ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

March 28, 2025

Ministry of the Environment, Conservation and Parks
3rd floor, 101 17th Street East
Owen Sound, Ontario N4K 0A5

RE: 2024 Tobermory Sewage Treatment Facility Annual Sewage Performance Report (CofA #3-0046-93-006) and Municipal Sewage Collection System Performance Report (CLI-ECA #250-W601) – Municipality of Northern Bruce Peninsula

Please see attached for the 2024 Annual Sewage Performance Report prepared by the Ontario Clean Water Agency on behalf of the Municipality of Northern Bruce Peninsula for the:

- Tobermory Sewage Treatment Facility

This report was completed in accordance with the requirements set out in CofA #3-0046-93-006, issued November 23, 2017, *Condition 15* and Municipal Sewage Collection System CLI-ECA #250-W601, issued July 25, 2023, *Schedule E (4.6)*. Your receipt of this report by or before March 31, satisfies the regulatory requirements:

- CofA #3-0046-93-006 that "The Owner shall prepare and submit a performance report to the District Officer on an annual basis, and the submission shall be made no later than 90 days following the end of each calendar year."
- CLI-ECA #250-W601 that "The Owner shall prepare an annual performance report for the Authorized System that is submitted to the Director on or before March 31st of each year and covers the period from January 1st to December 31st of the preceding calendar year.

In addition, CLI-ECA #093-W601 requires that report shall be made available, on request and without charge, to members of the public who are served by the Authorized System; and made available, by June 1 of the same reporting year, to members of the public without charge by publishing the report on the Internet, if the Owner maintains a website on the Internet. We kindly ask that notification is provided once the report is posted on the Municipal website.

Lastly, the Ministry has indicated that the Municipal Collection System ECA Annual Reports can either be prepared as a separate report or as a subsection of the Annual Sewage Report for the Wastewater Treatment Facility, attached you will find one report that satisfies the reporting requirements of both Environmental Compliance Approvals.

Should you require further clarification on the information found within the Annual Sewage Performance Report, please feel free to contact me.

Sincerely,

Leo-Paul Frigault
Senior Operations Manager
OCWA, Georgian Highlands Region

2024 ANNUAL SEWAGE PERFORMANCE REPORT

TOBERMORY SEWAGE TREATMENT PLANT

For the period of

JANUARY 1, 2024 TO DECEMBER 31, 2024

Prepared for the Municipality of Northern Bruce Peninsula by the Ontario Clean Water Agency

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Municipality of Northern Bruce Peninsula

1. System Description

The Tobermory Sewage Works System in the Municipality of Northern Bruce Peninsula (formerly Township of St. Edmunds) comprises a wastewater treatment plant and one sewage pumping station. The wastewater generated within the collection area of Tobermory is collected into the sewer system and pumped to the wastewater treatment plant by way of a 150 mm forcemain. The wastewater treatment plant consists of two aerated cells, one storage cell, two exfiltration ponds and one overflow cell.

The wastewater treatment plant contains two (2) aerated lagoons cells each with a capacity of 10,800 m^3. The aeration provided is tapered coarse bubble, diffused aeration. Aeration Cell #2 has a quiescent settling zone to permit effluent clarification. The effluent from the aeration Cell #2 can be recycled to aeration Cell #1, transferred to storage Cell #1 for winter storage, or transferred to the exfiltration Cells #2 or 3 during summer operations. The exfiltration cells have a combined minimum rated capacity of 317 m^3/day, and each cell has approximately 13,750 m^2 of surface area. There is one (1) back-up exfiltration cell with a minimum rated capacity of 625 m^3/d and approximately 21,875 m^2 surface area. To provide coarse bubble diffused aeration for the two aerated cells, the plant is provided with one duty and two standby blowers, each rated with a firm capacity of 193 L/sec at approximately 38 kPa.

The sewage pumping station (Little Tub Harbour Pumping Station), is located near the harbor and has two submersible pumps each rated at 18.3 L/sec capacity at 50.5 m TDH. The wet well has a normal operating volume of 5.7 m^3. Due to its location near the harbour, the sewage pumping station wet well is provided with an odour control activated carbon adsorption unit with a capacity of 188.8 L/sec, for adsorbing hydrogen sulphide gas emissions from the wet well. The pumping station is also equipped with a 150-kW diesel generator set for providing emergency power for the sewage pumps. An overview of Tobermory Sewage Treatment System can be found in Table 1 and a summary of the monitoring program can be found in Table 2.

Table 1. Tobermory Sewage Treatment System Overview

Facility Name	Tobermory Sewage Treatment System
Facility Type	Lagoon
Plant Classification	II WWT and II WWC
Works Number	120001577
Design Capacity	625 m^3/day
Receiving Water	None
Certificate of Approval	3-0046-93-006 (Sewage Treatment System)
	3-0310-82-917 (Groundwater Monitoring)
	8-1063-94-006 (Air)

Table 2.Tobermory Sewage Treatment System Monitoring Program

Source	Parameter	Minimum Frequency	Method
Influent	Flow (m^3)	Daily	Flowmeter
Secondary Aeration Cell Effluent	BOD_5, SS, TP, TKN, NH3+NH4(N), Nitrate, Nitrite	Monthly – March, June, July, August and October	External analysis
Aeration Cells	pH, Dissolved Oxygen	Weekly (from May – September)	In-House
Groundwater Wells	Alkalinity, Conductivity, Free Ammonia, Phenols, pH, Chloride, Sulphate, Nitrite, Magnesium, Iron, Nitrate, Calcium, Hardness, Sodium, DOC, Organic Nitrogen, TKN, Dissolved Reactive Phosphorous[2a], Total P[2]	Semi-Annual in May and October (for all 30 wells) Annual in August (for OW-6S, OW-6I, OW-6D, OW-7S, OW-9S, OW-9I, OW-9D, OW-10S, OW-11S, OW-12S)	External analysis
Ground Water Wells	Aluminum, Barium, Cadmium, Chromium, Copper, Lead, Manganese, Zinc	Every 3 years in October	External Analysis

[2a]*Shallow Wells Only*

2. Monitoring and Compliance Reports

As per Section 15(a) of C of A 3-0046-96-006, *a summary of all monitoring and compliance reports submitted in the reporting period, including an overview of the success and adequacy of the sewage treatment program* is required.

During the reporting period, the following reports were submitted:

- Discharge Data Report (Ministry of Environment, Conservation and Parks, MECP)

2.1 Discharge Data Report (MECP)

The Ontario Clean Water Agency (OCWA) has an agreement with the MECP to submit quarterly discharge data for all OCWA operated municipal sewage treatment facilities 45 days at the end of each quarter. Monitoring data is submitted via the Ministry of Environment Wastewater System (MEWS). The MECP has these reports stored in a shared location where MECP Inspectors can obtain and review them. There are no limits/objectives for discharge for the quarterly Discharge Data Report.

2.2 Adequacy of the Sewage Treatment Program

The current sewage treatment program provided effluent that was within the effluent objectives set out in the C of A for Suspended Solids and BOD_5 92% of the time. Based on this evaluation, effluent recirculation flow from lagoon cell 2 to lagoon cell 1 will have to be monitored during the summer months for performance and reliability to meet our effluent objectives 100% of the time.

3. Monitoring and Analytical Data

As per Section 15(b) of C of A 3-0046-96-006, *a comprehensive interpretation of all monitoring data and analytical data collected relative to the Tobermory Sewage Treatment System during the reporting period* is required.

All laboratory samples are analyzed by SGS Canada Inc., which is an ISO 17025 accredited laboratory. In-house readings (pH, DO, Temperature) are conducted for monitoring purposes by licensed operators using standardized methods. Calibrations and preventative maintenance are performed on facility equipment and monitoring equipment, see Section 10 for more details.

3.1 Sampling Frequency

Both groundwater and secondary aeration cell effluent are sampled on a regular basis. The sampling types and frequencies are summarized in Table 3, Table 4, Table 5 and Table 6.

All sampling frequencies either meet or exceed the requirements set out in Section 15 of C of A 3-0046-93-006.

Table 3. Complete Groundwater Monitoring Program– Sampling Frequencies for all 30 Observation Wells

Parameter	Minimum Frequency
Alkalinity	Semi-annually in May and October
Conductivity	Semi-annually in May and October
Free Ammonia	Semi-annually in May and October
Phenols	Semi-annually in May and October
pH	Semi-annually in May and October
Chloride	Semi-annually in May and October
Sulphate	Semi-annually in May and October
Nitrite	Semi-annually in May and October
Magnesium	Semi-annually in May and October
Iron	Semi-annually in May and October
Nitrate	Semi-annually in May and October
Calcium	Semi-annually in May and October
Hardness	Semi-annually in May and October
Sodium	Semi-annually in May and October
Dissolved Organic Carbon	Semi-annually in May and October
Organic Nitrogen	Semi-annually in May and October
Total Kjeldahl Nitrogen	Semi-annually in May and October
Phosphorous-Dissolved Reactive[3a]	Semi-annually in May and October
Total Phosphorous[3a]	Semi-annually in May and October
Aluminum	Every 36 Months in October
Barium	Every 36 Months in October
Cadmium	Every 36 Months in October

Parameter	Minimum Frequency
Chromium	Every 36 Months in October
Copper	Every 36 Months in October
Lead	Every 36 Months in October
Manganese	Every 36 Months in October
Zinc	Every 36 Months in October

[3a]*Shallow Wells only*

Table 4. Limited Groundwater Monitoring Program– Sampling Frequencies for Wells 6S, 6I, 6D, 7S, 9S, 9I, 9D, 10S, 11S, 12S

Parameter	Minimum Frequency
Alkalinity	Annually in August
Conductivity	Annually in August
Free Ammonia	Annually in August
Phenols	Annually in August
pH	Annually in August
Chloride	Annually in August
Sulphate	Annually in August
Nitrite	Annually in August
Magnesium	Annually in August
Iron	Annually in August
Nitrate	Annually in August
Calcium	Annually in August
Hardness	Annually in August
Sodium	Annually in August
Dissolved Organic Carbon	Annually in August
Organic Nitrogen	Annually in August
Total Kjeldahl Nitrogen	Annually in August
Phosphorous-Dissolved Reactive[4a]	Annually in August
Total Phosphorous[4a]	Annually in August

[3a]*Shallow Wells only*

Table 5. Effluent (Secondary Aeration Cell) Sample Monitoring – Sampling Frequencies

Parameters	Minimum Frequency
BOD_5	Monthly, during March, June, July, August and October
Total Solids	Monthly, during March, June, July, August and October
Total Phosphorous	Monthly, during March, June, July, August and October
Total Kjeldahl Nitrogen	Monthly, during March, June, July, August and October
Ammonia Nitrogen	Monthly, during March, June, July, August and October
Nitrite	Monthly, during March, June, July, August and October
Nitrate	Monthly, during March, June, July, August and October

Parameters	Minimum Frequency
pH	In-house, weekly from May to September
Dissolved Oxygen	In-house, weekly from May to September

Table 6. Sludge Haulage Sample Monitoring – Sampling Frequencies

Parameters	Minimum Frequency
Total Solids	April, where sludge haulage is expected
Total Phosphorus	April, where sludge haulage is expected
Arsenic	April, where sludge haulage is expected
Cadmium	April, where sludge haulage is expected
Cobalt	April, where sludge haulage is expected
Chromium	April, where sludge haulage is expected
Copper	April, where sludge haulage is expected
Zinc	April, where sludge haulage is expected
Free Ammonia	April, where sludge haulage is expected
Nitrate – N	April, where sludge haulage is expected
Mercury	April, where sludge haulage is expected
Molybdenum	April, where sludge haulage is expected
Nickel	April, where sludge haulage is expected
Selenium	April, where sludge haulage is expected
Lead	April, where sludge haulage is expected

3.2 Effluent Limits & Effluent Objectives

There are no effluent limits specified in C of A 3-0046-93-006 for the Tobermory Sewage Treatment System. The effluent objectives as per Section 10 of C of A 3-0046-93-006 for the Tobermory Sewage Treatment System are:

Table 7. Effluent (Secondary Aeration Cell) Objectives for Tobermory Sewage Treatment System

Effluent Parameter	Average Monthly Concentration (mg/L)
BOD_5	50
Suspended Solids	50

3.3 Comparison of Data to Effluent Objectives

Analytical and monitoring data for the Tobermory Sewage Treatment System is housed in OCWA's data management system (WISKI). A comparison of the analytical results compared to the effluent objectives can be found in Table 8.

Table 8. Comparison of Effluent Objectives to Sampled Effluent (Secondary Aeration Cell)

	BOD_5		**Suspended Solids**	
	Monthly Average Concentration (mg/L)	Within Objectives? (50.0 mg/L)	Monthly Average Concentration (mg/L)	Within Objectives? (50.0 mg/L)
March	6	Yes	7	Yes
June	10	Yes	14	Yes
July	18	Yes	11	Yes
August	80	No	61	No
October	14	Yes	27	Yes

3.4 Additional Monitoring Parameters

The following parameters do not have effluent limits or objectives but are monitored on a regular basis (see Section 3.1 for sampling frequency) as required by C of A 3-0046-93-006. Table 9, Table 10 and Table 11 summarizes the monitoring data for the reporting period.

3.4.1 Flows

The Tobermory Sewage Treatment Facility was designed to treat an average summer day flow of 625 m^3/d. The total raw sewage flow including hauled septage volumes for 2024 was 61,840 m^3 with an annual average daily flow of 147 m^3/day which is 23.5% of the design capacity of the system. Total and average daily flows for 2024 have decreased in comparison with 2023. A summary of the average daily flows on a monthly basis can be found in Table 9. For more detailed information regarding flows, refer to Appendix A.

Table 9. Summary of Average Day Flow by Month, 2024

Month	**Average Day Flow (m^3)**
January	87
February	99
March	83
April	132
May	185
June	205
July	240
August	270
September	173
October	114
November	52
December	130

Hauled septage volumes were added to the Sewage Pump Station total flow. According to item 11(b) of C of A 3-0046-93-006, “For the purposes of this Certificate and Subsection 107 (3) of the Ontario

Water Resources Act, the introduction of sewage flows in excess of 625 m^3/d for any consecutive period of time greater than one year is not approved under this Certificate". The sewage flows for 2024 were less than 625 m^3/d.

3.4.2 Aeration Cell Effluent

In addition to the parameters which have effluent objectives, Total Phosphorous, Total Kjeldahl Nitrogen (TKN), Ammonia-Nitrogen, Nitrite, Nitrate, pH and DO are monitored. Please refer to Table 10 and 11 for monitoring and analytical results.

Table 10. Average Monthly Aeration Cell Effluent Monitoring Laboratory Analysis Results, 2024

	Total Phosphorus (mg/L)	Total Kjeldahl Nitrogen (as N mg/L)	Ammonia+Ammonium (N) (mg/L)	Nitrite (mg/L as N)	Nitrate (mg/L as N)
March	5.14	7.2	4.8	<0.03	3.46
June	8.08	15.1	14.8	0.10	0.13
July	5.62	40.0	38.7	0.18	0.21
August	9.49	25.5	24.9	0.76	0.11
October	7.16	2.8	0.4	0.04	11.60

Table 11. Aeration Cell In-House Monitoring - Average Monthly pH and DO, 2024

	pH				Dissolved Oxygen (mg/L)			
	Cell #1		Cell #2		Cell #1		Cell #2	
	Min	Max	Min	Max	Min	Max	Min	Max
May	6.22	7.27	6.37	7.40	1.62	4.21	2.21	3.30
June	6.76	7.10	6.83	7.30	0.16	4.94	1.77	2.30
July	6.78	7.71	6.91	7.80	0.17	2.31	0.67	2.10
August	7.08	7.81	7.30	7.86	0.26	3.34	0.36	3.62
September	6.89	7.44	7.15	7.39	1.63	2.75	1.31	1.45

For sewage, it is optimal if the effluent is between a pH 6.0 and 9.5. The pH of Cell#1 and Cell#2 remained within the optimal range for 100% of the reporting period. The DO range for Cell #1 and Cell #2 was between 0.16 and 4.94 mg/L in 2024 in comparison to 0.23 to 11.09 mg/L in 2023. Overall, the average DO in 2024 (1.84 mg/L) was lower than the average DO in 2023 (2.37 mg/L).

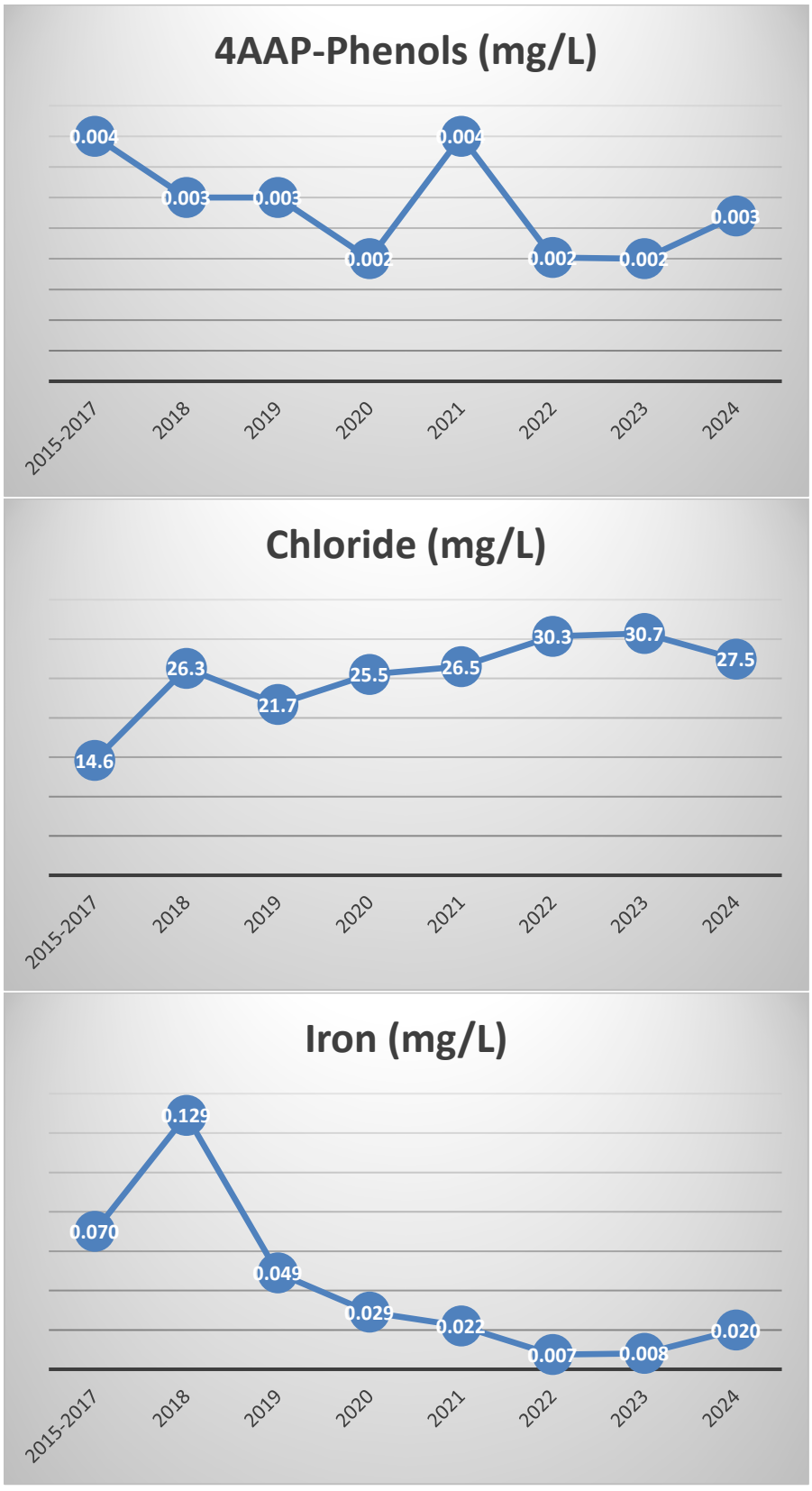
3.4.3 Groundwater Sampling Program

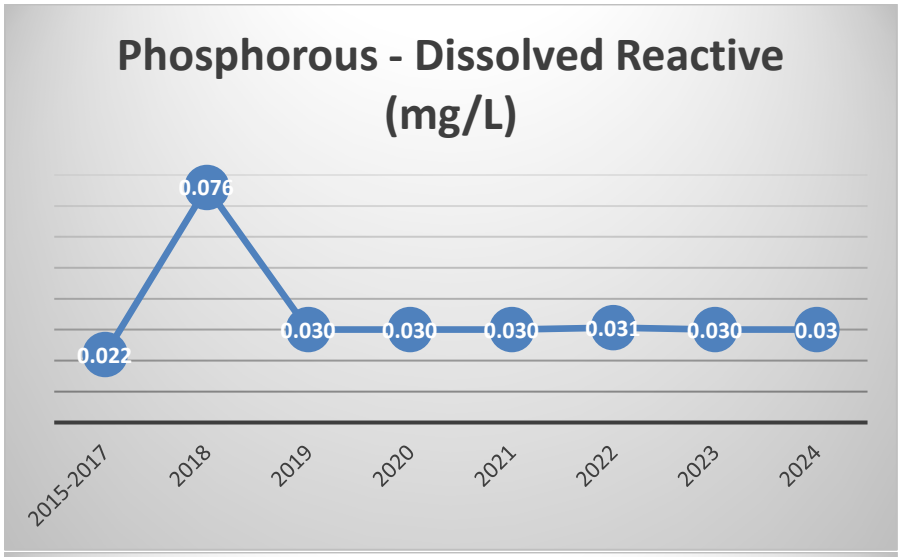
The complete and limited groundwater sampling of all on-site observation wells was completed in the Spring (May), Summer (August) and Fall (October) of 2024.

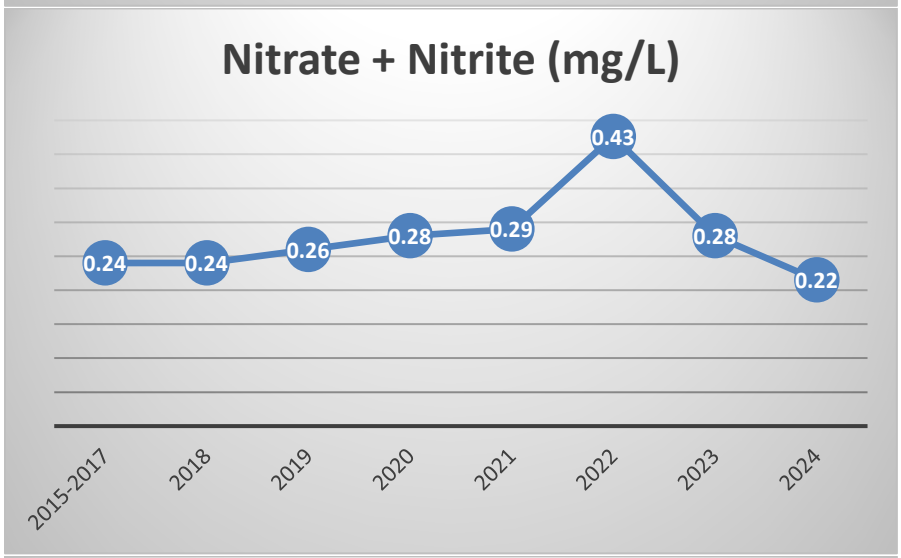
Table 12. Ground Water Sampling Program

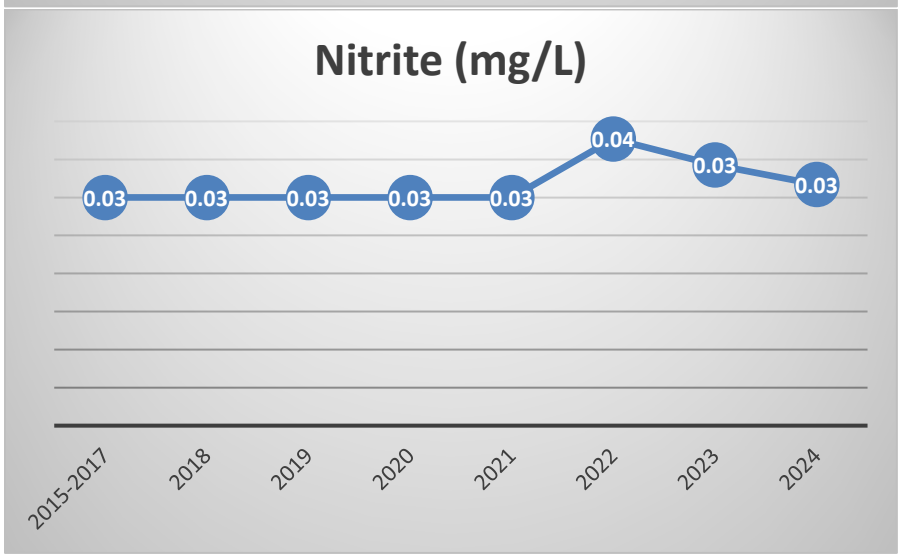
	Average						Minimum		Maximum	
	2024	**2023**	**2022**	**2021**	**2020**	**2019**	**2024**	**2023**	**2024**	**2023**
4AAP-Phenols (mg/L)	0.003	0.002	0.002	0.004	0.002	0.003	0.002	0.002	0.016	0.002
Alkalinity (mg/L as CaCO3)	289	287	296	296	289	283	155	204	479	482
Calcium (mg/L)	73	86	79	81	79	76	29	54	143	160
Chloride (mg/L)	27.5	30.7	30.3	26.5	25.5	21.7	1.0	1.0	180.0	180.0
Conductivity (uS/cm)	589	610	618	626	597	586	329	339	1090	1110
Dissolved Organic Carbon (mg/L)	5.7	2.0	2.0	2.0	2.0	2.0	1.0	1.0	87.0	4.0
Iron (mg/L)	0.020	0.008	0.007	0.022	0.029	0.049	0.007	0.007	0.381	0.038
Phosphorous - Dissolved Reactive (mg/L)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Magnesium (mg/L)	23.8	24.4	24.6	23.5	23.4	23.2	12.4	14.9	36.2	35.6
Nitrate + Nitrite (mg/L)	0.22	0.28	0.43	0.29	0.28	0.26	0.06	0.06	3.23	1.53
Nitrite (mg/L)	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.11	0.13
Nitrate (mg/L)	0.21	0.28	0.42	0.28	0.30	0.25	0.06	0.06	3.12	1.49
Organic Nitrogen (mg/L)	0.52	0.52	0.52	0.51	0.50	0.18	0.50	0.50	0.70	0.90
Sodium (mg/L)	17.1	17.9	19.0	16.8	16.0	15.5	0.5	0.54	104.0	80.1
Sulphate (mg/L)	11.6	16.4	17.0	13.0	13.0	11.2	2.0	2.0	44.0	42.0
Total Ammonia (mg/L)	0.12	0.17	0.18	0.30	0.10	0.22	0.10	0.10	0.40	2.80
Total Kjeldahl Nitrogen (mg/L)	0.52	0.59	0.58	0.64	0.50	0.51	0.50	0.50	0.70	3.40
Total Phosphorous (mg/L)	0.27	0.16	0.21	0.06	0.19	0.22	0.03	0.03	1.84	1.18
Hardness (dissolved) (mg/L as CaCO3)	279	314	299	298	293	285	143	215	493	547
Unionized Ammonia (mg/L)	0.004	0.004	0.005	0.012	0.003	0.004	0.001	0.001	0.019	0.059
pH	7.92	7.91	7.94	8.07	7.88	7.95	6.97	7.36	8.27	8.21

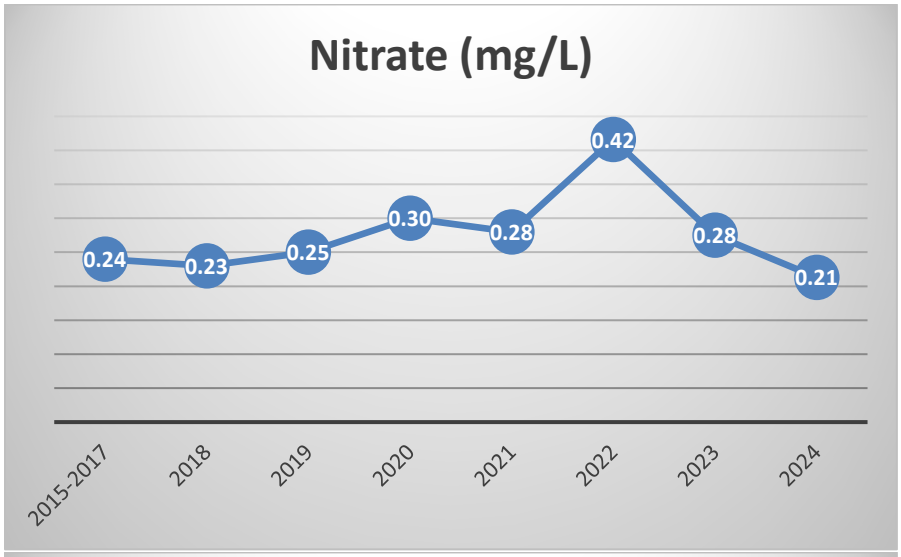
Ground Water Sampling graphs were made for every parameter that the average changed +/- 10% please see below. Further comprehensive interpretation of groundwater monitoring data is required in order to determine proximity of sites that produced parameter changes and if relation exists with other monitoring sites.

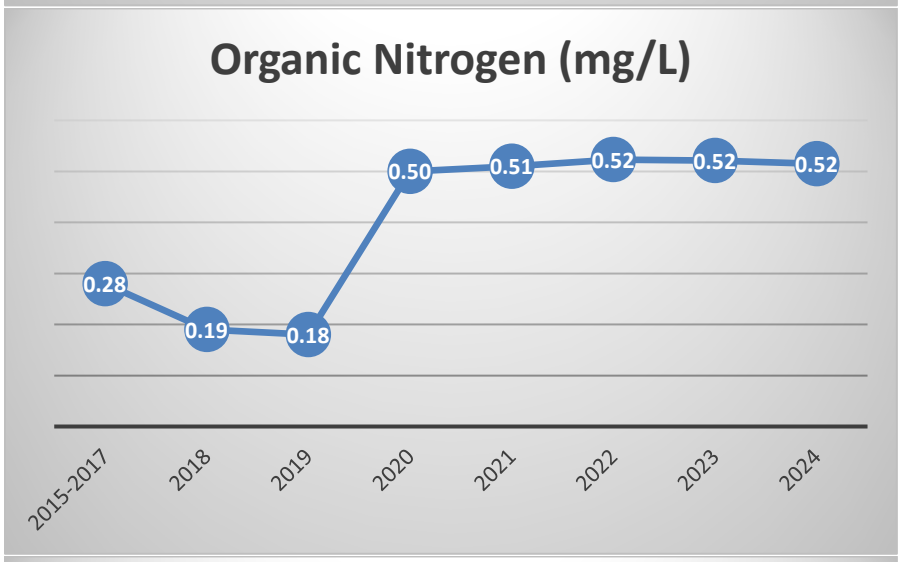

4AAP-Phenols (mg/L)
0.004
0.003
0.003
0.002
0.004
0.002
0.002
0.003
2015-2017
2018
2019
2020
2021
2022
2023
2024
Chloride (mg/L)
14.6
26.3
21.7
25.5
26.5
30.3
30.7
27.5
2015-2017
2018
2019
2020
2021
2022
2023
2024
Iron (mg/L)
0.070
0.129
0.049
0.029
0.022
0.007
0.008
0.020
2015-2017
2018
2019
2020
2021
2022
2023
2024

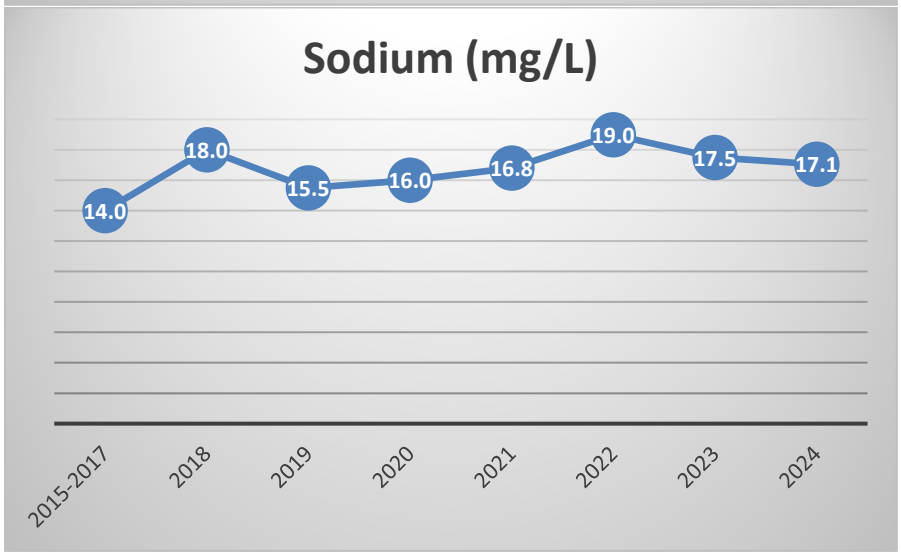

Phosphorous - Dissolved Reactive (mg/L)
0.022
0.076
0.030
0.030
0.030
0.031
0.030
0.03
2015-2017
2018
2019
2020
2021
2022
2023
2024

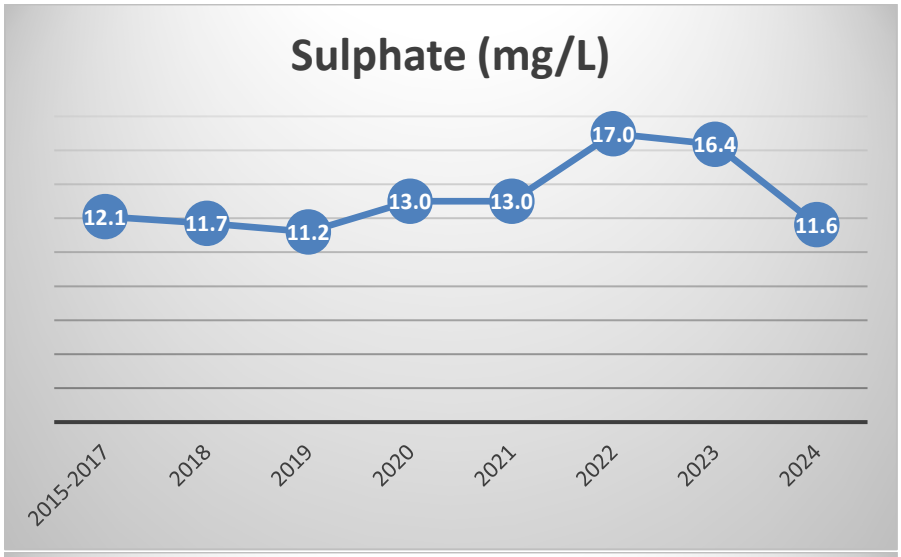

Nitrate + Nitrite (mg/L)
0.24
0.24
0.26
0.28
0.29
0.43
0.28
0.22
2015-2017
2018
2019
2020
2021
2022
2023
2024

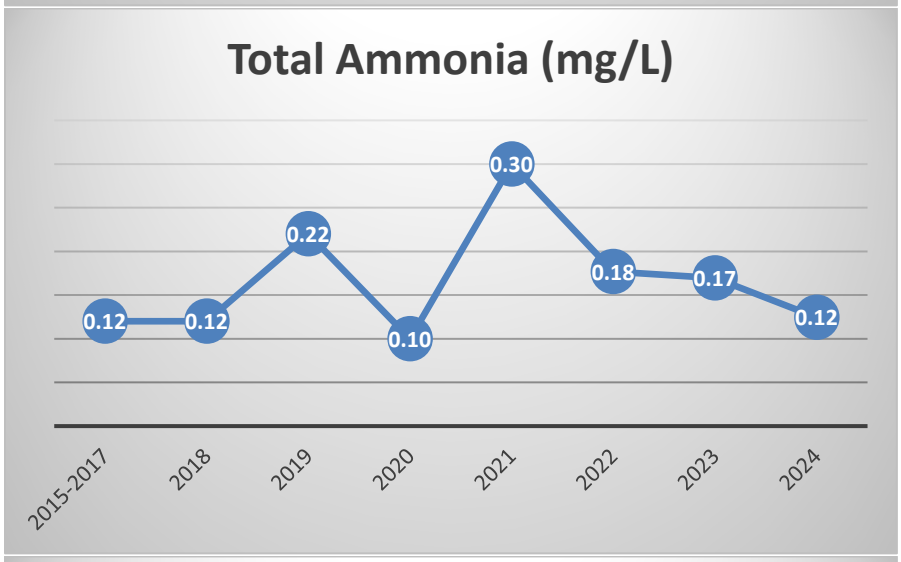

Nitrite (mg/L)
0.03
0.03
0.03
0.03
0.03
0.04
0.03
0.03
2015-2017
2018
2019
2020
2021
2022
2023
2024

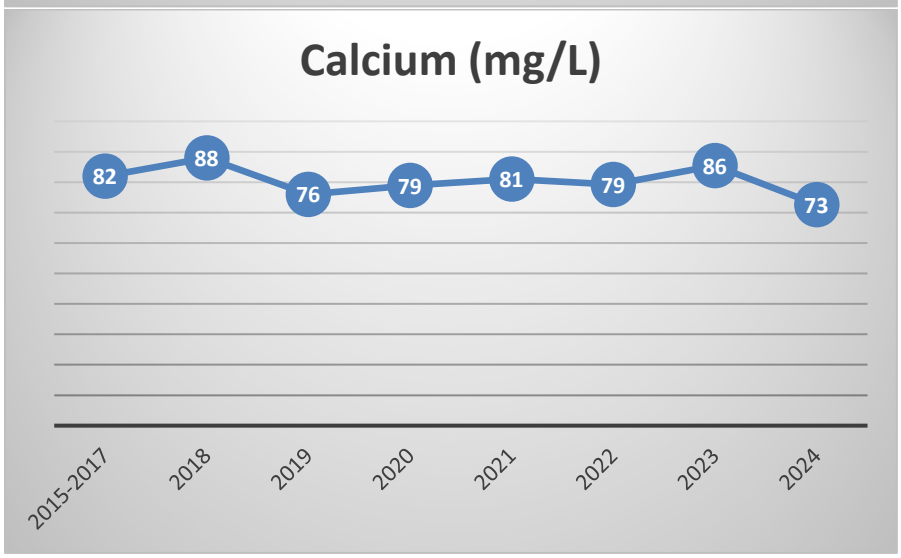

Nitrate (mg/L)
0.24
0.23
0.25
0.30
0.28
0.42
0.28
0.21
2015-2017
2018
2019
2020
2021
2022
2023
2024

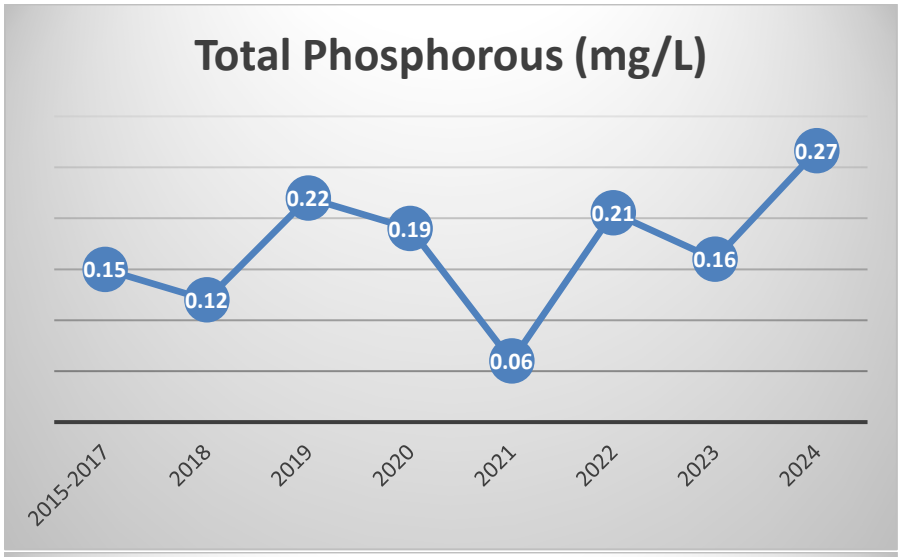

Organic Nitrogen (mg/L)
0.28
0.19
0.18
0.50
0.51
0.52
0.52
0.52
2015-2017
2018
2019
2020
2021
2022
2023
2024

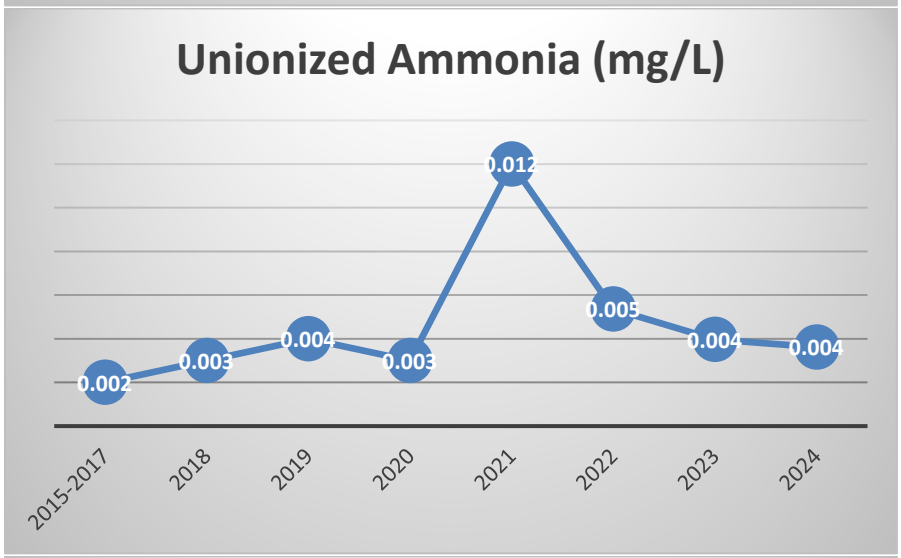

Sodium (mg/L)
14.0
18.0
15.5
16.0
16.8
19.0
17.5
17.1
2015-2017
2018
2019
2020
2021
2022
2023
2024


Sulphate (mg/L)
12.1
11.7
11.2
13.0
13.0
17.0
16.4
11.6
2015-2017
2018
2019
2020
2021
2022
2023
2024


Total Ammonia (mg/L)
0.12
0.12
0.22
0.10
0.30
0.18
0.17
0.12
2015-2017
2018
2019
2020
2021
2022
2023
2024


Calcium (mg/L)
82
88
76
79
81
79
86
73
2015-2017
2018
2019
2020
2021
2022
2023
2024


Total Phosphorous (mg/L)
0.15
0.12
0.22
0.19
0.06
0.21
0.16
0.27
2015-2017
2018
2019
2020
2021
2022
2023
2024


Unionized Ammonia (mg/L)
0.002
0.003
0.004
0.003
0.012
0.005
0.004
0.004
2015-2017
2018
2019
2020
2021
2022
2023
2024

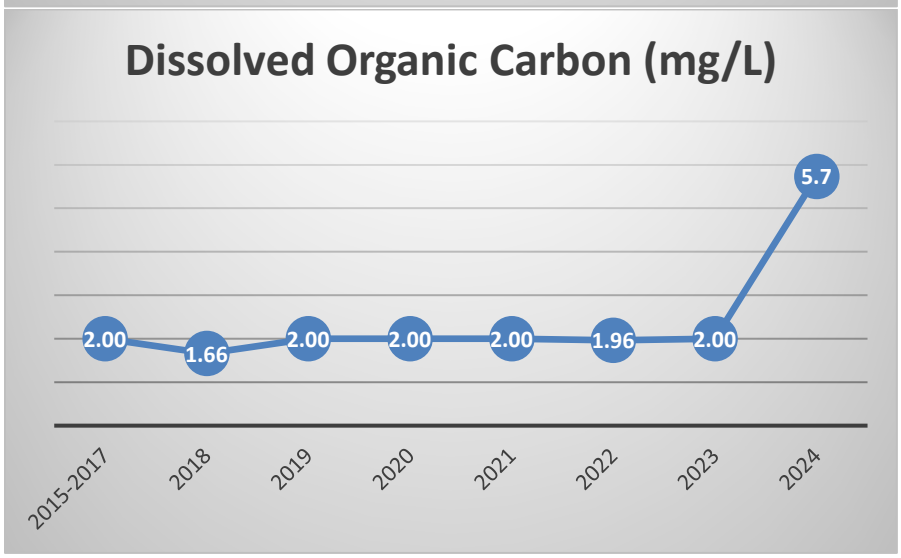

Dissolved Organic Carbon (mg/L)
2.00
1.66
2.00
2.00
2.00
1.96
2.00
5.7
2015-2017
2018
2019
2020
2021
2022
2023
2024

Table 13. Ground Water Sampling Program – 36 Month Sampling (October 2024)

	Minimum (mg/L)	**Average** (mg/L)	**Maximum** (mg/L)
Aluminum	0.001	0.001	0.003
Barium	0.006	0.018	0.046
Cadmium	0.000003	0.000005	0.000012
Chromium	0.00008	0.00008	0.00014
Copper	0.001	0.001	0.003
Lead	0.00009	0.00009	0.00015
Manganese	0.00004	0.04812	0.41400
Zinc	0.002	0.002	0.004

Refer to Appendix B for the laboratory analysis results for the groundwater sampling program.

4. Major Maintenance Activities

As per Section 15(c) of C of A 3-0046-96-006, *a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanisms or thing forming part of the facility* is required.

In 2024, the following major maintenance activities were conducted:

- Replaced damper actuator at Tobermory Lagoon Blower Building
- Replaced motor protection circuit and contactors at Tobermory Lagoon Blower Building
- Replaced submersible pump at Tobermory Sewage Pump Station
- Replaced outdoor and indoor lights at Lagoon Blower Building
- Replaced batteries for Tobermory Sewage Pump Station generator
- Inspected fuel tank at Tobermory Sewage Pump Station
- Repaired air exhaust fan at Tobermory Lagoon Blower Building
- Replaced DO sensor on portable analyzer

5. Operating Challenges

As per Section 15(d) of C of A 3-0046-96-006, *a description of any operating problems encountered and corrective actions taken during the reporting period* are to be identified.

During the reporting period, there were no operating problems, bypasses of raw sewage or spills at the Tobermory Sewage Treatment System or any associated pumping stations.

6. Proposed Alterations, Extensions or Replacements

As per Section 15(e) of C of A 3-0046-96-006, *a summary of any proposed alteration, extension or replacement in the process or operations of the sewage treatment plant to be completed over the next reporting period which may require approval under the Ontario Water Resources Act* (OWRA) is required.

The following alterations, extensions/replacements are proposed for 2024, some of which may not require approval under OWRA:

- SPS pump rebuild
- Lagoon cell sludge removal
- Generator annual inspection

7. Sludge Generation

As per Section 15(f) of C of A 3-0046-96-006, *a tabulation of the volume of sludge generated in the reporting period and an outline of anticipated volumes to be generated over the next reporting period* is required.

Since the facility is a sewage lagoon system, accumulated sludge is currently being stored in lagoon cell #1. The lagoons have been de-sludged once since the existing facility was constructed and approximately 800 m^3 of dewatered sludge was removed in October 2004.

A volume modeling and distribution survey was performed on July 23 & 24, 2020 of both Cells 1 and 2. The biosolids levels were recorded to be 10.62 inches for Cell 1 and 6.25 inches for Cell 2. The biosolids volumes were recorded to be 519.63 m^3 for Cell 1 and 391.84 m^3 for Cell 2. See Appendix E for the detailed reports.

8. Sludge Handling

As per Section 15(g) of C of A 3-0046-96-006, an *outline of the sludge handing methods and disposal areas to be utilized over the next reporting period* are to be specified.

Since the facility is a sewage lagoon system, sludge levels in the lagoons are monitored regularly and disposal is arranged when sludge storage has reached its limit. No disposal areas are expected to be utilized over the next reporting period.

9. Septage Receiving Works

In 2024, approximately 7,743 m^3 (1,703,300 imperial gallons) of septage was received by the Tobermory Sewage Treatment. The septage was received from various sources including:

- Bruce Peninsula Septic Service
- Scott Septic Pumping

The total monthly volume of septage received can be found in Table 14. Detailed haulage volumes can be found in Appendix C.

Table 14. Total Volume of Septage Received in 2024

Month	Total Volume of Septage Received (m^3)
January	0
February	0
March	0
April	37.7

Month	Total Volume of Septage Received (m^3)
May	859.2
June	1,304.7
July	1,910.3
August	1,909.4
September	1,117.4
October	397.8
November	206.8
December	0
Annual Total	**7,743**

10. Calibration and Maintenance Procedures

As per Section 15(h) of C of A 3-0046-96-006, *an evaluation of the calibration and maintenance procedures conducted on all monitoring equipment* is required.

All in-house monitoring equipment is calibrated as per manufacturer's recommendations. Monitoring and metering equipment is also calibrated by a third party on an annual basis. On May 30, 2024 SCG Flowmetrix successfully calibrated the flow meter at the Tobermory Pump Station and no issues were identified. In addition to sample analysis, preventative maintenance is scheduled for all equipment at the sewage treatment plant and pumping stations on at least a monthly basis. Maintenance activities were scheduled within the work management system (WMS), upon completion, operators record their time and close off the work order. Records for calibrations/ verifications can be found in Appendix D.

11. Modifications for Performance and Reliability

As per Section 15(j) of C of A 3-0046-96-006an *evaluation for the need for modifications to the Tobermory Sewage Treatment Facility to improve performance and reliability and to minimize upsets and bypasses* is required.

During the reporting period the Tobermory Sewage Treatment Facility met the effluent objectives 92% of the time. Based on this evaluation, effluent recirculation flow from lagoon cell 2 to lagoon cell 1 will continue to be monitored during the summer months for performance and reliability to meet our effluent objectives 100% of the time.

12. Municipal Sewage Collection System – Annual Performance Report

This report was prepared in accordance with the requirements of the Environmental Compliance Approval for a Municipal Sewage Collection Systems, Schedule E, Section 4.6.1.

Municipal Sewage Collection System ECA #	250-W601, Issue 1
Sewage Works	Northern Bruce Peninsula Sewage Collection System
Collection System Owner	The Corporation of the Municipality of Northern Bruce Peninsula
Reporting Period	January 1, 2024 to December 31, 2024

Is the Annual Report available to the public at no charge on a website on the Internet?

Yes

Note: As per Schedule E, Section 4.7.1 of CLI-ECA #250-W601, the annual performance report must be made available, on request and without charge, to members of the public who are served by the Authorized System; and 4.7.2 must be made available, by June 1st of the same reporting year, to members of the public without charge by publishing the report on the Internet, if the Owner maintains a website on the Internet.

Location where Annual Performance Report required under CLI-ECA #250-W601 Schedule E will be available for inspection. *(CLI-ECA #250-W601, Schedule E, Section 4.7.1 & 4.7.2):*

- Municipality of Northern Bruce Peninsula, 56 Lindsay Rd #5 RR 2, Lion's Head ON, N0G 1W0
- https://www.northbrucepeninsula.ca/develop/utilities/

Pursuant to Schedule E, sections 4.6.3 to 4.6.9, this Annual Performance Report shall:

a) If applicable, include a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.

b) If applicable, include a summary of any operating problems encountered and corrective actions taken.

c) Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.

d) Include a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.

e) Include a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.

f) Include a summary of all Collection System Overflow(s) and Spill(s) of Sewage.

g) Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses.

12.1 Description of the Works

The Sewage Works Collection System in the Municipality of Northern Bruce Peninsula is located in the communities of Tobermory and Lakewood Subdivision. For further information on the Lakewood Subdivision Sewage System, please refer to the Lakewood Subdivision Sewage System 2024 Annual Performance Report.

The Tobermory Sewage Works Collection System comprises of sewage collection mains, one sewage pumping station and one transmission sewage force main. The wastewater generated within the collection area of Tobermory is collected into the sewer system and pumped to the wastewater treatment facility by way of a 150 mm forcemain to the Tobermory Wastewater Treatment Facility.

The sewage pumping station in Authorized System include:

- Little Tub Sanitary Pumping Station – located at 15 Bay St. Consists of a wetwell, a manual screen, two pumps, a metering chamber with flowmeter, an emergency storage chamber (that discharges to Little Tub Harbour) and a stand-by diesel generator. The Little Tub Sanitary Pumping Station discharges to the Tobermory Sewage Lagoon.
- Tobermory Septage Receiving Station – located at the Tobermory Wastewater Treatment site. Receives residential and commercial septic tank and septage storage tanks from Tobermory area facilities that are not serviced by the sewage collection system.

12.2 Summary of Monitoring Data and Interpretation

No monitoring data was required within the municipal sewage collection system for the reporting period.

12.3 Summary of Operating Problems Encountered and Corrective Actions Taken

There were no operating problems encountered within the municipal sewage collection system for the reporting period.

12.4 Summary of Calibration, Maintenance and Repairs

All in-house monitoring equipment is calibrated as per manufacturer's recommendations. Monitoring and metering equipment is also calibrated by a third party on an annual basis. On May 30, 2024 SCG Flowmetrix successfully calibrated the flow meter at the Tobermory Pump Station and no issues were identified. In addition to sample analysis, preventative maintenance is scheduled for all equipment at the sewage treatment plant and pumping stations on at least a monthly basis. Maintenance activities were scheduled within the work management system (WMS), upon completion, operators record their time and close off the work order. All records for calibrations/ verifications can be found in Appendix D.

Major maintenance activities for the sewage pump stations can be found in section 12.6 of this report.

12.5 Community Complaints Received in Relation to the Sewage Works

During the reporting period, OCWA staff received zero (0) community complaints. Typically, the Municipality or OCWA will address complaints by verifying if there are odours in the surrounding area physically by attending the location of the complaint and recording observations and any actions taken in the logbook.

12.6 Alterations to the Authorized System

For 2024, major maintenance activities that occurred within the Authorized System include:

- Replaced submersible pump at Tobermory Sewage Pump Station
- Replaced batteries for Tobermory Sewage Pump Station generator
- Inspected fuel tank at Tobermory Sewage Pump Station

There were no alterations performed within the Authorized System that pose a Significant Drinking Water Threat.

12.7 Summary of Collection System Overflow(s) and Spill(s) of Sewage

There were no collection system overflow or spill events that occurred during the reporting period.

12.8 Efforts Made to Reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses.

The sewage pump stations are equipped with alarm monitoring for high flow events. Preventative maintenance procedures are in place to ensure the sewage pump stations are operating as designed and include:

- Wet well cleanouts
- Daily inspections of pump stations
- Annual cleanouts
- Pump inspections
- Alarm testing
- Generator inspection and maintenance

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix A

Performance Assessment Report

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Performance Assessment Report Standard ECA

From 1/1/2024 to 12/31/2024

1132 TOBERMORY WASTEWATER TREATMENT FACILITY 120001577

	1 / 2024	2/ 2024	3/ 2024	4/ 2024	5/ 2024	6/ 2024	7/ 2024	8/ 2024	9/ 2024	10/ 2024	11/ 2024	12/ 2024	<--Total-->	<--Avg-->	<--Max-->	<-Criteria->
Flows																
Raw Flow: Total - Sewage Pumping Station m^3/d	2,682.75	2,866.00	2,573.80	3,950.89	5,731.66	6,161.56	7,444.25	8,368.48	5,190.01	3,521.00	1,565.00	4,041.67	54,097.07			0.00
Raw Flow: Avg - Sewage Pumping Station m^3/d	86.54	98.83	83.03	131.70	184.89	205.39	240.14	269.95	173.00	113.58	52.17	130.38		147.81		625.00
Raw Flow: Max - Sewage Pumping Station m^3/d	164.50	222.50	175.70	289.30	262.33	277.75	272.00	410.33	248.50	165.67	87.67	281.00			410.33	0.00
Raw Flow: Count - Sewage Pumping Station m^3/d	31.00	29.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	366.00			0.00
Biochemical Oxygen Demand: BOD5																
Raw: Avg BOD5 - Sewage Pumping Station mg/L	0.00	0.00	78.00	0.00	0.00	108.00	127.00	116.00	0.00	74.00	0.00	0.00		100.60	127.00	0.00
Total Suspended Solids: TSS																
Raw: Avg TSS - Sewage Pumping Station mg/L	0.00	0.00	45.00	0.00	0.00	141.00	68.00	122.00	0.00	45.00	0.00	0.00		84.20	141.00	0.00
Total Phosphorus: TP																
Raw: Avg TP - Sewage Pumping Station mg/L	0.00	0.00	2.75	0.00	0.00	3.52	3.61	10.40	0.00	7.64	0.00	0.00		5.58	10.40	0.00
Nitrogen Series																
Raw: Avg TKN - Sewage Pumping Station mg/L	0.00	0.00	11.90	0.00	0.00	38.20	66.20	84.80	0.00	3.50	0.00	0.00		40.92	84.80	0.00

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix B

Groundwater Sampling Program Laboratory Analysis Results

Ontario Clean Water Agency - Request for Laboratory Services and CHAIN OF CUSTODY - GROUNDWATER (MAY&OCTOBER, EXTENDED)

Waterworks/Project #	120001577	C of C LIMS No:	May128712
Facility Name	Tobermory Sewage Treatment Plant	Laboratory Section	Sample condition upon receipt
Org. #	1132	Date Rec'd: MAY 25 2024	Time Rec'd
Quote #		Temperature Upon Receipt 19K3	Initials
Attached Parameter List	No ☐ Yes ☐		

Identification of Regulation under which the sample(s) fall: No Requirement to Report Sample Results Under Any Regulation for Wastewater Treatment

Requested Turnaround Time: b App. 24-48 h ☐ 5-7d ☒ 7-10d ☐ Other ☐ Specify:

	Report to: Process & Compliance Tech (PCT)	Data Transfer Contact: PCT	Invoice To: Ontario Clean Water Agency	Laboratory: SGS Lakefield Research Ltd
Address:	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	185 Concession St. Lakefield, ON K0L 2H0
Telephone:	519-374-5782	519-374-5782	519-797-2561	705-652-2000
Fax:	(519) 797-3080	(519) 797-3080	(519) 797-3080	705-652-6365
Email:	kyoung@ocwa.com	kyoung@ocwa.com	apwesthighlands@ocwa.com	carrie.greenlaw@sgs.com

Sample: Station Acronym	Station Number (Short Name)		Sample Location Name	Date & Time Collected (2024 / 05/22 & 23/24)	Bottles	Type: Alkalinity	Type: Conductivity	Parameters: Free Ammonia	Phenols	pH	Chloride	Sulphates	Nitrite	Magnesium	Iron	Nitrate	Calcium	Hardness	Sodium	DOC	Organic Nitrogen	TKN	Dissolved Reactive Phosphorus	Total Phosphorous	Comments	Upload to OCWA
Well	5S	-		05/23 11:15	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	5I	-		05/23 11:30	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	5D	-		05/23 11:40	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	9D	-		05/22 08:45	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	9I	-		05/22 08:50	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	9S	-	HT	05/22 08:55	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	8I	-		05/22 09:10	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	8D	-		05/22 09:20	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	10S	-		05/23 10:30	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	11S	-		05/23 09:55	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	12S	-		05/23 09:30	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	1D	-		05/23 09:15	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	1I	-		05/23 09:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	6S	-		05/22 14:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	6D	-		05/22 14:10	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	6I	-		05/22 14:05	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	57	-	HT	05/22 13:40	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	56	-		05/22 13:25	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	2S	-	Dry	13:00 05/22	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	2I	-		13:05 05/22	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	2D	-		05/22 13:15	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	55	-		05/22 09:55	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	7S	-		05/22 09:35	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well	60	-		05/23 10:50	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	61	-		05/23 11:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well	8S	-	DRY HT	05/22 09:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐

Sampler Name: Billy Shearer

Sampler Signature: Billy

RTN SAT 12:00

6087936636263600/3618

Revision #6

Revised: 2021.05.21

- 2x 60mL bottles bagged w/ 2I labelled as "19I" Sample time matches 2I
- New cuts made @ 2I as per Hayley

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

03-June-2024

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Phone: 519-797-2561
Fax:pdf

Date Rec. : 26 May 2024
LR Report: **CA12872-MAY24**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Well 5S-	6: Well 5I-	7: Well 5D-	8: Well 9D-	9: Well 9I-	10: Well 9S-	11: Well 8I-	12: Well 8D-
Sample Date & Time					23-May-24 11:15	23-May-24 11:30	23-May-24 11:40	22-May-24 08:45	22-May-24 08:50	22-May-24 08:55	22-May-24 09:10	22-May-24 09:20
Temperature Upon Receipt [°C]	---	---	---	---	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Alkalinity [mg/L as CaCO3]	28-May-24	08:18	28-May-24	15:04	232	215	206	226	253	251	272	289
Conductivity [uS/cm]	28-May-24	08:18	28-May-24	15:04	646	808	771	411	452	425	486	506
pH [No unit]	28-May-24	08:18	28-May-24	15:04	8.13	6.97	7.36	7.99	8.11	8.13	8.15	7.98
Temperature @ pH [°C]	28-May-24	08:18	28-May-24	15:04	18.8	16.5	16.7	16.8	17.7	18.9	17.6	19.0
Organic Nitrogen [mg/L]	27-May-24	16:01	30-May-24	07:35	0.6	0.6	0.7	< 0.5	< 0.5	< 0.5	0.5	0.6
Total Kjeldahl Nitrogen [as N mg/L]	27-May-24	16:01	29-May-24	12:47	0.6	0.7	0.6	< 0.5	< 0.5	< 0.5	0.5	0.5
Unionized Ammonia [mg/L as N]	27-May-24	18:00	29-May-24	12:49	<0.003	< 0.001	< 0.001	<0.002	0.002	<0.003	<0.003	<0.002
Ammonia+Ammonium (N) [as N mg/L]	27-May-24	18:00	28-May-24	12:40	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4AAP-Phenolics [mg/L]	28-May-24	12:56	29-May-24	08:18	< 0.002	0.014	0.013	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	28-May-24	14:32	31-May-24	10:46	3	87	43	1	< 1	2	1	< 1
Phosphorus (total) [mg/L]	30-May-24	14:49	31-May-24	14:31	0.16	---	---	---	---	0.05	---	---
Phosphorus (dissolved reactive) [mg/L]	27-May-24	14:15	28-May-24	08:32	< 0.03	---	---	---	---	< 0.03	---	---
Chloride [mg/L]	31-May-24	13:15	31-May-24	16:15	66	150	150	< 1	2	< 1	5	5
Sulphate [mg/L]	31-May-24	13:13	31-May-24	16:15	20	9	11	15	21	< 2	11	14
Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	0.24	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.14	0.09
Nitrate + Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	0.24	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.14	0.09
Hardness (dissolved) [mg/L as CaCO3]	30-May-24	21:06	30-May-24	12:33	238	205	232	233	249	241	284	295
Magnesium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	17.1	17.4	18.9	23.9	25.2	21.5	27.6	27.9
Calcium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	67.1	53.5	61.7	54.1	58.1	61.1	68.3	72.1
Iron (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	< 0.007	0.381	0.077	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Sodium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	45.7	104	81.8	3.64	5.58	0.83	2.18	1.66
Phosphorus (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	0.014	0.093	0.006	< 0.003	< 0.003	0.003	0.004	0.003

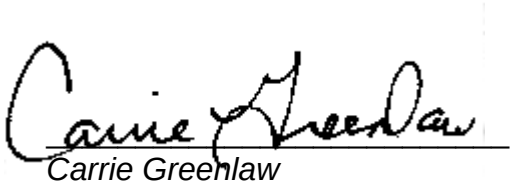
Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

OnLine LIMS

0003731218

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA12872-MAY24**



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003731218

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

03-June-2024

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Phone: 519-797-2561
Fax:pdf

Date Rec. : 26 May 2024
LR Report: **CA12872-MAY24**

Copy: #1

CERTIFICATE OF ANALYSIS

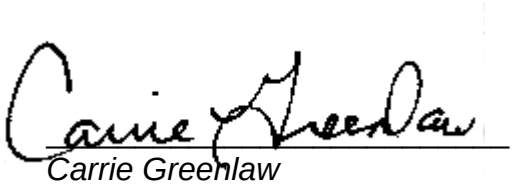
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	13: Well 10S-	14: Well 11S-	15: Well 12S-	16: Well 1D-	17: Well 1I-	18: Well 6S-	19: Well 6D-
Sample Date & Time					23-May-24 10:30	23-May-24 09:55	23-May-24 09:30	23-May-24 09:15	23-May-24 09:00	22-May-24 14:00	22-May-24 14:10
Temperature Upon Receipt [°C]	---	---	---	---	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Alkalinity [mg/L as CaCO3]	28-May-24	08:18	28-May-24	15:04	230	328	266	278	374	294	276
Conductivity [uS/cm]	28-May-24	08:18	28-May-24	15:04	329	561	890	487	635	500	479
pH [No unit]	28-May-24	08:18	28-May-24	15:04	8.16	8.02	7.99	8.15	7.96	8.11	8.03
Temperature @ pH [°C]	28-May-24	08:18	28-May-24	15:04	17.4	18.8	18.0	18.5	18.5	18.9	18.4
Organic Nitrogen [mg/L]	27-May-24	16:01	30-May-24	07:35	0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	27-May-24	16:01	29-May-24	12:47	0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 0.5
Unionized Ammonia [mg/L as N]	27-May-24	18:00	29-May-24	12:49	<0.003	<0.002	<0.002	<0.003	<0.002	<0.003	<0.002
Ammonia+Ammonium (N) [as N mg/L]	27-May-24	18:00	28-May-24	12:40	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4AAP-Phenolics [mg/L]	28-May-24	12:56	29-May-24	08:18	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	28-May-24	14:32	31-May-24	10:46	2	2	3	1	2	2	1
Phosphorus (total) [mg/L]	30-May-24	14:49	31-May-24	14:31	0.72	< 0.03	0.05	---	---	0.04	---
Phosphorus (dissolved reactive) [mg/L]	27-May-24	14:15	28-May-24	08:32	< 0.03	< 0.03	< 0.03	---	---	< 0.03	---
Chloride [mg/L]	31-May-24	13:15	31-May-24	16:15	< 1	1	160	3	< 1	< 1	1
Sulphate [mg/L]	31-May-24	13:13	31-May-24	16:15	18	13	23	10	4	< 2	7
Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.06	0.98	0.31	< 0.06	< 0.06	< 0.06	< 0.06
Nitrate + Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.06	0.98	0.31	< 0.06	< 0.06	< 0.06	< 0.06
Hardness (dissolved) [mg/L as CaCO3]	30-May-24	21:06	30-May-24	12:33	213	322	295	241	353	300	258
Magnesium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	20.5	28.4	19.7	23.8	28.6	35.2	25.2
Calcium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	51.4	82.4	85.6	57.5	94.0	62.1	61.7
Iron (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Sodium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	2.97	1.53	79.3	20.3	3.27	0.63	4.99
Phosphorus (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	0.004	0.003	0.003	0.029	0.324	< 0.003	0.009

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA12872-MAY24**



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003731223

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

03-June-2024

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Phone: 519-797-2561
Fax:pdf

Date Rec. : 26 May 2024
LR Report: **CA12872-MAY24**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	20: Well 6I-	21: Well 57-	22: Well 56-	24: Well 2I-	25: Well 2D-	26: Well 55-
Sample Date & Time					22-May-24 14:05	22-May-24 13:40	22-May-24 13:25	22-May-24 13:05	22-May-24 13:15	22-May-24 09:55
Temperature Upon Receipt [°C]	---	---	---	---	19.0	19.0	19.0	19.0	19.0	19.0
Alkalinity [mg/L as CaCO3]	28-May-24	08:18	28-May-24	15:04	348	476	263	383	242	370
Conductivity [uS/cm]	28-May-24	08:18	28-May-24	15:04	571	791	447	634	436	617
pH [No unit]	28-May-24	08:18	28-May-24	15:04	7.92	7.76	8.00	7.93	8.07	7.71
Temperature @ pH [°C]	28-May-24	08:18	28-May-24	15:04	18.7	17.5	17.3	17.0	17.2	19.0
Organic Nitrogen [mg/L]	27-May-24	16:01	30-May-24	07:35	0.6	0.6	< 0.5	0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	27-May-24	16:01	29-May-24	12:47	0.7	0.6	< 0.5	0.5	< 0.5	< 0.5
Unionized Ammonia [mg/L as N]	27-May-24	18:00	29-May-24	12:49	0.003	< 0.001	<0.002	<0.002	<0.002	< 0.001
Ammonia+Ammonium (N) [as N mg/L]	27-May-24	18:00	28-May-24	12:40	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4AAP-Phenolics [mg/L]	28-May-24	12:56	29-May-24	08:18	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	28-May-24	14:32	31-May-24	10:46	2	2	2	2	1	12
Phosphorus (total) [mg/L]	30-May-24	14:49	31-May-24	14:31	---	---	---	---	---	---
Phosphorus (dissolved reactive) [mg/L]	27-May-24	14:15	28-May-24	08:32	---	---	---	---	---	---
Chloride [mg/L]	31-May-24	13:15	31-May-24	16:15	2	< 1	< 1	< 1	< 1	< 1
Sulphate [mg/L]	31-May-24	13:13	31-May-24	16:15	8	5	< 2	5	17	< 2
Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	0.04	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.06	0.49	< 0.06	< 0.06	< 0.06	< 0.06
Nitrate + Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.06	0.49	< 0.06	< 0.06	< 0.06	< 0.06
Hardness (dissolved) [mg/L as CaCO3]	30-May-24	21:06	30-May-24	12:33	321	476	257	370	226	353
Magnesium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	32.2	36.2	17.6	31.4	22.5	22.1
Calcium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	75.7	131	73.9	96.3	53.3	105
Iron (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	< 0.007	0.014	< 0.007	< 0.007	< 0.007	< 0.007
Sodium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	2.48	0.88	0.49	2.23	15.1	0.97
Phosphorus (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	0.011	< 0.003	< 0.003	0.055	0.060	< 0.003

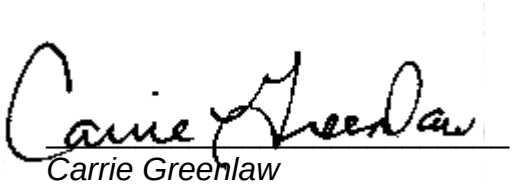
Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

OnLine LIMS

0003731227

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA12872-MAY24**



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003731227

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

03-June-2024

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Phone: 519-797-2561
Fax:pdf

Date Rec. : 26 May 2024
LR Report: **CA12872-MAY24**

Copy: #1

CERTIFICATE OF ANALYSIS

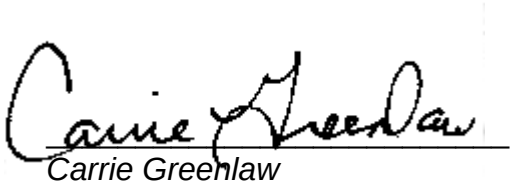
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	27: Well 7S-	28: Well 60-	29: Well 61-
Sample Date & Time					22-May-24 09:35	23-May-24 10:50	23-May-24 11:00
Temperature Upon Receipt [°C]	---	---	---	---	19.0	19.0	19.0
Alkalinity [mg/L as CaCO3]	28-May-24	08:18	28-May-24	15:04	250	300	276
Conductivity [uS/cm]	28-May-24	08:18	28-May-24	15:04	431	900	702
pH [No unit]	28-May-24	08:18	28-May-24	15:04	8.14	7.80	8.16
Temperature @ pH [°C]	28-May-24	08:18	28-May-24	15:04	19.4	18.9	18.9
Organic Nitrogen [mg/L]	27-May-24	16:01	30-May-24	07:35	< 0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	27-May-24	16:01	29-May-24	12:47	< 0.5	< 0.5	< 0.5
Unionized Ammonia [mg/L as N]	27-May-24	18:00	29-May-24	12:49	<0.003	< 0.001	<0.003
Ammonia+Ammonium (N) [as N mg/L]	27-May-24	18:00	28-May-24	12:40	< 0.1	< 0.1	< 0.1
4AAP-Phenolics [mg/L]	28-May-24	12:56	29-May-24	08:18	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	28-May-24	14:32	31-May-24	10:46	3	2	1
Phosphorus (total) [mg/L]	30-May-24	14:49	31-May-24	14:31	0.09	---	---
Phosphorus (dissolved reactive) [mg/L]	27-May-24	14:15	28-May-24	08:32	< 0.03	---	---
Chloride [mg/L]	31-May-24	13:15	31-May-24	16:15	< 1	140	57
Sulphate [mg/L]	31-May-24	13:13	31-May-24	16:15	5	31	26
Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.06	0.91	0.11
Nitrate + Nitrite (as N) [mg/L]	28-May-24	12:42	30-May-24	07:35	< 0.06	0.91	0.11
Hardness (dissolved) [mg/L as CaCO3]	30-May-24	21:06	30-May-24	12:33	243	320	316
Magnesium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	19.7	23.4	27.3
Calcium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	64.9	89.5	81.5
Iron (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	< 0.007	0.007	< 0.007
Sodium (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	0.79	70.3	31.1
Phosphorus (dissolved) [mg/L]	30-May-24	21:06	30-May-24	12:33	0.003	0.052	0.032

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA12872-MAY24**



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003731232

Ontario Clean Water Agency - Request for Laboratory Services and CHAIN OF CUSTODY - GROUNDWATER (SUMMER (AUGUST) LIMITED) Aug - 13510 NP

Waterworks/Project #	**120001577**
Facility Name	**Tobermory Sewage Treatment Plant**
Org. #	**1132**
Quote #	
Attached Parameter List	☐ No ☐ Yes

C of C LIMS No:

Laboratory Section

Date Rec'd: AUG 0 9 2024 Time Rec'd

Sample condition upon receipt

Initials

Temperature Upon Receipt 22 x 3 °C

Identification of Regulation under which the sample(s) fall: No Requirement to Report Sample Results Under Any Regulation for Wastewater Treatment

Requested Turnaround Time: **La b 24-48 h ☐ 5-7d ☒ 7-10d ☐ ☐ Other Specify:

	Report to: Process & Compliance Technician (PCT)	Data Transfer Contact: PCT	Invoice To: Ontario Clean Water Agency	Laboratory: SGS Lakefield
Address:	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	185 Concession St. Lakefield, ON K0L 2H0
Telephone:	519-374-5782	519-374-5782	(519) 797-2561	705-652-2000
Fax:	(519) 797-3080	(519) 797-3080	(519) 797-3080	705-652-6365
Email:	kyoung@ocwa.com	kyoung@ocwa.com	apwesthighlands@ocwa.com	carne.greenlaw@sgs.com

Sample						Type		Parameters																		Comments	Upload to OCWA
Station Acronym	Station Number (Short Name)		Sample Location Name	Date & Time Collected	Bottles	Alkalinity	Conductivity	Free Ammonia	Phenols	pH	Chloride	Sulphates	Nitrite	Magnesium	Iron	Nitrate	Calcium	Hardness	Sodium	DOC	Organic Nitrogen	TKN	Dissolved Reactive Phosphorus	Total Phosphorous		
Well01	OW6-S	-	Dry	08:50 08/08/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Dry	Yes ☒ No ☐
Well03	OW6-I	-		08:55 08/08/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				Yes ☒ No ☐
Well02	OW6-D	-		09:00 08/08/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Yes ☒ No ☐
Well25	OW7-S	-	DRY	13:15 08/07/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Dry	Yes ☒ No ☐
Well18	OW9-S	-		13:30 08/07/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Yes ☒ No ☐
Well19	OW9-I	-		13:35 08/07/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				Yes ☒ No ☐
Well20	OW9-D	-		13:40 08/07/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				Yes ☒ No ☐
Well23	OW10-S	-		09:40 08/08/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Yes ☒ No ☐
Well24	OW11-S	-		09:30 08/08/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Yes ☒ No ☐
Well10	OW12-S	-		09:10 08/08/24	Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		Yes ☒ No ☐

Sampler Name: Billy Shearer

Sampler Signature: Billy

6084875999045
HC RTN NP
09:45

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

20-August-2024

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

Date Rec. : 09 August 2024
LR Report: **CA13510-AUG24**

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Copy: #1

Phone: 519-797-2561
Fax:pdf

CERTIFICATE OF ANALYSIS

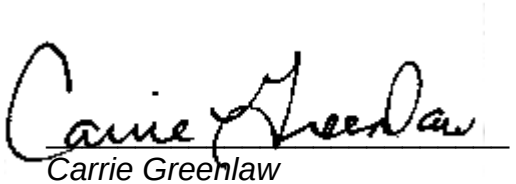
Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Well03-OW6-I (Well 3)	6: Well02-OW6-D (Well 2)	7: Well18-OW9-S (Well 18)	8: Well19-OW9-I (Well 19)	9: Well20-OW9-D (Well 20)	10: Well23-OW10-S (Well 23)	11: Well24-OW11-S (Well 24)	12: Well10-OW12-S (Well 10)
Sample Date & Time					08-Aug-24 08:55	08-Aug-24 09:00	07-Aug-24 13:30	07-Aug-24 13:35	07-Aug-24 13:40	08-Aug-24 09:40	08-Aug-24 09:30	08-Aug-24 09:10
Temperature Upon Receipt [°C]	---	---	---	---	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Alkalinity [mg/L as CaCO3]	09-Aug-24	15:41	13-Aug-24	09:41	328	279	310	261	238	220	349	321
Conductivity [uS/cm]	09-Aug-24	15:41	13-Aug-24	09:41	591	490	521	492	441	396	613	993
pH [No unit]	09-Aug-24	15:41	13-Aug-24	09:41	7.96	8.04	8.08	8.11	8.09	8.12	8.01	7.96
Temperature @ pH [°C]	09-Aug-24	15:41	13-Aug-24	09:41	20.8	22.4	22.5	22.0	22.4	20.5	22.5	22.5
Organic Nitrogen [mg/L]	13-Aug-24	16:47	16-Aug-24	16:38	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	13-Aug-24	16:47	14-Aug-24	13:36	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Unionized Ammonia [mg/L as N]	15-Aug-24	19:29	16-Aug-24	11:18	0.007	0.014	0.005	0.009	0.007	0.008	0.008	0.004
Ammonia+Ammonium (N) [as N mg/L]	15-Aug-24	19:29	16-Aug-24	11:18	0.2	0.3	< 0.1	0.2	0.1	0.2	0.2	0.1
4AAP-Phenolics [mg/L]	12-Aug-24	12:52	13-Aug-24	08:35	< 0.002	< 0.002	0.002	< 0.002	< 0.002	< 0.002	0.002	< 0.002
Dissolved Organic Carbon [mg/L]	12-Aug-24	13:19	14-Aug-24	10:16	1	1	1	< 1	< 1	2	1	3
Phosphorus (total) [mg/L]	13-Aug-24	15:09	14-Aug-24	10:16	---	0.09	0.04	---	---	0.94	< 0.03	< 0.03
Phosphorus (dissolved reactive) [mg/L]	12-Aug-24	13:57	14-Aug-24	08:58	---	< 0.03	< 0.03	---	---	< 0.03	< 0.03	< 0.03
Chloride [mg/L]	14-Aug-24	10:57	15-Aug-24	13:36	2	1	< 1	2	< 1	< 1	1	150
Sulphate [mg/L]	14-Aug-24	10:56	15-Aug-24	13:36	9	6	< 2	20	14	14	12	20
Nitrite (as N) [mg/L]	13-Aug-24	17:26	16-Aug-24	09:50	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	13-Aug-24	17:26	16-Aug-24	09:50	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.84	0.18
Nitrate + Nitrite (as N) [mg/L]	13-Aug-24	17:26	16-Aug-24	09:50	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	0.84	0.18
Hardness (dissolved) [mg/L as CaCO3]	12-Aug-24	18:38	13-Aug-24	11:04	314	250	275	250	224	207	323	304
Magnesium (dissolved) [mg/L]	12-Aug-24	18:38	13-Aug-24	11:04	31.6	25.2	24.8	24.8	23.1	20.2	28.3	20.5
Calcium (dissolved) [mg/L]	12-Aug-24	18:38	13-Aug-24	11:04	73.6	58.5	69.4	59.1	51.5	49.4	82.8	88.1
Iron (dissolved) [mg/L]	12-Aug-24	18:38	13-Aug-24	11:04	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Sodium (dissolved) [mg/L]	12-Aug-24	18:38	13-Aug-24	11:04	2.52	6.51	0.92	5.36	3.64	2.98	1.36	77.4
Phosphorus (dissolved) [mg/L]	12-Aug-24	18:38	13-Aug-24	11:04	< 0.003	0.007	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA13510-AUG24**



Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0003825462

Oct 2024

1/2

Ontario Clean Water Agency - Request for Laboratory Services and CHAIN OF CUSTODY - SEWAGE (3 YEARS, OCTOBER)

~~Page 1 of 1~~

Waterworks/Project #	120001577	C of C LIMS No:	Oct - 15168
Facility Name	Tobermory Sewage Treatment Plant	Laboratory Section	Sample Condition Upon Receipt: SR
Org. #	1132	Date Rec'd:	OCT 18 2024 Initials:
Quote #			
Attached Parameter List	No / Yes	Temperature Upon Receipt	14 x 3.

Identification of Regulation under which the sample(s) fall: No Requirement to Report Sample Results Under Any Regulation for Wastewater Treatment

Requested Turnaround Time: **Lab App. 24-48 h [ ] [X] 5-7d [ ] Other Specify:

	Report to: Process & Compliance Technician (PCT)	Data Transfer Contact: PCT	Invoice To: Ontario Clean Water Agency	Laboratory: SGS Lakefield Research Ltd
Address:	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	185 Concession St. Lakefield, ON K0L 2H0
Telephone:	519-374-5782	519-374-5782	519-797-2561	705-652-2000
Fax:	(519) 797-3080	(519) 797-3080	(519) 797-3080	705-652-6365
Email:	kyeung@ocwa.com	sydunlop@ocwa.com	apwestlighlands@ocwa.com	carrie.greenaway@sgs.com

Sample					Type		Parameters						Comments	Upload to OCWA
Station Acronym	Station Number (Short Name)		Sample Location Name	Date & Time Collected	Bottles	Aluminum	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Zinc	
Well04	OW5-S	-	16-10-24	14:55	Kit	x	x	x	x	x	x	x	x	DRY	Yes [X] No [ ]
Well05	OW5-I	-	~~14:24~~ 16-10-24	14:45	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well06	OW5-D	-	16-10-24	15:00	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well20	OW9-D	-	15-10-24	12:40	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well19	OW9-I	-	15-10-24	12:45	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well18	OW9-S	-	15-10-24	12:50	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well16	OW8-I	-	15-10-24	13:10	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well17	OW8-D	-	15-10-24	13:15	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well23	OW10-S	-	16-10-24	14:20	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well24	OW11-S	-	16-10-24	14:10	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well10	OW12-S	-	16-10-24	14:00	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well22	OW1-D	-	16-10-24	13:50	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well21	OW1-I	-	16-10-24	13:40	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well01	OW6-S	-	16-10-24	13:15	Kit	x	x	x	x	x	x	x	x	DRY	Yes [X] No [ ]
Well03	OW6-I	-	16-10-24	13:20	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well02	OW6-D	-	16-10-24	13:30	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well13	OW57	-	16-10-24	12:50	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well12	OW56	-	15-10-24	14:00	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well07	OW2-S	-	15-10-24	13:30	Kit	x	x	x	x	x	x	x	x	DRY	Yes [X] No [ ]
Well08	OW2-I	-	15-10-24	13:35	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well09	OW2-D	-	15-10-24	13:45	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well11	OW55	-	16-10-24	12:40	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well25	OW7-S	-	15-10-24	13:20	Kit	x	x	x	x	x	x	x	x	DRY	Yes [X] No [ ]
Well14	OW60	-	16-10-24	14:30	Kit	x	x	x	x	x	x	x	x	14:30	Yes [X] No [ ]
Well15	OW61	-	16-10-24	14:35	Kit	x	x	x	x	x	x	x	x		Yes [X] No [ ]
Well26	OW8-S	-	15-10-24	13:05	Kit	x	x	x	x	x	x	x	x	DRY	Yes [X] No [ ]

Sampler Name: Billy Shearer

Sampler Signature: Billy

Revision #6

Revised: 2024.07.19

HCRTN

p# 608793683897 SR.

608793683905

10:30

Ontario Clean Water Agency - Request for Laboratory Services and CHAIN OF CUSTODY - GROUNDWATER (MAY&OCTOBER, EXTENDED)

Waterworks/Project #	**120001577**	**C of C LIMS No:**	
Facility Name	**Tobermory Sewage Treatment Plant**	**Laboratory Section**	Sample condition upon receipt:
Org. #	**1132**	Date Rec'd:	Time Rec'd:
Quote #			Initials:
Attached Parameter List	No ☐ Yes ☐	Temperature Upon Receipt	°C

Identification of Regulation under which the sample(s) fall: No Requirement to Report Sample Results Under Any Regulation for Wastewater Treatment

Requested Turnaround Time: **La b ☐ 24-48 h ☐ 5-7d ☒ 7-10d ☐ Other ☐ Specify:

	Report to: Process & Compliance Tech (PCT)	Data Transfer Contact: PCT	Invoice To: Ontario Clean Water Agency	Laboratory: SGS Lakefield Research Ltd
Address:	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	18 Caroline Street Southampton, ON N0H 2L0	185 Concession St. Lakefield, ON K0L 2H0
Telephone:	519-374-5782	519-374-5782	519-797-2561	705-652-2000
Fax:	(519) 797-3080	(519) 797-3080	(519) 797-3080	705-652-6365
Email:	kyoung@ocwa.com	kyoung@ocwa.com	apwesthighlands@ocwa.com	carrie.greenlaw@sgs.com

Sample						Type		Parameters																Comments	Upload to OCWA
Station Acronym	Station Number (Short Name)		Sample Location Name	Date & Time Collected	Bottles	Alkalinity	Conductivity	Free Ammonia	Phenols	pH	Chloride	Sulphates	Nitrite	Magnesium	Iron	Nitrate	Calcium	Hardness	Sodium	DOC	Organic Nitrogen	TKN	Dissolved Reactive Phosphorus	Total Phosphorous		
Well04	OW5-S	-	16-Oct-24	14:55	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	DRY	Yes ☒ No ☐
Well05	OW5-I	-	16-Oct-24	14:45	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well06	OW5-D	-	16-Oct-24	15:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well20	OW9-D	-	15-Oct-24	12:40	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well19	OW9-I	-	15-Oct-24	12:45	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well18	OW9-S	-	15-Oct-24	12:50	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well16	OW8-I	-	15-Oct-24	13:10	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well17	OW8-D	-	15-Oct-24	13:15	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well23	OW10-S	-	16-Oct-24	14:20	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well24	OW11-S	-	16-Oct-24	14:10	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well10	OW12-S	-	16-Oct-24	14:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Yes ☒ No ☐
Well22	OW1-D	-	16-Oct-24	13:50	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well21	OW1-I	-	16-Oct-24	13:40	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well01	OW6-S	-	16-Oct-24	13:15	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	DRY	Yes ☒ No ☐
Well03	OW6-I	-	16-Oct-24	13:20	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well02	OW6-D	-	16-Oct-24	13:30	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well13	OW57	-	16-Oct-24	12:50	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well12	OW56	-	15-Oct-24	14:00	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well07	OW2-S	-	15-Oct-24	13:30	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	DRY	Yes ☒ No ☐
Well08	OW2-I	-	15-Oct-24	13:35	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well09	OW2-D	-	15-Oct-24	13:45	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well11	OW55	-	16-Oct-24	12:40	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well25	OW7-S	-	16-Oct-24	13:20	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	DRY	Yes ☒ No ☐
Well14	OW60	-	16-Oct-24	14:30	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well15	OW61	-	16-Oct-24	14:35	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				Yes ☒ No ☐
Well26	OW8-S	-	16-Oct-24	13:05	Kit	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	DRY	Yes ☒ No ☐

Sampler Name: Billy Shearer

Sampler Signature:

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

24-March-2025

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Phone: 519-797-2561
Fax:pdf

Date Rec. : 18 October 2024
LR Report: **CA15168-OCT24**

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Well 5I-OW5-I (Well 5)	6: Well 5D-OW5-D (Well 6)	7: Well 9D-OW9-D (Well 20)	8: Well 9I-OW9-I (Well 19)	9: Well 9S-OW9-S (Well 18)	10: Well 8I-OW8-I (Well 16)	11: Well 8D-OW8-D (Well 17)	12: Well 10S-OW10-S (Well 23)
Sample Date & Time					16-Oct-24 14:45	16-Oct-24 15:00	15-Oct-24 12:40	15-Oct-24 12:45	15-Oct-24 12:50	15-Oct-24 13:10	15-Oct-24 13:15	16-Oct-24 14:20
Temperature Upon Receipt [°C]	---	---	---	---	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Alkalinity [mg/L as CaCO3]	21-Oct-24	08:19	22-Oct-24	12:46	185	203	224	241	285	310	270	253
Conductivity [uS/cm]	21-Oct-24	08:19	22-Oct-24	12:46	474	848	436	476	546	498	513	383
pH [No unit]	21-Oct-24	08:19	22-Oct-24	12:46	8.02	7.62	8.27	8.03	8.07	8.16	8.09	8.11
Temperature @ pH [°C]	21-Oct-24	08:19	22-Oct-24	12:46	20.3	20.4	22.7	21.0	20.4	20.6	20.4	20.8
Organic Nitrogen [mg/L]	22-Oct-24	15:34	23-Oct-24	11:20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	22-Oct-24	15:34	23-Oct-24	11:20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Unionized Ammonia [mg/L as N]	22-Oct-24	17:43	23-Oct-24	11:04	0.004	0.002	0.005	0.002	0.007	0.006	0.005	0.019
Ammonia+Ammonium (N) [as N mg/L]	22-Oct-24	17:43	23-Oct-24	11:03	0.1	< 0.1	< 0.1	< 0.1	0.2	0.1	0.1	0.4
4AAP-Phenolics [mg/L]	21-Oct-24	14:09	22-Oct-24	09:51	< 0.002	0.016	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	21-Oct-24	21:13	23-Oct-24	10:13	4	58	< 1	< 1	1	< 1	1	2
Phosphorus (total) [mg/L]	22-Oct-24	19:08	24-Oct-24	15:27	---	---	---	---	0.08	---	---	1.84
Phosphorus (dissolved reactive) [mg/L]	22-Oct-24	11:08	23-Oct-24	07:44	---	---	---	---	< 0.03	---	---	< 0.03
Chloride [mg/L]	21-Oct-24	10:48	23-Oct-24	12:32	37	150	< 1	2	1	5	5	< 1
Sulphate [mg/L]	21-Oct-24	10:53	23-Oct-24	12:32	9	5	14	19	3	10	13	16
Nitrite (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	0.10	< 0.06	< 0.06	< 0.06	< 0.06	0.15	0.10	< 0.06
Nitrate + Nitrite (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	0.10	< 0.06	< 0.06	< 0.06	< 0.06	0.15	0.10	< 0.06
Hardness (dissolved) [mg/L as CaCO3]	22-Oct-24	09:04	24-Oct-24	08:58	186	224	215	234	295	226	242	193
Aluminum (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003
Barium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.0134	0.0234	0.0299	0.0250	0.00649	0.00773	0.0110	0.0370
Cadmium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.000012	< 0.000003	0.000006	0.000005	0.000005	< 0.000003	0.000007	0.000003
Chromium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.00008	0.00009	< 0.00008	< 0.00008	0.00010	< 0.00008	< 0.00008	0.00014
Copper (dissolved) [mg/L]	22-Oct-24	09:04	24-Mar-25	09:02	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.00009	< 0.00009	< 0.00009	< 0.00009	0.00015	< 0.00009	< 0.00009	< 0.00009
Manganese (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.0676	0.359	0.00148	0.00084	0.00039	0.00024	0.00050	0.00510
Magnesium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	12.4	16.1	21.0	22.2	25.1	21.3	22.1	18.3
Calcium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	54.2	63.1	51.2	57.0	76.6	55.5	60.4	47.1

OnLine LIMS

0004054487

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA15168-OCT24**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Well 5I-OW5-I (Well 5)	6: Well 5D-OW5-D (Well 6)	7: Well 9D-OW9-D (Well 20)	8: Well 9I-OW9-I (Well 19)	9: Well 9S-OW9-S (Well 18)	10: Well 8I-OW8-I (Well 16)	11: Well 8D-OW8-D (Well 17)	12: Well 10S-OW10-S (Well 23)
Iron (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.020	0.228	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Sodium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	21.3	69.2	3.22	4.75	0.90	1.72	1.24	2.53
Phosphorus (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.021	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Zinc (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

*Report revised to include Copper results.

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0004054487

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

24-March-2025

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

Date Rec. : 18 October 2024
LR Report: **CA15168-OCT24**

Copy: #2

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Phone: 519-797-2561
Fax:pdf

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	13: Well 11S-OW11-S (Well 24)	14: Well 12S-OW12-S (Well 10)	15: Well 1D-OW1-D (Well 22)	16: Well 1I-OW1-I (Well 21)	17: Well 6I-OW6-I (Well 3)	18: Well 6D-OW6-D (Well 2)	19: Well 57-OW57 (Well 13)	20: Well 56-OW56 (Well 12)
Sample Date & Time					16-Oct-24 14:10	16-Oct-24 14:00	16-Oct-24 13:50	16-Oct-24 13:40	16-Oct-24 13:20	16-Oct-24 13:30	16-Oct-24 12:50	15-Oct-24 14:00
Temperature Upon Receipt [°C]	---	---	---	---	14.0	14.0	14.0	14.0	14.0	14.0	14.0	14.0
Alkalinity [mg/L as CaCO3]	21-Oct-24	08:19	22-Oct-24	12:46	322	296	285	358	318	266	479	389
Conductivity [uS/cm]	21-Oct-24	08:19	22-Oct-24	12:46	616	899	495	641	574	474	843	659
pH [No unit]	21-Oct-24	08:19	22-Oct-24	12:46	7.95	7.92	8.10	7.71	7.69	7.70	7.68	7.32
Temperature @ pH [°C]	21-Oct-24	08:19	22-Oct-24	12:46	19.6	18.5	19.0	19.4	20.1	17.9	19.0	18.7
Organic Nitrogen [mg/L]	22-Oct-24	15:34	23-Oct-24	11:20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	22-Oct-24	15:34	23-Oct-24	11:20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Unionized Ammonia [mg/L as N]	22-Oct-24	17:43	23-Oct-24	11:04	<0.002	0.002	0.007	0.002	0.004	0.003	0.001	< 0.001
Ammonia+Ammonium (N) [as N mg/L]	22-Oct-24	17:43	23-Oct-24	11:03	< 0.1	< 0.1	0.2	0.1	0.2	0.2	< 0.1	0.1
4AAP-Phenolics [mg/L]	21-Oct-24	14:09	22-Oct-24	09:51	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	21-Oct-24	21:13	23-Oct-24	10:13	2	2	< 1	2	1	< 1	2	2
Phosphorus (total) [mg/L]	22-Oct-24	19:08	24-Oct-24	15:27	< 0.03	0.04	---	---	---	---	---	---
Phosphorus (dissolved reactive) [mg/L]	22-Oct-24	11:08	23-Oct-24	07:44	< 0.03	< 0.03	---	---	---	---	---	---
Chloride [mg/L]	21-Oct-24	10:48	23-Oct-24	12:32	2	100	1	< 1	2	< 1	< 1	< 1
Sulphate [mg/L]	21-Oct-24	10:53	23-Oct-24	12:32	11	19	9	3	9	6	4	< 2
Nitrite (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	0.52	0.40	< 0.06	< 0.06	< 0.06	< 0.06	0.37	< 0.06
Nitrate + Nitrite (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	0.52	0.40	< 0.06	< 0.06	< 0.06	< 0.06	0.37	< 0.06
Hardness (dissolved) [mg/L as CaCO3]	22-Oct-24	09:04	24-Oct-24	08:58	331	301	217	335	290	241	493	340
Aluminum (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.003
Barium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.00723	0.0159	0.0205	0.00866	0.0460	0.0233	0.0111	0.00738
Cadmium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.000003	0.000003	0.000005	0.000004	0.000004	< 0.000003	< 0.000003	0.000008
Chromium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.00009	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Copper (dissolved) [mg/L]	22-Oct-24	09:04	24-Mar-25	09:02	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Lead (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Manganese (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.00014	0.00006	0.00628	0.00146	0.0124	0.0144	0.00385	0.0175
Magnesium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	26.8	18.9	20.9	26.6	27.6	22.9	32.8	21.8
Calcium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	88.4	89.4	52.6	90.3	70.9	58.8	143	100

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA15168-OCT24**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	13: Well 11S-OW11-S (Well 24)	14: Well 12S-OW12-S (Well 10)	15: Well 1D-OW1-D (Well 22)	16: Well 1I-OW1-I (Well 21)	17: Well 6I-OW6-I (Well 3)	18: Well 6D-OW6-D (Well 2)	19: Well 57-OW57 (Well 13)	20: Well 56-OW56 (Well 12)
Iron (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
Sodium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	1.40	65.4	17.0	2.18	2.22	5.49	0.70	0.74
Phosphorus (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.003	< 0.003	0.027	0.200	< 0.003	0.008	0.004	< 0.003
Zinc (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

*Report revised to include Copper results.

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0004054492

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018

24-March-2025

OCWA-Grey Bruce (Tobermory Sewage Plant)
Attn : Karla Young

Date Rec. : 18 October 2024
LR Report: **CA15168-OCT24**

P.O. Box 760
Southampton, ON
N0H 2L0, Canada

Copy: #2

Phone: 519-797-2561
Fax:pdf

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	21: Well 2I-OW2-I (Well 8)	22: Well 2D-OW2-D (Well 9)	23: Well 55-OW55 (Well 11)	24: Well 60-OW60 (Well 14)	25: Well 61-OW61 (Well 15)
Sample Date & Time					15-Oct-24 13:35	15-Oct-24 13:45	15-Oct-24 12:40	15-Oct-24 14:30	15-Oct-24 14:35
Temperature Upon Receipt [°C]	---	---	---	---	14.0	14.0	14.0	14.0	14.0
Alkalinity [mg/L as CaCO3]	21-Oct-24	08:19	22-Oct-24	12:46	377	155	346	315	257
Conductivity [uS/cm]	21-Oct-24	08:19	22-Oct-24	12:46	670	335	630	1090	645
pH [No unit]	21-Oct-24	08:19	22-Oct-24	12:46	7.88	7.83	7.03	7.61	7.68
Temperature @ pH [°C]	21-Oct-24	08:19	22-Oct-24	12:46	21.4	21.2	17.5	17.5	17.4
Organic Nitrogen [mg/L]	22-Oct-24	15:34	23-Oct-24	11:20	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total Kjeldahl Nitrogen [as N mg/L]	22-Oct-24	15:34	23-Oct-24	11:20	< 0.5	< 0.5	< 0.5	0.6	< 0.5
Unionized Ammonia [mg/L as N]	22-Oct-24	17:43	23-Oct-24	11:04	0.001	0.001	< 0.001	0.002	< 0.001
Ammonia+Ammonium (N) [as N mg/L]	22-Oct-24	17:43	23-Oct-24	11:03	< 0.1	< 0.1	0.1	0.1	< 0.1
4AAP-Phenolics [mg/L]	21-Oct-24	14:09	22-Oct-24	09:51	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
Dissolved Organic Carbon [mg/L]	21-Oct-24	21:13	23-Oct-24	10:13	1	1	24	4	2
Phosphorus (total) [mg/L]	22-Oct-24	19:08	24-Oct-24	15:27	---	---	---	---	---
Phosphorus (dissolved reactive) [mg/L]	22-Oct-24	11:08	23-Oct-24	07:44	---	---	---	---	---
Chloride [mg/L]	21-Oct-24	10:48	23-Oct-24	12:32	< 1	< 1	< 1	180	49
Sulphate [mg/L]	21-Oct-24	10:53	23-Oct-24	12:32	4	7	< 2	44	20
Nitrite (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	< 0.03	0.11	< 0.03	< 0.03	< 0.03
Nitrate (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	< 0.06	3.12	< 0.06	0.11	0.09
Nitrate + Nitrite (as N) [mg/L]	19-Oct-24	08:25	22-Oct-24	12:51	< 0.06	3.23	< 0.06	0.11	0.09
Hardness (dissolved) [mg/L as CaCO3]	22-Oct-24	09:04	24-Oct-24	08:58	359	143	347	341	270
Aluminum (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Barium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.0199	0.0195	0.0194	0.0111	0.0120
Cadmium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.000006	< 0.000003	< 0.000003	0.000006	0.000003
Chromium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.00008	< 0.00008	< 0.00008	< 0.00008	< 0.00008
Copper (dissolved) [mg/L]	22-Oct-24	09:04	24-Mar-25	09:02	< 0.001	< 0.001	< 0.001	0.001	< 0.001
Lead (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.00009	< 0.00009	< 0.00009	< 0.00009	< 0.00009
Manganese (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.0154	0.00004	0.414	0.0875	0.00235
Magnesium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	28.7	17.2	19.9	25.4	21.7
Calcium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	96.3	28.8	106	94.5	72.2

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 120001577
Project : PO#017018
LR Report : **CA15168-OCT24**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	21: Well 2I-OW2-I (Well 8)	22: Well 2D-OW2-D (Well 9)	23: Well 55-OW55 (Well 11)	24: Well 60-OW60 (Well 14)	25: Well 61-OW61 (Well 15)
Iron (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.007	< 0.007	< 0.007	0.007	< 0.007
Sodium (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	1.81	7.00	0.82	86.2	24.8
Phosphorus (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	0.071	0.042	< 0.003	0.060	0.013
Zinc (dissolved) [mg/L]	22-Oct-24	09:04	24-Oct-24	08:58	< 0.002	0.004	< 0.002	< 0.002	< 0.002

Note: Provincial unionized ammonia calculated using lab results for pH and temperature.

*Report revised to include Copper results.

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0004054496

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix C

Sludge Haulage Volumes

2024- Parks Canada Hauled Sewage

		January	February	March	April	May	June	July	August	September	October	November	December	TOTAL
Scott Septic Pumping	Cyprus Lake Park					189,000	287,000	420,000	420,000	231,000	87,500	45,500		**1,680,000**
Bruce Peninsula Septic Service	Cyprus Lake				8,300					14,800				**23,100**
	120 Chi sin tib dek Road							200						**200**
	Total	**0**	**0**	**0**	**8,300**	**189,000**	**287,000**	**420,200**	**420,000**	**245,800**	**87,500**	**45,500**	**0**	**1,703,300**

7,743 m3

*amounts in gallons

1,703,300 Imperial gallons is equivalent to 7,743355.097 litres (1 Imperial Gallon = 4.54609 litres)

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix D
Calibration Reports

ABB MEASUREMENT & ANALYTICS | TEST REPORT

ABB Ability™

Verification for measurement devices

Verification Report for:

WaterMaster

Measurement made easy

Measurement & Analytics
Service

Installation Details

Meter Owner	
Machine Name	
Medium	

Customer Details

Site Address	Tobermory SPS
Telephone	
Email	

Operator Details

Date and Time	30-05-2024 14:48:40
Operator's Name	Admin
Operator's Signature	

Overall Status - Passed

The flowmeter has passed its internal continuous verification and automatic self-calibration. It is working within +/- 2% of original factory calibration.

ABB Ability Verification for measurement devices verifies the function of the measurement product within the specification limits over the lifetime of the device with a total test coverage > 90% and complies with the requirements for traceable verification according to DIN EN ISO 9001:2015 - section 8.5

Sensor Information

Sensor Serial No.	1
Sensor SAP/ERP No.	3K620000270131
Sensor Type	WM Full Bore
Sensor Size	DN 150
Q3	25.000 l/s
Calibration Accuracy	OIML Class 2
Sensor Calibration Factors	140.253 %, -4.301 mm/s
Date of Manufacture	10:20:07 2018/06/27
Sensor User Span/Zero	100.000 %, 0.000 mm/s
User Flow Cutoff/Hysteresis	1.000 %, 20.000 %
Coil Current	180.000 mA
Coil Inductance	153.932 mH
Coil / Loop Resistance	35.600 Ohm

Transmitter Information

Transmitter Serial No	9033561
Transmitter SAP/ERP No.	3K620000270131
Application Version	V01.07.00 03/02/17
MSP Version	01.00.00
Date of Manufacture	16:06:06 2018/04/18
Tx Gain Adjustment	0.036 %
OIML Accuracy Alarms	OFF
Mains Freq	60.000 Hz
Qmax	25.000 l/s
Pulses/Unit	30.000
FS Freq	0.750 Hz
Pulses Limit Freq	1200.000 Hz
Meter Mode	Forward And Reverse

Summary Verification of the Sensor

Summary of Results

Coil Group	PASS
Electrode Group	PASS
Sensor Group	PASS
Transmitter Signal	PASS
Transmitter Driver	PASS
Configuration	PASS

Sensor Data

Coil Inductance Shift	0.000 %
Cable Length	0 m
Electrode Backoff Voltage	0.199 V
Electrode Differential Voltage	-0.034 V

Pipe Status	**Full Pipe**

Summary Verification of the Transmitter

Output Group	
Current Output 31/32	**PASS**

Applied	Measured	Result
4 mA	4.000 mA	PASS
12 mA	11.986 mA	PASS
20 mA	20.000 mA	PASS

Pulse Output 41/42	**NOT EXECUTED**

Applied	Measured	Result
5250 Hz		
2625 Hz		

Pulse Output 51/52	**NOT EXECUTED**

Applied	Measured	Result
5250 Hz		
2625 Hz		

Totalizer Information

	Start	End	Difference
Forward	425172.000 m³	425172.000 m³	0.000 m³
Reverse	465.000 m³	465.000 m³	0.000 m³
Net	424707.000 m³	424707.000 m³	0.000 m³

Comments (Installation, Grounding etc.)

DMM-20 used for mA Output readings

Verification Certificate has been generated by ABB Ability Verification for measurement devices variant "Licensed software testing" (ABB WaterMaster VDF Version 03.34).

ABB Ability Verification for measurement devices Version 04.00.00.7

—

To find your local ABB contact, visit:
abb.com/contacts

For more information, visit:
abb.com/measurement

—

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Appendix E

Biosolids Volume Modeling and Distribution Surveys for Lagoon Cells 1 & 2

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

Ontario Clean Water Agency

Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Hydrographic Acoustic Sonar
Biosolids Volume Modeling and Distribution Survey

Date; July 23, 2020.

Tobermory Wastewater Biosolids Primary Retention - Cell #1.

Prepared For: Mr. Leo-Paul Frigault
Operations Manager
Ontario Clean Water Agency
West Highlands Hub
Wiarton, On

Prepared By: Paul Makar
PW MAKAR INSPECTION SERVICES LTD.

TABLE OF CONTENT

1.0 INTRODUCTION

1.1 The Ontario Clean Water Agency contracted PW MAKAR INSPECTION SERVICES LTD. to conduct a Hydrographic Acoustic Sonar Biosolids Volume Modeling and Distribution Survey of the Tobermory primary retention wastewater-biosolids Cell #1.

1.2 The intent of this survey was to determine biosolids sludge volumes, identify biosolids sludge distribution patterns and loading areas within the Tobermory primary retention wastewater-biosolids Cell #1.

1.3 The Tobermory primary biosolids Cell #1 has an aeration mixing system, which was turned off for a period of 6 days prior to the hydrographic survey. This was to allow the suspended sludge particulate matter to settle and to dissipate any air pockets trapped within the biosolids sludge.

1.4 The survey was performed using a multi-frequency (200, 50 and a 12 kHz) acoustic profiling system in the shallow wastewater of the Tobermory Biosolids Cell #1. “Generally”, PW MAKAR has a two person survey crew conducting the multi patterns of survey lines. A manned vessel motor operator and safety advisor and a sonar technician, taking sludge samples, calibrating, setting the transduce frequencies and monitoring the raw data streaming from the remote controlled survey vessels onboard computer system to the Toughbook computer system in the manned vessel. The remote controlled survey vessel is attached to the manned vessel as a precaution on wastewater biosolids lagoons/cells due to plant growth and debris on the surface.

1.4.1 The Tobermory Biosolids Cell #1 had an extensive amount of debris both on the surface and below the surface so much so it impacted the outboard motor of the manned vessel. To complete the hydrographic survey, PW MAKAR’s sonar technician had to manually row the remote controlled survey vessel and manned vessel. Our vessel motor operator and safety advisor was on shore monitoring the events.

1.4.1.1 

Figure #1. Remote controlled, unmanned survey vessel, attached to manned vessel, in the Tobermory primary retention wastewater-biosolids Cells.

1.5 The precision navigation was provided by the survey vessels on-board GPS system and is incorporated with the acoustic profiling system. Processing of the acoustic data

provides both an indication of the present fluid depth and an image of the extent of biosolids between the fluid bottom (upper biosolids surface contour bathymetric) and the liner/clay bottom (sub-bottom liner/clay contour) of the Tobermory Biosolids Cell #1.

1.6 This Biosolids Volumes and Distribution Survey were prompted by the Ontario Clean Water Agency Tobermory, Ontario, so that further treatment alternatives could be looked at.

2.0 SITE DESCRIPTION

2.1 The Tobermory wastewater treatment works consists of two (2) wastewater retention – biosolids Cells, Cell #1 primary treatment and Cell #2 secondary treatment.

2.1.1 Both the Cell #1 and Cell #2 were surveyed at this time. Cell #2 hydrographic report will be a separate report and not associated with this Cell #1 hydrographic report.

2.1 The underwater area surveyed within the Tobermory primary retention wastewater-biosolids Cell #1 – survey date; July 23, 202, has an underwater **Positive Planar Area** of **1,913.49 m²** or **0.47 acres** or **0.19 Ha**.

2.1.1.1 **Please note**; the area surveyed within the Tobermory primary retention wastewater-biosolids Cell #1 is dependent on the water level at the time of the survey. Any obstruction within the lagoon i.e. dykes, aeration systems, rock outcrops above and below the water, aquodic plant life can also affect the size of the survey area.

2.1.2

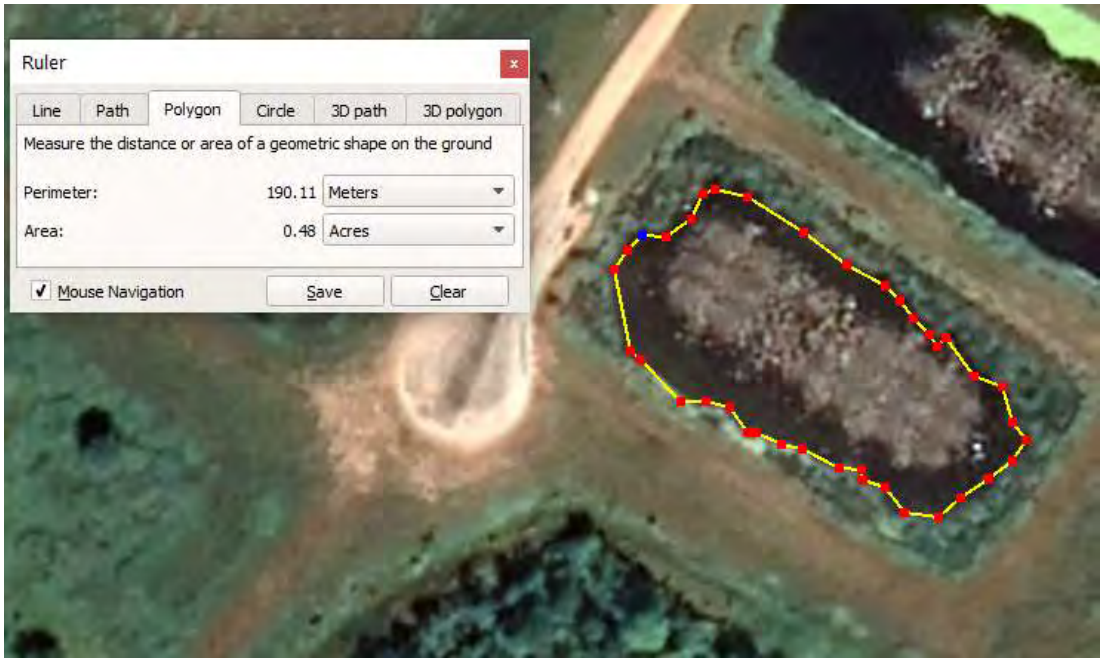


Figure #2. An area reference qualifier was conducted by a polygon measurement made in Google Earth 7/8/2019 image of the Tobermory Biosolids Cell #1 was found to be approximately 0.48 Acres.[1]

2.1.3 The Tobermory Biosolids Cell #1 property is located on the south side of Highway 6, approximately 3.5 kms from the Town of Tobermory, Ontario

3.0 DISCLAIMER

3.1 While PW MAKAR INSPECTION SERVICES LTD believes it has used best practice in obtaining the information contained in this report, in no event will PW MAKAR INSPECTION SERVICES LTD be liable for any commercial costs, damages, loss of profit, property damage or personal injury, including death sustained or suffered in connection with the use of data or subsequent processing of materials obtained during field efforts by PW MAKAR INSPECTION SERVICES LTD during this program, or consequential damages including, but not limited to those related to dredging, removal of biosolids, disposal of biosolids, or contamination resulting from use of data obtained from this report or efforts or conclusions drawn from this report.

3.2 PW MAKAR INSPECTION SERVICES LTD makes no warranty, either expressed or implied, regarding the suitability or fitness of any data or information contained in this report for a particular purpose or that the information will satisfy the requirement of any law, rule, specification, or contract.

3.3 The maximum liability of PW MAKAR INSPECTION SERVICES LTD. from all causes related to this work, field efforts, report or discussions about this effort is limited to the funding received by PW MAKAR INSPECTION SERVICES LTD for this work. Acceptance of this report signifies acceptance of this disclaimer.

3.4 This report shall be deemed accepted if no protest is received within 60 days of the issuance date of this report.

4.0 ABSTRACT

4.1 The shallow hydrographic underwater acoustic sonar survey was conducted on July 23, 2020, and this report reflects the water content and biosolids sludge levels at the time of this hydrographic survey.

4.2 The hydrographic survey was performed by PW MAKAR INSPECTION SERVICES LTD's, Sonar Technician, the survey complies with IHO (International Hydrographic Organization) Standards.

4.3 Transducer sound calibration checks were performed prior to the start of the hydrographic survey in the Tobermory Biosolids Cell #1.

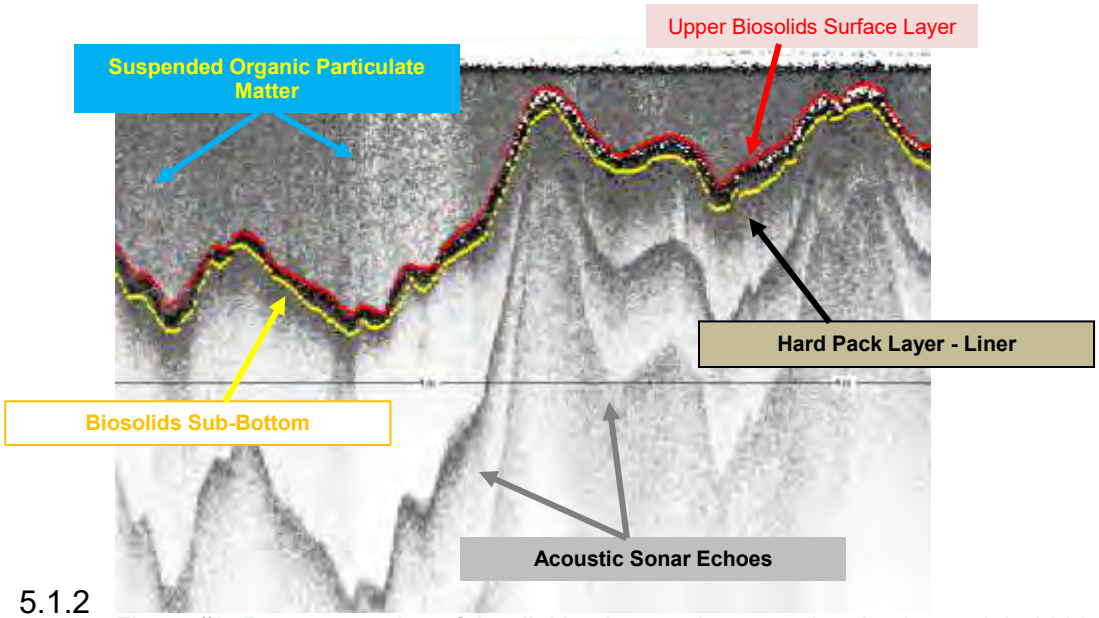
[1] Google Earth.
7/8/2019. - Most Current Google Image.

4.4 Biosolids samples were requested, they were obtain at different locations throughout from Cell #1 and put sample bottles supplied by OCWA.

5.0 BIOSOLIDS DEPTH EVALUATIONS

5.1 The sub-bottom contour in the Tobermory Biosolids Cell #1, has a “hard pack” sub-bottom layer i.e. clay, hard pack soil. All three of our hydrographic acoustic sonar transducers were utilized to determine the bathymetric bottom and sub-bottom in the lagoon.

5.1.1 Biosolids Isopach, volume computations were calculated from the bathymetric (upper surface) biosolids sludge layer using the 200 kHz transducer and the sub-bottom hard pack layer/liner utilizing both the 50 kHz and 12 kHz transducers.



5.1.2 Figure #3. Post processing of the digitized acoustic sonar signal echoes, July 2020, Tobermory Biosolids Cell #1.

5.2 The water level elevation was appropriate for conducting a hydrographic survey; extensive debris and aquodic plant life was present within the Tobermory Biosolids Cell #1 as well as growing within the inner berm, which have encroached upon the survey area particularly on the North, West and East sides of Cell #1.

5.2.1 There was adequate access and egress into Cell #1 at the time of the survey.

5.2.2 The total volume of biosolids surveyed on July 23, 2020 in the Tobermory Biosolids Cell #1, – is approximately **519.63 m³** or **679.65 yd³**.

5.2.2.1 To calculate a percentage of biosolids sludge, a grid volume computation was calculated from the bathymetric biosolids sludge bottom (defined as the top of the biosolids sludge) and the sub-bottom

of the biosolids sludge i.e. the top of the lagoon/cell liner. It is then divided by the grid volume computation calculated from the top of the liquid/water to the sub-bottom of the biosolids sludge of the lagoon/cell liner. The two number sets are then times (x) by 100 to determine a percentage of the biosolids.

Please note; the percentages of biosolids volumes will change/increase if water levels in the lagoon/cell fluctuate. In addition, if aluminum sulfate is added to the water and the suspended organic particles settles to the bottom this will add to the amount of biosolids sludge.
As well; the aeration mixing system was turned off for a period of 6 days prior to the hydrographic survey, there was still suspended organic matter in the water column of Cell #1 which would increase in the total amount of sludge if the suspended organic matter were to completely settle.

5.2.2.1.1 Therefore, on this date the percentage of biosolids buildup in the Tobermory Biosolids Cell #1 is approximately **12.68%.**

5.2.3 PW MAKAR Inspection Services Ltd. collected **24,362** digitized data value points in the Tobermory Biosolids Cell #1. The digitized data value points represent both the bathymetric bottom and sub-bottom biosolids values with GPS navigational values.

5.2.3.1 Each individual data value point consists of an XYZ value. X value is an Easting coordinate; Y value is a Northing coordinate and Z consists of a biosolids/sludge elevation processed in meters.

5.2.3.2 The average depth of biosolids sludge throughout the Tobermory Biosolids Cell #1 on this date was approximately **0.27 m or 270 mm or 10.62 in.**

6.0 GENERAL SITE EVALUATIONS

6.1 There is a heavy amount of short vegetation growing around the top of the beam of the wastewater lagoons, which should be monitored and cut back as required if not being allocated already.

6.2 There is extensive debris and aquodic plant life was present within the Tobermory Biosolids Cell #1 as well as growing within the inner berm, which have encroached upon the survey area particularly on the North, West and East sides of Cell #1.

6.3 There were no apparent berm erosion issues identified at this time.

6.4 Lagoon warning signage appeared appropriate.

Reported by: Paul Makar
Paul Makar
PW MAKAR COATINGS INSPECTION LTD. NACE CERTIFIED COATINGS INSPECTOR #137.

Grid Volume Computations

Bathymetric (Upper) Biosolids Surface and Sub-Bottom (Lower) – Liner Surface.

Tobermory primary retention wastewater-biosolids Cell #1.

Fri Jul 31 08:49:42 2020

Upper Surface

Grid File Name:	C:- PROJECTS\OCWA - Tobermory Lagoon Surveys\Tobermory Cell 1 Tobermory - A Layer Blanked out x2.grd
Grid Size:	88 rows x 100 columns
X Minimum:	448977.51
X Maximum:	449047.65
X Spacing:	0.70848484848499
Y Minimum:	5008992.64
Y Maximum:	5009052.52
Y Spacing:	0.68827586206768
Z Minimum:	-3.5706332640788
Z Maximum:	-0.29154967337266

Lower Surface

Grid File Name:	C:- PROJECTS\OCWA - Tobermory Lagoon Surveys\Tobermory Cell 1 - Tobermory - B- Layer BLANKEDout.grd
Grid Size:	88 rows x 100 columns
X Minimum:	448977.9
X Maximum:	449047.72
X Spacing:	0.70525252525201
Y Minimum:	5008991.57

Y Maximum:	5009052.97
Y Spacing:	0.70574712643036
Z Minimum:	-3.7645280032213
Z Maximum:	-0.29552466459216

Volumes

Z Scale Factor:	1

Total Volumes by:

Trapezoidal Rule:	509.75092006387
Simpson's Rule:	510.92281152889
Simpson's 3/8 Rule:	510.48660577901

Cut & Fill Volumes

Positive Volume [Cut]:	**519.63367514349 m³ or 679.65 yd³.**
Negative Volume [Fill]:	9.8827550796175
Net Volume [Cut-Fill]:	509.75092006387

Areas

Planar Areas

Positive Planar Area [Cut]:	**1913.4980118853 m² or 0.47 acres or 0.19 Ha.**
Negative Planar Area [Fill]:	82.647924934744
No Data Planar Area:	2290.8020631378
Total Planar Area:	4286.9479999578

Surface Areas

Positive Surface Area [Cut]:	1955.2692877998
Negative Surface Area [Fill]:	89.279421974063

PW MAKAR
Inspection
Services
Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial,
Municipal & Commercial
Sectors

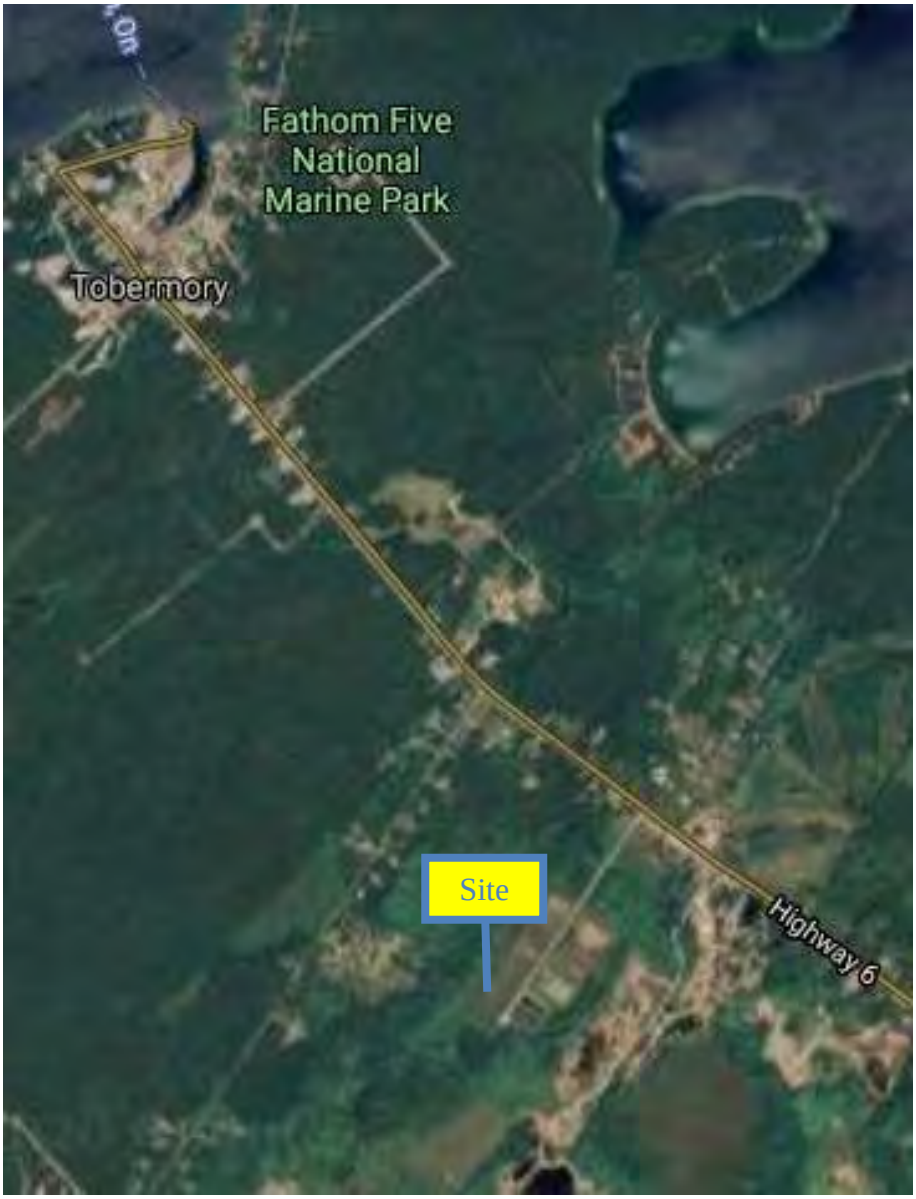
Appended Figures and Maps

DATE; July 23, 2020

SITE MAP LOCATION

Ontario Clean Water Agency
Tobermory, On
Tobermory Primary
Wastewater Biosolids Cell #1.

FIGURE No.4

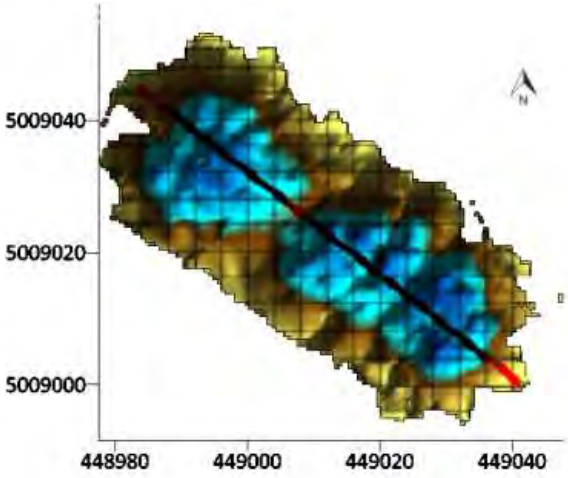


PW MAKAR INSPECTION SERVICES LTD. HAS A LICENCSING AGREEMENT WITH GOOGLE INC. TO REPRODUCE AND PUBLISH THE FOLLOWING IMAGE.NO FURTHER REPRODUCTION OR PUBLISHING OF THIS IMAGE IS PERMITTED UNLESS WRITEN CONSENT FROM PW MAKAR INSPECTION SERVICES LTD.	SITE AERIAL AP LOCATION Ontario Clean Water Agency Tobermory, On Tobermory Primary Wastewater Biosolids Cell #1.
DATE; July 23, 2020	**FIGURE No.5**

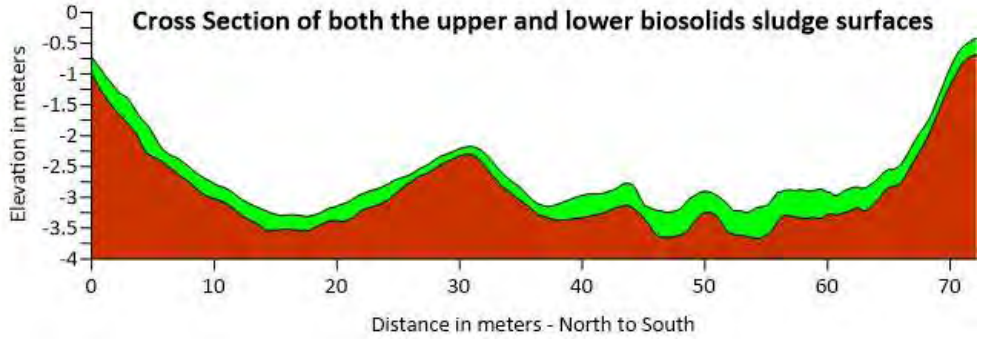
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Visual Representation of the Biosolids Sludge Layers
Sliced from North to South



The average depth of Biosolids Sludge in the Tobermory Cell #1 is 0.27 m or 270 mm or 10.62 in.



Georeferencing Image and Hydrographic Survey Vessel Tracking Lines

Ontario Clean Water Agency
Tobermory, Ontario
Tobermory WWTP

Survey Date: July 23, 2020.

FIGURE No.6

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Georeferencing Image and Hydrographic Survey Vessel Tracking Lines

Georeferencing Image and Hydrographic Survey Vessel Tracking Lines

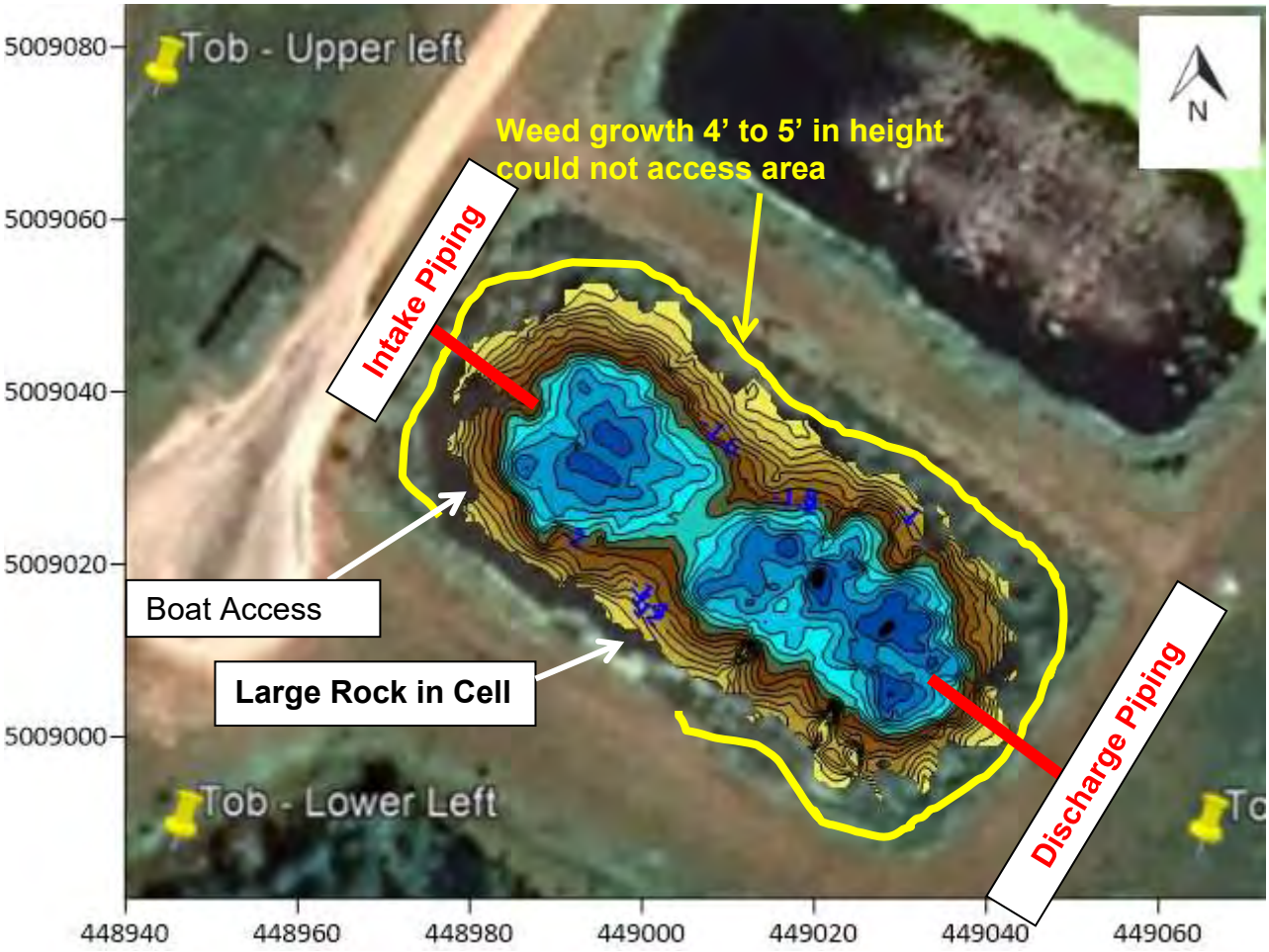
Ontario Clean Water Agency
Tobermory, Ontario
Tobermory WWTP

Plot #1

Survey Date: July 23, 2020.

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.
Georeferencing Image – Site Description



Georeferencing Image and Hydrographic Survey
Vessel Tracking Lines

Ontario Clean Water Agency
Tobermory, Ontario
Tobermory WWTP

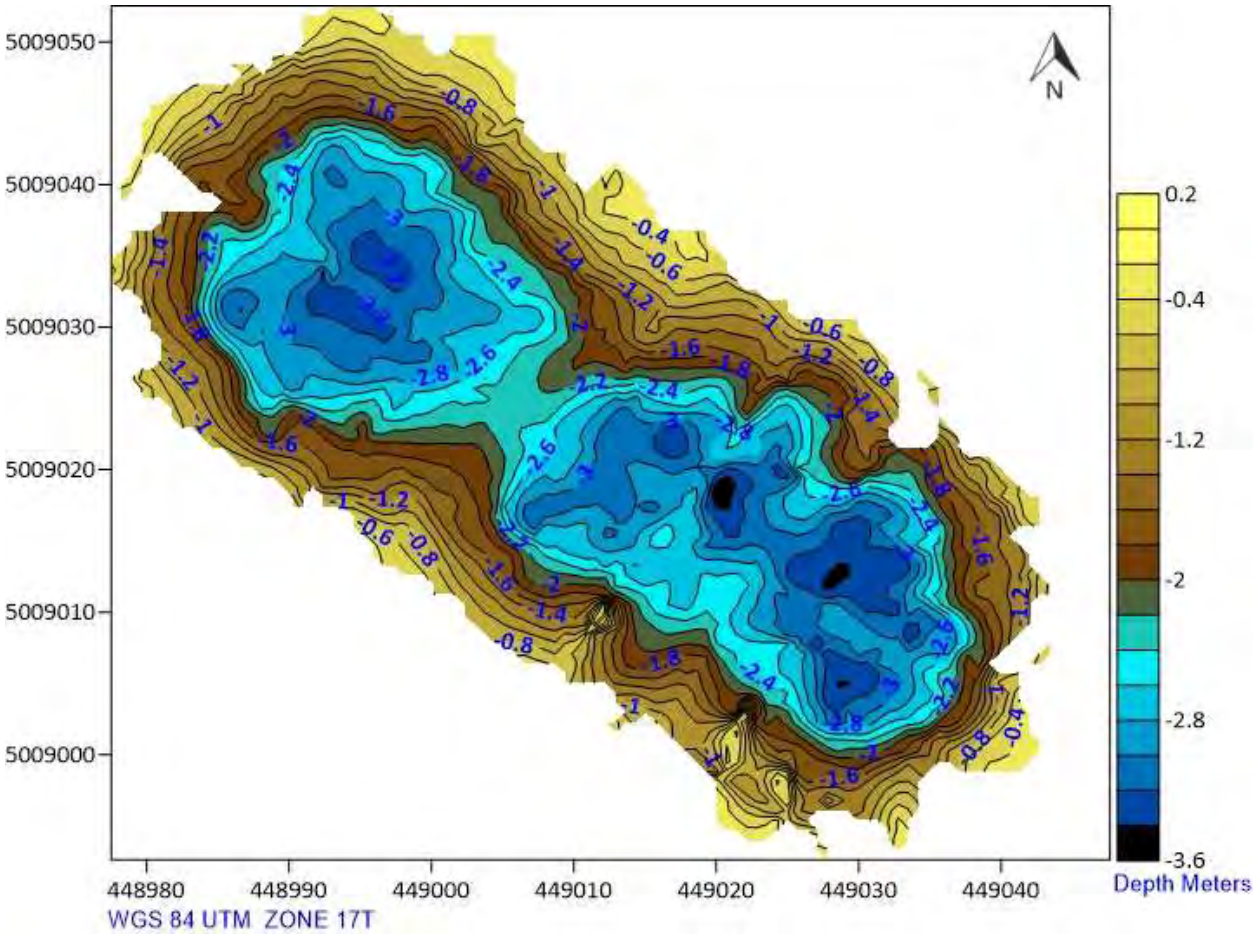
Plot #2

Survey Date: July 23, 2020.

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Bathymetric Upper Biosolids Sludge Surface – Contour Map



Bathymetric (Upper Surface) Biosolids Distribution – Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Primary
Wastewater Biosolids Cell #1.

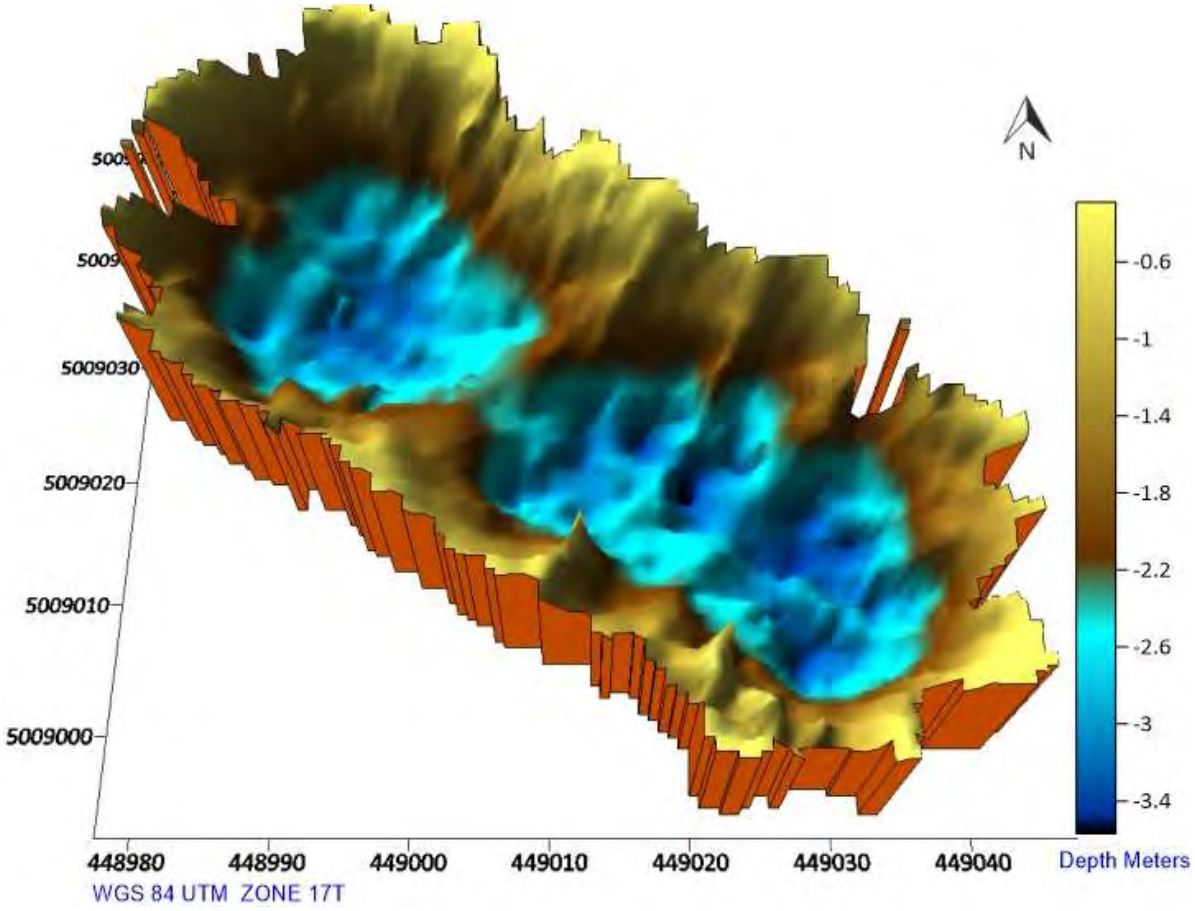
Plot #3

DATE: July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Bathymetric Upper Biosolids Sludge Surface – 3D Contour Map



Bathymetric (Upper Surface) Biosolids Distribution – 3D Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Primary
Wastewater Biosolids Cell #1.

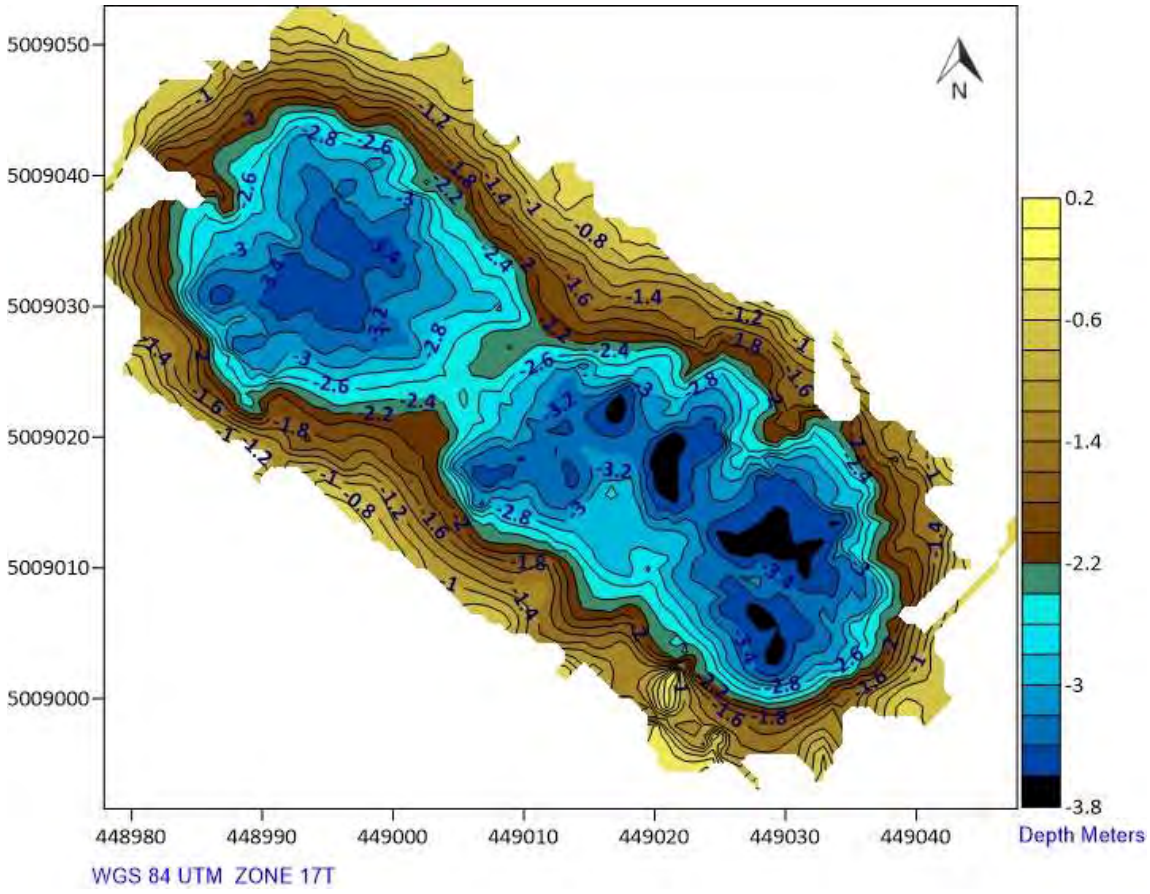
Plot #4

DATE; July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Lower Sub-Bottom Liner Surface – Contour Map



Lower Sub-Bottom (Liner/Clay/Hard Packed Soil) – Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Primary
Wastewater Biosolids Cell #1.

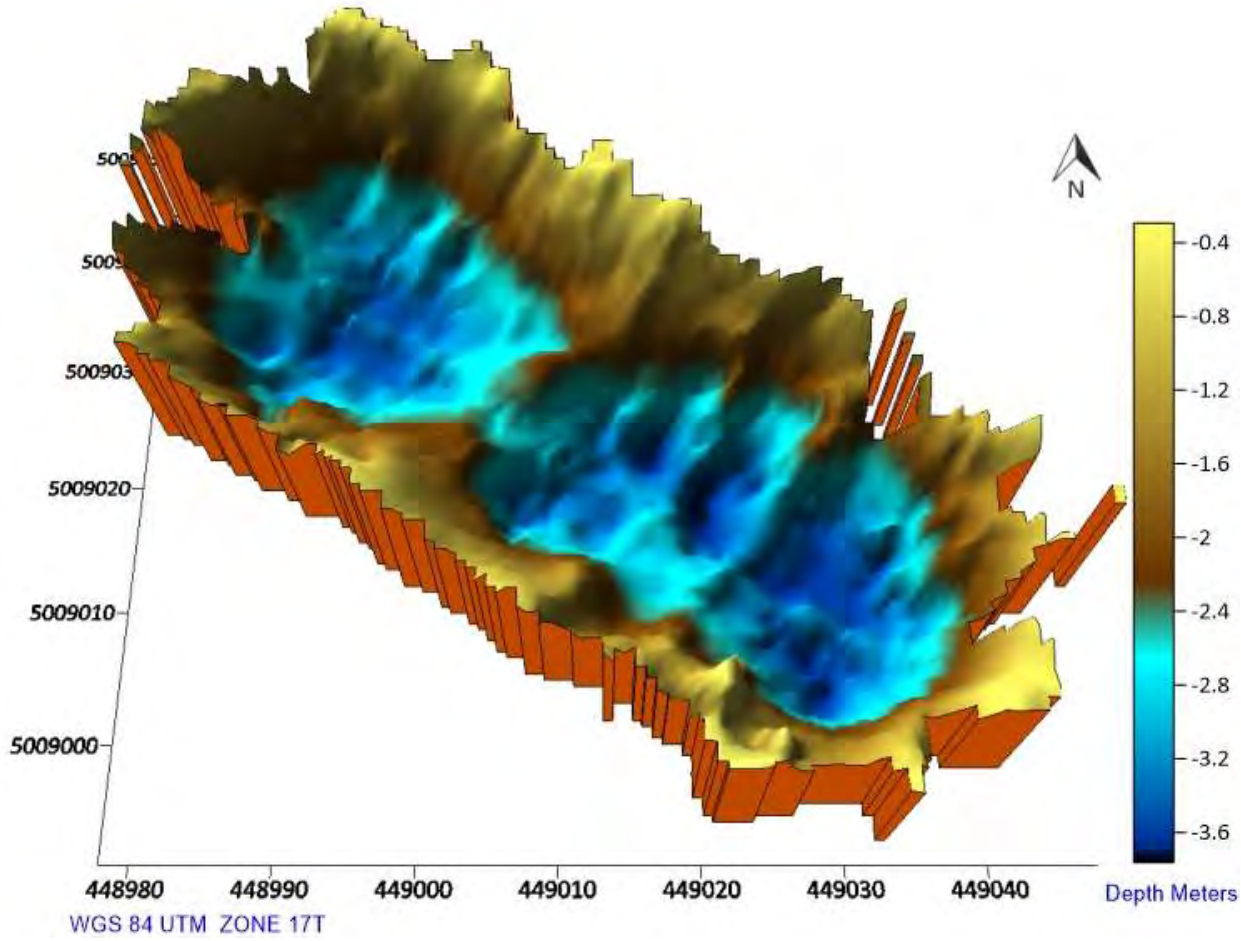
Plot #5

DATE; July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Lower Sub-Bottom Liner Surface – 3D Contour Map



Lower Sub-Bottom (Liner/Clay/Hard Packed Soil) – 3D Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Primary
Wastewater Biosolids Cell #1.

Plot #6

DATE; July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Primary Retention - Cell #1.

Hydrographic Acoustic Sonar
Biosolids Volume Modeling and Distribution Survey

Date; July 23, 2020
PICTORIAL REPORT

Digital image #1 – Tobermory Cell #1. – Three biosolids sludge samples were taken within Cell #1.

Digital image #2 – Tobermory Cell #1. – Three biosolids sludge samples were taken within Cell #1.

Digital image #3 – Tobermory Cell #1. – Remote controlled survey vessel and manned vessel.

Digital image #4 – Tobermory Cell #1. – Aquodic plant life on the surface of Cell#1.

SAFETY PARTNERSHIP TASC

Company: PW MAKAR	Date: July 21 2020
Employee: JOEL WILLOCK	Emergency # 911
Foreman: JOEL WILLOCK	Wind Direction: SW
Job Location: TOBERMORY LAGOON	Emergency assembly location: TRUCK

Do you require a permit for your work today? Yes / (No) Permit #_____
Special requirements?
COVID TEST, PPE

Did you sign into the unit? N/A
Will weather conditions affect your work today? NO
Is there a heat/cold stress issue today? (Yes) No Humidex 35
Where is the nearest eye wash station? TRUCK
Did you inspect your tools and equipment? (Yes) No
Could your activities impact you or others? Yes (No)
o tiered work o overhead lifting o hot work o other _____
Who is your site rep for emergency reporting? LEO-PAUL FRIGAULT
Did you sign off the permit today? Yes / No
Are you mentally/ physically prepared to complete this job? (Yes) No

Workers Names:
JOEL WILLOCK
GREG CHALMERS

KEY STEPS

1. **Complete card at the job site**
2. If in a crew, **complete together.**
3. Keep the card with the crew at all times.
4. If conditions change, the card must be reviewed with the whole crew.
5. **Identify Job steps, hazards in your work area,** and controls on the back of the card.
6. When job is complete return card to the supervisor.
7. If you have questions, "ASK".

It only takes a *minute* to prevent a *lifetime* of pain

PW MAKAR Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

Describe your task today: SUNAR CELL 1 & 2	Did you visually inspect job-site BEFORE STARTING WORK?: (Yes) No Any issues? DEBRIS, ACCESS	
Job Steps	**Hazards**	**Controls**
ACCESS LAGOON	WILD LIFE	WATCH STEPS and DRIVING
PUT VESSEL / BOAT IN CELL	SLIP, TRIP, FALL	USE Ropes, Rely on Partner
SUNAR CELL	DEBRIS, UNSANITARY WATER	WEAR PPE, TAKE TIME

MEMORY JOGGER (EXAMPLES to help complete above section)

Job Steps	Hazards	Controls
Describe steps to reveal hazards	**Each step could have many hazards**	**Control or Eliminate all Hazards**
o scan job site o get required tools/equipment o perform/ complete task o dismantle equipment o clean up job site	o unfamiliar process system o spill/release o cords, cables, tools o dropping tools o thermal burns	o lockout/ tagout o tie- off o lines drained/purged o shoring o fire extinguisher
Is housekeeping complete? (Yes) No Is permit signed off? (Yes) No	Supervisors Signature: Feedback:	

SAFETY PARTNERSHIP TASC

Company: PW MAKAR	Date: JULY 22 2020
Employee: JOEL WILLOCK	Emergency # 911
Foreman: JOEL WILLOCK	Wind Direction: NW
Job Location: TOBERMORY LAGOONS	Emergency assembly location: TRUCK

Do you require a permit for your work today? Yes / (No) Permit #
Special requirements?
COVID TEST, PPE

Did you sign into the unit? N/A
Will weather conditions affect your work today? YES - RAIN
Is there a heat/cold stress issue today? Yes (No) Humidex
Where is the nearest eye wash station? TRUCK
Did you inspect your tools and equipment? (Yes) No
Could your activities impact you or others? Yes / (No)
o tiered work o overhead lifting o hot work o other
Who is your site rep for emergency reporting? LEO - PAUL FRIGAULT
Did you sign off the permit today? Yes / No
Are you mentally/ physically prepared to complete this job? (Yes) No

Workers Names:
JOEL WILLOCK
GREG CHALMERS

KEY STEPS

1. **Complete card at the job site**
2. If in a crew, **complete together.**
3. Keep the card with the crew at all times.
4. If conditions change, the card must be reviewed with the whole crew.
5. **Identify Job steps, hazards in your work area,** and controls on the back of the card.
6. When job is complete return card to the supervisor.
7. If you have questions, "ASK".

It only takes a *minute* to prevent a *lifetime* of pain

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

Describe your task today: SONAR CELL 1 and 2	Did you visually inspect job-site BEFORE STARTING WORK?: (Yes) No Any issues? DEBRIS, ACCESS	
Job Steps	**Hazards**	**Controls**
Put Vessel in water	Slips, Trips, Falls	Watch Step, Use pushpole
Sonar Layout	Debris, Unsanitary Water	Watch splashes, clean propeller.
Remove Vessel	Injury, Falls	Watch Rocks, Use Ropes to Remove equipment,

MEMORY JOGGER (EXAMPLES to help complete above section)

Job Steps	Hazards	Controls
Describe steps to reveal hazards	**Each step could have many hazards**	**Control or Eliminate all Hazards**
o scan job site o get required tools/equipment o perform/ complete task o dismantle equipment o clean up job site	o unfamiliar process system o spill/release o cords, cables, tools o dropping tools o thermal burns	o lockout/ tagout o tie- off o lines drained/purged o shoring o fire extinguisher

Is housekeeping complete? (Yes) / No	Supervisors Signature:
Is permit signed off? (Yes) / No	Feedback:

SAFETY PARTNERSHIP TASC

Company: PW MAKAR	Date: July 23 2020
Employee: JOEL WILLOCK	Emergency #: 911
Foreman: JOEL WILLOCK	Wind Direction: SW
Job Location: TOBERMORY LAGOON	Emergency assembly location: TRUCK

Do you require a permit for your work today? Yes / (No) Permit #:
Special requirements?
COVID TEST, PPE

Did you sign into the unit? N/A
Will weather conditions affect your work today? NO
Is there a heat/cold stress issue today? (Yes) No Humidex 36
Where is the nearest eye wash station? TRUCK
Did you inspect your tools and equipment? (Yes) No
Could your activities impact you or others? Yes / (No)
o tiered work o overhead lifting o hot work o other N/A
Who is your site rep for emergency reporting? Leo-Paul Frigault
Did you sign off the permit today? Yes / No
Are you mentally/ physically prepared to complete this job? (Yes) No

KEY STEPS

1. **Complete card at the job site**
2. If in a crew, **complete together.**
3. Keep the card with the crew at all times.
4. If conditions change, the card must be reviewed with the whole crew.
5. **Identify Job steps, hazards in your work area,** and controls on the back of the card.
6. When job is complete return card to the supervisor.
7. If you have questions, "ASK".

It only takes a *minute* to prevent a *lifetime* of pain

Workers Names:
JOEL WILLOCK
GREG CHALMERS

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

Describe your task today: SUNAR CELL 1 ad 2	Did you visually inspect job-site BEFORE STARTING WORK?: (Yes) No Any issues? DEBRIS, ACCESS	
Job Steps	Hazards	Controls
Insert Vessel into Cell	TRIPS, SLIPS, Falls	TAKE TIME, Communicate
Move Vessel / BOAT to Cell 2	Falls	watch Step, Communicate
Survey Cells	Debris, Unsanitary Debris	PPE, TAKE TIME
Remove Vessel / BOAT.	TRIP, Muscle Pulls	Use Ropes, Truck, Rely on Partners.

MEMORY JOGGER (EXAMPLES to help complete above section)

Job Steps	**Hazards**	**Controls**
Describe steps to reveal hazards	**Each step could have many hazards**	**Control or Eliminate all Hazards**
o scan job site o get required tools/equipment o perform/ complete task o dismantle equipment o clean up job site	o unfamiliar process system o spill/release o cords, cables, tools o dropping tools o thermal burns	o lockout/ tagout o tie- off o lines drained/purged o shoring o fire extinguisher
Is housekeeping complete? (Yes) No Is permit signed off? (Yes) No	Supervisors Signature: Feedback:	

PW MAKAR Inspection Services Ltd.
481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Hydrographic Acoustic Sonar
Biosolids Volume Modeling and Distribution Survey

Date; July 24, 2020.

Tobermory Wastewater Biosolids Secondary Retention - Cell #2

Prepared For: Mr. Leo-Paul Frigault
Operations Manager
Ontario Clean Water Agency
West Highlands Hub
Wiarton, On

Prepared By: Paul Makar
PW MAKAR INSPECTION SERVICES LTD.

TABLE OF CONTENT

1.0 INTRODUCTION

1.1 The Ontario Clean Water Agency contracted PW MAKAR INSPECTION SERVICES LTD. to conduct a Hydrographic Acoustic Sonar Biosolids Volume Modeling and Distribution Survey of the Tobermory secondary retention wastewater-biosolids Cell #2.

1.2 The Tobermory secondary biosolids Cell #2 has an aeration mixing system, which was turned off for a period of 7 days prior to the hydrographic survey. This was to allow the suspended sludge particulate matter to settle and to dissipate any air pockets trapped within the biosolids sludge.

1.3 The survey was performed using a multi-frequency (200, 50 and a 12 kHz) acoustic profiling system in the shallow wastewater of the Tobermory Biosolids Cell #2. “Generally”, PW MAKAR has a two person survey crew conducting the multi patterns of survey lines. A manned vessel motor operator and safety advisor and a sonar technician, taking sludge samples, calibrating, setting the transduce frequencies and monitoring the raw data streaming from the remote controlled survey vessels onboard computer system to the Toughbook computer system in the manned vessel. The remote controlled survey vessel is attached to the manned vessel as a precaution on wastewater biosolids lagoons/cells due to plant growth and debris on the surface.

1.3.1 The Tobermory Biosolids Cell #2 had an extensive amount of aquatic plant life both on the surface and below the surface so much so it impacted the outboard motor of the manned vessel. To complete the hydrographic survey, PW MAKAR’s sonar technician had to manually row the remote controlled survey vessel and manned vessel. Our vessel motor operator and safety advisor was on shore monitoring the events.

1.3.1.1

Figure #1. Remote controlled, unmanned survey vessel, attached to manned vessel, in the Tobermory wastewater-biosolids Cells.

1.4 The precision navigation was provided by the survey vessels on-board GPS system and is incorporated with the acoustic profiling system. Processing of the acoustic data provides both an indication of the present fluid depth and an image of the extent of

biosolids between the fluid bottom (upper biosolids surface contour bathymetric) and the liner/clay bottom (sub-bottom liner/clay contour) of the Tobermory Biosolids Cell #2.

2.0 SITE DESCRIPTION

2.1 The Tobermory wastewater treatment works consists of two (2) wastewater retention – biosolids Cells, Cell #1 primary treatment and Cell #2 secondary treatment.

2.1.1 Both the Cell #1 and Cell #2 were surveyed at this time. Both Cells will have their own hydrographic reports.

2.1 The underwater area surveyed within the Tobermory secondary retention wastewater-biosolids Cell #2 – survey date; July 24, 2020, has an underwater **Positive Planar Area** of **2458.08 m²** or **0.60 acres** or **0.25 Ha**.

2.1.1.1 **Please note**; the area surveyed within the Tobermory secondary retention wastewater-biosolids Cell #2 is dependent on the water level at the time of the survey. Any obstruction within the lagoon i.e. dykes, aeration systems, rock outcrops above and below the water, aquodic plant life can also affect the size of the survey area.

2.1.2

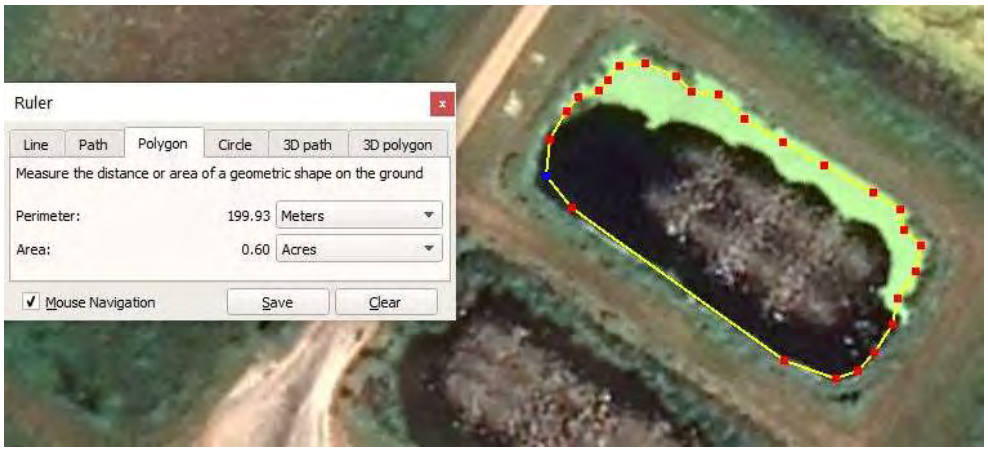


Figure #2. An area reference qualifier was conducted by a polygon measurement made in Google Earth 7/8/2019 image of the Tobermory Biosolids Cell #2 was found to be approximately 0.60 Acres.[1]

2.1.3 The Tobermory Biosolids Cell #2 property is located on the south side of Highway 6, approximately 3.5 kms from the Town of Tobermory, Ontario

3.0 DISCLAIMER

3.1 While PW MAKAR INSPECTION SERVICES LTD believes it has used best practice in obtaining the information contained in this report, in no event will PW MAKAR

[1] Google Earth.
7/8/2019. - Most Current Google Image.

INSPECTION SERVICES LTD be liable for any commercial costs, damages, loss of profit, property damage or personal injury, including death sustained or suffered in connection with the use of data or subsequent processing of materials obtained during field efforts by PW MAKAR INSPECTION SERVICES LTD during this program, or consequential damages including, but not limited to those related to dredging, removal of biosolids, disposal of biosolids, or contamination resulting from use of data obtained from this report or efforts or conclusions drawn from this report.

3.2 PW MAKAR INSPECTION SERVICES LTD makes no warranty, either expressed or implied, regarding the suitability or fitness of any data or information contained in this report for a particular purpose or that the information will satisfy the requirement of any law, rule, specification, or contract.

3.3 The maximum liability of PW MAKAR INSPECTION SERVICES LTD. from all causes related to this work, field efforts, report or discussions about this effort is limited to the funding received by PW MAKAR INSPECTION SERVICES LTD for this work. Acceptance of this report signifies acceptance of this disclaimer.

3.4 This report shall be deemed accepted if no protest is received within 60 days of the issuance date of this report.

4.0 ABSTRACT

4.1 The shallow hydrographic underwater acoustic sonar survey was conducted on July 24, 2020, and this report reflects the water content and biosolids sludge levels at the time of this hydrographic survey.

4.2 The hydrographic survey was performed by PW MAKAR INSPECTION SERVICES LTD's, Sonar Technician, the survey complies with IHO (International Hydrographic Organization) Standards.

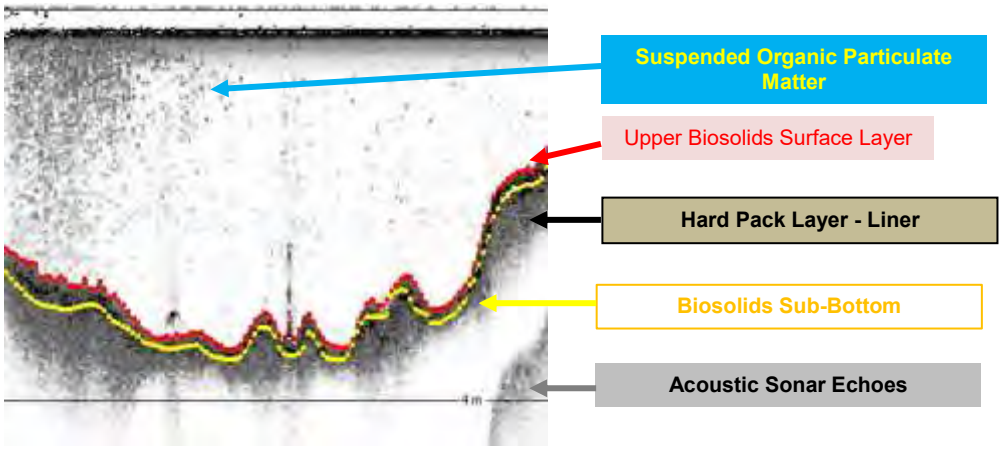
4.3 Transducer sound calibration checks were performed prior to the start of the hydrographic survey in the Tobermory Biosolids Cell #2.

4.4 Biosolids samples were requested, they were obtain at different locations throughout from Cell #2 and put sample bottles supplied by OCWA.

5.0 BIOSOLIDS DEPTH EVALUATIONS

5.1 The sub-bottom contour in the Tobermory Biosolids Cell #2, has a "hard pack" sub-bottom layer i.e. clay, hard pack soil. All three of our hydrographic acoustic sonar transducers were utilized to determine the bathymetric bottom and sub-bottom in the lagoon.

5.1.1 Biosolids Isopach, volume computations were calculated from the bathymetric (upper surface) biosolids sludge layer using the 200 kHz transducer and the sub-bottom hard pack layer/liner utilizing both the 50 kHz and 12 kHz transducers.



5.1.2 Figure #3. Post processing of the digitized acoustic sonar signal echoes, July 2020, Tobermory Biosolids Cell #2.

5.2 The water level elevation was appropriate for conducting a hydrographic survey; extensive aquodic plant life was present within the Tobermory Biosolids Cell #2.

5.2.1 There was adequate access and egress into Cell #2 at the time of the survey.

5.2.2 The total volume of biosolids surveyed on July 24, 2020 in the Tobermory Biosolids Cell #2, – is approximately **391.84 m³** or **512.50 yd³**.

5.2.2.1 To calculate a percentage of biosolids sludge, a grid volume computation was calculated from the bathymetric biosolids sludge bottom (defined as the top of the biosolids sludge) and the sub-bottom of the biosolids sludge i.e. the top of the lagoon/cell liner. It is then divided by the grid volume computation calculated from the top of the liquid/water to the sub-bottom of the biosolids sludge of the lagoon/cell liner. The two number sets are then times (x) by 100 to determine a percentage of the biosolids.

Please note; the percentages of biosolids volumes will change/increase if water levels in the lagoon/cell fluctuate. In addition, if aluminum sulfate is added to the water and the suspended organic particles settles to the bottom this will add to the amount of biosolids sludge.
As well; the aeration mixing system was turned off for a period of 6 days prior to the hydrographic survey, there was still suspended organic matter in the water column of Cell #2 which would increase in the total amount of sludge if the suspended organic matter were to completely settle.

5.2.2.1.1 Therefore, on this date the percentage of biosolids buildup in the Tobermory Biosolids Cell #2 is approximately **6.55%.**

5.2.3 PW MAKAR Inspection Services Ltd. collected **22,570** digitized data value points in the Tobermory Biosolids Cell #2. The digitized data value points represent both the bathymetric bottom and sub-bottom biosolids values with GPS navigational values.

5.2.3.1 Each individual data value point consists of an XYZ value. X value is an Easting coordinate; Y value is a Northing coordinate and Z consists of a biosolids/sludge elevation processed in meters.

5.2.3.2 The average depth of biosolids sludge throughout the Tobermory Biosolids Cell #2 on this date was approximately **0.159 m or 159 mm or 6.25 in.**

6.0 GENERAL SITE EVALUATIONS

6.1 There is a heavy amount of short vegetation growing around the top of the beam of the wastewater lagoons, which should be monitored and cut back as required if not being allocated already.

6.2 There is extensive aquodic plant life was present within the Tobermory Biosolids Cell #2.

6.3 There were no apparent berm erosion issues identified at this time.

6.4 Lagoon warning signage appeared appropriate.

Reported by: Paul Makar

Paul Makar

PW MAKAR COATINGS INSPECTION LTD. NACE CERTIFIED COATINGS INSPECTOR #137.

Grid Volume Computations

Bathymetric (Upper) Biosolids Surface and Sub-Bottom (Lower) – Liner Surface.

Tobermory secondary retention wastewater-biosolids Cell #2.

Tue Aug 4 15:28:28 2020

Upper Surface

Grid File Name:	C:\A Layer Mapping\CELL 2 A LAYER BLANKED out.grd
Grid Size:	87 rows x 100 columns
X Minimum:	449002.78
X Maximum:	449077.63
X Spacing:	0.75606060606037
Y Minimum:	5009033.35
Y Maximum:	5009098.31
Y Spacing:	0.75534883720887
Z Minimum:	-3.6466769116936
Z Maximum:	-0.33875893332183

Lower Surface

Grid File Name:	C:\ B Layer Mapping\CELL 2 - B LAYER BLANKED out.grd
Grid Size:	87 rows x 100 columns
X Minimum:	449002.78
X Maximum:	449077.63
X Spacing:	0.75606060606037
Y Minimum:	5009033.35
Y Maximum:	5009098.31
Y Spacing:	0.75534883720887
Z Minimum:	-3.6988725333469
Z Maximum:	-0.39013566397471

Volumes

Z Scale Factor: 1

Total Volumes by:

Trapezoidal Rule: 391.63094297646
Simpson's Rule: 392.01246675622
Simpson's 3/8 Rule: 392.02655423716

Cut & Fill Volumes

Positive Volume [Cut]: 391.84174219581 m³ or 512.50 yd³.
Negative Volume [Fill]: 0.21079921935185
Net Volume [Cut-Fill]: 391.63094297646

Areas

Planar Areas

Positive Planar Area [Cut]: 2458.0876401037 m² or 0.60 acres or 0.25 Ha.
Negative Planar Area [Fill]: 9.0189983719641
No Data Planar Area: 2395.1493615201
Total Planar Area: 4862.2559999957

Surface Areas

Positive Surface Area [Cut]: 2475.0869017594
Negative Surface Area [Fill]: 9.2495263915813

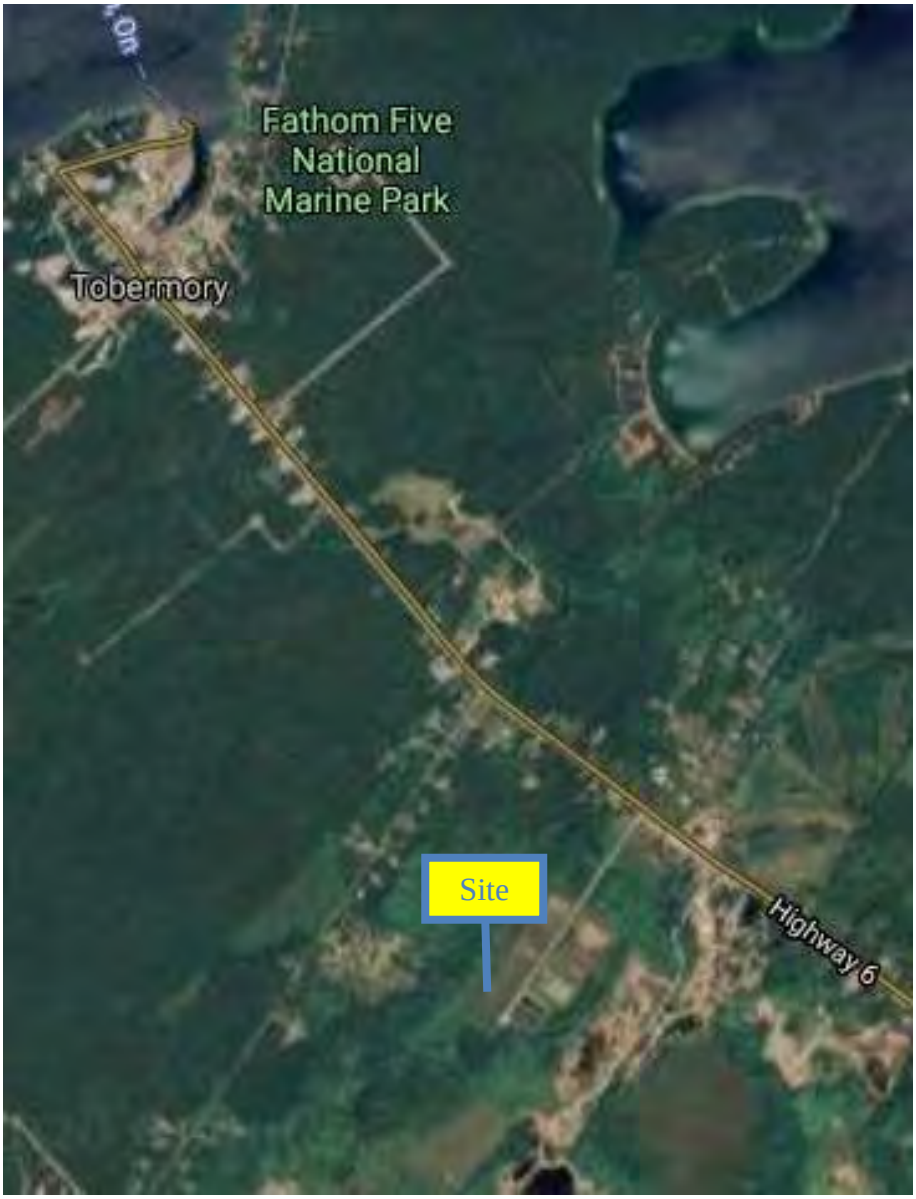
PW MAKAR
Inspection
Services
Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial,
Municipal & Commercial
Sectors

Appended Figures and Maps

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

PW MAKAR INSPECTION SERVICES LTD. HAS A LICENCSING AGREEMENT WITH GOOGLE INC. TO REPRODUCE AND PUBLISH THE FOLLOWING IMAGE.NO FURTHER REPRODUCTION OR PUBLISHING OF THIS IMAGE IS PERMITTED UNLESS WRITEN CONSENT FROM PW MAKAR INSPECTION SERVICES LTD.	SITE MAP LOCATION Ontario Clean Water Agency Tobermory, On Tobermory Secondary Wastewater Biosolids Cell #2.
DATE; July 24, 2020	**FIGURE No.4**



PW MAKAR INSPECTION SERVICES LTD. HAS A LICENCSING AGREEMENT WITH GOOGLE INC. TO REPRODUCE AND PUBLISH THE FOLLOWING IMAGE.NO FURTHER REPRODUCTION OR PUBLISHING OF THIS IMAGE IS PERMITTED UNLESS WRITEN CONSENT FROM PW MAKAR INSPECTION SERVICES LTD.

DATE; July 24, 2020

SITE AERIAL AP LOCATION

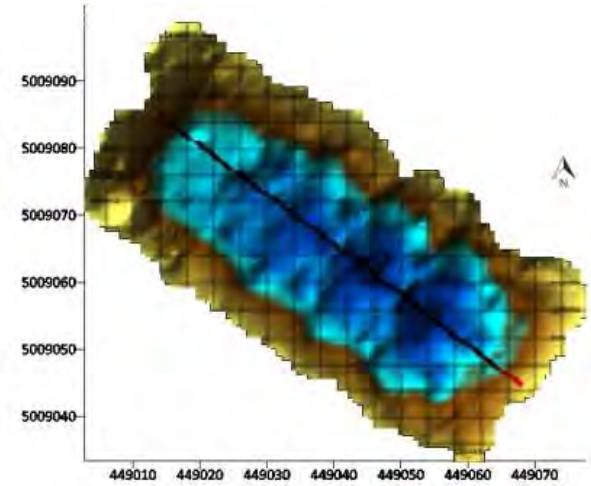
Ontario Clean Water Agency
Tobermory, On
Tobermory Secondary
Wastewater Biosolids Cell #2.

FIGURE No.5

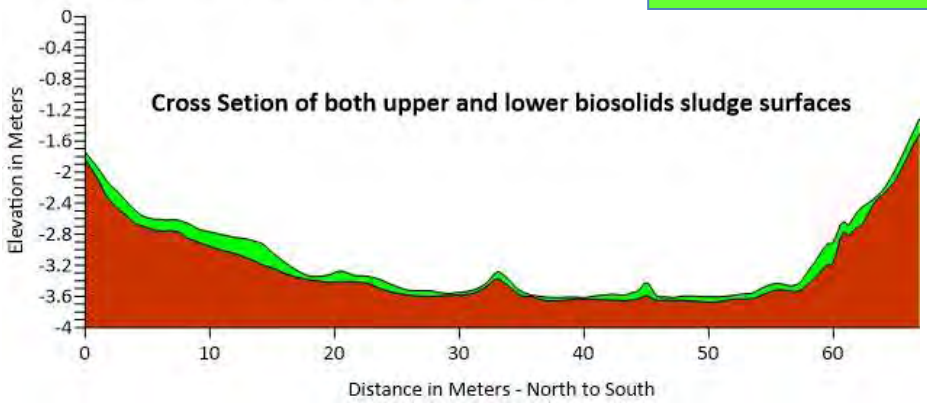
Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Visual Representation of the Biosolids Sludge Layers
Sliced from North to South



The average depth of Biosolids Sludge in the Tobermory Cell #2 is 0.159 m or 159 mm or 6.25 in.



Visual Representation of the Biosolids Sludge Layers Sliced from North to South

Ontario Clean Water Agency
Tobermory, Ontario
Tobermory WWTP

Survey Date: July 24, 2020.

FIGURE No.6

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Georeferencing Image and Hydrographic Survey Vessel Tracking Lines

Georeferencing Image and Hydrographic Survey Vessel Tracking Lines

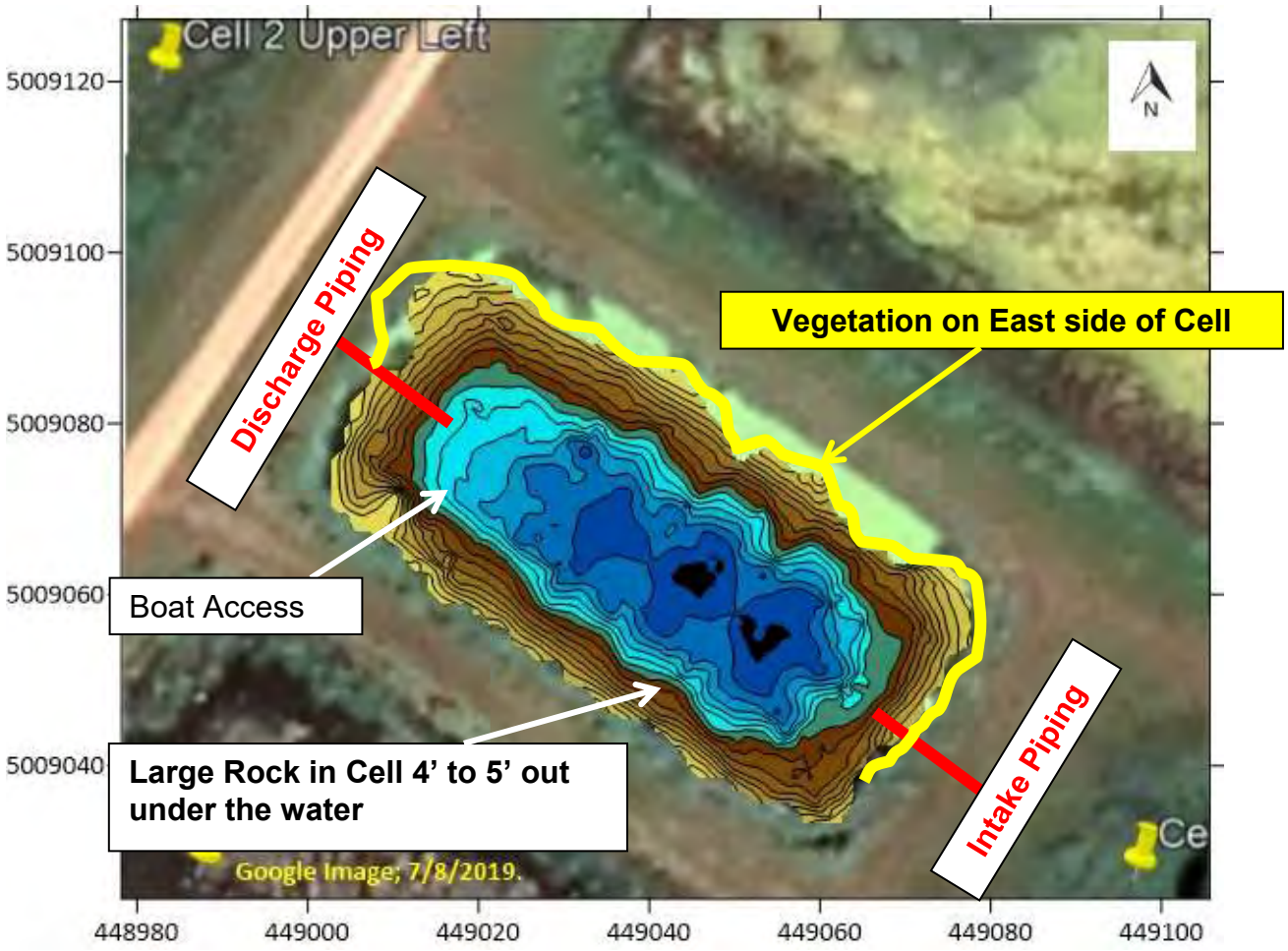
Ontario Clean Water Agency
Tobermory, Ontario
Tobermory WWTP

Plot #1

Survey Date: July 23, 2020.

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.
Georeferencing Image – Site Description



Georeferencing Image – Site Description

Ontario Clean Water Agency
Tobermory, Ontario
Tobermory WWTP

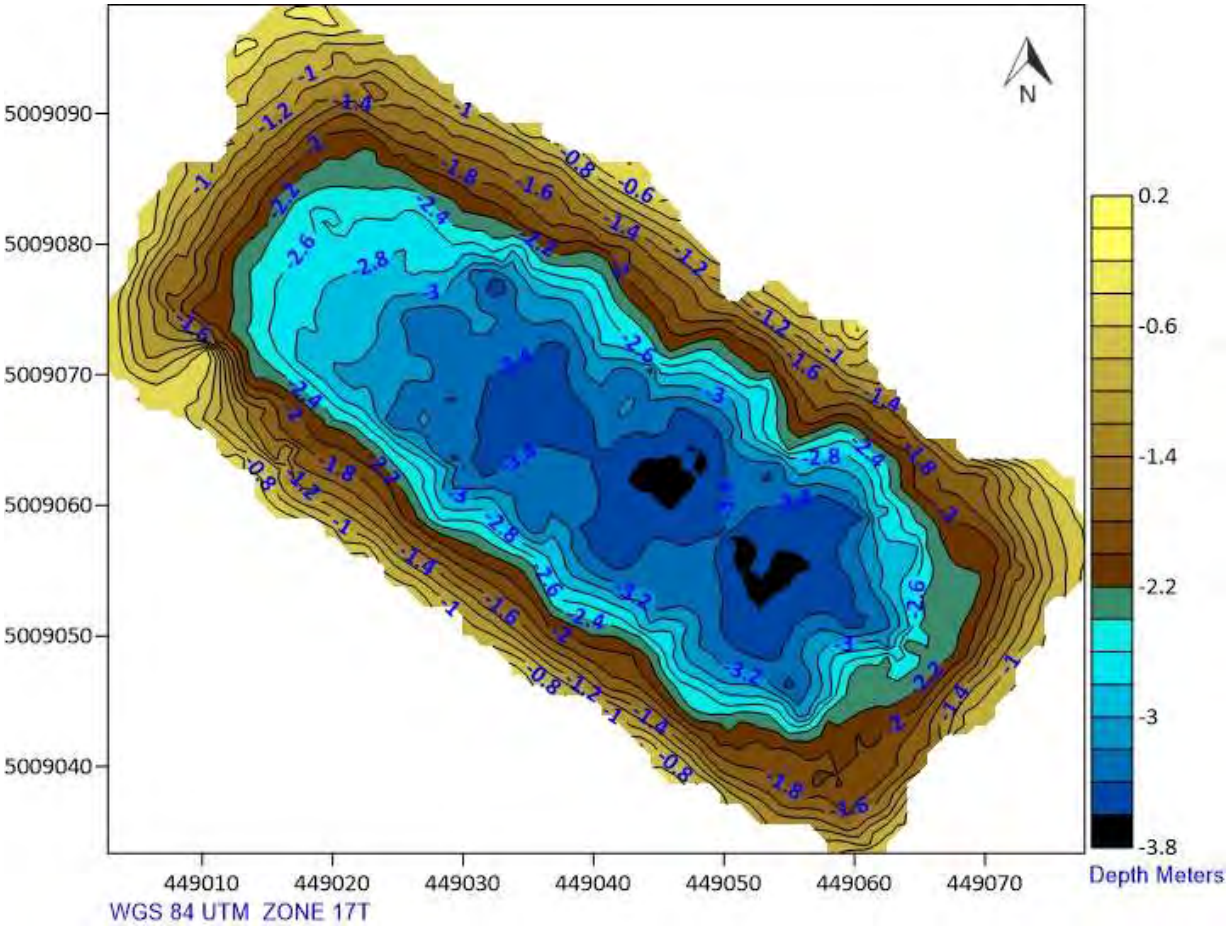
Plot #2

Survey Date: July 23, 2020.

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Bathymetric Upper Biosolids Sludge Surface – Contour Map



Bathymetric (Upper Surface) Biosolids Distribution – Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Secondary
Wastewater Biosolids Cell #2.

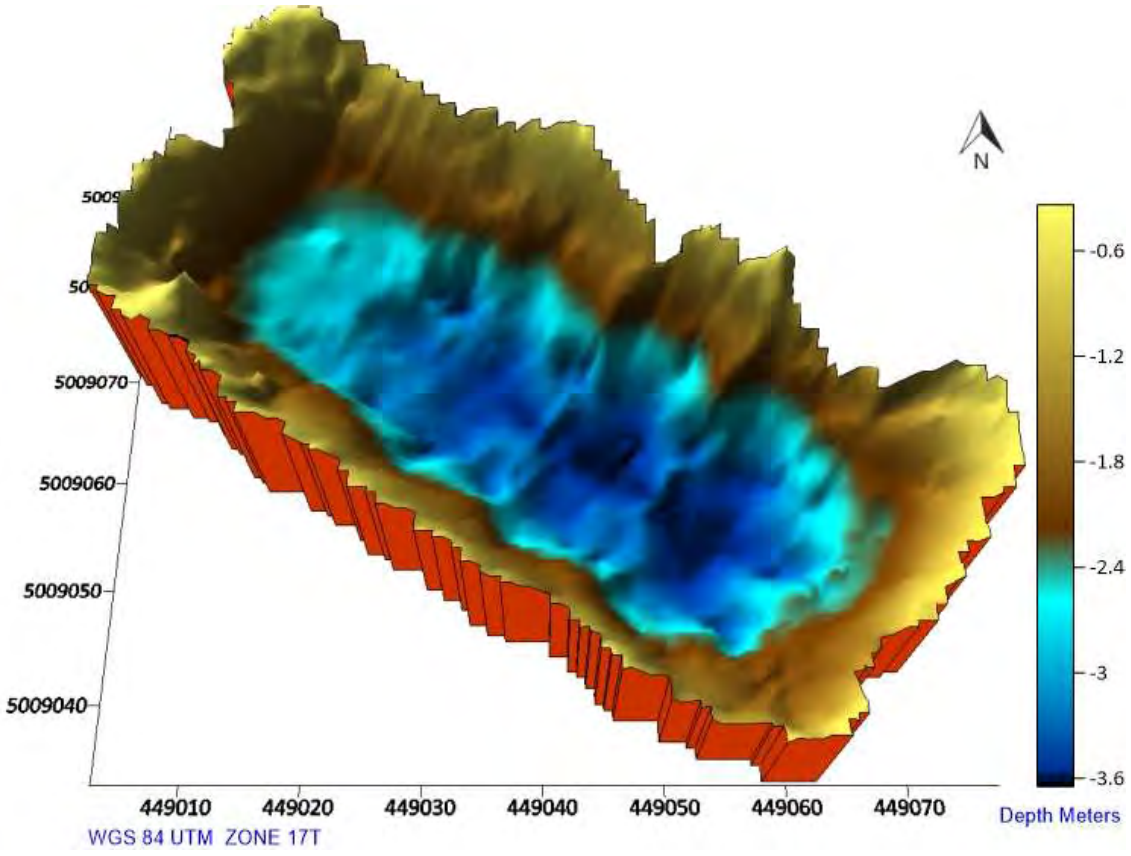
Plot #3

DATE: July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Bathymetric Upper Biosolids Sludge Surface – 3D Contour Map



Bathymetric (Upper Surface) Biosolids Distribution – 3D Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Secondary
Wastewater Biosolids Cell #2.

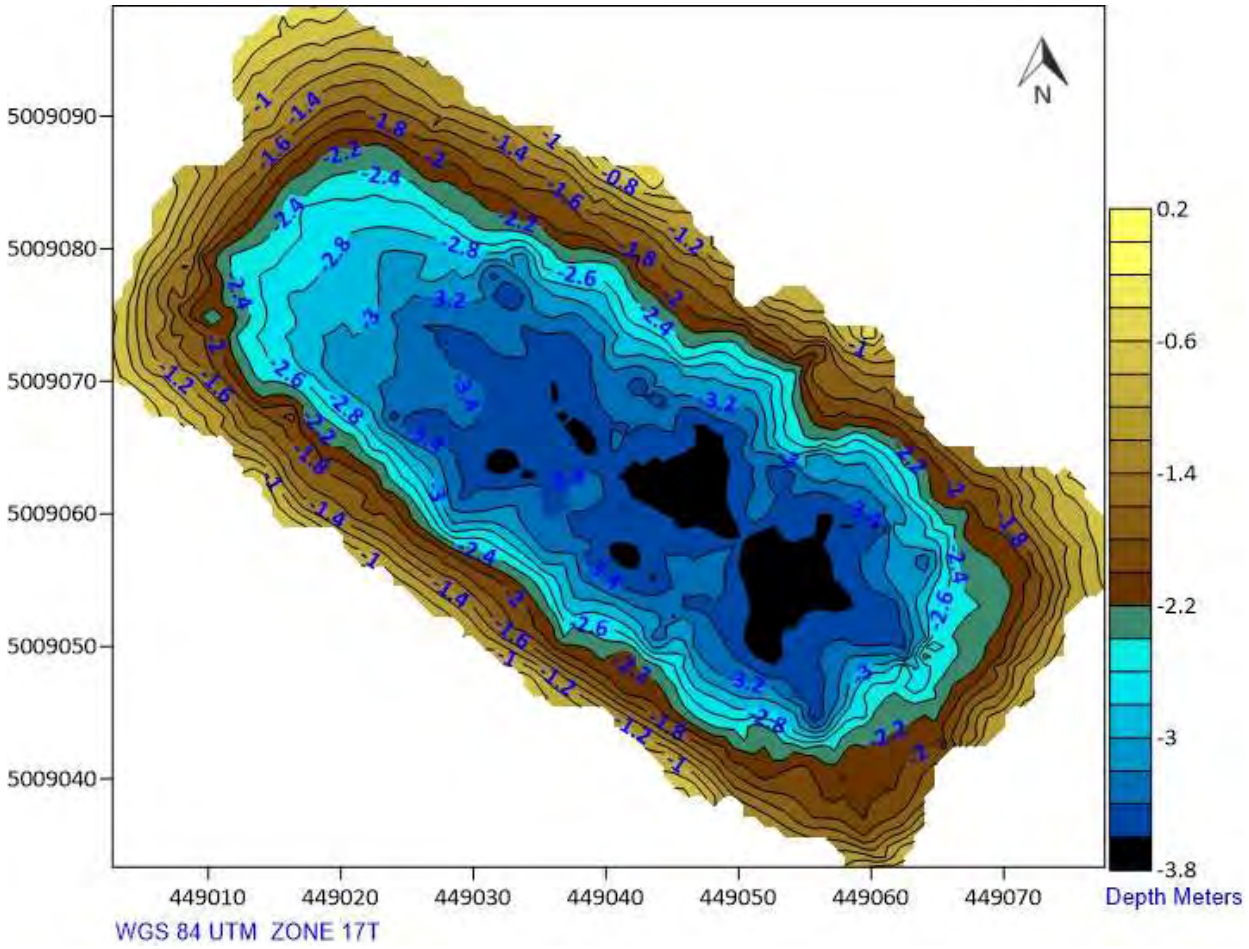
Plot #4

DATE; July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Lower Sub-Bottom Liner Surface – Contour Map



Lower Sub-Bottom (Liner/Clay/Hard Packed Soil) – Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Secondary
Wastewater Biosolids Cell #2.

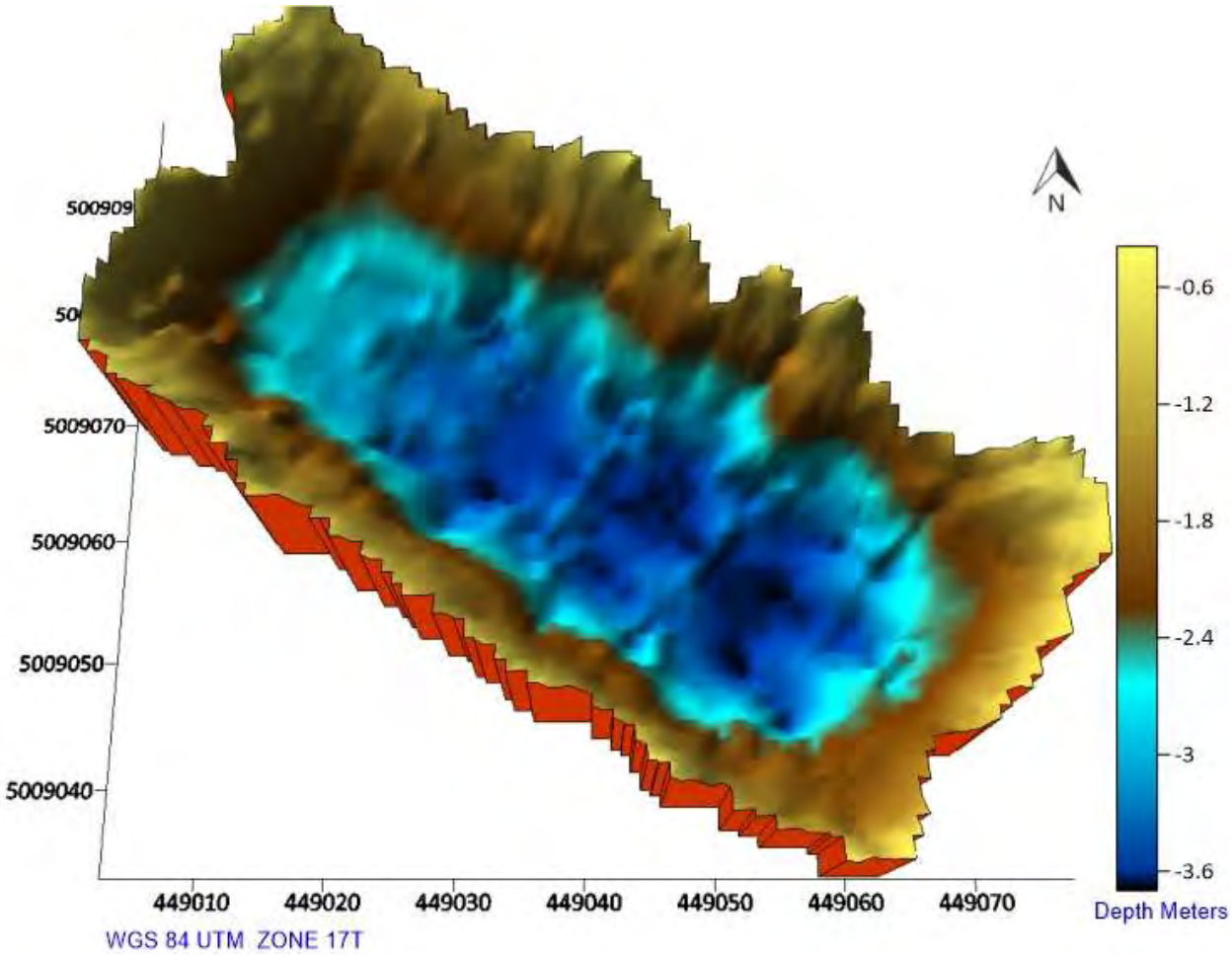
Plot #5

DATE; July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Lower Sub-Bottom Liner Surface – 3D Contour Map



Lower Sub-Bottom (Liner/Clay/Hard Packed Soil) – 3D Contour Map

Ontario Clean Water Agency
Tobermory, On
Tobermory Secondary
Wastewater Biosolids Cell #2.

Plot #6

DATE; July 23, 2020

Ontario Clean Water Agency
Municipality of Northern Bruce Peninsula
County of Bruce
Tobermory, Ontario

Tobermory Wastewater
Biosolids Secondary Retention - Cell #2.

Hydrographic Acoustic Sonar
Biosolids Volume Modeling and Distribution Survey

Date; July 24, 2020
PICTORIAL REPORT

Digital image #1 – Tobermory Cell #2. – Aquatic plant life on the surface of Cell 2.

Digital image #2 – Tobermory Cell #2. – Aquatic plant life on the surface of Cell 2.

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

SAFETY PARTNERSHIP TASC

Company: PW MAKAR	Date: July 21 2020
Employee: JOEL WILLOCK	Emergency # 911
Foreman: JOEL WILLOCK	Wind Direction: SW
Job Location: TOBERMORY LAGOON	Emergency assembly location: TRUCK

Do you require a permit for your work today? Yes (No) Permit #

Special requirements?

COVID TEST, PPE

Did you sign into the unit? N/A

Will weather conditions affect your work today? NO

Is there a heat/cold stress issue today? (Yes) No Humidex 35

Where is the nearest eye wash station? TRUCK

Did you inspect your tools and equipment? (Yes) No

Could your activities impact you or others? Yes (No)

o tiered work o overhead lifting o hot work o other

Who is your site rep for emergency reporting? LEO- PAUL FRIGAULT

Did you sign off the permit today? Yes / No

Are you mentally/ physically prepared to complete this job? (Yes) No

Workers Names:

JOEL WILLOCK

GREG CHALMERS

KEY STEPS

1. **Complete card at the job site**
2. If in a crew, **complete together.**
3. Keep the card with the crew at all times.
4. If conditions change, the card must be reviewed with the whole crew.
5. **Identify Job steps, hazards in your work area,** and controls on the back of the card.
6. When job is complete return card to the supervisor.
7. If you have questions, "ASK".

It only takes a *minute* to prevent a *lifetime* of pain

Describe your task today: SONAR CELL 1 & 2

Did you visually inspect job-site BEFORE STARTING WORK?: (Yes) No

Any issues? DEBRIS, ACCESS

Job Steps	Hazards	Controls
ACCESS LAGOON	WILDLIFE	WATCH STEPS and DRIVING
PUT VESSEL / BOAT IN CELL	SLIP, TRIP, FALLS	USE ROPES, Rely on Partner
SONAR CELL	DEBRIS, UNSANITARY CONDITIONS	WEAR PPE, TAKE TIME

MEMORY JOGGER (EXAMPLES to help complete above section)

Job Steps	Hazards	Controls
Describe steps to reveal hazards	**Each step could have many hazards**	**Control or Eliminate all Hazards**
o scan job site	o unfamiliar process system	o lockout/ tagout
o get required tools/equipment	o spill/release	o tie- off
o perform/ complete task	o cords, cables, tools	o lines drained/purged
o dismantle equipment	o dropping tools	o shoring
o clean up job site	o thermal burns	o fire extinguisher

Is housekeeping complete? (Yes) No

Is permit signed off? (Yes) No

Supervisors Signature:

Feedback:

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

SAFETY PARTNERSHIP TASC

Company: PW MAKAR	Date: JULY 23 2020
Employee: JOEL WILLOCK	Emergency # 911
Foreman: JOEL WILLOCK	Wind Direction: NW
Job Location: TOBERMORY LAGOONS	Emergency assembly location: TRUCK

Do you require a permit for your work today? Yes / (No) Permit #

Special requirements?

COVID TEST, PPE

Did you sign into the unit? N/A

Will weather conditions affect your work today? YES - RAIN

Is there a heat/cold stress issue today? Yes (No) Humidex

Where is the nearest eye wash station? TRUCK

Did you inspect your tools and equipment? (Yes) No

Could your activities impact you or others? Yes / (No)

o tiered work o overhead lifting o hot work o other

Who is your site rep for emergency reporting? LEO - PAUL FRIGAULT

Did you sign off the permit today? Yes / No

Are you mentally/ physically prepared to complete this job? (Yes) No

KEY STEPS

1. **Complete card at the job site**
2. If in a crew, **complete together.**
3. Keep the card with the crew at all times.
4. If conditions change, the card must be reviewed with the whole crew.
5. **Identify Job steps, hazards in your work area,** and controls on the back of the card.
6. When job is complete return card to the supervisor.
7. If you have questions, "ASK".

It only takes a *minute to* prevent a *lifetime* of pain

Workers Names:

JOEL WILLOCK

GREG CHALMERS

Describe your task today: SONAR CELL 1 of 2

Did you visually inspect job-site BEFORE STARTING WORK: (Yes) No

Any issues? DEBRIS, ACCESS

Job Steps	Hazards	Controls
Put Vessel in water	Slips, Trips, Falls	Watch Step, Use Pontoon
Sonar Lagoon	Debry, Unsanitary Water	Watch splashes, clean Propeller.
Remove Vessel	Injury, Falls	Watch Rocks, Use Rope To Remove equipment.

MEMORY JOGGER (EXAMPLES to help complete above section)

Job Steps	Hazards	Controls
Describe steps to reveal hazards	**Each step could have many hazards**	**Control or Eliminate all Hazards**
o scan job site	o unfamiliar process system	o lockout/ tagout
o get required tools/equipment	o spill/release	o tie- off
o perform/ complete task	o cords, cables, tools	o lines drained/purged
o dismantle equipment	o dropping tools	o shoring
o clean up job site	o thermal burns	o fire extinguisher

Is housekeeping complete? (Yes) / No

Is permit signed off? (Yes) / No

Supervisors Signature:

Feedback:

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

SAFETY PARTNERSHIP TASC

Company: PW MAKAR	Date: July 23 2020
Employee: JOEL WILLOCK	Emergency # 911
Foreman: JOEL WILLOCK	Wind Direction: SW
Job Location: TOBERMORY LAGOON	Emergency assembly location: TRUCK

Do you require a permit for your work today? Yes / (No) Permit #

Special requirements?

COVID TEST, PPE

Did you sign into the unit? N/A

Will weather conditions affect your work today? NO

Is there a heat/cold stress issue today? (Yes) No Humidex 36

Where is the nearest eye wash station? TRUCK

Did you inspect your tools and equipment? (Yes) No

Could your activities impact you or others? Yes / (No)

o tiered work o overhead lifting o hot work o other N/A

Who is your site rep for emergency reporting? Leo-Paul Frigault

Did you sign off the permit today? Yes / No

Are you mentally/ physically prepared to complete this job? (Yes) No

KEY STEPS

1. **Complete card at the job site**
2. If in a crew, **complete together.**
3. Keep the card with the crew at all times.
4. If conditions change, the card must be reviewed with the whole crew.
5. **Identify Job steps, hazards in your work area**, and controls on the back of the card.
6. When job is complete return card to the supervisor.
7. If you have questions, "ASK".

It only takes a *minute* to prevent a *lifetime* of pain

Workers Names:

JOEL WILLOCK

GREG CHALMERS

PW MAKAR
Inspection Services Ltd.

481 Murray Dr.
Corunna, ON., N0N 1G0
Servicing the Industrial, Municipal & Commercial Sectors

Describe your task today: SUNAR CELL 1 ad 2	Did you visually inspect job-site BEFORE STARTING WORK?: (Yes) No Any issues? DEBRIS, ACCESS	
Job Steps	Hazards	Controls
Insert Vessel into Cell	TRIPS, Slips, Falls	TAKE TIME, Communicate
Move Vessel / BOAT to Cell 2	Falls	watch Step, Communicate
Survey Cells	Debris, Unsanitary Debris	PPE, TAKE TIME
Remove Vessel / BOAT.	TRIP, Muscle Pulls.	Use Ropes, Truck, Rely on Partners.

MEMORY JOGGER (EXAMPLES to help complete above section)

Job Steps	**Hazards**	**Controls**
Describe steps to reveal hazards	**Each step could have many hazards**	**Control or Eliminate all Hazards**
o scan job site o get required tools/equipment o perform/ complete task o dismantle equipment o clean up job site	o unfamiliar process system o spill/release o cords, cables, tools o dropping tools o thermal burns	o lockout/ tagout o tie- off o lines drained/purged o shoring o fire extinguisher
Is housekeeping complete? (Yes) No Is permit signed off? (Yes) No	Supervisors Signature: Feedback:	