
Land Use Planning Study
Township of McKellar

Environmental Component



Michalski Nielsen

ASSOCIATES LIMITED

Objectives

1. Assess water quality of McKellar lakes
 2. Identify fish habitat along shoreline
 3. Evaluate recreational potential based on boating capacity
 4. Determine capacity to further development based on trophic state
 5. Recommend policies in context of environmental opportunities and constraints
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Historical Data Search

- Data collected included: water chemistry, lake capacity assessments, fisheries, fish habitat, lake bathymetry, access, etc.
 - Data collected from the Ministry of the Environment in Sudbury and the Ministry of Natural Resources in Parry Sound.
 - Some information still to be obtained (i.e. wildlife habitat, species-at-risk).
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Water Chemistry Sampling

- 17 lakes
 - Simolea, Ryan, Mary Jane, McKellar, Moffat, Oliver, McEwen, Armstrong, Little McKellar, Blackwater, Manson, Robinson, Manitouwabing, Little Ruebottom, Fresque, Hyde and Acton
 - 2 rivers
 - Manitouwabing and Middle
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Water Chemistry Sampling

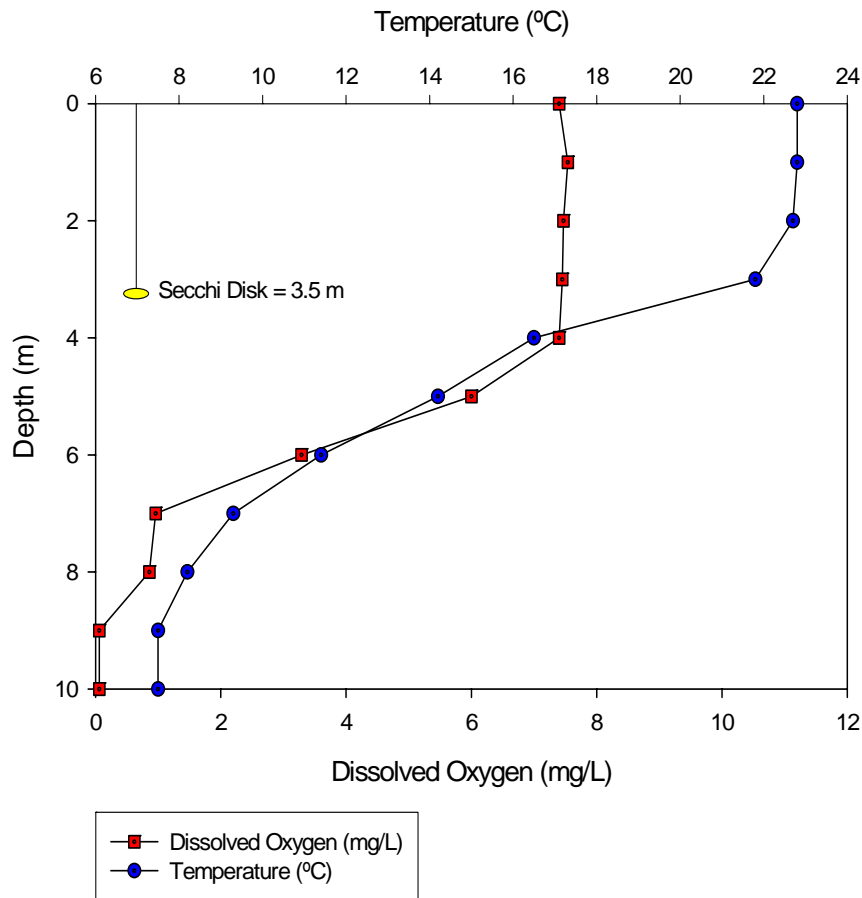
- Sites chosen based on bathymetry (i.e. Manitouwabing n=6, Acton n=1).
 - Dissolved oxygen and temperature profiles
 - Secchi disk (water transparency)
 - Water chemistry parameters included:
 - Total phosphorus (shallow and deep water samples if appropriate)
 - pH, alkalinity
 - Colour, turbidity, total suspended solids, conductivity, dissolved organic carbon
 - Total kjedahl nitrogen, nitrate, nitrite
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Shoreline Assessments

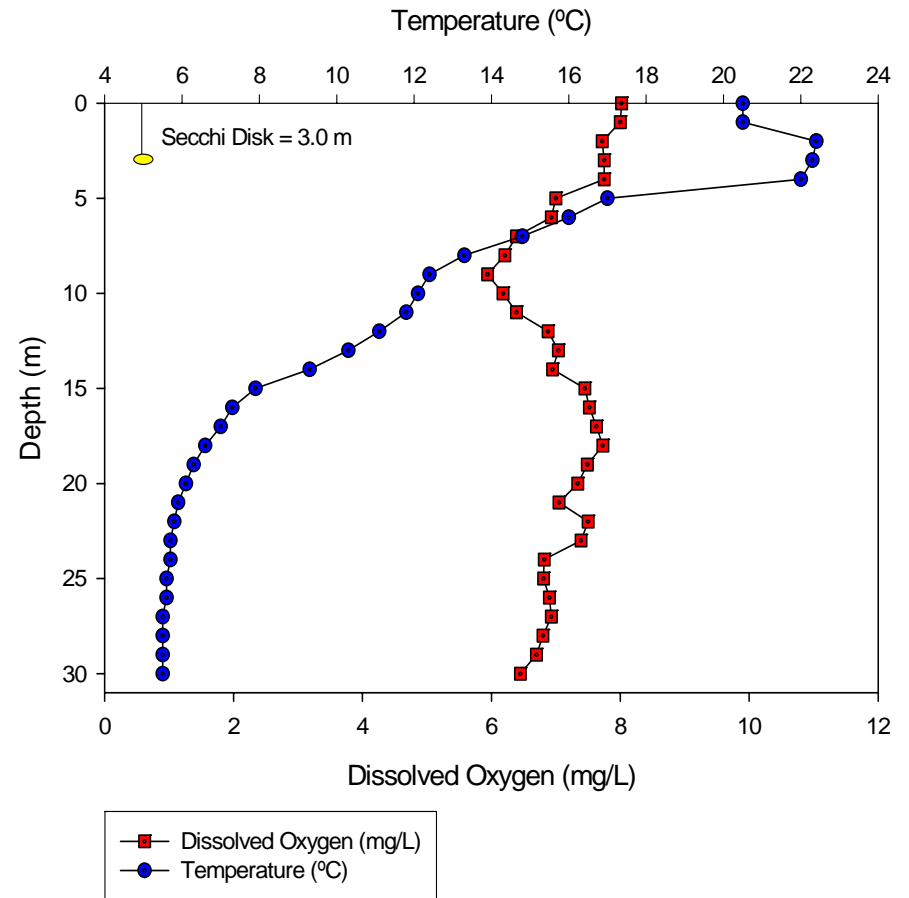
- Fish habitat
 - Aquatic plant beds, fallen trees, spawning substrates, inflows
 - Boat counts and capacity analysis
 - Skiffs, runabouts, personal watercrafts, canoes, windsurfers, sailboats
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Water Chemistry Results

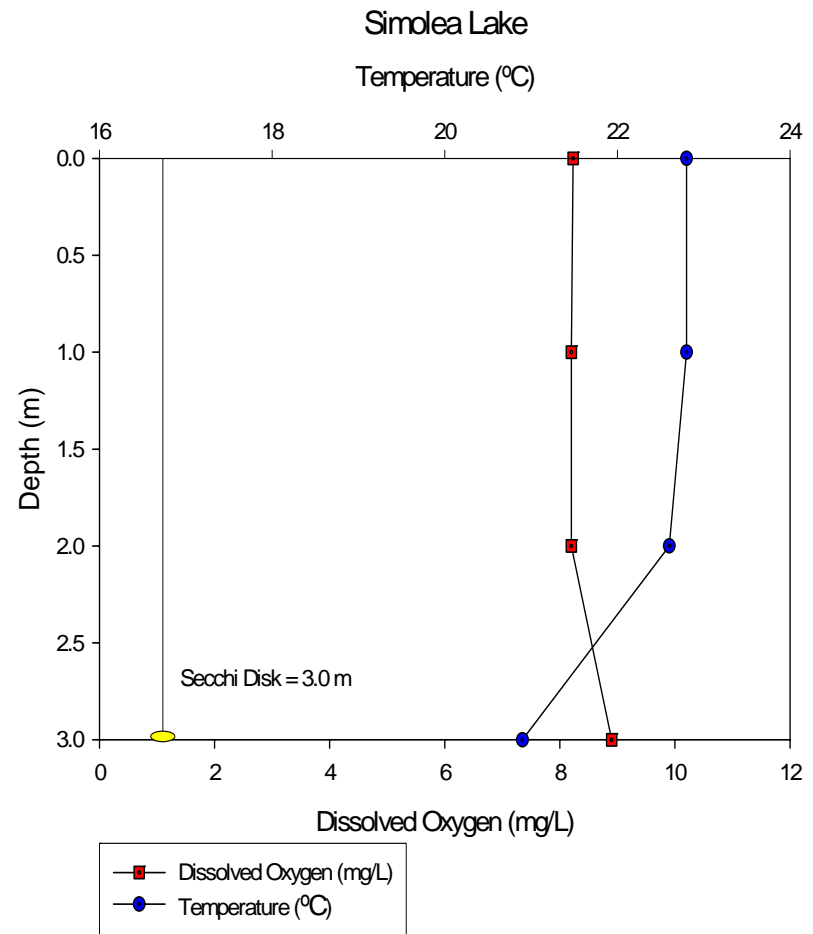
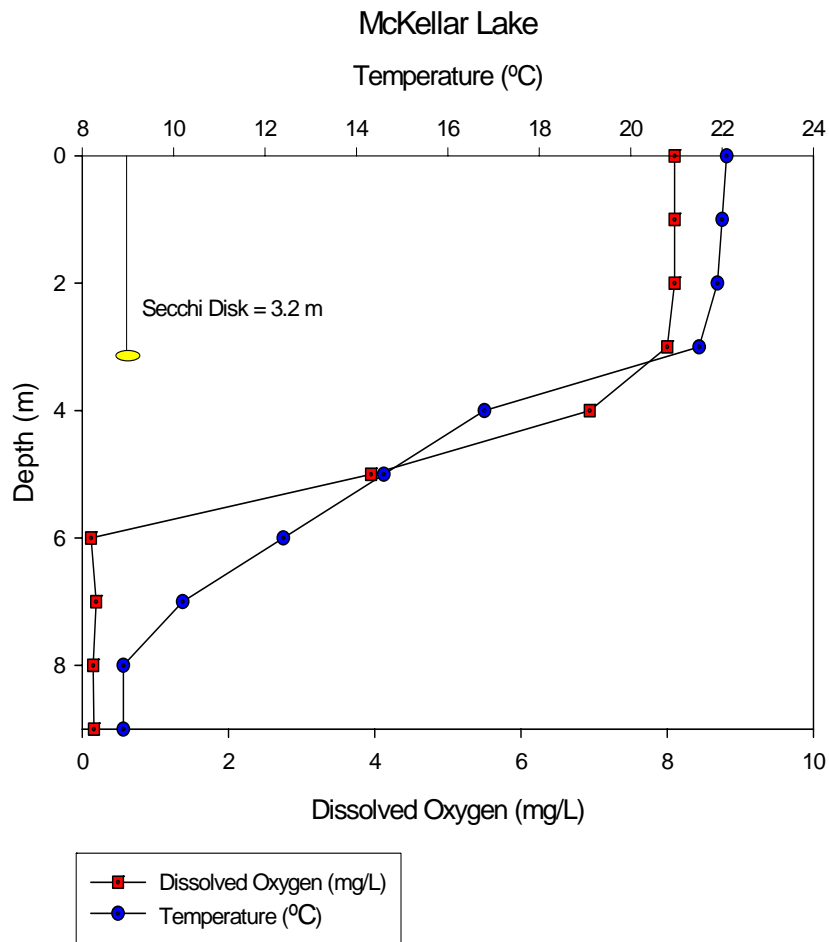
Lake Manitouwabing - Station A



Lake Manitouwabing - Station C



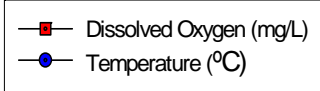
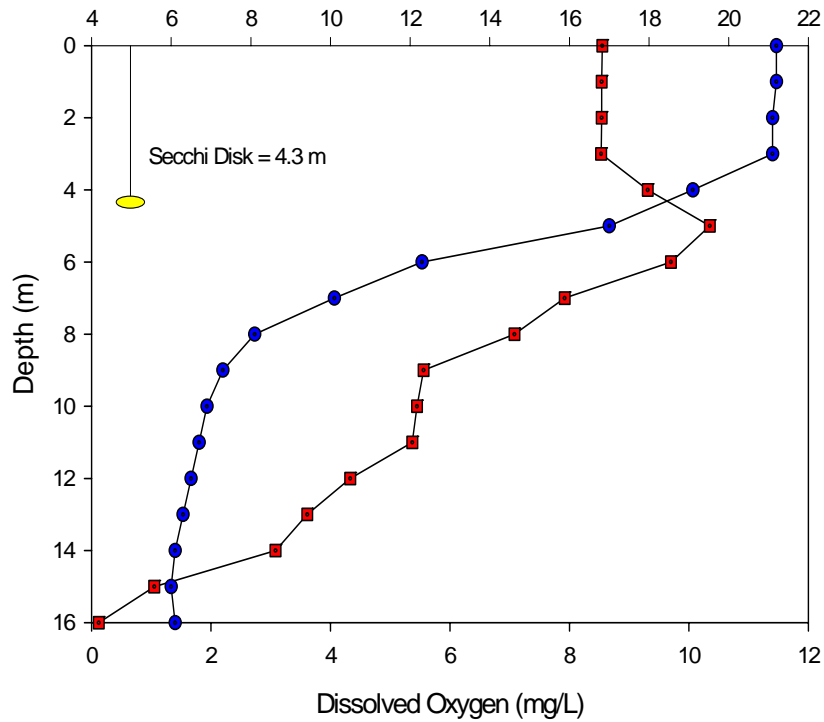
Water Chemistry Results



Water Chemistry Results

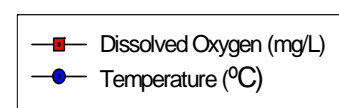
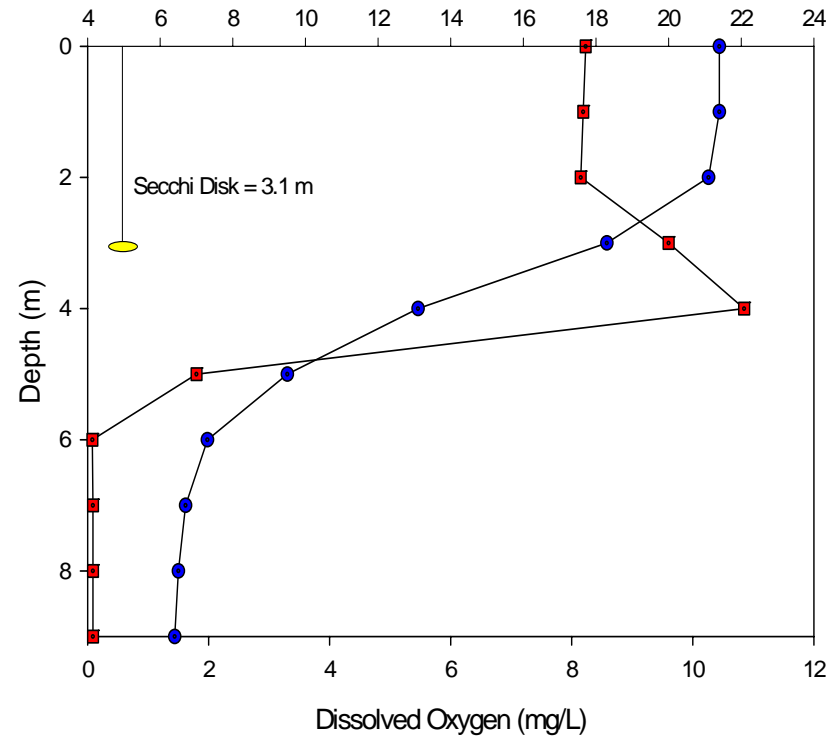
Oliver Lake

Temperature (°C)

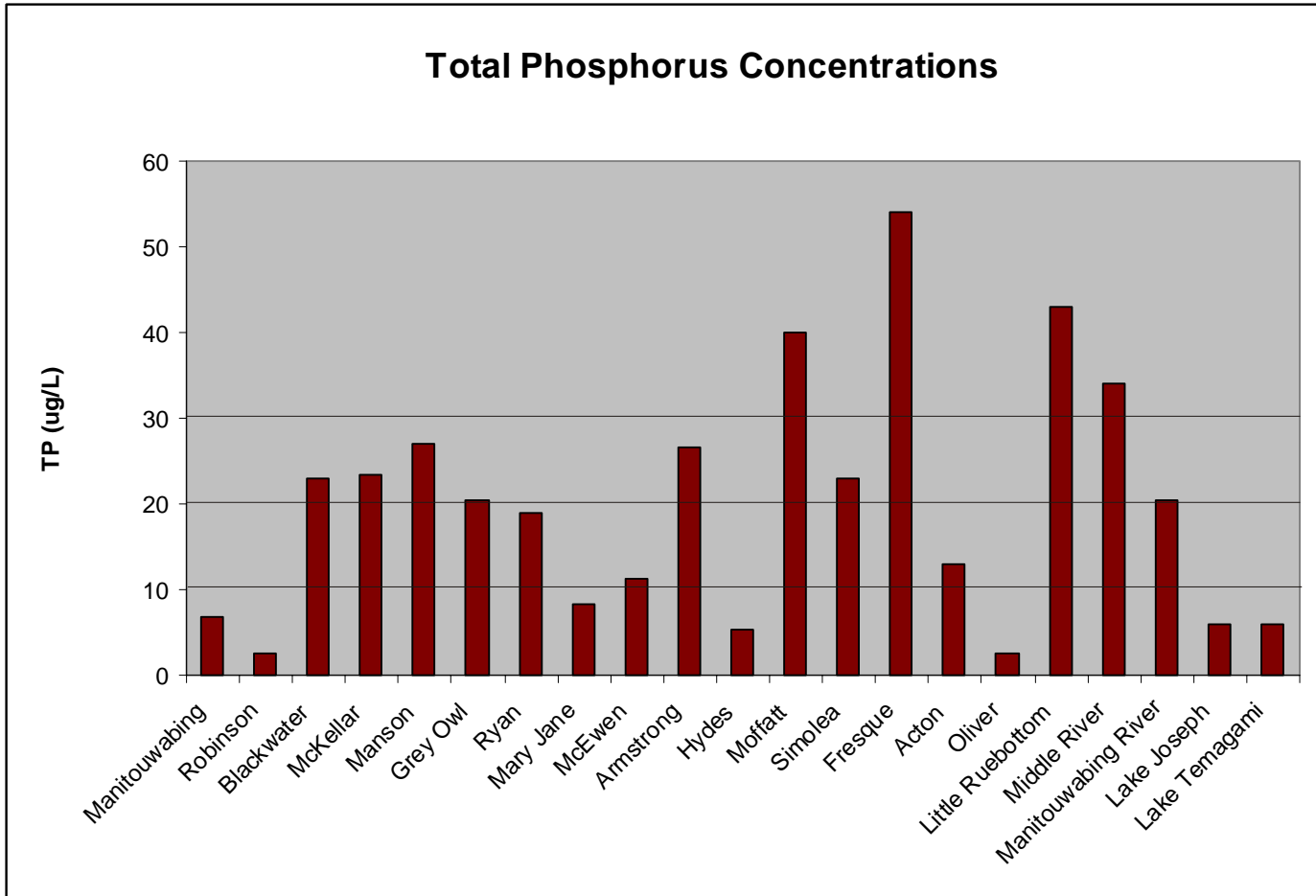


Acton Lake

Temperature (°C)



Water Chemistry Results

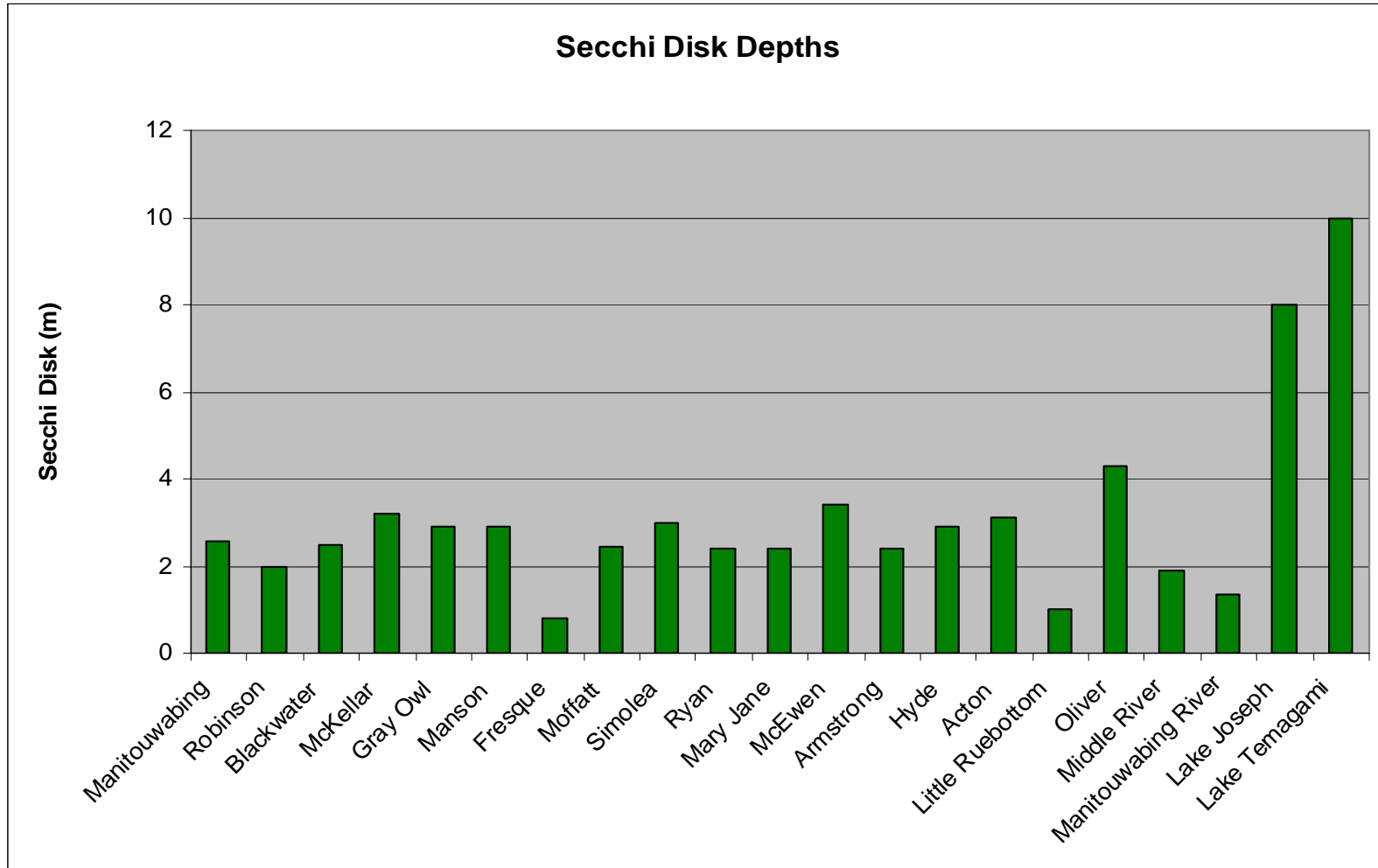


Eutrophic

Mesotrophic

Oligotrophic

Water Chemistry Results



Shoreline Fish Habitat Identification



Shoreline Fish Habitat Identification



Aquatic Vegetation



Inflows

Shoreline Fish Habitat Identification



Fallen trees



Spawning substrates

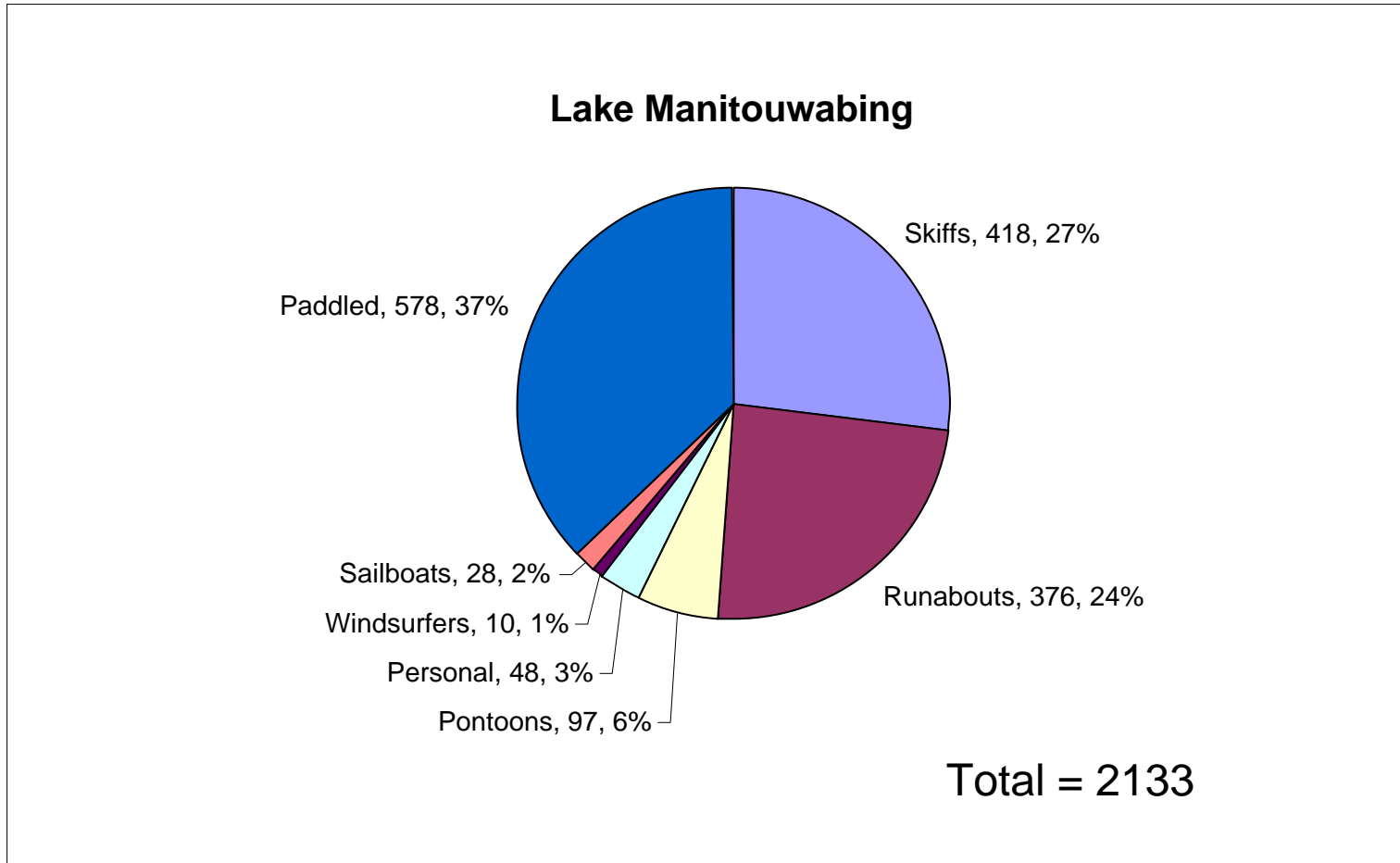
Shoreline Fish Habitat Identification



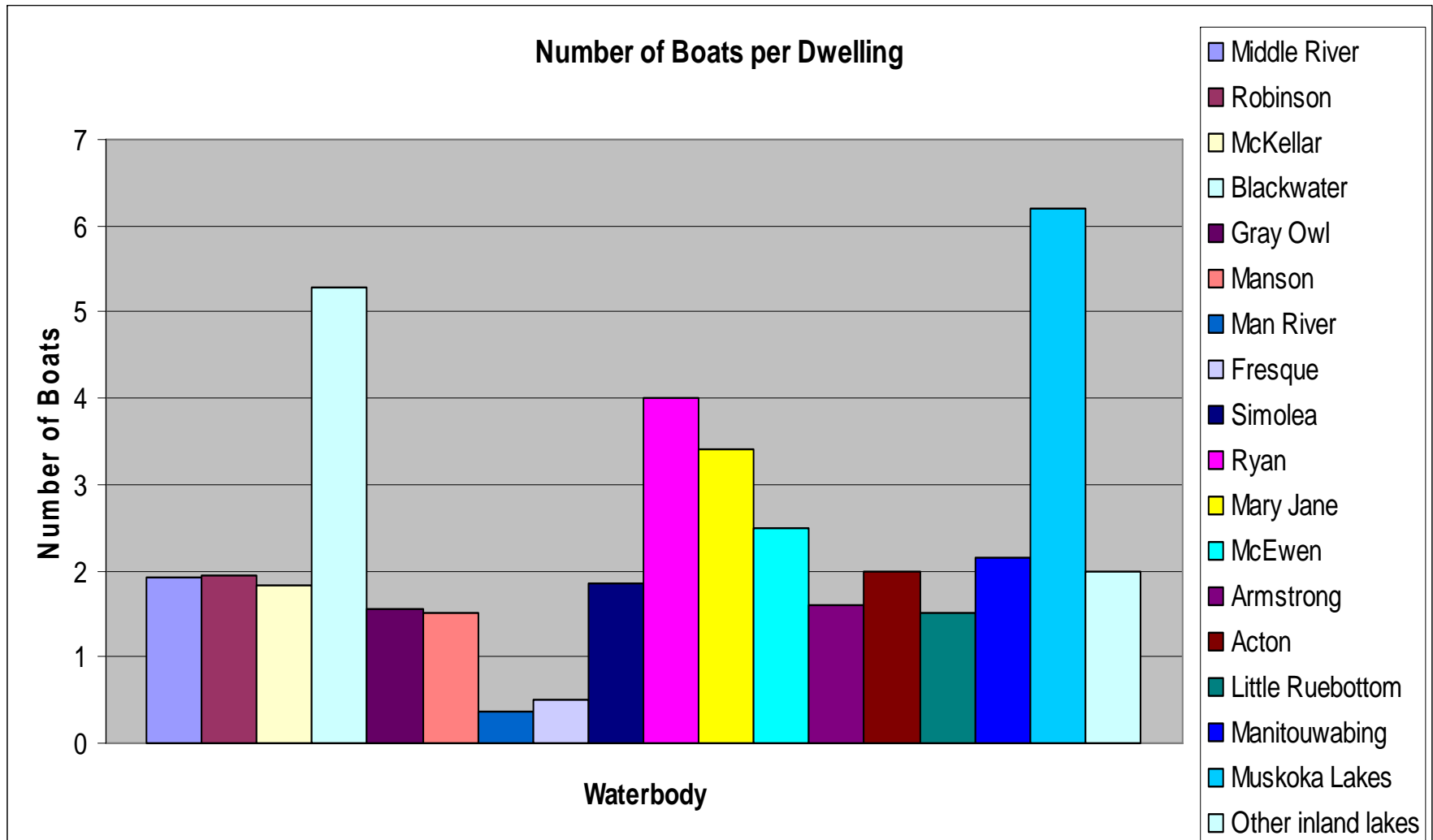
Shoreline Fish Habitat Identification



Shoreline Boat Count Results

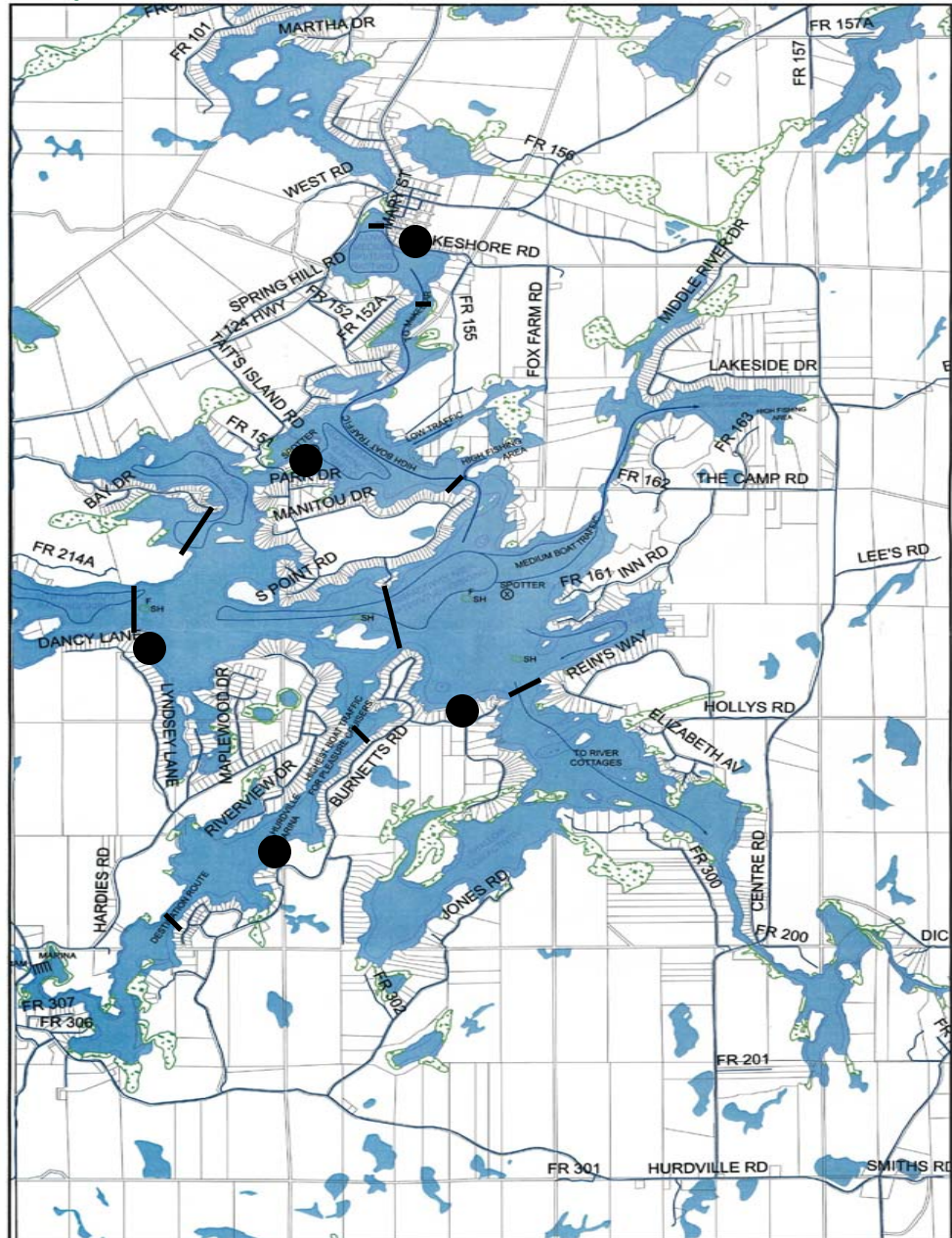


Shoreline Boat Count Results



Recreational Capacity Studies

- Lake Manitowabing
- 5 Observers



Recreational Capacity Studies

- McKellar Lake
- 3 Observers



McKellar Township
Lake McKellar



Recreational Capacity Studies

1. Saturday July 4th
 2. Sunday July 19th
 3. Saturday August 1st
- Number and type of boat that cross centre line transect cumulatively between 10:00 am and 6:00 pm.
 - A snapshot of the number, speed and type of boats in study area every 10 min.
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Next Steps

- Compare water quality data with historical levels, Provincial and Federal Water Quality Objectives, etc.
 - Determine sensitivity of lakes to development based on water quality and recreational boating
 - Prepare atlas of McKellar lakes
 - Assess data to identify opportunities and constraints to development (i.e. policy implications)
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