WATER QUALITY MONITORING PROGRAM

TOWNSHIP OF GEORGIAN BAY

Summary Report - 2025 Bacterial Results

Prepared for:

Township of Georgian Bay

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Submitted by:

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1.0 ACKNOWLEDGEMENTS

For the past 25 years the Township of Georgian Bay has supported this community-based, volunteer water quality monitoring program. Thank you to Caely Nicholson for her assistance in coordinating the program and liaising with the volunteers throughout the 2025 program.

The volunteers whose dedication and efforts are critical to the success of this program deserve acknowledgement and thanks. Over the course of the 25-year program, thousands of bacterial and chemical analyses have been carried out in over 150 sampling locations throughout the Township.

A sincere thank you to the following volunteers involved in the 2025 program:

- Gibson Lake: Richard Renshaw
- Gloucester Pool: Cindy Gilmour, Cat Graydon, Michele Sexsmith, Mitra Doherty, Pam Clemens and Cheryl Elliot-Fraser
- Go Home Lake: Simon Edwards
- Myers Lake: Pam and Cliff Jordan
- Severn River: Debbie Bang and Sarah Papadopoulos
- Six Mile Lake: Stuart Saville and Kristian Graziano
- Stewart Lake: Roch Beaulieu
- Oak Bay: David Flower
- Honey Harbour: Winanne Grant & Allan Hazelton

2.0 INTRODUCTION

Within The Township of Georgian Bay are the coastal shorelines of southeastern Georgian Bay including Honey Habour and Oak Bay, along with the Severn River and its connected lakes including Gloucester Pool. The central and eastern portions of the Township contain Six Mile and Gibson Lakes while the northern region contains Go Home, Myers and Stewart Lakes.

Water quality monitoring, focusing on bacterial and water chemistry indicators has been carried out in volunteer-based programs in the coastal regions of southeastern Georgian Bay and these seven water bodies within the Township.

The purpose of this report is to provide a review of the 2025 volunteer bacteriological water quality program, a summary of results and recommendations for future water monitoring in the Township.

2.1 Bacterial Water Quality Monitoring

Regulatory bacterial monitoring is only mandated for public swimming beaches. Concern over the limited scope of this policy, which ignores other shoreline environments, has prompted the development of many community-based water quality monitoring programs. These programs are effective in accurately monitoring the bacterial status of surface waters and these efforts promote education and environmental ethics amongst resource users.

2.2 Sources of Bacterial Contamination

Storm water runoff, septic system effluent, run-off from agricultural and recreational areas such as public beaches, trailer parks and marinas, discharge from boats and fecal material from wildlife and pets all represent potential sources of bacterial contamination in surface waters.

2.3 Bacterial Indicators and Regulatory Guidelines

Bacterial indicators are enumerated in natural waters to assess the presence and level of fecal contamination and thus determine the potential for disease. Total Coliforms, Fecal Coliforms and Escherichia coli (E. coli) are widely used in regulatory monitoring of recreational waters. However, E. coli is recommended as the main indicator of fecal pollution (WHO 2017). These indicator organisms themselves are not the cause of illness; however, their presence is used to indicate the risk that other pathogenic organisms of fecal origin may be present.

Total Coliforms are abundant in the feces of all warm-blooded animals, but are also found in the natural aquatic environment, in soil and on vegetation. Unlike the general Coliform group of bacteria, E. coli is exclusively of fecal origin, and its presence is thus an effective confirmation of fecal contamination.

2.4 Ontario Recreational Guideline for E. coli

If levels of E. coli in surface waters are found to be greater than guideline levels, it is probable that pathogenic organisms are also present. Swimming in bacterially contaminated waters could result in gastro-intestinal symptoms, eye infections, skin complaints, ear, nose and throat infections and respiratory illness.

The most recent Ontario recreational water quality Guideline is a Geometric Mean concentration (minimum of five samples) of less than 200 E. coli/100 mL, and a single-sample maximum concentration of less than 400 E. coli/100 mL, while the previous standard was less than 100 E. coli/100 mL as a Geometric Mean. Health Canada is currently using a Beach Action Value (BAV) of 235 CFU E. coli/100mL for a single sample, whereby an exceedance of this value will prompt warnings and potential beach closures (Health Canada 2023).

2.5 Alternative Water Quality Objective

According to the Provincial Guideline, surface water is safe for recreational purposes if there are less than 200 E. coli/100 mL (this concentration represents an acceptable threshold of risk), however the presence of this concentration of E. coli in surface waters is indicative of deteriorating water quality. This guideline may be suitable for highly urbanized regions (where water impairment has already occurred) however, a more stringent objective for E. Coli may be more suitable for regions where the water quality has not yet been impaired. For this reason, a **Georgian Bay Water Quality Objective (GBWQO) of 10 CFU E. coli/100mL** has been used in water monitoring programs in this lake community.

3.0 2025 BACTERIAL WATER MONITORING PROGRAM DESIGN

3. 1 Sampling Sites

In the 2025 water quality monitoring program seven inland lakes and two coastal Georgian Bay regions were sampled and are shown on Map 1.1. Locations of individual sampling sites per region are provided in Maps 1.2-1.16.

3. 2 Sample Collection

Sample collection generally occurred on a bi-monthly basis from late June (or early July) to early September. In some instances, additional sampling was undertaken (i.e. Go Home Lake's annual one-day, larger scale sampling program. Results are provided on their website https://www.gohomelake.ca/).

In most cases, samples were collected in the morning before 10 a.m. as solar radiation can impact the survival of bacteria. Water was collected at a depth of 9-15 inches. Labeled sterile bottles with sample water were stored in coolers until they were ready for analysis.

3.3 Bacterial Analysis

The ColiPlate™ test kit was used to analyze all water samples for Total Coliforms and E. coli bacteria. This test kit utilizes the defined substrate technology (DST) method of bacterial testing for Coliforms and E. coli. This method for testing recreational waters has been approved by the Environmental Protection Agency (EPA) and has been widely recognized as a more rapid, user friendly and accurate test in comparison to the traditional standard methods.

Water samples were directly poured into Coliplates™ and were incubated at 35°C for 24 hours. After incubation, individual wells in the microplate change colour to blue when Coliforms are present and exhibit fluorescence under a UV light when E. coli are present. These positive wells were enumerated, and the Most Probable Number (MPN) technique was used to convert the positive well counts to cell density values in CFU/100mL sample.

Please see the Resources section of **bluewaterbiosciences.com** for more detailed information on Sample Collection and Analysis Procedures (including a User Guide, Data Sheets and a Video Demonstration of the ColiPlate™ technique).


Woodington
Stewart Lake
MacTier
Foot's Bay
Ferndale
Redwood
Port
Myers Lake
Glen Orchard
Whiteside
Acton Island
Bala
Go Home Lake
Sahanatien
Potters Landing
Gibson Lake
Crooked Bay
Six Mile Lake
Wood Landing
Severn River
Beausoleil Island
Honey Harbour
Severn Falls
Wolverine Beach
Gloucester Pool
Maceys Bay
Port Severn
Oak Bay
Map 1.1 Sampling Regions

4.0 DATA INTERPRETATION AND RESLUTS

Tables 1.1-1.9 provide Total Coliform and E. coli data in MPN/100mL for the seven Inland Lakes and coastal Georgian Bay regions Oak Bay and Honey Harbour. Standard descriptive statistics were used to evaluate the bacteriological data sets. The Geometric Mean (GM) and Standard Deviation (SD) of Total Coliform and E. coli densities per sampling site are provided for each region. Total Coliform and E. coli results that were <3 or zero, were changed to a value of 1 so they could be log transformed which is required to formulate the Geometric Mean.

Geometric Mean (GM): A type of average used for bacteriological data, which tends to be highly variable. Unlike a standard arithmetic mean, the Geometric Mean minimizes the effect of very high or low values, providing a more reliable measure of the central tendency or typical bacterial concentration at a sample site over time.

Standard Deviation (SD): A measure of the amount of variation or dispersion of a set of values. In this context, a high standard deviation indicates that the bacterial counts at a specific location fluctuated significantly over the sampling period, whereas a low standard deviation suggests more stable and consistent conditions.

Single Sample Values: Since the Geometric Mean dampens the effect of very high bacterial values, Single Sample Values of E. coli at a specific time are also important to recognize as they can identify immediate water quality problems.

Total Coliform values are not included in the data interpretation as it is no longer recommended as an indicator of poor water quality, since it is from natural sources (soil and vegetation).

Figures 1 and 2 show the seasonal Geometric Mean E. coli densities (MPN/100mL) from Inland Lakes and Coastal Georgian Bay. Exceedances of the GBWQO (10 MPN/100mL) are indicated by the red vertical line.

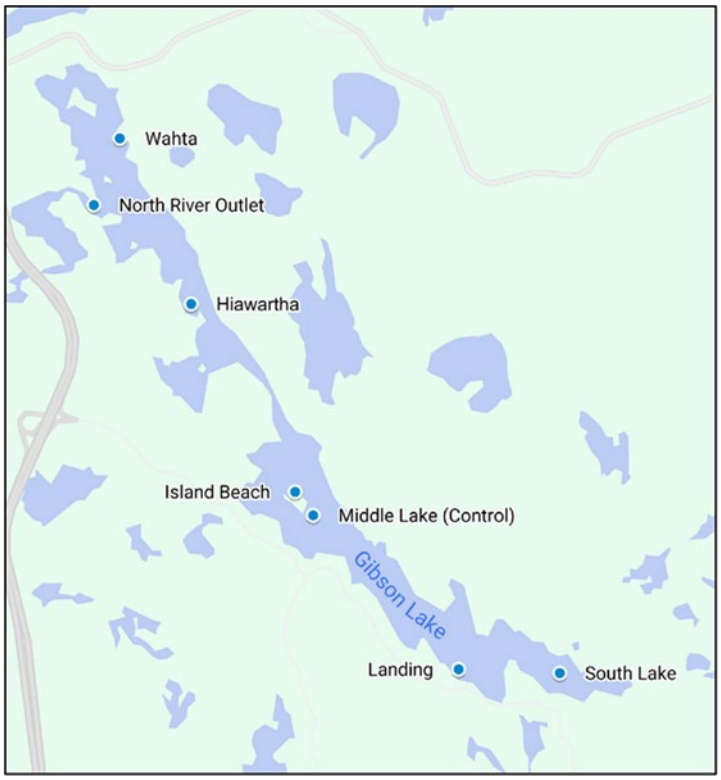
Table 1.10 Summarizes sites which recorded GBWQO Exceedances in 2025 (Seasonal Geometric Mean E. coli). Three-tiered threshold levels (Alert ☐ Action ☐ and Critical ☐) as described by Greenland and Dillan were applied to these sites based on the range of the exceedance (>10, >30, >50 MPN/100mL).

4.1 Gibson Lake

Table 1.1 Gibson Lake

				TC				
ID	**Sample Location**	**22-Jun**	**12-Jul**	**3-Aug**	**16-Aug**	**1-Sep**	**GM**	**SD**
GB01	South Lake	1	5	33	19	1	5	14
GB02	Landing	3	11	11	8	1	5	5
GB03	Middle Lake	8	5	8	5	1	4	3
GB04	Island Beach	1	13	22	16	1	5	9
GB05	Hiawartha	3	11	11	13	1	5	5
GB06	Wahta	3	33	76	46	16	22	28
GB07	North River Outlet	8	8	19	8	16	11	5
				EC				
ID	**Sample Location**	**22-Jun**	**12-Jul**	**3-Aug**	**16-Aug**	**1-Sep**	**GM**	**SD**
GB01	South Lake	1	5	3	3	1	2	2
GB02	Landing	1	**11**	**11**	5	1	4	5
GB03	Middle Lake	3	5	3	1	1	2	2
GB04	Island Beach	1	5	**11**	5	1	3	4
GB05	Hiawartha	1	1	3	5	1	2	2
GB06	Wahta	3	**11**	1	5	3	3	4
GB07	North River Outlet	1	3	5	3	8	3	3

During the 2025 season in Gibson Lake low levels of Total Coliform and E. coli were reported, well below the Provincial Guidelines and the GBWQO, except for 2 samples taken at GB02 (Landing), on July 12th and Aug 3rd, and 1 sample taken at GB04 (Island Beach) on Aug 3rd and 1 sample taken at GB06 (Wahta) on July 12th. These samples all had readings of 11 MPN E. coli/100mL, slightly above the GBWQO (highlighted in bold). Overall, these results are indicative of excellent water quality, which has historically been the case for Gibson Lake.



Map 1.2 Gibson Lake

4.2 Gloucester Pool

Table 1. 2 Gloucester Pool

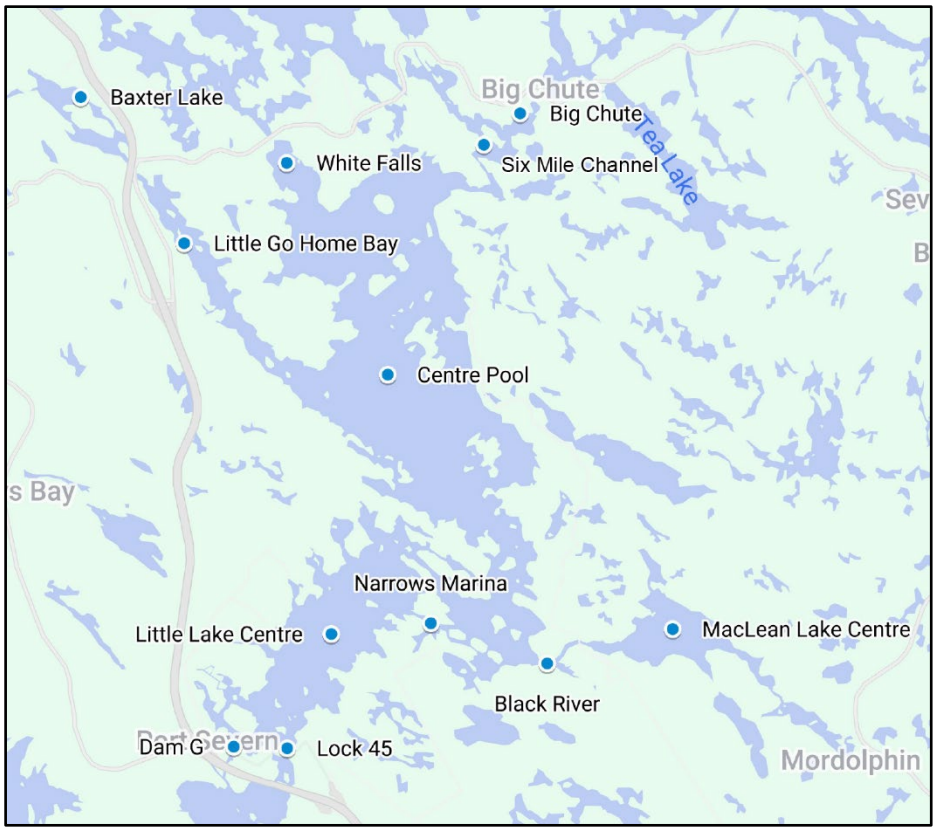
				TC				
ID	**Sample Location**	**13-May**	**23-Jun**	**21-Jul**	**20-Aug**	**16-Sep**	**GM**	**SD**
GL01	Big Chute	110	8	19	43	102	37	47
GL02	Six Mile Channel	16	22	**2424**	72	33	73	1068
GL03	Whites Falls	49	16	339	33	55	55	135
GL04	Little Go Home Bay	451	11	69	62	350	94	198
GL05	Glouester Pool Centre	587	19	188	8	19	50	248
GL06	Black River	136	46	**1370**	151	200	192	556
GL07	Narrows Marina	**1370**	55	65	188	177	175	562
GL08	Little Lake Centre	938	11	**1174**	22	3	60	578
GL09	Lock 45	72	13	25	33	127	40	46
GL10	Dam G	510	43	**1370**	**2425**	280	459	976
GL11	Baxter Lake	**1370**	3	**1370**	49	94	121	724
GL17	Maclean Lake Centre		33	**2425**	36	30	96	1196

				EC				
ID	**Sample Location**	**13-May**	**23-Jun**	**21-Jul**	**20-Aug**	**16-Sep**	**GM**	**SD**
GL01	Big Chute	1	1	1	1	1	1	0
GL02	Six Mile Channel	3	1	3	1	3	2	1
GL03	Whites Falls	3	1	**16**	1	3	3	6
GL04	Little Go Home Bay	1	1	3	1	1	1	1
GL05	Glouester Pool Centre	1	1	1	1	3	1	1
GL06	Black River	**30**	3	**55**	8	**13**	**14**	21
GL07	Narrows Marina	**76**	1	5	1	8	5	32
GL08	Little Lake Centre	3	1	3	1	1	2	1
GL09	Lock 45	1	1	5	1	8	2	3
GL10	Dam G	3	1	3	1	**28**	3	12
GL11	Baxter Lake	1	1	8	1	1	2	3
GL17	Maclean Lake Centre		1	5	1	1	1	2

During the 2025 season in Gloucester Pool sample location GL06 (Black River, which is the outlet to MacLean Lake) had single sample values exceeding the GBWQO with 30, 55 and 13 MPN E. coli/100 mL, recorded on May 13th, July 21st and Sept 16 respectively. The Geometric Mean at GL06 also exceeded the GBWQO (shown on **Figure1**) with a value of 14 MPN E. coli/100mL (highlighted in bold). This site has historically exceeded the GBWQO

and continues to be considered a 'hot spot'. The threshold level **"Alert"** has been applied to this site as shown in **Table 1.10**.

Sample locations GL03 (Whites Falls), GL07 (Narrows Marina) and GL10 (Dam G) each had one single sample value exceeding the GBWQO with 16, 76, and 28 MPN E. coli/100mL recorded on July 21st, May 13th and Sept 16th respectively. The remaining single sample values and Geometric Means from all sample locations in Gloucester Pool are well below the GBWQO of 10 MPN E. coli/100mL.



Map 1.3 Gloucester Pool

4.3 Go Home Lake

Table 1.3 Go Home Lake

				TC						
ID	**Sample Location**	**7-Jun**	**21-Jun**	**5-Jul**	**18-Jul**	**2-Aug**	**15-Aug**	**30-Aug**	**GM**	**SD**
GH01	F. Seasons Bay	5	3	33	271	98	156	30	35	99
GH02	Heart Bay	25	28	**2424**	**2425**	146	72	28	143	1155
GH03	BOMW	5	43	98	161	188	49	87	60	66
GH04	Pike Bay	30	22	52	28	36	16	39	30	12
GH05	BOMW Camp	11	489	13	**2425**	362	858	65	166	861
GH06	Marina	22	76	90	**2425**	317	65	36	115	884
				EC						
ID	**Sample Location**	**7-Jun**	**21-Jun**	**5-Jul**	**18-Jul**	**2-Aug**	**15-Aug**	**30-Aug**	**GM**	**SD**
GH01	F. Seasons Bay	1	1	3	3	3	1	1	2	1
GH02	Heart Bay	3	3	**171**	1	1	1	1	3	64
GH03	BOMW	1	1	1	1	1	1	1	1	0
GH04	Pike Bay	8	5	1	3	1	1	3	2	3
GH05	BOMW Camp	1	**403**	1	1	1	1	1	2	152
GH06	Marina	8	**28**	5	**16**	**49**	8	**11**	**13**	16

During the 2025 season in Go Home Lake 4 samples from site GH06 (Go Home Lake Marina) exceeded the GBWQO with 28, 16, 49 and 11 MPN E. coli/100 mL recorded on June 21st, July 18th, Aug 2nd, and Aug 30th respectively. The seasonal Geometric Mean at GH06 also exceeded the GBWQO (shown in **Figure 1**) with a value of 13 MPN E. coli/100 mL (highlighted in bold). The threshold level **"Alert"** has been applied to this site as shown in **Table 1.10**. This site has historically reported the highest E. coli levels compared to other sample locations in Go Home Lake. In 2023 Dr. Chow-Fraser also reported this site having a seasonal Geometric Mean (23 MPN/100mL), exceeding the GBWQO (Chow-Fraser, 2024).

Sample locations GH02 (Heart Bay) and GH05 (BOMW Camp) each had a single sample value greater than the GBWQO with 171 and 403 MPN E. coli/100 mL (both considered anomalies since values remained low for all other sample dates) recorded on July 5th and June 21st.

The remaining single sample values and Geometric Means from all sample locations in Go Home Lake (except for GH06, Go Home Lake Marina) are well below the GBWQO of 10 MPN E. coli/100mL.

Map 1.4 Go Home Lake

4.4 Myers Lake

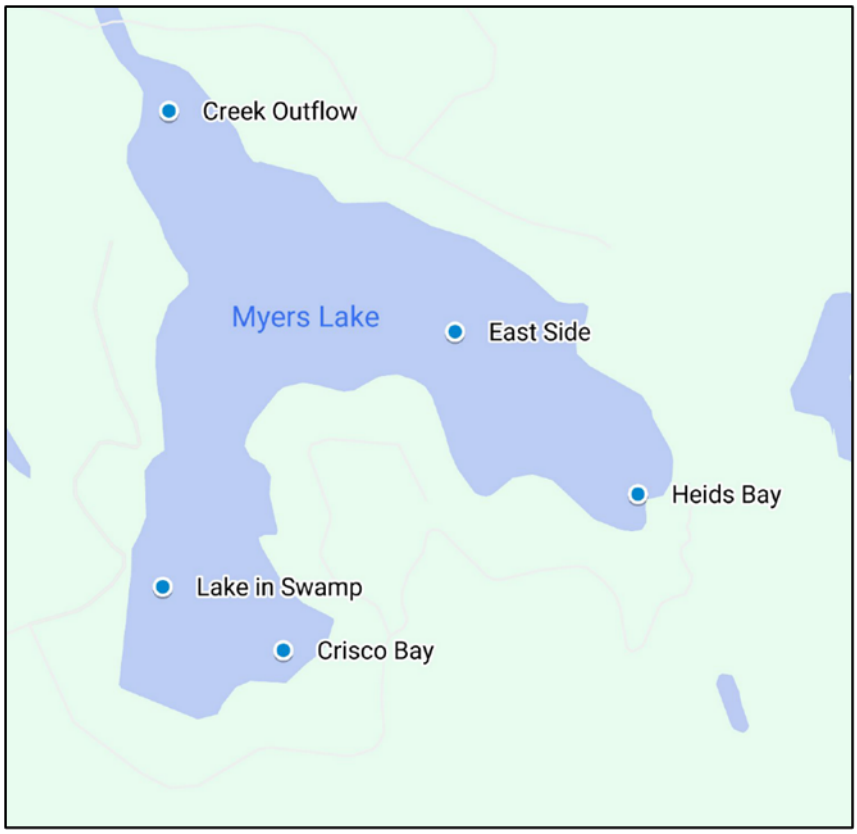
Table 1.4 Myers Lake

				TC					
ID	**Sample Location**	**29-Jun**	**13-Jul**	**15-Jul**	**30-Jul**	**10-Aug**	**26-Aug**	**GM**	**SD**
ML01	Crisco Bay (South)	11	33		151	90	46	47	55
ML02	Lake in Swamp	13	177	102	25	177	83	66	71
ML03	Creek Outflow	39	19		5	69	87	29	34
ML04	Heids Bay (East)	22	141	141	8	46	49	45	59
				EC					
ID	**Sample Location**	**29-Jun**	**13-Jul**	**15-Jul**	**30-Jul**	**10-Aug**	**26-Aug**	**GM**	**SD**
ML01	Crisco Bay (South)	1	5		8	3	8	4	3
ML02	Lake in Swamp	1	**166**	**102**	8	**123**	**79**	**33**	65
ML03	Creek Outflow	1	1		5	1	1	1	2
ML04	Heids Bay (East)	8	**141**	**141**	1	3	1	9	71

During the 2025 season in Myers Lake, 4 out of the 6 samples taken at site ML02 (Lake in Swamp) exceeded the GBWQO with 166, 102, 123 and 79 MPN E. coli/100 mL recorded on June 13th, July 15th, Aug 10th, and Aug 26th respectively. The Geometric Mean at ML02 also exceeded the GBWQO (shown in **Figure 1**) with a value of 33 MPN E. coli/100 mL (highlighted in bold). 2 samples taken at site ML04 (Heids Bay/East Side) exceeded the GBWQO with 141 MPN E. coli/100 mL recorded on July 13th and July 15th.

The July 15th sampling was added as a 're-test' date for both ML02 and ML04, as the E. coli readings were exceptionally high on July 13th. While the readings returned to normal levels at ML04 for the remainder of the season, the readings remained high at ML02. For this reason, the threshold level **"Action"** has been applied to this site as shown in **Table 1.10**.

In previous years, Myers Lake consistently reported lower bacterial levels, indicative of excellent water quality. The 2025 findings at 2 sites in Myers Lake are not consistent with past data trends, therefore these sites should continue to be monitored.



Map 1.5 Myers Lake

4.5 Severn River

Table 1.5 Severn River

				TC			
ID	**Sample Location**	**11-Jul**	**1-Aug**	**11-Aug**	**29-Aug**	**GM**	**SD**
SR01	Russian Bay	307	65	119	317	166	129
SR02	Severn Falls	171	161	200	213	185	24
SR03	Wood Bay	328	166	177	**2425**	391	1103
SR04	Coulter Bay	110	156	**2425**	226	311	1132
SR05	Copp Bay	83	194	263	132	154	78
SR06	Pretty Channel	94	240	**2424**	141	296	1134

				EC			
ID	**Sample Location**	**11-Jul**	**1-Aug**	**11-Aug**	**29-Aug**	**GM**	**SD**
SR01	Russian Bay	1	1	**16**	**11**	4	8
SR02	Severn Falls	1	**11**	**16**	8	6	6
SR03	Wood Bay	1	**11**	**16**	5	5	7
SR04	Coulter Bay	1	1	**49**	**11**	5	23
SR05	Copp Bay	1	8	1	**16**	3	7
SR06	Pretty Channel	1	**11**	5	**19**	6	8

During the 2025 season in Severn River all sites reported at least one single sample exceedance of the GBWQO. SR01 (Russian Bay) had values of 16 and 11 MPN E. coli/100 mL on the 11th and 29th of August, SR02 (Severn Falls) and SR03 (Wood Bay) had values of 11 and 16 on the 1st and 12th of August, SR04 (Coutler Bay) had values of 49 and 11 MPN E. coli/100 mL on the 11th and 29th of August, SR05 (Copp Bay) had a value of 16 MPN on August 29th and SR06 (Pretty Channel) had values of 11 and 19 MPN E. coli/100 mL on the 1st and 29th of August.

These single sample exceedances of the GBWQO in Severn River were not great enough for the seasonal Geometric Means to exceed the GBWQO.

Map 1.6
Severn River

4.6 Six Mile Lake

Table 1.6 Six Mile Lake

			TC					
ID	**Sample Location**	**4-Jul**	**23-Jul**	**7-Aug**	**27-Aug**	**16-Sep**	**GM**	**SD**
SM01	White Falls Dam	69	11	13	114	25	31	44
SM02	SML Marina	13	8	43	654	8	30	285
SM03	SML Prov. Park	16	3	177	28	94	30	72
SM04	Long Lake	8	28	33	123	55	35	44
SM05	Wawa Gov't Dock	13	1	13	33	1	6	13
SM06	West Crooked Bay	3	1	28	79	22	11	32
SM07	East Crooked Bay	3	11	16	79	43	18	31
SM08	Hungry River	30	43	**1174**	**2424**	**2424**	389	1194
SM09	South Hungry Bay	5	8	3	43	16	10	16
SM10	Lost Channel	3	11	5	1	36	6	14

			EC					
ID	**Sample Location**	**4-Jul**	**23-Jul**	**7-Aug**	**27-Aug**	**16-Sep**	**GM**	**SD**
SM01	White Falls Dam	1	**11**	5	**13**	3	5	5
SM02	SML Marina	1	3	8	**11**	1	3	4
SM03	SML Prov. Park	1	3	**16**	3	**16**	5	8
SM04	Long Lake	1	5	3	8	8	4	3
SM05	Wawa Gov't Dock	1	1	1	1	1	1	0
SM06	West Crooked Bay	1	1	1	5	3	2	2
SM07	East Crooked Bay	1	1	1	1	1	1	0
SM08	Hungry River	1	1	5	3	8	3	3
SM09	South Hungry Bay	1	1	1	5	**19**	2	8
SM10	Lost Channel	1	1	1	1	1	1	0

During the 2025 season in Six Mile Lake 4 of the 10 Sample Locations had single sample exceedances of the GBWQO. SM01 (White Falls Dam) had values of 11 and 13 MPN E. coli/100 mL on the 23rd of July and the 27th of August, SM02 (SML Marina) had a value of 11 MPN E. coli/100 mL on August 27th, SM03 (SML Provincial Park) had a value of 16 MPN E. coli/100 mL on both August 7th and September 16th and SM09 (South Hungry Bay) had a value of 19 MPN E. coli/100 mL on September 16th.

The single sample exceedances of the GBWQO in Six Mile Lake were not great enough for the seasonal Geometric Means to exceed the GBWQO. Besides the few single sample exceedances, overall, the bacterial results from Six Mile Lake are indicative of excellent water quality.

Map 1.7 Six Mile Lake

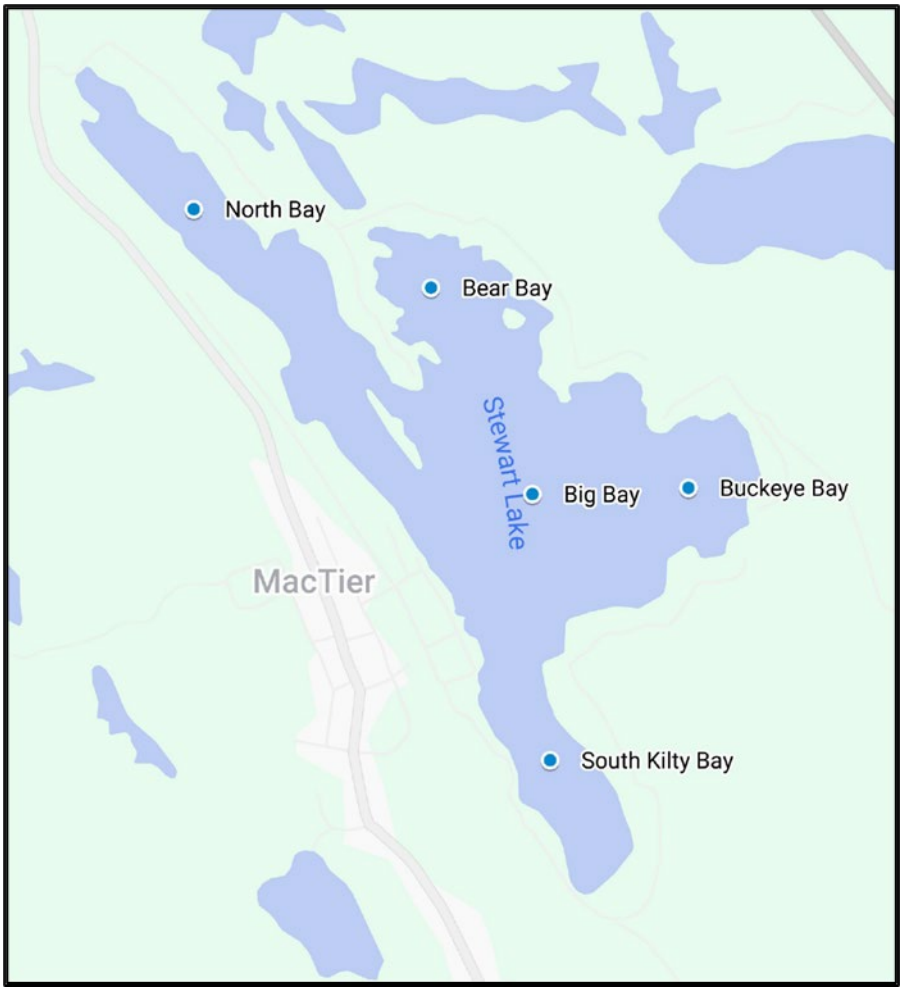
4.7 Stewart Lake

Table 1.7 Stewart Lake

			TC				
ID	**Sample Location**	**29-Jun**	**17-Jul**	**27-Aug**	**13-Sep**	**GM**	**SD**
SL01	Kilty Bay	16	19	13	22	17	4
SL02	Big Bay	13	36	13	19	18	11
SL03	North Bay	52	39	19	3	18	22
SL04	Bear Bay	39	52	8	22	24	19
SL05	Buckeye Bay	13	16	22	5	12	7
			EC				
ID	**Sample Location**	**29-Jun**	**17-Jul**	**27-Aug**	**13-Sep**	**GM**	**SD**
SL01	Kilty Bay	**16**	5	1	3	4	7
SL02	Big Bay	3	1	1	3	2	1
SL03	North Bay	8	1	**11**	1	3	5
SL04	Bear Bay	**13**	**25**	1	8	7	10
SL05	Buckeye Bay	1	8	3	1	2	3

During the 2025 season in Stewart Lake 3 of the 5 Sample Locations had single sample exceedances of the GBWQO. SL01 (Kilty Bay) had a value of 16 MPN E. coli/100 mL on June 29th, SL03 (North Bay) had a value of 11 MPN E. coli/100 mL on August 27th and SL04 (Bear Bay) had values of 13 and 25 MPN E. coli/100 mL on June 29th and Jul 17th.

The single sample exceedances of the GBWQO in Stewart Lake were not great enough for the seasonal Geometric Means to exceed the GBWQO. Besides the single sample exceedances, the bacterial results from Stewart Lake are indicative of good water quality.



Map 1.8 Stewart Lake

4.8 Oak Bay

Table 1.8 Oak Bay

			TC			
ID	**Sample Location**	**18-Jun**	**26-Jul**	**30-Aug**	**GM**	**SD**
1011	Golf Course Point	72	206	106	116	70
1011A	Trailer Park	132	240	110	152	70
1012	Oak Bay Marina	33	79	43	48	24
1201	Tug Channel	28	72	83	55	29
1202	Oak Bay Road	30	76	79	56	27
1204	NE Eden Oak Dev.	30	87	43	48	30
1205	Potato Is. Inner		1174		**1174**	
1206	Island 62	25	22	28	25	3
1207	Island 61	33	177	72	75	74
1208	East Potato Is. Rd.	25	30	19	24	6
1209	West of Green Is.	8	156	25	31	81
1210	East of Green Is.	62	8	36	26	27
1212	Green Is. Channel	13	30	25	21	9

			EC			
ID	**Sample Location**	**18-Jun**	**26-Jul**	**30-Aug**	**GM**	**SD**
1011	Golf Course Point	3	**106**	8	**14**	58
1011A	Trailer Park	**49**	**39**	**65**	**50**	13
1012	Oak Bay Marina	1	**22**	**16**	7	11
1201	Tug Channel	1	**19**	3	4	10
1202	Oak Bay Road	1	**28**	**19**	8	14
1204	NE Eden Oak Dev.	1	3	3	2	1
1205	Potato Is. Inner		**52**		**52**	
1206	Island 62	1	**19**	1	3	10
1207	Island 61	**16**	**65**	8	**20**	31
1208	East Potato Is. Rd.	1	8	1	2	4
1209	West of Green Is.	1	1	3	1	1
1210	East of Green Is.	8	3	**22**	8	10
1212	Green Is. Channel	5	8	5	6	2

During the 2025 season Oak Bay reported 9 out of the 12 Sample Locations with single sample exceedances of the GBWQO. 1011 (Golf Course Point) had a value of 106 MPN E. coli/100 mL on July 26th, 1011A (Trailer Park) had values of 49, 39 and 65 MPN/100 mL on June 18th, July 26th and August 30th, 1012 (Oak Bay Marina) had values of 22 and 16 MPN/100 mL on July 26th and August 30th, 1201 (Tug Channel) had a value of 19 MPN E. coli/100 ML on July 26th, 1202 (Oak Bay Road) had

values of 28 and 19 MPN E. coli/100 mL on July 26th and August 30th, 1205 (Potato Island Inner) had a value of 52 on July 26th, 1206 (Island 62) had a value of 19 MPN E. coli/100 mL on July 26th, 1207 (Island 61) had values of 16 and 65 MPN E. coli/100 mL on June 18th, July 26th and 1210 (East of Green Island) had a value of 22 MPN E. coli/100 mL on August 30th.

Four of the Sample Locations reported Geometric Mean values greater than the GBWQO (shown in Figure 2) these were 1011(Golf Course Point), 1011A (Trailer Park), 1205 (Potato Island Inner) and 1207 (Island 61), with values of 14, 50, 52 and 20 MPN/100 mL respectively. The threshold levels **"Alert"** and **"Critical"** were applied to these sites as shown in **Table 1.10**. It is important to note that due to the small number of sampling dates (3 sample days for all sites except site 1205 which only had 1 sample day) the Geometric Means may not be accurately reflected (for this reason site 1205 was not included in Table 1.10, summary of GBWQO Exceedances).

The Township of Georgian Bay's 2024 monitoring program also reported Geometric Means exceeding the GBWQO for 1011(Golf Course Point), 1011A (Trailer Park) and 1205 (Potato Island Inner). 1011 (Golf Course Point) and 1205 (Potato Island Inner) were also identified as having poor and very poor water quality in Chow-Fraser and Vinden's 2024 Report (Chow-Fraser and Vinden, 2024). These sites continue to be considered hot spots and intensified monitoring should be continued.

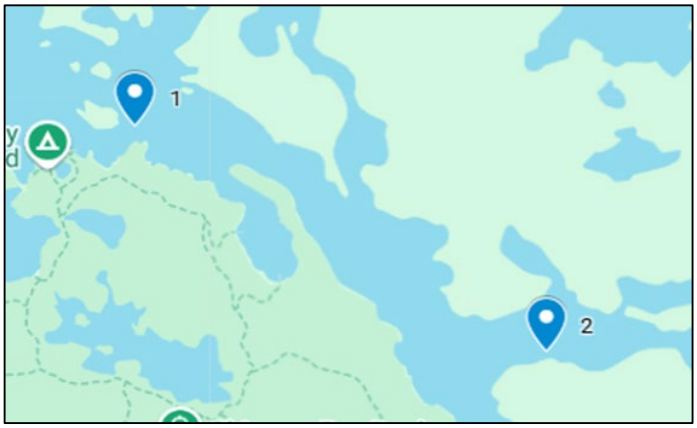
Map 1.9 Oak Bay

Table 1.9 Honey Harbour				TC			
ID	Sample Location	12-Jun	10-Jul	15-Aug	19-Sep	GM	SD
3001	Ardilaun (1)	22	90	146	16	46	62
3002	Deer Is NW (2)	16	59	72	13	31	30
1080	Hidden Glen Trailer Marina (3)	94	206	255	233	184	72
1081	Woods Landing marina (4)	156	510	123	233	219	176
2025	North Bay Inflow (5)	83	451	43	87	109	191
1107	School House Bay (site 6)	740	161	206	**2425**	494	1061
3003	Schoolhouse (site 7)	98	469	87	62	125	194
3004	Schoolhouse (site 8)	33	**2424**	52	33	108	1192
3005	Schoolhouse (site 9)	55	388	69	127	117	155
1063	South Harbour Marina (10)	226	30	119	62	84	86
3006	Del - North of Beach (11)	46	30	28	28	32	9
1008	North Picnic Island Marina (12	90	177	339	328	205	121
1007	Church Bay Marina (13)	213	166	**2442**	206	365	1124
3007	Picnic Is W (14)	39	19	307	76	64	133
3008	Picnic Is S (14)	19	22	177	79	49	74
3009	Brandy's Is. SW (16)	87	255	510	388	257	182
3010	Brandy's Is. S (17)	200	98	**1696**	206	288	766
1001	Brandy's Is. E (18)	59	43	619	151	124	272
1002	Tobies Bay (19)	79	76	289	177	132	101
1003	Sunset Bay (20)	123	46	194	**1696**	208	790
				EC			
ID	Sample Location	12-Jun	10-Jul	15-Aug	19-Sep	GM	SD
3001	Ardilaun (1)	5	1	1	1	1	2
3002	Deer Is NW (2)	3	1	3	1	2	1
1080	Hidden Glen Trailer Marina (3)	3	3	5	3	3	1
1081	Woods Landing marina (4)	**16**	**11**	**11**	8	**11**	3
2025	North Bay Inflow (5)	**11**	8	**16**	1	6	6
1107	School House Bay (site 6)	**36**	**65**	**11**	**146**	**44**	59
3003	Schoolhouse (site 7)	**11**	**13**	3	5	7	5
3004	Schoolhouse (site 8)	8	3	1	1	2	3
3005	Schoolhouse (site 9)	5	1	1	1	1	2
1063	South Harbour Marina (10)	3	1	**13**	3	3	5
3006	Del - North of Beach (11)	3	3	3	1	2	1
1008	North Picnic Island Marina (12	**33**	**13**	**13**	8	**15**	11
1007	Church Bay Marina (13)	**22**	**25**	**33**	**62**	**33**	18
3007	Picnic Is W (14)	5	3	5	1	3	2
3008	Picnic Is S (14)	3	**11**	3	**72**	9	33
3009	Brandy's Is. SW (16)	3	5	5	5	4	1
3010	Brandy's Is. S (17)	3	**28**	**11**	**22**	**12**	11
1001	Brandy's Is. E (18)	**11**	1	**13**	1	3	6
1002	Tobies Bay (19)	3	3	**13**	5	5	5
1003	Sunset Bay (20)	3	3	1	8	3	25 3

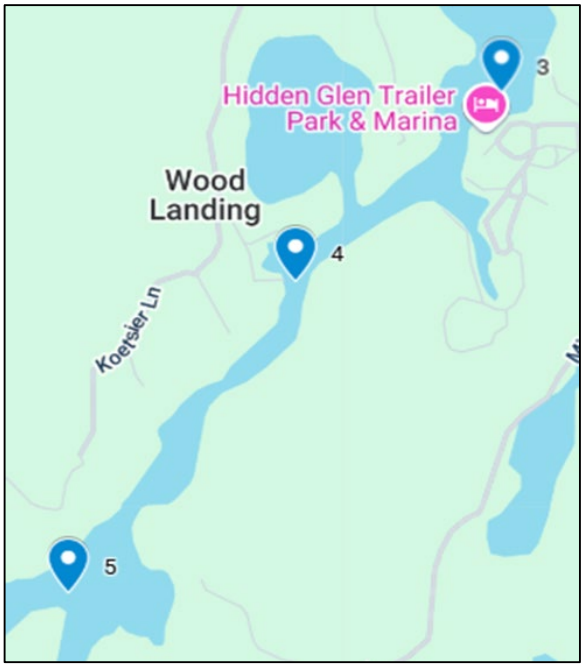
4.9 Honey Harbour

During the 2025 season in the Honey Harbour region, it was reported that 11 out of the 20 Sample Locations had single sample exceedances of the GBWQO. 1081 (Woods Landing marina) had values of 16, 11, and 11 MPN E. coli/100 mL on June 12, July 10th and August 15th. 2025 (North Bay Inflow) had values of 11 and 16 MPN E. coli/100 mL on June 12th and August 15th. 1107 (Schoolhouse Bay) had values of 36, 65, 11 and 146 MPN E. coli/100 mL on June 12, July 10th, August 15th and September 19th. 3003 (School house site 7) had values of 11 and 13 MPN E. coli/100 mL on June 12 and July 10th. 1063 (South Harbour Marina) had a value of 13 MPN E. coli/100 mL on August 15th. 1008 (North Picnic Island Marina) had values of 33, 13 and 13 on June 12th, July 10th and August 15th. 1007 (Church Bay Marina had values of 22, 25, 33 and 62 MPN E. coli/100 mL on June 12, July 10th, August 15th and September 19th. 3008 (Picnic Island S) had values of 11 and 72 MPN E. coli /100 mL on July 10th and September 19th. 3010 (Brandy Island S) had values of 28, 11 and 22 MPN E. coli/100 mL on July 10th, August 15th and September 19th. 3010 (Brandy Island E) had values of 11 and 13 MPN E. coli/100 mL on June 12th and August 15th and 1002 (Tobies Bay) had a value of 13 MPN E. coli/100 mL on August 15th.

During the 2025 season, 5 out of the 20 Sample Locations had a Geometric Mean greater than the GBWQO, with mean values of 11, 44, 15, 33, and 12 MPN/100 mL at 1081 (Woods Landing Marina), 1107 (Schoolhouse Bay), 1008 (North Picnic Island Marina), 1007 (Church Bay Marina) and 3010 (Brandy's Island S) respectively. The threshold levels **"Alert"** and **"Action"** were applied to these sites as shown in **Table 1.10**. Intensified monitoring in these locations should be continued.

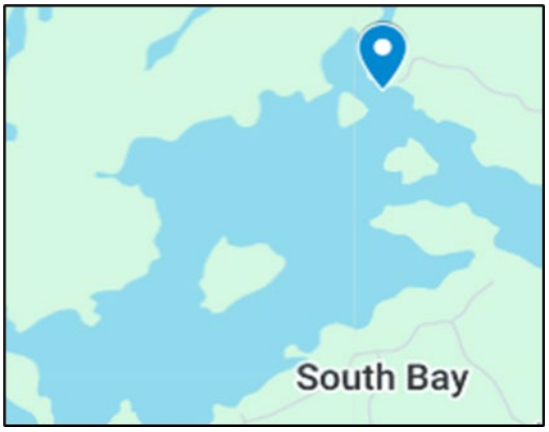


Map 1.10 Ardilaun & Deer Island, Honey Harbour



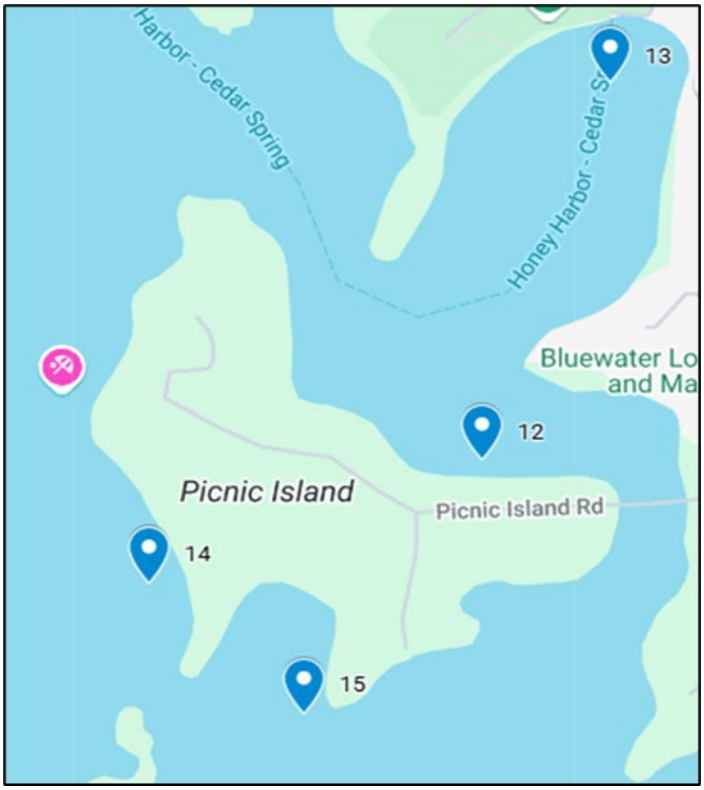
Map 1.11 Woods Landing, Honey Harbour

Map 1.12 Schoolhouse Bay, Honey Harbour

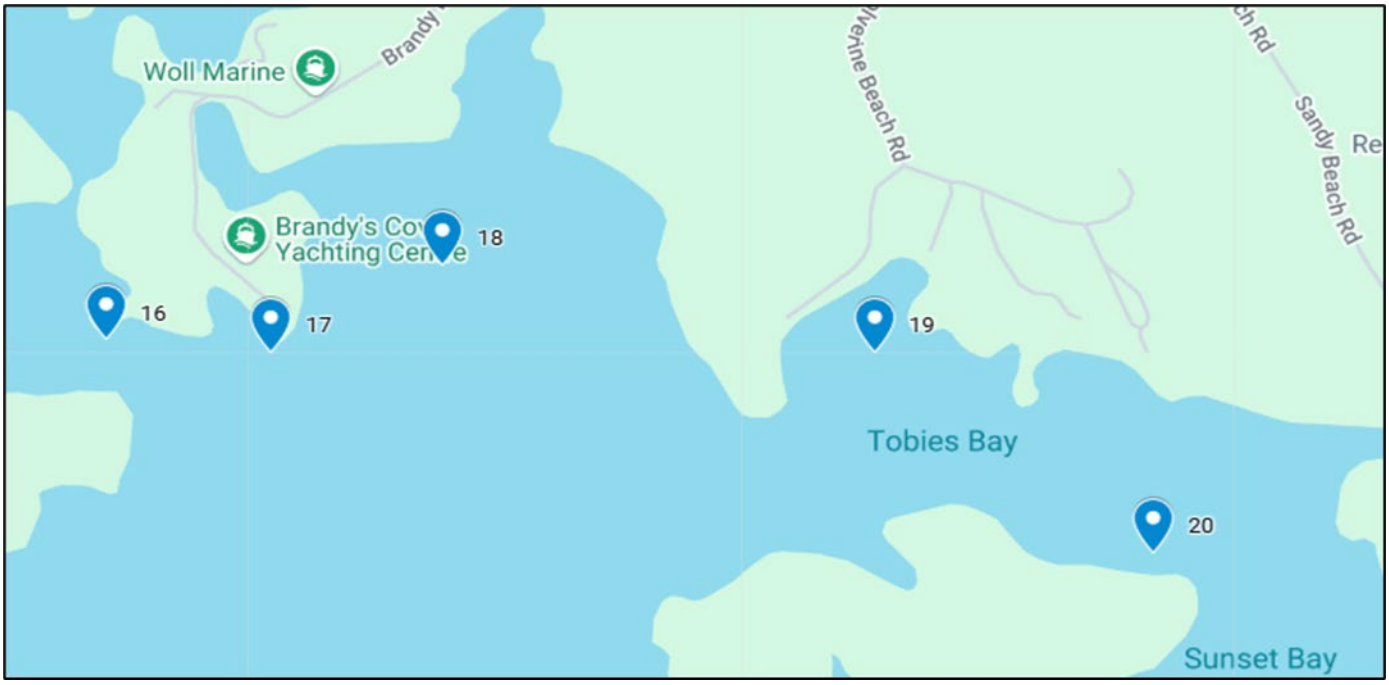


Map 1.13 South Bay, Honey Harbour

Map 1.14 Delawana North, Honey Harbour



Map 1.15 Church Bay & Picnic Island, Honey Harbour



Map 1.16 Brandy's Island, Sunset Bay, Tobies Bay

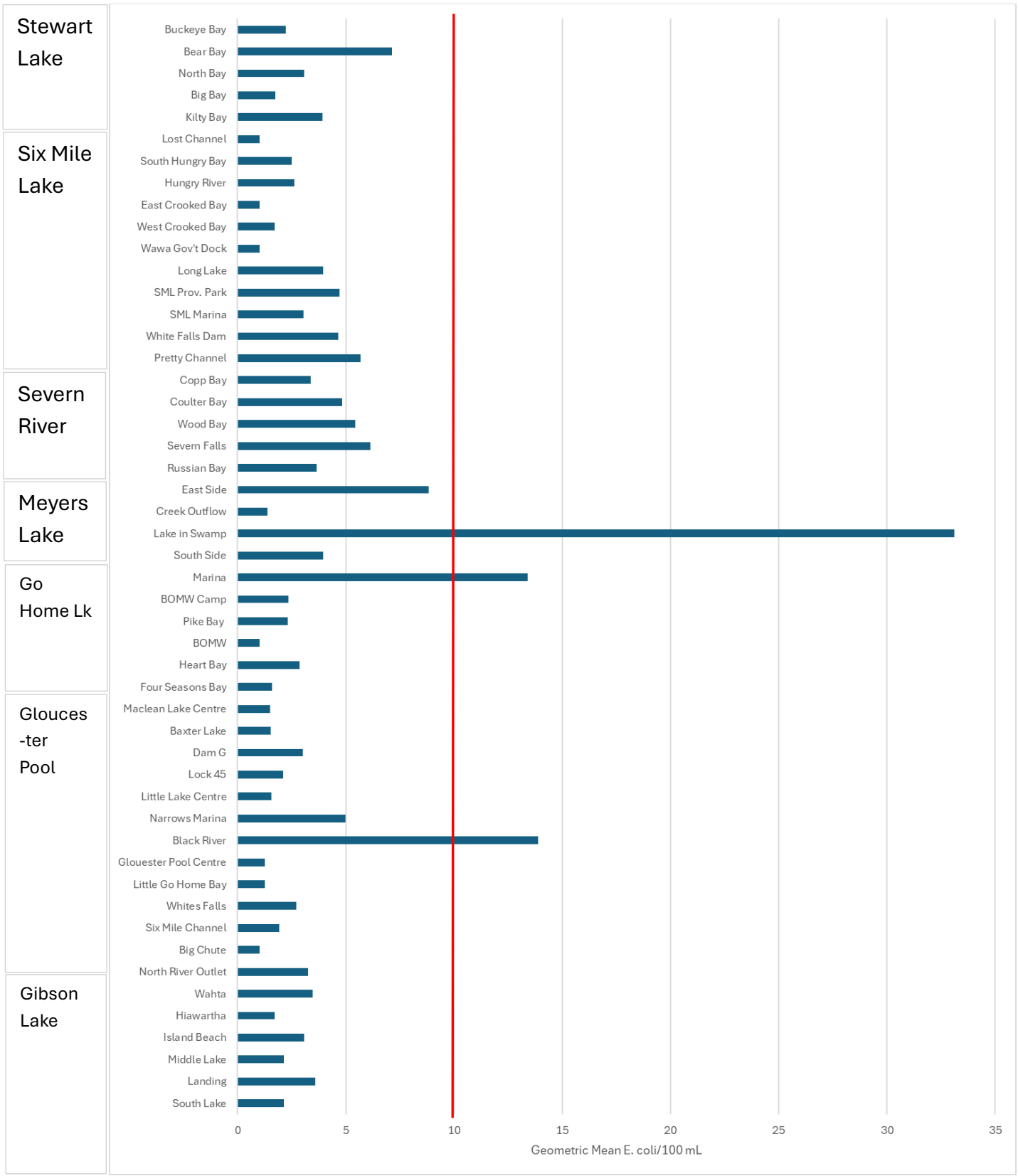


Figure 1: 2025 Geometric Mean E. coli densities (MPN/1000mL) from Inland Lakes. Red line indicates the GBWQO of 10 MPN/100mL

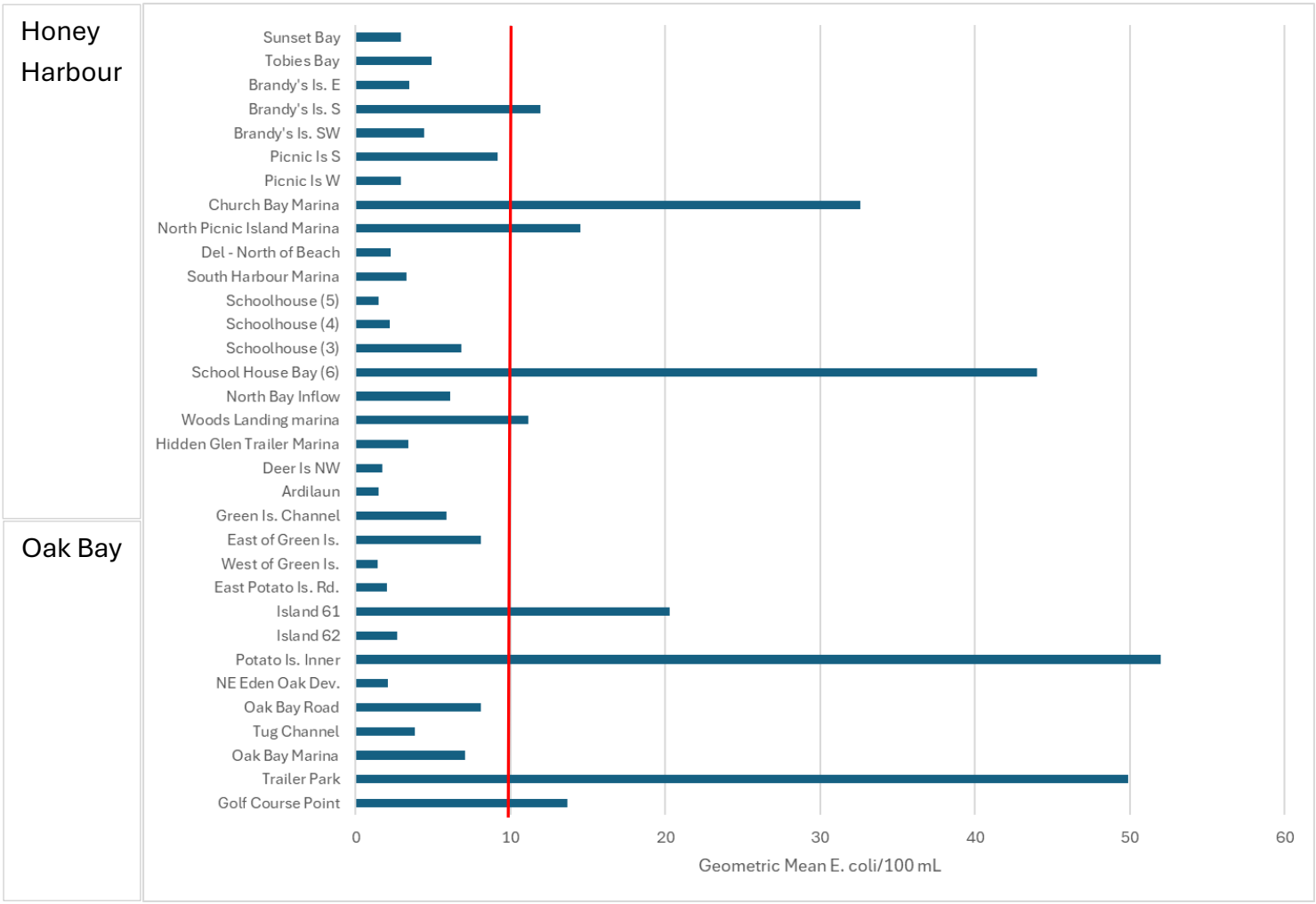


Figure 2: 2025 Geometric Mean E. coli densities (MPN/1000mL) from Coastal Georgian Bay (Honey Harbour and Oak Bay regions). Red line indicates the GBWQO of 10 MPN/100mL

5.0 SUMMARY

In 2025 a total of 245 water samples from seven inland lakes were collected and analyzed for Total Coliforms and E. coli. Based on seasonal Geometric Means of E. coli, there are three sites, GL06 Black River in Gloucester Pool (17 MPN/100 mL), GH06 Go Home Lake Marina in Go Home Lake (13 MPN/100 mL) and ML02 Lake in Swamp in Myers Lake (33 MPN/100 mL) that exceeded the GBWQO (**Table 1.10**). Based on Single Sample Values of E. coli, 43 out of the 245 samples, or 17% of the total samples collected from the inland lakes exceeded the GBWQO.

In 2025 a total of 117 water samples from coastal Georgian Bay were collected and analyzed for Total Coliforms and E. coli. Based on seasonal Geometric Means of E. coli, there are eight sites (3 from Oak Bay and 5 from Honey Harbour) that exceeded the GBWQO, as listed in **Table 1.10**. Based on Single Sample Values of E. coli, 41 out of the 117 samples, or 35% of the total samples collected from coastal Georgian Bay (Oak Bay and Honey Harbour) exceeded the GBWQO.

The Three-Tired Threshold system developed by Greenland and Dillan was applied to seasonal Geometric Mean E. coli values (**Table 1.10**). While the Greenland and Dillan report recommends thresholds of >100, > 200 and > 400 MPN/100 mL this report has used >10, >30 and > 50 MPN/100 mL as threshold ranges, since seasonal GM ranges suggested by Greenland and Dillan do not reflect the GBWQO.

A site in Myers Lake (ML02 Lake in Swamp), and sites in Oak Bay and Honey Harbour had the greatest threshold levels, however it must be noted that there were only 3 sample dates in Oak Bay and 4 in Honey Harbour, and the provincial guidelines require 5 samples.

Table 1.10 Summary of GBWQO Exceedances in 2025 (seasonal Geometric Mean E. coli)

Region	Site	E. coli	Range	Threshold Level
Gloucester Pool	GL06 Black River	14	>10 MPN/100 mL	Alert
Go Home Lake	GH06 Marina	13	>10 MPN/100 mL	Alert
Myers Lake	ML02 Lake in Swamp	33	>30 MPN/100 mL	Action
Oak Bay	1011 Golf Course Point	14	>10 MPN/100 mL	Alert
Oak Bay	1011A Trailer Park	50	>50 MPN/100 mL	Critical
Oak Bay	Island 61	20	>10 MPN/100 mL	Alert
Honey Harbour	1081 Woods Landing marina (4)	11	>10 MPN/100 mL	Alert
Honey Harbour	1107 School House Bay (6)	44	>30 MPN/100 mL	Action
Honey Harbour	1008 N. Picnic Island Marina (12)	15	>10 MPN/100 mL	Alert
Honey Harbour	1007 Church Bay Marina (13)	33	>30 MPN/100 mL	Action
Honey Harbour	3010 Brandy's Island S (17)	12	>10 MPN/100 mL	Alert

6.0 RECOMMENDATIONS

The value and benefits of this long-established, volunteer-based water monitoring program is significant. A strong network of trained and dedicated volunteers has been created, and an impressive database of water quality parameters has been established.

Based on the findings of the 2025 Water Quality Monitoring Program and discussions with volunteers and Township officials, several recommendations are provided.

1) The continuation and potential expansion of this program to include more parameters such as Secchi depth and dissolved oxygen (DO) and continuing to sample for total phosphorus (TP) is recommended.

2) Expanding the program geographically to include more northern regions of coastal Georgian Bay such as Twelve Mile Bay, Go Home Bay and Cognashene, paying particular attention to the inner bays that are used as anchorage bays by transient boaters. Recruiting volunteers for these regions would be necessary.

3) Maintaining consistent sampling at these long-term sampling locations is recommended, so that trend analysis is possible. Five years consistent data is the minimum number required to reasonably draw conclusions on trends over time (Hutchinson, 2025).

4) The recommended minimum 5 sample days should be adhered to in future water monitoring programs so seasonal Geometric Means are effective.

5) Pre-season, in-person training sessions should be provided to ensure water monitoring methodologies are being implemented consistently and correctly and to provide necessary training if additional parameters and related equipment are to be added to the program.

6) Applying the three-tired Threshold System, as described by Greenland and Dillon when exceedances occur is recommended. The threshold levels/ranges to be used need to be determined for this region (this report used lower threshold ranges than suggested in Greenland and Dillan's report).

7) Appropriate graduated mitigation responses which are triggered by threshold level exceedances need to be determined and authorized. These could range from re-testing and enhanced monitoring to mandatory septic re-inspection, potential beach/water use advisories, nutrient reduction action plan implementation and ultimately development restrictions (Greenland and Dillan, 2025).
   This will ensure that the appropriate governing body reacts logically and swiftly when critical stress thresholds are reached.

8) Future Water Quality Monitoring programs should commit to a regular review and refinement of thresholds and response actions (Greenland and Dillan, 2025), based on monitoring results and changes in the political, scientific and environmental climate.

A goal expressed by many individuals involved in this Water Quality Monitoring Program is to see a shift from simply monitoring and reporting to a mandatory, data-driven response plan when parameters hit critical levels, and ensuring it becomes the foundational policy tool for future water resource management in the Township of Georgian Bay.

7.0 REFERENCES

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