

***Pike Lake Water Quality Report
2004 – 2006***

Prepared for
***The Pike Lake Cabin Owners Association
&
Pike Lake Provincial Park***

Monitoring and Assessment Branch
Stewardship Division
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Acknowledgements

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1.0 Introduction and Background

1.1 General Description, Geography and Hydrogeology of Pike Lake

Pike Lake is approximately 9.5 km long, 4.5 km wide and located approximately 29 km southeast of Saskatoon, Saskatchewan. The lake's surface area is approximately 32.2 km² (depending on water level). Shaped like a crescent moon, the lake is a remnant of the South Saskatchewan River's meandering channel, which is now cut off from natural flows of the river (oxbow lake). The lake's water level is now maintained for recreational purposes by Saskatchewan Watershed Authority's Operations Division, to provide sufficient depth for recreation in and around the lake. Water level in Pike Lake is also influenced by surface water inflow (several minor tributaries with intermittent drainage into the lake), precipitation, evaporation, and groundwater. Maximum depth in Pike Lake is approximately 3 m.

Pike Lake Provincial Park surrounds a large portion of the lake, however most amenities such as camping, swimming and golf are located along the western shoreline. A popular recreational site with many attractions, Pike Lake is easily accessible from Saskatoon and has many visitors throughout the summer. Though there are many seasonal visitors, the lake is also home full year-round for several residents.

Pike Lake is located within the Moist Mixed Grasslands ecoregion in Saskatchewan. Lying within the South Saskatchewan River floodplain, Pike Lake is surrounded by alluvial soil which is often very fertile. Within this ecoregion, surficial aquifers or surficial glacial aquifers contribute ground water, which is low in salt concentration when compared to bedrock aquifers (Acton et al. 1998).

1.2 Lake Stewardship & the Pike Lake Provincial Park

Before its cessation in 2008, the *Lake Stewardship Program* was focused on supporting activities, projects and public education at lakes with stewardship groups and volunteers. Pike Lake had no active volunteer lake stewardship group during the time of sampling therefore, sampling assistance was provided by the staff at the Pike Lake Provincial Park.

In addition to staff at Pike Lake Provincial Park, residents and public users can be important advocates on behalf of the health of Pike Lake and its upland area. The Pike Lake Cottage Association or formation of a watershed-oriented group could support or facilitate projects which promote education and awareness regarding the aquatic and terrestrial health of Pike Lake. It is through education and awareness that people make better decisions towards the protection and preservation of our natural environment.

2.0 Water Quality Sampling

Water quality monitoring of Pike Lake began in 2004 through the cooperation of Saskatchewan Watershed Authority and the Pike Lake Provincial Park staff. The objective of water quality sampling was to provide background (normal or average) water quality values for Pike Lake.

Sampling was discontinued after 2006 to provide the opportunity for another lake to establish some baseline sampling through the *Lake Stewardship Program*. Though water quality sampling through the *Lake Stewardship Program* ceased completely in 2008, the baseline data collected on Pike Lake will be of great benefit to better understand the lake's water quality and to make more informed decisions on the management or activities in and around the lake. There was no historical water quality data found (prior to 2004) in the provincial database for surface water quality.

2.1 Water Quality Frequency and Sampling Sites

The standard lake sampling schedule for Saskatchewan Watershed Authority's *Lake Stewardship Program* included two winter (January to March) and four summer samples (May to October) per year. Sample sites are divided into *Baseline Stations* and *Shoreline Stations* (Figure 1).

Baseline Station: Baseline stations are generally deep, centrally located sites chosen to represent typical water quality conditions in the lake. Certain parameters (i.e. dissolved oxygen and temperature) are recorded at intervals throughout the depth at the site. Baseline stations are sampled on all six sample dates during the year. Water quality results from baseline stations are also used to calculate the Water Quality Index (WQI) score.

Shoreline Stations: Shoreline stations are monitored to determine the effects of local influences on water quality. The locations of shoreline stations were chosen by Saskatchewan Watershed Authority to reflect the conditions at the north and south portions of the lake (Figure 1). Sampled only during open water, the water quality results for these shoreline stations are compared to Saskatchewan's *Surface Water Quality Objectives for Recreation and Aesthetics* (Interim Edition, July 2006).

2.2 Water Quality Index: Assessing General Water Quality

The Water Quality Index (WQI) provides a means of assessing the overall quality of lake water in Saskatchewan. To calculate the WQI, results from water quality sampling are compared to provincial objectives for specific water uses such as irrigation, recreation and the protection of aquatic life. The WQI combines key chemical and biological aspects of water quality (including major ions, nutrients, heavy metals, herbicides, bacteria, dissolved oxygen and pH) to define overall water quality and summarize these parameters in a single score.

A single score for each year allows easy comparison of general water quality trends over time and identifies parameters considered important to overall lake health. The WQI score is based on whether parameters meet their objectives and takes into account the magnitude and frequency of excursions. Deviation from objective values does not necessarily indicate poor lake health or that water quality is worsening. Certain parameters (*i.e.* arsenic, chloride and pH) may naturally exceed the WQI objectives in Saskatchewan lakes due to geologic and hydrologic characteristics of the drainage basin and lake. The WQI does not differentiate 'natural-source deviation' or exceedances, which are a result of human influences. As such, it is important to examine lake

water quality over time in order to assess if human activity may be impacting lake water quality.
¹

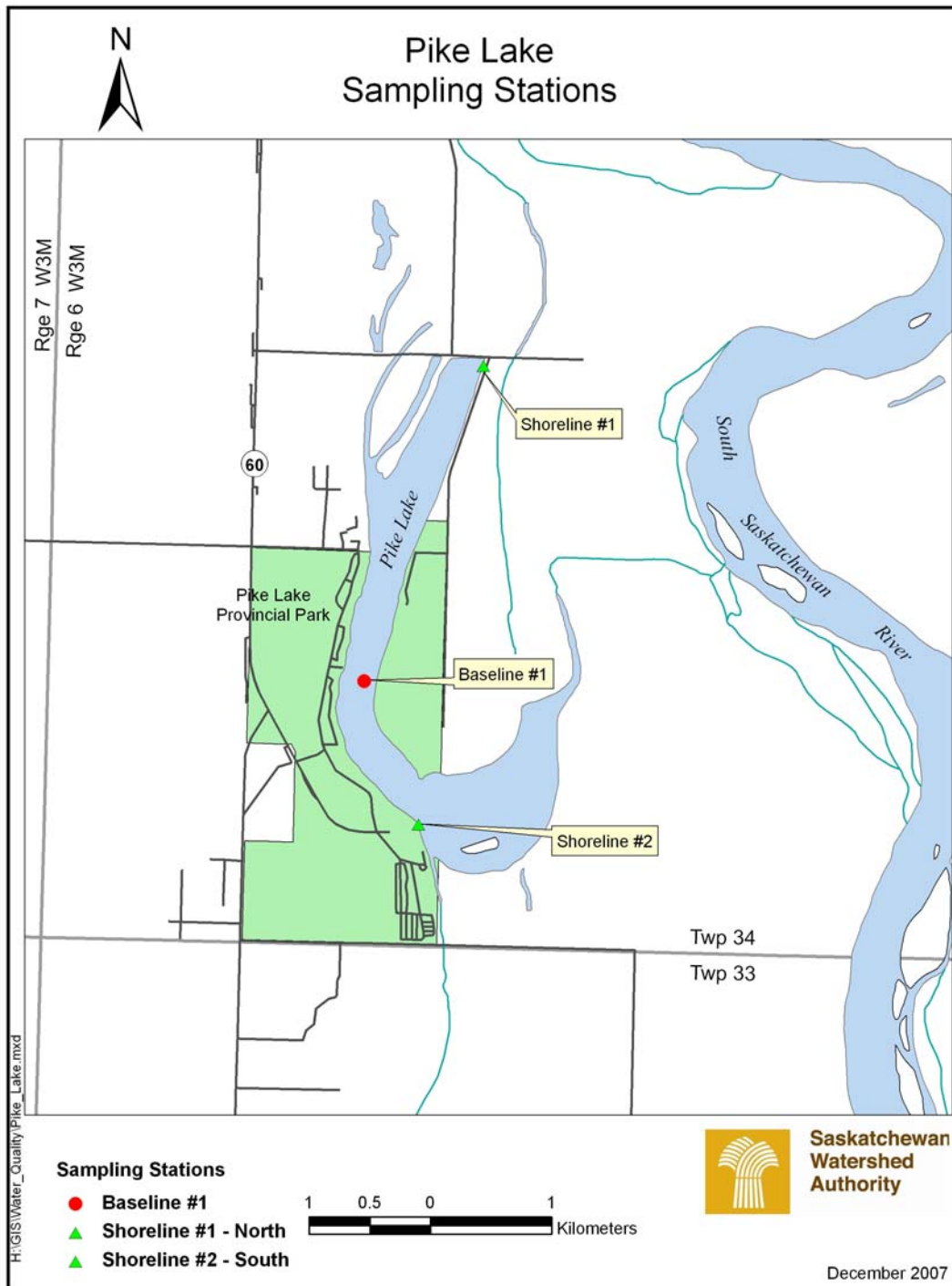


Figure 1: Map of Pike Lake 2004 - 2006 sampling stations

¹ For a more complete explanation about the Water Quality Index (WQI) or the parameters used to determine WQI scores, please refer to the “Lake Stewardship Water Quality Guide” online at www.swa.ca.

3.0 Water Quality Results and Discussion

3.1 Baseline Station Summary

The WQI scores for Pike Lake Baseline Station (centre of the lake) remained consistent over the sample period from 2004-2006 (Figure 2). In 2004, sampling was initiated during the open water season (summer) and therefore only three samples were collected that year. In 2005, there were two winter and four open water samples taken. Similarly, 2006 had two winter samples and three open water samples. The increased WQI score in 2004 and is largely due to the absence of winter water quality data in 2004 and the low number of total samples taken in that year.

Taking in account the limitations of 2004’s data, Pike Lake’s baseline station has WQI scores categorized as *good*. The consistency in both the frequency and magnitude of the parameters identified as “exceeding” the WQI index indicates that these exceedances may not be due to human influences, but rather to natural processes, which may not impair the ecology of Pike Lake. Only four parameters (pH, chromium, phosphorus, and dissolved oxygen) exceeded objectives in the WQI.

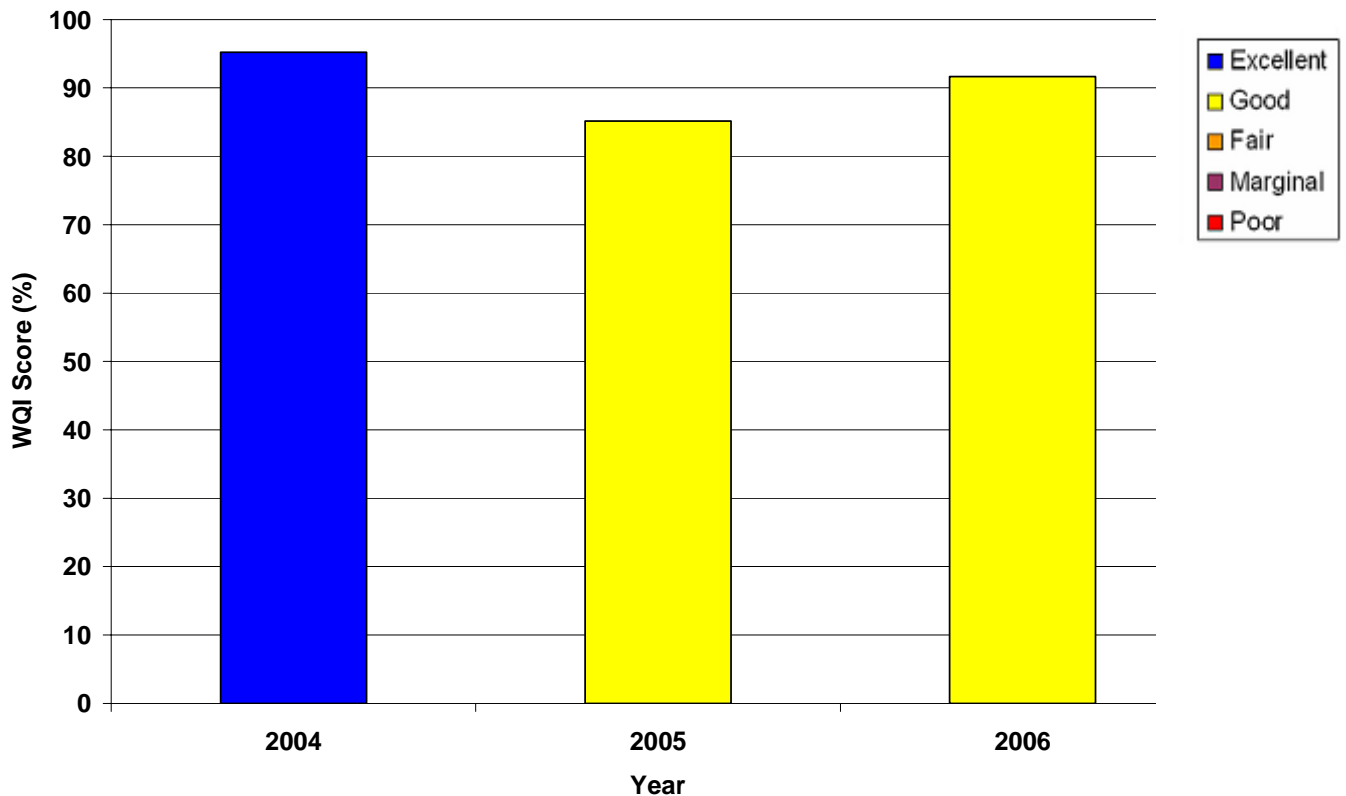


Figure 2: Water Quality Index (WQI) scores for Pike Lake - Baseline Station 2004-2006

3.2 Parameters Not Meeting WQI Objectives

pH

pH is an important water quality parameter that affects chemical and biological reactions within lakes. Extremes in pH or rapid changes in pH can negatively impact aquatic life. Saskatchewan lakes demonstrate a variety of pH levels from basic to acidic. The pH only exceeded the WQI objective of pH 6.5-9.0 once in 2004. Since sampling was initiated by Saskatchewan Watershed Authority in 2004, Pike Lake's baseline pH ranges seasonally from pH 7.7-9.2.

Metals

It is difficult to trace the source of metals in surface water since there are many natural and human sources. Given that Saskatchewan is rich in many minerals, it is not unusual to find these minerals in surface water. Arsenic, mercury, chromium and aluminum are natural elements found in soil and bedrock. They may enter surface water supplies through natural rock weathering, discharge of industrial wastewater, agricultural pollution, and dissolution in rain, snow or groundwater.

Sampling results from 2004-2006 showed only one exceedance of chromium at Pike Lake baseline. Chromium exceeded the provincial objective for the protection of aquatic life (0.001 mg/L) in May 2005 only once measuring 0.008 mg/L. Due to its low frequency of occurrence and the magnitude of exceedance, it is not considered to have a negative influence on the water quality of Pike Lake.

Total Phosphorus

Nutrients are essential for the growth and survival of all organisms. The amount of nutrients in a system influence how much life supports. In aquatic systems nutrients can come from a variety of sources including: human activities, natural weathering, inflow, and internal sources (e.g. release from sediment at the lake bottom). Increased nutrients can potentially lead to a variety of problems including algal or macrophyte growth (plants anchored to the bottom of the lake); however, it is important to note that total phosphorus is variable and may change seasonally. As a result of their importance, key nutrients including total phosphorus were monitored as part of the *Lake Stewardship Program*. Total phosphorus in Pike Lake ranged from 0.03 to 0.40 mg/L.

Dissolved Oxygen

Dissolved oxygen concentrations are variable based on time, weather, and temperature. Dissolved oxygen affects both chemical processes and biological organisms within the lake. For example, certain fish species are sensitive to low levels of dissolved oxygen and may experience stress or death due to lack of oxygen in the water. For the WQI, the objective is 5.5 mg/L of dissolved oxygen for the protection of aquatic life.

Profile measurements for dissolved oxygen in Pike Lake indicate that it experiences low levels of dissolved oxygen during both the winter and late summer (Figure 3). The decrease in available dissolved oxygen during specific times of year are likely due to decomposition on the bottom of

the lake paired with 1) no oxygen exchange with the atmosphere (ice on the lake in winter) or 2) high water temperatures during summer (which decreases the water's ability to hold onto dissolved oxygen).

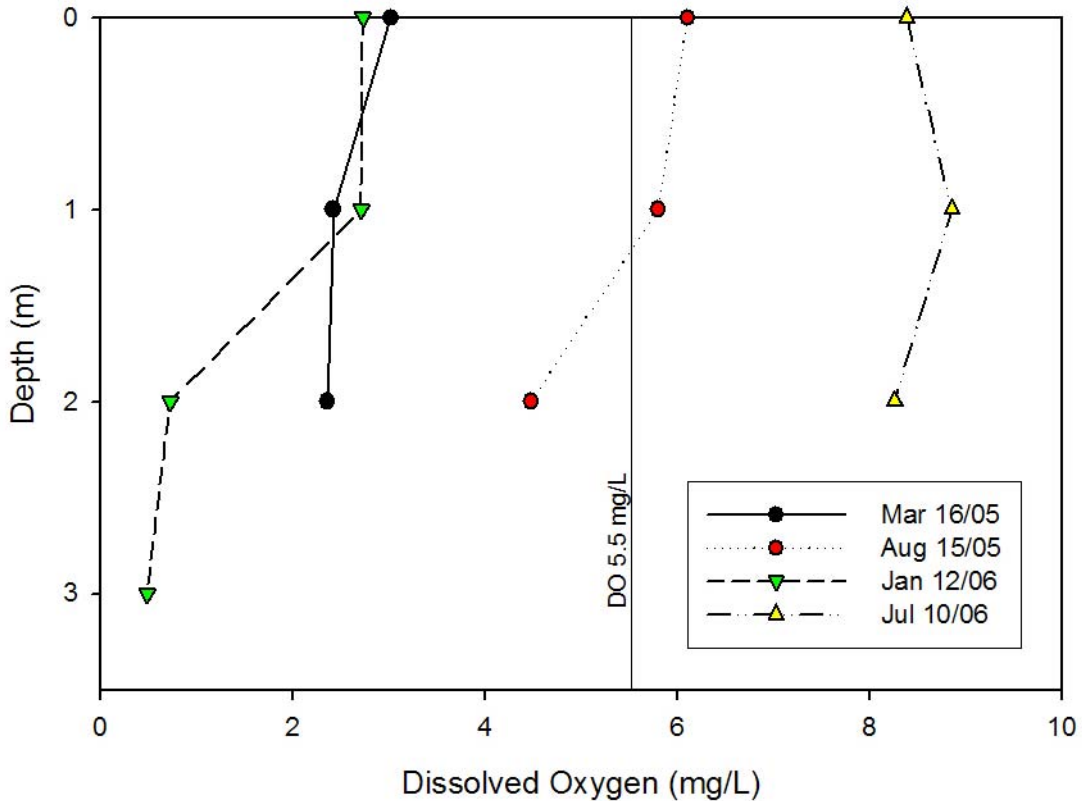


Figure 3: Dissolved oxygen profiles taken in both winter and summer in Pike Lake at baseline station.

3.3 Remaining Parameters Measured for the WQI

Parameters which contribute to the water quality of Pike Lake but did not exceed the WQI objectives include: chloride, mercury, total ammonia, arsenic, sodium, herbicides (2'4-D, MCPA), aluminum, sulphate, fecal coliform bacteria, *E.coli*, nitrate and Chlorophyll *a*. For a complete description of each parameter and their contribution to water quality see the [Lake Stewardship Water Quality Guide](#), which you can find on our website www.swa.ca.

3.4 Field Measurements

Surface water quality parameters measured at the baseline station include five important field measurements which contribute to a better understanding of Pike Lake's water quality. Some of these parameters also contributed to the calculation of the WQI. These five parameters include: dissolved oxygen (see Section 3.2), temperature, specific conductivity, turbidity, and Secchi disk depth.

Temperature

This parameter is measured because of the direct/indirect influence it has on other parameters such as dissolved oxygen and conductivity. Temperature can influence the spatial distribution of fish (i.e. cold water vs. warm water species), plant growth and the amount of dissolved oxygen in the water. Ranging seasonally, temperature values observed at the baseline in Pike Lake from 2004-2006 varies from 2.6 to 26.6°C.

Specific Conductivity

Conductivity is a measure of water's ability to conduct an electrical current, which depends on the concentration of dissolved ions in solution. Specific conductivity is calculated using the conductivity of the water (concentration of specific ions) and the lake temperature. Influenced by geology, soil composition, evaporation, precipitation and inflow from the South Saskatchewan River Pike Lake's specific conductivity ranged from 406-686 µS/cm (2004-2006).

Turbidity

Turbidity is a measure of water clarity. A reduction in water clarity may be caused by solids suspended in the water, including: sediment (e.g. during lake overturn) and plankton (small plants and animals). Other sources of turbidity (or lack of water clarity) which are commonly seen closer to shore include: shoreline erosion (due to ice scour or wave action from wind or boat traffic), waste discharge, urban runoff, algal growth, sediment disruption from human activities or bottom feeding organisms. An increase in turbidity decreases light penetration because the particles floating in the water either absorb or scatter the light (Wetzel 2001). For recreational purposes, the surface water objective for turbidity is less than 50 NTU. Turbidity is low (meaning good light penetration and clarity is good) in Pike Lake with values between 1.3 and 10.9 NTU.

Secchi Disk Depth

Secchi disk depth is a direct measure of water transparency and like turbidity is affected by suspended sediment, plankton and water colour. Easily measured with a marked disk and measured rope, the Secchi disk depth can delineate the photic zone (area in which light penetrates the water column) of the lake. This is an important measurement because it indicates the depth of water that algae and plants can live. At Pike Lake baseline, the Secchi disk reading ranged from 0.5 to 2.1 m.

3.5 Shoreline Stations

Pike Lake has two shoreline stations chosen for summer monitoring. Pike Lake's shoreline stations are located near the shore of the north end (Station #1) and near the south shoreline (Station #2) (Figure 1). Shorelines at Pike Lake were measured from 2004 to 2006. Water quality measurements at shoreline sampling stations were compared to Saskatchewan's *Surface Water Quality Objectives for Recreation and Aesthetics* (2006). There are numeric objectives for clarity (Secchi depth), *E. coli* and turbidity. Chlorophyll *a* values are compared to the Saskatchewan Watershed Authority target value (SWA 2007).

Secchi Disk Depth

The Saskatchewan *Surface Water Quality Objectives* (2006), state that for bathing waters the Secchi disk depth should be at least 1.2 m. Water clarity is affected by factors such as wave action, suspended particles (sediment or algae), weed growth and the amount of coloured organic material in the water. Factors decreasing the Secchi disk depth can be more pronounced near shore, due to increased wave action, increased temperature (which may promote algal or plant growth) and influences from upland activities (i.e. runoff and human activities). Secchi depth at both shoreline stations measured 1.2 m or less on all occasions. The primary reason for decreased Secchi depth was due to macrophyte growth.

Bacteria

Escherichia coli (*E. coli*) are species of bacteria normally found in the lower intestines of animals and people. *Escherichia coli* are commonly detected in surface water because people, pets, livestock, birds and wild animals come into contact with the water. The recreational guideline for *E.coli* states that “The geometric mean of at least five samples taken during a period not to exceed 30 days should not exceed 2000 *E.coli* per litre.” (SE 2006). Shoreline samples from Pike Lake commonly show some level of *E. coli*; however, levels often remain less than 20 counts/100mL and were therefore below the guideline used in the WQI of <200 counts/100mL. Regardless of the origin, it is always helpful for humans to take steps to minimize contamination (i.e. proper septic tank maintenance and keeping pets out of the water).

Turbidity

For recreational purposes, the surface water objective for turbidity is less than 50 NTU. Both shorelines had readings below 20.1 NTU and therefore did not exceed the objective set for recreation. Similar to water clarity, turbidity is influenced by water movement, wind, suspended particles and organic matter.

Chlorophyll *a*

The relative amount of algae in surface water is assessed by measuring Chlorophyll *a* (the primary pigment that plants and algae use to convert sunlight into energy for growth). Chlorophyll *a* is an indicator of the productivity of the lake. Lakes high in nutrients tend to have more algae or macrophyte growth. Pike Lake’s north shoreline had the only chlorophyll *a* excursion with a value of 61.3 µg/L. The Saskatchewan Watershed Authority recommended objective for chlorophyll *a* is <50µg/L. Shoreline stations may have higher algae concentrations than baseline stations due to factors such as wind and wave actions which can lead to the congregation of algae along the shoreline. Similarly, calm warm days can also lead to localized algal blooms thereby increasing the chlorophyll *a* present.

When compared to the objectives used to calculate the WQI, the shoreline sampling stations at Pike Lake have similar water quality to the baseline stations with the exception of the influence of weed growth. A WQI index score is not calculated for shoreline stations because some parameters required for the index (e.g. metals) are not measured at shoreline stations. Second, shoreline water quality is much more indicative of the local conditions than water quality of the entire lake.

4.0 Recommendations

Pike Lake has been sampled through the *Lake Stewardship Program* for three years. Though the program ceased in 2008, the information collected from 2004-2006 provides lake users, residents, managers and other interested parties with an increased understanding of Pike Lake's water quality. Saskatchewan Watershed Authority encourages the group to continue educating themselves and other lake users about the water quality of Pike Lake and how to protect it.

Due to good light penetration, shallow depth and availability of nutrients, Pike Lake has a large proportion of littoral area (area in which light reaches the lake bottom). This allows for ample macrophyte growth which may limit some recreational activities on the lake such as swimming, boating and fishing. It is recommended that the 'natural' balance of Pike Lake's nutrients and subsequent biomass be considered as future management plans are applied to the lake.

To maintain the water quality of Pike Lake, it is recommended that recreational users and upland stakeholders minimize nutrient additions to the lake. Fertilizer use and disruption of natural vegetation and shoreline should be kept to a minimum. Enhancement of shoreline buffer zones to slow erosion and slow the flow of surface runoff to Pike Lake will help reduce the amount of nutrients and other contaminants entering the lake.

The Saskatchewan Watershed Authority encourages the continuation of public education and outreach by the *Pike Lake Cabin Owners Association* or similar organization to teach lake users and stakeholders how to follow healthy shoreline living practices such as those outlined in *On the Living Edge – Your Handbook for Waterfront Living* (Kipp & Gallaway 2003).

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Data Tables

2004-2006

Pike Lake Baseline Field Data, 2004				
Field Data	July 6	July 27	Sept 1	Sept 29
Surface Parameters				
Air Temperature (°C)	20	15	13	13
Dissolved Oxygen (mg/L)	8.8	9.8	9.4	8.9
pH (pH units)	9.2	8.0	8.9	8.7
Specific Conductivity (µS/cm)	406.1	350.7	419.7	443.3
Secchi Disk (metres)	1.5	2.0	1.6	1.9
Turbidity (NTU)	2.47	1.44	1.61	1.72

Table 1: Pike Lake Baseline Field Data 2004

Pike Lake Baseline Dissolved Oxygen, Temperature, and Specific Conductivity Profile, 2004					
Date (d/m/y)	Depth (m)	Dissolved Oxygen		Water Temperature (°C)	Specific Conductivity (µS/cm)
		(mg/L)	(% sat.)		
July 6	1.00	4.78	51.4	19.5	460.5
	2.00	7.36	73.8	18.6	459.1
July 27	0.25	8.77	-	22.2	406.1
	1.00	6.63	-	22.3	408.9
Sept 1	0.00	9.39	-	16.3	419.7
	1.00	5.81	-	16.5	423.3
	2.00	6.02	-	16.7	424.3
Sept 29	0.25	8.89	-	13.0	443.3
	1.00	8.72	-	13.4	448.8
	2.00	7.37	-	12.8	450.2

Table 2: Pike Lake Baseline Station Dissolved Oxygen, Temperature and Specific Conductivity Profile 2004

Pike Lake Baseline 2004 Surface Parameters				
Parameters	July 6	July 27	Sept 1	Sept 29
Nutrients (mg/L)				
Dissolved Organic Carbon	-	11.3	10.2	10.7
Nitrate, as Nitrogen	-	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	-	0.03	0.05	0.04
Total Kjeldahl Nitrogen	-	1.0	0.9	1.0
Total Phosphorous	-	0.04	0.04	0.04
Ortho-Phosphate, as P	-	<0.02	<0.02	<0.02
Solids (mg/L)				
Total Dissolved	-	297	325	353
Suspended, Fixed	-	1	1	<1
Suspended, Volatile	-	2	3	3
Suspended, Total	-	3	3	3
Bacteria (orgs/100 mL)				
Fecal Coliform	-	<10	<10	10
Fecal Strep	-	<10	<10	-
Total Coliform	-	10	300	300
Major Ions (mg/L)				
Alkalinity, Total	-	158	162	172
Alkalinity, Phenol	-	28	14	12
Bicarbonate	-	124	163	181
Calcium	-	17	22	27
Carbonate	-	33.6	16.8	14.4
Chloride	-	19.3	17.4	17.6
Hardness, Total	-	141	154	170
Magnesium	-	24	24	25
Potassium	-	4	4	4
Sodium	-	35	34	35
Sulphate	-	39.9	44.1	48.7
Other				
Chlorophyll <i>a</i> (µg/L)	-	7.41	5.04	2.97
Specific Conductivity (µS/cm)	-	420	444	464
pH (pH units)	-	9.2	8.7	8.7
Turbidity (NTU)	-	2.4	2.0	1.5
Biochemical Oxygen Demand (mg/L)	-	2.2	<2.0	2.0
Chemical Oxygen Demand (mg/L)	-	34.4	33.5	34.2

Table 3: Pike Lake Baseline 2004 Surface Parameters

Pike Lake Baseline 2004 Integrated Parameters				
Parameters	July 6	July 27	Sept 1	Sept 29
Nutrients (mg/L)				
Dissolved Organic Carbon	-	11.3	-	10.8
Nitrate, as Nitrogen	-	<0.04	-	<0.04
Ammonia, as Nitrogen	-	<0.02	-	0.04
Total Kjeldahl Nitrogen	-	1.0	-	1.0
Total Phosphorous	-	0.04	-	0.03
Ortho-Phosphate, as P	-	<0.02	-	<0.02
Solids (mg/L)				
Total Dissolved	-	295	-	350
Suspended, Fixed	-	1	-	<1
Suspended, Volatile	-	3	-	3
Suspended, Total	-	3	-	3
Bacteria (orgs/100 mL)				
Fecal Coliform	-	<10	-	<10
Fecal Strep	-	<10	-	
Total Coliform	-	30	-	90
Major Ions (mg/L)				
Alkalinity, Total	-	158	-	170
Alkalinity, Phenol	-	28	-	12
Bicarbonate	-	124	-	178
Calcium	-	17	-	27
Carbonate	-	33.6	-	14.4
Chloride	-	19.1	-	17.7
Hardness, Total	-	141	-	170
Magnesium	-	24	-	25
Potassium	-	4	-	4
Sodium	-	34	-	35
Sulphate	-	39.7	-	48.7
Other				
Chlorophyll <i>a</i> (µg/L)	-	9.48	-	2.28
Conductivity (µS/cm)	-	421	-	464
pH (pH units)	-	9.2	-	8.7
Turbidity (NTU)	-	2.3	-	1.5
Biochemical Oxygen Demand (mg/L)	-	2.4	-	2.0
Chemical Oxygen Demand (mg/L)	-	31.7	-	33.6

Table 4: Pike Lake Baseline 2004 Integrated Parameters

Pike Lake Baseline 2004 Bottom Parameters				
Parameters	July 6	July 27	Sept 1	Sept 29
Nutrients (mg/L)				
Dissolved Organic Carbon	-	11.3	-	10.7
Nitrate, as Nitrogen	-	<0.04	-	<0.04
Ammonia, as Nitrogen	-	<0.02	-	0.03
Total Kjeldahl Nitrogen	-	1.5	-	1.0
Total Phosphorous	-	0.12	-	0.03
Ortho-Phosphate, as P	-	<0.02	-	<0.02
Solids (mg/L)				
Total Dissolved	-	301	-	350
Suspended, Fixed	-	3	-	<1
Suspended, Volatile	-	6	-	3
Suspended, Total	-	9	-	3
Bacteria (orgs/100 mL)				
Total Coliform	-	<10	20	210
Fecal Coliform	-	<10	<10	<10
Fecal Strep	-	20	<10	-
Major Ions (mg/L)				
Alkalinity, Total	-	158	-	170
Alkalinity, Phenol	-	26	-	12
Bicarbonate	-	129	-	178
Calcium	-	18	-	27
Chloride	-	19.4	-	17.7
Hardness, Total	-	144	-	170
Magnesium	-	24	-	25
Potassium	-	4	-	4
Sodium	-	35	-	35
Sulphate	-	40.0	-	48.4
Other				
Chlorophyll <i>a</i> (µg/L)	-	5.63	6.22	2.27
Specific Conductivity (µS/cm)	-	423	-	464
pH (pH units)	-	9.2	-	8.7
Turbidity (NTU)	-	2.9	-	1.6
Biochemical Oxygen Demand (mg/L)	-	3.3	-	2.7
Chemical Oxygen Demand (mg/L)	-	34.3	-	34.2

Table 5: Pike Lake Baseline 2004 Bottom Parameters

* September 1, 2004 bottles were broken in transport, analysis unable to be performed

Pike Lake North Shoreline 2004 Surface Parameters				
Parameters	July 6	July 27	Sept 1	Sept 29
Nutrients (mg/L)				
Dissolved Organic Carbon	-	15.8	14.3	14.7
Nitrate, as Nitrogen	-	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	-	0.06	0.06	0.05
Total Kjeldahl Nitrogen	-	1.8	1.3	1.2
Total Phosphorous	-	0.10	0.04	-
Ortho-Phosphate, as P	-	0.02	<0.02	-
Solids (mg/L)				
Suspended, Fixed	-	6	1	1
Suspended, Volatile	-	6	4	3
Suspended, Total	-	12	5	4
Bacteria (orgs/100 mL)				
Fecal Coliform	-	10	30	90
Total Coliform	-	140	1,300	3400
Fecal Strep	-	100	30	-
Other				
Chlorophyll <i>a</i> (µg/L)	-	16.68	6.81	1.48
Turbidity (NTU)	-	11.0	2.3	2.1
Biochemical Oxygen Demand (mg/L)	-	4.1	2.1	2.5
Chemical Oxygen Demand (mg/L)	-	49.4	45.8	40.4
Field Data				
Air Temperature (°C)	18	17	13	13
Cloud Cover (%)	50	95	100	5
Wind Speed (km/hr)	20	25	1	8
pH (pH units)	8.365	9.528	9.034	9.045
Turbidity (NTU)	3.12	9.25	2.27	1.73
Secchi Disk Transparency (m)	-	0.6	0.9	-
Water Temperature (°C)	20.4	20.9	15.3	13.5
Specific Conductivity (µS/cm)	411.7	405.9	434.4	448.8
Dissolved Oxygen (mg/L)	13.37	6.71	11.02	10.18

Table 6: Pike Lake North Shoreline 2004 Surface Parameters

Pike Lake South Shoreline 2004 Surface Parameters				
Parameters	July 6	July 27	Sept 1	Sept 29
Nutrients (mg/L)				
Dissolved Organic Carbon	-	9.5	7.8	10.6
Nitrate, as Nitrogen	-	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	-	0.04	0.03	0.04
Total Kjeldahl Nitrogen	-	0.7	0.7	0.9
Total Phosphorous	-	0.04	0.02	0.03
Ortho-Phosphate, as P	-	<0.02	<0.02	<0.02
Solids (mg/L)				
Suspended, Fixed	-	2	<1	<1
Suspended, Volatile	-	1	2	2
Suspended, Total	-	3	3	2
Bacteria (orgs/100 mL)				
Fecal Coliform	-	<10	10	10
Total Coliform	-	80	400	3,100
Fecal Strep	-	10	10	-
Other				
Turbidity (NTU)	-	2	1.2	1.2
Biochemical Oxygen Demand (mg/L)	-	<2	<2	<2
Chemical Oxygen Demand (mg/L)	-	25.0	21.8	33.0
Field Data				
Air Temperature (°C)	18	22	13	15
Cloud Cover (%)	50	90	100	25
Wind Speed (km/hr)	20	20	4	2
pH (pH units)	8.048	8.520	8.727	8.597
Turbidity (NTU)	3.26	3.28	2.32	4.20
Secchi Disk Transparency (m)	1.0	1.2	1.0	-
Water Temperature (°C)	20.0	21.7	16.3	13.6
Specific Conductivity (µS/cm)	410.3	440.5	425.9	451.5
Dissolved Oxygen (mg/L)	12.29	9.08	8.86	10.88

Table 7: Pike Lake South Shoreline 2004 Surface Parameters

Pike Lake Baseline Field Data, 2005						
Field Data	Feb 2	Mar 16	May 18	July 13	Aug 15	Sept 7
Surface Parameters						
Air Temperature (°C)	-	-14	13	30	16	25
Dissolved Oxygen (mg/L)	0.32	3.02	9.54	7.22	6.11	7.29
pH (pH units)	-	7.463	7.866	8.355	7.901	8.119
Specific Conductivity (µS/cm)	685.0	686.0	491.6	487.0	506.0	519.0
Secchi Disk (metres)	1.27	1.40	1.60	2.10	1.20	0.85
Turbidity (NTU)	-	2.53	2.49	1.31	3.11	4.04

Table 8: Pike Lake Baseline Field Data, 2005

Pike Lake Baseline Dissolved Oxygen, Temperature, and Specific Conductivity Profile, 2005					
Date (d/m/y)	Depth (m)	Dissolved Oxygen		Water Temperature (°C)	Specific Conductivity (µS/cm)
		(mg/L)	(% sat.)		
05/02/05	0	0.32	-	2.5	685.0
	1	0.96	-	3.2	688.0
	2	1.03	-	4.8	719.0
	2.5	1.03	-	4.8	718.0
16/03/05	0	3.02	25.6	2.6	686.0
	1	2.42	18.0	2.4	772.0
	2	2.36	17.1	2.4	774.0
18/05/05	0	9.54	92.1	14.1	491.6
	1	9.26	91.9	14.1	491.6
	2	9.23	91.2	14.1	491.7
13/07/05	0	7.22	90.7	26.6	487.0
	1	8.54	103.6	25.3	484.0
	2	3.87	42.5	24.5	499.1
08/15/05	0	6.11	61.8	17.7	506.0
	1	5.80	54.7	17.2	509.0
	2	4.48	44.6	17.0	508.0
07/09/05	0	7.29	75.9	16.8	519
	1	7.04	73.9	16.8	519
	2	6.91	71.2	16.8	518

Table 9: Pike Lake Baseline Station Dissolved Oxygen, Temperature, and Specific Conductivity Profile, 2005

Pike Lake Baseline 2005 Surface Parameters						
Parameters	Feb 02	Mar 15	May 18	Jul 13	Aug 15	Sept 7
Nutrients (mg/L)						
Dissolved Organic Carbon	14.8	15.8	22.7	13.2	14.9	13.0
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.14	0.10	0.04	0.05	0.07	0.12
Total Kjeldahl Nitrogen	1.6	1.8	10.0	1.0	1.2	1.5
Total Phosphorous	0.05	0.06	0.04	0.03	0.08	0.10
Ortho-Phosphate, as P	<0.02	0.04	<0.02	0.03	0.03	0.04
Solids (mg/L)						
Total Dissolved	568	575	399	371	411	420
Suspended, Fixed	<1	1	<1	1	1	2
Suspended, Volatile	4	3	4	1	5	8
Suspended, Total	4	4	4	2	6	10
Bacteria (orgs/100 mL)						
Fecal Coliform	<10	<10	<10	<10	<10	10
Total Coliform	10	20	50	10	20	10
Major Ions (mg/L)						
Alkalinity, Total	276	284	202	196	212	216
Alkalinity, Phenol	-	-	-	6	-	-
Bicarbonate	337	346	246	224	259	264
Calcium	53	56	37	30	33	37
Carbonate	-	-	-	7.2	-	-
Chloride	25.9	27.8	18.0	18.4	20.2	20.5
Fluoride	0.33	0.22	-	0.18	0.19	-
Hardness, Total	276	284	191	174	189	204
Magnesium	35	35	24	24	26	27
Potassium	-	7	6	5	6	6
Sodium	-	48	33	32	35	36
Sulphate	60.6	55.0	34.9	30.3	31.6	29.7
Other						
Chlorophyll <i>a</i> (µg/L)	3.66	8.17	7.51	3.85	21.23	24.46
Conductivity (µS/cm)	688	702	496	472	501	517
pH (pH units)	7.7	7.7	8.3	8.4	7.9	8.1
Turbidity (NTU)	1.8	2.4	2.7	1.5	3.8	5.6
Biochemical Oxygen Demand (mg/L)	3.3	4.2	-	2.9	2.4	3.8
Chemical Oxygen Demand (mg/L)	41.2	40.2	63.8	29.3	43.7	48.2

Table 10: Pike Lake Baseline 2005 Surface Parameters

Pike Lake Baseline 2005 Bottom Parameters			
Parameters	February 2	March 15	June 5
Nutrients (mg/L)			
Dissolved Organic Carbon	15.7	16.7	14.5
Nitrate, as Nitrogen	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.20	0.28	0.02
Total Kjeldahl Nitrogen	1.7	1.9	1.9
Total Phosphorous	0.08	0.08	0.12
Ortho-Phosphate, as P	0.03	0.04	0.04
Solids (mg/L)			
Total Dissolved	602	656	458
Suspended, Fixed	3	1	4
Suspended, Volatile	7	6	7
Suspended, Total	10	7	11
Bacteria (orgs/100 mL)			
Total Coliform	70	200	291
Fecal Coliform	<10	<10	-
<i>E. Coli</i>	-	-	3
Major Ions (mg/L)			
Alkalinity, Total	304	342	256
Alkalinity, Phenol	-	-	6
Bicarbonate	371	417	298
Calcium	56	63	44
Chloride	26.9	28.4	19.8
Fluoride	0.28	0.29	0.19
Hardness, Total	292	322	217
Magnesium	37	40	26
Potassium	7	8	7
Sodium	51	55	32
Sulphate	52.7	44.1	23.7
Other			
Chlorophyll <i>a</i> (µg/L)	1.39	25.44	16.00
Specific Conductivity (µS/cm)	723	782	568
pH (pH units)	7.7	7.6	8.4
Turbidity (NTU)	17	37	6
Biochemical Oxygen Demand (mg/L)	4.7	5.6	3.9
Chemical Oxygen Demand (mg/L)	47.3	52.6	45.9

Table 11: Pike Lake Baseline 2005 Bottom Parameters

Pike Lake Baseline 2005 Surface Metal Parameters					
Parameters	Feb 2	May 18	July 13	Aug 15	Sept 7
Metals (mg/L)					
Mercury (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (µg/L)	1.6	1.0	1.2	1.2	1.2
Barium	0.19	0.11	0.097	0.11	0.12
Beryllium	<0.001	0.002	<0.001	<0.001	<0.001
Boron	0.067	0.046	0.062	0.064	0.062
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.001	0.008	<0.001	<0.001	<0.001
Cobalt	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	0.003	0.002	<0.001	<0.001	<0.001
Iron	0.088	0.034	0.016	0.034	0.041
Lead	<0.002	<0.002	<0.002	<0.002	<0.002
Manganese	0.30	0.025	0.031	0.052	0.071
Molybdenum	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Soluble	6.00	0.69	1.70	3.50	3.80
Silver	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	0.30	0.21	0.20	0.21	0.22
Titanium	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	0.027	<0.005	<0.005	<0.005	<0.005
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001
Herbicides (µg/L)					
2,4,5-T	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,5-TP (silvex)	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-D	<0.5	<0.5	<0.5	<0.5	<0.5
Bromoxynil (Buctril)	<0.5	<0.5	<0.5	<0.5	<0.5
Dicamba (Banvel)	<0.5	<0.5	<0.5	<0.5	<0.5
Diclofop-methyl (HoeGrass)	<1	<1	<1	<1	<1
MCPA	<0.5	<0.5	<0.5	<0.5	<0.5
Picloram (Tordon)	<1	<1	<1	<1	<1

Table 12: Pike Lake Baseline 2005 Surface Metal Parameters

Pike Lake North Shoreline 2005 Surface Parameters				
Parameters	May 18	July 13	Aug 15	Sept 7
Nutrients (mg/L)				
Dissolved Organic Carbon	11.3	15.3	16.1	15.2
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.03	0.10	0.10	0.11
Total Kjeldahl Nitrogen	0.9	1.1	1.5	1.3
Total Phosphorous	0.03	0.04	0.06	0.06
Ortho-Phosphate, as P	<0.02	0.03	0.02	<0.02
Solids (mg/L)				
Suspended, Fixed	<1	1	8	1
Suspended, Volatile	3	3	6	4
Suspended, Total	3	4	11	5
Bacteria (orgs/100 mL)				
Fecal Coliform	80	<10	<10	<10
Total Coliform	3,200	<10	200	1,500
Other				
Chlorophyll <i>a</i> (µg/L)	7.51	3.06	9.18	9.08
Turbidity (NTU)	2.1	1.3	5.1	3.4
Biochemical Oxygen Demand (mg/L)	<2	3	2.6	2.6
Chemical Oxygen Demand (mg/L)	30.00	3.06	46.90	43.7
Mercury (µg/L)	<0.05	<0.05	<0.05	-
Field Data				
Air Temperature (°C)	12	30	15	15
Cloud Cover (%)	100	45	75	5
Wind Speed (km/hr)	0-5	0-5	0-5	15-20
Wave Height (cm)	0-2	ripples	4	5
pH (pH units)	7.866	8.948	8.472	8.524
Turbidity (NTU)	1.80	1.15	2.64	3.26
Secchi Disk Transparency (m)	1.0	1.0	1.0	1.0
Water Temperature (°C)	12.4	28.5	17.2	17.6
Specific Conductivity (µS/cm)	489.7	466	485.8	494.6
Dissolved Oxygen (mg/L)	85.7	6.32	7.63	9.42
Dissolved Oxygen (% sat.)	8.78	83.2	80.2	98.6

Table 13: Pike Lake North Shoreline 2005 Surface Parameters

Pike Lake South Shoreline 2005 Surface Parameters				
Parameters	May 18	July 13	Aug 15	Sept 7
Nutrients (mg/L)				
Dissolved Organic Carbon	11.1	13.6	15.1	14.2
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.04	0.12	0.03	0.07
Total Kjeldahl Nitrogen	0.8	1.0	1.2	1.5
Total Phosphorous	0.04	0.04	0.09	0.11
Ortho-Phosphate, as P	<0.02	0.02	0.06	0.03
Solids (mg/L)				
Suspended, Fixed	1	2	2	3
Suspended, Volatile	4	3	5	9
Suspended, Total	5	5	8	11
Bacteria (orgs/100 mL)				
Fecal Coliform	20	<10	<10	<10
Total Coliform	250	10	<10	200
Other				
Turbidity (NTU)	2.6	1.9	4.6	7.7
Biochemical Oxygen Demand (mg/L)	<2.0	2.7	3.2	3.7
Chemical Oxygen Demand (mg/L)	27.0	<11.0	42.5	51.0
Mercury (µg/L)	<0.05	<0.05	<0.05	-
Field Data				
Air Temperature (°C)	14	28	12	28
Cloud Cover (%)	100	40	100	5
Wind Speed (km/hr)	0-5	calm	15	25-30
Wave Height (cm)	0-2	ripples	7.5	7.5
pH (pH units)	7.884	8.261	8.098	8.110
Turbidity (NTU)	2.19	2.52	3.76	4.86
Secchi Disk Transparency (m)	1.0	1.0	1.0	1.0
Water Temperature (°C)	14.5	26.8	18.0	18.4
Specific Conductivity (µS/cm)	495.5	494.0	510	520
Dissolved Oxygen (mg/L)	9.33	7.25	8.01	9.04
Dissolved Oxygen (% sat.)	92.6	95.1	84.7	96.6

Table 14: Pike Lake South Shoreline 2005 Surface Parameters

Pike Lake Baseline Field Data, 2006					
	Jan 12	June 5	July 10	Aug 14	Sept 11
Surface Parameters					
Time	12:30	12:15	13:20	11:25	12:00
Air Temperature (°C)	-4.0	14.0	33.0	22.0	24.3
pH (pH units)	7.888	8.400	8.398	8.490	8.810
Secchi Disk (meters)	1.5	0.8	1.0	1.0	0.5
Turbidity (NTU)	2.73	5.26	2.87	6.69	10.76
Cloud Cover (%)	100	100	0	0	0
Wind Speed (km/h)	0-5	10	0	5	0
Ice Depth (cm)	8.5	0	0	0	0

Table 15: Pike Lake Baseline Field Data, 2006

Pike Lake Baseline Dissolved Oxygen, Temperature, and Specific Conductivity Profile, 2006					
Date (d/m/y)	Depth (m)	Dissolved Oxygen		Water Temperature (°C)	Specific Conductivity (µS/cm)
		(mg/L)	(% sat.)		
12/01/06	0	2.73	19.7	2.7	678
	1	2.71	19.6	2.6	675
	2	0.72	5.7	3.5	676
	3	0.48	3.7	4.1	692
05/06/06	0	8.60	-	18.9	546
	1	8.57	-	18.8	484
	2	8.02	-	18.9	448
10/07/06	0	8.39	-	25.0	549
	1	8.86	-	24.2	539
	2	8.26	-	24.1	538
14/08/06	0	7.60	-	20.6	500
	1	7.50	-	20.2	500
	2	6.40	-	19.6	500
11/09/06	0	9.20	-	18.5	520
	1	8.92	-	17.2	520
	2	6.82	-	17.0	527

Table 16: Pike Lake Baseline Station Dissolved Oxygen, Temperature, and Specific Conductivity Profile, 2006

Pike Lake North Shore Field Data, 2006				
	June 5	July 10	Aug 14	Sept 11
Field Data				
Time		14:10	11:45	13:05
Air Temperature (°C)		33	22.2	24.3
Water Temperature (°C)		27.7	19.7	20.1
pH (pH units)		8.581	8.86	9.30
Turbidity (NTU)		3.39	11.90	20.10
Secchi Disk Transparency (m)		0.60	0.25	0.25
Specific Conductivity (µS/cm)		623	544	560
Dissolved Oxygen (mg/L)		8.41	10.4	12.3
Cloud Cover (%)		0	0	20
Wind Speed (km/hr)		0	0	5

Table 17: Pike Lake North Shore Field Data, 2006

Pike Lake South Shore Field Data, 2006				
	June 5	July 10	Aug 14	Sept 11
Field Data				
Time	13:24	12:20	10:30	11:35
Air Temperature (°C)	14.0	33.0	21.9	24.3
Water Temperature (°C)	18.5	24.4	20.2	18.7
pH (pH units)	8.459	8.311	8.400	8.800
Turbidity (NTU)	5.61	3.88	7.42	9.02
Secchi Disk Transparency (m)	0.70	>1.00	0.75	0.50
Specific Conductivity (µS/cm)	488	523	500	521
Dissolved Oxygen (mg/L)	9.03	9.40	7.50	8.60
Cloud Cover (%)	100	0	0	0
Wind Speed (km/hr)	10	5	5	0

Table 18: Pike Lake South Shore Field Data, 2006

Pike Lake Baseline 2006 Surface Parameters					
Parameters	Jan 12	June 5	July 10	Aug 14	Sept 11
Nutrients (mg/L)					
Dissolved Organic Carbon	20.0	14.4	15.6	14.7	16.6
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.53	<0.02	<0.02	0.02	0.03
Total Kjeldahl Nitrogen	2.3	1.5	1.3	1.8	2.0
Total Phosphorous	0.11	0.09	0.08	0.40	0.14
Ortho-Phosphate, as P	0.07	0.04	0.04	0.05	0.06
Solids (mg/L)					
Total Dissolved	603	459	424	400	416
Suspended, Fixed	2	1	<1	1	3
Suspended, Volatile	6	8	4	11	18
Suspended, Total	8	8	5	12	21
Bacteria (orgs/100 mL)					
E. Coli	<10	9	<10	20	<10
Total Coliform	<10	225	620	2,014	42,200
Major Ions (mg/L)					
Alkalinity, Total	322	256	232	220	234
Alkalinity, Phenol	-	2	8	6	12
Bicarbonate	393	307	264	254	256
Calcium	63	44	38	28	29
Carbonate	-	2.4	9.6	7.2	14.4
Chloride	27.2	19.4	20.4	20.8	23.2
Fluoride	0.22	0.19	0.19	0.18	0.19
Hardness, Total	297	213	210	185	188
Magnesium	34	25	28	28	28
Potassium	8	7	6	6	6
Sodium	43	31	35	35	37
Sulphate	34.8	23.2	23.3	21.2	22.8
Other					
Chlorophyll <i>a</i> (µg/L)	45.53	16.69	11.46	33.04	49.76
Specific Conductivity (µS/cm)	721	568	526	503	537
pH (pH units)	7.8	8.3	8.5	8.4	8.6
Turbidity (NTU)	0.22	0.19	0.19	6.60	12.00
Biochemical Oxygen Demand (mg/L)	5.5	3.6	2.9	4.3	6.7
Chemical Oxygen Demand (mg/L)	59.7	44.3	46.9	52.1	65.1

Table 19: Pike Lake Baseline 2006 Surface Parameters

Pike Lake Baseline 2006 Bottom Parameters	
Parameters	June 5
Nutrients (mg/L)	
Dissolved Organic Carbon	14.5
Nitrate, as Nitrogen	<0.04
Ammonia, as Nitrogen	0.02
Total Kjeldahl Nitrogen	1.9
Total Phosphorous	0.12
Ortho-Phosphate, as P	0.04
Solids (mg/L)	
Total Dissolved	458
Suspended, Fixed	4
Suspended, Volatile	7
Suspended, Total	11
Bacteria (orgs/100 mL)	
Total Coliform	291
E. Coli	3
Major Ions (mg/L)	
Alkalinity, Total	256
Alkalinity, Phenol	6
Bicarbonate	298
Calcium	44
Chloride	19.8
Fluoride	0.19
Hardness, Total	217
Magnesium	26
Potassium	7
Sodium	32
Sulphate	23.7
Other	
Chlorophyll <i>a</i> (µg/L)	16.0
Specific Conductivity (µS/cm)	568
pH (pH units)	8.4
Turbidity (NTU)	6
Biochemical Oxygen Demand (mg/L)	3.9
Chemical Oxygen Demand (mg/L)	45.9

Table 20: Pike Lake Baseline 2006 Bottom Parameters

Pike Lake North Shoreline 2006 Surface Parameters				
Parameters	June 5	July 10	Aug 14	Sept 11
Nutrients (mg/L)				
Dissolved Organic Carbon	16.4	21.0	19.9	20.9
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.02	0.03	0.02	0.04
Total Kjeldahl Nitrogen	1.5	1.6	2.5	3.0
Total Phosphorous	0.09	0.09	0.17	0.21
Ortho-Phosphate, as P	0.03	0.05	0.07	0.07
Solids (mg/L)				
Dissolved, Total	467	-	-	-
Suspended, Fixed	1	2	3	11
Suspended, Volatile	5	5	17	28
Suspended, Total	6	7	20	39
Bacteria (orgs/100 mL)				
E. Coli	3	<10	20	10
Total Coliform	866	1,291	3,255	744
Major Ions (mg/L)				
Alkalinity, Total	254	-	-	-
Alkalinity, Phenol	6	-	-	-
Bicarbonate	295	-	-	-
Calcium	42	-	-	-
Carbonate	7.2	-	-	-
Chloride	22.0	-	-	-
Fluoride	0.18	-	-	-
Hardness, Total	224	-	-	-
Magnesium	29	-	-	-
Potassium	7	-	-	-
Sodium	38	-	-	-
Sulphate	26.8	-	-	-
Other				
Chlorophyll <i>a</i> (µg/L)	9.09	9.18	39.99	61.31
Specific Conductivity (µS/cm)	576	-	-	-
Turbidity (NTU)	4.4	3.8	15.0	20.0
Biochemical Oxygen Demand (mg/L)	3.3	4.1	6.2	8.6
Chemical Oxygen Demand (mg/L)	46.3	61.4	72.4	89.4

Table 21: Pike Lake North Shoreline 2006 Surface Parameters

Pike Lake South Shoreline 2006 Surface Parameters				
Parameters	June 5	July 10	Aug 14	Sept 11
Nutrients (mg/L)				
Dissolved Organic Carbon	15.0	16.1	15.5	16.9
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	<0.02	0.08	<0.02	0.03
Total Kjeldahl Nitrogen	1.6	1.2	1.6	1.6
Total Phosphorous	0.11	0.10	0.12	0.13
Ortho-Phosphate, as P	0.04	0.05	0.05	0.06
Solids (mg/L)				
Dissolved, Total	463	-	-	-
Suspended, Fixed	3	1	1	1
Suspended, Volatile	8	7	10	16
Suspended, Total	11	8	11	17
Bacteria (orgs/100 mL)				
E. Coli	3	10	10	<10
Total Coliform	137	1,664	1,376	44,300
Major Ions (mg/L)				
Alkalinity, Total	262	-	-	-
Alkalinity, Phenol	8	-	-	-
Bicarbonate	300	-	-	-
Calcium	46	-	-	-
Carbonate	9.6	-	-	-
Chloride	19.6	-	-	-
Fluoride	0.19	-	-	-
Hardness, Total	222	-	-	-
Magnesium	26	-	-	-
Potassium	6	-	-	-
Sodium	32	-	-	-
Sulphate	24.0	-	-	-
Other				
Chlorophyll <i>a</i> (µg/L)	15.31	12.93	29.62	34.06
Specific Conductivity (µS/cm)	573	-	-	-
Turbidity (NTU)	5.2	3.9	7.3	8.6
Biochemical Oxygen Demand (mg/L)	4	3.5	3.8	5.8
Chemical Oxygen Demand (mg/L)	48.9	50.6	51.8	67.3

Table 22: Pike Lake South Shoreline 2006 Surface Parameters