

***Round Lake Water Quality Report
2008***

Prepared for
***Kelvington Area Round Lake Environmental Stewardship
(KARLES)***

Monitoring and Assessment Branch
Stewardship Division
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1.0 Introduction and Background

1.1 General Description, Geography, Hydrogeology and Fishery of Round Lake, Saskatchewan.

Round Lake is located 27 kilometers north of Kelvington, Saskatchewan. Round Lake receives inflow from Pickel and Klogie Lakes which are managed by Ducks Unlimited Canada. A low earthen dam and two-bay concrete stop log control structure was constructed in 1941 at the outflow on the south west end of the lake. The control structure is used to regulate the water level of Round Lake and manage downstream flow for flood protection. The structure was further renovated in 1973 and 2000 (SWA Operations 2008).

The water level in Round Lake is influenced by surface water inflow/outflow, evaporation and ground water recharge. Round Lake's water level increases an average of 5 inches (0.125 meters) as a result of recharge from shallow aquifers during the winter months (SWA 2008). For this reason, Saskatchewan Watershed Authority Operations manage the structure by releasing 4 inches in the fall to prevent overflow during the winter and ice buildup in the downstream channel and maintain the full supply level (F.S.L.) of 592.04 meters above sea level (SWA 2008).

Round Lake is 3.1 kilometers long and 2.0 kilometers wide. The lake's surface area is approximately 4.8 square kilometers (depending on water level) with a maximum depth of 4.5 meters. Capacity of Round Lake at F.S.L (592.04 m) is 10,855 cubic decameters (SWA Operations 2008).

A popular local recreational site, activities in and around Round Lake include: swimming, boating, hunting, trapping and fishing. Located at the north end of the lake, the Sask Cadet Camp has 1,000-2,500 users per year who take part in activities such as camping, canoeing, sailing and swimming. The east side of the lake is protected by a forest reserve while the west side has a mix of natural shoreline and upland agriculture.

Round Lake is located within the Mid-Boreal Upland ecoregion in Saskatchewan. Within this ecoregion, Round Lake is located in the Porcupine landscape area which is characterized by knob and kettle glacial till and some gently rolling lacustrine planes (Acton et al. 1998).

The fishery in Round Lake has been managed by the province through test-netting (population assessment) and stocking. Test-netting in the 1970s and 1980s indicated that the northern pike population in Round Lake was 'excellent'. Stocking of walleye was amplified after winterkill events occurring from 1982-1988 and again in 2003/2004 (Saskatchewan Environment 2005). Saskatchewan Environment (Ministry of the Environment as of 2008), suggests that winterkill events in Round Lake are occurring during years of increased vegetative (macrophyte) growth and unfavorable winter conditions, such as increased snowfall (2005).

1.2 Lake Stewardship & the Kelvington Area Round Lake Environmental Stewardship (KARLES)

The Kelvington Area Round Lake Environmental Stewardship group (KARLES) participated in Saskatchewan Watershed Authority's *Lake Stewardship Program* from 2005 to April 2008. The *Lake Stewardship Program* focused on supporting lake activities and projects that provided public education to local residents/users on aquatic ecology and water quality. Lakes involved in the program had established stewardship groups and/or volunteers to carry out project and activities. As part of the *Lake Stewardship Program*, Saskatchewan Watershed Authority also initiated a water quality monitoring program and provided technical support and interpretation of water quality measurements for the KARLES group and other interested parties.

The KARLES volunteers are important advocates on behalf of the health of Round Lake and its upland area. The group was incorporated as a non-profit organization in 2004 with the support of Saskatchewan Watershed Authority and the Department of Fisheries and Oceans Canada.

In 2005, the group listed a number of goals which focused on activities and projects that would benefit the aquatic and terrestrial health of Round Lake. The group had long-term plans to protect fish habitat and restore natural flow through the outlet of Round Lake. Additionally, KARLES envisioned that building nature trails, providing campsites, washrooms and a boat launch would allow users to better enjoy the lake while protecting this natural resource. For example, the group suggested that no large boats and motors be allowed on the lake thereby offering some protection to shorelines and fish habitat.

2.0 Water Quality Sampling

Water quality monitoring of Round Lake began in 2005 through the cooperation of Saskatchewan Watershed Authority and the KARLES group. The objective of water quality sampling from 2005-2007 was to provide background (normal or average) water quality values for Round Lake. Though water quality sampling through the *Lake Stewardship Program* ceased in 2008, the background data collected on Round Lake will lend to a better understanding of the lake's water quality. Water quality data can be used to make more informed decisions on the management or activities in and around the lake.

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. Sampling was conducted at the Round Lake *Baseline Station* and the *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, specific conductivity and temperature) are recorded at intervals throughout the

depth at the site. Baseline stations are sampled on all sample dates with top and bottom samples taken for full chemical analysis. Water quality results from the baseline station were used to calculate the Water Quality Index (WQI) score.

Shoreline Stations: Shoreline stations were monitored to determine the effects of local influences on water quality. The locations of shoreline stations were chosen by volunteers from the stewardship group in consultation with Saskatchewan Watershed Authority (Figure 1). They were sampled on summer sample dates only. 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 (CCME 1999). 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, bacteria, pesticides, 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

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.

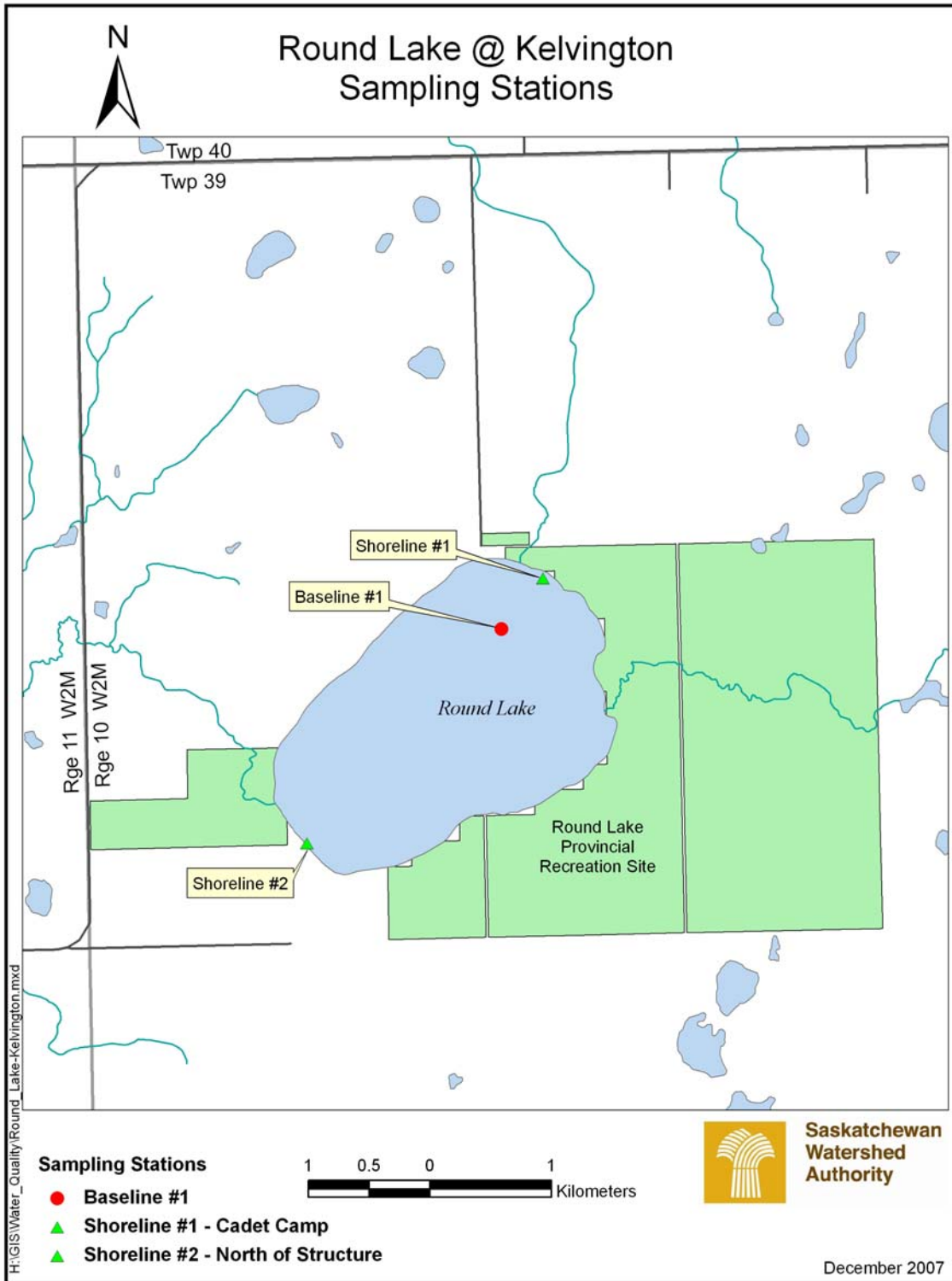


Figure 1: Map of Round Lake 2005-2007 sampling stations.

3.0 Water Quality Results and Discussion

3.1 Baseline Station Summary

The WQI scores for Round Lake Baseline Station (centre of the lake) remained consistent over the sample period from 2005-2007 (Figure 2). Due to poor ice conditions and timing of sampling none of the years had all 6 samples collected. Only 4, 3 and 5 samples were taken from 2005-2007, respectively. Often, winter water quality samples have slightly lower WQI scores due to the changes in water quality that occur when ice is on the lake and temperatures change. Therefore, lack of samples (especially winter samples) in 2005 and 2006 resulted in greater WQI scores than in 2007.

Round Lake’s baseline station WQI scores are categorized as *good* to *excellent*. Only four parameters (chromium, dissolved oxygen, total phosphorus and chlorophyll *a*) did not meet WQI objectives. Given the land use surrounding Round Lake, the parameters identified as “exceeding” the WQI index are not unusual for other lakes monitored through the *Lake Stewardship Program*. Despite the natural occurrence of low dissolved oxygen and increased total phosphorus and chlorophyll *a*, Round Lake experienced very few exceedances which were small in magnitude.

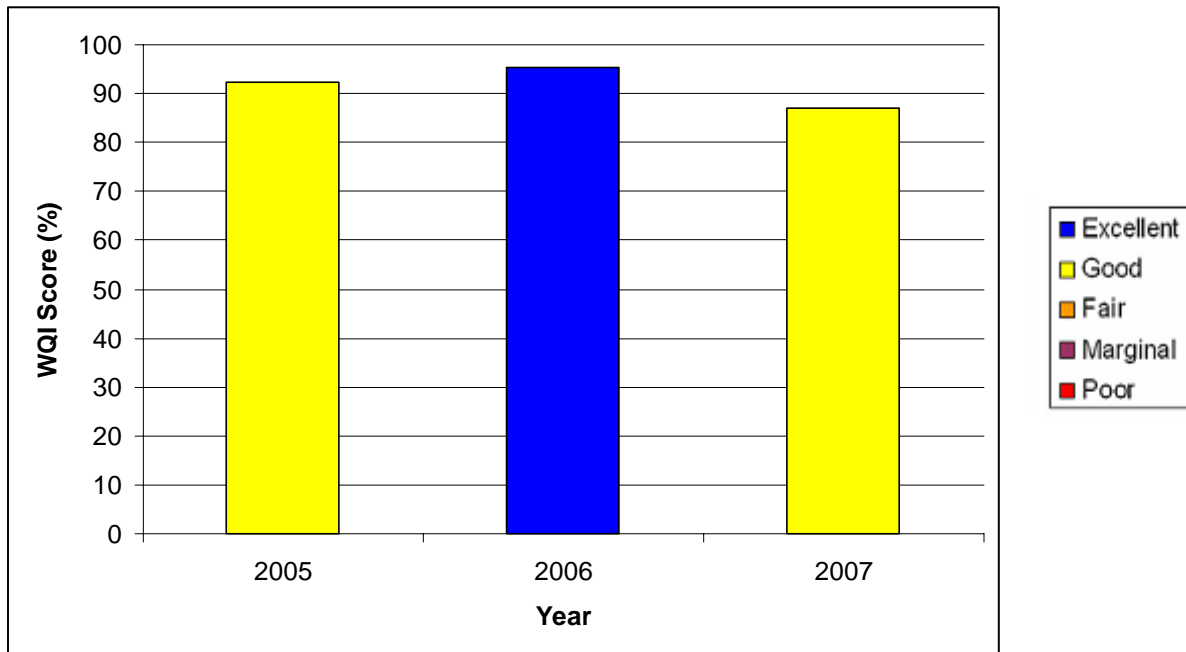


Figure 2: Water Quality Index (WQI) scores for Round Lake’s Baseline Station 2005-2007. No winter samples were collected in 2005 and 2006.

3.2 Parameters not Meeting WQI Objectives

Chromium

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

In the absence of major industry, chromium values are typically present in small amounts in the natural environment. For this reason the objective for the protection of aquatic life is $<1 \mu\text{g/L}$ in surface water such as lakes. Round Lake had chromium concentrations at or below the objective on all occasions with the exception of April 3rd, 2007 ($6 \mu\text{g/L}$). Due to the absence of additional chromium exceedances, this particular result may indicate contamination either in the field or the laboratory. Regardless, it is important to note unusual values and look for trends in their occurrence.

Dissolved Oxygen & Temperature

Dissolved oxygen concentrations are variable depending on time, weather, and temperature. Dissolved oxygen affects both chemical processes and biological organisms within the lake. Though it is not monitored on a yearly basis, the Ministry of the Environment has found that the lake periodically experiences winterkill due to low oxygen levels during the winter, with the last large event occurring in 2003/2004 (SE 2005). The objective for the protection of aquatic life is 5.5 mg/L (SE 2006).

A drop in oxygen during the winter months is a result of decreased oxygen exchange (due to ice cover) with the atmosphere and bacterial growth within the lake. When bacteria grow, they consume oxygen in the process of decomposing organic matter which usually results in decreased dissolved oxygen concentrations near the lake bottom.

Low dissolved oxygen can occur during both winter and summer seasons and is common in many southern Saskatchewan Lakes. For example, the dissolved oxygen profile in Round Lake on February 27th, 2007 shows that dissolved oxygen concentrations under the ice are below the objective for the protection of aquatic life (Figure 3).

Conversely, dissolved oxygen during the summer months was above the objective of 5.5 mg/L with exception of the bottom 0.5-1.0 meters in mid to late summer (Figure 3). Similar to winter, the dissolved oxygen at the lake bottom decreases during the summer due to decomposition. In warm water, dissolved oxygen can reach very low concentrations especially at times of decreased photosynthesis (*i.e.* during the night) and low lake turbulence (*i.e.* calm periods with no wind action).

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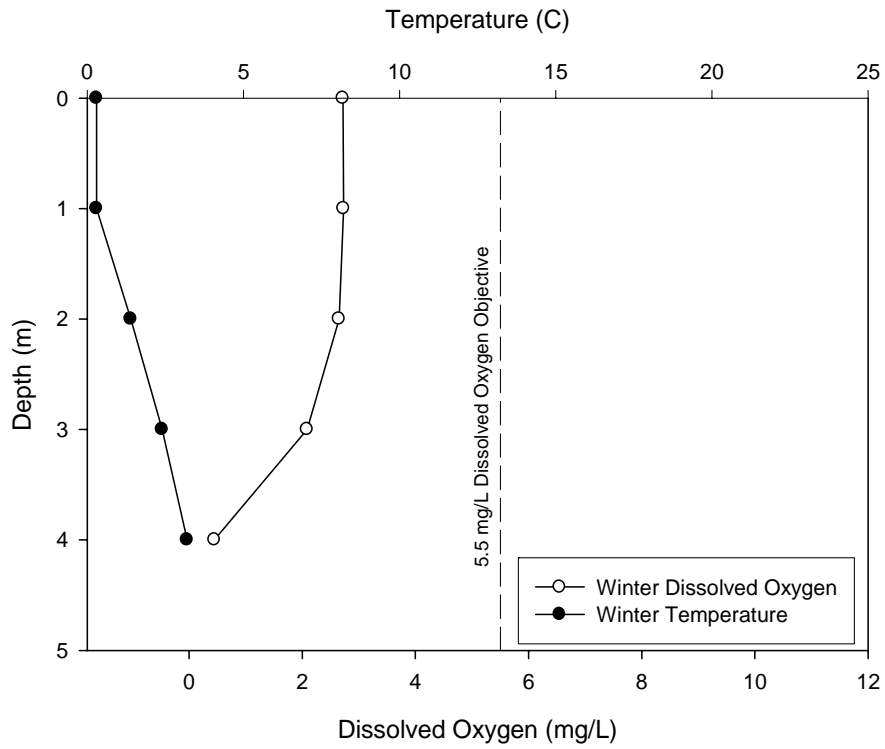
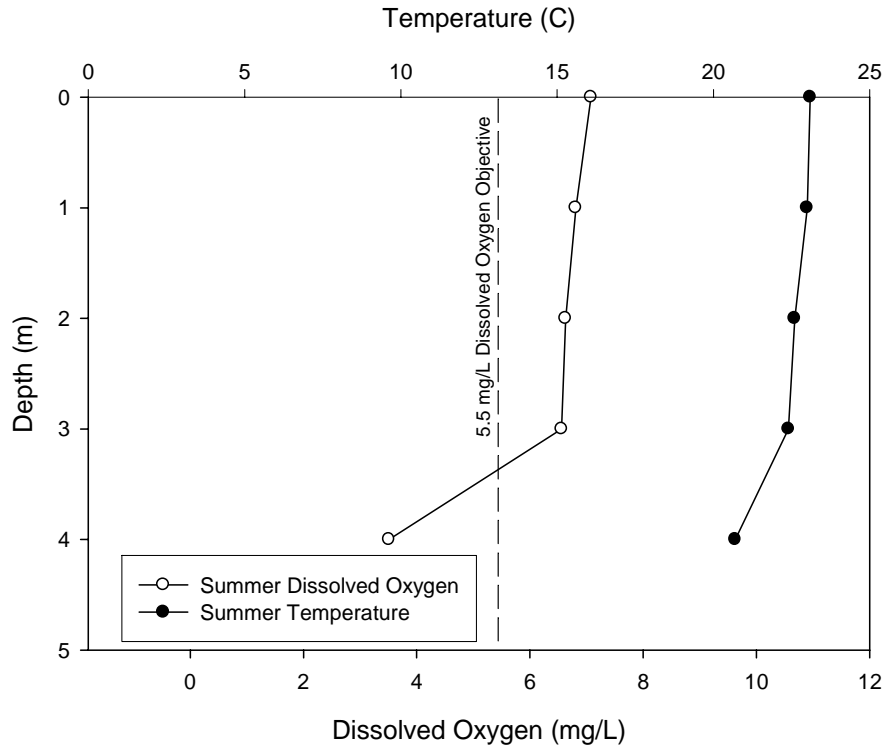


Figure 1: Dissolved oxygen and temperature profiles on July 16th (summer) and February 27th (winter), 2007.

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Total Phosphorus

Nutrients (including phosphorus) are essential for the growth and survival of all organisms. The amount of phosphorus in an ecosystem influences how much life it can support. In aquatic systems, phosphorus can come from a variety of sources including: human activities, natural weathering, inflow and internal sources (*i.e.* sediment at the lake bottom). High concentrations of phosphorus can lead to a variety of problems including algal growth. It is important to note that total phosphorus is variable and may change seasonally. As a result, some key nutrients were monitored as part of the *Lake Stewardship Program*. Total phosphorus in Round Lake ranged from 0.05 to 0.22 mg/L.

Chlorophyll *a*

The amount of algae in surface water was assessed by measuring Chlorophyll *a* (the primary pigment that plants and algae use to convert sunlight into energy for growth). Chlorophyll *a* (or the total algal biomass) is an indicator of the availability of nutrients within the lake. Increased available nutrients enable plants including algae to grow. Saskatchewan Watershed Authority has a target value for chlorophyll *a* of 50 mg/L. The Chlorophyll *a* target value was only exceeded once on July 18th, 2005 (77.6 mg/L).

3.3 Remaining Parameters Measured for the WQI

Parameters which contribute to the water quality of Round Lake but did not exceed the WQI objectives include: arsenic, chloride, sodium, mercury, herbicides, aluminium, sulphate, fecal coliform bacteria, *E.coli*, nitrate and pH. 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 Round Lake's water quality. These five parameters include: dissolved oxygen (see Section 3.2), temperature, specific conductivity, turbidity and Secchi disk depth. Some of these parameters were used to calculate of the WQI.

Temperature

Temperature is measured in the field because of the direct/indirect influence it has on other parameters such as dissolved oxygen and specific conductivity. Varying with depth, water temperature changes with depth and is important with respect to lake mixing (turnover). Temperature can also influences the spatial distribution of fish (*i.e.* cold water vs. warm water species) and plant growth. Ranging seasonally, temperature values observed at the baselines in Round Lake ranged from 0.2°C in the winter to 23.1°C in the summer (Figure 3).

Specific Conductivity

Influenced by geology and soil composition, conductivity is a measure of water's ability to conduct an electrical current, which is dependent on the concentration of dissolved ions in solution. Specific conductivity is calculated using the conductivity of the water which is a

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function of ion concentration and the water temperature. This field measurement provides an estimate of salinity which is more accurately represented by laboratory results for TDS (total of all dissolved ions in the water). Specific conductivity values in Round Lake ranged from 362 $\mu\text{S}/\text{cm}$ to 489 $\mu\text{S}/\text{cm}$ and TDS from 291 mg/L to 415 mg/L. Round Lake is classified as a fresh water lake (Last et al. 2005).

Turbidity

Turbidity is a measure of water clarity. A reduction in water clarity may be caused by dissolved and suspended solids in the water, including: sediment (e.g. during lake overturn) and plankton (small plants and animals). Common sources of turbidity include: algal growth, shoreline erosion (due to ice scour or wave action from wind or boat traffic), waste discharge, urban runoff, sediment disruption from human activities or bottom feeding organisms. A change in turbidity may affect fish habitat, light penetration, plant growth, water temperature and dissolved oxygen concentrations. For recreational purposes, the surface water objective for turbidity is less than 50 NTU. Turbidity was low at Round Lake baseline, with values between 0.55 NTU and 17.0 NTU.

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) 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 and influences from upland activities (i.e. runoff and human activities). Similar to turbidity, Secchi disk values provide a measure of water clarity. At Round Lake baseline, the Secchi disk reading ranged from 0.5 m to 3.0 m. Decreased Secchi disk depths in Round Lake were associated with warm summer days and high algal abundance.

3.5 Shoreline Stations

Two shoreline stations were chosen for summer monitoring. Round Lake's shoreline stations were located on the north shoreline near the Cadet Camp (Station #1) and on the west shoreline just south of the outflow structure (Station #2; Figure 1). Shorelines at Round Lake were monitored during the summer months from 2005-2007. 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 were compared to the Saskatchewan Watershed Authority target value.

Secchi Disk Depth

Water clarity (Secchi depth) was not measured at the shoreline stations because either the bottom of the lake was visible at depths greater than 1.2 m or it was too windy and difficult to accurately take a measurement. For a more detailed description of Secchi disk depth, see Section 3.4.

Bacteria

Escherichia coli (*E. coli*) is a bacteria found in the lower intestines of animals and humans. Bacteria (including *E. coli*) are commonly detected in surface water because humans, pets,

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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” (Saskatchewan Environment 2006).

Though our method of testing did not meet the methodological requirements as mentioned above, both samples from Round Lake baseline (100 counts/100mL) were below the objective for *E.coli* in recreational waters. Regardless of the origin, it is always helpful for humans to take steps to minimize contamination by properly managing potential sources (*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. Neither shoreline exceeded the objective set for recreation (all shoreline turbidity readings were below 9.0 NTU). Similar to water clarity, turbidity is influenced by water movement, wind, suspended particles and organic matter. For a more detailed description of turbidity, see Section 3.4.

Chlorophyll *a*

Chlorophyll *a* at Round Lake’s shoreline sites ranged from 2.3 µg/L to 73.5 µg/L with a total of three samples above the <50 µg/L objective. Shoreline stations may have higher algae concentrations than baseline stations because wind can push algae to the shore. For example, on August 7th, 2007, the maximum concentration of Chlorophyll *a* was measured during wind speeds ranging from 15-20 km/h. For a more detailed description of chlorophyll *a*, see Section 3.2.

The shoreline stations at Round Lake have similar water quality to that at the baseline station. A WQI index score is not calculated for shoreline stations because some parameters required for the index (*i.e.* metals) are not measured at shoreline stations. Second, shoreline water quality is more indicative of the local conditions than water quality of the entire lake.

4.0 Recommendations

Round Lake was sampled as part of the *Lake Stewardship Program* from 2005-2007 completing three summer seasons and one winter season. Though the *Lake Stewardship Program* ceased in 2008, the information collected provides lake users, residents, managers with an increased understanding of Round Lake’s water quality.

To maintain the water quality of Round 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. Maintenance of shoreline buffer zones to prevent erosion and slow the flow of surface runoff to Round 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 KARLES to teach lake users and stakeholders 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

2005 – 2007

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Parameters	May 30	July 18	Aug 17	Sept 19
Nutrients (mg/L)				
Dissolved Organic Carbon	25.6	28.0	29.2	27.8
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.05	0.08	0.05	0.09
Total Kjeldahl Nitrogen	2.2	2.2	2.6	2.3
Total Phosphorous	0.05	0.15	0.10	0.09
Ortho-Phosphate, as P	<0.02	<0.02	<0.02	<0.02
Solids (mg/L)				
Total Dissolved	342	341	335	328
Suspended Solids, Fixed	1	4	6	6
Suspended Solids, Volatile	2	14	10	7
Suspended Solids, Total	3	18	16	13
Bacteria (orgs/100 mL)				
Fecal Coliform	<10	<10	<10	<10
Total Coliform	10	<10	<10	20
Major Ions (mg/L)				
Alkalinity, Total	184	192	204	184
Alkalinity, Phenol	8	14	32	12
Bicarbonate	205	200	171	195
Calcium	33	37	38	36
Carbonate	9.6	16.8	38.4	14.4
Chloride	2.5	2.1	2.2	2.1
Hardness, Total	206	212	218	205
Magnesium	30	29	30	28
Potassium	10	9	9	9
Sodium	9	10	10	10
Sulphate	42.8	36.9	36.4	33.2
Other				
Chlorophyll <i>a</i> (µg/L)	6.2	77.6	39.2	na
Specific Conductivity (µS/cm)	430	423	422	407
pH (pH units)	8.5	8.7	9.1	8.7
Turbidity (NTU)	1.6	9.8	13.0	11.0
Biochemical Oxygen Demand (mg/L)	<2.0	3.6	3.1	<2.0
Chemical Oxygen Demand (mg/L)	98.7	79.8	85.9	84.7
Field Data				
Time Sampled	10:30	10:30	12:00	13:00
Air Temperature (°C)	18	15	10	12
pH (pH units)	8.69	8.61	8.74	8.99
Turbidity (NTU)	1.73	12.20	12.20	12.00
Cloud Cover (%)	20	0	100	0
Secchi Disk Transparency (m)	2.20	0.50	0.50	1.00
Wind Speed (km/hr)	5	calm	15-20	15

Table 2: Round Lake Baseline Surface 2005 - Metal and Herbicide Parameters

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Parameters	May 30	July 18	August 17	Sept 19
Metals (mg/L) *unless otherwise indicated				
Mercury (µg/L)	<0.05	<0.05	<0.05	<0.05
Aluminium	<0.005	0.027	<0.005	<0.005
Arsenic (µg/L)	1.5	2.1	1.9	1.7
Barium	0.036	0.034	0.032	0.032
Beryllium	<0.001	<0.001	<0.001	<0.001
Boron	0.059	0.052	0.043	0.045
Cadmium	<0.001	<0.001	<0.001	<0.001
Chromium	<0.001	<0.001	<0.001	<0.001
Cobalt	<0.001	<0.001	<0.001	<0.001
Copper	<0.001	<0.001	<0.001	<0.001
Iron	0.053	0.099	0.047	0.080
Lead	<0.002	<0.002	<0.002	<0.002
Manganese	0.016	0.150	0.150	0.080
Molybdenum	<0.001	0.002	0.016	0.002
Nickel	0.001	0.002	<0.001	<0.001
Silicon, Soluble	0.30	3.70	2.30	0.31
Silver	<0.001	<0.001	<0.001	<0.001
Strontium	0.12	0.12	0.13	0.12
Titanium	<0.001	0.003	<0.001	<0.001
Vanadium	<0.001	<0.001	<0.001	<0.001
Zinc	<0.005	<0.005	<0.005	<0.005
Zirconium	<0.001	0.002	0.002	<0.001
Herbicides (µg/L)				
2,4,5-T	<0.5	<0.5	na	na
2,4,5-TP (silvex)	<0.5	<0.5	na	na
2,4-D	<0.5	<0.5	na	na
Bromoxynil (Buctril)	<0.5	<0.5	na	na
Dicamba (Banvel)	<0.5	<0.5	na	na
Diclofop-methyl (HoeGrass)	<1	<1	na	na
MCPA	<0.5	<0.5	na	na
Picloram (Tordon)	<1	<1	na	na

Table 3: Round Lake Baseline 2005 Profile

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Date (dd/mm/yy)	Depth (m)	Dissolved Oxygen		Water Temperature (°C)	Specific Conductivity (µS/cm)
		(mg/L)	(% sat.)		
30/05/05	0	8.50	77.2	13.6	421.6
	1	8.34	78.2	11.4	422.1
	2	7.89	73.7	11.1	424.3
	3	5.84	55.9	10.8	429.4
	4	3.80	34.5	10.8	433.7
18/07/05	0	9.24	104.5	21.1	420.0
	1	8.87	100.5	21.0	420.1
	2	7.44	86.9	20.4	420.4
	3	7.34	72.1	20.3	422.8
	4	6.95	78.8	20.2	423.7
08/17/05	0	7.27	75.4	15.9	415.8
	1	7.28	73.9	15.9	415.9
	2	7.23	73.1	15.9	415.9
	3	7.32	74.0	15.9	415.9
	4	5.15	51.0	15.9	415.7
09/19/05	0	8.58	81.1	12.7	403.0
	1	8.71	80.9	12.7	403.1
	2	8.52	80.6	12.7	402.5
	3	8.58	80.2	12.6	403.0
	4	8.53	79.6	12.6	402.8

Table 4: Round Lake Baseline Bottom Parameters, 2005

Round Lake Water Quality Report 2005-2007

Parameters	May 30	July 18	Aug 17	Sept 19
Nutrients (mg/L)				
Dissolved Organic Carbon	25.7	28.0	29.8	27.7
Nitrate, as Nitrogen	0.05	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.06	0.04	0.05	0.09
Total Kjeldahl Nitrogen	2.8	2.3	2.5	2.3
Total Phosphorous	0.13	0.11	0.09	0.11
Ortho-Phosphate, as P	<0.02	0.02	<0.02	<0.02
Solids (mg/L)				
Total Dissolved	351	341	334	329
Suspended Solids, Fixed	4	3	6	6
Suspended Solids, Volatile	6	9	10	7
Suspended Solids, Total	10	11	17	13
Bacteria (orgs/100 mL)				
Fecal Coliform	<10	10	<10	<10
Total Coliform	10	10	10	30
Major Ions (mg/L)				
Alkalinity, Total	184	192	204	186
Alkalinity, Phenol	na	14	34	12
Bicarbonate	224	200	166	198
Calcium	33	37	38	36
Carbonate	na	16.8	40.8	14.4
Chloride	2.4	2.1	2.2	2.0
Fluoride	0.13	0.12	na	na
Hardness, Total	206	212	218	205
Magnesium	30	29	30	28
Potassium	10	9	10	9
Sodium	9	10	10	9
Sulphate	42.8	36.8	36.5	32.6
Other				
Chlorophyll <i>a</i> (µg/L)	6.7	40.7	33.9	35.6
Conductivity (µS/cm)	432	424	421	407
pH (pH units)	8.3	8.7	9.1	8.7
Turbidity (NTU)	3	13	17	12
Biochemical Oxygen Demand (mg/L)	<2.0	2.8	3.0	2.0
Chemical Oxygen Demand (mg/L)	79.9	78.8	87.8	85.0

Table 5: Round Lake Shoreline Station #1 - Cadet Camp, 2005

Round Lake Water Quality Report 2005-2007

Parameter	May 30	July 18	Aug 17	Sept 19
Nutrients (mg/L)				
Dissolved Organic Carbon	25.8	28.0	30.2	28.1
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.06	0.04	0.05	0.06
Total Kjeldahl Nitrogen	2.2	2.1	2.3	2.4
Total Phosphorous	0.04	0.11	0.10	0.11
Ortho-Phosphate, as P	<0.02	0.02	<0.02	<0.02
Solids (mg/L)				
Suspended Solids, Fixed	<1	3	8	7
Suspended Solids, Volatile	2	9	10	8
Suspended Solids, Total	2	11	19	15
Bacteria (orgs/100 mL)				
Fecal Coliform	<10	<10	<10	50
Total Coliform	<10	<10	<10	20
Other				
Chlorophyll <i>a</i> (µg/L)	4.5	52.2	43.7	16.7
Turbidity (NTU)	1.8	13.0	15.0	12.0
Biochemical Oxygen Demand (mg/L)	<2.0	3.0	2.5	2.9
Chemical Oxygen Demand (mg/L)	76.3	7.4	87.9	88.2
Field Parameters				
Time Sampled	11:40	11:45	11:00	12:15
Air Temperature (°C)	18	15	10	12
Water Temperature (°C)	13.1	21.2	15.9	na
pH (pH units)	8.56	8.71	8.83	na
Dissolved Oxygen (mg/L)	9.94	9.83	7.38	na
Dissolved Oxygen (% sat.)	94.8	109.6	75.0	na
Turbidity (NTU)	1.57	8.50	8.88	na
Cloud Cover (%)	20	0	100	0
Wind Speed (km/hr)	5	calm	15-20	15

Table 6: Round Lake Shoreline Station #2 - North of Outlet Structure, 2005

Round Lake Water Quality Report 2005-2007

Parameters	May 30	July 18	Aug 17	Sept 19
Nutrients (mg/L)				
Dissolved Organic Carbon	25.8	28.4	28.9	28.1
Nitrate, as Nitrogen	<0.04	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.05	0.04	0.04	0.11
Total Kjeldahl Nitrogen	2.7	2.2	2.5	2.3
Total Phosphorous	0.05	0.10	0.10	0.07
Ortho-Phosphate, as P	<0.02	0.02	<0.02	<0.02
Solids (mg/L)				
Suspended Solids, Fixed	1	2	11	6
Suspended Solids, Volatile	2	7	13	7
Suspended Solids, Total	3	9	24	12
Bacteria (orgs/100 mL)				
Fecal Coliform	<10	<10	<10	40
Total Coliform	30	<10	<10	200
Other				
Chlorophyll <i>a</i> (µg/L)	4.0	62.6	36.9	26.8
Turbidity (NTU)	1.6	6.7	16.0	10.0
Biochemical Oxygen Demand (mg/L)	<2.0	4.1	4.0	<2.0
Chemical Oxygen Demand (mg/L)	75.2	71.8	90.7	85.1
Field Parameters				
Time Sampled	12:00	12:15	11:30	12:30
Air Temperature (°C)	18	15	10	12
Water Temperature (°C)	13.1	21.2	16.3	na
pH (pH units)	8.84	8.73	8.80	na
Dissolved Oxygen (mg/L)	10.15	10.62	8.56	na
Dissolved Oxygen (% sat.)	90.1	118.6	87.0	na
Turbidity (NTU)	1.68	4.60	24.0	na
Cloud Cover (%)	20	0	100	0
Wind Speed (km/hr)	5	5	15-20	15

Table 7: Round Lake Baseline Surface Parameters, 2006

Parameters	May 16	June 25	July 19
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Round Lake Water Quality Report 2005-2007

Nutrients (mg/L)			
Dissolved Organic Carbon	25.7	27.4	28.3
Nitrate, as Nitrogen	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.08	0.11	0.07
Total Kjeldahl Nitrogen	1.8	2.1	1.8
Total Phosphorous	0.22	0.11	0.09
Ortho-Phosphate, as P	0.03	0.04	0.02
Solids (mg/L)			
Total Dissolved	291	295	294
Suspended Solids, Fixed	1	1	3
Suspended Solids, Volatile	2	6	4
Suspended Solids, Total	3	7	7
Bacteria (orgs/100 mL)			
<i>E. coli</i>	<1	<10	<10
Total Coliform	<1	31	41
Major Ions (mg/L)			
Alkalinity, Total	166	168	172
Alkalinity, Phenol	6	8	14
Bicarbonate	188	185	176
Calcium	36	41	42
Carbonate	7.2	9.6	16.8
Chloride	1.6	1.4	1.4
Fluoride	0.13	0.12	0.14
Hardness, Total	176	185	191
Magnesium	21	20	21
Potassium	6	6	6
Sodium	6	6	6
Sulphate	25.6	26.2	24.5
Other			
Chlorophyll <i>a</i> (µg/L)	2.6	24.6	24.6
Specific Conductivity (µS/cm)	368	371	367
pH (pH units)	8.4	8.6	8.1
Turbidity (NTU)	0.71	6.40	4.30
Biochemical Oxygen Demand (mg/L)	<2	na	2
Chemical Oxygen Demand (mg/L)	67.9	80.3	75.7
Field Data			
Time Sampled	12:08	13:00	10:45
Air Temperature (°C)	20	22	16
pH (pH units)	8.60	8.55	8.77
Turbidity (NTU)	1.46	8.92	1.51
Cloud Cover (%)	40	0	20
Secchi Disk Transparency (m)	2.60	1.25	1.25
Wind Speed (km/hr)	W 20	0	NW 10

Table 8: Round Lake Baseline Surface 2006 - Metal and Herbicide Parameters

Round Lake Water Quality Report 2005-2007

Parameters	May 16	June 25	July 19
Metals (mg/L) *unless otherwise indicated			
Mercury (µg/L)	<0.05	<0.05	<0.05
Aluminium	<0.005	0.053	<0.005
Arsenic (µg/L)	0.9	1.4	1.6
Barium	0.030	0.046	0.034
Beryllium	<0.001	<0.001	<0.001
Boron	0.029	0.027	0.028
Cadmium	<0.001	0.023	<0.001
Chromium	0.084	<0.001	<0.001
Cobalt	<0.001	<0.001	<0.001
Copper	<0.001	0.004	<0.001
Iron	0.037	0.200	0.052
Lead	<0.002	0.013	<0.002
Manganese	0.016	0.130	0.320
Molybdenum	<0.001	0.001	<0.001
Nickel	<0.001	0.001	0.001
Silicon, Soluble	2.0	3.8	1.2
Silver	<0.001	<0.001	<0.001
Strontium	0.10	0.11	0.11
Titanium	<0.001	0.002	<0.001
Vanadium	<0.001	<0.001	<0.001
Zinc	<0.005	<0.005	<0.005
Zirconium	<0.001	<0.001	<0.001
Herbicides (µg/L)			
2,4,5-T	<0.5	<0.5	<0.5
2,4,5-TP (silvex)	<0.5	<0.5	<0.5
2,4-D	<0.5	<0.5	<0.5
Bromoxynil (Buctril)	<0.5	<0.5	<0.5
Dicamba (Banvel)	<0.5	<0.5	<0.5
Diclofop-methyl (Hoe Grass)	<1	<1	<1
MCPA	<0.5	<0.5	<0.5
Picloram (Tordon)	<1	<1	<1

Table 9: Round Lake Baseline 2006 Profile

Round Lake Water Quality Report 2005-2007

Date (dd/mm/yy)	Depth (m)	Dissolved Oxygen		Water Temperature (°C)	Specific Conductivity (µS/cm)
		(mg/L)	(% sat.)		
16/05/06	0	9.95	na	14.6	350.9
	1	10.08	na	14.5	353.1
	2	10.05	na	14.1	353.4
	3	10.03	na	13.7	353.6
	4	9.94	na	12.6	354.4
26/06/06	0	8.17	91.4	20.4	317.0
	1	7.65	86.0	20.3	319.3
	2	7.53	84.7	20.2	325.7
	3	6.84	76.8	19.8	327.7
	4	6.26	60.3	18.8	342.0
19/07/06	0	6.59	75.4	21.9	335.9
	1	6.63	75.8	22.0	335.7
	2	6.60	76.7	22.0	335.6
	3	6.76	77.1	22.0	335.5
	4	5.58	66.4	21.9	339.5

Table 10: Round Lake Baseline Bottom Parameters, 2006

Round Lake Water Quality Report 2005-2007

Parameters	May 16	June 25	July 19
Nutrients (mg/L)			
Dissolved Organic Carbon	25.3	27.2	28.4
Nitrate, as Nitrogen	<0.04	0.04	<0.04
Ammonia, as Nitrogen	0.10	0.05	0.06
Total Kjeldahl Nitrogen	1.9	2.3	1.7
Total Phosphorous	0.05	0.09	0.09
Ortho-Phosphate, as P	0.02	0.04	0.03
Solids (mg/L)			
Total Dissolved	294	297	315
Suspended Solids, Fixed	1	1	3
Suspended Solids, Volatile	1	4	4
Suspended Solids, Total	2	6	7
Bacteria (orgs/100 mL)			
<i>E. coli</i>	<1	<10	<10
Total Coliform	3	20	20
Major Ions (mg/L)			
Alkalinity, Total	166	168	174
Alkalinity, Phenol	6	8	na
Bicarbonate	188	185	212
Calcium	36	42	43
Carbonate	7.2	9.6	na
Chloride	1.7	1.4	1.4
Fluoride	0.12	0.12	0.13
Hardness, Total	176	191	198
Magnesium	21	21	22
Potassium	7	6	6
Sodium	7	6	6
Sulphate	25.6	26.4	24.6
Other			
Chlorophyll <i>a</i> (µg/L)	2.9	23.5	19.6
Specific Conductivity (µS/cm)	368	362	367
pH (pH units)	8.4	8.5	8.8
Turbidity (NTU)	0.88	10.10	4.80
Biochemical Oxygen Demand (mg/L)	<2	na	<2
Chemical Oxygen Demand (mg/L)	67.8	72.3	76.1

Table 11: Round Lake Shoreline Station #1 - Cadet Camp, 2006

Round Lake Water Quality Report 2005-2007

Parameters	May 16	June 25	July 19
Nutrients (mg/L)			
Dissolved Organic Carbon	24.8	27.6	27.1
Nitrate, as Nitrogen	0.05	0.04	<0.04
Ammonia, as Nitrogen	0.08	0.07	0.14
Total Kjeldahl Nitrogen	1.7	1.9	1.7
Total Phosphorous	0.05	0.10	0.11
Ortho-Phosphate, as P	0.03	0.04	0.06
Solids (mg/L)			
Suspended Solids, Fixed	1	1	2
Suspended Solids, Volatile	2	4	4
Suspended Solids, Total	3	5	6
Bacteria (orgs/100 mL)			
<i>E. coli</i>	1	<10	<10
Total Coliform	7	41	2,909
Other			
Chlorophyll <i>a</i> (µg/L)	2.3	20.6	16.1
pH (pH units)	8.3	na	na
Turbidity (NTU)	1.9	6.3	6.7
Biochemical Oxygen Demand (mg/L)	<2	na	<2
Chemical Oxygen Demand (mg/L)	65.3	75.4	75.2
Field Data			
Time Sampled	12:55	12:00	10:00
Air Temperature (°C)	20	22	16
Water Temperature (°C)	14.1	na	22.0
Cloud Cover (%)	40	0	20
Wind Speed (km/hr)	20	0	10
pH (pH units)	8.50	na	8.69
Turbidity (NTU)	2.40	na	2.65
Conductivity (µS/cm)	355.5	na	340.0
Dissolved Oxygen (mg/L)	8.32	na	6.12
Dissolved Oxygen (% sat.)	na	na	70.6

Table 12: Round Lake Shoreline Station #2 - North of Outflow Structure, 2006

Round Lake Water Quality Report 2005-2007

Parameters	May 16	June 25	July 19
Nutrients (mg/L)			
Dissolved Organic Carbon	25.4	27.3	28.4
Nitrate, as Nitrogen	<0.04	0.05	<0.04
Ammonia, as Nitrogen	0.08	0.05	0.11
Total Kjeldahl Nitrogen	1.8	2.0	1.6
Total Phosphorous	0.11	0.13	0.09
Ortho-Phosphate, as P	0.03	0.04	<0.02
Solids (mg/L)			
Suspended Solids, Fixed	1	1	3
Suspended Solids, Volatile	1	5	5
Suspended Solids, Total	2	6	8
Bacteria (orgs/100 mL)			
<i>E. coli</i>	<1	<10	<10
Total Coliform	<1	10	31
Other			
Chlorophyll <i>a</i> (µg/L)	4.0	26.3	4.6
pH (pH units)	8.4	na	na
Turbidity (NTU)	1.1	5.5	3.1
Biochemical Oxygen Demand (mg/L)	<2.0	na	2.5
Chemical Oxygen Demand (mg/L)	65.7	77.6	72.1
Field Data			
Time Sampled	13:15	12:30	10:15
Air Temperature (°C)	15	22	16
Water Temperature (°C)	12.8	na	21.9
Cloud Cover (%)	10	0	20
Wind Speed (km/hr)	20	0	10
pH (pH units)	8.61	na	8.79
Turbidity (NTU)	0.59	na	3.20
Specific Conductivity (µS/cm)	353.3	na	335.2
Dissolved Oxygen (mg/L)	9.78	na	7.75
Dissolved Oxygen (% sat.)	na	na	89.0

Table 13: Round Lake Baseline Surface Parameters, 2007

Round Lake Water Quality Report 2005-2007

Parameters	Feb 27	Apr 3	Jul 16	Aug 7	Sept 25
Nutrients (mg/L)					
Dissolved Organic Carbon	26.5	31.5	29.8	22.6	19.5
Nitrate, as Nitrogen	0.45	0.63	<0.04	0.04	<0.04
Ammonia, as Nitrogen	0.06	0.03	0.02	0.04	0.02
Total Kjeldahl Nitrogen	1.6	1.5	1.1	1.1	1.2
Total Phosphorous	0.12	0.12	0.05	0.09	0.09
Ortho-Phosphate, as P	0.12	0.10	0.04	0.08	0.07
Solids (mg/L)					
Total Dissolved	407	415	332	341	351
Suspended Solids, Fixed	<1	<1	<1	1	10
Suspended Solids, Volatile	<1	<1	3	2	8
Suspended Solids, Total	1	<1	3	3	18
Bacteria (orgs/100 mL)					
<i>E. coli</i>	<10	<10	<1	<10	10
Total Coliform	<10	<10	10	75	10
Major Ions (mg/L)					
Alkalinity, Total	200	215	167	172	171
Bicarbonate	244	262	204	210	209
Calcium	56	59	49	50	53
Chloride	1.8	1.7	1.4	1.3	1.5
Fluoride	0.18	0.16	0.17	0.19	0.15
Hardness, Total	259	267	209	215	227
Magnesium	29	29	21	22	23
Potassium	8	7	6	7	6
Sodium	8	7	6	6	7
Sulphate	59.5	48.8	44.4	44.7	51.9
Other					
Chlorophyll <i>a</i> (µg/L)	1.6	0.6	12.0	9.1	17.7
Specific Conductivity (µS/cm)	489	483	384	398	409
pH (pH units)	7.7	7.6	8.2	8.2	8.2
Turbidity (NTU)	0.55	0.78	1.41	2.99	3.10
Biochemical Oxygen Demand (mg/L)	<2.0	0.6	<2.0	<2.0	2.4
Chemical Oxygen Demand (mg/L)	67.7	79.6	57.2	55.5	56.3
Field Data					
Time Sampled	14:30	11:00	14:20	14:15	14:15
Air Temperature (°C)	-10	-18	23	24	10
pH (pH units)	7.81	7.79	8.17	7.99	na
Turbidity (NTU)	0.88	1.03	1.04	1.78	3.94
Cloud Cover (%)	100	10	75	0	5
Secchi Disk (meters)	na	na	2.5	3.0	1.5
Wind Speed (km/hr)	5	10-15	5	15-20	10
Ice Depth (cm)	70	72	0	0	0

Table 14: Round Lake Baseline Surface 2007 - Metal and Herbicide Parameters

Round Lake Water Quality Report 2005-2007

Parameters	Feb 27	April 3	July 16	Aug 7	Sept 25
Metals (mg/L)*unless otherwise indicated					
Mercury (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminium	<0.005	<0.005	<0.005	<0.005	<0.005
Arsenic (µg/L)	1.3	1.3	1.2	1.2	1.0
Barium	0.047	0.045	0.037	0.031	0.036
Beryllium	<0.001	<0.001	<0.001	<0.001	<0.001
Boron	0.032	0.026	0.030	0.032	0.032
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.001	0.006	<0.001	<0.001	<0.001
Cobalt	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	0.024	0.031	0.031	0.025	0.042
Lead	<0.002	<0.002	0.002	<0.002	<0.002
Manganese	0.150	0.140	0.017	0.009	0.008
Molybdenum	0.001	<0.001	<0.001	0.001	0.002
Nickel	<0.001	<0.001	<0.001	<0.001	<0.001
Silicon, Soluble	7.8	7.7	4.6	9.6	7.1
Silver	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	0.14	0.14	0.12	0.13	0.13
Titanium	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	0.007	0.006	<0.005	<0.005	0.008
Zirconium	<0.001	<0.001	<0.001	<0.001	<0.001
Herbicides (µg/L)					
2,4,5-T	<0.5	<0.5	na	na	na
2,4,5-TP (silvex)	<0.5	<0.5	na	na	na
2,4-D	<0.5	<0.5	na	na	na
Bromoxynil (Buctril)	<0.5	<0.5	na	na	na
Dicamba (Banvel)	<0.5	<0.5	na	na	na
Diclofop-methyl (Hoe Grass)	<1	<1	na	na	na
MCPA	<0.5	<0.5	na	na	na
Picloram (Tordon)	<1	<1	na	na	na

Table 14: Round Lake Baseline 2007 Profile

Round Lake Water Quality Report 2005-2007

Date (dd/mm/yy)	Depth (m)	Dissolved Oxygen		Water Temperature (°C)	Specific Conductivity (µS/cm)
		(mg/L)	(% sat.)		
27/02/07	0.0	2.72	18.6	0.3	440.0
	1.0	2.73	18.8	0.3	450.0
	2.0	2.65	18.7	1.4	442.0
	3.0	2.09	15.1	2.4	441.6
	4.0	0.45	3.6	3.2	449.3
03/04/07	0.0	1.93	13.7	0.2	446.0
	1.0	1.63	11.4	0.3	442.0
	2.0	1.22	9.0	1.6	445.0
	3.0	1.01	7.5	2.1	454.8
	4.0	0.60	4.2	2.7	455.4
16/07/07	0.0	7.08	83.0	23.1	369.8
	1.0	6.81	79.8	23.0	369.4
	2.0	6.63	77.0	22.6	369.3
	3.0	6.56	76.4	22.4	369.9
	4.0	3.51	38.0	20.7	373.5
07/08/07	0.0	6.33	72.1	21.7	371.7
	1.0	6.27	71.2	21.6	373.4
	2.0	6.23	71.0	21.5	376.0
	3.0	6.54	71.6	21.5	376.7
	4.0	4.58	50.1	21.0	385.1
25/09/07	0.0	9.56	85.5	10.2	374.3
	1.0	9.40	84.4	10.1	375.1
	2.0	9.37	83.5	10.0	378.0
	3.0	9.36	83.1	10.0	379.1
	4.0	8.48	75.3	10.0	379.9

Table 15: Round Lake Baseline Bottom Parameters, 2007

Round Lake Water Quality Report 2005-2007

Parameters	February 27	April 3
Nutrients (mg/L)		
Dissolved Organic Carbon	26.4	26.4
Nitrate, as Nitrogen	0.43	0.47
Ammonia, as Nitrogen	0.04	0.21
Total Kjeldahl Nitrogen	1.6	1.3
Total Phosphorous	0.12	0.12
Ortho-Phosphate, as P	0.12	0.09
Solids (mg/L)		
Total Dissolved	405.0	404.9
Suspended Solids, Fixed	<1	<1
Suspended Solids, Volatile	<1	<1
Suspended Solids, Total	<1	<1
Bacteria (orgs/100 mL)		
<i>E. coli</i>	<10	<10
Total Coliform	<10	<10
Major Ions (mg/L)		
Alkalinity, Total	200	200
Bicarbonate	244	244
Calcium	55	56
Chloride	1.8	1.9
Fluoride	0.17	0.16
Hardness, Total	257	259
Magnesium	29	29
Potassium	8	8
Sodium	8	7
Sulphate	59.2	58.5
Other		
Chlorophyll <i>a</i> (µg/L)	0.6	1.7
Specific Conductivity (µS/cm)	487	473
pH (pH units)	7.7	7.8
Turbidity (NTU)	0.55	0.94
Biochemical Oxygen Demand (mg/L)	<2.0	0.6
Chemical Oxygen Demand (mg/L)	65.3	60.6

Table 16: Round Lake Shoreline Station #1 - Cadet Camp, 2007

Round Lake Water Quality Report 2005-2007

Parameters	July 16	August 7	September 25
Nutrients (mg/L)			
Dissolved Organic Carbon	30.0	22.8	19.1
Nitrate, as Nitrogen	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.02	0.02	<0.02
Total Kjeldahl Nitrogen	1.2	1.6	1.2
Total Phosphorous	0.08	0.12	0.09
Ortho-Phosphate, as P	0.04	0.08	0.06
Solids (mg/L)			
Suspended Solids, Fixed	<1	6	2
Suspended Solids, Volatile	14	2	6
Suspended Solids, Total	14	8	8
Bacteria (orgs/100 mL)			
<i>E. coli</i>	<1	<10	<10
Total Coliform	86	20	<10
Other			
Chlorophyll <i>a</i> (µg/L)	16.2	73.5	23.4
Turbidity (NTU)	2.37	12.20	5.10
Biochemical Oxygen Demand (mg/L)	4.0	3.2	2.8
Chemical Oxygen Demand (mg/L)	59.4	57.2	56.2
Field Data			
Time Sampled	14:00	13:30	13:45
Air Temperature (°C)	23	24	10
Water Temperature (°C)	23.8	21.7	10.1
pH (pH units)	8.13	8.16	na
Dissolved Oxygen (mg/L)	8.00	8.02	9.81
Dissolved Oxygen (% sat.)	90.1	92.5	86.9
Turbidity (NTU)	2.09	3.00	3.70
Cloud Cover (%)	75	0	5
Wind Speed (km/hr)	5	15-20	10

Table 17: Round Lake Shoreline Station #2 - North of Outlet Structure, 2007

Round Lake Water Quality Report 2005-2007

Parameters	July 16	August 7	September 25
Nutrients (mg/L)			
Dissolved Organic Carbon	29.7	22.5	18.8
Nitrate, as Nitrogen	<0.04	<0.04	<0.04
Ammonia, as Nitrogen	0.08	0.03	0.02
Total Kjeldahl Nitrogen	1.1	1.1	1.1
Total Phosphorous	0.05	0.10	0.09
Ortho-Phosphate, as P	0.04	0.08	0.06
Solids (mg/L)			
Suspended Solids, Fixed	<1	<1	3
Suspended Solids, Volatile	1	9	5
Suspended Solids, Total	1	9	8
Bacteria (orgs/100 mL)			
<i>E. coli</i>	1	10	<10
Total Coliform	152	309	<10
Other			
Chlorophyll <i>a</i> (µg/L)	4.5	7.9	13.1
Turbidity (NTU)	1.49	2.41	5.40
Biochemical Oxygen Demand (mg/L)	<2	<2	<2
Chemical Oxygen Demand (mg/L)	53.6	54.6	57.1
Field Data			
Time Sampled	14:00	13:45	14:00
Air Temperature (°C)	23	24	10
Water Temperature (°C)	22.9	22.1	10.2
pH (pH units)	8.08	8.11	na
Dissolved Oxygen (mg/L)	6.60	6.92	10.02
Dissolved Oxygen (% sat.)	76.7	77.6	89.8
Turbidity (NTU)	1.26	2.86	2.79
Cloud Cover (%)	75	0	5
Wind Speed (km/hr)	5	15-20	10