Memorandum

Date: **January 24, 2018**

To: **Dominique O'Brien, Manager of Community Services, Seguin Township**

From: **Kris Hadley**

Re: **J100033 – 2017 Water Quality Monitoring Summary**

In 2017, Seguin Township completed the tenth year of sampling for its Water Quality Monitoring Program. This program collects total phosphorus (TP) concentration data and other pertinent lake information (e.g., Secchi depth, dissolved oxygen concentration, lake depth, dissolved organic carbon, and major ion concentrations) in support of the water quality model developed to predict phosphorus concentrations in the Township[1]. Continued monitoring will also allow the Township to identify any changes in lake water quality as they emerge.

Monitoring in 2017 was conducted by summer students employed by Seguin Township. HESL staff provided sampling instructions which consisted of a half day training session and ongoing technical guidance, and assisted coordination with the laboratory at Dorset Environmental Science Centre (DESC). From May 16th to June 15rd, 2017, duplicate water samples were collected from 47 lakes for analysis of spring overturn TP concentration and in August 29 of those lakes were revisited to measure dissolved oxygen and temperature profiles, Secchi depth and lake depth.

Spring total phosphorus data are also collected by volunteers for several of the lakes in the Township under the province's Lake Partner Program (LPP) using the same sampling protocols as Seguin's program and analyzed at DESC. As with previous years, available LPP total phosphorus data collected since 2002 were compiled, reviewed and added to the Seguin data set to provide more data for more lakes and years. Combined, these two monitoring programs provide spring overturn total phosphorus data for 88 of the 129 lakes in Seguin Township that have a surface area of at least 10 ha. The LPP data for 2016 have been incorporated, however, 2017 data have not yet been posted. These data should be reviewed and included in future updates to the total phosphorus summaries.

The major findings from the 2017 Seguin monitoring and the results of the combined data from Seguin's monitoring program and the LPP are summarized below, and recommendations are provided for future sampling.

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[1] *Hutchinson Environmental Sciences, Ltd., 2016.* Review, Update and Refinement of Seguin Township's Water Quality Model (SWQM) and Phosphorus Management Approach. *Final report prepared for Seguin Township. January 2016. 67pp*

1. Spring Total Phosphorus

1.1 Data Screening

Contamination of samples can occur during sample collection which can produce elevated TP concentrations and 'bad splits' between field duplicates. Even with careful sampling, bad splits often occur in approximately 10% of sample submissions to DESC (pers. comm., Bev Clark, MOECC retired). All sample pairs that differed by more than a) 40% from the minimum of the two values, and b) 4 µg/L, were flagged and the higher of the two values was removed, assuming contamination.

There were no bad splits identified in the 2017 samples collected by Seguin Township (Table 1). This represents continued good sampling practices as the percentage of bad splits has remained below 10% since 2012. Samples collected by the LPP also demonstrated good sampling practice with only 5.1% of samples with bad splits. We recommend continued vigilance in following sampling protocol when collecting water samples to minimize the potential for sample contamination.

Table 1. Bad Splits between Duplicate Samples Collected by the Seguin Township Monitoring Program (ST) and the Lake Partner Program (LPP) for Seguin Township Lakes

Year	# of Bad Splits (>40% and >4 µg/L difference between sample pairs)	Total # of Samples	% Bad Splits
2008 (ST)	3	25	12
2009 (ST)	7	37	19
2010 (ST)	4	36	11
2011 (ST)	8	47	17
2012 (ST)	4	50	8
2013 (ST)	1	53	2
2014 (ST)	1	46	2
2015 (ST)	0	40	0
2016 (ST)	1	49	2
2017 (ST)	0	50	0
ST (08-17)	29	444	6.5
LPP (02-16)	23	455	5.1

Outliers from the data set were identified using the Dixon's Q and Grubbs' outlier tests[2] at a significance level of $\alpha = 0.05$. Nine values from 2017 were identified as outliers and were removed from the dataset prior to analysis (Table 2). Several previously identified outliers in the data set are no longer considered outliers with the addition of the 2017 Seguin Township and 2016 LPP data. Values from Baby Lake (16.2

[2] *For lakes with 3 to 10 years of data, a sample was considered to be an outlier based on both the Dixon and Grubb's test. For lakes with more than 10 years of data, only the Grubb's test was used to identify outliers.*

µg/L, 2016), Isabella Lake (11.9 µg/L, 2011), and McDonald Lake (10.8 µg/L, 2009), were identified as outliers in 2016, but were not in 2017 and so were incorporated into the updated data set.

Table 2. Outlier Total Phosphorus Values (2002-2017)

Lake	Year	Outlier TP (µg/L)	Mean 2002-2017 TP (µg/L) (outlier excluded)
Black Water Lake	2008	16.2	9.7
Brush Lake	2011	5.8	4.1
Cosh Lake	2008	21.0	6.7
Gilbank Lake	2006	13.9	7.4
Lane Lake	2013	10.0	5.1
Little Whitefish Lake	2006	10.1	4.9
McNutt Lake	2008	16.5	8.6
Oastler Lake	2014	10.8	6.8
Salmon Lake	2002	13.2	5.8
Whitefish Lake	2010	7.4	4.1

1.2 Summary

Mean spring total phosphorus concentrations for the 88 lakes with data from 2002 to 2017 ranged from 3.5 to 14.5 µg/L, with an overall average of 7.4 µg/L (Table 3). As in 2016, sixty-seven (67) of the lakes had spring TP concentrations <=10 µg/L, which provides a high level of protection against aesthetic deterioration due to excessive algal production in lakes[3]. Home, Lioness, Wright, Gerow and McTaggart Lake were sampled for the first time in 2017 expanding the Seguin Monitoring data set.

The MOECC recommends a minimum of two years of spring overturn TP data to be 95% confident of being within 20% of the mean spring concentration of a lake (Clark and Hutchinson 1992). Seventy-eight (78) lakes in Seguin Township now meet or exceed the minimum monitoring data requirements to provide reliable estimates of long term, spring total phosphorus concentrations.

Mann Kendall trend analysis was used to determine whether TP concentrations were changing significantly over time (2002-2017) in lakes with at least 10 years of data. Seventeen (17) lakes in the data set met the criteria for trend analysis (n = 10-16). No lakes displayed a significant increasing trend in TP over time ($p<0.05$), while TP in Manitouwaba Lake (2002-2016) decreased significantly from 6.8 mg/L in 2002 to 4.5 mg/L in 2016.

[3] *Ontario Ministry of Environment and Energy, 1994. Water Management Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy. Queen's Printer for Ontario, 1994, reprinted March 1995.*

Table 3. Mean Spring Total Phosphorus (TP) Concentrations in Seguin Township Lakes (n=85)

Lake name	TP 2017 (µg/L)	# of Years Sampled (02-17)	Mean TP (02-17) (µg/L)
Anselmi Lake		1	8.9
Armishaw Lake		4	5.3
Baby Lake	17.2	8	8.8
Back Lake	11.8	5	8.1
Black Water Lake	10.1	9	10.4
Blue Lake		8	3.9
Brennan Lake		4	9.4
Brush Lake		1	5.8
Burr Lake	9.2	2	6.7
Capton Lake		4	7.1
Carruthers Lake	6.4	2	5.7
Clear Lake	4.3	13	3.5
Cosh Lake		5	6.7
Diamond Lake		6	9.6
Draper Lake	8.8	6	7.2
Dyson Lake	6.3	8	4.9
Fair Lake		4	7.0
Faris Lake		4	3.8
First Lake	7.9	6	7.1
Flaxman Lake		4	4.4
Forget Lake	6.8	6	5.8
Gerow Lake	9.1	1	
Gilbank Lake	7.1	8	7.3
Haines Lake		5	7.7
Home Lake	16.9	1	
Hooton Lake	6.2	2	6.0
Horseshoe Lake	6.4	16	7.2
Isabella Lake	11.1	15	9.7
Joselin (Burnt) Lake		13	5.9
Kight Lake	15.0	5	11.1
Kingshott Lake		5	10.0
Lane Lake	5.9	5	5.1
Lieback Lake		4	5.4
Linger Long (Napken) Lake	11.0	6	9.2
Lioness Lake	9.1	1	
Little Seguin/Duck Lake	10.5	11	9.3
Little Whitefish Lake	5.8	10	4.8
Long Lake		4	7.3
Long Lake 1		3	4.3
Lower Fry Lake		6	13.0
Manitouwaba Lake		13	5.8
Maple Lake	11.6	12	11.1
Martin Lake		7	6.8

Lake name	TP 2017 (µg/L)	# of Years Sampled (02-17)	Mean TP (02-17) (µg/L)
McDonald Lake	9.2	6	8.3
McGowan Lake		13	5.2
McKechine Lake		5	4.0
McLean Lake		5	7.4
McNutt Lake		8	8.6
McTaggart Lake	10.9	1	
Mill Lake		1	
Mirror Lake	7.5	5	6.7
Mohan Lake		1	5.4
Murdock Lake		4	11.2
Mutton Lake		5	10.2
Neville Lake	14.7	5	11.6
Oastler Lake	6.7	12	6.9
Otter Lake	6.6	15	6.2
Pender Lake		4	5.4
Pickering Lake		4	13.4
Portage Lake	5.4	8	5.8
Rankin Lake	11.0	14	8.6
Richmond Lake	5.8	3	6.3
Roberts Lake	7.6	7	7.1
Salmon Lake	6.8	14	5.7
Scime Lake		2	9.3
Scott Lake		4	6.1
Second Lake		5	10.9
Sovereign Lake		1	6.5
Star Lake	10.0	15	10.0
Storm Lake		4	6.1
Sucker Lake	6.1	8	6.1
Sugar Lake	8.0	14	7.1
Ten Mile Lake		4	9.5
Third Lake		4	11.5
Three-Legged Lake	4.4	10	5.1
Tiffin Lake/Silver		6	6.5
Trout Lake	5.5	6	4.9
Tub Lake		4	6.8
Tucker Lake	7.0	7	8.0
Turtle Lake	8.8	12	8.0
Upper Fry Lake		12	14.5
Whitefish Lake	4.1	8	4.5
Windfall Lake	9.0	5	7.6
Wright Lake	6.4	1	
Yarrow Lake		4	8.4

Excludes Little Lake Joe, Little Otter Lake and Virtue Lake as they are not modelled

2. August Field Sampling

Dissolved oxygen and temperature profiles, lake depth, Secchi depth and water colour (qualitative) were monitored (Table 4) and water quality samples were collected and analyzed for major ions and dissolved organic carbon at 29 study lakes in August 2017 (Table 5).

Of the lakes monitored, 8 were shallow and mixed to the bottom. Five lakes were weakly stratified and could potentially mix to the bottom during strong wind events. These lakes have potential for internal phosphorus loading via sediment resuspension and would also have lower rates of phosphorus loss to the sediments due to wind mixing into the water column. Several of the lakes displayed low oxygen concentrations (<0.1 mg/L) within 1 m of the lake bottom, however only Tucker Lake was considered to potentially develop an anoxic (no oxygen) hypolimnion, as it was the only lake which had <0.1 mg/L of dissolved oxygen throughout the entire hypolimnion.

For the first time during the Seguin Township monitoring program, top/bottom total phosphorus samples were collected to attempt to quantify potential phosphorus release from lake sediments in lakes whose dissolved oxygen concentrations fell below 2.0 mg/L. Samples were collected from 10 lakes in which DO fell below 2.0 mg/L, all of which showed some degree of elevated phosphorus in bottom samples (e.g., Black Water, Gilbank, Little Whitefish, Neville, Sugar and Tucker, Table 4) indicating either potential internal loading of phosphorus from sediments or the accumulation of particulate phosphorus in quiescent bottom waters as part of the process of settling from surface waters and incorporation into lake sediments. Continued top/bottom sampling of Seguin Township lakes is recommended to confirm patterns seen in 2017 and to identify any other lakes which may experience internal loading of total phosphorus.

A special study on Otter Lake has found evidence of higher hypolimnetic phosphorus concentrations in the isolated embayments of Otter Lake (Clark 2017). Clark (2017) found that higher concentrations were especially prevalent in Bay 2 (just North of Sovereign Lake), where hypolimnetic phosphorus concentrations approached but did not exceed 20 μg/L, however increased TP in Bay 2 was not associated with human activities.

Past sampling performed for the Township of Seguin has focused on the qualitative assessment of dissolved organic substances by water colour observation, however in 2017 in addition to recording water colour observations, dissolved organic carbon (DOC) samples were collected to begin to better quantify DOC and identify lakes in which TP concentrations reflect elevated DOC concentrations. Lakes with high DOC concentration (i.e., >10 mg/L) will have naturally enriched TP concentrations and may not model well because they fall outside the range of DOC in lakes that were used to develop and calibrate the Province's Lakeshore Capacity Model (Ontario, 2010) which was used as the basis of the Seguin Water Quality Model. Tucker Lake was the only lake sampled in 2017 in which DOC concentration was above 10 mg/L (Table 5). We recommend continued DOC sampling in the future to inform the modelling and help explain the TP concentrations of other Seguin Township lakes, focussing on lakes whose colour suggests elevated dissolved organics (Appendix A).

Major ion sampling was performed for the first time in the 2017 monitoring campaign. Water samples were collected and submitted to the water chemistry lab at DESC for analysis of calcium, sulphate and chloride (Table 5). Chloride concentrations were elevated in several of the lakes which are in close proximity to

Table 4. Summary of August 2017 Field Sampling Results.

	Depth (m)	Surface Water Temperature (˚C)	Dissolved Oxygen (mg/L)[1]	Potentially Anoxic Hypolimnion?[2]	Shallow Mixed Water Column?[3]	Total Phosphorus Top (µg/L)	Total Phosphorus Bottom (µg/L)	Secchi Depth (m)	Water Colour
Baby Lake	1.5	21.2	8.51 (1)	No	Yes			1.2	Brown
Black Water Lake	6	21.4	0.14 (5)	No	Weak	20.2	27.4	2.5	Light
Draper Lake	4	22.5	8.32 (3)	No	Yes			2.7	Clear
Dyson Lake	16	22.1	8.15 (12)	No	No			3.3	Not Recorded
First Lake	2.7	21.5	7.8 (2)	No	Yes			2.5	Light Yellow
Gilbank Lake	18	22.4	1.94 (12)	No	No	5.2	7.4	2.8	Clear/Yellow
Horseshoe Lake	25	23.4	6.33 (8)	No	No	7.6	8.2	3.7	Yellow
Isabella Lake	9.2					25.2	26.4	2.2	
Lane Lake	7	21.3	10.1 (5)	No	Weak			3.5	Clear
Linger Long Lake	3	23.8	7.66 (2)	No	Yes			2.1	Brown/Red
Little Otter Lake	5	24	6.75 (4)	No	Weak			3.1	Clear/Yellow
Little Whitefish Lake	11	23.2	0.92 (11)	No	No	5.8	9.6	5.1	Clear/Blue Green
Maple Lake	16	22.3	1.92 (6)	No	Weak	9	10.2	1.9	Yellow
Mirror Lake	4	22.7	7.91 (3)	No	Yes			4.9	Clear
Neville Lake	5.2	20.7	0.08 (5)	Yes	No	23.6	59	2.3	Brown/Yellow
Otter Lake	30	24	6.75 (4)	No	Yes			4.4	Yellow
Portage Lake	16	23.7	10.02 (7)	No	No			3.2	Clear/Yellow
Roberts Lake	4	21.1	7.56 (3)	No	Yes			3.1	Light
Salmon Lake	10	24	3.03 (9)	No	No	5.2	6.6	5.3	Clear
Sucker Lake	17	21.7	2.45 (15)	No	No			3.4	Yellow
Sugar Lake	16	22.5	1.75 (14)	No	No	6	8.8	2.9	Green/Yellow
Three Legged Lake	14	23.9	7.81 (10)	No	No			3.8	Clear/Blue
Tucker Lake	6	20.2	0.04 (6)	Yes	No	9	21.4	2.1	Red
Turtle Lake	17	22.5	0.75 (6)	No	Weak			3.1	Yellow
Whitefish Lake	9	23	8.33 (3)	No	Yes			3.6	Clear

[1]depth in brackets is the deepest D.O. measurement; [2]mean hypolimnetic dissolved oxygen concentration <0.1 mg/L; [3]weak stratification refers to lakes that have a thermocline (>1°C change/1 m depth) that extends to the lake bottom.

major roads (e.g., Baby, First, Oastler and Roberts) suggesting some of these lakes are impacted by local road treatment, however Baby Lake has the highest chloride concentration despite no nearby major road. The source of chloride in Baby Lake cannot be determined based on initial sampling, Baby Lake is a shallow lake, with low connectivity to other water bodies, it is possible that high chloride concentrations are a result of evaporative enrichment. Calcium concentrations in seven lakes have dropped below 2.0 mg/L, a threshold known to potentially effect organisms with high calcium demands, such as crayfish and some zooplankton species (Hadley et al. 2014; Jeziorski et al. 2008). Calcium decline in the Muskoka region is a well studied phenomenon and believed to be a long-term consequence of 20th century acidification coupled with Canadian Shield bedrock which is highly resistant to natural weathering processes which replenish ions such as calcium in soils (Jeziorski et al. 2008).

Table 5. Summary of Dissolved Organic Carbon and Major Ion Sampling Conducted in 2017

Lake Name	Dissolved Organic Carbon (mg/L)	Ca (mg/L)	Cl (mg/L)	SO_4 (mg/L)
Baby Lake	7.7	10.4	91.3	2.9
Black Water Lake	9.3	4.1	0.7	1.3
Draper Lake	3.9	2.3	1.2	3.1
Dyson Lake	3.7	2.6	1.4	4.0
First Lake	4.9	5.4	34.3	5.2
Gilbank Lake	4.3	3.3	12.4	3.2
Horseshoe Lake	5.1	3.7	17.5	3.5
Isabella Lake	7.9	2.0	2.8	2.0
Lane Lake	5.6	1.5	1.5	2.2
Linger Long Lake	8.6	1.4	0.5	2.2
Little Otter Lake	5.8	3.9	7.5	3.5
Little Whitefish Lake	4.5	3.3	4.2	3.6
Maple Lake	6.3	2.4	5.1	2.5
McDonald Lake	7.3	3.1	1.9	3.4
Mirror Lake	4.4	5.5	4.4	3.2
Neville Lake	7.9	1.8	1.0	1.2
Oastler Lake	6.1	5.1	22.5	4.3
Otter Lake	5.4	2.3	1.9	3.1
Portage Lake	4.9	3.7	11.3	4.0
Rankin Lake	5.3	5.2	11.3	3.8
Roberts Lake	7.6	7.1	79.1	6.0
Salmon Lake	5.2	1.9	2.2	2.4
Star Lake	6.3	2.7	6.0	2.5
Sucker Lake	5	1.7	2.4	2.6
Sugar Lake	5	1.8	1.0	3.2
Three Legged Lake	4.3	1.5	1.0	2.9
Tucker Lake	10.3	2.9	2.2	2.3
Turtle Lake	5.4	3.3	10.0	3.3
Whitefish Lake	3.9	3.5	12.5	3.4

Fall sampling presented several sampling issues which compromised data collection. Lake depth measurements were not collected along with profile data due to an apparent equipment issue in the field. In addition, recommended best sampling and data management practices do not appear to have been followed during field sampling. Sampling methodology was not followed for dissolved oxygen profile collection and therefore profiles for several of the 29 lakes sampled are incomplete. In addition, field data collected for Isabella, McDonald, Oastler and Star Lake were not provided in the Year End Field Report to the Township, despite water samples having been collected. It is unclear if profiles from these lakes were not collected when samples for DOC and major ions were collected or if field data were lost or not reported. Data from both Salmon and Horseshoe Lake suggest that dissolved oxygen did not fall below the 2.0 mg/L threshold necessary to trigger top/bottom TP sampling, yet samples were collected. Field data collection forms were provided for Fall sampling but were not used, it is recommended that future field programs adhere to the sampling guidance provided to ensure data integrity is maintained.

3. Summary and Recommendations

The 2017 data collection campaign of the Seguin Water Quality Monitoring Program was a success. The collection of samples for dissolved organic carbon and major ion analysis provided important data to inform the ongoing assessment of development capacities and aid in the identification of emerging lake health issues in the Township.

The key results of this years monitoring program and recommendations for future sampling are:

- A total of 88 of 129 lakes (68%) in Seguin Township have measured spring total phosphorus concentration data, and 78 of these lakes have at least 2 years of data as of the end of the 2017 sampling season
- No lakes displayed a significant increasing trend in TP
- August monitoring of dissolved oxygen, temperature, lake depth and Secchi depth was completed for 29 lakes in 2017. These data have been useful to flag shallow lakes, high DOC lakes and lakes that potentially undergo anoxia for future refinements of the Seguin Water Quality Model and to explain potential error in model predictions.
- Now that at least 2 years of data exist for the ‘A’ Lakes monitored by the program (Table 6), a new monitoring schedule could be developed to sample these lakes every three years instead of every other year to allow sampling of additional lakes that presently do not have data (‘B’ lakes, Table 6). Seven lakes currently are identified as accessible but have not yet been sampled and an additional seven have a single year of data. Eighteen additional lakes have currently not been surveyed to determine accessibility.
- We recommend that the monitoring program continue with the addition of more lakes that have little or no data (‘B’ lakes, Appendix A), and include the collection of top/bottom total phosphorus samples in low oxygen lakes
- Due to the complex lake shape and bathymetry of Horseshoe Lake and Little Whitefish Lake, we recommend that spring total phosphorus sampling should be conducted within each of the major distinct basins (3 basins in Horseshoe lake and 4 basins in Little Whitefish Lake) to assess potential differences in water quality between basins in the future.
- 2017 was the first monitoring year which included quantitative analysis of DOC, however the majority of the Seguin Township lakes still have not been sampled for DOC. We recommend continued sampling for dissolved organic carbon to inform future modelling of these lakes. HESL

will work with Seguin Township to select the most appropriate lakes for additional sampling if this is possible.

- Lakes with a shallow mixed water column, high DOC, and potentially anoxic hypolimnia should be identified in future revisions of the Seguin Water Quality Model to explain possible error in model predictions and to adjust the model accordingly. Based on these data Tucker Lake may be difficult to model as it is both high DOC and potentially anoxic. Additionally, Black Water, and Neville showed substantially higher hypolimnetic total phosphorus concentrations.
- It is important to reinforce the need for proper field protocol for sample collection and record keeping among the student crew. We recommend that an orientation “refresher” be conducted for the students prior to the August sampling.

4. References

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Jeziorski, A., Yan, N., Paterson, A.M., Desellas, A., Turner, M.A., Jeffries, D., Keller, B., Weeber, R., McNicol, D.K., Palmer, M.E., McIver, K., Arseneau, K., Ginn, B., Cumming, B., Smol, J.P. 2008. The widespread threat of calcium decline in fresh waters. Science 322.

Table 6. Revised Seguin Township Lake Monitoring List 2017

Even Years (2018)	Odd Years (2019)
Anselmi Lake	Armishaw Lake
Blue Lake	Baby Lake
Brennan Lake	Back Lake
Capton Lake	Black Water Lake
Cosh Lake	Burr Lake
Diamond Lake	Carruthers Lake
Fair Lake	Clear Lake
Faris Lake	Draper Lake
Flaxman Lake	Dyson Lake
Haines Lake	First Lake
Joselin (Burnt) Lake	Forget Lake
Kingshott Lake	Gerow Lake
Lieback Lake	Gilbank Lake
Little Otter Lake	Home Lake
Long Lake	Hooton Lake
Long Lake 1	Horseshoe Lake I II and III
Lower Fry Lake	Isabella Lake
Manitouwaba Lake	Kight Lake
Martin Lake	Lane Lake
McGowan Lake	Linger Long (Napken) Lake
McKechine Lake	Lioness Lake
McLean Lake	Little Lake Joe
McNutt Lake	Little Seguin/Duck Lake
Mill Lake	Little Whitefish Lake I II III and
Mohan Lake	Maple Lake
Murdock Lake	McDonald Lake
Mutton Lake	McTaggart Lake
Pender Lake	Mirror Lake
Pickering Lake	Neville Lake
Scime Lake	Oastler Lake
Scott Lake	Otter Lake
Second Lake	Portage Lake
Sovereign Lake	Rankin Lake
Storm Lake	Richmond Lake
Ten Mile Lake	Roberts Lake
Third Lake	Salmon Lake
Tiffin Lake/Silver	Star Lake
Tub Lake	Sucker Lake
Upper Fry Lake	Sugar Lake
Yarrow Lake	Three-Legged Lake
Aikman Lake	Trout Lake
Cochrane Lake	Tucker Lake
Dick Lake	Turtle Lake
Hamer Lake	Virtue Lake
Heaslip Lake	Whitefish Lake
Lovell Lake	Windfall Lake
Watson Lake	

Appendix A. Seguin Township Lake List

2009 Model Lake No.	Lake Name	Watershed Code	Upstream Lakes	Accessible ?	DOC Sampled ?	DOC Priority	'A' Lakes	'B' Lakes
87	5	S3	0	-				x
26	1	GB (end)	0	-				x
95	10/Good Lake	S6	0	No				x
27	2	GB (end)	28	-				x
1	3	B (end)	7	-				x
100	4	LJ	0	-				x
88	6/Vinett Lake	S3	92	All Marsh				x
89	7	S3	0	-				x
126	8	OT	0	-				x
127	9	OT	0	-				x
54	Aikman Lake	MC	56	Yes				x
101	Anselmi Lake	LJ (end)	0	No				x
102	Armishaw Lake	LJ (end)	0	Yes		1	x	
61	Baby Lake	S1	0	Yes	X	4	x	
49	Back Lake	H	0	Yes		1	x	
28	Bennett Lake	GB	0	-				x
97	Black Water Lake	S8	0	Yes	X	4	x	
2	Blue Lake	B	0	Yes		3	x	
15	Brennan Lake	BS	25	Yes		1	x	
103	Brush Lake	LJ (end)	0	Yes				x
104	Burr Lake	LJ	113	Yes				x
50	Capton Lake	H	0	Yes		1	x	
62	Carruthers Lake	S1	0	Yes				x
105	Carter Lake	LJ (end)	0	-				x
29	Catfish Lake	GB (end)	0	-				x
63	Clear Lake	S1	61	Yes		3	x	
30	Clear Lake 1	GB (end)	0	-				x
106	Clubbe Lake	LJ (end)	0	No				x
51	Cochrane Lake	H	0	Yes				x
64	Cosh Lake	S1	0	Yes		1	x	
65	Dainty Lake	S1	0	No				x

2009 Model Lake No.	Lake Name	Watershed Code	Upstream Lakes	Accessible ?	DOC Sampled ?	DOC Priority	'A' Lakes	'B' Lakes
44	Dell Lake	H	0	-				x
66	Diamond Lake	S1	0	Yes		1	x	
107	Dick Lake	LJ (end)	0	Yes				x
108	Draper Lake	LJ (end)	0	Yes	X	4	x	
109	Dyson Lake	LJ (end)	0	Yes	X	4	x	
110	Fair Lake	LJ (end)	0	Yes		1	x	
67	Faris Lake	S1	0	Yes		3	x	
16	First Lake	BS	18	Yes	X	4	x	
17	Flaxman Lake	BS	22	Yes		3	x	
31	Forget Lake	GB (end)	0	Yes		3	x	
90	Fume Lake	S3	87,88,91	No				x
111	Gerow Lake	LJ (end)	0	Yes				x
68	Gilbank Lake	S1	72b,83	Yes	X	4	x	
42	Haines Lake	H (end)	47,48	Yes		1	x	
112	Hamer Lake	LJ	0	Yes				x
32	Heaslip Lake	GB (end)	0	Yes				x
33	Hines Lake	GB (end)	40	-				x
45	Home Lake	H	43	Yes				x
55	Hooton Lake	MC	0	Yes				x
84	Horn Lake	S2	0	No				x
18	Horseshoe Lake (includes Virtue Lake)	BS	17,19	Yes	X	4	x	
113	Hurst Lake	LJ	0	No				x
60	Isabella Lake	S (end)	70,85,90, 93,94,95, 96,97,98	Yes		1	x	
91	Jelso Lake	S3	0	No				x
34	Joselin (Burnt) Lake	GB (end)	37	Yes			x	
52	Kight Lake	H	0	Yes		1	x	
35	Kingshott Lake	GB	0	Yes		1	x	
114	Krapek Lake	LJ to Portage	0	No				x
43	Lane Lake	H	0	Yes	X	4	x	
69	Lieback Lake	S1	0	Yes		1	x	

2009 Model Lake No.	Lake Name	Watershed Code	Upstream Lakes	Accessible ?	DOC Sampled ?	DOC Priority	'A' Lakes	'B' Lakes
3	Linger Long Lake/Napken	B	0	Yes	X	4	x	
19	Lioness Lake	BS	15	Yes				x
56	Lipscombe Lake	MC	58	No				x
98	Little Manitouwaga Lake	S9	99	No				x
70	Little Seguin/Duck Lake	S1	66,73	Yes		1	x	
71	Little Whitefish	S1	63	Yes	X	4	x	
53	Long Lake	H	0	Yes		1	x	
72	Long Lake 1	S1	0	Yes			x	
115	Loucks Lake	LJ (end)	0	No				x
4	Lovell Lake	B	0	Yes				x
85	Lower Fry Lake	S2	86	Yes		1	x	
99	Manitouwaba Lake	S9	0	Yes		1	x	
73	Maple Lake	S1	74,78,81	Yes	X	4	x	
74	Martin Lake	S1	62,65,67, 75,76,77	Yes		1	x	
116	McCan Lake	LJ (end)	0	No				x
75	McCauley Lake	S1	0	No				x
57	McCoy Lake	MC (end)	54,59	No				x
5	McDonald Lake	B	3,6	Yes		1	x	
36	McGowan Lake	GB	0	Yes		3	x	
46	McGruther Lake	H	0	-				x
37	McKechine Lake	GB	0	Yes		1	x	
76	McLean Lake	S1	0	Yes		1	x	
47	McNutt Lake	H	49,50,51, 52,53	Yes		1	x	
117	McTaggart Lake	LJ	112,121,1 24	Yes				x

2009 Model Lake No.	Lake Name	Watershed Code	Upstream Lakes	Accessible ?	DOC Sampled ?	DOC Priority	'A' Lakes	'B' Lakes
118	Mirror Lake	LJ (end)	0	Yes	X	4	x	
77	Mohan Lake	S1	69	No				x
119	Motley Lake	LJ	104	No				x
6	Murdock Lake	B	0	Yes		1	x	
78	Mutton Lake	S1	80	Yes		1	x	
48	Neville Lake	H	44,45,46	Yes	X	4	x	
38	Oak Lake	GB (end)	0	No				x
7	Oastler Lake	B	4,5,8	Yes		1	x	
39	One Island Lake	GB (end)	0	No				x
8	Otter Lake	B	2,9,10,11, 12,13,14	Yes	X		x	
40	Payne Lake	GB	0	No				x
20	Pender Lake	BS	0	Yes		1	x	
120	Pickering Lake	LJ (end)	0	No				x
79	Ponsford Lake	S1	0	No				x
128	Portage Lake	LJ (end)	0	Yes	X	4	x	
9	Rankin Lake	B	0	Yes			x	
41	Richmond Lake	GB (end)	36	Yes				x
121	Roberts Lake	LJ	0	Yes	X	4	x	
10	Salmon Lake	B	0	Yes	X	4	x	
96	Santa Lake	S7	0	-				x
11	Scime Lake	B	0	Yes			x	
12	Scott Lake	B	0	Yes		3	x	
21	Second Lake	BS	16,24	Yes		1	x	
13	Sovereign Lake	B	0	Yes				x
22	Spectacle Lake	BS	0	-				x
80	Star Lake	S1	79,82	Yes		1	x	
94	Storm Lake	S5	0	Yes		1	x	
122	Sucker Lake	LJ (end)	125	Yes	X		x	
81	Sugar Lake	S1	0	Yes	X	4	x	
58	Tarver Lake	MC	0	No				x
92	Ten Mile Lake	S3	89	Yes		1	x	
23	Third Lake	BS (end)	21	Yes		1	x	

2009 Model Lake No.	Lake Name	Watershed Code	Upstream Lakes	Accessible ?	DOC Sampled ?	DOC Priority	'A' Lakes	'B' Lakes
59	Three-Legged Lake	MC	55	Yes	X	4	x	
123	Tiffin/Silver Lake	LJ (end)	117	Yes			x	
72.5	Trout Lake	S1	72	Yes		3	x	
93	Tub Lake	S4	0	Yes		1	x	
124	Tucker Lake	LJ	0	Yes	X	4	x	
82	Turtle	S1	68	Yes	X	4	x	
86	Upper Fry Lake	S2	84	Yes		1	x	
125	Watson Lake	LJ	119	Yes				x
83	Whitefish Lake	S1	71,64	Yes	X	4	x	
24	Windfall Lake	BS	0	Yes		1	x	
14	Wright Lake	B	0	Yes				x
25	Yarrow Lake	BS	20	Yes		1	x	

KRH