Pratt and Morin Lakes - Environmental Overview

Prepared for:
RM of Canwood No. 494

Prepared by:
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October 2007
File No. 113253300

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July 20, 2007
File: 13253300

Dear Survey Participant:

Reference: Morin and Pratt Lakes – An Environmental and Development Overview

The RM of Canwood No. 494 has contracted Stantec Consulting Ltd. to complete an environmental and development overview of the Morin and Pratt lakes. Our study includes completing some basic water quality sampling at each lake, and a general assessment of the lakeshore and surrounding environment. We also are seeking public input on the current and potential uses of the lakes. The enclosed survey is one method of collecting information useful for future planning within the RM and will take just a few minutes to complete. A stamped, self-addressed envelope is included for you to return the completed survey form to our office.

Your participation with the survey is greatly appreciated. Your answers and opinions are valuable to our study and to the RM of Canwood.

Please complete the survey form and return to us before August 31, 2007. You may also fax your completed form to 306-667-2500. If you require additional space for comments, please feel free to add additional pages to your submission.

Later this year the results of the survey will be presented to the RM of Canwood and the public will be invited to attend.

Thank you for your assistance in this study.

Sincerely,

STANTEC CONSULTING LTD.

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1.0 Introduction

The RM of Canwood No. 494 contracted Stantec Consulting Ltd. to complete an environmental and development overview of both Pratt and Morin lakes, which are located within the RM (Figure 1). These lakes are popular for their recreational capabilities and both have numerous cottages along their shorelines.

The study objective was:

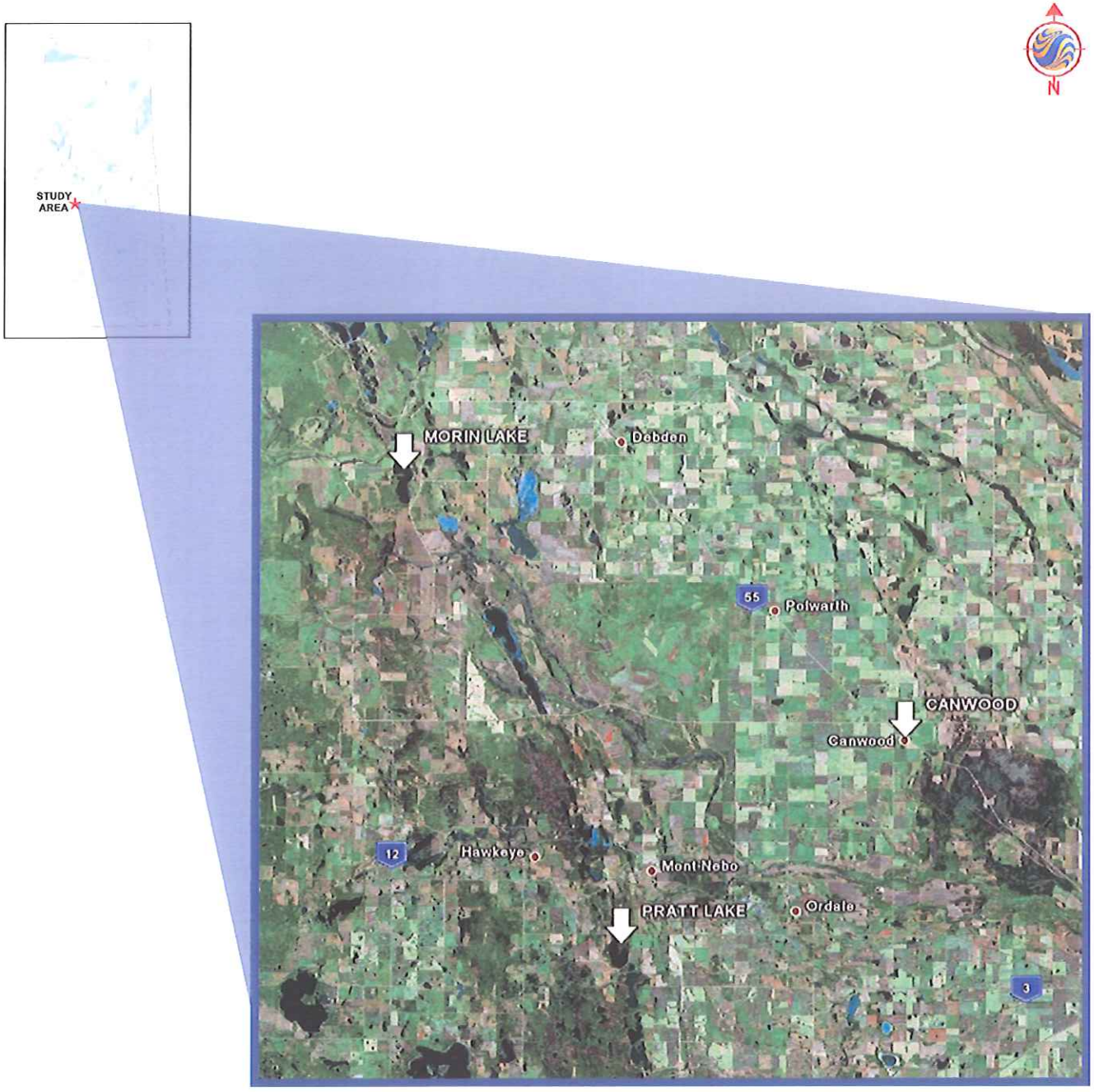
- To prepare a research document identifying the potential effects of future development at Morin and Pratt lakes

The major topics to be examined included:

- The natural resource base
- Land use (current and projected)
- Identification of potential opportunity and constraint areas related to the natural and/or the land use environments
- Public attitudes to the current lake use

The major activities undertaken for this assignment included:

- Review of relevant literature and maps for the land use and the natural resource base descriptions.
- Site visit to collect water samples for subsequent analyses.
- Site visit to photograph and generally assess the shorelines of each lake.
- Development of a questionnaire for cottagers and surrounding land owners. The questionnaire was implemented by the RM and the completed forms were subsequently reviewed and assessed by Stantec.
- Preparation of this report.



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Google Earth Pro (2007)

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Client/Project:
RM of CANWOOD No. 494
ENVIRONMENTAL OVERVIEW
MORIN LAKE AND PRATT LAKE, SASKATCHEWAN

Figure No.:
1

Title:
SITE LOCATION

2.0 Study Area

2.1 INTRODUCTION

This chapter provides an ecological overview of the Pratt and Morin lake environments (the natural resource base). Topics discussed include topography, wildlife, vegetation, and fisheries. The chapter also includes a discussion of the surrounding land uses.

2.2 ECOLOGICAL SETTING

Pratt Lake is located primarily within the Shellbrook Plain Landscape Area of the Boreal Transition Ecoregion, within the Boreal Plain Ecozone. Acton et al (1998) describe this landscape area with the following:

> *The terrain, which is at an elevation of about 450 to 500 m, is relatively level but slopes gradually toward the North Saskatchewan River. It is drained by a number of streams which originate in the uplands to the north and flow through the Shellbrook plain on their way to the North Saskatchewan River.*
>
> *The area is a gently undulating to moderately rolling plain. Along its southern boundary the landscape is characterized mainly by sandy loam fluvial-lacustrine deposits and Dark Gray Chernozemic soils. Extremely sandy stratified deposits, often reworked by wind, also occur, and exhibit typical dune topography characterized by short, steep slopes and circular undrained depressions. The soils found on these sandy materials are mainly Brunisols and, to a less extent, Regosols and Dark Gray Chernozems.*
>
> *In the northern part, the surficial deposits are mainly loamy glacial till and glaciolacustrine sediments, although a large tract of sandy eolian sediments occurs south of Canwood. Dark Gray Chernozems are associated with the finer textured deposits, while Brunisolic soils are dominant on the sandy eolian sediments.*
>
> *Roughly 60% of the area is cultivated, with cereal and oilseeds being the main crops. Forages account for about 15% of the cultivated area. The native areas are mostly pine forest associated with the extremely sandy eolian deposits. Isolated wetlands supporting black spruce and tamarack also occur.*

The surficial geology at Pratt Lake is primarily fluvial, with some hummocky, sandy fluvial lacustrine features along the eastern half of the lake.

Morin Lake is located within the Sturgeon River Plain Landscape area of the Boreal Transition Region. This area is described by Acton et al (1998):

The Sturgeon River plain is a moderately rolling glacial till plain forming an arc around the southwestern corner of the Waskesiu Hills. While the overall landscape exhibits a hummocky pattern characterized by numerous undrained depressions or potholes, many of the small lakes and wetlands are elongated in a northwest-southeast direction. This feature, coupled with the fact that the prominent Sturgeon River Valley – which is a former glacial meltwater channel – is oriented in a similar direction, is evidence of the direction of glacier movement.

Elevations range from about 525 m at the base of the Waskesiu Hills and in the northern part of the area, to about 450 m along its southern boundary. Along the northern boundary, water flows northward into either Cowan Lake or Delaronde lakes and from there into the Churchill River system. The remainder of the area drains southward into the Saskatchewan River system, although with the exception of Sturgeon River Valley, external drainage is not well developed and groundwater tables are often high.

In the southern part of the area, Dark Gray Chernozemic soils developed on loamy textured glacial till are dominant. Many of these soils are calcareous at the surface or show evidence of restricted drainage due to a high water table. The low-lying depressional areas are characterized by organic soils, many of which contain marl deposits. Isolated areas of virgin Black Chernozemic soils can be found on the steep south-facing slopes of the Sturgeon River Valley, as well as on some very sandy deposits along the southwestern boundary of Prince Albert national park. Gray Luvisolic soils, developed on loamy glacial till which is occasionally overlain with sandy stratified sediments, are dominant in the northwestern part of the area.

Slightly less than half of the Sturgeon River plain is cultivated with cereal and oilseeds accounting for about 70% of the seeded area. The remaining area is large trebling aspen forest or wetlands.

The surficial geology of Morin Lake includes sandy and gravelly, glaciofluvial deposits along the south, southwest and eastern portions. The northwestern corner of the lake is predominantly unsorted glacial till (moraine). Alluvial deposits are found along the small stream draining the lake to the north.

2.2.1 Vegetation

Generally, the two lakes are within a deciduous dominant boreal forest that is characterized by a mix of forest and agriculture. Hilly uplands are usually aspen forest, with balsam poplar being a significant component of the more poorly drained soils. Even-aged jack pine stands are characteristic of the sandy and gravelly soil areas.

Both lakes have significant forest growth along the shorelines and backshores with agricultural lands situated nearby. Photographs of both lakes are provided in Appendix A, with a shoreline description provided in Section 3.2.

A search of the Saskatchewan Conservation Data Centre records revealed no records of any rare or endangered floral species at either lake.

2.2.2 Wildlife

Both lakes are associated with a relatively diverse wildlife population. White-tailed deer, moose, black bear, beaver, and several small mammal species are common throughout the region. Ungulate habitat is particularly good, with large portions of the region being rated as Class 2 or 3 (Canada Land Inventory).

Morin Lake is surrounded by Class 2 lands (very slight limitations for the production of ungulates). There are provincially designated *Wildlife Habitat Protection Act* (WHPA) lands within the SW, NW and NE of 11-52-8 W3M. These lands are important for white-tailed deer and ruffed grouse. Figures 2 and 3 (Chapter 3) illustrate these WHPA locations.

Pratt Lake has Class 2 lands along the north east, and south borders of the lake, with Class 3 lands to the west. WHPA lands are located in the east half of 18-49-6 W3M and are also important for white-tailed deer and ruffed grouse.

A search of the Saskatchewan Conservation Data Centre revealed no rare or endangered species records for either lake. Bald eagles and osprey have been reported by local cottagers as nesting within the east half of 19-49-6 W3M.

2.2.3 Fisheries

Both lakes are managed by Saskatchewan Environment, Fish and Wildlife Branch. Pratt Lake is stocked with walleye fry on a regular basis (e.g., approximately 500,000 walleye fry in both 2004 and 2005). Morin Lake is also stocked with walleye fry and has been on a regular basis since 1932 (200,000 in both 2005 and 2006). Both lakes have fair populations of northern pike. Perch and white suckers are also present and Morin Lake has a small population of whitefish.

Attempts have been made at Morin Lake to expand/improve the fishery. Lake trout were stocked in 1962, 1964 and 1981, but none were showing up in subsequent test netting, although anglers did report some catches. Although Morin Lake is deep (over 30 m in some locations), limnology data collected by Saskatchewan Environment indicated low oxygen levels, which likely was the reason for the failure of the lake trout program.

The Morin Lake Spawning Shoal Project was an unsuccessful attempt to create a spawning habitat for walleye. Two artificial reefs were constructed in 1988 and 1990, using coarse gravel and rock. However, these were inspected in 1992 and it was determined that the shoals had suck into the soft lake bottom and were completely silted over.

2.2.4 The Lakes

Pratt Lake is a small lake approximately 228 ha in area. However, as indicated in Figure 2 (Chapter 3), a portion of this lake is very shallow (see point P8 on map) and therefore, the potential usable portion of the lake is smaller. Although the lake margins are relatively shallow, there are two deep basins having a depth of approximately 20 m.

The lake is fed by a small stream flowing north from a series of small lakes and wetlands. Beaver dams at the outlet to the north help control the water levels within the lake. Past removal of these dams has led to significant drops in water levels. Saskatchewan Environment reports that in 1995 the water levels did drop, likely due to a beaver dam failure, resulting in winter kill of fish. Although the lake does have two deep basins, winter kills do periodically occur because much of the lake is shallow.

Morin Lake is approximately 254 ha in size and drains to the north through a small stream that flows into the Big River Indian Reserve No. 118. This lake is primarily fed by groundwater and surface runoff. It is also a relatively deep lake, with depths of more than 30 m in some locations.

2.3 LAND USE

2.3.1 Pratt Lake

Pratt Lake is surrounded by a combination of privately owned land, Agricultural Crown Land, and Saskatchewan Environment Resource Lands. Agricultural Crown Lands are within the NW, NE, and SE of 19-49-6 W3M. Saskatchewan Environment Resource Lands are within the NE 18-49-6 W3M and include the WHPA lands previously mentioned.

Cottage developments are in three locations. The Hansen Subdivision (NW 19-49-6 W3M) has 24 lots, 21 cottages and no year round residents. The Southwest Subdivision (NW 18-49-6 W3M) has 35 lots, 19 cottages, and no year round residents. The Southeast Subdivision (SE 19-49-6 W3M) has 17 lots, 1 cottage, one cottage under construction, and no year round residents. There are also four cabins constructed along the eastern portion of the lake, which are not part of a designated cottage subdivision.

The northern boundary of the Mistawasis Indian Reserve No. 103 is located approximately one kilometre to the south, although no residential developments associated with this Reserve are within several kilometres of Pratt Lake.

Surrounding land use includes forested lands and agriculture (croplands and pasture). A gravel road is immediately adjacent to the southern shoreline of the lake. A small, poorly developed boat launch is located adjacent to the road.

There are no nearby land uses of significant concern to recreational use at Pratt Lake. There are no communities, landfills, sewage lagoons, or industrial developments within several

kilometres of the lake. Water entering the lake comes from a series of wetlands (cattail marshes) flowing north from the Mistawasis Indian Reserve No. 103.

The proximity of cattle to the lake was often expressed as a concern by cottagers responding to a questionnaire survey (Chapter 4). Many respondents noted that in the past, livestock have entered the lake to drink. There is a perception that water quality within the lake may be compromised by this activity.

In summary, the potential land use concerns at Pratt Lake include:

- Shoreline disturbance at the cottage subdivisions
- Livestock from surrounding cattle operations entering the lake
- Proximity of the road along the south shore of the lake.

2.3.2 Morin Lake

Morin Lake is surrounded by a combination of private and crown lands. Additionally, the Big River Indian Reserve No. 118 borders the northern end of the lake. Crown Lands are within the SW, NW and NE 14-52-8 W3M and within the SE 11-52-8 W3M.

The Morin Lake Regional Park and cottage subdivisions are within the western half of 24-52-8 W3M. There are 142 lots, including a public reserve, 110 cottages, 24 permanent dwellings and 60 year round residents. The Hamlet of Victoire is located a few hundred metres east of the lake.

The Regional Park was established in 1984 and is 42 ha in size. It includes campsites (31 electrified and 14 non-electrified), a boat launch, beach, ball diamonds, overflow camping, and a playground and picnic area. The park is popular and often reaches capacity on several summer weekends.

The nearest sewage lagoon is more than 2 km away and not connected to the lake via any channel. There are no designated landfills or industrial areas within several kilometres of the lake.

A small garbage dump (unauthorized) is located on the Indian Reserve, approximately 150 m from the lake shoreline. The dump site has old appliances and other debris. It is separated from the lake by the forested shoreline and a road and there are no obvious overland flow connections between this site and the lake.

3.0 Field Survey

The objective of the field survey was to examine the environmental conditions specific to Pratt and Morin Lakes. To achieve this objective, detailed observations were recorded and water sampling was conducted.

3.1 METHODS

The shoreline of Pratt and Morin Lakes was traversed in a boat on August 21 and 22, 2007 and observations were made of the following:

- Cabin development areas, with specific focus on shoreline areas cleared for water front developments (beach, dock, etc);
- Shoreline areas susceptible to erosion;
- Location of potentially significant or sensitive habitats; and
- Location of any potential concerns (cattle near the shore, debris, etc.).

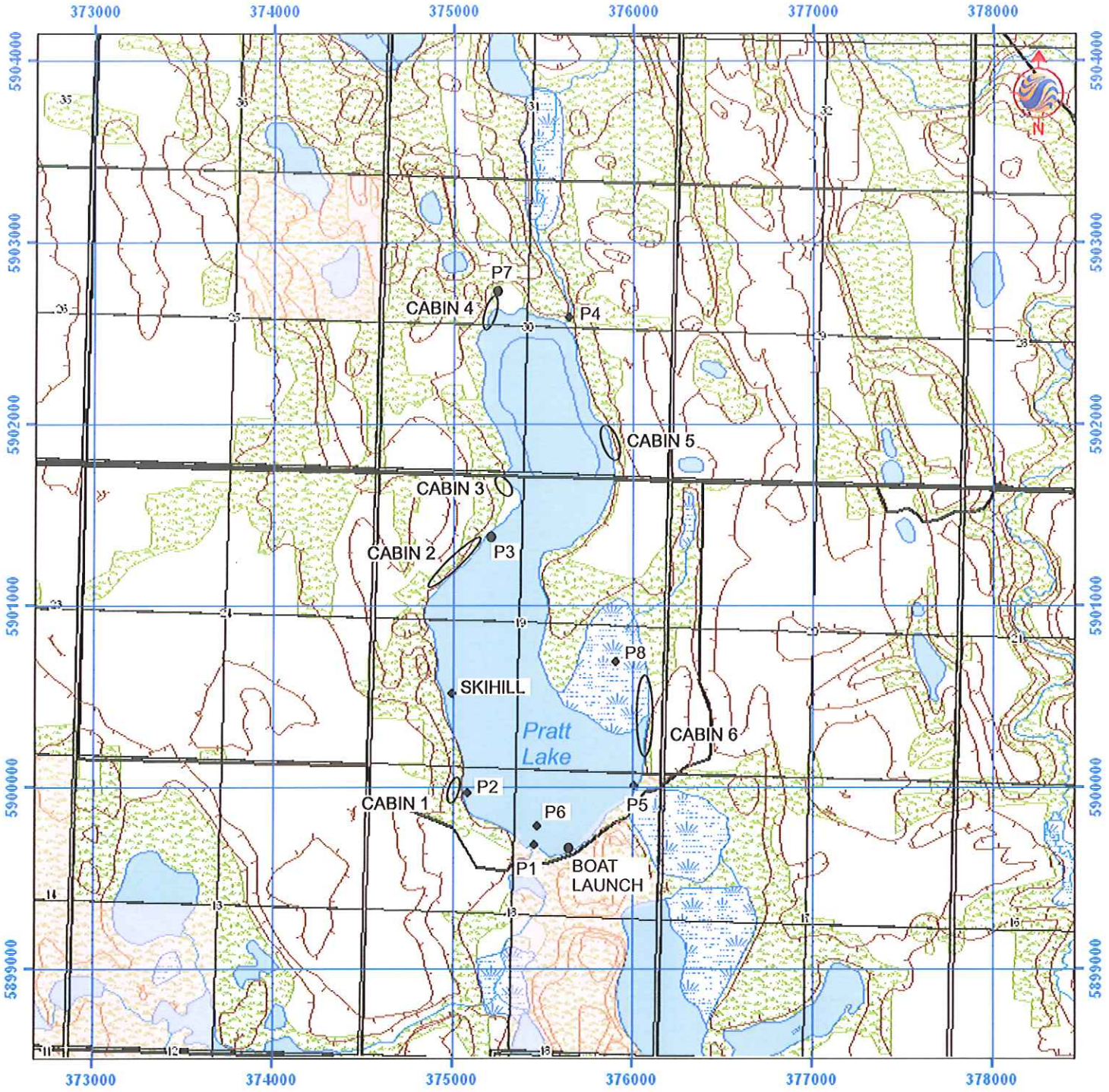
A photograph log of the field survey was maintained and select photographs are found in Appendix A.

Water quality was assessed at eight locations along the shoreline of Pratt Lake on August 21, 2007, and at six locations along the shoreline of Morin Lake on August 22, 2007. All sampling locations were conducted approximately 15 m from the shore and at depths between 1 and 2 m. In situ field measurements (pH, conductivity, turbidity, dissolved oxygen, temperature, and total dissolved solids) were collected at all sampling locations on both Lakes using a Horiba U22 multiprobe, which was calibrated prior to use. Water samples for laboratory analysis were collected at five of the sampling locations on both Lakes. Water samples were submitted under chain of custody to ALS Laboratory Group in Saskatoon, SK within 8 hours of sample collection. The samples were analyzed for nutrients (nitrate, ammonia, total phosphorus), salinity, metals, total and fecal coliforms, biochemical oxygen demand (BOD), and turbidity.

3.2 OBSERVATIONS

3.2.1 Pratt Lake

The following observations (Table 3.1) were made during the field survey along the shoreline of Pratt Lake. Refer to Figure 2 for the locations listed below and Appendix A for the site photographs.



UTM 13U

Legend:

- Road
- Railroad
- Contour Interval
- Watercourse
- Waterbody
- Vegetation
- Wetland
- Wildlife Habitat Protection

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Client/Project:

RM of CANWOOD No. 494
ENVIRONMENTAL OVERVIEW
PRATT LAKE, SASKATCHEWAN

Figure No.:

2

Title:

SITE VISIT LOCATIONS

Table 3.1 Pratt Lake Site Visit Observations

Location	*Observation*
Boat Launch	• Located along the southern shore of the Lake, off of the RM road. Consists of two narrow strips of concrete, which are on a moderate grade into the water. No dock is located at the boat launch. • Access off the highway poses a potential safety concern.
Cabin1	• Consists of 6 cabins, 1 ice shack, 4 fixed docks (2 in a dilapidated state), and 1 floating dock (Photos 1 & 2). • Two eroded slopes are evident and appear to have frequent vehicle activity (likely for loading and unloading boats) (Photos 3 & 4). • Overall, the area surrounding the cabins is dominated by trembling aspens, with interspersed white spruce trees. The shoreline is either disturbed (~1/3 of the shoreline) or mowed grass (~2/3 of the shoreline). No riparian vegetation zone exists along the cabin shoreline. • No evidence of cattle access to the lake was observed at this location.
Ski hill	• The former ski hill is vegetated with grasses and forbs with shrubs and white spruce bordering the shoreline (Photos 5 & 6). • No evidence of cattle access to the lake was observed at this location. • This site is referred to as the ski hill site based upon comments from one of the local cottagers.
Cabin 2	• Consists of 17 cabins, with 15 fixed docks (Photos 7 to 17). A water line into the lake was observed from one of the cabins. • Cabins are developed on either a shallow to moderate slope from the water's edge. Cabins are located approximately 15 to 40 m from the water's edge. • Overall, aspen and spruce trees surround the cabins. Riparian vegetation has either been mowed/cleared for beach or boat launch (Photos 16 & 17) development. • Areas of the shoreline have been modified through the construction of retaining walls (wooden or rock piles) (Photos 12 to 14). • Intense development of the shoreline has occurred within this cabin area.
Btw. Cabin 2 and 3 Area	• Wetland/marsh is present along the shoreline and consists of cattails with some dead black spruce (Photo 18). White spruce dominates the forest on land.
Cabin 3	• Consists of 3 cabins, with 3 fixed docks (Photos 19 & 20). • Cabins are developed on a shallow slope from the water's edge. • Entire area between the cabins and water's edge has been mowed (with the exception of some trees in this area). • Intense development of the shoreline within this cabin area.
Cabin 4	• Consists of 2 cabins, with 1 fixed dock and 1 floating dock (Photos 21 to 24). • Shoreline is heavily forested (aspen dominated, with some spruce and shrubs), with a band of cattails along the water's edge. Small areas have been mowed to facilitate access to the water/dock.
Outlet (@P4)	• Channel is ~50 m wide and is lined with spruce and cattails (~30 m open water) (Photo 25).
Cabin 5	• Consists of 4 cabins, with 3 fixed docks, and 1 floating dock (Photos 26 to 28). • Shoreline is heavily forested (aspen and shrub dominated) and few areas have been disturbed.
Wetland in SE portion of Lake (@P8)	• Consists of a large wetland complex dominated by bulrushes, with black spruce along the shoreline (Photos 29 to 32).

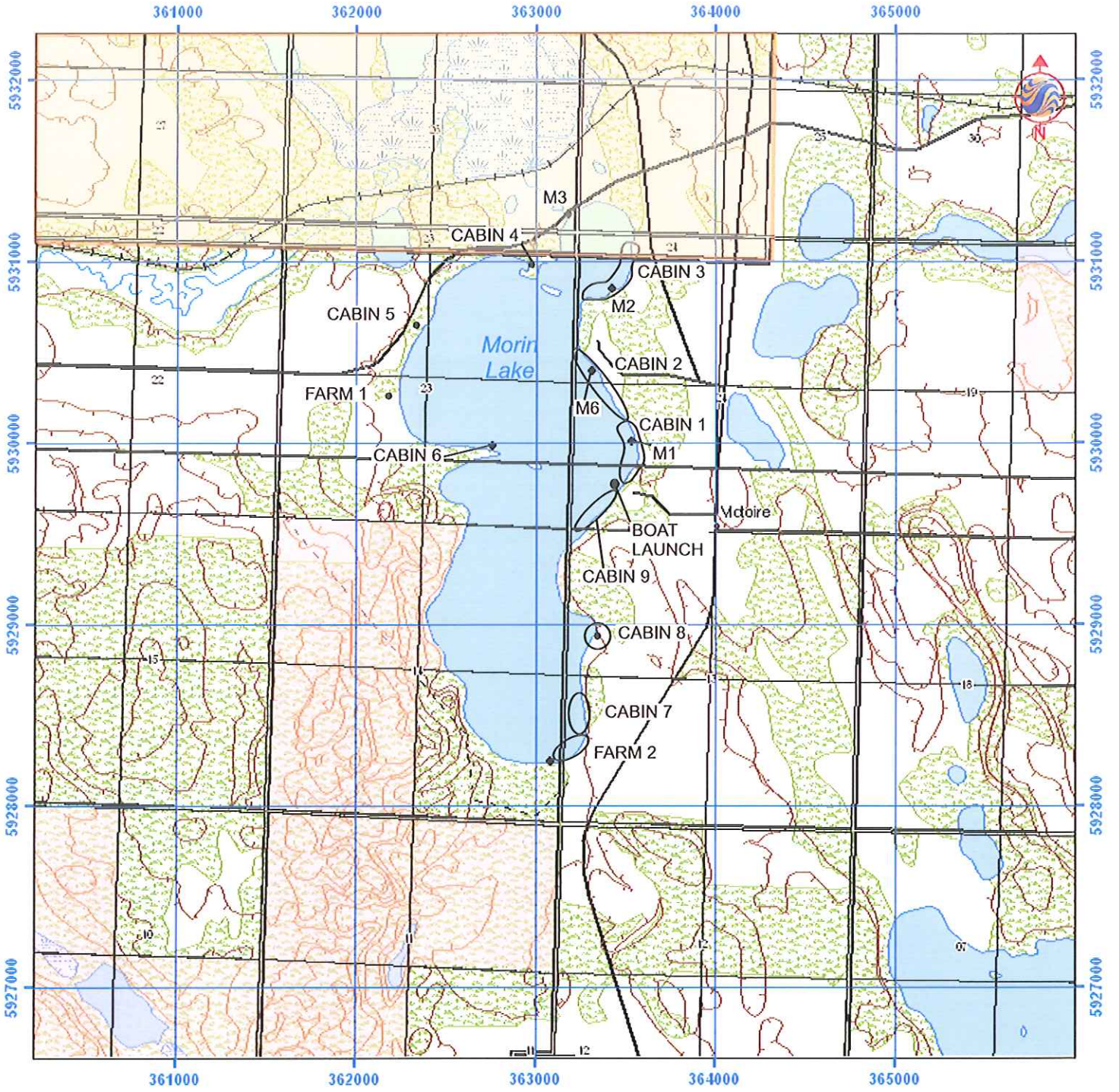
Location	Observation
Cabin 6	• Consists of 2 cabins (1 currently under development), with 3 fixed docks (Photos 33 to 37). This area represents the newest cabin development on the Lake. All lots have been sold, however development has not commenced on the other lots. • Shoreline is heavily forested (aspen, poplar, white spruce, and shrubs), with a fringe of cattails and bulrushes.
Inlet (@P5)	• Consists of a shallow marsh area dominated by cattails and bulrushes.
General	• Overall, the majority of the land surrounding Pratt Lake was forested and consists of trembling aspen, balsam poplar, white and black spruce, and a variety of shrub and willow species. • Beaver activity was observed along the shoreline of the Lake (Photos 38 & 39). Beaver dams appear to be one of the major factors in maintaining water levels on this lake. Discussions with local cottagers indicated that in the past, beaver dams had been removed and the water levels dropped significantly. Discussions with SE staff suggested that fish stocking success was likely reduced when the water levels dropped. • Lake substrate consists of a black organic muck. • Dense aquatic vegetation and/or algae was encountered at all sampling locations, and included northern water milfoil and pond weed species (Photos 40 to 42). • Water clarity was good along the shoreline. • A large eroded slope is present on the south end of the Lake (south side of highway) (Photo 43). Erosion resulting from ATV activity was evident along the slope.

3.2.2 Morin Lake

The following observations (Table 3.2) were made during the field survey along the shoreline of Morin Lake. Refer to Figure 3 for the locations listed below and Appendix A for the Site Photographs.

Table 3.2 Morin Lake Site Visit Observations

Location	Observations
Boat launch	• Located along the eastern shore of the Lake, within the Regional Park (Photos 1 & 2). Consists of a concrete pad, which is on a moderate grade into the water. A dilapidated dock is present at the boat launch, but is a safety hazard in its current state. • A public beach is located immediately south of the boat launch (Photos 3 & 4). One floating dock is located by the public beach.
Cabin1	• Located within the Regional Park and consists of 20 cabins, with 17 fixed docks (Photos 5 to 14). • Cabins are developed on a shallow slope from the water's edge. Cabins are located approximately 15 to 40 m from the water's edge. • Overall, aspen trees surround the cabins. Majority of riparian vegetation has either been mowed or cleared for beach or dock development. • Areas of the shoreline have been modified through the construction of retaining walls (rock piles) (Photos 7 & 13). • Intense development of the shoreline has occurred within this cabin area.
Cabin2	• Consists of 5 cabins, with 5 fixed docks and 1 floating dock (Photos 15 to 20).



UTM 13U

Legend:

- Road
- Railroad
- Contour Interval
- Watercourse
- Waterbody
- Vegetation
- Wetland
- Indian Reserve
- Wildlife Habitat Protection

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Client/Project:

RM of CANWOOD No. 494
ENVIRONMENTAL OVERVIEW
MORIN LAKE, SASKATCHEWAN

Figure No.:
3

Title:
SITE VISIT LOCATIONS

Location	Observations
	• Cabins located along a ridge at the top of bank. Shoreline and ridge slope are heavily forested with trembling aspens, balsam poplars, and white spruce. • Shoreline and cabin development in this area is spread out and not concentrated in one area.
Cabin3	• Consists of 9 cabins, with 7 fixed docks and 2 floating docks (Photos 21 to 28). The northern extent of this area is contained with the Indian Reserve (2 cabins within this area). • Cabins are developed on a shallow slope from the water's edge. Cabins are located approximately 30 to 50 m from the water's edge. • Overall, spruce and poplar trees surround the cabins. Portions of the riparian vegetation has either been mowed or cleared for beach or dock development, however large portions of the shoreline are forested.
Outlet (@ M3)	• Located at the north end of the Lake and consists of a culvert that crosses the highway (Photo 29). • Willows and bulrushes line the northern shoreline of the Lake. • Filamentous algae were observed in the water at M3 (Photo 30).
Cabin4	• Consists of 1 cabin, with no dock (Photo 31). • Shoreline is dominated by spruce, aspen and poplar trees and a variety of shrubs. Very little disturbance was observed along the shoreline.
Cabin5	• Consists of 2 cabins, with 1 fixed dock (Photos 32 to 34). • Cabin is surrounded primarily by aspen trees and the majority of area between the cabin and water's edge has been cleared for beach or other development. • A portion of the shoreline has been modified through the construction of retaining walls (rock piles) (Photo 32).
Farm1	• Consists of a farm, with 1 house, several outbuildings/trailers, and 1 fixed dock (Photos 35 &o 36). Hay bales were stored ~20 m from the shoreline (Photo 37). • No evidence of cattle access to the lake was observed at this location. • A water intake pipe was observed in the water on the southern portion of the property (Photo 38). • The area surrounding the house consists of a manicured lawn, which is likely fertilized on a regular basis. The grass is mowed up to the water's edge. • Aquatic vegetation was observed along the shoreline at sampling location M4.
Cabin6	• Consists of 1 cabin, with a fixed dock (Photo 39). • Shoreline is heavily forested with primarily spruce trees. A small area of the shoreline has been disturbed for dock development.
Crown Land (SW portion of the Lake)	• No developments are located along the shoreline within the Wildlife Habitat Protection Lands (Photos 40 to 42). • The shoreline is heavily forested with predominately aspen and spruce trees. Hilly terrain is present along the majority of this shoreline.
Farm2	• Consists of a farm, with 1 house, several outbuildings, and 1 fixed dock (Photos 43 to 46). • No evidence of cattle access to the lake was observed at this location. • The shoreline consists of aspen, spruce and shrub species, however areas of the shoreline have been converted into a lawn which has been mowed up to the water's edge.
Cabin7	• Consists of 2 cabins, with 2 fixed docks (Photo 47). • Cabins are located on the top of a ridge and the upland and shoreline are heavily forested (primarily aspen, poplar, and spruce trees). • Localized areas along the shoreline have been disturbed for dock developments.
Cabin8	• Consists of 2 cabins, with 2 fixed docks (Photos 48 & 49).

Location	Observations
	• The area surrounding one of these cabins has been cleared and is currently being mowed. In addition, the shoreline by this cabin has been disturbed for beach/dock development.
Cabin9	• Located within the Regional Park and consists of 17 cabins, with 9 fixed docks (Photos 50 to 55). • Cabins are developed on either a shallow slope from the water's edge or a ridge above the water's edge. Cabins are located approximately 15 to 50 m from the water's edge. • The shoreline is forested, however significant portions have been mowed/cleared for beach or dock development.
General	• Overall, the majority of the land surrounding Morin Lake was forested and consists of trembling aspen, balsam poplar, white and black spruce, and a variety of shrub and willow species. . • Beaver activity was observed along the shoreline of the Lake (Photo 56). • Lake substrate consists of a black organic sandy material. • Overall, aquatic vegetation and filamentous algae were only observed at two of the sampling locations, M4 and M3, respectively. • Water clarity was good along the shoreline.

3.2.3 General Comments

Generally, both lakes are surrounded by large portions of relatively natural forest and shoreline. However, both lakes also show significant shoreline modification near several cabin developments. There are many instances where the natural riparian vegetation has been removed for beach and dock development, and for the development of lawns. Several of these locations do not meet the recommendations of Fisheries and Oceans Canada (Fisheries and Oceans Canada 2004a, 2004b, 2005). Water quality, fish habitat, and ecological quality of the shoreline and lake can all be adversely affected by these modifications.

3.3 WATER QUALITY RESULTS

The in-situ field measurements and laboratory analytical results for Pratt and Morin Lakes are presented in Appendix B, Tables 1 and 2 respectively. As outlined below, water quality at both lakes, on the sampling dates, meets all requirements for recreational use.

3.3.1 Pratt Lake

The water quality within Pratt Lake was deemed suitable based on the CCME guidelines for the protection of recreational waters (CCME 2006) and the protection of aquatic life (CCME 2004). Dissolved oxygen levels were within an acceptable range for Lake. The nutrient concentrations in the water were below detection limits, salinity levels were low, and pH values were slightly basic (but within the acceptable range). Metals concentrations were either low or below detection limits for the samples analyzed. Coliform concentrations in the water samples were low and within the acceptable range for recreational and aquatic life protection. BOD levels were below the detection limit and turbidity levels were well below the recreational guidelines.

3.3.2 Morin Lake

The water quality within Morin Lake was deemed suitable based on the CCME guidelines for the protection of recreational waters (CCME 2006) and the protection of aquatic life (CCME 2004), with the exception of the copper concentrations at sampling location M4, which were in excess of the aquatic life guidelines. There was no apparent reason for the high copper concentrations. This sample was analyzed twice to confirm the value.

Dissolved oxygen levels within the Lake were within an acceptable range. The nutrient concentrations in the water were below detection limits, salinity levels were low, and pH values were slightly basic (but within the acceptable range). Coliform concentrations in the water samples were within the acceptable range for recreational and aquatic life protection, however elevated total coliform counts were measured in the M5 water sample. BOD levels were below the detection limit and turbidity levels were well below the recreational guidelines.

4.0 Questionnaire Survey

4.1 INTRODUCTION AND SURVEY METHODS

An important component of this study was the implementation of a questionnaire survey designed to gather general opinions from cottage owners, campers, day users, and local lake and rural municipality residents. The survey was designed by Stantec and implemented by the Rural Municipality. The following points outline the objectives and the implementation methods.

- Two questionnaires were designed for distribution and are attached, with their covering letters in Appendix C.
- One questionnaire ("RM Survey") was aimed at cottage owners and residents of the rural municipality. The RM distributed these questionnaires through the mail, and respondents either mailed or faxed their completed questionnaire to the Stantec office in Saskatoon. The RM distributed the questionnaire to rural residents within an approximate 3km radius around the lake.
- Another questionnaire ("User Survey") was designed more specifically for lake visitors (i.e., campers, day visitors, regional park visitors). This questionnaire was distributed by the RM at the Morin Lake Regional Park. Initially, the Morin Lake questionnaire was targeted to only non-cottage owners with the intention that cottage owners and rural residents would be captured with the same questionnaire as Pratt Lake (i.e., the RM Survey). However, once the results began arriving it was noted that the majority of respondents were indeed cottage owners. As the only differences in the questionnaires were related to questions on age and party size, it was decided that the analysis of opinions was still valid. However, for discussion purposes in this report, and to be consistent with Pratt Lake, no analysis of ages or number of people in the party was completed. Therefore, the User Survey and the RM Survey are treated equally.

Fifty seven questionnaires were returned for Pratt Lake and 102 questionnaires were returned for Morin Lake (21 RM Surveys and 81 User Surveys). Results are discussed in the next sections.

4.2 PRATT LAKE RESULTS

Fifty-seven questionnaires were returned by RM residents and cottage owners at and around Pratt Lake. As indicated in Table 4.1, 84.2% of the responses were from cottage owners at the lake. The table also indicates the high number of lake visits (e.g., more than half visit the lake more than 10 times per summer and more than 70% visit more than 10 times per year). While spring and summer are obviously the most common season for visits, the responses indicate significant use during both fall and winter as well.

Important activities include boating, swimming, fishing, and bird and/or nature study. The low number of campers is indicative of no designated camping facilities at this lake. Also, in terms of facilities used, the boat launch appears to be the most popular at the lake. However, there aren't many other facilities to choose from at this lake.

Table 4.1 Pratt Lake Survey Results (Questions 2 to 7) (n=57)

Question	*Answer*	*Number of Responses*	*Percent of Responses*
How many times will you be visiting this lake this summer?	1-4 times	9	15.8
	5 -10 times	16	28.1
	Over 10	31	54.4
	None	1	1.8
How many times will you be visiting this lake this year?	1-4 times	5	8.8
	5-10 times	11	19.3
	Over 10	40	70.2
	None	1	1.8
During what seasons do you usually visit this lake?	Winter	31	54.5
	Spring	48	84.2
	Summer	53	93.0
	Fall	41	71.9
Which of the following are you:	Farm resident	9	15.8
	Cottage Owner	48	84.2
When visiting the lake, what activities do you usually participate in?	Walking/relaxing/beach	38	66.7
	Boating	48	84.2
	Staying at cottage	44	77.2
	Picnicking	6	10.5
	Camping	4	7.0
	Swimming	44	77.2
	Fishing	47	82.5
	Biking	8	14.0
	Bird/nature study	37	64.9
	Other	16	28.1
	Don't visit the lake	1	1.8
What types of facilities have you used?	Boat launches	40	70.2
	Campsites	1	1.8
	Beaches	21	36.8
	Picnic sites	1	1.8
	Other	3	5.3

4.2.1 Concerns at Pratt Lake

Question 8 presented a list of potential issues or concerns that respondents could rank from 1 (not concerned/not important) to 5 (very concerned/very important); or not applicable. A graph illustrating the responses is provided in Appendix D.

Several issues were ranked as being very important or of great concern. Those receiving a rank of 5 by more than 50% of the respondents are:

- Water clarity
- Algal blooms
- Bacterial/fecal contamination
- Impact of new development on the shoreline
- Impact of current development on the shoreline
- Septic systems (onsite waste disposal)
- Farm runoff entering lakes
- Livestock operations adjacent to the lakes
- Responsible pesticide and fertilizers usage on lake shores and within watersheds
- Enforcement of shoreline and development regulations
- Fisheries management and stocking
- Maintenance of suitable fish habitat

It should be noted that these important issues are based upon respondent's opinions and perceptions. For example, the water quality analysis conducted for Pratt Lake did not indicate that bacterial or fecal contamination was in fact a reality.

4.2.2 Current and Future Development at Pratt Lake

Respondents were asked to list their most important concerns and to provide general comments on the development of Pratt Lake. Responses are provided in Appendix E. Generally, the comments and concerns focused on a few major topics, which are summarized below:

- The most often mentioned concerns related to overcrowding, over development, and the loss of shoreline habitat. The great majority of respondents have the feeling that no further development be allowed at Pratt Lake.
- There is an often expressed concern that livestock are entering the lake and contaminating the water.
- Many feel that the lake is overcrowded with boats and several people expressed concerns for the safety of swimmers and other boaters.
- The natural environment around the lake is highly valued for its wildlife, its beauty, and the aesthetic qualities associated with this small lake.
- A few negative comments were directed specifically at the RM of Canwood.

4.3 MORIN LAKE RESULTS

Tables 4.2 and 4.3 present some of the survey results for the RM Survey and the User Survey. Results for this lake are noticeably different than for Pratt Lake, primarily due to the presence of the Morin Lake Regional Park and the facilities associated with the park. Both the RM and the User survey illustrate the high number of repeat visits in a year, and the dominance of the summer months. The more facilities offered at Morin (e.g., campsites, beach, picnic sites, ball diamonds) are reflected in the results and the comments provided by respondents.

Table 4.2 Morin Lake Survey Results (Questions 2 to 7) (RM Survey) (n=21)

Question	*Answer*	*Number of Responses*	*Percent of Responses*
How many times will you be visiting this lake this summer?	1-4 times	4	19.0
	5 -10 times	4	19.0
	Over 10	13	61.9
	None	0	0
How many times will you be visiting this lake this year?	1-4 times	4	19.0
	5-10 times	3	14.3
	Over 10	14	66.7
	None	0	0
During what seasons do you usually visit this lake?	Winter	6	28.6
	Spring	16	76.2
	Summer	20	95.2
	Fall	12	57.1
Which of the following are you:	Farm resident	13	61.9
	Cottage Owner	8	38.1
When visiting the lake, what activities do you usually participate in?	Walking/relaxing/beach	18	85.7
	Boating	18	85.7
	Staying at cottage	12	57.1
	Picnicking	2	9.5
	Camping	3	14.3
	Swimming	20	95.2
	Fishing	10	47.6
	Biking	0	0
	Bird/nature study	8	38.1
	Other	4	19.0
	Don't visit the lake	0	0
What types of facilities have you used?	Boat launches	14	66.7
	Campsites	5	23.8
	Beaches	16	76.2
	Picnic sites	3	14.3
	Other	3	14.3

Table 4.3 Morin Lake Survey Results (Questions 2 to 7) (User Survey) (n=81)

Question	*Answer*	*Number of Responses*	*Percent of Responses*
How many times will you be visiting this lake this summer?	1-4 times	8	9.9
	5 -10 times	9	11.1
	Over 10	64	79.0
	None	0	0
How many times will you be visiting this lake this year?	1-4 times	6	7.4
	5-10 times	4	4.9
	Over 10	71	87.7
	None	0	0
During what seasons do you usually visit this lake?	Winter	37	45.7
	Spring	62	76.5
	Summer	80	98.8
	Fall	46	56.8
Which of the following are you:	Camper	19	24.1
	Day visitor	5	6.3
	Cottage/resident	55	69.6
When visiting the lake, what activities do you usually participate in?	Walking/relaxing/beach	79	97.5
	Boating	66	81.5
	Staying at cottage	54	66.7
	Picnicking	16	19.8
	Camping	22	27.2
	Swimming	68	84.0
	Fishing	67	82.7
	Biking	35	43.2
	Bird/nature study	40	49.4
	Other	7	8.6
	Don't visit the lake	0	0
What types of facilities have you used?	Boat launches	63	77.8
	Campsites	24	29.6
	Beaches	71	87.7
	Picnic sites	16	19.8
	Other	18	22.2

4.3.1 Concerns at Morin Lake

Graphs illustrating the responses to the concern/issue list are provided in Appendix D. The difference between Pratt and Morin Lake is obvious. Responses show that 20 of the 26 issues were ranked as being very important (rank 5) in the User Survey. The User Survey represented 81 responses – 70% of these being cottagers and 25% being campers. Some of the most often expressed concerns were (more than 70% of the responses):

- Water clarity
- Bacterial/fecal contamination
- Swimmers itch
- Impact of new development on the shoreline
- Farm runoff entering the lake

4.3.2 Current and Future Development at Morin Lake

Comments related to current and future development, in addition to specific comments about concerns at Morin Lake are presented in Appendix F. The following points provide a general overview:

- Responses were similar to Pratt Lake regarding current development. Many already feel that the lake has reached its limit and no further development is wanted by the majority of those responding.
- There is an often expressed concern that materials are being deposited on the ice in the winter and allowed to settle into the lake in the spring.
- Noise pollution from motorboats and personal watercraft was mentioned many times.
- Summer weekends have become increasingly busy at the lake and are detrimental to the quiet environment that initially attracted cottagers.

5.0 Carrying Capacity

5.1 INTRODUCTION

While not specifically an objective of this environmental and development review, the information collected on Pratt and Morin lakes does allow for some discussion of the carrying capacity. This is particularly relevant given the many public comments on the overcrowding currently experienced at the lake. Therefore, this chapter briefly discussed the concept of recreational carrying capacity and provides some calculations for the two lakes.

5.2 CARRYING CAPACITY CONCEPT

Recreational carrying capacity is an estimate of the amount of development and/or activity a lake can handle before it starts to deteriorate (Doshi 2006). However, as evident in the literature (e.g., Bosley 2005), carrying capacity is difficult to determine as there are many variables that must be considered. These variables include the size of the lake, the amount of usable water surface, and the goals of the lake managers and users. Goals are complex and reflect the demands and desires of the recreational users. Some lakes are prized for their aesthetic and ecological character, or their fishing capabilities, or their water sports capabilities (e.g., water skiing).

The concept of overcrowding can vary with individuals. Some people, for example, are stressed by the sound of large horsepower motorboats or personal watercraft. They may wish the lake to be managed more for its quiet, aesthetic, and/or ecological values. At the other end of the spectrum, however, are those who enjoy the noise, the speed, and the excitement associated with very active boating activities.

To effectively calculate carrying capacity a detailed boating survey and census should be done. This was beyond the scope of this study as it is time consuming and potentially expensive. However, based upon the questionnaire comments and examples from the literature, some basic calculations are provided in the next section.

5.3 CARRYING CAPACITY CALCULATIONS

Recreational carrying capacity literature suggests a wide variety of suggested densities for boating uses. These are based upon lake size and the type of boats active on the lake. A relevant study (Jaakson et al, 1989) examined carrying capacity at Emma Lake in Saskatchewan. This study suggested that approximately 4 hectares of usable water surface is required per boat. This value considers a mix of water skiing, motorboat cruising, fishing, canoeing, and sailing. Warbach et al (see Doshi 2006), examining all motorized boats having a horsepower greater than 5HP, suggests that 12 ha is required per boat. Therefore, using these two examples, we can examine both Pratt and Morin lakes.

Studies also suggest that a calculation of usable water surface be made. It is suggested that a zone extending approximately 60 m from the shoreline be considered non-usable in the calculation (Doshi 2006). This safe zone provides room for swimming areas, sensitive habitat, no-wake zones, etc. Also, shallow water areas should be excluded from the usable area.

5.3.1 Pratt Lake Carrying Capacity

Pratt Lake has two relatively deep areas, but is generally shallow along the shoreline and, as noted previous, there is a corner of the lake that is very shallow and often crowded with cattails and bulrushes. Eliminating the shallow cattail/bulrush area from the calculation, Pratt Lake has a shoreline of approximately 8.1 km and an area of approximately 206 ha. Removing the 60 m shoreline buffer from this area, a usable water area of 157 ha is calculated. This usable area suggests the following:

- Motorized boats (>5HP) = 157 ha divided by 12 ha/boat = 13 boats on the lake
- Mix of boats (e.g., Jaakson) = 157 ha divided by 4 ha/boat = 40 boats

Therefore, a rough carrying capacity for Pratt Lake ranges from 13 boats to 40 boats on the lake at any one time. As Pratt Lake experiences a combination of uses, the carrying capacity is likely closer to 30 or 40 boats being a maximum capacity at any one time. Note that is includes the total of canoes, sailboats, paddleboats, personal watercraft, and motorboats. Considering the number of cottages on the lake and the number of boats currently existing, it is very likely Pratt Lake occasionally exceeds its boating carrying capacity on busy weekends. The greater the proportion of motorboats, the lower the carrying capacity becomes.

5.3.2 Morin Lake Carrying Capacity

Morin Lake is slightly larger than Pratt and has fewer shallow areas. The shoreline is approximately 8.8 km in length and the surface area is approximately 254 ha. Removing the 60 m wide shoreline buffer reduces the usable area to approximately 200 ha. Using the calculations identified in 5.3.1, the carrying capacity for Morin Lake ranges from approximately 16 boats to 50 boats. Considering that this lake also has many cottages as well as a regional park, the likelihood of having motorboats with motors larger than 5HP is great. The effective carrying capacity is likely somewhere in between, and on a busy long summer long weekend, this lake is very likely at or above its motorboat capacity.

6.0 Recommendations and Conclusion

6.1 RECOMMENDATIONS

It is recommended that:

- No further shoreline development should be considered on either Pratt or Morin Lake. It is important that the lakes maintain their forested uplands and the riparian vegetation along the shorelines. There are both ecological and aesthetic reasons for this recommendation.
- Cottagers should be strongly encouraged to follow Fisheries and Oceans Canada guidelines for dock and waterfront development (Fisheries and Oceans Canada 2004a, 2004b, 2005).
- The RM should consider investigating wastewater disposal at the cottage subdivisions and determine if all requirements are being adhered to.
- The RM should consider placing horsepower restrictions on both lakes but perhaps most importantly, on Pratt Lake. The shape of Pratt Lake and the amount of usable deep water surface area is not conducive to high speed motorboats mixing with other water-based recreation activities. On busy weekends, both lakes are likely exceeding their recreational carrying capacity.
- The RM should consider working closely with members of the Big River First Nation to address concerns regarding the reported disposal of materials on the lake ice. While no evidence of environmental concern was noted in the water quality analyses, the public survey results strongly suggest a negative public perception of this issue.
- As water levels on Pratt Lake are highly influenced by beaver dams, further investigation of water flows might be considered. Without the beaver activity, levels would drop and significantly reduce the usable lake surface area. The RM should ensure the beaver population is protected. It is also recommended that the RM consider discussing the potential for water level control structures with the Saskatchewan Watershed Authority. Further study on water inflow and outflow may be required.
- An improved boat launch should be constructed at Pratt Lake. The current launch site adjacent to the road along the south shore of the lake is in poor condition and its proximity to the gravel road could lead to further shoreline erosion and sediments and materials from the road entering the lake.
- Restoration of some disturbed shorelines is considered, including the steep, sandy slope at the south end of Pratt Lake.

- The RM should work with the surrounding livestock producers to ensure that other sources of water are provided for cattle. There is a significant, often expressed concern by cottagers regarding the watering of cattle within the lakes. Fencing and the development of dugouts at some distance from the lakeshore is strongly recommended.

6.2 CONCLUSION

The conclusions are:

- Water quality within both lakes, at the time of sampling, met all the requirements for recreational use.
- There are no significant land use concerns within the region that are affecting the water quality at the lakes, with the possible exception of shoreline development and overuse.
- There are several examples at each lake indicating intensive riparian area clearing and disturbance by cottagers. In the long-term, these activities may lead to increased erosion and the general decline in water quality and aquatic habitat quality.
- There are reported concerns of livestock entering the lakes. This was not observed during our investigations and the analysis of water samples did not indicate any significant fecal coliform concentrations.
- The biggest constraint to future use and development at these lakes is their size and their current level of use. The opportunities for future growth are minimal. Instead of growth, it is recommended that efforts be made to encourage shoreline protection.

Pratt and Morin lakes provide good recreational capability. Although they are surrounded by agricultural activities, their generally forested shorelines isolate them from the surroundings and provides a quiet, aesthetically pleasing atmosphere. The quiet environment and the character of the lakes and surrounding forests are very important qualities that were expressed by many survey respondents as the major reasons for spending their summers here. However, based upon the survey responses, the observations during the site visits, and the rough calculations of carrying capacity, it is very likely that these lakes have reached their development limits.

Cottagers should be encouraged to protect their shorelines. The ecological qualities of the surrounding environment should be protected, and some restrictions on motorboat use be considered if the quiet, ecologically pleasing environment is to be maintained.

7.0 References

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Appendix A
Site Photographs

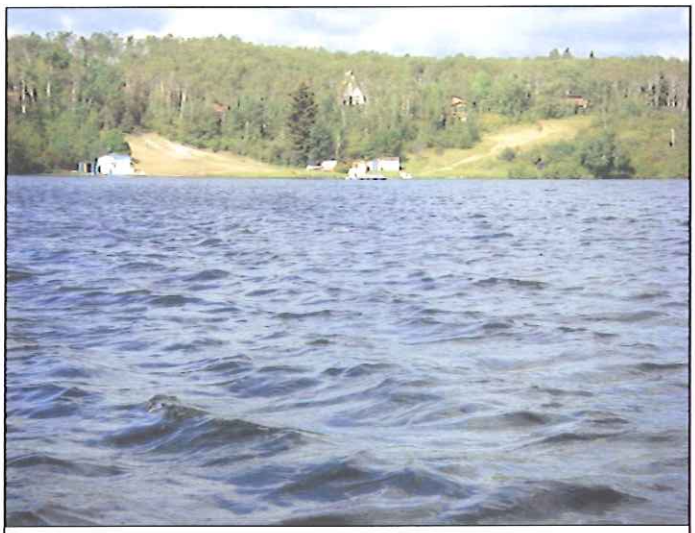


PHOTO 1 Cabins located within Cabin1 Area.

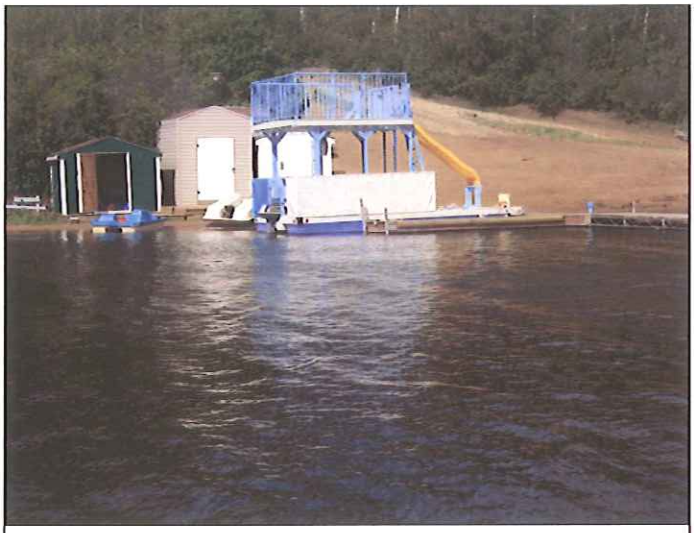


PHOTO 2 Dock and barge at Cabin1.

PHOTO 3 Eroded slope at Cabin1 Area.

PHOTO 4 Eroded slope at Cabin1 Area.

PHOTO 5 Former ski hill on western shore of Pratt Lake.

PHOTO 6 Riparian vegetation along the western shore (north of the ski hill).

PHOTO 7 Southern border of Cabin2 Area.

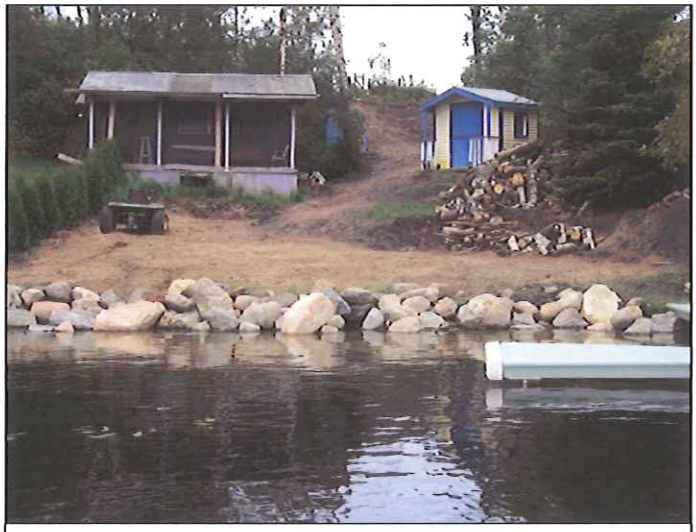


PHOTO 8 Shoreline within Cabin2 Area.

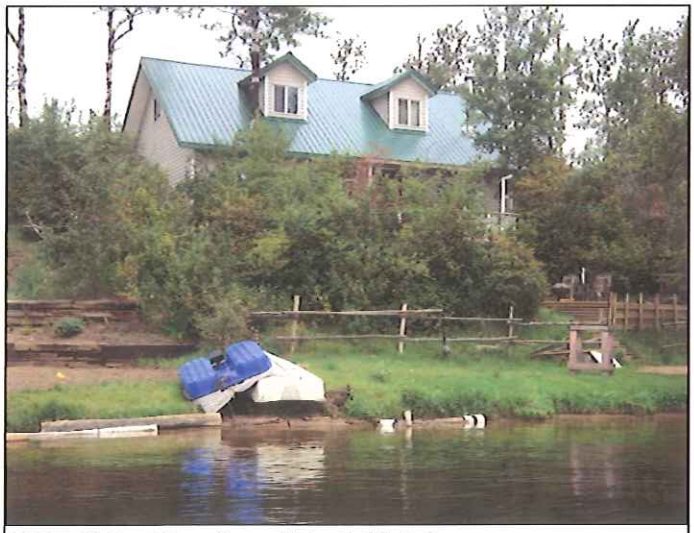


PHOTO 9 Shoreline within Cabin2 Area.

PHOTO 10 Shoreline within Cabin2 Area.

PHOTO 11 Shoreline within Cabin2 Area.

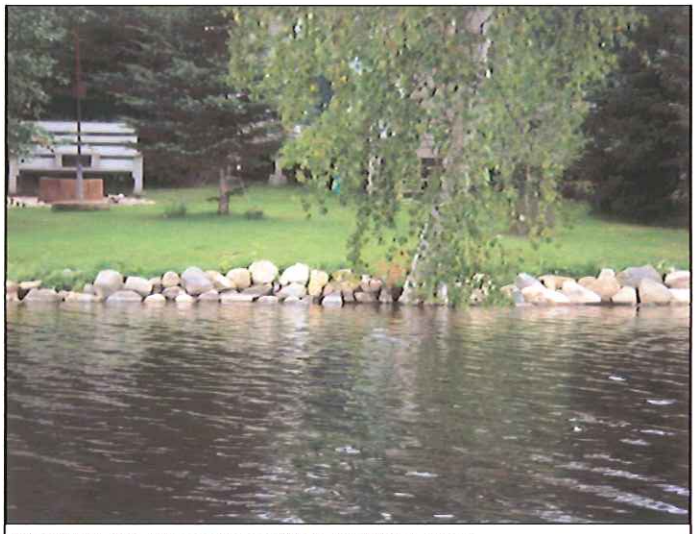


PHOTO 12 Shoreline within Cabin2 Area.

PHOTO 13 Shoreline within Cabin2 Area.

PHOTO 14 Shoreline within Cabin2 Area.

PHOTO 15 Shoreline within Cabin2 Area.

PHOTO 16 Boat launch within Cabin2 Area.

PHOTO 17 Boat launch within Cabin2 Area.

PHOTO 18 Wetland/Marsh located between the Cabin 2 and 3 Area.

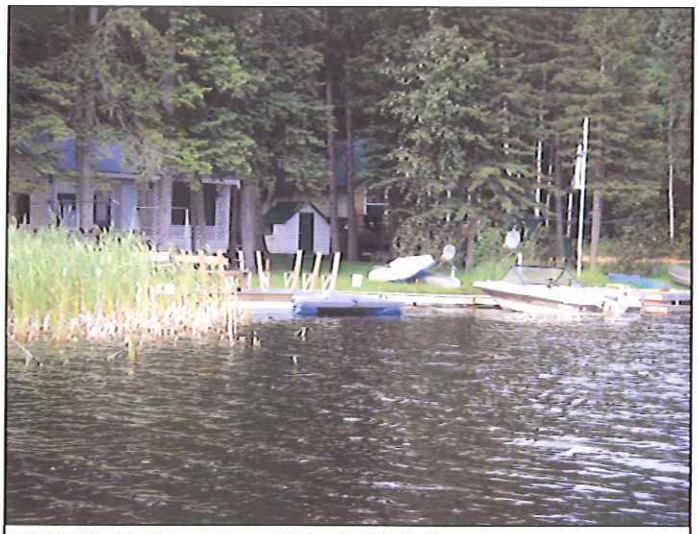


PHOTO 19 Shoreline within Cabin3 Area.

PHOTO 20 Shoreline within Cabin3 Area.

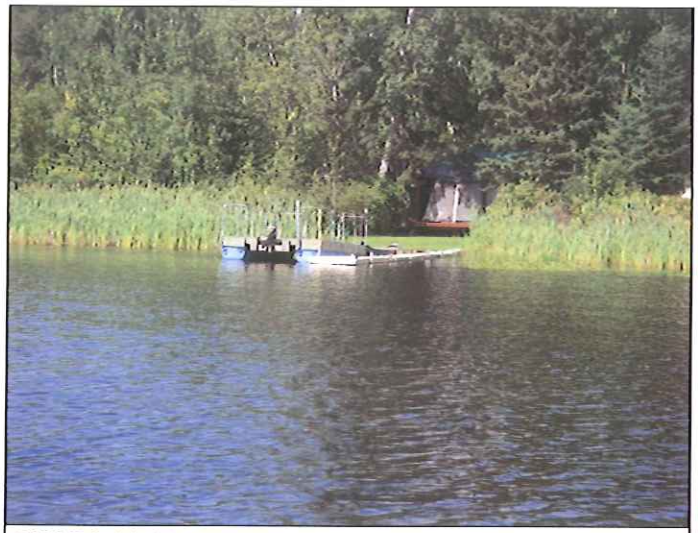


PHOTO 21 Shoreline within Cabin4 Area.

PHOTO 22 Shoreline within Cabin4 Area.

PHOTO 23 Shoreline within Cabin4 Area.

PHOTO 24 Floating dock within Cabin4 Area.

Stantec

PHOTO 25 Outlet of Pratt Lake
(at water sampling location P4).

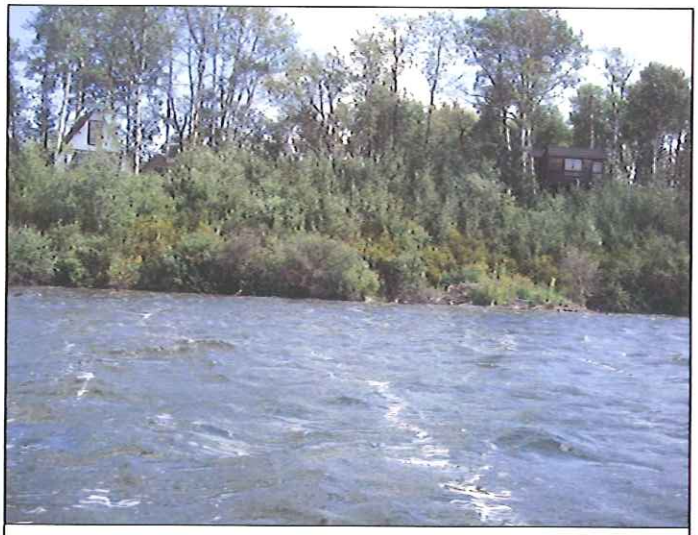


PHOTO 26 Shoreline within Cabin5 Area.

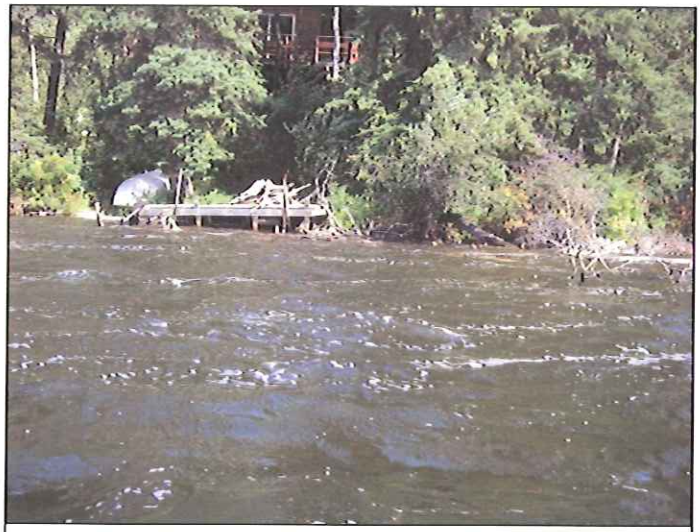


PHOTO 27 Shoreline within Cabin5 Area.

PHOTO 28 Floating dock within Cabin5 Area.

Stantec

PHOTO 29 Spruce forest located on the east-central portion of the shoreline.

PHOTO 30 Wetland located within the southeast portion of the Lake (P8 located in this vicinity).

PHOTO 31 Wetland located within the southeast portion of the Lake (P8 located in this vicinity).

PHOTO 32 Wetland located within the southeast portion of the Lake (P8 located in this vicinity).

PHOTO 33 View of the Cabin6 Area.

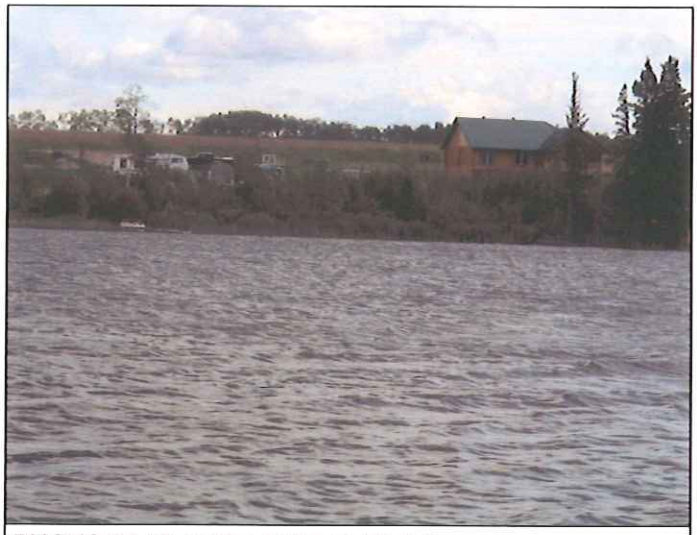


PHOTO 34 Shoreline within Cabin6 Area.

PHOTO 35 Fixed dock within Cabin6 Area.

PHOTO 36 Fixed dock within Cabin6 Area.

PHOTO 37 Fixed dock within Cabin6 Area.

PHOTO 38 Beaver lodge located on the western shore.

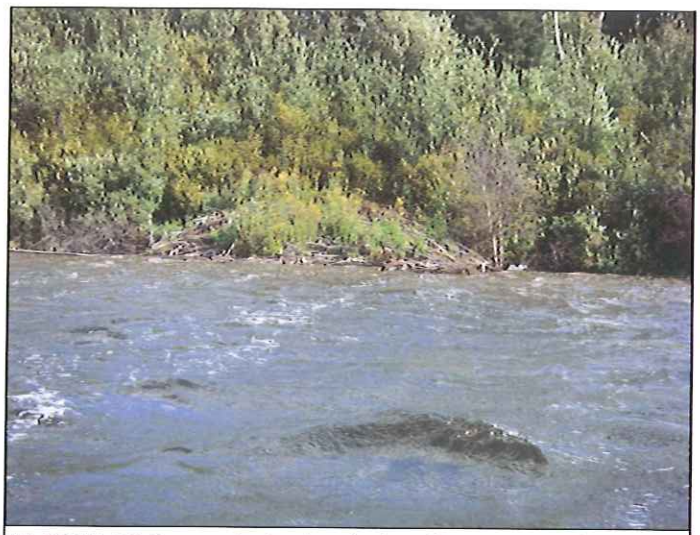


PHOTO 39 Beaver lodge located on the eastern shore.

PHOTO 40 Aquatic vegetation along the Cabin4 shoreline.

PHOTO 41 Aquatic vegetation at the P1 sampling location.

PHOTO 42 Aquatic vegetation at the P6 sampling location.

PHOTO 43 Eroded slope at the south end of the Lake.

PHOTO 1 Boat launch on the eastern shore of Morin Lake

PHOTO 2 Boat launch on the eastern shore of Morin Lake

PHOTO 3 Public beach on the eastern shore of Morin Lake (south of boat launch)

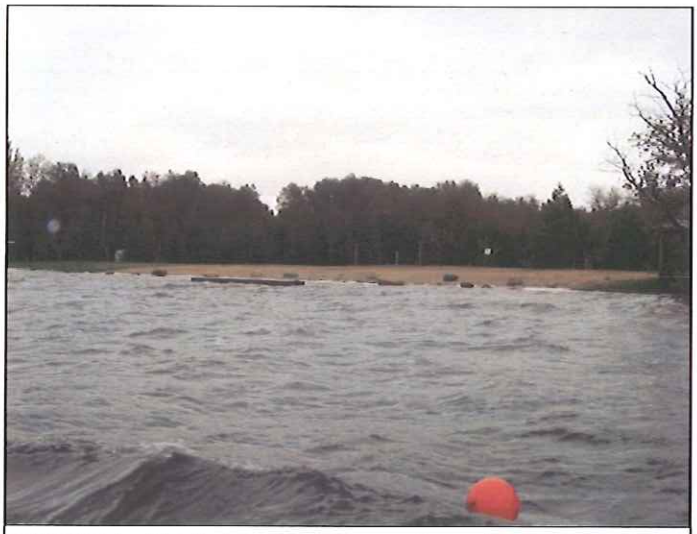


PHOTO 4 Public beach on the eastern shore of Morin Lake (south of boat launch)

PHOTO 5 Shoreline within Cabin1 Area

PHOTO 6 Shoreline within Cabin1 Area

PHOTO 7 Shoreline within Cabin1 Area

PHOTO 8 Shoreline within Cabin1 Area

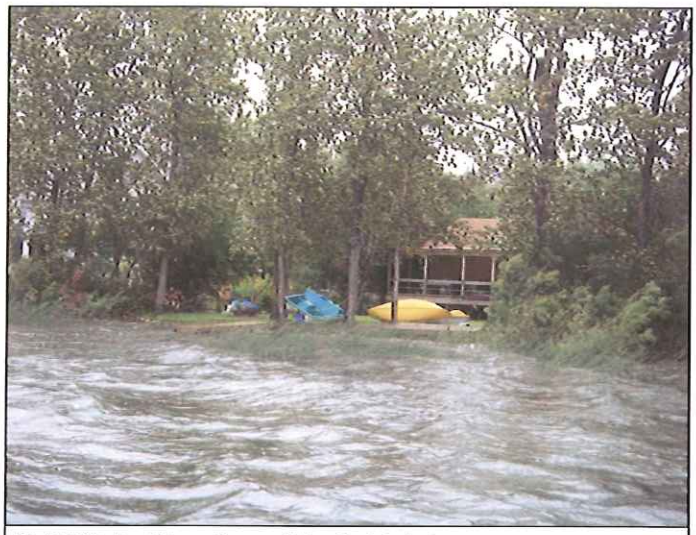


PHOTO 9 Shoreline within Cabin1 Area

PHOTO 10 Shoreline within Cabin1 Area

PHOTO 11 Shoreline within Cabin1 Area

PHOTO 12 Shoreline within Cabin1 Area

PHOTO 13 Shoreline within Cabin1 Area

PHOTO 14 Shoreline within Cabin1 Area

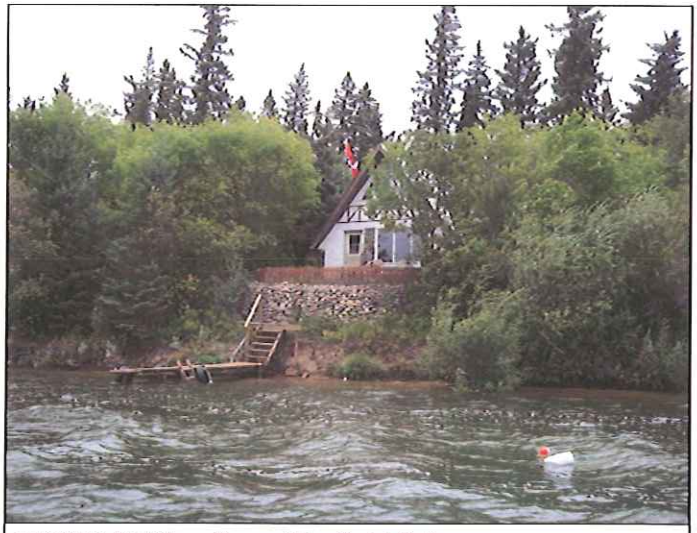


PHOTO 15 Shoreline within Cabin2 Area

PHOTO 16 Shoreline within Cabin2 Area

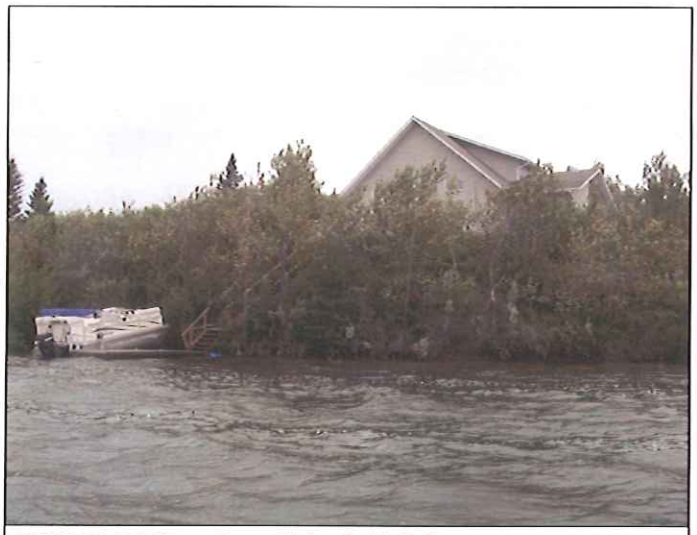


PHOTO 17 Shoreline within Cabin2 Area

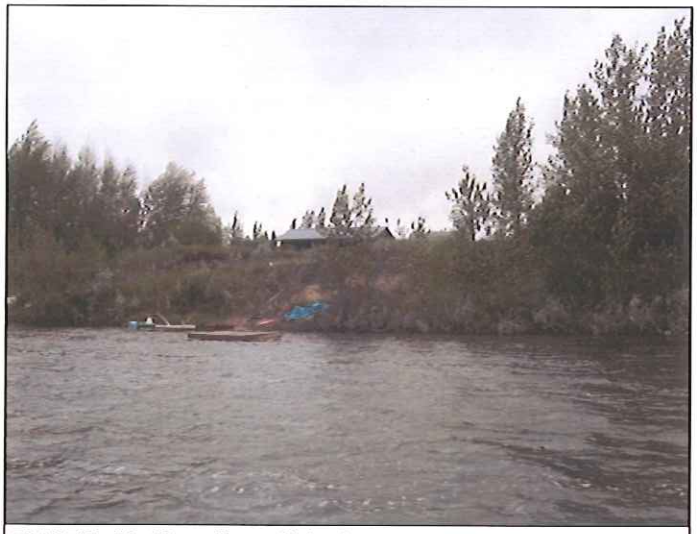


PHOTO 18 Shoreline within Cabin2 Area

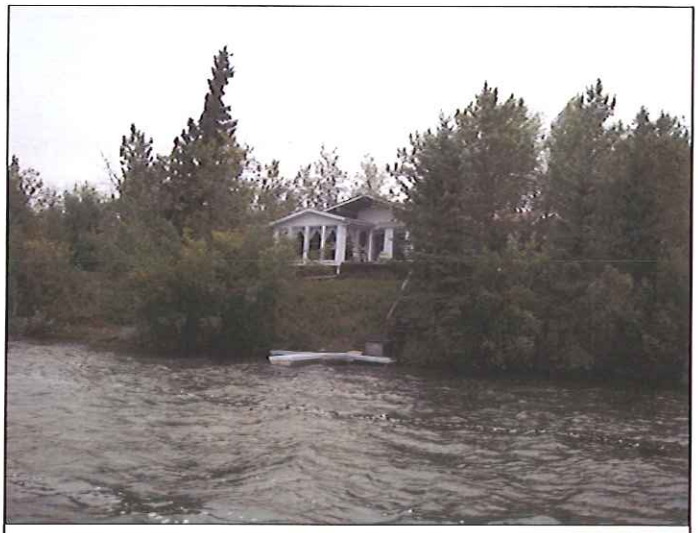


PHOTO 19 Shoreline within Cabin2 Area

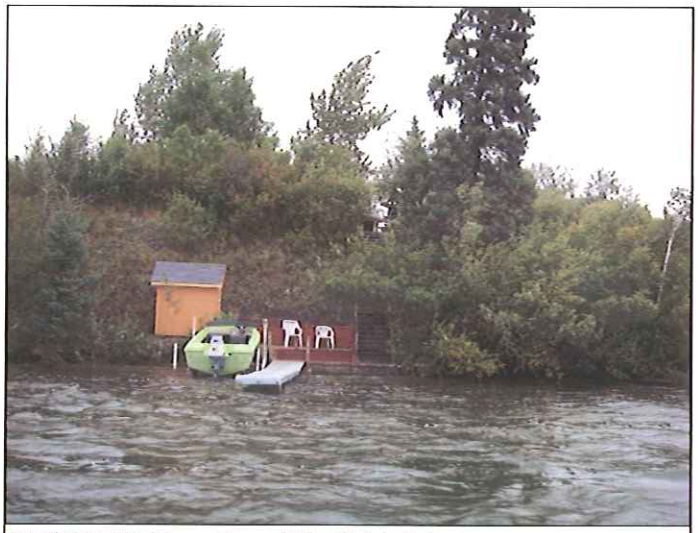


PHOTO 20 Shoreline within Cabin2 Area

PHOTO 21 Shoreline within Cabin3 Area

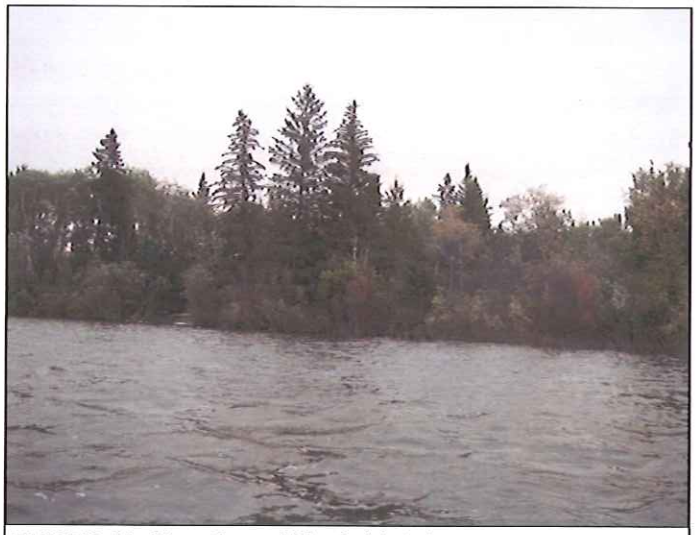


PHOTO 22 Shoreline within Cabin3 Area

PHOTO 23 Shoreline within Cabin3 Area

PHOTO 24 Shoreline within Cabin3 Area

PHOTO 26 Shoreline within Cabin3 Area

PHOTO 25 Shoreline within Cabin3 Area

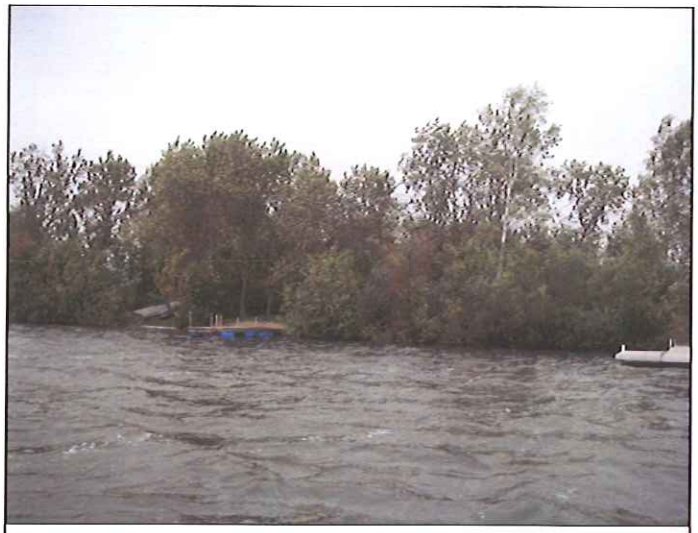


PHOTO 27 Shoreline within Cabin3 Area

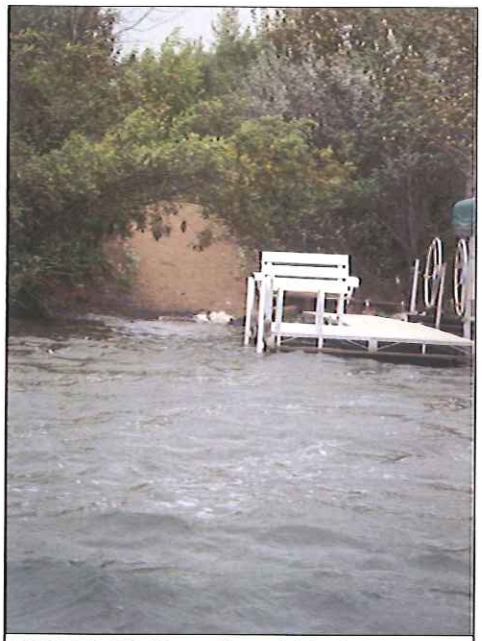


PHOTO 28 Shoreline within Cabin3 Area

PHOTO 29 North end of Morin Lake at the outlet location (sampling location M3)

PHOTO 30 Filamentous algae at the outlet location (sampling location M3)

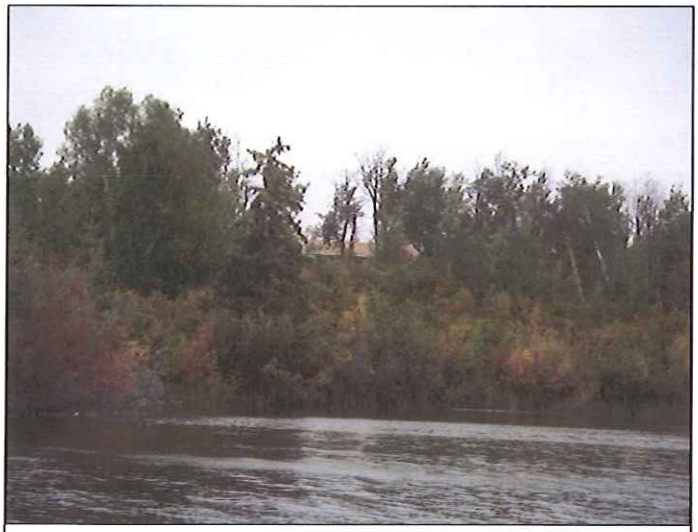


PHOTO 31 Shoreline within Cabin4 Area.

PHOTO 32 Shoreline within Cabin5 Area.

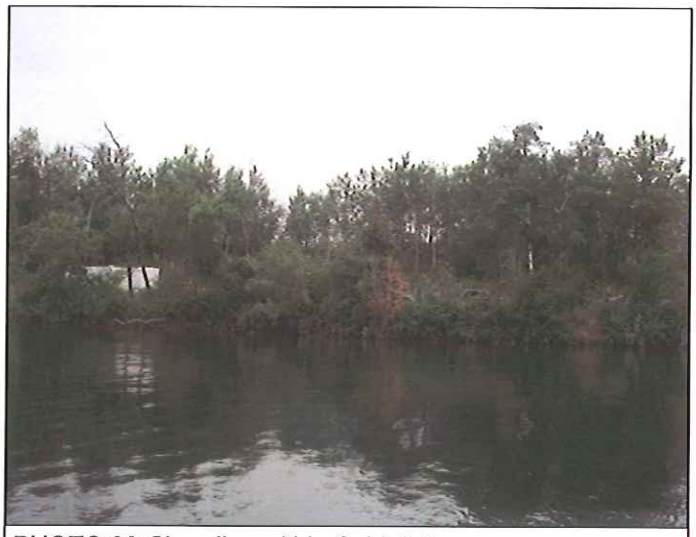


PHOTO 33 Shoreline within Cabin5 Area.

PHOTO 34 Shoreline within Cabin5 Area.

PHOTO 35 Shoreline within Farm1 Area.

PHOTO 36 Shoreline within Farm1 Area.

PHOTO 37 Shoreline within Farm1 Area.

PHOTO 38 Water intake within Farm1 Area.

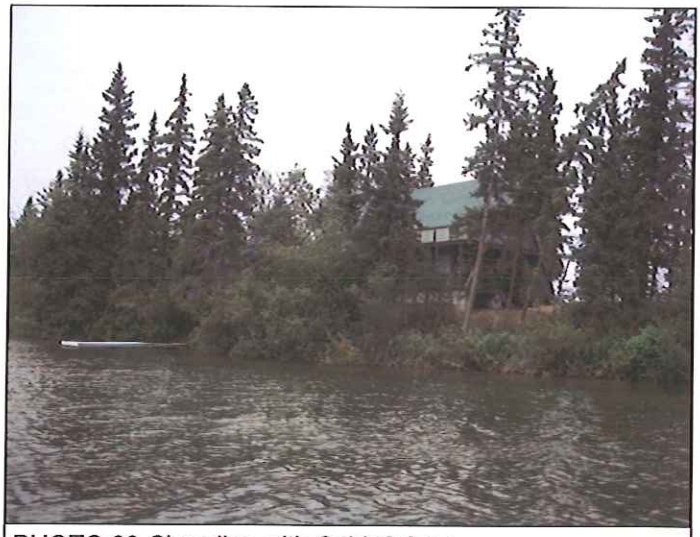


PHOTO 39 Shoreline with Cabin6 Area.

PHOTO 40 Shoreline along the southwest portion of the Lake (Crown land)

PHOTO 41 Shoreline along the southwest portion of the Lake (Crown land)

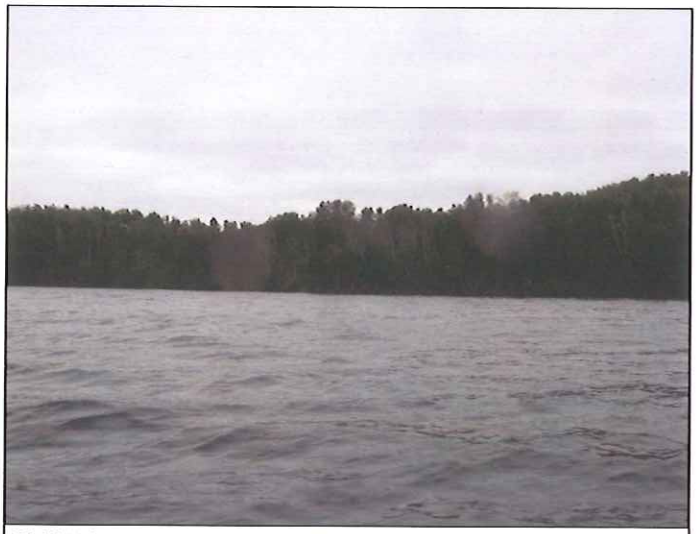


PHOTO 42 Shoreline along the southwest portion of the Lake (Crown land)

PHOTO 43 Shoreline with Farm2 Area.

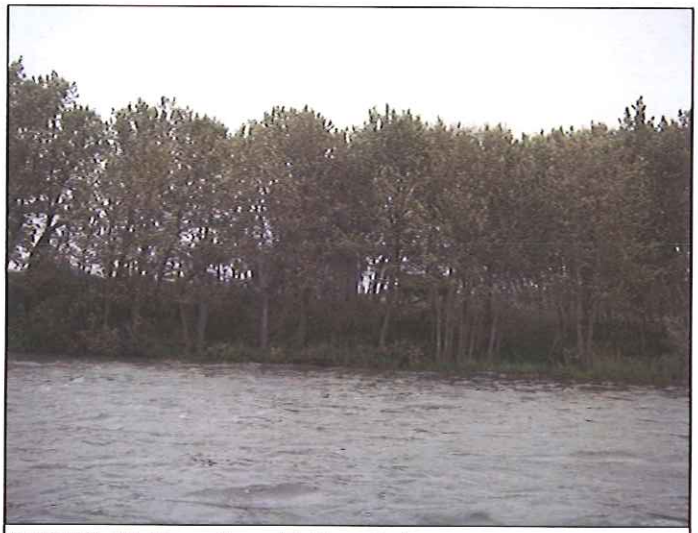


PHOTO 44 Shoreline with Farm2 Area.

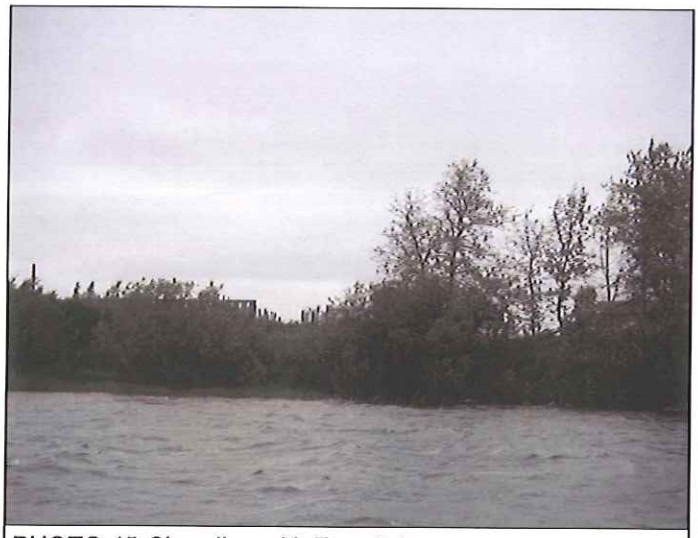


PHOTO 45 Shoreline with Farm2 Area.

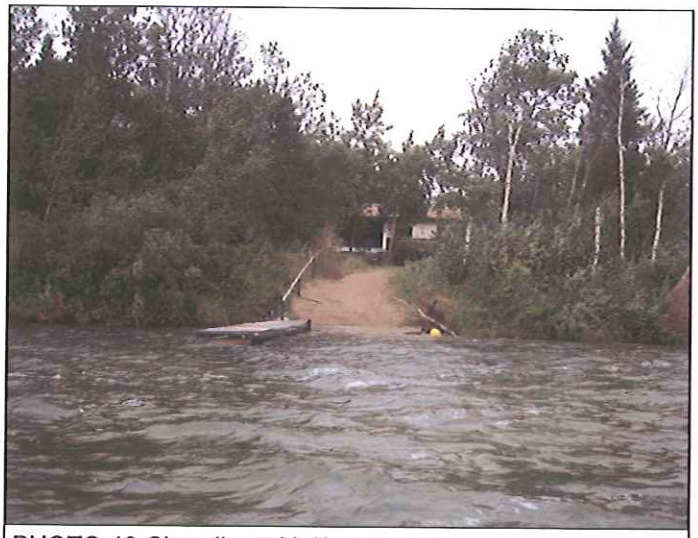


PHOTO 46 Shoreline with Farm2 Area.

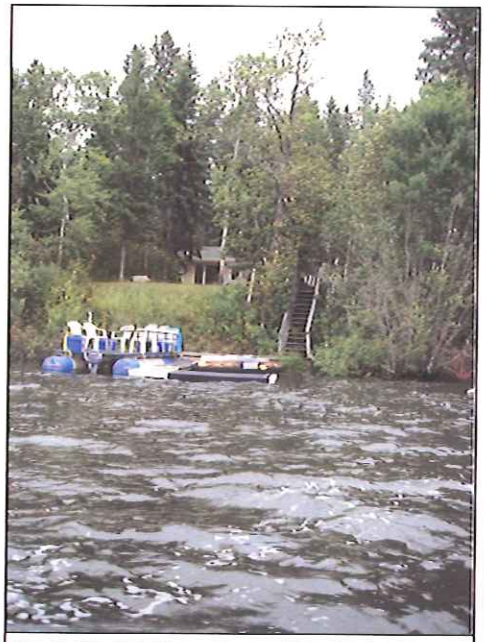


PHOTO 47 Shoreline within Cabin7 Area.

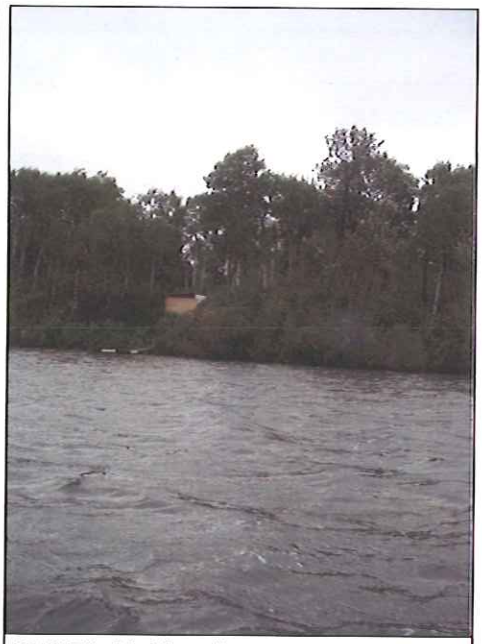


PHOTO 48 Shoreline within Cabin8 Area.

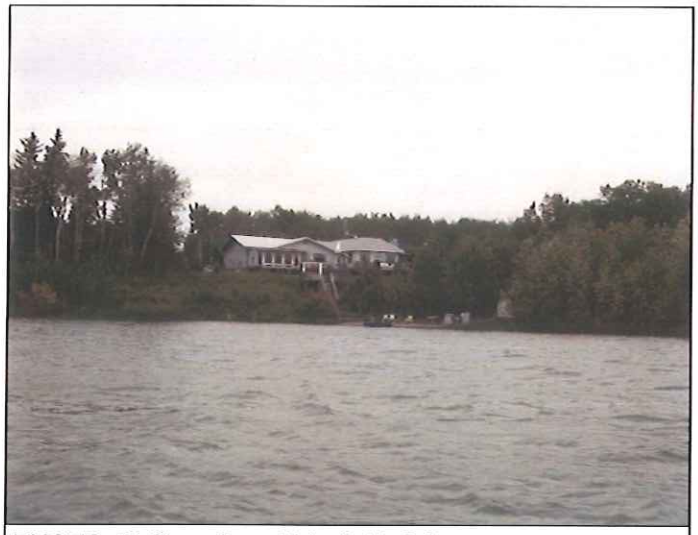


PHOTO 49 Shoreline within Cabin8 Area.

PHOTO 50 Shoreline within Cabin9 Area.

PHOTO 51 Shoreline within Cabin9 Area.

PHOTO 52 Shoreline within Cabin9 Area.

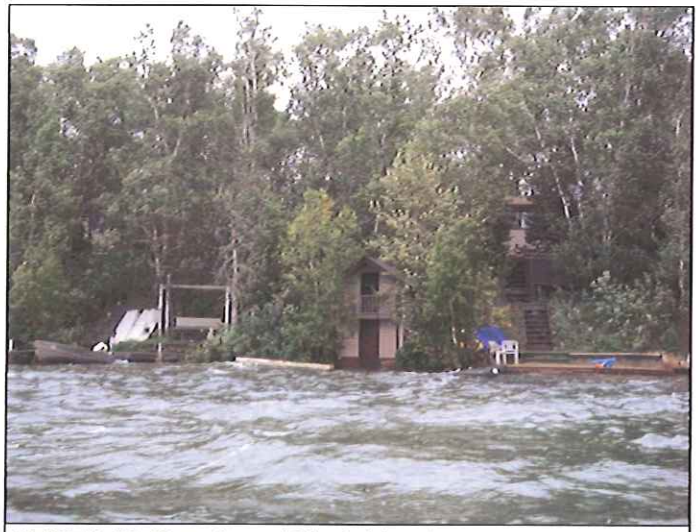


PHOTO 53 Shoreline within Cabin9 Area.

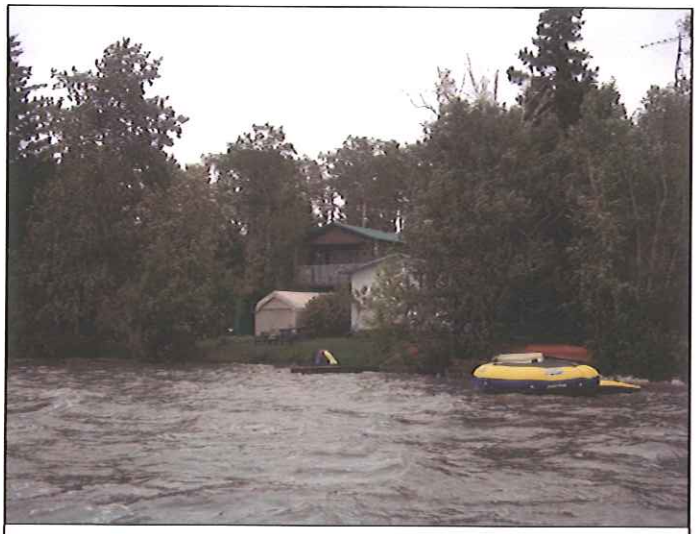


PHOTO 54 Shoreline within Cabin9 Area.

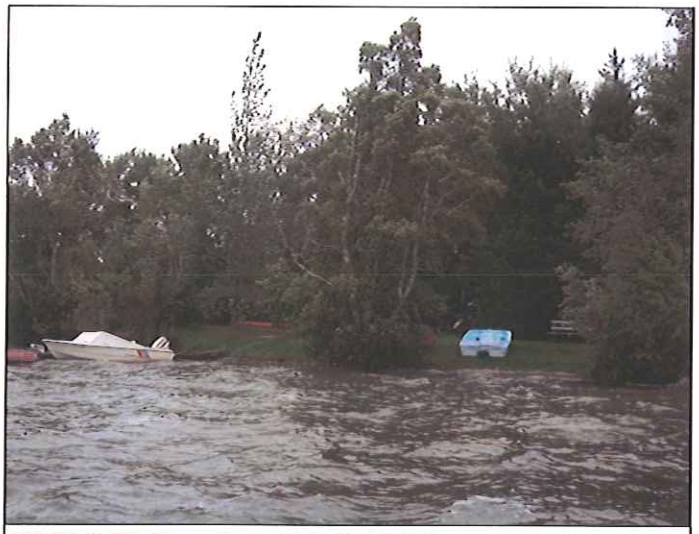


PHOTO 55 Shoreline within Cabin9 Area.

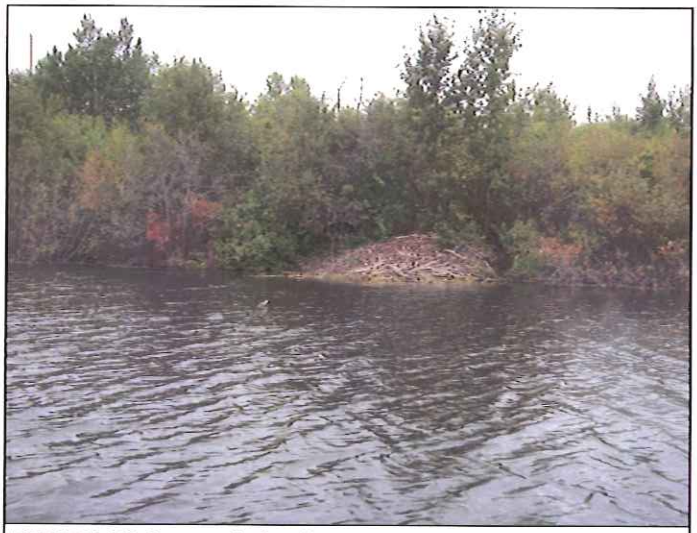


PHOTO 56 Beaver lodge located on the northern shore of the Lake

Appendix B
Water Analysis Results

Table 1. Pratt Lake Water Quality Results

Parameter	Units	Detection Limit	Recreational Guidelines[1]	Aquatic Guidelines[2]	P1	P2	P3	P4	P5	P6	P7	P8
Field Measurements												
pH			5.0 - 9.0	6.9 - 9.0	8.55	8.62	8.65	8.46	8.47	8.62	8.55	8.5
Conductivity (EC)	mS/cm				0.721	0.72	0.719	0.717	0.719	0.72	0.719	0.76
Turbidity	NTU		50		-3.2	-4	-3.9	-3.9	7.1	-4	-3.3	-3.5
Dissolved Oxygen	mg/L				7.03	7.43	8.14	8.6	8.07	7.55	7.63	8.5
Temperature	°C				17.02	18.05	18.19	17.74	17.33	17.82	18.24	17.5
TDS	g/L				0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
Water Depth	m				1	1.5	1.5	1.1	1	2	1.5	1.2
Nutrients												
Nitrate-N	mg/L	0.1		13	<0.1	<0.1	<0.1	<0.1	<0.1			
Nitrite-N	mg/L	0.05		0.06	<0.05	<0.05	<0.05	<0.05	<0.05			
Nitrate+Nitrite-N	mg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1			
Ammonia-N	mg/L	0.05			<0.05	0.07	<0.05	<0.05	<0.05			
Total Phosphorus	mg/L	0.2			<0.2	<0.2	<0.2	<0.2	<0.2			
Salinity												
Chloride (Cl)	mg/L	1			18	14	9	10	10			
Calcium (Ca)	mg/L	2			36	35	34	35	35			
Potassium (K)	mg/L	1			9	8	8	8	8			
Magnesium (Mg)	mg/L	1			67	67	66	67	66			
Sodium (Na)	mg/L	1			52	48	45	45	42			
Sulfate (SO4)	mg/L	6			128	133	133	132	134			
SAR	SAR	0.1			1.2	1.1	1.0	1.0	1.0			
pH	pH	0.1	5.0 - 9.0	6.9 - 9.0	8.3	8.4	8.4	8.3	8.4			
Conductivity (EC)	uS/cm	10			790	770	750	760	770			
TDS	mg/L	1			506	493	480	486	493			
Metals												
Calcium (Ca)	mg/L	0.5			34.1	32.9	33.2	32.7	33.1			
Potassium (K)	mg/L	0.1			7.4	7.6	7.6	7.6	7.4			
Magnesium (Mg)	mg/L	0.1			60.5	61.2	61.9	61.0	60.9			
Sodium (Na)	mg/L	1			39	40	40	40	39			
Iron (Fe)	mg/L	0.005		0.3	0.058	0.013	0.051	0.012	0.066			
Manganese (Mn)	mg/L	0.001			0.022	0.015	0.012	0.012	0.016			
Silver (Ag)	mg/L	0.0004		0.0001	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004			
Aluminum (Al)	mg/L	0.02		0.005 - 0.1	0.02	<0.02	0.04	<0.02	0.03			
Arsenic (As)	mg/L	0.0004		0.005	0.0014	0.0013	0.0013	0.0012	0.0013			
Boron (B)	mg/L	0.02			0.13	0.14	0.13	0.13	0.13			
Barium (Ba)	mg/L	0.0002			0.0334	0.0301	0.0300	0.0279	0.0310			
Beryllium (Be)	mg/L	0.001			<0.001	<0.001	<0.001	<0.001	<0.001			
Bismuth (Bi)	mg/L	0.0001			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Cadmium (Cd)	mg/L	0.0002		0.000017	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
Cobalt (Co)	mg/L	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
Chromium (Cr)	mg/L	0.0008			<0.0008	<0.0008	<0.0008	<0.0008	<0.0008			
Copper (Cu)	mg/L	0.001		0.002 - 0.004	<0.001	<0.001	<0.001	<0.001	<0.001			
Molybdenum (Mo)	mg/L	0.0001			0.0004	0.0005	0.0004	0.0003	0.0004			
Nickel (Ni)	mg/L	0.0002		0.025 - 0.15	0.0009	0.0009	0.0008	0.0009	0.0010			
Lead (Pb)	mg/L	0.0001		0.001 - 0.007	<0.0001	<0.0001	<0.0001	<0.0001	0.0001			
Antimony (Sb)	mg/L	0.0004			0.0007	0.0007	0.0006	0.0007	0.0008			
Selenium (Se)	mg/L	0.0004		0.001	0.0018	0.0013	0.0012	0.0009	0.0007			
Tin (Sn)	mg/L	0.0004			<0.0004	<0.0004	<0.0004	<0.0004	<0.0004			
Strontium (Sr)	mg/L	0.0002			0.123	0.117	0.119	0.113	0.116			
Titanium (Ti)	mg/L	0.005			<0.005	<0.005	<0.005	<0.005	<0.005			
Thallium (Tl)	mg/L	0.0001		0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001			
Uranium (U)	mg/L	0.0001			0.0004	0.0005	0.0005	0.0005	0.0005			
Vanadium (V)	mg/L	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002			
Zinc (Zn)	mg/L	0.004		0.03	0.015	0.016	0.005	0.006	0.005			
Coliforms												
Fecal Coliform	CFU/100 mL	1		200	3	1	<1	8	28			
Total Coliforms	CFU/100mL	1			27	9	12	10	39			
Other												
BOD	mg/L	2			<2	<2	<2	<2	<2			
Turbidity	NTU	0.1	50		0.71	0.69	0.83	0.77	1.8			

[1] sdf

[2] asd

Table 2. Morin Lake Water Quality Results

Parameter	Units	Detection Limit	Recreational Guidelines[1]	Aquatic Guidelines[2]	M1	M2	M3	M4	M5	M6
Field Measurement										
pH			5.0 - 9.0	6.9 - 9.0	8.79	8.77	8.76	8.8	8.75	8.8
Conductivity (EC)	mS/cm				0.671	0.667	0.669	0.666	0.667	0.67
Turbidity	NTU		50		0.8	0.6	0.7	1	0.7	2.2
Dissolved Oxygen	mg/L				9.58	9.57	9.38	9.82	9.74	9.65
Temperature	°C				17.63	17.53	17.79	17.76	17.77	17.8
TDS	g/L				0.43	0.43	0.43	0.43	0.43	0.43
Water Depth	m				1.7	1.5	2	1.3	1.7	2.2
Nutrients										
Nitrate-N	mg/L	0.1		13	<0.1	<0.1	<0.1	<0.1	<0.1	
Nitrite-N	mg/L	0.05		0.06	<0.05	<0.05	<0.05	<0.05	<0.05	
Nitrate+Nitrite-N	mg/L	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	
Ammonia-N	mg/L	0.05			<0.05	<0.05	<0.05	<0.05	<0.05	
Total Phosphorus	mg/L	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	
Salinity										
Chloride (Cl)	mg/L	1			7	8	7	7	7	
Calcium (Ca)	mg/L	2			23	23	23	23	23	
Potassium (K)	mg/L	1			14	13	13	13	14	
Magnesium (Mg)	mg/L	1			58	57	58	57	59	
Sodium (Na)	mg/L	1			27	28	27	27	27	
Sulfate (SO4)	mg/L	6			82	82	81	81	81	
SAR	SAR	0.1			0.7	0.7	0.7	0.7	0.7	
pH	pH	0.1	5.0 - 9.0	6.9 - 9.0	8.4	8.5	8.5	8.5	8.5	
Conductivity (EC)	uS/cm	10			660	660	650	650	650	
TDS	mg/L	1			422	422	416	416	416	
Metals										
Calcium (Ca)	mg/L	0.5			22.1	21.8	21.9	22.2	21.9	
Potassium (K)	mg/L	0.1			13.7	12.9	13.1	13.4	13.0	
Magnesium (Mg)	mg/L	0.1			54.8	52.8	53.2	54.9	53.5	
Sodium (Na)	mg/L	1			27	25	26	26	26	
Iron (Fe)	mg/L	0.005		0.3	0.009	0.019	0.017	0.011	0.018	
Manganese (Mn)	mg/L	0.001			0.005	0.006	0.006	0.005	0.005	
Silver (Ag)	mg/L	0.0004		0.0001	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
Aluminum (Al)	mg/L	0.02		0.005 - 0.1	<0.02	<0.02	0.02	<0.02	<0.02	
Arsenic (As)	mg/L	0.0004		0.005	0.0018	0.0019	0.0019	0.0019	0.0018	
Boron (B)	mg/L	0.02			0.11	0.12	0.12	0.12	0.13	
Barium (Ba)	mg/L	0.0002			0.0189	0.0197	0.0197	0.0190	0.0200	
Beryllium (Be)	mg/L	0.001			<0.001	<0.001	<0.001	<0.001	<0.001	
Bismuth (Bi)	mg/L	0.0001			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Cadmium (Cd)	mg/L	0.0002		0.000017	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Cobalt (Co)	mg/L	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Chromium (Cr)	mg/L	0.0008			<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
Copper (Cu)	mg/L	0.001		0.002 - 0.004	<0.001	<0.001	<0.001	**0.031**	<0.001	
Molybdenum (Mo)	mg/L	0.0001			0.0013	0.0012	0.0013	0.0012	0.0012	
Nickel (Ni)	mg/L	0.0002		0.025 - 0.15	0.0006	0.0009	0.0008	0.0007	0.0008	
Lead (Pb)	mg/L	0.0001		0.001 - 0.007	0.0001	0.0001	0.0001	0.0002	0.0001	
Antimony (Sb)	mg/L	0.0004			0.0007	0.0008	0.0007	0.0006	0.0006	
Selenium (Se)	mg/L	0.0004		0.001	<0.0004	0.0006	0.0006	<0.0004	0.0006	
Tin (Sn)	mg/L	0.0004			<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	
Strontium (Sr)	mg/L	0.0002			0.0643	0.0652	0.0686	0.0637	0.0670	
Titanium (Ti)	mg/L	0.005			<0.005	<0.005	<0.005	<0.005	<0.005	
Thallium (Tl)	mg/L	0.0001		0.0008	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	
Uranium (U)	mg/L	0.0001			0.0005	0.0006	0.0006	0.0005	0.0006	
Vanadium (V)	mg/L	0.0002			<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	
Zinc (Zn)	mg/L	0.004		0.03	0.006	0.015	0.008	0.017	0.005	
Coliforms										
Fecal Coliforms	CFU/100 mL	1		200	1	4	1	1	17	
Total Coliforms	CFU/100 mL	1			13	1	43	12	>200	
Other										
BOD	mg/L	2			<2	<2	<2	<2	<2	
Turbidity	NTU	0.1	50		1.1	0.90	0.90	0.84	0.86	

[1] sdf

[2] asd

Appendix C
Questionnaire

RM of Canwood – Morin and Pratt Lakes Survey

The RM of Canwood No. 494 is seeking public input on the current and potential future uses of Morin and Pratt lakes. This user survey is one method of collecting information useful for future planning within the RM. Your participation with the survey is greatly appreciated. Your answers and opinions are valuable.

1. Which lake are you most familiar with? (check one answer)

   a. ☐ Morin Lake b. ☐ Pratt Lake

2. Approximately how many times will you be visiting this lake THIS SUMMER?

   a. ☐ 1 to 4 times b. ☐ 5 to 10 times

   c. ☐ Over 10 times d. ☐ None

3. Approximately how many times will you be visiting this lake THIS YEAR?

   a. ☐ 1 to 4 times b. ☐ 5 to 10 times

   c. ☐ Over 10 times d. ☐ None

4. During what seasons do you usually visit this lake? (check all that apply)

   a. ☐ Winter (Jan, Feb, Mar) b. ☐ Spring (Apr, May, Jun)

   c. ☐ Summer (Jul, Aug, Sep) d. ☐ Fall (Oct, Nov, Dec)

5. Which of the following are you? (check one only)

   a. ☐ Farm resident b. ☐ Cottage Owner

6. When visiting this lake, which activities do you usually participate in? (check all that apply)

   a. ☐ Walking or relaxing on the beach
   b. ☐ Boating
   c. ☐ Staying at a cottage
   d. ☐ Picnicking
   e. ☐ Camping
   f. ☐ Swimming
   g. ☐ Fishing
   h. ☐ Biking
   i. ☐ Bird watching and nature study
   j. ☐ Other, specify _____
   k. ☐ I don't visit the lake

7. What types of facilities have you used in the area (check all that apply)?

a. ☐ Boat launches
b. ☐ Campsites
c. ☐ Beaches
d. ☐ Picnic sites
e. ☐ other (specify) _____
f. ☐ None

8. The following questions ask for your opinion on a variety of topics related to the lake you are most familiar with. Answers range from **1** (not concerned/not important) to **5** (very concerned/very important). **NA** is not applicable. Please circle your response for each topic. The topics include water quality issues, lake and shoreline activities, recreation activities, etc.

a.	Water clarity	1	2	3	4	5	NA
b.	Algal blooms	1	2	3	4	5	NA
c.	Bacterial/fecal contamination	1	2	3	4	5	NA
d.	Sedimentation and muck accumulation	1	2	3	4	5	NA
e.	Odours	1	2	3	4	5	NA
f.	Swimmers itch	1	2	3	4	5	NA
g.	Impact of new development on the shoreline	1	2	3	4	5	NA
h.	Impact of current development on the shoreline	1	2	3	4	5	NA
i.	Septic systems (onsite waste disposal)	1	2	3	4	5	NA
j.	Farm runoff entering lakes	1	2	3	4	5	NA
k.	Livestock operations adjacent to lakes	1	2	3	4	5	NA
l.	Responsible pesticide and fertilizer usage on lake shores and within watersheds	1	2	3	4	5	NA
m.	Enforcement of shoreline and development regulations (e.g., maintaining setbacks and buffer zones)	1	2	3	4	5	NA
n.	Construction and removal of piers	1	2	3	4	5	NA
o.	Public access and non-resident lake use	1	2	3	4	5	NA
p.	Noise pollution from personal watercraft	1	2	3	4	5	NA
q.	Water pollution from motorboats	1	2	3	4	5	NA
r.	Motorcraft impact on shorelines, waterfowl, etc.	1	2	3	4	5	NA
s.	Boating safety (overcrowding)	1	2	3	4	5	NA
t.	Swimming safety	1	2	3	4	5	NA
u.	Beach and boat launch maintenance	1	2	3	4	5	NA
v.	Flooding of lake and shoreline	1	2	3	4	5	NA
w.	Water level fluctuations	1	2	3	4	5	NA

x.	Fisheries management and stocking	1	2	3	4	5	NA
y.	Maintenance of suitable fish habitat	1	2	3	4	5	NA
z.	Wildlife problems (e.g., beaver)	1	2	3	4	5	NA

11. Please list five of your most important concerns regarding the current and future use of the lake you are most familiar with. Please list in order of importance.

_____

_____

_____

_____

_____

12. Please use the space below to provide any other comments you may want to make on the current and future use of these lakes. You may comment on both lakes if you wish, but please identify which lake you are referring to for each comment made.

Date Survey was completed: _____

Thank you.

Stantec Consulting Ltd.
100 - 75 - 24th Street East
Saskatoon SK S7K 0K3
Tel: (306) 667-2400
Fax: (306) 667-2500

Stantec

July 24, 2007
File: 13253300

Dear Survey Participant:

Reference: Morin and Pratt Lakes – An Environmental and Development Overview

The RM of Canwood No. 494 has contracted Stantec Consulting Ltd. to complete an environmental and development overview of the Morin and Pratt lakes. Our study includes completing some basic water quality sampling at each lake, and a general assessment of the lakeshore and surrounding environment. We also are seeking public input on the current and potential uses of the lakes. The enclosed survey is one method of collecting information useful for future planning within the RM and will take just a few minutes to complete.

Your participation with the survey is greatly appreciated. Your answers and opinions are valuable to our study and to the RM of Canwood.

Please complete and return the survey form before August 31, 2007. You can drop the completed survey form in the "Suggestion Box" at the park Kiosk. You may also fax your completed form to 306-667-2500. If you require additional space for comments, please feel free to add additional pages to your submission.

Later this year the results of the survey will be presented to the RM of Canwood and the public will be invited to attend.

Thank you for your assistance in this study.

Sincerely,

STANTEC CONSULTING LTD.

Peter Goode
Senior Environmental Consultant
Tel: (306) 667-2454
Fax: (306) 667-2500
peter.goode@stantec.com:

Morin and Pratt Lakes User Survey

The RM of Canwood No. 494 is seeking public input on the current and potential future uses of Morin and Pratt lakes. This user survey is one method of collecting information useful for future planning within the RM. Your participation with the survey is greatly appreciated. Your answers and opinions are valuable.

1. Which lake are you visiting right now: (check one answer)

   a. ☐ Morin Lake b. ☐ Pratt Lake

2. Approximately how many times will you be visiting this lake THIS SUMMER?

   a. ☐ 1 to 4 times b. ☐ 5 to 10 times c. ☐ Over 10 times

3. Approximately how many times will you be visiting this lake THIS YEAR?

   a. ☐ 1 to 4 times b. ☐ 5 to 10 times c. ☐ Over 10 times

4. During what seasons do you usually visit this lake? (check all that apply)

   a. ☐ Winter (Jan, Feb, Mar) b. ☐ Spring (Apr, May, Jun)

   c. ☐ Summer (Jul, Aug, Sep) d. ☐ Fall (Oct, Nov, Dec)

5. Which of the following are you? (check one only)

   a. ☐ Camper b. ☐ Day visitor
   c. ☐ Other (specify) _____

6. How many people are in your group (including yourself)? _____

7. How many of them are in each of the following age categories? (provide number)

   ___ 0-12 years ___ 13-19 years ___ 20-59 years ___ 60+

8. What activities are you doing while at this lake on this trip? (check all that apply)

   a. ☐ Walking or relaxing on the beach
   b. ☐ Boating
   c. ☐ Staying at a cottage
   d. ☐ Picnicking
   e. ☐ Camping
   f. ☐ Swimming
   g. ☐ Fishing
   h. ☐ Biking
   i. ☐ Bird watching and nature study
   j. ☐ Other, specify _____

9. What types of facilities have you used in the area (check all that apply)?

a. ☐ Boat launches
b. ☐ Campsites
c. ☐ Beaches
d. ☐ Picnic sites
d. ☐ other (specify) _____

10. The following questions ask for your opinion on a variety of topics related to the lake you are currently visiting. Answers range from **1** (not concerned/not important) to **5** (very concerned/very important). **NA** is not applicable. Please circle your response for each topic. The topics include water quality issues, lake and shoreline activities, recreation activities, etc.

a.	Water clarity	1	2	3	4	5	NA
b.	Algal blooms	1	2	3	4	5	NA
c.	Bacterial/fecal contamination	1	2	3	4	5	NA
d.	Sedimentation and muck accumulation	1	2	3	4	5	NA
e.	Odours	1	2	3	4	5	NA
f.	Swimmers itch	1	2	3	4	5	NA
g.	Impact of new development on the shoreline	1	2	3	4	5	NA
h.	Impact of current development on the shoreline	1	2	3	4	5	NA
i.	Septic systems (onsite waste disposal)	1	2	3	4	5	NA
j.	Farm runoff entering lakes	1	2	3	4	5	NA
k.	Livestock operations adjacent to lakes	1	2	3	4	5	NA
l.	Responsible pesticide and fertilizer usage on lake shores and within watersheds	1	2	3	4	5	NA
m.	Enforcement of shoreline and development regulations (e.g., maintaining setbacks and buffer zones)	1	2	3	4	5	NA
n.	Construction and removal of piers	1	2	3	4	5	NA
o.	Public access and non-resident lake use	1	2	3	4	5	NA
p.	Noise pollution from personal watercraft	1	2	3	4	5	NA
q.	Water pollution from motorboats	1	2	3	4	5	NA
r.	Motorcraft impact on shorelines, waterfowl, etc.	1	2	3	4	5	NA
s.	Boating safety (overcrowding)	1	2	3	4	5	NA
t.	Swimming safety	1	2	3	4	5	NA
u.	Beach and boat launch maintenance	1	2	3	4	5	NA
v.	Flooding of lake and shoreline	1	2	3	4	5	NA
w.	Water level fluctuations	1	2	3	4	5	NA
x.	Fisheries management and stocking	1	2	3	4	5	NA

y.	Maintenance of suitable fish habitat	1	2	3	4	5	NA
z.	Wildlife problems (e.g., beaver)	1	2	3	4	5	NA

11. Please list five of your most important concerns regarding the current and future use of this lake. Please list in order of importance.

_____

_____

_____

_____

_____

12. Please use the space below to provide any other comments you may want to make on the current and future use of this lake.

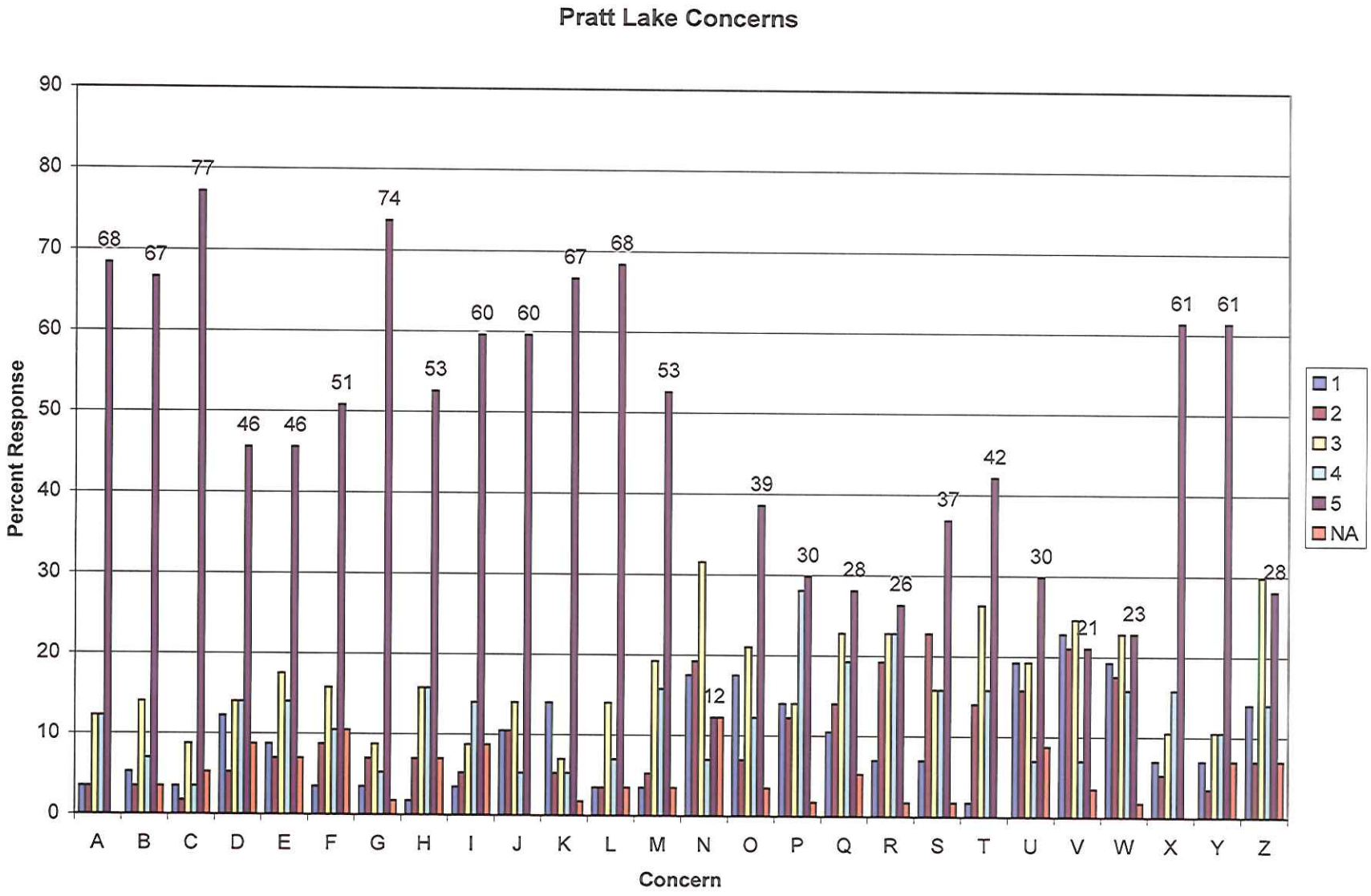
Date Survey was completed: _____

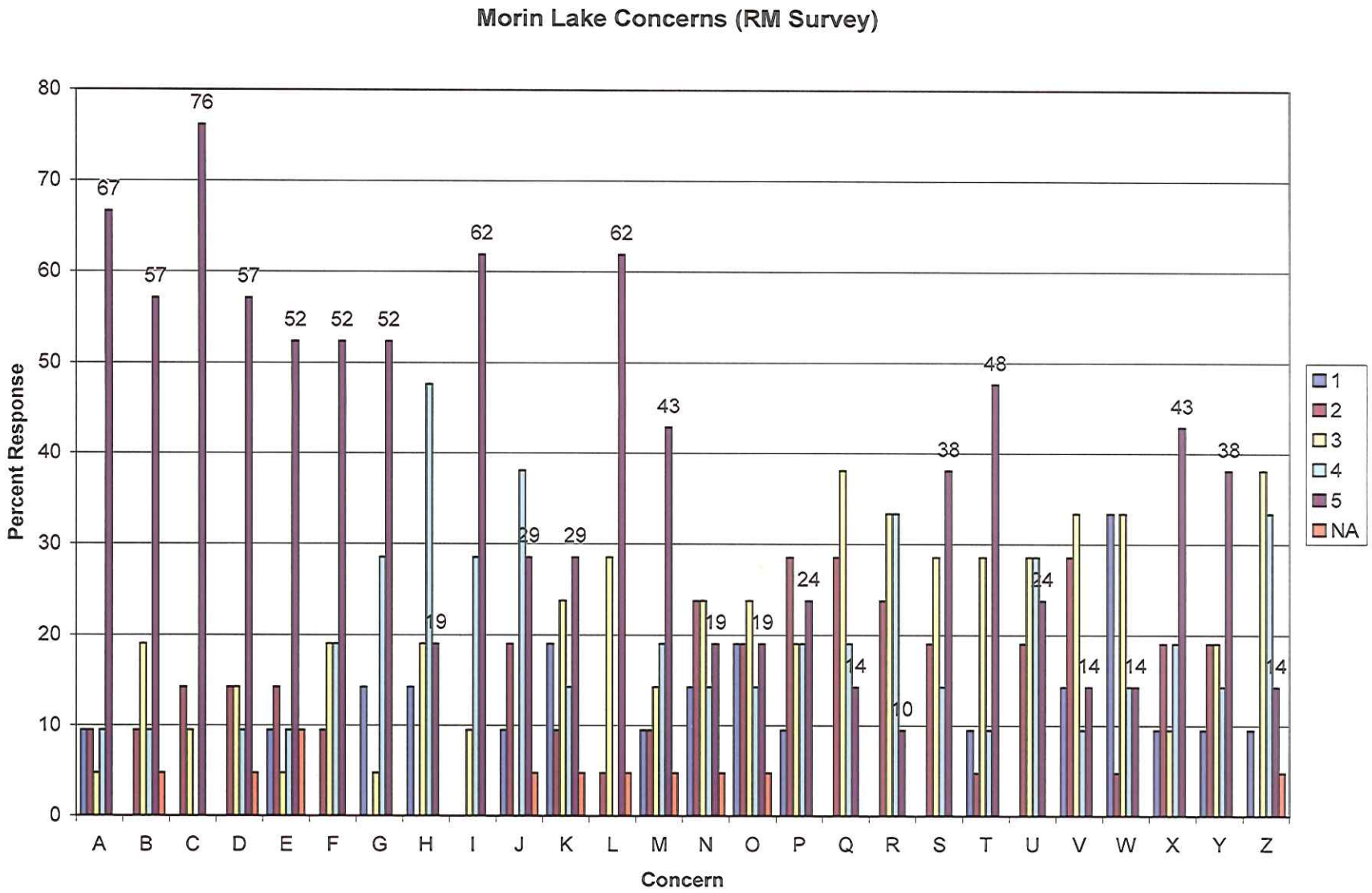
Thank you.

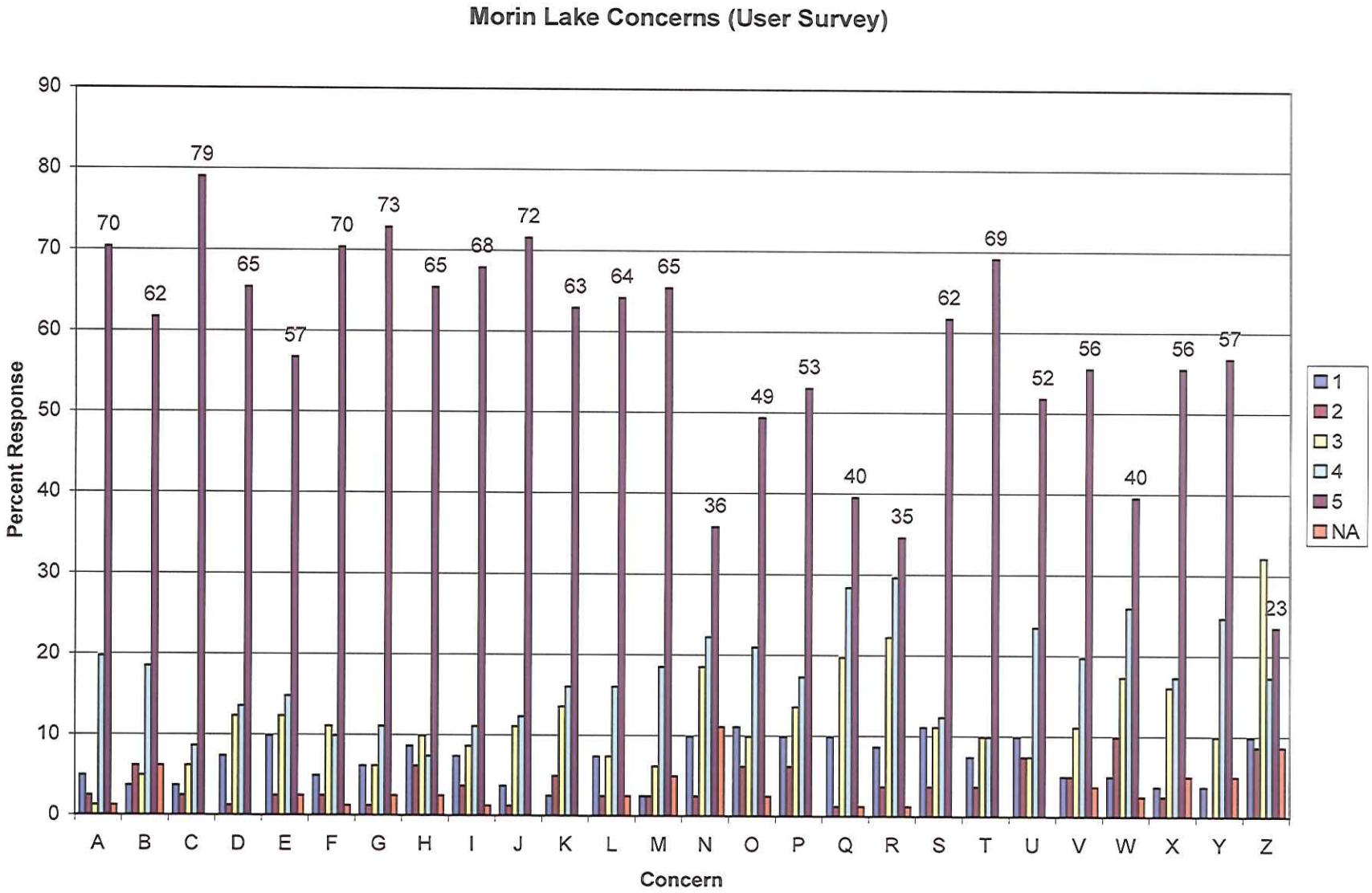
Appendix D
Survey Results

Concern List – the letters on the x-axis of the concern charts that follow correspond to the concerns identified below.

a.	Water clarity
b.	Algal blooms
c.	Bacterial/fecal contamination
d.	Sedimentation and muck accumulation
e.	Odours
f.	Swimmers itch
g.	Impact of new development on the shoreline
h.	Impact of current development on the shoreline
i.	Septic systems (onsite waste disposal)
j.	Farm runoff entering lakes
k.	Livestock operations adjacent to lakes
l.	Responsible pesticide and fertilizer usage on lake shores and within watersheds
m.	Enforcement of shoreline and development regulations (e.g., maintaining setbacks and buffer zones)
n.	Construction and removal of piers
o.	Public access and non-resident lake use
p.	Noise pollution from personal watercraft
q.	Water pollution from motorboats
r.	Motorcraft impact on shorelines, waterfowl, etc.
s.	Boating safety (overcrowding)
t.	Swimming safety
u.	Beach and boat launch maintenance
v.	Flooding of lake and shoreline
w.	Water level fluctuations
x.	Fisheries management and stocking
y.	Maintenance of suitable fish habitat
z.	Wildlife problems (e.g., beaver)


Pratt Lake Concerns
Percent Response
90
80
70
60
50
40
30
20
10
0
68
67
77
46
46
51
74
53
60
60
67
68
53
12
39
30
28
26
37
42
30
21
23
61
61
28
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
Concern
1
2
3
4
5
NA


Morin Lake Concerns (RM Survey)
Percent Response
Concern
0
10
20
30
40
50
60
70
80
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
67 57 76 57 52 52 52 19 62 29 29 62 43 19 19 24 14 10 38 48 24 14 14 43 38 14
1
2
3
4
5
NA


Morin Lake Concerns (User Survey)
Percent Response
Concern
0
10
20
30
40
50
60
70
80
90
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
70 62 79 65 57 70 73 65 68 72 63 64 65 36 49 53 40 35 62 69 52 56 40 56 57 23
1
2
3
4
5
NA

Appendix E
Pratt Lake Survey Comments

PRATT LAKE – COMMENTS FROM THE QUESTIONNAIRE

Five most important concerns identified by the various respondents:

- Over building cabins
- Public campground or beach development
- Water quality
- Livestock accessibility
- Maintenance of new access to Alvin Hanson subdivision
- Septic waste holding tanks at all cabins
- Overcrowding of cabins
- Unsafe boating due to overcrowding
- Overfished lake
- Noise pollution
- Overdevelopment
- Overcrowding on the lake itself
- Lack of RM maintenance on hill going down to lake
- Fish habitat
- Beauty of shoreline
- Water level
- Winter access
- Removal of trees around the lake
- Impact of new development
- Clear lake water
- Cattle not in the lake water
- Keep natural shoreline
- No more cabins at the lake
- Some use of seadoos at the lake
- Impact of farm/livestock runoff into the lake
- Fisheries management/habitat
- Beach and swimming safety
- All weather road access
- Boating safety
- Overpopulation of cabin developments
- Maintaining water level high enough for lake access
- Livestock in the lake
- Ringing the lake with cottages should be avoided (I prefer trees)
- Too many boats on a relatively small lake
- Overfishing
- Keeping E. coli under the health concern level
- Agricultural runoff
- Overdevelopment
- Excess development
- Waste collection

- No bush clearing
- Overcrowding of new development
- Farm runoff entering lakes…bacterial contamination
- Livestock operations adjacent to lake…bacterial contamination
- Clean, clear water, no contaminants
- Protection of the environment
- Designated areas for public uses
- Good access road to the lake
- Environmental concerns – water purity and riparian preservation
- Overcrowding – over use of a small lake
- Local break ins and security
- Over development
- Water quality
- Algal blooms, itch
- Lack of municipal road maintenance – summer and winter
- Maintain maximum natural habitat
- Development
- Boating safety (overcrowding)
- Fish stocking
- Swimmers itch
- No further development
- Fish stocks kept up
- Non resident use of the lake
- Livestock close to the lake
- No more removal of natural habitat
- Overcrowding
- Lakeshore development
- Livestock in the water
- Water pollution from livestock and boats
- Road development for cabin
- Too much unregulated development on the west side of Pratt Lake
- Beaver "clearcutting" and maintaining water level a bit too high
- Theft of tree from property during the winter
- Development and overuse
- Fish and wildlife population
- Amicable relations with farmers
- Maintenance of quiet – resident use only
- Sustainable water quality and quantity
- Over development
- Loss of natural shoreline
- Pollution
- Water clarity
- Over population of lake
- Water condition

- Possible overbuilding of cabins, as witnessed at other nearby lakes
- When will water was tested bacteria found and advised not to drink.
- Disturbing the hill behind causes wash-outs and wash-down
- Livestock operations adjacent to the lake.
- Holding tank dumping
- New developments
- Impact of current and new development on shoreline
- Septic systems
- Water clarity
- Noise pollution from watercraft, use of large motors
- Impact of too many people on wildlife
- Over use and/or development and subsequent environmental damage

General comments about current and future development

- This is a very small lake so we think that there should not be any more lots opened.
- There has been far too much development already done like the RM building a road for a development that never occurred. They ruined the whole habitat on the south side of the lake and just caused the tax payers worthless use of tax money.
- We are concerned with the new road for the Hanson Subdivision. We would like it to be done properly so that it can be accessible even on rainy/wet days.
- The only response from the RM to unregulated development has been to tax, and not regulate. There is a need to determine the capacity of the lake to accept any further development. The adoption of "public health" requirements for all structures would be appropriate but would require uniform enforcement.
- Pratt is small and has lots of natural shorelines and fish/wildlife habitat. Additional cottage expansion would hamper this. The majority of existing cottage owners chose this small, weedy lake for the quiet and respect for the environment and wildlife over conveniences.
- Pratt Lake is very small and can only support a small number of cabins. I hope ti will not be developed much further.
- I do not want to see any more cabins build on Pratt Lake. I do not want a campground or public beach on Pratt Lake. This small lake is already at capacity of cabins and development.
- Would like to see a stop to any new subdivisions, over population is a concern.
- Would like to keep "new development" kept to a minimum. Overcrowding would cause other major problems not yet present at this lake. Preferably no new development.

- The current population at this lake I believe is at its maximum.
- As a result of the number of cottages on this lake, boat traffic can be quite light at times, but also very busy. Even ten watercraft on this lake at one time can be dangerous. Because of the natural and weedy shoreline, many swim in the middle of the lake, which is great, however, boat operators must use caution.
- There are bald eagles, herons, etc using the area around the point. This area which is now unpatented crown land must be preserved as wildlife habitat.
- Public use (non-cottage owners) of the lake has increased significantly. This is fine and nice to see, however, as the lake is mall steps should not be taken to encourage public recreational use, but jut let things develop as they have.
- Fishing limits, especially for pickerel, should be reduced to 2 fish per person. The lake is heavily fished for it size by cottage owners and non-cottage owners.
- Many, even existing cottage owners, do not have an appreciation for the number of rare species, especially birds, using the area. No further development should be allowed. Some method of encouragement should be used to promote a willingness of farmers in the area to forest-reforest areas immediately surrounding this lake.
- The lake is quite small and already with the newest development and a few younger families purchasing cabins from previous older owners, the lake has become much busier. We do not feel it can safely handle any more boaters. We also seem to be getting more and more non-resident visitors.
- We also feel that holding tank regulations are not being strictly enforced.
- Lake is not overcrowded with boats.
- More cabins will only bring more revenue to the RM.
- Our main concern is the big motors on the lake. This lake is way too small for them roaring around pulling three tubes at a time or two water skiers. With so many out there the swimmers are constantly scrambling to get out of the way. Our family has to go to another lake if we want to swim. Not fair!!
- Pratt Lake is not a large lake and we do not want to see any further developments because of the possibility of overcrowding, as well as damage to the shoreline and lake.
- Pratt Lake is a small lake in a highly sensitive boreal transition zone and is a very special place. I am very concerned about ??? and particularly with the construction of a new road, this pressure to develop the area further. I would like to see a moratorium on any further development of this lake, and although we have a boat, I would even support a no power boat restriction or motor/boat size limit.
- I have a cabin and 100 acres of land at the lake since 1978. I enjoy nature and would like to see the lake in as much a natural state as possible. I am worried about more development. Pratt Lake had been a

Appendix F
Morin Lake Survey Comments

MORIN LAKE – COMMENTS FROM THE QUESTIONNAIRE

Five most important concerns identified by the various respondents:

- Lake water quality for swimming with all shore development going on.
- Reduce motors to 4 stroke and max 40 HP
- No seadoos
- No snowmobiles on lake
- Clean up Native Indian pollution on shore line.
- Check septic tanks for holes punched in bottom
- Too many cottages for size of lake
- Cattle operations, and allowing cattle to water directly in the lake
- Watercraft overcrowding
- Pollution especially coming from Whitefish Reserve at north end of Morin Lake
- Sustain fish populations.
- Restriction of future development (cottages)
- Continuation of boating, swimming, and fishing
- Maintenance of road access
- Water quality
- Livestock access to the lake (elimination of)
- Over population
- Garbage in north end of lake
- Over development
- High speed watercraft (seedoos and airboats)
- Lack of Saskatchewan Environment conservation officers checking fishermen
- Overcrowding of overflow areas at the park.
- Too many cottages
- Over fishing
- Lack of boat docks
- No place to fillet fish
- Garbage
- Overpopulation
- Noise pollution
- Health/condition of wildlife
- Water pollution
- Garbage pollution
- Over population and future development
- Safeguard swimming areas
- Stupid boaters – unsafe operators
- Preserve crown land as natural habitat and scenery
- Garbage pollution along shoreline
- Cattle from community defecating in lake

- Future development is OK, but every one including existing residents, share in promoting and practicing sound environmental practices. Everyone has a right under present legislation to use a Canadian waterbody. Private sector land should be developed in a sound environmental way, which in turn promotes wealth for all.
- Hold Big River Indian Reserve accountable for the pollution that is occurring at the north end of Morin Lake. Some of these people seem to think that it is acceptable to discard their garbage, old vehicles and appliances directly in the lake.
- Maintenance of current lake status.
- The lake is overcrowded and I hope not too much more development occurs.
- Garbage is being dumped on the north west side of Morin lake on the big River Reserve line only a few hundred feet from the lake. Some garbage is on Crown land.
- While Morin Lake is generally a peaceful lake, it has become increasingly busy particularly on weekends. With the increase in powerboats – larger and faster – I am very concerned for swimmers, paddlers and boaters themselves. We have noted increased speeds, recklessness and ill-regard for others on the lake. Also, the effect of boat wash on the shorelines causing erosion to root systems. Once again with increase, large boats causing large washes. It feel it is important to remember we are the visitors to this habitat. Changing it should be minimal. We have seen the effects of over development in national parks. W should not be heading down that same road.
- We were told a few years back that the lake had reached its maximum population and no further development would be allowed. That was good news to everyone. Most days there are scarcely any boats on the lake, but on busy weekend it can become very busy to the point of being dangerous. We should do what is possible to preserve the clean water and serenity that is currently Morin Lake. I am not a fisherman, so fishing is not a big deal to me. However, as a child I remember thousands of leopard frogs, which eventually vanished. There is a movement in Alberta to replenish leopard frogs into former habitats. Could we consider this for Morin Lake?
- One thing that appeals to me about Morin Lake is that it isn't usually very busy. There are few people, little noise and not a lot of garbage in the public areas like the main beach and campground. Further development might change that drastically, and it isn't something I'm looking forward to. The peace and quiet for the majority of the time is too valuable to me.
- Limit further expansion and development of land use around the lake – maintain a "cottage" atmosphere with no paved roads or streetlights; prevent further subdivision or sale of lots; control unauthorized clearing of bush areas and destruction of natural habitats.
- Maintain integrity of the lake (water quality, natural habitats, shoreline, water table): keep livestock from entering the lake; limit boating during

one time, litter is left on the beach, and traffic makes us concerned about our children. We really value the community and rural setting here. If you visit other lakes that are more densely populated and then come back to Morin Lake you will notice how precious the quality of life is here.

- Morin Lake is a small lake. Cottage and housing development needs to be controlled to ensure capacity of the lake is not exceeded.
- People that have front property figure that no one can walk in front of their places and that people shouldn't put their boats in the water in front of their cabins. We don't want any more land to be developed for cabins.