	0.0008	0.0015	0.501	0.501	0.500	0.501	0.0013	0.0007	<0.0002	0.0003	0.0012	0.0023	0.0007	0.0008	0.0032	0.0003	-	-
Iron	0.007	0.3	AO	0.09	0.206	<0.007	0.098	0.20	0.25	0.15	0.20	0.021	0.213	0.007	<0.007	0.037	0.083	<0.007	<0.007	<0.007	0.028	-	-
Lead	0.00001	0.01	MAC	0.00008	0.00007	<0.00009	<0.00009	0.0026	0.0026	0.0025	0.0025	0.00002	0.00008	<0.00009	<0.00009	0.00003	0.00006	<0.00009	<0.00009	0.00003	<0.00001	-	-
Magnesium	0.001	-	-	6.77	11.8	6.94	3.23	-	-	-	-	1.17	1.95	1.04	1.57	1.01	3.36	0.828	0.953	7.1	6.66	N/S	N/S
Manganese	0.00001	0.05	AO	0.0127	0.0738	0.0209	0.00337	0.03	0.06	0.04	0.03	0.00082	0.00852	0.00055	0.00099	0.00261	0.0139	0.00164	0.00376	0.0338	0.0383	-	-
Mercury	0.00001	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00004	0.00025	0.00025	0.00025	0.00025	<0.00001	<0.00001	<0.00001	<0.00004	<0.00001	<0.00001	<0.00001	<0.00004	<0.00001	<0.00001	-	-
Molybdenum	0.00001	-	-	0.00008	0.00011	0.00013	0.00008	-	-	-	-	0.00028	0.00028	0.00026	0.00027	0.00062	0.00045	0.00022	0.00014	0.00143	0.00156	-	-
Nickel	0.0001	-	-	0.0019	0.0082	0.0027	0.0014	-	-	-	-	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0006	0.0002	0.0005	<0.0001	0.0003	-	-
Phosphorus (Metal)	0.003	-	-	0.01	0.009	0.004	0.013	-	-	-	-	<0.003	0.008	<0.003	<0.003	0.003	0.007	<0.003	<0.003	<0.003	<0.003	-	-
Potassium	0.003	-	-	0.544	1.39	0.732	1.17	-	-	-	-	0.456	0.574	0.531	0.723	0.411	0.813	0.445	0.665	1.68	1.61	-	-
Selenium	0.00004	0.01	MAC	0.00009	0.00005	<0.00004	0.00006	0.0026	0.0025	0.0025	0.0025	0.00006	0.00004	<0.00004	0.00004	0.00021	0.00006	<0.00004	0.00004	<0.00004	<0.00004	-	-
Silver	0.000050	-	-	<0.00005	<0.00005	<0.00005	<0.00005	-	-	-	-	<0.00005	<0.00005	<0.00005	<0.00005	0.00008	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	-	-
Sodium	0.01	200	AO	7.69	9.64	7.75	6.78	104	105	104	103	1.65	3.02	1.86	2.36	1.99	2.9	2.26	2.69	4.49	4.52	-	-
Strontium	0.00002	-	-	0.0749	0.184	0.0999	0.0318	-	-	-	-	0.0342	0.0514	0.0395	0.0465	0.0309	0.0453	0.0347	0.036	0.161	0.168	-	-
Thallium	0.000005	-	-	0.000009	0.000009	<0.000005	<0.000005	-	-	-	-	0.000005	0.000005	<0.000005	0.000007	<0.000005	0.000012	<0.000005	0.000006	<0.000005	<0.000005	-	-
Tin	0.00006	-	-	<0.00006	<0.00006	<0.00006	<0.00006	-	-	-	-	<0.00006	<0.00006	<0.00006	0.00007	<0.00006	0.0003	<0.00006	<0.00006	0.00007	<0.00006	-	-
Titanium	0.00005	-	-	0.00546	0.00767	0.00044	0.00523	-	-	-													

### 3.5 SURFACE WATER MONITORING RESULTS

Four surface water sampling locations (SW-1 to SW-4) were included in the 2020/2021 sampling program and are presented on Figure 2.1. Surface water sampling results are summarized in Table 3.3. Laboratory Certificates of Analysis can be found in Appendix C.

Surface water sampling locations SW-1, SW-2 and SW-4 were sampled only once throughout the two year reporting period (when water was available). Sampling location SW-3, in the Amable du Fond River, consistently has appreciable flow, and is sampled yearly each spring and fall.

Surface water results indicate several parameters with PWQO exceedances, including aluminum, cobalt (one instance), iron, phosphorous and total phenols. Surface water sampling locations SW-1 (upstream), SW-2 (downstream) and SW-4 (downstream) exceeded the PWQO for the same parameters (aluminum, cobalt, copper, iron and phosphorus) at similar concentrations, suggesting that the Landfill is not impacting surface water.

TABLE 3.3  
MUNICIPALITY OF CALVIN  
MUNICIPALITY OF CALVIN LANDFILL SITE  
2020/2021 LANDFILL MONITORING REPORT  
SUMMARY OF 2020/2021 SURFACE WATER QUALITY RESULTS

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Parameter	RL	PWQO	SW-1			SW-2			SW-3				SW-4			
			26-May-20	-	-	-	-	-	26-Oct-21	26-May-20	14-Oct-20	19-May-21	26-Oct-21	-	-	19-May-21
Location	-	-	Upstream			Downstream			Background				Downstream			
			On-site near western property line downstream of "groundwater spring area"			Ditch located west of the Landfill			Amable du Fond River				Culvert on Adams Road southeast of site			
<b>In Situ Parameters</b>																
Conductivity (In Situ) µS/cm	-	-	50						35	23	28	24	27			-
Oxygen Dissolved (In Situ)	-	4	8.3						1.3	16.1	10.6	10.5	11.2			-
pH (In Situ) pH	-	6.5 to 8.5	6.63						5.62	6.48	7.28	6.43	6.7			-
Temperature (In Situ) °C	-	-	15.0						7.0	20.0	11.4	15.2	10.7			-
<b>Physical Tests</b>																
Alkalinity (Total as CaCO <sub>3</sub> )	2	25% of Background Value	17						7	6	7	7	6			14
Biochemical Oxygen Demand	4	-	<4						8	<4	<4	<4	<4			<4
Conductivity µS/cm	2	-	53						74	26	27	23	24			41
Hardness as CaCO <sub>3</sub> (Total)	0.05	-	20.9	Dry	Dry	Dry	Dry	Dry	9.12	9.2	10.9	8.5	9.55	Dry	Dry	9.9
pH	0.05	6.5 to 8.5	7.18						6.35	6.76	6.95	6.81	7.01			7.27
Total Dissolved Solids	30	-	34						63	<30	<30	<30	<30			46
Total Suspended Solids	2	-	5						28	2	<2	2	3			28
<b>Dissolved Anions</b>																
Chloride (Dissolved)	1	-	1						<1	1	<1	<1	<1			<1
Sulphate (Total)	1	-	3						<2	4	4	4	<2			3
<b>Nutrients</b>																
Ammonia (Total)	0.1	-	<0.1						<0.04	<0.1	<0.1	<0.1	0.06			<0.1
Ammonia (un-ionized)	0.1	0.02 <sup>(a,b)</sup>	<0.0004						<0.00001	<0.0002	<0.0002	<0.0002	0.0001			<0.0002
Nitrate (as N)	0.06	-	<0.06						<0.06	<0.06	<0.06	<0.06	<0.06			<0.06
Nitrite (as N)	0.03	-	<0.03						<0.03	<0.03	<0.03	<0.03	<0.03			<0.03
Nitrogen Kjeldahl (Total)	0.5	-	0.7						0.32	0.8	<0.5	<0.5	0.2			<0.5
<b>Total Metals</b>																
Aluminum	0.001	0.015 to 0.075 <sup>(c)</sup>	0.364						0.325	0.064	0.052	0.052	0.092			0.193
Antimony	0.0002	-	0.02						<0.0009	<0.0009	<0.0009	<0.0009	<0.0009			<0.0009
Arsenic	0.0002	0.005	0.0002						<0.0002	0.0002	0.0002	<0.0002	0.0002			<0.0002
Barium	0.00002	-	0.0186						0.017	0.0143	0.016	0.0147	0.0156			0.0183
Beryllium	0.000007	0.011 to 1.1 <sup>(c)</sup>	0.00002						0.000024	0.000015	<0.000007	0.000007	0.000007			0.000023
Bismuth	0.000007	-	0.000022						<0.00001	0.000029	0.000012	<0.00001	<0.00001			<0.00001
Boron	0.002	0.2	0.01						<0.002	0.004	0.01	0.004	0.008			0.015
Cadmium	0.000003	0.0001 to 0.0005 <sup>(c)</sup>	0.00002						0.000015	0.000004	0.000003	<0.000003	<0.000003			0.00004
Calcium	0.01	-	5.12						2.41	2.41	2.77	2.25	2.47			2.76
Chromium	0.00003	0.0089	0.001						0.00073	0.00034	0.00024	0.00027	0.00036			0.00068
Cobalt	0.000004	0.0009	0.000292						0.0007	0.000056	0.0075	0.00004	0.000063			0.000764
Copper	0.00002	0.001 to 0.005 <sup>(c)</sup>	0.0014						0.0009	0.0008	0.0009	0.0006	0.0015			0.0011
Iron	0.007	0.3	0.406						0.925	0.138	0.153	0.112	0.213			0.312
Lead	0.00001	0.001 to 0.005 <sup>(c)</sup>	0.00022						0.00012	0.00005	0.00005	<0.00009	0.0002			0.00018
Lithium	0.0001	-	0.0012						0.0004	0.0004	0.0011	0.0003	0.0003			0.0002
Magnesium	0.001	-	1.97						0.754	0.777	0.969	0.697	0.824			0.724
Manganese	0.00001	-	0.0315	Dry	Dry	Dry	Dry	Dry	0.0942	0.0167	0.00795	0.0124	0.0146	Dry	Dry	0.154
Mercury	0.00001	0.0002	<0.00001						<0.00001	<0.00001	<0.00001	<0.00001	<0.00001			<0.00001
Molybdenum	0.00001	0.04	0.00041						0.00007	0.00007	0.00008	0.00004	0.00005			0.0001
Nickel	0.0001	0.025	0.0011						0.0008	0.0002	0.0004	0.0004	0.0004			0.0009
Phosphorus	0.003	0.03	0.039						0.18	0.024	0.009	0.003	0.005			0.026
Potassium	0.003	-	1.43						1.36	0.47	0.494	0.426	0.482			1.31
Selenium	0.00004	0.1	0.00008						0.00006	0.00007	0.00007	0.0001	0.00007			0.00009
Silicon	0.02	-	9.47						7.19	2.66	2.35	2.32	2.36			5.41
Silver	0.00005	0.0001	<0.00005						<0.00005	<0.00005	0.00024	0.00009	<0.00005			0.00006
Sodium	0.01	-	2.26						1.42	0.91	1.37	0.92	0.86			3.14
Strontium	0.00002	-	0.0437						0.0242	0.0208	0.0236	0.0206	0.0215			0.0286
Thallium	0.000005	0.0003	0.000006						<0.000005	0.000008	<0.000005	<0.000005	<0.000005			0.000009
Tin	0.00001	-	0.00009						<0.00006	0.00007	0.00013	<0.00006	<0.00006			0.00006
Titanium	0.00005	-	0.0143						0.012	0.00172	0.00134	0.00123	0.00269			0.00747
Uranium	0.000002	0.005	0.00003						0.000009	0.000021	0.000017	0.000012	0.000019			0.000016
Vanadium	0.00001	0.006	0.00136						0.00117	0.00019	0.00013	0.00013	0.00023			0.00089
Zinc	0.002	0.02	0.002						0.01	0.002	0.002	<0.002	0.003			0.003
<b>Organics</b>																
Carbon Organic (Dissolved)	1	-	-						13	5	5	5	7			5
Phenols	0.002	0.001	-						0.039	0.003	<0.002	0.001	0.001			0.002

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**NOTES:**

- SAMPLES ANALYZED BY SGS CANADA INC. IN LAKEFIELD, ON.
- PWQO REFERS TO PROVINCIAL WATER QUALITY OBJECTIVES OF THE MINISTRY OF ENVIRONMENT AND ENERGY, ONTARIO MINISTRY OF THE ENVIRONMENT, JULY 1994.
- BOLDED AND HIGHLIGHTED** VALUES INDICATE VALUES EXCEEDING THE PWQO.
- WHERE A VALUE IS LESS THAN THE RESPECTIVE MDL BUT THE MDL IS ELEVATED ABOVE THE GUIDELINE, THE EXCEEDANCE IS NOT HIGHLIGHTED, AS THE ACTUAL VALUE IS UNKNOWN.
- UNITS IN mg/L UNLESS OTHERWISE INDICATED.
- SUPERSCRIPTS AS FOLLOWS:
  - (a) pH DEPENDENT
  - (b) TEMPERATURE DEPENDENT
  - (c) Hardness (Total) DEPENDENT
- NO WATER WAS PRESENT AT SAMPLING LOCATION SW-2 FOR ANY OF THE FOUR SAMPLING EVENTS, SO IT WAS REMOVED FROM THIS TABLE.
- MERCURY VALUES WERE REPORTED IN ug/L BUT CONVERTED TO mg/L. IN THE 2016/2017 REPORT THE VALUES HAD NOT BEEN CONVERTED TO mg/L, RESULTING IN MERCURY CONCENTRATIONS THAT APPEARED TO BE ABOVE THE RESPECTIVE GUIDELINES ALTHOUGH THEY WERE NOT.

REV	DATE	ISSUED WITH REPORT	DESCRIPTION	SBF	SRA	PREP'D	RW'D
0	07FEB21	ISSUED WITH REPORT NB102-192/14-1					

### 3.6 METHANE CONCENTRATION ANALYSIS

Methane concentrations were measured in each well during sampling events. MOE Guideline D 4 (MOECC, 2016c) and Procedure D-4-1; (MOECC, 2016d) indicates that:

“A mixture of 5% to 15% methane in air will explode if ignited. A concentration of 5% methane in air is the Lower Explosive Limit (LEL) and concentrations equal to or greater than the LEL are considered hazardous. Hazardous conditions are not considered to be present on a landfill, or on the property near a landfill, if the concentration of methane in the waste is determined to be less than 10% LEL.”

Methane readings from the Landtec GEM2000 Gas Analyzer were measured in general percent as well as % LEL. Methane concentrations at background well MW7 ranged from 0 to 0.3% seasonally. The LEL methane concentrations measured have been provided in Table 3.4. The highest methane concentrations measured in 2020/2021 were observed at MW8 (leachate well) at 2.3% and MW4 (leachate well) at 0.9 %.

**TABLE 3.4**  
**MUNICIPALITY OF CALVIN**  
**MUNICIPALITY OF CALVIN LANDFILL SITE**  
**2020/2021 LANDFILL MONITORING REPORT**  
**SUMMARY OF 2020/2021 AIRSPACE MEASUREMENTS**

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Monitoring Well Location	Date	Methane	LEL	CO2	Oxygen	BAL
Units		%	%	%	%	%
MW3	26-May-20	0.0	-	0.0	21.9	78.1
	15-Oct-20	0.1	0.1	5.8	11.5	82.6
	19-May-21	-	-	-	-	-
	26-Oct-21	0.4	1	5.6	9.1	84.8
MW4	26-May-20	No well cap previously - cap replaced				
	15-Oct-20	0.1	0.1	2.3	18.0	79.8
	19-May-21	0.1	-	0.1	23.9	78.8
	27-Oct-21	0.9	0.7	0.4	19.7	79.5
MW5D	26-May-20	0.0	-	0.0	21.8	78.2
	15-Oct-20	0.1	0.1	0.2	20.1	79.3
	19-May-21	0.0	-	0.1	20.8	78.9
	26-Oct-21	0.4	0.7	0.2	19.9	79.4
MW5S	26-May-20	0.0	-	1.0	21.7	78.3
	14-Oct-20	0.1	0.1	0.7	19.4	80.2
	19-May-21	0.0	-	4.3	12.6	83.0
	26-Oct-21	0.3	5.3	5.3	7.7	86.7
MW6	26-May-20	0.0	-	0.0	21.2	78.3
	14-Oct-20	0.1	0.1	0.2	20.2	79.4
	19-May-21	0.0	-	0.3	20.6	79.0
	26-Oct-21	0.4	0.1	2.5	17.7	79.4
MW7	26-May-20	0.0	-	0.0	21.2	78.5
	14-Oct-20	0.1	0.2	0.6	20.0	79.2
	19-May-21	0.1	0.2	0.2	20.9	78.8
	27-Oct-21	0.3	0.5	0.3	19.8	79.6
MW8	26-May-20	0.0	-	1.0	21.4	78.5
	15-Oct-20	0.1	0.1	0.7	19.0	80.1
	19-May-21	0.0	-	0.3	20.6	79.0
	26-Oct-21	2.3	0.6	2.6	12.2	81.9
MW9	26-May-20	0.0	-	1.0	21.9	78.1
	14-Oct-20	0.0	0.0	0.8	19.8	79.3
	19-May-21	0.0	-	4.3	12.6	83.0
	26-Oct-21	0.3	0.6	2.6	16.5	80.6
MW-10	26-May-20	0.0	-	1.0	21.3	78.6
	14-Oct-20	0.1	0.1	1.4	20.0	79.1
	19-May-21	0.1	0.2	0.2	20.9	78.8
	27-Oct-21	0.4	0.7	0.5	19.8	79.2
MW11	26-May-20	0.0	-	2.0	21.6	78.4
	14-Oct-20	0.0	0.0	0.3	20.3	79.3
	19-May-21	0.0	0.2	0.2	20.1	79.5
	27-Oct-21	0.4	0.7	0.3	19.7	79.5
MW12	26-May-20	0.0	-	1.0	22.0	78.0
	14-Oct-20	0.1	0.1	0.4	20.1	79.5
	19-May-21	0.0	0.1	1.1	16.0	82.7
	27-Oct-21	0.4	0.6	0.2	19.4	79.5
MW13	26-May-20	Riser too low to get accurate reading.				
	14-Oct-20	0.1	0.0	0.2	20.1	79.7
	19-May-21	0.0	0.0	0.1	20.1	79.8
	27-Oct-21	0.3	0.6	0.4	19.5	79.5
MW14	26-May-20	0.0	-	0.10	21.0	78.9
	15-Oct-20	0.1	0.0	2.2	18.1	80.5
	19-May-21	0.0	0.0	0.2	21.8	78.8
	27-Oct-21	0.3	0.6	1.3	18.3	80.0

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**NOTES:**

1. A LANDTEC GEM 2000 WAS USED FOR ALL SAMPLING EVENTS EXCEPT SEPTEMBER 2019, DURING WHICH AN RKI EAGLE WAS USED.
2. "-" INDICATES DATA NOT AVAILABLE.

0	07FEB21	ISSUED WITH REPORT NB102-192/14-1	SBF	SRA
REV	DATE	DESCRIPTION	PREPD	RWVD

## 4.0 QUALITY ASSURANCE AND QUALITY CONTROL

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Quality Assurance and Quality Control (QA/QC) are critical parts of environmental sampling programs. The data provided by QA/QC samples helps to determine the accuracy and precision of the sample data and whether cross contamination has occurred. The following QA/QC procedures were followed for the 2020/2021 monitoring program:

- All sampling activities, environmental conditions and any unusual conditions were documented on field data sheets.
- All equipment was operated in accordance with the manufacturer's instructions.
- Gloves and other protective equipment were worn at all times during sampling.
- QA/QC samples were collected and analyzed (approximately 10% of the total number of samples collected).

Relative percent difference (RPD) calculations were used to determine how close the original and duplicate sample results were for each parameter tested. KP flags RPD values of 20% or greater (where the concentrations are greater than 5 times the MDL) and investigates possible causes for the difference. It should be noted that in many cases, an RPD of greater than 20% can be the result of a very small difference in concentration. For example, the difference between 0.00005 mg/L and 0.00003 mg/L is 50%, but it represents a very small difference in absolute terms. These types of small changes could be the result of natural variation in the water and are not considered a quality control concern for these analyses.

There were several parameters with an RPD above 20% (and greater than 5 times the reporting limit) for each sampling event for groundwater and surface water, as shown on Tables 4.1 and 4.2, respectively. In most cases, although the relative differences were large, the actual concentrations were very low and well below respective guidelines.

The data presented within this report are determined to be accurate and can be relied upon given the above QA/QC results.

Certificates of Analysis for 2020 and 2021 are provided in Appendix C.

TABLE 4.1  
MUNICIPALITY OF CALVIN  
MUNICIPALITY OF CALVIN LANDFILL SITE  
2020/2021 LANDFILL MONITORING REPORT  
SUMMARY OF GROUNDWATER QA/QC RESULTS

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Parameter	MDL	MW-13	Duplicate	RPD	MW-14	Duplicate	RPD	MW-5S	Duplicate	RPD	MW-6	Duplicate	RPD	MW-8	Duplicate	RPD
		14/Oct/2020		(%)	26/May/2020	(%)	26/Oct/2021	(%)	14/Oct/2020	(%)	19/May/2021	(%)				
<b>Physical Tests</b>																
Alkalinity (Total as CaCO <sub>3</sub> )	2	23	24	4%	10	12	18%	211	212	0%	86	96	11%	155	158	2%
Chemical Oxygen Demand	8	<8	<8	-	<8	<8	-	10	27	-	<8	<8	-	<8	<8	-
Conductivity µS/cm	2	59	69	16%	42	46	9%	574	622	8%	224	230	3%	525	526	0%
Hardness as CaCO <sub>3</sub> (Dissolved)	0.05	23.8	23	3%	14.7	14.5	1%	274	272	1%	134	131	2%	203	201	1%
pH	0.05	6.97	6.97	0%	6.82	7.03	3%	6.71	7.55	12%	7.72	7.5	3%	7.14	6.99	2%
Total Dissolved Solids	30	49	57	-	<30	<30	-	386	391	1%	143	143	-	269	265	2%
Total Suspended Solids	2	209	205	2%	375	222	<b>51%</b>	530	290	<b>59%</b>	896	876	2%	21	19	10%
<b>Dissolved Anions</b>																
Chloride (Dissolved)	1	<1	<1	-	1	1	-	36	37	3%	5	4	-	44	43	2%
Sulphate (Dissolved)	2	12	11	9%	5	5	-	49	50	2%	15	15	0%	43	42	2%
<b>Nutrients</b>																
Ammonia (Total)	0.1	<0.1	<0.1	-	<0.1	<0.1	-	0.24	0.23	4%	<0.1	<0.1	-	<0.1	<0.1	-
Nitrate (as N)	0.06	<0.06	<0.06	-	<0.06	<0.06	-	0.76	0.85	11%	0.8	0.81	1%	1.73	1.7	2%
Nitrite (as N)	0.03	<0.03	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	-
Nitrogen Kjeldahl (Total)	0.5	<0.5	<0.5	-	<0.5	<0.5	-	0.41	0.34	19%	<0.5	0.6	-	<0.5	<0.5	-
<b>Dissolved Metals</b>																
Aluminum (Dissolved)	0.001	0.121	0.056	<b>73%</b>	0.038	0.051	<b>29%</b>	0.002	0.002	-	0.049	0.035	<b>33%</b>	0.002	0.003	-
Antimony (Dissolved)	0.0009	<0.0009	<0.0009	-	<0.0009	<0.0009	-	<0.0009	<0.0009	-	<0.0009	<0.0009	-	<0.0009	<0.0009	-
Arsenic (Dissolved)	0.0002	<0.0002	<0.0002	-	<0.0002	<0.0002	-	<0.0002	<0.0002	-	<0.0002	<0.0002	-	0.0004	0.0004	-
Barium (Dissolved)	0.0002	0.00782	0.00598	<b>27%</b>	0.0136	0.0135	1%	0.0789	0.0772	2%	0.0781	0.0765	2%	0.118	0.126	7%
Beryllium (Dissolved)	0.00007	0.000019	0.000015	-	0.000027	0.000032	-	0.00001	0.00001	-	<0.00007	0.00007	-	0.000011	0.000014	-
Bismuth (Dissolved)	0.00007	0.000014	0.000037	-	<0.00007	<0.00007	-	<0.00001	<0.00001	-	0.000015	0.000014	-	<0.00001	<0.00001	-
Boron (Dissolved)	0.002	0.01	0.01	0%	0.002	0.002	-	0.21	0.186	12%	0.037	0.035	6%	0.125	0.135	8%
Cadmium (Dissolved)	0.00003	0.00007	0.00007	-	0.000041	0.000041	0%	-	-	-	0.000022	0.000019	15%	0.000029	0.000023	<b>23%</b>
Calcium (Dissolved)	0.01	6.33	6.21	2%	4.24	4.2	1%	79.2	77.4	2%	27.1	26.3	3%	60.5	60.2	1%
Chromium (Dissolved)	0.00008	<0.00008	<0.00008	-	0.00019	0.00016	-	0.00008	0.0001	-	0.00032	0.00023	-	0.00036	0.00033	-
Cobalt (Dissolved)	0.00004	0.000139	0.000105	<b>28%</b>	0.000526	0.000309	<b>52%</b>	0.0014	0.00138	1%	0.000107	0.000093	14%	0.000074	0.000067	10%
Copper (Dissolved)	0.0002	0.0007	0.0005	-	0.0012	0.0128	<b>166%</b>	0.0044	0.0039	12%	0.0007	0.0006	-	0.0014	0.0013	7%
Iron (Dissolved)	0.007	0.213	0.06	<b>112%</b>	0.037	0.051	<b>32%</b>	<0.007	<0.007	-	0.194	0.029	-	<0.007	<0.007	-
Lead (Dissolved)	0.00001	0.00008	<0.00001	-	0.00003	0.00005	-	<0.00009	<0.00009	-	<0.00001	<0.00001	-	<0.00009	<0.00009	-
Magnesium (Dissolved)	0.001	1.95	1.81	7%	1.01	0.981	3%	18.6	19.1	3%	16	15.9	1%	12.7	12.3	3%
Manganese (Dissolved)	0.0001	0.00852	0.00704	19%	0.00261	0.00249	5%	1.73	1.84	6%	0.00208	0.00124	<b>51%</b>	0.0897	0.0692	<b>26%</b>
Mercury (Dissolved)	0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00004	<0.00004	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Molybdenum (Dissolved)	0.00004	0.00028	0.00029	4%	0.00062	0.00033	<b>61%</b>	0.00167	0.00154	8%	0.00088	0.0008	10%	0.00019	0.00013	-
Nickel (Dissolved)	0.0001	0.0002	0.0001	-	<0.0001	<0.0001	-	0.0022	0.0022	0%	0.0007	0.0007	0%	0.0006	0.0006	0%
Phosphorus (Metal) Dissolved	0.003	0.008	0.007	-	0.003	0.003	-	<0.003	<0.003	-	0.011	0.007	-	<0.003	<0.003	-
Potassium (Dissolved)	0.009	0.574	0.56	2%	0.411	0.426	4%	23.5	23.2	1%	2.98	2.98	0%	14.3	14.2	1%
Selenium (Dissolved)	0.00004	0.00004	0.00006	-	0.00021	0.00014	-	0.0001	0.00006	-	<0.00004	<0.00004	-	0.00008	0.00009	-
Silver (Dissolved)	0.00005	<0.00005	<0.00005	-	0.00008	0.00036	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-	<0.00005	<0.00005	-
Sodium (Dissolved)	0.01	3.02	2.97	2%	1.99	1.95	2%	19.6	18.2	7%	14.4	14.1	2%	23.3	22.3	4%
Strontium (Dissolved)	0.0002	0.0514	0.0503	2%	0.0309	0.0316	2%	0.376	0.368	2%	0.212	0.21	1%	0.468	0.438	7%
Thallium (Dissolved)	0.00005	0.000005	<0.000005	-	<0.000005	<0.000005	-	0.000008	0.00001	-	<0.000005	<0.000005	-	<0.000005	<0.000005	-
Tin (Dissolved)	0.00006	<0.00006	0.00006	-	<0.00006	<0.00006	-	0.00043	<0.00006	-	<0.00006	<0.00006	-	0.00008	<0.00006	-
Titanium (Dissolved)	0.00005	0.00409	0.0009	<b>128%</b>	0.00185	0.00283	<b>42%</b>	0.0001	0.00006	-	0.00296	0.00173	<b>52%</b>	<0.00005	<0.00005	-
Vanadium (Dissolved)	0.00001	0.00013	0.00002	-	0.00013	0.00013	0%	0.00042	0.00029	<b>37%</b>	0.00066	0.00063	5%	0.00017	0.00016	6%
Zinc (Dissolved)	0.002	<0.002	<0.002	-	0.003	0.004	-	<0.002	<0.002	-	0.004	0.002	-	0.003	0.003	-
<b>Organics</b>																
Carbon Organic (Dissolved)	1	1	1	-	1	1	-	3	3	-	1	2	-	2	2	-
Phenols	0.002	0.003	<0.002	-	<0.002	<0.002	-	<0.002	<0.002	-	0.002	0.004	-	<0.002	<0.002	-
<b>Volatile Organics</b>																
Acetone	30	<30	<30	-	<30	<30	-	<30	<30	-	<30	<30	-	<30	<30	-
Dichloromethane	0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-
Methyl ethyl ketone	20	<20	<20	-	<20	<20	-	<20	<20	-	<20	<20	-	<20	<20	-
Vinyl Chloride	0.2	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	-
<b>Semi Volatile Organics</b>																
1/4-Dichlorobenzene (SVO)	0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-
<b>BTEX</b>																
Benzene	0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-
Toluene	0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	2.1	2.2	-	<0.5	<0.5	-

I:\1102\00192\14\AI\Report\Report 1, Rev 0\Tables\2020-2021 Report Tables.xlsx\Table 4.1-GW QAQC

**NOTES:**

1. SAMPLES WERE ANALYZED BY SGS CANADA INC. IN LAKEFIELD ON.
2. RPD - RELATIVE PERCENT DIFFERENCE CALCULATED USING: 100\*ABSOLUTE VALUE/(RESULT-DUP RESULT)/((RESULT+DUP RESULT)/2).
3. VALUES IN RED BOLD HAVE 20% OR GREATER RELATIVE PERCENT DIFFERENCE (RPD) AND ARE 5 TIMES GREATER THAN THE RL.
4. "-" INDICATES THAT DATA ARE NOT AVAILABLE/NOT GREATER THAN 5 TIME RL.
5. WHERE ONE OR BOTH RESULTS ARE BELOW THE REPORTABLE DETECTION LIMIT, RPD HAS NOT BEEN CALCULATED.
6. RL REFERS TO THE LABORATORY REPORTING LIMIT.
7. UNITS ARE IN mg/L UNLESS OTHERWISE STATED.

0	07FEB21	ISSUED WITH REPORT NB102-192/14-1	SBF	SRA
REV	DATE	DESCRIPTION	PREP	RW/D

TABLE 4.2  
MUNICIPALITY OF CALVIN  
MUNICIPALITY OF CALVIN LANDFILL SITE  
2020/2021 LANDFILL MONITORING REPORT  
SUMMARY OF SURFACE WATER QA/QC RESULTS

Print Feb-07-22 11:36:46

Parameter	MDL	SW-3	Duplicate	RPD	SW-3	Duplicate	RPD	SW-3	Duplicate	RPD	SW-3	Duplicate	RPD
		26/May/2020	(%)	14/Oct/2020	(%)	19/May/2021	(%)	26/Oct/2021	(%)				
<b>Physical Tests</b>													
Alkalinity (Total as CaCO3) mg CaCO3/L	2	6	7	-	7	9	-	7	6	-	6	7	-
Biochemical Oxygen Demand	2	<4	<4	-	<4	<4	-	<4	<4	-	<4	<4	-
Conductivity µS/cm	2	26	27	4%	27	35	<b>26%</b>	23	25	8%	24	27	12%
pH	0.05	6.76	6.69	1%	6.95	7.07	2%	6.81	6.81	0%	7.01	6.85	2%
Total Dissolved Solids	30	<30	<30	-	<30	<30	-	<30	<30	-	<30	37	-
Total Suspended Solids	2	2	2	-	<2	<2	-	2	2	-	3	7	-
<b>Dissolved Anions</b>													
Chloride (Dissolved)	1	1	1	-	<1	<1	-	<1	<1	-	<1	<1	-
Sulphate (Total)	2	4	3	-	4	3	-	4	3	-	<2	<2	-
<b>Nutrients</b>													
Ammonia (Total)	0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	0.06	0.08	-
Nitrate (as N)	0.06	<0.06	<0.06	-	<0.06	<0.06	-	<0.06	<0.06	-	<0.06	<0.06	-
Nitrite (as N)	0.03	<0.03	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	-	<0.03	<0.03	-
Nitrogen Kjeldahl (Total)	0.5	0.8	0.9	-	<0.5	<0.5	-	<0.5	<0.5	-	0.2	0.22	-
<b>Total Metals</b>													
Aluminum (Total)	0.001	0.064	0.068	6%	0.052	0.05	4%	0.052	0.05	4%	0.092	0.091	1%
Antimony (Total)	0.0009	<0.0009	<0.0009	-	<0.0009	<0.0009	-	<0.0009	<0.0009	-	<0.0009	<0.0009	-
Arsenic (Total)	0.0002	0.0002	<0.0002	-	0.0002	<0.0002	-	<0.0002	<0.0002	-	0.0002	<0.0002	-
Barium (Total)	0.00002	0.0143	0.0151	5%	0.016	0.0151	6%	0.0147	0.0151	3%	0.0156	0.0164	5%
Beryllium (Total)	0.000007	0.000015	0.000013	-	<0.000007	0.000007	-	0.000007	0.000008	-	0.000007	0.000008	-
Bismuth (Total)	0.000007	0.000029	0.000022	-	0.000012	0.000012	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Boron (Total)	0.002	0.004	0.004	-	0.01	0.006	-	0.004	0.004	-	0.008	0.003	-
Cadmium (Total)	0.000003	0.000004	0.000007	-	0.000003	0.000006	-	<0.000003	0.000012	-	<0.000003	<0.000003	-
Calcium (Total)	0.01	2.41	2.42	0%	2.77	2.65	4%	2.25	2.25	0%	2.47	2.67	8%
Chromium (Total)	0.00008	0.00034	0.00042	-	0.00024	0.00024	-	0.00027	0.00027	-	0.00036	0.00031	-
Cobalt (Total)	0.000004	0.000056	0.000056	0%	0.0075	0.00607	<b>21%</b>	0.00004	0.000037	8%	0.000063	0.000082	<b>26%</b>
Copper (Total)	0.0002	0.0008	0.0023	-	0.0009	0.0009	-	0.0006	0.0006	-	0.0015	0.0006	-
Iron (Total)	0.007	0.138	0.146	6%	0.153	0.143	7%	0.112	0.108	4%	0.213	0.224	5%
Lead (Total)	0.00001	0.00005	0.00006	18%	0.00005	0.00005	0%	<0.00009	<0.00009	-	0.0002	<0.00009	-
Lithium (Total)	0.0001	0.0004	0.0004	-	0.0011	0.0009	<b>20%</b>	0.0003	0.0003	-	0.0003	0.0003	-
Magnesium (Total)	0.001	0.777	0.794	2%	0.969	0.917	6%	0.697	0.718	3%	0.824	0.866	5%
Manganese (Total)	0.00001	0.0167	0.0177	6%	0.00795	0.00755	5%	0.0124	0.012	3%	0.0146	0.0154	5%
Mercury (Total)	0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-	<0.00001	<0.00001	-
Molybdenum (Total)	0.00004	0.00007	0.00008	-	0.00008	0.00007	-	0.00004	0.00005	-	0.00005	<0.00004	-
Nickel (Total)	0.0001	0.0002	0.0003	-	0.0004	0.0004	-	0.0004	0.0003	-	0.0004	0.0005	-
Phosphorus (Metal) Total	0.003	0.024	0.02	18%	0.009	0.008	-	0.003	0.004	-	0.005	0.004	-
Potassium (Total)	0.009	0.47	0.472	0%	0.494	0.471	5%	0.426	0.422	1%	0.482	0.506	5%
Selenium (Total)	0.00004	0.00007	0.0001	-	0.00007	0.00007	-	0.0001	0.0001	-	0.00007	0.0001	-
Silicon (Total)	0.02	2.66	2.63	1%	2.35	2.21	6%	2.32	2.45	5%	2.36	2.4	2%
Silver (Total)	0.00005	<0.00005	<0.00005	-	0.00024	0.00017	-	0.00009	0.00009	-	<0.00005	<0.00005	-
Sodium (Total)	0.01	0.91	0.93	2%	1.37	1.21	12%	0.92	0.95	3%	0.86	0.91	6%
Strontium (Total)	0.00002	0.0208	0.0209	0%	0.0236	0.0227	4%	0.0206	0.021	2%	0.0215	0.022	2%
Thallium (Total)	0.000005	0.000008	0.000005	-	<0.000005	<0.000005	-	<0.000005	<0.000005	-	<0.000005	<0.000005	-
Tin (Total)	0.00006	0.00007	0.00009	-	0.00013	0.00012	-	<0.00006	<0.00006	-	<0.00006	0.00006	-
Titanium (Total)	0.00005	0.00172	0.00256	<b>39%</b>	0.00134	0.00123	9%	0.00123	0.0012	2%	0.00269	0.00286	6%
Uranium (Total)	0.000002	0.000021	0.000021	0%	0.000017	0.000016	6%	0.000012	0.000012	0%	0.000019	0.000022	15%
Vanadium (Total)	0.00001	0.00019	0.00023	19%	0.00013	0.00012	8%	0.00013	0.00014	7%	0.00023	0.00023	0%
Zinc (Total)	0.002	0.002	0.003	-	0.002	0.002	-	<0.002	<0.002	-	0.003	0.006	-
<b>Organics</b>													
Carbon Organic (Dissolved)	1	5	5	0%	5	6	18%	5	5	0%	7	7	0%
Phenols	0.002	0.003	<0.002	-	<0.002	<0.002	-	0.001	0.002	-	0.001	<0.001	-

I:\1\02\00192\14\A\Report\Report 1, Rev 0\Tables\2020-2021 Report Tables.xlsx|Table 4.2-SW QAQC

**NOTES:**

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- RPD - RELATIVE PERCENT DIFFERENCE CALCULATED USING: 100\*ABSOLUTE VALUE/(RESULT-DUP RESULT)/((RESULT+DUP RESULT)/2).
- VALUES IN RED BOLD HAVE 20% OR GREATER RELATIVE PERCENT DIFFERENCE (RPD) AND ARE 5 TIMES GREATER THAN THE RL.
- "-" INDICATES THAT DATA ARE NOT AVAILABLE/DATA LESS THAN 5 TIMES THE RL.
- WHERE ONE OR BOTH RESULTS ARE BELOW THE REPORTABLE DETECTION LIMIT, RPD HAS NOT BEEN CALCULATED.
- RL REFERS TO THE LABORATORY REPORTING LIMIT.
- UNITS ARE IN mg/L UNLESS OTHERWISE STATED.

REV	DATE	DESCRIPTION	PREP'D	RVWD
0	07FEB'21	ISSUED WITH REPORT NB102-192/14-1	SBF	SRA



## 5.0 CONCLUSIONS AND RECOMMENDATIONS

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Minor landfill-derived groundwater impacts were measured at downgradient monitoring wells, specifically at MW9 and MW10. The remaining downgradient wells appear to have very little impact from the Landfill, which suggests that natural attenuation is occurring to deter offsite impacts in these wells.

KP recommends closely monitoring the nitrate results in groundwater downgradient of the landfill (notably at MW9) to determine if the concentrations are increasing/decreasing or remaining constant. Should concentrations increase and remain above ODWS, KP recommends the installation of an additional monitoring well south of MW9, near the property line, to determine the degree of groundwater attenuation at that location.

The surface water results suggest that there are no surface water impacts in the vicinity of the Landfill. Additionally, based on the domestic well sampling located on Adam's Road, there is no evidence of landfill related impacts.

KP recommends continuing the water quality sampling on a frequency of twice per year (spring and fall) and reporting once every two years.

## 6.0 CERTIFICATION

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This report was prepared and reviewed by the undersigned.

Prepared:

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Simon Foster, M.Sc., P.Geo.  
Senior Scientist

Reviewed:



---

Steven R. Aiken, P.Eng.  
Manager, Environmental Services

This report was prepared by Knight Piésold Ltd. for the account of Municipality of Calvin. Report content reflects Knight Piésold's best judgement based on the information available at the time of preparation. Any use a third party makes of this report, or any reliance on or decisions made based on it is the responsibility of such third parties. Knight Piésold Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. Any reproductions of this report are uncontrolled and might not be the most recent revision.

Approval that this document adheres to the Knight Piésold Quality System:



## APPENDIX A

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### Certificate of Approval

(Page A-1)



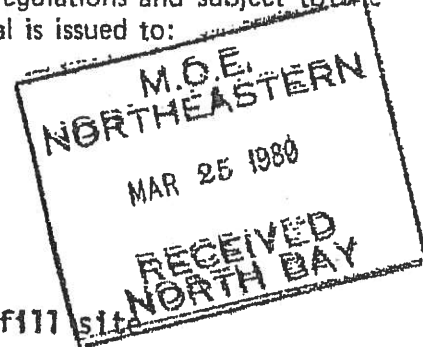
Ministry  
of the  
Environment

Provisional Certificate No. A 530901

## PROVISIONAL CERTIFICATE OF APPROVAL WASTE DISPOSAL SITE

Under The Environmental Protection Act, 1971 and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Calvin  
R.R. # 2  
Mattawa, Ontario  
POH 1V0



for the use and operation of a 2.025 hectare landfill site

all in accordance with the following plans and specifications:

Located: Lot 21, Concession 3  
Township of Calvin  
District of Nipissing

which includes the use of the site only for the receiving and disposal of the following categories of waste (NOTE: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) domestic and commercial wastes.

and subject to the following conditions:

1. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this Certificate including the reasons for this condition has been registered by the applicant as an instrument in the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof has been returned by the applicant to the Director.

## APPENDIX B

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### Photo Log

(Pages B-1 to B-7)

## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 1** – SW-4 sampling location (Fall 2020 – Dry).



**PHOTO 2** – SW-2 sampling location (Spring 2020).

## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 3** – MW4 Monitoring Wel (Fall 2020).



**PHOTO 4** – MW5S Monitoring Well (Fall 2020).

## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 5** – MW6 Monitoring Well (Fall 2020).



**PHOTO 6** – MW7 Monitoring Well (Fall 2020).



## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 7** – MW8 Monitoring Well (Fall 2020).



**PHOTO 8** – MW9 Monitoring Well (Fall 2020).

## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 9** – MW11 Monitoring Well (Fall 2020).

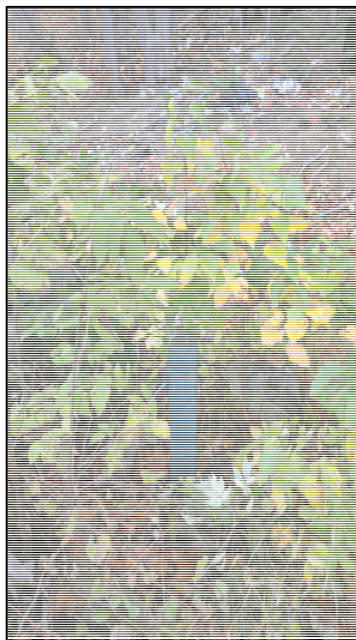


**PHOTO 10** – MW12 Monitoring Well (Fall 2020).

## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 11 – MW13 Monitoring Well (Fall 2020).**



**PHOTO 12 – MW14 Monitoring Well (Fall 2020).**

## 2020/2021 LANDFILL MONITORING REPORT PHOTO LOG



**PHOTO 13** – General Site Picture (Scrap Steel and Calvin Mall) (Fall 2020) .



**PHOTO 14** – General Site Conditions (Fall 2020).

## APPENDIX C

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### Laboratory Certificates of Analysis

(Pages C-1 to C-35)



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

05-June-2020

**Corporation of the Municipality of Calvin**

Attn : Jacob Grove

1355 Peddlers Dr RR#2  
Mattawa, ON  
POH 1V0, Canada

**Date Rec. :** 29 May 2020  
**LR Report:** CA15521-MAY20  
**Reference:** NB102-192/14

**Copy:** #1

Phone: 705-744-2700  
Fax:705-744-0309

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW14	7: MW14-DUP	8: MW4
Sample Date & Time					26-May-20 08:45	26-May-20 08:45	26-May-20 09:50
Temp Upon Receipt [°C]	---	---	--	---	12.0	12.0	12.0
TSS [mg/L]	02-Jun-20	11:54	05-Jun-20	09:06	375	222	309
Alkalinity [mg/L as CaCO3]	02-Jun-20	16:23	03-Jun-20	12:51	10	12	350
Conductivity [uS/cm]	02-Jun-20	16:23	03-Jun-20	12:51	42	46	795
pH [no unit]	02-Jun-20	16:23	03-Jun-20	12:51	6.82	7.03	7.80
TDS [mg/L]	29-May-20	20:14	04-Jun-20	07:51	< 30	< 30	386
DOC [mg/L]	01-Jun-20	21:26	02-Jun-20	07:43	1	1	15
4AAP-Phenolics [mg/L]	02-Jun-20	06:50	02-Jun-20	18:41	< 0.002	< 0.002	0.009
COD [mg/L]	30-May-20	11:08	01-Jun-20	09:12	< 8	< 8	96
Cl [mg/L]	04-Jun-20	06:57	04-Jun-20	13:56	1	1	24
TKN [as N mg/L]	29-May-20	19:22	02-Jun-20	15:13	< 0.5	< 0.5	16.2
NH3+NH4 [as N mg/L]	01-Jun-20	16:13	02-Jun-20	18:56	< 0.1	< 0.1	16.0
SO4 [mg/L]	04-Jun-20	07:12	04-Jun-20	13:56	5	5	30
NO2 [as N mg/L]	29-May-20	21:46	02-Jun-20	12:39	< 0.03	< 0.03	0.06
NO3 [as N mg/L]	29-May-20	21:46	02-Jun-20	12:39	< 0.06	< 0.06	< 0.06
Hg (diss) [mg/L]	01-Jun-20	15:26	01-Jun-20	15:46	< 0.00001	< 0.00001	< 0.00001
Hardness (diss) [mg/L as CaCO3]	02-Jun-20	11:08	03-Jun-20	14:35	14.7	14.5	267
Al (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.038	0.051	0.008
Sb (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.0002	< 0.0002	0.0004
Ba (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.0136	0.0135	0.144
Be (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.000027	0.000032	0.000008
Bi (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.000007	< 0.000007	< 0.000007
B (diss) [mg/L]	02-Jun-20	11:08	04-Jun-20	11:52	0.002	0.002	1.19
Cd (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.000041	0.000041	< 0.000003
Ca (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	4.24	4.20	81.8
Cr (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.00019	0.00016	0.00145
Co (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.000526	0.000309	0.0188
Cu (diss) [mg/L]	02-Jun-20	11:08	04-Jun-20	11:52	0.0012	0.0128	0.0134
Fe (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.037	0.051	0.179
Pb (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.00003	0.00005	< 0.00001
Li (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.0005	0.0005	< 0.0001
Mg (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	1.01	0.981	15.3

Online LIMS

0002140864

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Test method information available upon request. \*Temperature Upon Receipt\* is representative of the whole shipment and may not reflect the temperature of individual samples.  
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW14	7: MW14-DUP	8: MW4
Mn (diss) [mg/L]	02-Jun-20	11:08	04-Jun-20	11:52	0.00261	0.00249	3.94
Mo (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.00062	0.00033	0.00059
Ni (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.0001	< 0.0001	0.0035
P (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.003	0.003	0.008
K (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.411	0.426	26.5
Se (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.00021	0.00014	0.00026
Ag (diss) [mg/L]	02-Jun-20	11:08	04-Jun-20	11:52	0.00008	0.00036	0.00023
Na (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	1.99	1.95	36.9
Sr (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.0309	0.0316	0.409
Tl (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.000005	< 0.000005	0.000009
Si [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	12.7	12.6	12.2
Si (tot) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	5.94	5.90	5.71
Sn (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.00006	< 0.00006	0.00014
Ti (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.00185	0.00283	0.00031
U (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.000043	0.000044	0.000323
V (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.00013	0.00013	0.00046
Zn (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	0.003	0.004	0.002
Zr (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:35	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 0.5	< 0.5	0.9
1,4-Dichlorobenzene [µg/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 0.5	< 0.5	2.9
Dichloromethane [µg/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 0.5	< 0.5	< 0.5
Vinyl Chloride [µg/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 0.2	< 0.2	< 0.2
MEK [µg/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 20	< 20	< 20
Acetone [µg/L]	03-Jun-20	12:21	04-Jun-20	11:26	< 30	< 30	< 30

Analysis	9: MW8	10: MW7	11: MW10	12: MW11	13: MW13	14: MW12
Sample Date & Time	26-May-20 10:35	26-May-20 11:40	26-May-20 12:20	26-May-20 13:30	26-May-20 14:10	26-May-20 14:40
Temp Upon Receipt [°C]	12.0	12.0	12.0	12.0	12.0	12.0
TSS [mg/L]	46	178	2670	14000	408	12100
Alkalinity [mg/L as CaCO3]	163	35	113	22	16	9
Conductivity [uS/cm]	528	136	518	64	48	38
pH [no unit]	7.43	6.76	7.28	7.50	7.04	6.71
TDS [mg/L]	291	111	266	< 30	< 30	63
DOC [mg/L]	2	5	7	1	1	1
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
COD [mg/L]	< 8	16	23	9	8	14
Cl [mg/L]	44	5	43	1	< 1	2
TKN [as N mg/L]	< 0.5	< 0.5	1.3	< 0.5	< 0.5	< 0.5
NH3+NH4 [as N mg/L]	0.1	< 0.1	0.7	< 0.1	< 0.1	< 0.1
SO4 [mg/L]	33	21	87	8	4	6
NO2 [as N mg/L]	< 0.03	< 0.03	0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	1.74	0.57	1.15	< 0.06	< 0.06	< 0.06
Hg (diss) [mg/L]	< 0.00001	< 0.00001	0.00002	< 0.00001	< 0.00001	< 0.00001
Hardness (diss) [mg/L as CaCO3]	209	49.9	131	20.4	16.4	11.9
Al (diss) [mg/L]	0.004	0.130	0.035	0.377	0.041	0.477
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	< 0.0002	< 0.0002	0.0008	< 0.0002	< 0.0002	< 0.0002
Ba (diss) [mg/L]	0.111	0.0157	0.123	0.0147	0.00438	0.0138

Analysis	9: MW8	10: MW7	11: MW10	12: MW11	13: MW13	14: MW12
Be (diss) [mg/L]	0.000009	0.000025	0.000048	0.000032	0.000018	0.000040
Bi (diss) [mg/L]	< 0.000007	0.000023	0.000023	0.000012	< 0.000007	0.000013
B (diss) [mg/L]	0.140	0.008	0.736	0.032	0.006	0.005
Cd (diss) [mg/L]	< 0.000003	0.000020	0.000119	0.000007	0.000007	< 0.000003
Ca (diss) [mg/L]	61.5	8.82	36.7	5.48	4.66	3.20
Cr (diss) [mg/L]	0.00016	0.00052	0.00039	0.00050	0.00010	0.00086
Co (diss) [mg/L]	0.000209	0.000117	0.00134	0.000121	0.000018	0.000271
Cu (diss) [mg/L]	0.0084	0.0022	0.0074	0.0028	0.0013	0.0029
Fe (diss) [mg/L]	0.010	0.090	0.024	0.227	0.021	0.404
Pb (diss) [mg/L]	< 0.00001	0.00008	0.00003	0.00017	0.00002	0.00033
Li (diss) [mg/L]	0.0039	0.0083	0.0003	0.0012	0.0003	0.0003
Mg (diss) [mg/L]	13.4	6.77	9.62	1.64	1.17	0.949
Mn (diss) [mg/L]	0.0267	0.0127	2.28	0.00361	0.00082	0.00858
Mo (diss) [mg/L]	0.00017	0.00008	0.00045	0.00025	0.00028	0.00014
Ni (diss) [mg/L]	< 0.0001	0.0019	0.0015	< 0.0001	< 0.0001	< 0.0001
P (diss) [mg/L]	0.003	0.010	0.008	0.007	< 0.003	0.009
K (diss) [mg/L]	16.5	0.544	7.23	0.795	0.456	0.512
Se (diss) [mg/L]	0.00012	0.00009	0.00019	0.00007	0.00006	0.00005
Ag (diss) [mg/L]	0.00009	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	20.3	7.69	52.8	4.26	1.65	1.69
Sr (diss) [mg/L]	0.426	0.0749	0.468	0.0449	0.0342	0.0310
Tl (diss) [mg/L]	< 0.000005	0.000009	0.000051	< 0.000005	0.000005	0.000008
Si [mg/L]	19.5	26.4	16.7	18.6	11.6	14.4
Si (tot) [mg/L]	9.11	12.3	7.82	8.69	5.41	6.73
Sn (diss) [mg/L]	0.00016	< 0.00006	0.00059	0.00017	< 0.00006	0.00031
Ti (diss) [mg/L]	0.00025	0.00546	0.00112	0.01629	0.00109	0.02803
U (diss) [mg/L]	0.00105	0.000052	0.000452	0.000195	0.000118	0.000073
V (diss) [mg/L]	0.00011	0.00109	0.00022	0.00056	0.00022	0.00107
Zn (diss) [mg/L]	0.002	0.004	0.003	0.004	< 0.002	0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	< 0.5	< 0.5	0.8	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene [ug/L]	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5
Dichloromethane [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	< 0.5	< 0.5	< 0.5	1.0	< 0.5	< 0.5
Vinyl Chloride [ug/L]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
MEK [ug/L]	< 20	< 20	< 20	< 20	< 20	< 20
Acetone [ug/L]	< 30	< 30	< 30	< 30	< 30	< 30

Analysis	15: MW5S	16: MW5D	17: MW6	18: MW9	19: MW3
Sample Date & Time	26-May-20 15:30	26-May-20 15:45	26-May-20 16:30	26-May-20 17:20	26-May-20 17:45
Temp Upon Receipt [°C]	12.0	12.0	12.0	12.0	12.0
TSS [mg/L]	7230	24	4900	1750	3420
Alkalinity [mg/L as CaCO3]	205	185	66	168	173
Conductivity [uS/cm]	596	451	177	400	389
pH [no unit]	8.17	8.20	7.65	7.78	7.51
TDS [mg/L]	329	229	94	191	177
DOC [mg/L]	3	1	1	4	4
4AAP-Phenolics [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
COD [mg/L]	10	< 8	< 8	13	20



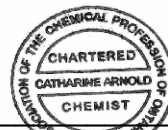
Analysis	15: MW5S	16: MW5D	17: MW6	18: MW9	19: MW3
Cl [mg/L]	32	13	6	7	12
TKN [as N mg/L]	< 0.5	< 0.5	< 0.5	< 0.5	1.1
NH3+NH4 [as N mg/L]	0.2	< 0.1	< 0.1	< 0.1	0.6
SO4 [mg/L]	52	28	11	18	7
NO2 [as N mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	0.56	< 0.06	1.03	1.87	0.66
Hg (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Hardness (diss) [mg/L as CaCO3]	258	219	83.4	144	136
Al (diss) [mg/L]	0.003	0.003	0.135	0.037	0.034
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	0.0003	< 0.0002	< 0.0002	0.0007	0.0005
Ba (diss) [mg/L]	0.0712	0.0458	0.0548	0.131	0.101
Be (diss) [mg/L]	0.000013	< 0.000007	0.000015	0.000007	0.000012
Bi (diss) [mg/L]	< 0.000007	< 0.000007	< 0.000007	< 0.000007	< 0.000007
B (diss) [mg/L]	0.235	0.067	0.027	0.602	0.271
Cd (diss) [mg/L]	0.000070	0.000018	0.000011	0.000027	0.000051
Ca (diss) [mg/L]	70.0	50.8	18.2	37.4	31.8
Cr (diss) [mg/L]	0.00008	< 0.00008	0.00047	0.00022	0.00028
Co (diss) [mg/L]	0.000319	< 0.000004	0.000093	0.000800	0.000727
Cu (diss) [mg/L]	0.0043	0.0010	0.0013	0.0092	0.0063
Fe (diss) [mg/L]	< 0.007	< 0.007	0.121	0.019	0.024
Pb (diss) [mg/L]	< 0.00001	< 0.00001	0.00006	0.00004	0.00001
Li (diss) [mg/L]	0.0021	0.0014	0.0019	0.0002	0.0008
Mg (diss) [mg/L]	20.2	22.4	9.21	12.3	13.7
Mn (diss) [mg/L]	1.39	0.0735	0.00281	0.172	0.749
Mo (diss) [mg/L]	0.00140	0.00469	0.00055	0.00082	0.00027
Ni (diss) [mg/L]	0.0010	< 0.0001	< 0.0001	0.0002	0.0021
P (diss) [mg/L]	< 0.003	< 0.003	0.007	0.003	0.008
K (diss) [mg/L]	24.4	4.84	2.39	23.4	3.97
Se (diss) [mg/L]	0.00006	0.00004	0.00004	0.00014	0.00009
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	14.6	10.1	11.7	23.3	28.9
Sr (diss) [mg/L]	0.360	0.395	0.143	0.516	0.394
Tl (diss) [mg/L]	0.000012	< 0.000005	< 0.000005	0.000019	0.000005
Si [mg/L]	14.5	11.3	18.1	6.44	13.9
Si (tot) [mg/L]	6.76	5.27	8.48	3.01	6.51
Sn (diss) [mg/L]	0.00007	< 0.00006	0.00019	0.00011	0.00012
Ti (diss) [mg/L]	0.00020	0.00028	0.00955	0.00138	0.00252
U (diss) [mg/L]	0.00225	0.00538	0.000235	0.00110	0.000754
V (diss) [mg/L]	0.00028	0.00054	0.00064	0.00020	0.00058
Zn (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	0.6	0.6	0.8	< 0.5	< 0.5
Vinyl Chloride [ug/L]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
MEK [ug/L]	< 20	< 20	< 20	< 20	< 20
Acetone [ug/L]	< 30	< 30	< 30	< 30	< 30

**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : CA15521-MAY20

*Catharine Arnold*  
Catharine Arnold, B.Sc., C.Chem  
Project Specialist,  
Environment, Health & Safety





**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

05-June-2020

**Corporation of the Municipality of Calvin**

Attn : Jacob Grove

**Date Rec. :** 29 May 2020  
**LR Report:** CA15520-MAY20

1355 Peddlers Dr RR#2  
Mattawa, ON  
P0H 1V0, Canada

**Copy:** #1

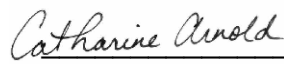

Phone: 705-744-2700  
Fax:705-744-0309

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: RES-188
Sample Date & Time					26-May-20 15:00
Temp Upon Receipt [°C]	---	---	--	---	12.0
TSS [mg/L]	02-Jun-20	11:54	04-Jun-20	08:54	< 2
Alkalinity [mg/L as CaCO3]	02-Jun-20	16:23	03-Jun-20	12:51	76
Conductivity [uS/cm]	02-Jun-20	16:23	03-Jun-20	12:51	182
pH [no unit]	02-Jun-20	16:23	03-Jun-20	12:51	7.81
TDS [mg/L]	29-May-20	20:14	04-Jun-20	07:58	66
DOC [mg/L]	01-Jun-20	21:26	02-Jun-20	07:43	< 1
4AAP-Phenolics [mg/L]	02-Jun-20	06:50	02-Jun-20	18:41	< 0.002
COD [mg/L]	30-May-20	11:19	01-Jun-20	09:03	< 8
Cl [mg/L]	04-Jun-20	06:57	04-Jun-20	13:56	< 1
TKN [as N mg/L]	29-May-20	19:22	02-Jun-20	15:13	< 0.5
NH3+NH4 [as N mg/L]	01-Jun-20	16:13	02-Jun-20	10:34	< 0.1
SO4 [mg/L]	04-Jun-20	07:12	04-Jun-20	13:56	13
NO2 [as N mg/L]	29-May-20	21:46	02-Jun-20	12:39	< 0.03
NO3 [as N mg/L]	29-May-20	21:46	02-Jun-20	12:39	< 0.06
Hg (diss) [mg/L]	01-Jun-20	15:26	01-Jun-20	15:46	< 0.00001
Hardness (diss) [mg/L as CaCO3]	02-Jun-20	11:08	03-Jun-20	14:34	82.9
Al (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.001
Sb (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.0009
As (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.0002
Ba (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.0127
Be (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.000007
Bi (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.000007
B (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.034
Cd (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.000003
Ca (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	21.5
Cr (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.00008
Co (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.000004

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: RES-188
Cu (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.0032
Fe (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.007
Pb (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.00003
Li (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.0017
Mg (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	7.10
Mn (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.0338
Mo (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.00143
Ni (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.0001
P (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.003
K (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	1.68
Se (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.00004
Ag (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.00005
Na (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	4.49
Sr (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.161
Tl (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.000005
Si [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	12.2
Si (tot) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	5.70
Sn (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.00007
Ti (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.00005
U (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.000524
V (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.00067
Zn (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	0.005
Zr (diss) [mg/L]	02-Jun-20	11:08	03-Jun-20	14:34	< 0.002
Benzene [ug/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 0.5
1,4-Dichlorobenzene [µg/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 0.5
Dichloromethane [µg/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 0.5
Toluene [ug/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 0.5
Vinyl Chloride [µg/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 0.2
MEK [µg/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 20
Acetone [µg/L]	03-Jun-20	12:21	04-Jun-20	11:27	< 30

  
  
**Catharine Arnold, B.Sc., C.Chem**  
**Project Specialist,**  
**Environment, Health & Safety**



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**Corporation of the Municipality of Calvin**

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**Project :** NB102-192/14

**30-October-2020**

**Date Rec. :** 16 October 2020  
**LR Report:** CA15285-OCT20

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Fpinal Report

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed Date	3: Analysis Completed Date	4: Analysis Completed Time	6: MW-3	7: MW-4	8: MW-5S	9: MW-5D	10: MW-6
Sample Date & Time					15-Oct-20 09:40	15-Oct-20 14:15	14-Oct-20 16:40	15-Oct-20 10:10	14-Oct-20 15:30
Temp Upon Receipt [°C]	---	---	---	---	13.0	13.0	13.0	13.0	13.0
TSS [mg/L]	22-Oct-20	08:16	22-Oct-20	20:25	4670	108	263	46	896
Alkalinity [mg/L as CaCO3]	17-Oct-20	13:27	20-Oct-20	21:12	203	73	213	192	86
Conductivity [uS/cm]	17-Oct-20	13:27	20-Oct-20	21:12	393	162	584	432	224
pH [No unit]	17-Oct-20	13:27	20-Oct-20	21:12	7.05	6.68	7.32	8.34	7.72
TDS [mg/L]	16-Oct-20	18:33	21-Oct-20	20:06	226	97	366	217	143
DOC [mg/L]	19-Oct-20	22:25	20-Oct-20	14:20	6	3	3	< 1	1
4AAP-Phenolics [mg/L]	20-Oct-20	11:10	21-Oct-20	11:46	< 0.002	0.002	< 0.002	< 0.002	0.002
COD [mg/L]	20-Oct-20	07:33	21-Oct-20	19:22	28	28	< 8	< 8	< 8
Cl [mg/L]	24-Oct-20	09:29	29-Oct-20	13:53	11	2	31	12	5
TKN [as N mg/L]	22-Oct-20	16:59	23-Oct-20	14:03	2.5	3.8	1.0	< 0.5	< 0.5
NH3+NH4 [as N mg/L]	19-Oct-20	17:56	20-Oct-20	16:29	1.7	2.8	0.3	< 0.1	< 0.1
SO4 [mg/L]	23-Oct-20	15:55	30-Oct-20	09:55	10	9	62	26	15
NO2 [as N mg/L]	19-Oct-20	20:14	23-Oct-20	16:29	0.16	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	19-Oct-20	20:14	23-Oct-20	16:29	1.86	< 0.06	0.86	< 0.06	0.80
Hg (diss) [mg/L]	19-Oct-20	15:19	20-Oct-20	15:39	< 0.00001	0.00002	< 0.00001	< 0.00001	< 0.00001
Hardness (diss) [mg/L as CaCO3]	21-Oct-20	11:24	22-Oct-20	13:27	152	54.3	267	230	134

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Project : NB102-192/14

LR Report : CA15285-OCT20

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: MW-3	7: MW-4	8: MW-5S	9: MW-5D	10: MW-6
Al (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.030	0.003	0.043	0.054	0.049
Sb (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.0006	< 0.0002	0.0002	< 0.0002	< 0.0002
Ba (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.177	0.0410	0.0753	0.0496	0.0781
Be (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.000011	< 0.000007	0.000009	< 0.000007	< 0.000007
Bi (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.000021	0.000010	0.000012	0.000008	0.000015
B (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.276	0.068	0.184	0.064	0.037
Cd (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.000035	0.000010	0.000099	0.000111	0.000022
Ca (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	35.6	15.7	71.9	52.9	27.1
Cr (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00025	0.00019	< 0.00008	< 0.00008	0.00032
Co (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00249	0.0102	0.00187	0.000076	0.000107
Cu (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.0144	0.0004	0.0046	0.0006	0.0007
Fe (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.019	0.166	0.029	0.044	0.194
Pb (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	< 0.00001	< 0.00001	< 0.00001	0.00003	< 0.00001
Li (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.0008	0.0002	0.0021	0.0015	0.0028
Mg (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	15.5	3.64	21.2	23.8	16.0
Mn (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	2.40	1.60	1.84	0.130	0.00208
Mo (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00070	0.00009	0.00175	0.00501	0.00088
Ni (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.0058	0.0018	0.0024	0.0003	0.0007
P (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.011	0.003	0.008	0.006	0.011
K (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	9.32	4.26	21.6	4.80	2.98
Se (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00011	< 0.00004	0.00005	< 0.00004	< 0.00004
Ag (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	40.1	6.55	18.4	11.4	14.4
Sr (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.408	0.0940	0.367	0.413	0.212
Tl (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	< 0.000005	< 0.000005	0.000011	0.000011	< 0.000005
Si [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	11.7	11.8	11.7	8.66	18.4
Si (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	5.48	5.51	5.46	4.04	8.58
Sn (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	< 0.00006	< 0.00006	< 0.00006	< 0.00006	< 0.00006
Ti (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00118	0.00006	0.00166	0.00300	0.00296
U (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00117	0.000014	0.00248	0.00559	0.000410

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**Project :** NB102-192/14  
**LR Report :** CA15285-OCT20

Analysis	1: Analysis Start Date	2: Analysis Start Time Completed	3: Analysis Completed Date	4: Analysis Completed Time	6: MW-3	7: MW-4	8: MW-5S	9: MW-5D	10: MW-6
V (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.00067	0.00011	0.00029	0.00400	0.00066
Zn (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	0.003	0.002	0.004	< 0.002	0.004
Zr (diss) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:27	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 0.5	< 0.5	1.2	2.1	2.1
Vinyl Chloride [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
MEK [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 20	< 20	< 20	< 20	< 20
Acetone [ug/L]	17-Oct-20	09:48	20-Oct-20	19:57	< 30	< 30	< 30	< 30	< 30

Analysis	11: MW-6-DUP	12: MW-7	13: MW-8	14: MW-9	15: MW-10	16: MW-11	17: MW-12	18: MW-13
Sample Date & Time	14-Oct-20 15:30	14-Oct-20 10:05	15-Oct-20 11:00	14-Oct-20 14:20	14-Oct-20 13:45	14-Oct-20 13:10	14-Oct-20 12:25	14-Oct-20 11:30
Temp Upon Receipt [°C]	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
TSS [mg/L]	876	165	14	2000	584	1100	3290	209
Alkalinity [mg/L as CaCO3]	96	55	164	228	56	23	9	23
Conductivity [uS/cm]	230	300	537	665	720	67	35	59
pH [No unit]	7.50	7.01	7.20	7.44	6.30	6.83	6.60	6.97
TDS [mg/L]	143	169	357	329	463	< 30	51	49
DOC [mg/L]	2	6	2	6	10	< 1	1	1
4AAP-Phenolics [mg/L]	0.004	0.003	0.003	< 0.002	< 0.002	< 0.002	0.003	0.003
COD [mg/L]	< 8	16	< 8	13	25	< 8	< 8	< 8
Cl [mg/L]	4	4	32	9	60	2	1	< 1
TKN [as N mg/L]	0.6	0.7	0.5	1.5	1.2	< 0.5	0.5	< 0.5
NH3+NH4 [as N mg/L]	< 0.1	< 0.1	< 0.1	0.5	0.2	< 0.1	< 0.1	< 0.1
SO4 [mg/L]	15	43	50	31	160	13	12	12
NO2 [as N mg/L]	< 0.03	0.04	< 0.03	0.07	< 0.03	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	0.81	0.75	3.24	4.54	5.99	0.23	< 0.06	< 0.06



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Analysis	11: MW-6-DUP	12: MW-7	13: MW-8	14: MW-9	15: MW-10	16: MW-11	17: MW-12	18: MW-13
Hg (diss) [mg/L]	< 0.00001	< 0.00001	< 0.00001	< 0.00001	0.00001	< 0.00001	< 0.00001	< 0.00001
Hardness (diss) [mg/L as CaCO3]	131	96.3	235	209	174	21.3	10.8	23.8
Al (diss) [mg/L]	0.035	0.134	0.006	0.061	0.075	0.262	0.361	0.121
Sb (diss) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
As (diss) [mg/L]	< 0.0002	0.0002	< 0.0002	0.0008	0.0008	< 0.0002	< 0.0002	< 0.0002
Ba (diss) [mg/L]	0.0765	0.0544	0.102	0.178	0.130	0.0121	0.00931	0.00782
Be (diss) [mg/L]	0.000007	0.000045	0.000014	0.000011	0.000097	0.000028	0.000028	0.000019
Bi (diss) [mg/L]	0.000014	0.000068	0.000064	0.000046	0.000037	0.000026	0.000042	0.000014
B (diss) [mg/L]	0.035	0.019	0.171	0.619	0.828	0.038	0.011	0.010
Cd (diss) [mg/L]	0.000019	0.000031	0.000010	0.000038	0.000157	0.000007	0.000006	0.000007
Ca (diss) [mg/L]	26.3	19.1	65.8	54.9	49.7	5.46	2.81	6.33
Cr (diss) [mg/L]	0.00023	0.00031	0.00015	0.00029	0.00053	0.00021	0.00067	< 0.00008
Co (diss) [mg/L]	0.000093	0.000839	0.000337	0.00123	0.00129	0.000137	0.000296	0.000139
Cu (diss) [mg/L]	0.0006	0.0017	0.0017	0.0132	0.0055	0.0018	0.0022	0.0007
Fe (diss) [mg/L]	0.029	0.206	< 0.007	0.040	0.045	0.184	0.342	0.213
Pb (diss) [mg/L]	< 0.00001	0.00007	< 0.00001	0.00002	< 0.00001	0.00008	0.00020	0.00008
Li (diss) [mg/L]	0.0026	0.0100	0.0034	0.0002	0.0005	0.0013	0.0004	0.0005
Mg (diss) [mg/L]	15.9	11.8	17.1	17.5	12.1	1.86	0.919	1.95
Mn (diss) [mg/L]	0.00124	0.0738	0.0813	0.704	1.25	0.00282	0.00764	0.00852
Mo (diss) [mg/L]	0.00080	0.00011	0.00015	0.00077	0.00019	0.00015	0.00012	0.00028
Ni (diss) [mg/L]	0.0007	0.0082	0.0005	0.0018	0.0026	0.0006	0.0008	0.0002
P (diss) [mg/L]	0.007	0.009	0.006	0.009	0.012	0.007	0.014	0.008
K (diss) [mg/L]	2.98	1.39	12.0	27.6	4.83	0.748	0.470	0.574
Se (diss) [mg/L]	< 0.00004	0.00005	0.00013	0.00013	0.00019	0.00006	< 0.00004	0.00004
Ag (diss) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Na (diss) [mg/L]	14.1	9.64	22.8	28.1	82.1	5.26	2.16	3.02
Sr (diss) [mg/L]	0.210	0.184	0.440	0.600	0.631	0.0472	0.0302	0.0514
Tl (diss) [mg/L]	< 0.000005	0.000009	< 0.000005	0.000042	0.000048	0.000005	0.000006	0.000005
Si [mg/L]	18.0	26.3	14.6	5.67	14.1	13.7	11.4	12.6
Si (diss) [mg/L]	8.41	12.3	6.81	2.65	6.57	6.41	5.34	5.87
Sn (diss) [mg/L]	< 0.00006	< 0.00006	< 0.00006	0.00010	0.00015	< 0.00006	< 0.00006	< 0.00006

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**Project :** NB102-192/14  
**LR Report :** CA15285-OCT20

<b>Analysis</b>	<b>11: MW-6-DUP</b>	<b>12: MW-7</b>	<b>13: MW-8</b>	<b>14: MW-9</b>	<b>15: MW-10</b>	<b>16: MW-11</b>	<b>17: MW-12</b>	<b>18: MW-13</b>
Ti (diss) [mg/L]	0.00173	0.00767	0.00021	0.00220	0.00196	0.0117	0.0211	0.00409
U (diss) [mg/L]	0.000393	0.000127	0.00137	0.00159	0.000327	0.000169	0.000058	0.000173
V (diss) [mg/L]	0.00063	0.00075	0.00008	0.00026	0.00025	0.00039	0.00080	0.00013
Zn (diss) [mg/L]	0.002	0.004	0.002	0.002	0.003	0.003	0.003	< 0.002
Zr (diss) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Benzene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	2.2	< 0.5	< 0.5	< 0.5	< 0.5	1.9	< 0.5	< 0.5
Vinyl Chloride [ug/L]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
MEK [ug/L]	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Acetone [ug/L]	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30

<b>Analysis</b>	<b>19: MW-13-DUP</b>	<b>20: MW-14</b>
Sample Date & Time	14-Oct-20 11:30	15-Oct-20 12:40
Temp Upon Receipt [°C]	13.0	13.0
TSS [mg/L]	205	334
Alkalinity [mg/L as CaCO3]	24	27
Conductivity [uS/cm]	69	81
pH [No unit]	6.97	7.22
TDS [mg/L]	57	74
DOC [mg/L]	1	2
4AAP-Phenolics [mg/L]	< 0.002	< 0.002
COD [mg/L]	< 8	< 8
Cl [mg/L]	< 1	< 1
TKN [as N mg/L]	< 0.5	< 0.5
NH3+NH4 [as N mg/L]	< 0.1	< 0.1
SO4 [mg/L]	11	9

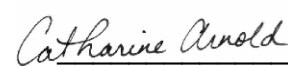



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**Project :** NB102-192/14  
**LR Report :** CA15285-OCT20

<b>Analysis</b>	<b>19: MW-13-DUP</b>	<b>20: MW-14</b>
NO2 [as N mg/L]	< 0.03	< 0.03
NO3 [as N mg/L]	< 0.06	< 0.06
Hg (diss) [mg/L]	< 0.00001	< 0.00001
Hardness (diss) [mg/L as CaCO3]	23.0	36.5
Al (diss) [mg/L]	0.056	0.083
Sb (diss) [mg/L]	< 0.0009	< 0.0009
As (diss) [mg/L]	< 0.0002	< 0.0002
Ba (diss) [mg/L]	0.00598	0.0252
Be (diss) [mg/L]	0.000015	0.000023
Bi (diss) [mg/L]	0.000037	0.000021
B (diss) [mg/L]	0.010	0.007
Cd (diss) [mg/L]	0.000007	0.000102
Ca (diss) [mg/L]	6.21	9.07
Cr (diss) [mg/L]	< 0.00008	0.00011
Co (diss) [mg/L]	0.000105	0.000240
Cu (diss) [mg/L]	0.0005	0.0023
Fe (diss) [mg/L]	0.060	0.083
Pb (diss) [mg/L]	< 0.00001	0.00006
Li (diss) [mg/L]	0.0005	0.0013
Mg (diss) [mg/L]	1.81	3.36
Mn (diss) [mg/L]	0.00704	0.0139
Mo (diss) [mg/L]	0.00029	0.00045
Ni (diss) [mg/L]	0.0001	0.0006
P (diss) [mg/L]	0.007	0.007
K (diss) [mg/L]	0.560	0.813
Se (diss) [mg/L]	0.00006	0.00006
Ag (diss) [mg/L]	< 0.00005	< 0.00005
Na (diss) [mg/L]	2.97	2.90
Sr (diss) [mg/L]	0.0503	0.0453
Tl (diss) [mg/L]	< 0.000005	0.000012
Si [mg/L]	12.2	13.4

Analysis	19: MW-13-DUP	20: MW-14
Si (diss) [mg/L]	5.69	6.28
Sn (diss) [mg/L]	0.00006	0.00030
Ti (diss) [mg/L]	0.00090	0.00541
U (diss) [mg/L]	0.000147	0.000076
V (diss) [mg/L]	0.00002	0.00017
Zn (diss) [mg/L]	< 0.002	0.009
Zr (diss) [mg/L]	< 0.002	< 0.002
Benzene [ug/L]	< 0.5	< 0.5
1,4-Dichlorobenzene [µg/L]	< 0.5	< 0.5
Dichloromethane [µg/L]	< 0.5	< 0.5
Toluene [ug/L]	< 0.5	< 0.5
Vinyl Chloride [µg/L]	< 0.2	< 0.2
MEK [µg/L]	< 20	< 20
Acetone [µg/L]	< 30	< 30

  
  
**Catharine Arnold, B.Sc., C.Chem**  
**Project Specialist,**  
**Environment, Health & Safety**



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**Project :** NB102-192/14

02-November-2020

**Corporation of the Minicipality of Calvin**

Attn : Jacob Grove

**Date Rec. :** 16 October 2020

**LR Report:** CA14391-OCT20

1355 Peddlers Dr RR#2, Mattawa  
Canada, P0H 1V0  
Phone: 705-744-2700, Fax:705-744-0309

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# CERTIFICATE OF ANALYSIS

## Final Report

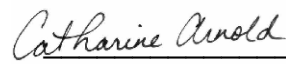

Analysis	1:	2:	3:	4:	6:
	Analysis Start Date	Analysis Start Time	Analysis Completed Date	Analysis Completed Time	RES-188
Sample Date & Time					14-Oct-20 13:00
Temp Upon Receipt [°C]	---	---	---	---	13.0
TSS [mg/L]	20-Oct-20	14:35	21-Oct-20	20:00	< 2
Alkalinity [mg/L as CaCO3]	17-Oct-20	10:47	20-Oct-20	19:50	75
Conductivity [uS/cm]	17-Oct-20	10:47	20-Oct-20	19:50	172
pH [No unit]	17-Oct-20	10:47	20-Oct-20	19:50	8.13
TDS [mg/L]	16-Oct-20	18:33	20-Oct-20	19:31	100
DOC [mg/L]	19-Oct-20	22:25	20-Oct-20	14:19	< 1
4AAP-Phenolics [mg/L]	20-Oct-20	11:10	21-Oct-20	11:45	< 0.002
COD [mg/L]	20-Oct-20	08:57	20-Oct-20	14:52	< 8
Cl [mg/L]	28-Oct-20	15:18	29-Oct-20	10:00	< 1
TKN [as N mg/L]	22-Oct-20	16:59	26-Oct-20	10:39	< 0.5
NH3+NH4 [as N mg/L]	21-Oct-20	15:52	22-Oct-20	14:10	< 0.1
SO4 [mg/L]	28-Oct-20	15:01	29-Oct-20	10:00	14
NO2 [as N mg/L]	19-Oct-20	23:26	22-Oct-20	13:53	< 0.03
NO3 [as N mg/L]	19-Oct-20	23:26	22-Oct-20	13:53	< 0.06
Hg (diss) [mg/L]	19-Oct-20	15:19	20-Oct-20	15:38	< 0.00001
Hardness (diss) [mg/L as CaCO3]	21-Oct-20	23:29	22-Oct-20	14:25	78.3
Al (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.002
Sb (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.0013
As (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.0002
Ba (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.0125
Be (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.000007
Bi (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.000011
B (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.023
Cd (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.000003
Ca (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	20.4
Cr (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.00008
Co (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.000022

Online LIMS

0002308239

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Test method information available upon request. \*Temperature Upon Receipt\* is representative of the whole shipment and may not reflect the temperature of individual samples.  
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: RES-188
Cu (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.0003
Fe (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.028
Pb (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.00001
Li (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.0016
Mg (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	6.66
Mn (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.0383
Mo (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.00156
Ni (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.0003
P (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.003
K (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	1.61
Se (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.00004
Ag (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.00005
Na (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	4.52
Sr (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.168
Tl (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.000005
Si [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	8.98
Si (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	4.20
Sn (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.00006
Ti (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.00005
U (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.000503
V (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	0.00056
Zn (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.002
Zr (diss) [mg/L]	21-Oct-20	23:29	22-Oct-20	14:25	< 0.002
Benzene [ug/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 0.5
1,4-Dichlorobenzene [µg/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 0.5
Dichloromethane [µg/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 0.5
Toluene [ug/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 0.5
Vinyl Chloride [µg/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 0.2
MEK [µg/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 20
Acetone [µg/L]	17-Oct-20	09:48	20-Oct-20	19:59	< 30

  
  
**Catharine Arnold, B.Sc., C.Chem**  
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Project : NB102-192/14

19-November-2021

Date Rec. : 28 October 2021  
LR Report: CA15824-OCT21

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	7: MW-6	8: MW-8	9: MW-5D	10: MW-5S	11: MW-3	12: MW-9
Sample Date & Time					26-Oct-21 11:55	26-Oct-21 12:30	26-Oct-21 13:15	26-Oct-21 13:35	26-Oct-21 14:25	26-Oct-21 14:10
Temperature Upon Receipt [°C]	---	---	---	---	12.0	12.0	12.0	12.0	12.0	12.0
Total Suspended Solids [mg/L]	02-Nov-21	14:42	04-Nov-21	11:46	383	77	35	530	306	3460
Alkalinity [mg/L as CaCO3]	28-Oct-21	15:17	02-Nov-21	14:46	107	184	183	211	273	282
pH [No unit]	28-Oct-21	15:17	02-Nov-21	14:46	6.72	6.59	7.65	6.71	6.64	6.69
Conductivity [uS/cm]	28-Oct-21	15:17	02-Nov-21	14:46	233	546	420	574	568	660
Total Dissolved Solids [mg/L]	29-Oct-21	19:13	03-Nov-21	16:19	154	371	254	386	383	469
Chemical Oxygen Demand [mg/L]	01-Nov-21	09:37	03-Nov-21	09:41	20	< 8	< 8	10	10	8
Total Kjeldahl Nitrogen (N) [mg/L]	29-Oct-21	16:26	04-Nov-21	09:40	< 0.05	0.14	0.05	0.41	2.58	0.87
Ammonia+Ammonium (N) [mg/L]	28-Oct-21	17:45	02-Nov-21	13:36	< 0.04	0.04	0.04	0.24	2.54	0.76
4AAP-Phenolics [mg/L]	29-Oct-21	09:03	01-Nov-21	10:29	< 0.002	< 0.002	< 0.002	< 0.002	0.003	< 0.002
Sulphate [mg/L]	01-Nov-21	12:26	02-Nov-21	10:59	12	56	23	49	9	42
Chloride [mg/L]	01-Nov-21	13:17	02-Nov-21	10:59	5	32	20	36	25	18
Nitrite (as N) [mg/L]	29-Oct-21	21:14	03-Nov-21	14:22	< 0.03	< 0.03	< 0.03	< 0.03	0.34	0.07
Nitrate (as N) [mg/L]	29-Oct-21	21:14	03-Nov-21	14:22	0.83	3.12	< 0.06	0.76	2.23	4.85
Dissolved Organic Carbon [mg/L]	28-Oct-21	10:28	29-Oct-21	15:01	1	2	< 1	3	9	8
Silica Dioxide [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	16.8	15.2	8.79	12.1	12.1	6.24
Mercury (total) [mg/L]	29-Oct-21	11:30	03-Nov-21	12:01	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004
Mercury (dissolved) [mg/L]	29-Oct-21	11:30	03-Nov-21	12:01	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004
Hardness (dissolved) [mg/L as CaCO3]	01-Nov-21	14:11	03-Nov-21	11:36	92.7	259	219	274	194	282
Silver (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005

OnLine LIMS

0002719329



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Project : NB102-192/14

LR Report : CA15824-OCT21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	7: MW-6	8: MW-8	9: MW-5D	10: MW-5S	11: MW-3	12: MW-9
Aluminum (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.003	0.001	0.002	0.002	0.005	0.005
Arsenic (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	< 0.0002	< 0.0002	< 0.0002	< 0.0002	0.0006	0.0008
Barium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.0630	0.114	0.0480	0.0789	0.242	0.283
Beryllium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.000008	0.000007	< 0.000007	0.000010	0.000017	0.000010
Bismuth (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001	< 0.00001
Boron (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.029	0.209	0.057	0.210	0.356	0.706
Calcium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	20.8	77.2	53.8	79.2	47.3	78.4
Cobalt (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.000069	0.000139	0.000023	0.00140	0.00410	0.00106
Chromium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.00031	0.00038	< 0.00008	0.00008	0.00033	0.00031
Copper (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	0.0004	0.0013	0.0003	0.0044	0.0150	0.0123
Iron (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Potassium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:36	2.66	14.4	5.01	23.5	10.4	38.8
Lithium (dissolved) [mg/L]	01-Nov-21	14:11	09-Nov-21	15:05	0.0021	0.0040	0.0014	0.0022	0.0008	0.0003
Magnesium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	9.91	16.1	20.5	18.6	18.3	21.1
Molybdenum (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.00077	0.00019	0.00471	0.00167	0.00067	0.00077
Manganese (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.00100	0.00803	0.0894	1.73	2.67	0.713
Sodium (dissolved) [mg/L]	01-Nov-21	14:11	09-Nov-21	15:06	11.0	20.4	9.99	19.6	41.9	26.7
Nickel (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.0005	0.0005	0.0002	0.0022	0.0068	0.0015
Phosphorus (dissolved) [mg/L]	01-Nov-21	14:11	09-Nov-21	15:06	< 0.003	0.004	< 0.003	< 0.003	< 0.003	0.005
Lead (dissolved) [mg/L]	01-Nov-21	14:11	09-Nov-21	15:06	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Silicon (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	7.86	7.12	4.11	5.66	5.64	2.92
Thallium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	< 0.000005	< 0.000005	< 0.000005	0.000008	< 0.000005	0.000048
Tin (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	< 0.00006	< 0.00006	< 0.00006	0.00043	0.00008	0.00014
Titanium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.00010	0.00009	0.00007	0.00010	0.00022	0.00019
Uranium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.000236	0.00131	0.00485	0.00233	0.00151	0.00237
Antimony (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.00009	0.00013	< 0.00004	0.00010	0.00016	0.00017
Strontium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.165	0.469	0.379	0.376	0.430	0.733
Vanadium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	0.00045	0.00014	0.00037	0.00042	0.00068	0.00030
Zirconium (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Zinc (dissolved) [mg/L]	01-Nov-21	14:11	03-Nov-21	11:37	< 0.002	0.002	< 0.002	< 0.002	0.003	< 0.002
Acetone [ug/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 30	< 30	< 30	< 30	< 30	< 30
Benzene [ug/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene [ug/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichloromethane [ug/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

OnLine LIMS

000219329



**SGS Canada Inc.**  
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Lakefield - Ontario - KOL 2HO  
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**Project :** NB102-192/14  
**LR Report :** CA15824-OCT21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	7: MW-6	8: MW-8	9: MW-5D	10: MW-5S	11: MW-3	12: MW-9
Vinyl Chloride [µg/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 0.2	< 0.2	< 0.2	< 0.2	0.2	< 0.2
Methyl ethyl ketone [ug/L]	29-Oct-21	12:33	03-Nov-21	09:59	< 20	< 20	< 20	< 20	< 20	< 20

Analysis	13: MW-11	14: MW-10	15: MW-12	16: MW-13	17: MW-14	18: MW-4	19: MW7	20: MW5S-Dup
Sample Date & Time	27-Oct-21 08:35	27-Oct-21 09:05	27-Oct-21 09:30	27-Oct-21 10:05	27-Oct-21 10:40	27-Oct-21 11:10	27-Oct-21 12:00	26-Oct-21 13:55
Temperature Upon Receipt [°C]	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Suspended Solids [mg/L]	2670	1410	5780	179	117	705	284	290
Alkalinity [mg/L as CaCO3]	29	57	9	23	12	438	25	212
pH [No unit]	6.37	6.69	6.50	6.83	6.16	7.15	6.70	7.55
Conductivity [uS/cm]	85	548	33	59	47	943	74	622
Total Dissolved Solids [mg/L]	77	386	57	63	49	514	77	391
Chemical Oxygen Demand [mg/L]	< 8	14	12	< 8	< 8	129	15	27
Total Kjeldahl Nitrogen (N) [mg/L]	0.08	0.99	0.12	< 0.05	< 0.05	16.4	0.18	0.34
Ammonia+Ammonium (N) [mg/L]	< 0.04	0.43	< 0.04	< 0.04	< 0.04	14.9	0.05	0.23
4AAP-Phenolics [mg/L]	0.003	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Sulphate [mg/L]	7	100	5	5	5	52	10	50
Chloride [mg/L]	2	42	2	< 1	< 1	37	4	37
Nitrite (as N) [mg/L]	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.07	< 0.03	< 0.03
Nitrate (as N) [mg/L]	0.29	6.30	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.85
Dissolved Organic Carbon [mg/L]	< 1	6	2	< 1	2	20	7	3
Silica Dioxide [mg/L]	14.4	14.5	11.4	12.2	11.5	10.5	16.0	12.2
Mercury (total) [mg/L]	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004
Mercury (dissolved) [mg/L]	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004	< 0.00004
Hardness (dissolved) [mg/L as CaCO3]	35.9	173	11.9	23.4	16.0	397	24.3	272
Silver (dissolved) [mg/L]	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.00005
Aluminum (dissolved) [mg/L]	0.007	0.017	0.021	0.011	0.017	0.008	0.143	0.002
Arsenic (dissolved) [mg/L]	< 0.0002	0.0005	< 0.0002	< 0.0002	< 0.0002	0.0004	< 0.0002	0.0002
Barium (dissolved) [mg/L]	0.00840	0.111	0.00399	0.00739	0.0191	0.176	0.0112	0.0772
Beryllium (dissolved) [mg/L]	0.000013	0.000058	0.000013	0.000018	0.000042	< 0.000007	0.000015	0.000010
Bismuth (dissolved) [mg/L]	< 0.00001	< 0.00001	0.00001	0.00002	< 0.00001	0.00002	0.00002	< 0.00001
Boron (dissolved) [mg/L]	0.041	0.672	0.030	0.008	0.005	0.807	0.032	0.186
Calcium (dissolved) [mg/L]	9.93	51.9	3.37	6.77	4.82	125	4.39	77.4
Cobalt (dissolved) [mg/L]	0.000034	0.00105	0.000051	0.000044	0.000303	0.0188	0.000137	0.00138





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Project : NB102-192/14

LR Report : CA15824-OCT21

Analysis	13: MW-11	14: MW-10	15: MW-12	16: MW-13	17: MW-14	18: MW-4	19: MW7	20: MW5S-Dup
Chromium (dissolved) [mg/L]	0.00016	0.00031	0.00018	< 0.00008	0.00014	0.00209	0.00079	0.00010
Copper (dissolved) [mg/L]	0.0005	0.0036	0.0004	0.0003	0.0008	0.0003	0.0015	0.0039
Iron (dissolved) [mg/L]	< 0.007	0.007	0.010	< 0.007	< 0.007	0.040	0.098	< 0.007
Potassium (dissolved) [mg/L]	1.04	5.68	0.573	0.723	0.665	28.9	1.17	23.2
Lithium (dissolved) [mg/L]	0.0010	0.0003	0.0003	0.0005	0.0006	0.0001	0.0051	0.0018
Magnesium (dissolved) [mg/L]	2.70	10.5	0.852	1.57	0.953	20.6	3.23	19.1
Molybdenum (dissolved) [mg/L]	0.00030	0.00021	0.00013	0.00027	0.00014	0.00018	0.00008	0.00154
Manganese (dissolved) [mg/L]	0.00081	1.73	0.00181	0.00099	0.00376	5.24	0.00337	1.84
Sodium (dissolved) [mg/L]	3.41	50.7	2.19	2.36	2.69	45.8	6.78	18.2
Nickel (dissolved) [mg/L]	0.0004	0.0017	0.0001	0.0001	0.0005	0.0047	0.0014	0.0022
Phosphorus (dissolved) [mg/L]	< 0.003	< 0.003	0.009	< 0.003	< 0.003	0.009	0.013	< 0.003
Lead (dissolved) [mg/L]	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Silicon (dissolved) [mg/L]	6.72	6.77	5.33	5.69	5.37	4.90	7.47	5.69
Thallium (dissolved) [mg/L]	< 0.000005	0.000042	< 0.000005	0.000007	0.000006	< 0.000005	< 0.000005	0.000010
Tin (dissolved) [mg/L]	< 0.00006	0.00011	< 0.00006	0.00007	< 0.00006	0.00021	< 0.00006	< 0.00006
Titanium (dissolved) [mg/L]	0.00023	0.00017	0.00057	0.00020	0.00018	0.00041	0.00523	0.00006
Uranium (dissolved) [mg/L]	0.000129	0.000240	0.000018	0.000196	0.000050	0.000145	0.000051	0.00223
Antimony (dissolved) [mg/L]	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009	< 0.0009
Selenium (dissolved) [mg/L]	0.00006	0.00012	< 0.00004	0.00004	0.00004	0.00024	0.00006	0.00006
Strontium (dissolved) [mg/L]	0.0672	0.634	0.0302	0.0465	0.0360	0.589	0.0318	0.368
Vanadium (dissolved) [mg/L]	0.00027	0.00018	0.00028	0.00014	0.00008	0.00051	0.00158	0.00029
Zirconium (dissolved) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Zinc (dissolved) [mg/L]	< 0.002	< 0.002	< 0.002	< 0.002	0.004	< 0.002	< 0.002	< 0.002
Acetone [ug/L]	< 30	< 30	< 30	< 30	< 30	< 30	< 30	< 30
Benzene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5
1,4-Dichlorobenzene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.9	< 0.5	< 0.5
Dichloromethane [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene [ug/L]	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vinyl Chloride [ug/L]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	1.1	< 0.2	< 0.2
Methyl ethyl ketone [ug/L]	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20



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**Project :** NB102-192/14  
**LR Report :** CA15824-OCT21

*Chris Sullivan*



**Chris Sullivan, B.Sc., C.Chem**  
**Project Specialist,**  
**Environment, Health & Safety**



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**Project :** NB102-192/14  
**LR Report :** CA15824-OCT21

## Quality Control Report

Organic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
%													
<i>Volatile Organics - QCBatchID: GCM0528-OCT21</i>													
1,4-Dichlorobenzene	0.5	µg/L	<0.5			ND	30	91	60	130	93	50	140
Acetone	30	ug/L	<30			ND	30	NV	60	130	NV	50	140
Benzene	0.5	µg/L	<0.5			ND	30	92	60	130	92	50	140
Dichloromethane	0.5	µg/L	<0.5			ND	30	92	60	130	91	50	140
Methyl ethyl ketone	20	ug/L	<20			ND	30	NV	60	130	NV	50	140
Toluene	0.5	µg/L	<0.5			ND	30	91	60	130	92	50	140
Vinyl Chloride	0.2	µg/L	<0.2			ND	30	92	60	130	96	50	140
Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
%													
<i>Alkalinity - QCBatchID: EWL0022-NOV21</i>													
Alkalinity	2	mg/L as Ca	< 2			0	20	104	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0642-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			4	20	109	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0652-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			1	20	106	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0014-NOV21</i>													
Ammonia+Ammonium (N)	0.04	mg/L	<0.04			4	10	100	90	110	106	75	125
<i>Ammonia by SFA - QCBatchID: SKA0307-OCT21</i>													
Ammonia+Ammonium (N)	0.04	mg/L	<0.04			0	10	106	90	110	106	75	125
<i>Anions by discrete analyzer - QCBatchID: DIO5004-NOV21</i>													
Chloride	1	mg/L	<1			1	20	103	80	120	107	75	125
Sulphate	2	mg/L	<2			2	20	86	80	120	81	75	125
<i>Anions by IC - QCBatchID: DIO0645-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	102	90	110	94	75	125
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	100	90	110	100	75	125
<i>Carbon by SFA - QCBatchID: SKA0309-OCT21</i>													
Dissolved Organic Carbon	1	mg/L	<1			0	20	104	90	110	106	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0004-NOV21</i>													
Chemical Oxygen Demand	8	mg/L	<8			0	20	96	80	120	86	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0005-NOV21</i>													
Chemical Oxygen Demand	8	mg/L	<8			ND	20	101	80	120	92	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0011-NOV21</i>													



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**Project :** NB102-192/14  
**LR Report :** CA15824-OCT21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Chemical Oxygen Demand	8	mg/L	<8			11	20	96	80	120	96	75	125
<i>Chemical Oxygen Demand - QCBatchID: EWL0031-NOV21</i>													
Chemical Oxygen Demand	8	mg/L	<8			4	20	100	80	120	90	75	125
<i>Conductivity - QCBatchID: EWL0022-NOV21</i>													
Conductivity	2	uS/cm	< 2			1	20	99	90	110	NA		
<i>Conductivity - QCBatchID: EWL0642-OCT21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Conductivity - QCBatchID: EWL0652-OCT21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Mercury by CVAAS - QCBatchID: EHG0039-OCT21</i>													
Mercury (total)	0.00004	mg/L	< 0.00001			ND	20	93	80	120	109	70	130
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0007-NOV21</i>													
Aluminum (dissolved)	0.001	mg/L	<0.001			3	20	100	90	110	90	70	130
Antimony (dissolved)	0.0009	mg/L	<0.0009			1	20	104	90	110	98	70	130
Arsenic (dissolved)	0.0002	mg/L	<0.0002			0	20	104	90	110	109	70	130
Barium (dissolved)	0.00002	mg/L	<0.00002			0	20	105	90	110	100	70	130
Beryllium (dissolved)	0.000007	mg/L	<0.00007			ND	20	92	90	110	76	70	130
Bismuth (dissolved)	0.00001	mg/L	1e-005			ND	20	96	90	110	83	70	130
Boron (dissolved)	0.002	mg/L	<0.002			1	20	102	90	110	101	70	130
Calcium (dissolved)	0.01	mg/L	<0.01			0	20	106	90	110	111	70	130
Chromium (dissolved)	0.00008	mg/L	<0.00008			ND	20	105	90	110	126	70	130
Cobalt (dissolved)	0.000004	mg/L	<0.000004			1	20	104	90	110	102	70	130
Copper (dissolved)	0.0002	mg/L	<0.0002			0	20	102	90	110	107	70	130
Iron (dissolved)	0.007	mg/L	<0.007			2	20	107	90	110	125	70	130
Lead (dissolved)	0.00009	mg/L	<0.00009			9	20	107	90	110	101	70	130
Lithium (dissolved)	0.0001	mg/L	<0.0001			2	20	103	90	110	116	70	130
Magnesium (dissolved)	0.001	mg/L	<0.001			2	20	105	90	110	71	70	130
Manganese (dissolved)	0.00001	mg/L	<0.00001			2	20	103	90	110	73	70	130
Molybdenum (dissolved)	0.00004	mg/L	<0.00004			1	20	105	90	110	101	70	130
Nickel (dissolved)	0.0001	mg/L	<0.0001			2	20	102	90	110	108	70	130
Phosphorus (dissolved)	0.003	mg/L	<0.003			ND	20	100	90	110	NV	70	130
Potassium (dissolved)	0.009	mg/L	<0.009			1	20	107	90	110	115	70	130
Selenium (dissolved)	0.00004	mg/L	<0.00004			7	20	102	90	110	105	70	130
Silicon (dissolved)	0.02	mg/L	<0.02			3	20	95	90	110	NV	70	130
Silver (dissolved)	0.00005	mg/L	<0.00005			ND	20	105	90	110	106	70	130
Sodium (dissolved)	0.01	mg/L	<0.01			3	20	102	90	110	105	70	130
Strontium (dissolved)	0.00002	mg/L	<0.00002			0	20	100	90	110	104	70	130
Thallium (dissolved)	0.000005	mg/L	<0.000005			ND	20	104	90	110	101	70	130
Tin (dissolved)	0.00006	mg/L	<0.00006			0	20	107	90	110	NV	70	130



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**Project :** NB102-192/14  
**LR Report :** CA15824-OCT21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
								%					
Titanium (dissolved)	0.00005	mg/L	<0.00005			3	20	105	90	110	NV	70	130
Uranium (dissolved)	0.000002	mg/L	<0.000002			1	20	102	90	110	90	70	130
Vanadium (dissolved)	0.00001	mg/L	<0.00001			7	20	104	90	110	115	70	130
Zinc (dissolved)	0.002	mg/L	<0.002			ND	20	101	90	110	100	70	130
Zirconium (dissolved)	0.002	mg/L	<0.002			ND	20	102	90	110	NV	70	130
<i>Metals in aqueous samples - ICP-OES - QCBatchID: EMS0007-NOV21</i>													
Silica Dioxide	0.02	mg/L	<0.02			3	20	95	90	110	NV	70	130
<i>pH - QCBatchID: EWL0022-NOV21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0642-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0652-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0004-NOV21</i>													
4AAP-Phenolics	0.002	mg/L	<0.002			9	10	105	80	120	110	75	125
<i>Solids Analysis - QCBatchID: EWL0051-NOV21</i>													
Total Dissolved Solids	30	mg/L	<30			2	20	100	90	110	NA		
<i>Solids Analysis - QCBatchID: EWL0674-OCT21</i>													
Total Dissolved Solids	30	mg/L	<30			1	20	98	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0047-NOV21</i>													
Total Suspended Solids	2	mg/L	< 2			0	10	97	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0001-NOV21</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	0.062			1	10	109	90	110	100	75	125
<i>Total Nitrogen - QCBatchID: SKA0016-NOV21</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	<0.05			ND	10	101	90	110	81	75	125
<i>Total Nitrogen - QCBatchID: SKA0050-NOV21</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	<0.05			3	10	100	90	110	NV	75	125



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**Project :** NB102-192/14

30-October-2020

**Corporation of the Municipality of Calvin**

Attn : Jacob Grove

**Date Rec. :** 16 October 2020

**LR Report:** CA15286-OCT20

1355 Peddlers Dr RR#2, Mattawa

Canada, P0H 1V0

Phone: 705-744-2700, Fax:705-744-0309

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Final Report

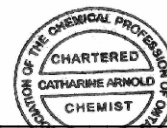
Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-3	7: SW3-DUP
Sample Date & Time					14-Oct-20 17:40	14-Oct-20 17:40
Temp Upon Receipt [°C]	---	---	---	---	13.0	13.0
BOD5 [mg/L]	16-Oct-20	16:46	21-Oct-20	14:48	< 4	< 4
Alkalinity [mg/L as CaCO3]	17-Oct-20	13:27	20-Oct-20	21:13	7	9
Conductivity [uS/cm]	17-Oct-20	13:27	20-Oct-20	21:13	27	35
pH [No unit]	17-Oct-20	13:27	20-Oct-20	21:13	6.95	7.07
TDS [mg/L]	16-Oct-20	20:12	20-Oct-20	20:32	< 30	< 30
TSS [mg/L]	21-Oct-20	10:31	22-Oct-20	10:27	< 2	< 2
DOC [mg/L]	19-Oct-20	22:25	20-Oct-20	14:20	5	6
Cl [mg/L]	27-Oct-20	21:26	28-Oct-20	14:17	< 1	< 1
NH3+NH4 [as N mg/L]	17-Oct-20	13:19	19-Oct-20	13:51	< 0.1	< 0.1
TKN [as N mg/L]	21-Oct-20	20:15	22-Oct-20	21:12	< 0.5	< 0.5
SO4 [mg/L]	27-Oct-20	21:21	28-Oct-20	14:17	4	3
NO2 [as N mg/L]	21-Oct-20	12:47	23-Oct-20	13:00	< 0.03	< 0.03
NO3 [as N mg/L]	21-Oct-20	12:47	23-Oct-20	13:00	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	20-Oct-20	11:10	21-Oct-20	11:46	< 0.002	< 0.002
Hg (tot) [mg/L]	19-Oct-20	15:19	20-Oct-20	15:40	< 0.00001	< 0.00001
Hg (diss) [mg/L]	19-Oct-20	15:19	20-Oct-20	15:40	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	21-Oct-20	11:24	22-Oct-20	13:29	10.9	10.4
Al (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.052	0.050
Al (diss)-0.2µm [mg/L]	21-Oct-20	11:24	27-Oct-20	17:29	0.034	0.027
Sb (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	< 0.0009	< 0.0009
As (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.0002	< 0.0002
Ba (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.0160	0.0151
Be (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	< 0.000007	0.000007
Bi (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.000012	0.000012
B (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.010	0.006
Cd (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.000003	0.000006
Ca (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	2.77	2.65

Online LIMS

0002306190

<b>Analysis</b>	<b>1: Analysis Start Date</b>	<b>2: Analysis Start Time</b>	<b>3: Analysis Completed Date</b>	<b>4: Analysis Completed Time</b>	<b>6: SW-3</b>	<b>7: SW3-DUP</b>
Cr (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00024	0.00024
Co (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00750	0.00607
Cu (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.0009	0.0009
Fe (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.153	0.143
Pb (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00005	0.00005
Li (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.0011	0.0009
Mg (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.969	0.917
Mn (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00795	0.00755
Mo (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00008	0.00007
Ni (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.0004	0.0004
P (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.009	0.008
K (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.494	0.471
Se (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00007	0.00007
Si [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	5.03	4.73
Si (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	2.35	2.21
Ag (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00024	0.00017
Na (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	1.37	1.21
Sr (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.0236	0.0227
Tl (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	< 0.000005	< 0.000005
Sn (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00013	0.00012
Ti (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00134	0.00123
U (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.000017	0.000016
V (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.00013	0.00012
Zn (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	0.002	0.002
Zr (tot) [mg/L]	21-Oct-20	11:24	22-Oct-20	13:29	< 0.002	< 0.002

*Catharine Arnold*



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 Project Specialist,  
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P.O. Box 4300 - 185 Concession St.  
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05-June-2020

**Corporation of the Municipality of Calvin**

Attn : Jacob Grove

1355 Peddlers Dr RR#2  
Mattawa, ON  
POH 1V0, Canada

Phone: 705-744-2700  
Fax:705-744-0309

**Date Rec. :** 29 May 2020  
**LR Report:** CA15522-MAY20  
**Reference:** NB102-192/14

**Copy:** #1

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW1	7: SW3	8: SW3-DUP
Sample Date & Time					26-May-20 15:45	26-May-20 18:00	26-May-20 18:00
Temp Upon Receipt [°C]					15.0	15.0	15.0
BOD5 [mg/L]	29-May-20	17:51	03-Jun-20	13:55	< 4	< 4	< 4
Alkalinity [mg/L as CaCO3]	02-Jun-20	16:23	03-Jun-20	12:51	17	6	7
Conductivity [uS/cm]	02-Jun-20	16:23	03-Jun-20	12:51	53	26	27
pH [no unit]	02-Jun-20	16:23	03-Jun-20	12:51	7.18	6.76	6.69
TDS [mg/L]	29-May-20	19:48	04-Jun-20	07:51	34	< 30	< 30
TSS [mg/L]	02-Jun-20	14:30	04-Jun-20	09:25	5	2	2
DOC [mg/L]	01-Jun-20	21:26	02-Jun-20	07:43	7	5	5
Cl [mg/L]	04-Jun-20	06:57	04-Jun-20	13:56	1	1	1
NH3+NH4 [as N mg/L]	01-Jun-20	16:13	02-Jun-20	10:34	< 0.1	< 0.1	< 0.1
TKN [as N mg/L]	29-May-20	19:22	02-Jun-20	08:52	0.7	0.8	0.9
SO4 [mg/L]	04-Jun-20	07:12	04-Jun-20	13:56	3	4	3
NO2 [as N mg/L]	29-May-20	21:46	02-Jun-20	12:40	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	29-May-20	21:46	02-Jun-20	12:40	< 0.06	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	02-Jun-20	06:50	02-Jun-20	18:41	< 0.002	0.003	< 0.002
Hg (tot) [mg/L]	01-Jun-20	15:26	01-Jun-20	15:46	< 0.00001	< 0.00001	< 0.00001
Hg (diss) [mg/L]	01-Jun-20	15:26	01-Jun-20	15:46	< 0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	01-Jun-20	14:48	02-Jun-20	16:51	20.9	9.2	9.3
Al (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.364	0.064	0.068
Al (diss) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.145	0.030	0.032
Sb (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	< 0.0009	< 0.0009	< 0.0009
As (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0002	0.0002	< 0.0002
Ba (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0186	0.0143	0.0151
Be (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.000020	0.000015	0.000013
Bi (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.000022	0.000029	0.000022
B (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.010	0.004	0.004
Cd (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.000020	0.000004	0.000007
Ca (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	5.12	2.41	2.42
Cr (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.00100	0.00034	0.00042
Co (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.000292	0.000056	0.000056
Cu (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0014	0.0008	0.0023
Fe (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.406	0.138	0.146
Pb (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.00022	0.00005	0.00006


Online LIMS

0002140934

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Test method information available upon request. \*Temperature Upon Receipt\* is representative of the whole shipment and may not reflect the temperature of individual samples.  
SGS Canada Inc. Environment-Health & Safety statement of conformity decision rule does not consider uncertainty when analytical results are compared to a specified standard or regulation.



Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW1	7: SW3	8: SW3-DUP
Li (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0012	0.0004	0.0004
Mg (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	1.97	0.777	0.794
Mn (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0315	0.0167	0.0177
Mo (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.00041	0.00007	0.00008
Ni (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0011	0.0002	0.0003
P (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.039	0.024	0.020
K (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	1.43	0.470	0.472
Se (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.00008	0.00007	0.00010
Si [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	20.3	5.70	5.63
Si (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	9.47	2.66	2.63
Ag (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	< 0.00005	< 0.00005	< 0.00005
Na (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	2.26	0.91	0.93
Sr (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0437	0.0208	0.0209
Tl (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.000006	0.000008	0.000005
Sn (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.00009	0.00007	0.00009
Ti (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.0143	0.00172	0.00256
U (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.000030	0.000021	0.000021
V (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.00136	0.00019	0.00023
Zn (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	0.002	0.002	0.003
Zr (tot) [mg/L]	01-Jun-20	14:48	02-Jun-20	16:51	< 0.002	< 0.002	< 0.002

*Catharine Arnold*  
  
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**SGS Canada Inc.**

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**Project :** NB102-192/14

10-June-2021

**Corporation of the Municipality of Calvin**

Attn : Jacob Grove

1355 Peddlers Dr RR#2  
Mattawa, ON  
P0H 1V0, Canada

**Date Rec. :** 20 May 2021  
**LR Report:** CA14762-MAY21  
**Reference:** NB102-192/14

**Copy:** #1

Phone: 705-744-2700  
Fax:705-744-0309

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-3	8: SW-3-DUP
Sample Date & Time					19-May-21 08:30	19-May-21 09:00	19-May-21 09:00
Temp Upon Receipt [°C]	---	---	---	---	8.0	8.0	8.0
BOD5 [mg/L]	20-May-21	20:11	25-May-21	16:04	< 4	< 4	< 4
Alkalinity [mg/L as CaCO3]	25-May-21	15:06	27-May-21	13:38	14	7	6
Conductivity [uS/cm]	25-May-21	15:06	27-May-21	13:38	41	23	25
pH [No unit]	25-May-21	15:06	27-May-21	13:38	7.27	6.81	6.81
TDS [mg/L]	20-May-21	15:07	26-May-21	10:38	46	< 30	< 30
TSS [mg/L]	25-May-21	07:49	26-May-21	10:24	28	2	2
DOC [mg/L]	25-May-21	20:22	26-May-21	14:50	5	5	5
Cl [mg/L]	07-Jun-21	21:47	08-Jun-21	11:15	< 1	< 1	< 1
NH3+NH4 [as N mg/L]	21-May-21	20:18	25-May-21	16:44	< 0.1	< 0.1	< 0.1
TKN [as N mg/L]	20-May-21	15:59	21-May-21	10:08	< 0.5	< 0.5	< 0.5
SO4 [mg/L]	05-Jun-21	12:44	08-Jun-21	11:15	3	4	3
NO2 [as N mg/L]	22-May-21	14:25	26-May-21	15:36	< 0.03	< 0.03	< 0.03
NO3 [as N mg/L]	22-May-21	14:25	26-May-21	15:36	< 0.06	< 0.06	< 0.06
NO2+NO3 [as N mg/L]	22-May-21	14:25	26-May-21	15:36	< 0.06	< 0.06	< 0.06
4AAP-Phenolics [mg/L]	21-May-21	13:21	25-May-21	13:31	0.002	0.001	0.002
Hg (tot) [mg/L]	27-May-21	07:00	29-May-21	06:46	< 0.00001	< 0.00001	< 0.00001
Hg (diss) [mg/L]	27-May-21	07:00	29-May-21	06:46	< 0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	25-May-21	11:38	29-May-21	06:46	9.9	8.5	8.6
Al (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.193	0.052	0.050
Al (diss)-0.2µm [mg/L]	25-May-21	11:38	29-May-21	06:46	0.106	0.030	0.029
Sb (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	< 0.0009	< 0.0009	< 0.0009
As (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	< 0.0002	< 0.0002	< 0.0002
B (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.015	0.004	0.004
Ba (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.0183	0.0147	0.0151
Be (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.000023	0.000007	0.000008
Bi (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	< 0.00001	< 0.00001	< 0.00001
Cd (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.000040	< 0.000003	0.000012
Ca (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	2.76	2.25	2.25
Cr (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00068	0.00027	0.00027
Co (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.000764	0.000040	0.000037
Cu (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.0011	0.0006	0.0006
Fe (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.312	0.112	0.108

Online LIMS

0002525082

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-4	7: SW-3	8: SW-3-DUP
Pb (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00018	< 0.00009	< 0.00009
Li (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.0002	0.0003	0.0003
Mg (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.724	0.697	0.718
Mn (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.154	0.0124	0.0120
Mo (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00010	0.00004	0.00005
Ni (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.0009	0.0004	0.0003
P (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.026	0.003	0.004
K (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	1.31	0.426	0.422
Se (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00009	0.00010	0.00010
Si (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	5.41	2.32	2.45
Si [mg/L]	25-May-21	11:38	29-May-21	06:46	11.6	4.96	5.24
Ag (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00006	0.00009	0.00009
Na (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	3.14	0.92	0.95
Sr (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.0286	0.0206	0.0210
Tl (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.000009	< 0.000005	< 0.000005
Sn (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00006	< 0.00006	< 0.00006
Ti (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00747	0.00123	0.00120
U (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.000016	0.000012	0.000012
V (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.00089	0.00013	0.00014
Zn (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	0.003	< 0.002	< 0.002
Zr (tot) [mg/L]	25-May-21	11:38	29-May-21	06:46	< 0.002	< 0.002	< 0.002

*Catharine Arnold*  
 Catharine Arnold, B.Sc., C.Chem  
 Project Specialist,  
 Environment, Health & Safety

19-November-2021

**Corporation of the Municipality of Calvin**

Attn : Jacob Grove

**Date Rec. :** 28 October 2021  
**LR Report:** CA15833-OCT21

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-3	7: SW-3-DUP	8: SW-2
Sample Date & Time			26-Oct-21 09:50	26-Oct-21 10:15	26-Oct-21 10:50
Temperature Upon Receipt [°C]	---	---	14.0	14.0	14.0
Biochemical Oxygen Demand (BOD5) [mg/L]	02-Nov-21	12:00	< 4	< 4	8
Total Suspended Solids [mg/L]	01-Nov-21	13:42	3	7	28
Alkalinity [mg/L as CaCO3]	29-Oct-21	14:37	6	7	7
pH [No unit]	29-Oct-21	14:37	7.01	6.85	6.35
Conductivity [uS/cm]	29-Oct-21	14:37	24	27	74
Total Dissolved Solids [mg/L]	01-Nov-21	21:24	< 30	37	63
Total Kjeldahl Nitrogen (N) [mg/L]	04-Nov-21	09:40	0.20	0.22	0.32
Ammonia+Ammonium (N) [mg/L]	29-Oct-21	12:59	0.06	0.08	< 0.04
4AAP-Phenolics [mg/L]	01-Nov-21	10:29	0.001	< 0.001	0.039
Sulphate [mg/L]	02-Nov-21	11:00	< 2	< 2	< 2
Chloride [mg/L]	02-Nov-21	11:00	< 1	< 1	< 1
Nitrite (as N) [mg/L]	03-Nov-21	14:23	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	03-Nov-21	14:23	< 0.06	< 0.06	< 0.06
Dissolved Organic Carbon [mg/L]	29-Oct-21	15:01	7	7	13
Silica Dioxide [mg/L]	02-Nov-21	17:36	5.04	5.14	15.4
Mercury (total) [mg/L]	03-Nov-21	12:02	< 0.00001	< 0.00001	< 0.00001
Mercury (dissolved) [mg/L]	03-Nov-21	12:02	< 0.00001	< 0.00001	< 0.00001
Hardness [mg/L as CaCO3]	02-Nov-21	17:37	9.55	10.2	9.12
Silver (total) [mg/L]	02-Nov-21	17:37	< 0.00005	< 0.00005	< 0.00005
Aluminum (total) [mg/L]			0.092	0.091	0.325
Aluminum (0.2µm) [mg/L]	02-Nov-21	17:37	0.044	0.044	0.171
Arsenic (total) [mg/L]	02-Nov-21	17:37	0.0002	< 0.0002	< 0.0002
Barium (total) [mg/L]	02-Nov-21	17:37	0.0156	0.0164	0.0170
Beryllium (total) [mg/L]	02-Nov-21	17:37	0.000007	0.000008	0.000024
Bismuth (total) [mg/L]	02-Nov-21	17:37	< 0.00001	< 0.00001	< 0.00001
Boron (total) [mg/L]	02-Nov-21	17:37	0.008	0.003	< 0.002
Calcium (total) [mg/L]	02-Nov-21	17:37	2.47	2.67	2.41
Cadmium (total) [mg/L]	02-Nov-21	17:37	< 0.000003	< 0.000003	0.000015
Cobalt (total) [mg/L]	02-Nov-21	17:37	0.000063	0.000082	0.000700
Chromium (total) [mg/L]	02-Nov-21	17:37	0.00036	0.00031	0.00073
Copper (total) [mg/L]	02-Nov-21	17:37	0.0015	0.0006	0.0009
Iron (total) [mg/L]	02-Nov-21	17:37	0.213	0.224	0.925
Potassium (total) [mg/L]	02-Nov-21	17:37	0.482	0.506	1.36
Magnesium (total) [mg/L]	02-Nov-21	17:37	0.824	0.866	0.754

Analysis	3: Analysis Completed Date	4: Analysis Completed Time	6: SW-3	7: SW-3-DUP	8: SW-2
Manganese (total) [mg/L]	02-Nov-21	17:37	0.0146	0.0154	0.0942
Molybdenum (total) [mg/L]	02-Nov-21	17:37	0.00005	< 0.00004	0.00007
Sodium (total) [mg/L]	02-Nov-21	17:37	0.86	0.91	1.42
Nickel (total) [mg/L]	02-Nov-21	17:37	0.0004	0.0005	0.0008
Lithium (total) [mg/L]	02-Nov-21	17:37	0.0003	0.0003	0.0004
Lead (total) [mg/L]	02-Nov-21	17:37	0.00020	< 0.00009	0.00012
Thallium (total) [mg/L]	02-Nov-21	17:37	< 0.000005	< 0.000005	< 0.000005
Tin (total) [mg/L]	02-Nov-21	17:37	< 0.00006	0.00006	< 0.00006
Phosphorus (total) [mg/L]	02-Nov-21	17:37	0.005	0.004	0.180
Titanium (total) [mg/L]	02-Nov-21	17:37	0.00269	0.00286	0.0120
Antimony (total) [mg/L]	02-Nov-21	17:37	< 0.0009	< 0.0009	< 0.0009
Silicon (total) [mg/L]	02-Nov-21	17:37	2.36	2.40	7.19
Selenium (total) [mg/L]	02-Nov-21	17:37	0.00007	0.00010	0.00006
Strontium (total) [mg/L]	02-Nov-21	17:38	0.0215	0.0220	0.0242
Uranium (total) [mg/L]	02-Nov-21	17:38	0.000019	0.000022	0.000009
Vanadium (total) [mg/L]	02-Nov-21	17:38	0.00023	0.00023	0.00117
Zirconium (total) [mg/L]	02-Nov-21	17:38	< 0.002	< 0.002	< 0.002
Zinc (total) [mg/L]	02-Nov-21	17:38	0.003	0.006	0.010

*Chris Sullivan*



**Chris Sullivan, B.Sc., C. Chem**  
 Project Specialist,  
 Environment, Health & Safety



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**Project :** NB102-192/14  
**LR Report :** CA15833-OCT21

## Quality Control Report

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate			LCS / Spike Blank			Matrix Spike / Reference Material			
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
							%						
<i>Alkalinity - QCBatchID: EWL0638-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			1	20	102	80	120	NA		
<i>Alkalinity - QCBatchID: EWL0642-OCT21</i>													
Alkalinity	2	mg/L as Ca	< 2			4	20	109	80	120	NA		
<i>Ammonia by SFA - QCBatchID: SKA0305-OCT21</i>													
Ammonia+Ammonium (N)	0.04	mg/L	<0.04			8	10	106	90	110	100	75	
<i>Ammonia by SFA - QCBatchID: SKA0307-OCT21</i>													
Ammonia+Ammonium (N)	0.04	mg/L	<0.04			0	10	106	90	110	106	75	
<i>Anions by discrete analyzer - QCBatchID: DIO5004-NOV21</i>													
Chloride	1	mg/L	<1			1	20	103	80	120	107	75	
Sulphate	2	mg/L	<2			2	20	86	80	120	81	75	
<i>Anions by IC - QCBatchID: DIO0645-OCT21</i>													
Nitrate (as N)	0.06	mg/L	<0.06			0	20	102	90	110	94	75	
Nitrite (as N)	0.03	mg/L	<0.03			ND	20	100	90	110	100	75	
<i>Biochemical Oxygen Demand - QCBatchID: BOD0053-OCT21</i>													
Biochemical Oxygen Demand (BOD5)	2	mg/L	< 2			3	30	90	70	130	NV	70	
<i>Carbon by SFA - QCBatchID: SKA0309-OCT21</i>													
Dissolved Organic Carbon	1	mg/L	<1			0	20	104	90	110	106	75	
<i>Conductivity - QCBatchID: EWL0638-OCT21</i>													
Conductivity	2	uS/cm	< 2			0	20	99	90	110	NA		
<i>Conductivity - QCBatchID: EWL0642-OCT21</i>													
Conductivity	2	uS/cm	< 2			0	20	98	90	110	NA		
<i>Mercury by CVAAS - QCBatchID: EHG0039-OCT21</i>													
Mercury (total)	0.00001	mg/L	< 0.00001			ND	20	93	80	120	109	70	
<i>Metals in aqueous samples - ICP-MS - QCBatchID: EMS0003-NOV21</i>													
Aluminum (0.2µm)	0.001	mg/L	<1			18	20	107	90	110	92	70	
Aluminum (total)	0.001	mg/L	<0.001			18	20	107	90	110	92	70	
Antimony (total)	0.0009	mg/L	<0.0009			6	20	95	90	110	104	70	
Arsenic (total)	0.0002	mg/L	<0.0002			5	20	107	90	110	117	70	
Barium (total)	0.00002	mg/L	<0.00002			1	20	99	90	110	94	70	
Beryllium (total)	0.000007	mg/L	<0.00007			ND	20	100	90	110	95	70	
Bismuth (total)	0.00001	mg/L	<0.00001			ND	20	100	90	110	96	70	
Boron (total)	0.002	mg/L	<0.002			10	20	101	90	110	95	70	
Cadmium (total)	0.000003	mg/L	<0.000003			ND	20	101	90	110	95	70	
Calcium (total)	0.01	mg/L	<0.01			0	20	106	90	110	103	70	
Chromium (total)	0.00008	mg/L	<0.00008			ND	20	109	90	110	124	70	



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**Project :** NB102-192/14

**LR Report :** CA15833-OCT21

Parameter	Reporting Limit	Unit	Method Blank	Inorganic Analysis									
				Duplicate			LCS / Spike Blank				Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
Cobalt (total)	0.000004	mg/L	<0.000004			1	20	100	90	110	101	70	130
Copper (total)	0.0002	mg/L	<0.0002			10	20	100	90	110	98	70	130
Iron (total)	0.007	mg/L	<0.007			ND	20	101	90	110	100	70	130
Lead (total)	0.00009	mg/L	<0.00001			17	20	104	90	110	95	70	130
Lithium (total)	0.0001	mg/L	<0.0001			3	20	99	90	110	93	70	130
Magnesium (total)	0.001	mg/L	<0.001			6	20	104	90	110	98	70	130
Manganese (total)	0.00001	mg/L	<0.00001			7	20	98	90	110	108	70	130
Molybdenum (total)	0.00004	mg/L	<0.00004			5	20	102	90	110	103	70	130
Nickel (total)	0.0001	mg/L	<0.0001			5	20	100	90	110	100	70	130
Phosphorus (total)	0.003	mg/L	<0.003			ND	20	102	90	110	NV	70	130
Potassium (total)	0.009	mg/L	<0.009			0	20	104	90	110	115	70	130
Selenium (total)	0.00004	mg/L	<0.00004			3	20	104	90	110	128	70	130
Silicon (total)	0.02	mg/L	<0.02			5	20	98	90	110	NV	70	130
Silver (total)	0.00005	mg/L	<0.00005			ND	20	103	90	110	98	70	130
Sodium (total)	0.01	mg/L	<0.01			2	20	105	90	110	70	70	130
Strontium (total)	0.00002	mg/L	<0.00002			5	20	93	90	110	100	70	130
Thallium (total)	0.000005	mg/L	<0.000005			ND	20	101	90	110	94	70	130
Tin (total)	0.00006	mg/L	<0.00006			ND	20	97	90	110	NV	70	130
Titanium (total)	0.00005	mg/L	<0.00005			ND	20	108	90	110	NV	70	130
Uranium (total)	0.000002	mg/L	<0.000002			3	20	101	90	110	87	70	130
Vanadium (total)	0.00001	mg/L	<0.00001			0	20	100	90	110	103	70	130
Zinc (total)	0.002	mg/L	<0.002			ND	20	102	90	110	122	70	130
Zirconium (total)	0.002	mg/L	<0.002			ND	20	97	90	110	NV	70	130
<i>Metals in aqueous samples - ICP-OES - QCBatchID: EMS0003-NOV21</i>													
Silica Dioxide	0.02	mg/L	<0.02			5	20	98	90	110	NV	70	130
<i>pH - QCBatchID: EWL0638-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>pH - QCBatchID: EWL0642-OCT21</i>													
pH	0.05	No unit	NA			0		100			NA		
<i>Phenols by SFA - QCBatchID: SKA0004-NOV21</i>													
4AAP-Phenolics	0.001	mg/L	<0.001			9	10	105	90	110	110	75	125
<i>Solids Analysis - QCBatchID: EWL0674-OCT21</i>													
Total Dissolved Solids	30	mg/L	<30			1	20	98	90	110	NA		
<i>Suspended Solids - QCBatchID: EWL0679-OCT21</i>													
Total Suspended Solids	2	mg/L	< 2			3	10	101	90	110	NA		
<i>Total Nitrogen - QCBatchID: SKA0016-NOV21</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	<0.05			ND	10	101	90	110	81	75	125
<i>Total Nitrogen - QCBatchID: SKA0028-NOV21</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	<0.05			0	10	101	90	110	103	75	125



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Project : NB102-192/14

LR Report : CA15833-OCT21

Inorganic Analysis													
Parameter	Reporting Limit	Unit	Method Blank	Duplicate				LCS / Spike Blank			Matrix Spike / Reference Material		
				Result 1	Result 2	RPD	Acceptance Criteria	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
									Low	High		Low	High
<i>Total Nitrogen - QCBatchID: SKA0050-NOV21</i>													
Total Kjeldahl Nitrogen (N)	0.05	mg/L	<0.05			3	10	100	90	110	NV	75	125





## MUNICIPALITY OF CALVIN

1355 PEDDLERS DRIVE, MATTAWA ON, P0H 1V0

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### BUILDING REPORT

**MONTH: February, 2022**

1. NUMBER OF PERMITS ISSUED	1
2. TOTAL MONTHLY VALUE	\$51,627
3. TOTAL FEES COLLECTED	\$0
4. TOTAL BUILDING VALUE TO DATE	\$51,627
5. TOTAL FEES COLLECTED TO DATE	\$0

#### COMMENTS:

Permit: 01-2022 Type: Install solar PV array to roof Value: \$51,627 Fee: \$100

Notes: Permit 01-2022 not paid for.

SHANE CONRAD  
CHIEF BUILDING OFFICIAL

CORPORATION OF THE MUNICIPALITY OF CALVIN  
MINUTES OF THE SPECIAL COUNCIL MEETING THURSDAY, FEBRUARY 17, 2022

The special meeting of Council was held this date by Zoom electronic meetings (due to Covid-19 pandemic). Present were Mayor Ian Pennell, Deputy Mayor Sandy Cross, Councillor Christine Shippam, Councillor Kim Brooker, Councillor Bart Castelijn, Clerk-Treasurer Cindy Pigeau and Administrative Assistant Aleysha Blake,

Regrets: 0

Guests: 0

The meeting was called to order at 7:00 p.m. by Mayor Ian Pennell

PECUNIARY/CONFLICT OF INTEREST:                   None  
PRESENTATIONS/DELEGATIONS:                   None  
REPORTS FROM MUNICIPAL OFFICERS:           None

We lost Councilor Brooker at 7:01pm, she signed back in at 7:01pm with the use of her phone only.

2022-058           ADOPT MINUTES OF TUESDAY, FEBRUARY 8, 2022 COUNCIL MEETING

Moved by Coun Brooker and seconded by Coun Castelijn that the minutes of the regular meeting of Council held on Tuesday, February 8<sup>th</sup>, 2022 be hereby adopted and signed as circulated.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker     Yea  
Councillor Cross        Yea  
Councillor Castelijn    Yea  
Councillor Shippam     Yea  
Mayor Pennell          Yea  
Carried

2022-041           BY-LAW NO. 2022-010 BEING A BY-LAW TO PROVIDE FOR THE USE OF HERBICIDES AND PESTICIDES ON MUNICIPAL PROPERTY

Moved by Coun Cross and seconded by Coun Shippam that being a by-law to provide for the use of herbicides and pesticides on municipal property. This by-law received third and final reading on Thursday, February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker     Yea  
Councillor Cross        Yea  
Councillor Castelijn    Yea  
Councillor Shippam     Yea  
Mayor Pennell          Yea  
Carried

2022-042           BY-LAW NO. 2022-011 THAT BEING A BY-LAW TO ADOPT A POLICY REGARDING THE PASSING OF THE ANNUAL BUDGET FOR THE MUNICIPALITY OF CALVIN

Moved by Coun Shippam and seconded by Coun Castelijn (Second Reading) Moved by Coun Brooker and seconded by Coun Cross that being a by-law to adopt a policy regarding the passing of the annual budget for the Municipality of Calvin. This by-law received 2<sup>nd</sup>, 3<sup>rd</sup> and final reading on Thursday February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Second Reading

Councillor Brooker      Yea  
Councillor Cross        Yea  
Councillor Castelijn    Yea  
Councillor Shippam     Yea  
Mayor Pennell          Yea  
Carried

Recorded Vote as per Electronic Meeting Best Practices

Third Reading

Councillor Brooker      Yea  
Councillor Cross        Yea  
Councillor Castelijn    Yea  
Councillor Shippam     Yea  
Mayor Pennell          Yea  
Carried

2022-044      BY-LAW NO. 2022-012 BEING A BY-LAW TO ENTER INTO AN AGREEMENT BETWEEN THE CORPORATION OF THE MUNICIPALITY OF CALVIN AND THE ALGONQUIN PROVINCIAL PARK ACCESS (LANDFILL)

Moved by Coun Cross and seconded by Coun Shippam that being a by-law to enter into an agreement between the Corporation of the Municipality of Calvin and the Algonquin Provincial Park Access (Landfill). This by-law received third and final reading on Thursday, February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker      Yea  
Councillor Cross        Yea  
Councillor Castelijn    Yea  
Councillor Shippam     Yea  
Mayor Pennell          Yea  
Carried

2022-045      BY-LAW NO. 2022-013 BEING A BY-LAW TO ENTER INTO AN AGREEMENT BETWEEN THE CORPORATION OF THE MUNICIPALITY OF CALVIN AND SAMUEL de CHAMPLAIN PROVINCIAL PARK (LANDFILL)

Moved by Coun Castelijn and seconded by Coun Brooker that being a by-law to enter into an agreement between the Corporation of the Municipality of Calvin and the Samuel de Champlain Provincial Park (Landfill). This by-law received third and final reading on Thursday, February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker      Yea  
Councillor Cross        Yea  
Councillor Castelijn    Yea  
Councillor Shippam     Yea  
Mayor Pennell          Yea  
Carried

2022-046      BY-LAW NO. 2022-014 BEING A BY-LAW TO ENTER INTO AN AGREEMENT BETWEEN THE CORPORATION OF THE MUNICIPALITY OF CALVIN AND CANADIAN ECOLOGY CENTRE (LANDFILL)

Moved by Coun Brooker and seconded by Coun Cross that being a by-law to enter into an agreement between the Corporation of the Municipality of Calvin and the Canadian Ecology Centre (Landfill). This by-law received third and final reading on Thursday, February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-048 BY-LAW NO. 2022-015 BEING A BY-LAW TO ENTER INTO AN AGREEMENT BETWEEN THE CORPORATION OF THE MUNICIPALITY OF CALVIN AND THE TOWNSHIP OF BONFIELD FOR WILDLIFE DAMAGE COMPENSATION INVESTIGATORS

Moved by Coun Shippam and seconded by Coun Castelijn that being a by-law to enter into an agreement between the Corporation of the Municipality of Calvin and the Township of Bonfield. This by-law received third and final reading on Thursday, February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-050 BY-LAW NO. 2022-016 BEING A BY-LAW TO AUTHORIZE THE ESTABLISHMENT OF THE JOINT ELECTION COMPLIANCE AUDIT COMMITTEE AND TO APPOINT ITS COMMITTEE MEMBERS FOR THE 2022 MUNICIPAL ELECTIONS

Moved by Coun Castelijn and seconded by Coun Brooker that a by-law to authorize the establishment of the joint election compliance audit committee and to appoint its committee members for the 2022 municipal elections. This by-law received third and final reading on Thursday, February 17<sup>th</sup>, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-059 DISCUSS POSSIBLITY OF A TOWN HALL FOR PUBLIC INPUT

Moved by Coun Shippam and seconded by Coun Cross that Council hereby approves the planning of a Town Hall for the spring of 2022, in accordance with Public Health regulations, with Members of Council, to meet with community members in a forum that brings forward collective ideas and thoughts for the betterment of the Municipality of Calvin.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-060 BORROWING LIMIT FOR A MUNICIPAL VISA CREDIT CARD

Moved by Coun Cross and seconded by Coun Castelijn that Council hereby approves the borrowing limit of up to \$25,000 (minimum credit limit) for the new Corporate Visa Credit Card that will be used only by the Municipal Administrator.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-061 CLOSED PORTION

Moved by Coun Brooker and seconded by Coun Shippam that this portion of the meeting now be closed under the Municipal Act, 2001, ch. 25, as per Section 239 (2)(b) personal matters about an identifiable individual, including a municipal or local board employee and (2)(d) labour relations or employee negotiations RE: Municipal Administrator Position and Section 239 (2)(e) Litigation or potential litigation, including matters before administrative tribunals, affecting the municipality or local boards RE: Stewarts Road.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-062 OUT OF CLOSED PORTION

Moved by Coun Brooker and seconded by Coun Cross that the Council for the Corporation of the Municipality of Calvin arise from Closed Session at 9:28 p.m. and report as follows: That Council discussed the Municipal Administrator position and litigation or potential litigation RE: Stewarts Road.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker Yea  
Councillor Cross Yea  
Councillor Castelijn Yea  
Councillor Shippam Yea  
Mayor Pennell Yea  
Carried

2022-063 BY-LAW #2022-018 BEING A BY-LAW TO CONFIRM THE PROCEEDINGS OF COUNCIL (FEBRUARY 17, 2022 – SPECIAL MEETING OF COUNCIL)

Moved by Coun Castelijn and seconded by Coun Shippam (First Reading), Moved by Coun Cross and seconded by Coun Brooker, (Second Reading), Moved by Coun Shippam and seconded by Coun Castelijn (Third and Final Reading) that being a by-law to confirm the proceedings of Council (February 17, 2022 – Special Meeting of Council). This by-law received first, second, third and final reading on Thursday, February 17, 2022 and finally passed before an open Council on this date.

Recorded Vote as per Electronic Meeting Best Practices

First Reading

Councillor Brooker	Yea
Councillor Cross	Yea
Councillor Castelijn	Yea
Councillor Shippam	Yea
Mayor Pennell	Yea
Carried	

Recorded Vote as per Electronic Meeting Best Practices

Second Reading

Councillor Brooker	Yea
Councillor Cross	Yea
Councillor Castelijn	Yea
Councillor Shippam	Yea
Mayor Pennell	Yea
Carried	

Recorded Vote as per Electronic Meeting Best Practices

Third Reading

Councillor Brooker	Yea
Councillor Cross	Yea
Councillor Castelijn	Yea
Councillor Shippam	Yea
Mayor Pennell	Yea
Carried	

2022-064      ADJOURNMENT

Moved by Coun Cross and seconded by Coun Castelijn that be it resolved that this regular meeting of Council now be adjourned at 9:33 p.m.

Recorded Vote as per Electronic Meeting Best Practices

Councillor Brooker	Yea
Councillor Cross	Yea
Councillor Castelijn	Yea
Councillor Shippam	Yea
Mayor Pennell	Yea
Carried	

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Mayor

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Clerk



# Corporation of the Municipality of Calvin Council Resolution

**Date:** March 8, 2022

**Resolution Number:** [Click or tap here to enter text.](#)

**Moved By:** [Choose a name.](#)

**Seconded By:** [Choose a name.](#)

**NOW THEREFORE BE IT RESOLVED THAT:**

“That the minutes of the regular meeting of Council held on Thursday, February 17<sup>th</sup>, 2022 be hereby adopted and signed as circulated”

**Result** [Options.](#)

**Recorded Vote:**

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Mayor Pennell	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Brooker	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Castelijn	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Cross	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Shippam	<input type="checkbox"/>	<input type="checkbox"/>



# Corporation of the Municipality of Calvin Council Resolution

**Date:** March 8, 2022

**Resolution Number:** [Click or tap here to enter text.](#)

**Moved By:** Choose a name.

**Seconded By:** Choose a name.

Council for the Corporation of the Municipality of Calvin authorized the installation of a drilled well at the Community Centre which was completed in October of 2019;

The two (2) cistern tanks have not been used since that time;

**NOW THEREFORE BE IT RESOLVED THAT:**

“Council for the Corporation of the Municipality of Calvin hereby declares the two (2) cistern tanks surplus from the Recreation Department and that they be offer to the Roads or Fire department. Should no department within the Municipality have a use for the two (2) cistern tanks then Council authorizes that the two (2) cistern tanks be offer for sale by sealed bid.”

**Result** Options.

**Recorded Vote:**

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Mayor Pennell	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Brooker	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Castelijm	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Cross	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Shippam	<input type="checkbox"/>	<input type="checkbox"/>





# Corporation of the Municipality of Calvin Council Resolution

**Date:** March 8, 2022

**Resolution Number:** [Click or tap here to enter text.](#)

**Moved By:** [Choose a name.](#)

**Seconded By:** [Choose a name.](#)

**NOW THEREFORE BE IT RESOLVED THAT:**

**“That Council hereby requests Staff to amend the Fees and Charges By-Law No. 2020-023 and that staff shall bring forward a copy of the amended By-Law at the Tuesday, March 22, 2022 Council Meeting for discussion and these changes shall include the following; Schedule B: Building Inspection Services, Schedule G: Public Works Services and Schedule H: Cemetery Price List. ”**

**Result** [Options.](#)

**Recorded Vote:**

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Mayor Pennell	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Brooker	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Castelijn	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Cross	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Shippam	<input type="checkbox"/>	<input type="checkbox"/>

THE CORPORATION OF THE MUNICIPALITY OF CALVIN

**BYLAW NUMBER 2022-021**

**BEING A BY-LAW TO APPOINT AN INTERIM DEPUTY TREASURER**

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**Legal Authority**

**Scope of Powers**

Section 8(1) of the *Municipal Act*, 2001, S.O. 2001, c.25, (“*Municipal Act*”) as amended, provides that the powers of a municipality shall be interpreted broadly so as to confer broad authority on municipalities to enable them to govern their affairs as they consider appropriate, and to enhance their ability to respond to municipal issues.

**Powers of a Natural Person**

Section 9 of the *Municipal Act* provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act.

**Powers Exercised by Council**

Section 5 (1) of the *Municipal Act* provides that the powers of a municipality shall be exercised by its Council

**Powers Exercised by By-law**

Section 5(3) of the *Municipal Act* provides that a municipal power, including a municipality’s capacity, rights, powers and privileges under section 9, shall be exercised by bylaw unless the municipality is specifically authorized to do otherwise.

**Municipal Administration**

Section 227 of the *Municipal Act* provides it is the role of the officers and employees of the municipality to implement Council’s decisions and establish administrative practices and procedures to carry out Council’s decisions.

**Deputy Treasurer**

Section 286(2) of the *Municipal Act*, 2001, S.O. 2001, c.25, as amended (“*Municipal Act*”) provides that Council may by by-law appoint a Deputy Treasurer who shall have all the powers and duties of the Treasurer under the *Municipal Act* and every other Act.

**Preamble**

The *Municipal Act* allows municipalities to appoint a Deputy Treasurer who has the powers and authorities of the Treasurer.

It is important for the municipal business to continue in the absence of the Treasurer Council for the Corporation of the Municipality of Calvin requires a Deputy Treasurer on an interim basis while recruiting for a Municipal Administrator.

**Decision**

Council of the Corporation of the Municipality decides it in the best interest of the Corporation to appoint a Deputy Treasurer on an Interim basis.

**Direction**

**NOW THEREFORE** the Council of the Corporation of the Municipality of Calvin directs as follows:

1. That Aleysha Blake is hereby appointed as the Interim Deputy Treasurer for the Corporation of the Municipality of Calvin.
2. That the powers and duties of the Deputy Treasurer shall be those powers and duties of the Treasurer as set forth in the *Municipal Act* and every other Act.
3. This by-law takes effect on the day of its final passing.

Read and adopted by Resolution \_\_\_\_\_his 8<sup>th</sup> Day of March 2022.

\_\_\_\_\_  
Mayor

\_\_\_\_\_  
Clerk

THE CORPORATION OF THE MUNICIPALITY OF CALVIN

**BYLAW NUMBER 2022-022**

**BEING A BY-LAW TO APPOINT AN INTERIM DEPUTY CLERK**

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**Legal Authority**

**Scope of Powers**

Section 8(1) of the *Municipal Act*, 2001, S.O. 2001, c.25, (“*Municipal Act*”) as amended, provides that the powers of a municipality shall be interpreted broadly so as to confer broad authority on municipalities to enable them to govern their affairs as they consider appropriate, and to enhance their ability to respond to municipal issues.

**Powers of a Natural Person**

Section 9 of the *Municipal Act* provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under this or any other Act.

**Powers Exercised by Council**

Section 5(1) of the *Municipal Act* provides that the powers of a municipality shall be exercised by its Council

**Powers Exercised by By-law**

Section 5(3) of the *Municipal Act* provides that a municipal power, including a municipality’s capacity, rights, powers and privileges under section 9, shall be exercised by bylaw unless the municipality is specifically authorized to do otherwise.

**Municipal Administration**

Section 227 of the *Municipal Act* provides it is the role of the officers and employees of the municipality to implement Council’s decisions and establish administrative practices and procedures to carry out Council’s decisions.

**Deputy Clerk**

Section 228(2) of the *Municipal Act*, 2001, S.O. 2001, c.25, as amended (“*Municipal Act*”) provides that Council may by by-law appoint a Deputy Clerk who shall have all the powers and duties of the Clerk under the *Municipal Act* and every other Act.

**Preamble**

The *Municipal Act* allows municipalities to appoint a Deputy Clerk who has the powers and authorities of the Clerk.

It is important for the municipal business to continue in the absence of the Clerk

Council for the Corporation of the Municipality of Calvin requires a Deputy Clerk on an interim basis while recruiting for a Municipal Administrator.

**Decision**

Council of the Corporation of the Municipality decides it in the best interest of the Corporation to appoint a Deputy Clerk on an Interim basis.

**Direction**

**NOW THEREFORE** the Council of the Corporation of the Municipality of Calvin directs as follows:

1. That Aleysha Blake is hereby appointed as the Interim Deputy Clerk for the Corporation of the Municipality of Calvin.
2. That the powers and duties of the Deputy Clerk shall be those powers and duties of the Clerk as set forth in the *Municipal Act* and every other Act.
3. This by-law takes effect on the day of its final passing.

Read and adopted by Resolution \_\_\_\_\_ this 8<sup>th</sup> Day of March 2022.

\_\_\_\_\_  
Mayor

\_\_\_\_\_  
Clerk



# Corporation of the Municipality of Calvin Council Resolution

**Date:** March 8, 2022

**Resolution Number:** [Click or tap here to enter text.](#)

**Moved By:** Choose a name.

**Seconded By:** Choose a name.

**NOW THEREFORE BE IT RESOLVED THAT:**

**“That By-Law #2022-022 being a By-Law to appoint an Interim Deputy Clerk;**

**NOW THEREFORE the Council of the Corporation of the Municipality of Calvin directs as follows:**

- 1. That Aleysha Blake is hereby appointed as the Interim Deputy Clerk for the Corporation of the Municipality of Calvin;**
- 2. That the powers and duties of the Deputy Clerk shall be those powers and duties of the Clerk as set for in the *Municipal Act* and every other Act;**
- 3. This by-law takes effect on the day of its final passing.”**

**Result** Options.

**Recorded Vote:**

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Mayor Pennell	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Brooker	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Castelijns	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Cross	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Shippam	<input type="checkbox"/>	<input type="checkbox"/>

CORPORATION OF THE MUNICIPALITY OF CALVIN

BY-LAW NO. 2022-020

**BEING A BY-LAW TO CONFIRM THE PROCEEDINGS OF COUNCIL.**

WHEREAS it is the desire of Council to confirm all proceedings, motions and by-Laws:

NOW THEREFORE THE CORPORATION OF THE MUNICIPALITY OF CALVIN HEREBY ENACTS AS FOLLOWS:

1. THAT the Confirmatory Period of this By-Law shall be for the Regular Council meeting of February 8<sup>th</sup>, 2022;
2. THAT all By-Laws passed by the Council of the Corporation of the Municipality of Calvin during the period mentioned in Section 1 are hereby ratified and confirmed;
3. THAT all resolutions passed by the Council of the Corporation of the Municipality of Calvin during the period mentioned in Section 1 are hereby ratified and confirmed;
4. THAT all other proceedings, decisions and directives of the Council of the Corporation of the Municipality of Calvin during the period mentioned in Section 1 are hereby ratified and confirmed.

Read and adopted by Resolution \_\_\_\_\_ this 8<sup>th</sup> Day of March 2022.

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
CLERK-TREASURER



# Corporation of the Municipality of Calvin Council Resolution

**Date:** March 8, 2022

**Resolution Number:** [Click or tap here to enter text.](#)

**Moved By:** [Choose a name.](#)

**Seconded By:** [Choose a name.](#)

**NOW THEREFORE BE IT RESOLVED THAT:**

**“that By-Law #2022-020 being a By-Law to confirm the proceedings of Council its Regular Council Meeting held Tuesday March 8 2022 be read and adopted. ”**

**Result** [Options.](#)

**Recorded Vote:**

<u>Member of Council</u>	<u>In Favour</u>	<u>Opposed</u>
Mayor Pennell	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Brooker	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Castelijn	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Cross	<input type="checkbox"/>	<input type="checkbox"/>
Councillor Shippam	<input type="checkbox"/>	<input type="checkbox"/>