City of Greater Sudbury

Lake Water Quality Program

2013 Annual Report

Environmental Planning Initiatives

City Of Lakes

The City of Greater Sudbury is recognised as the 'City of Lakes', with a geographic area of 3,627 square kilometres, about two-thirds the size of Prince Edward Island. Greater Sudbury boasts 330 lakes, more lakes than any other municipality in Canada. Our lakes are a valued natural resource to our citizens who have a vested interest in the health and quality of these rich community assets.

Lake Water Quality Program

The Lake Water Quality Program helps to ensure that Greater Sudbury is positively recognised as a City of Lakes. The Lake Water Quality Program advocates for the ecological health of the lakes, provides lake water quality monitoring and education, offers technical support to lake stewardship groups and the community, and provides research into various issues related to lake water quality.

Staffing

The City of Greater Sudbury provides funding for the full-time position of the Program Co-ordinator and a seasonal Lake Water Quality Field Intern. These positions are responsible for the day-to-day program and activities including water quality monitoring, shoreline home visit program, technical assistance to lake stewardship groups and the Lakes Advisory Panel. Additional duties include organizing the annual Water Gathering, website content and report writing.

Summary of Activities

In conjunction with its partners, the Lake Water Quality Program carried out the annual Spring Phosphorus Sampling, the Lake Stewardship Grant Program and co-ordinated the Shoreline Home Visit Program. In summary:

- 37 lakes sampled for spring phosphorus
- 12 lakes sampled for late summer phosphorus
- 455 shoreline properties surveyed for the Love Your Lake program
- 28 active lake stewardship groups
- 5 lakes stocked with Milfoil Weevil
- 11 lake stewardship grants awarded
- 6 Lakes Advisory Panel meetings

Lake Water Quality Program Components

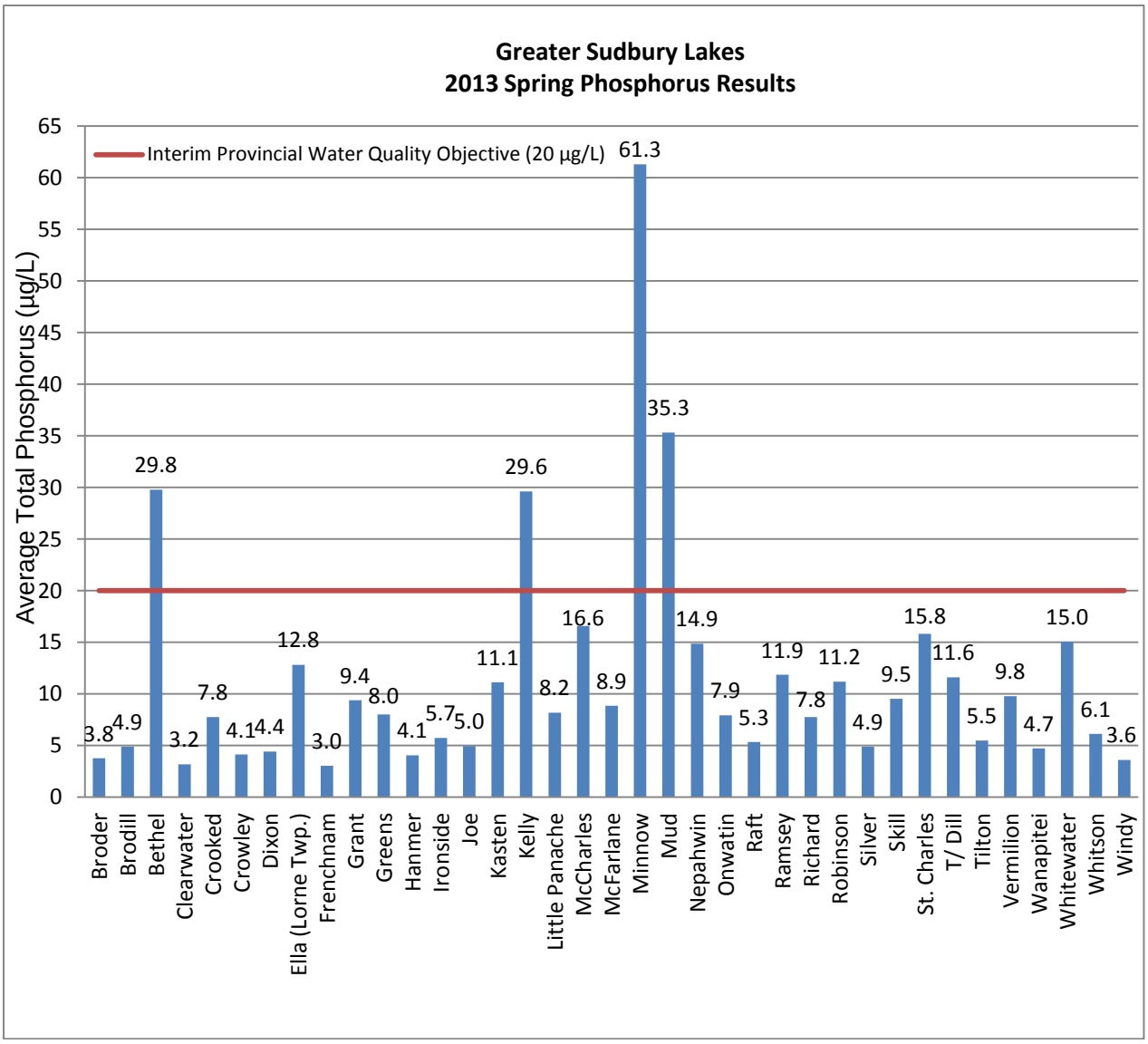
Spring Phosphorus Sampling Program

The City of Greater Sudbury has been sampling local lakes for spring phosphorus for the past 12 year. These lakes were chosen based on their historical phosphorus levels, waterfront development pressures, and requests from lake stewardship groups. Phosphorus is the main nutrient (fertilizer) that controls the growth of algae. Phosphorus is sampled in the spring shortly after the ice has left the lake and after an episode called "spring turnover". Phosphorus enters a lake primarily through surface water runoff from human sources such as septic systems, fertilizers, agriculture practices, municipal and industrial wastewater and detergents. As well, depending on the type of ground cover, soil conditions and bedrock, phosphorus can enter a lake by way of natural sources.

Spring Phosphorus Results

The spring phosphorus sampling was conducted on 38 lakes during the month of May 2013. Results for the lakes that were sampled are shown in the graph below. Individual spring phosphorus graphs for lakes sampled this year are found at the end of this report. Of the lakes sampled, four lakes had phosphorus concentrations greater than the Interim Provincial Water Quality Objective of 20 µg/L (micrograms per litre). This level which indicates the lake is eutrophic or nutrient rich. Other chemical parameters sampled included conductivity, chloride, sodium and dissolved organic carbon. These results are listed in the table below.

The bar graph below indicates the 2013 spring phosphorus sampling results 37 lakes.



The table below indicates the 2013 sampling results for conductivity, dissolved organic carbon, sodium and chloride for 37 lakes.

Lake	Conductivity (µS/cm)	Dissolved Organic Carbon (mg/L)	Sodium (mg/L)	Chloride (mg/L)
Bethel	284	9.26	25.7	45.7
Broder 23	27.6	4.39	1.41	0.42
Brodill	25.6	4.71	1.3	0.74
Clearwater	58.1	4.48	4.27	7.51
Crooked	38.1	7.32	2.84	2.32
Crowley	25.4	4.57	1.35	0.34
Dixon	21.6	3.8	1.35	0.61
Ella (Lorne)	139	6.29	6.4	6.11
Frenchman	43.9	3.9	4.64	<0.2
Grant	362	6.17	45.1	72.7
Greens	46.6	7.49	2.4	1.5
Hanmer	41.3	3.2	3.23	2.86
Ironside	24.6	7.7	1.03	<0.2
Joe	28.2	2.7	1.51	1.2
Kasten	27.6	7.11	1.35	0.34
Kelly	1510	6.54	94.3	111
Little Panache	116	6.13	6.87	12.4
McCharles	228	9.05	12.3	15.7
McFarlane	330	6.47	39.8	64.8
Minnow	856	6.94	127	210
Mud	961	8.46	61.6	79.8
Nepahwin	596	5.42	76.1	137
Onwatin	46.8	7.64	2.4	1.6
Raft	36.7	3.6	1.84	1.0
Ramsey	405	5.47	48.8	91.8
Richard	170	5.46	18.4	29.8
Robinson	426	6.62	53.5	94.2
Silver	385	4.82	50.6	92.2
Skill	34	8.51	1.89	1.4
St. Charles	226	6.86	25.5	43.3
T/Dill	30.6	7.21	1.95	1.7
Tilton	39.3	4.14	2.73	3.43
Vermilion	87.7	7.4	4.83	4.97
Wanapitei	57.3	7.23	1.75	0.76
Whitewater	211	6.36	11.9	17.3
Whitson	127	6.27	13.6	20.8
Windy	63.1	3.8	6.33	11

Summer Phosphorus Sampling

During the months of July, August and September, 11 lakes were sampled for late summer total phosphorus, dissolved oxygen and temperature profiles and Secchi depths. The results will be used as part of the development a watershed-based Lake Water Quality Model for lakes in Greater Sudbury using the Ministry of the Environment's Lakeshore Capacity Model approach.

Milfoil Weevil Stocking Program

Many lakes in Greater Sudbury have become overrun with Eurasian Water milfoil, an aggressive invasive aquatic plant that out compete native plant species. Milfoil can interfere with boating, fishing, and swimming when one encounters the dense mats of vegetation that can form. The vegetation can become entangled in boat propellers and boating equipment. To combat this plant, the City of Greater Sudbury, in consultation with the Greater Sudbury Watershed Alliance, and with the help of EnviroScience Inc., stocked 5 lakes in 2013 with the native water milfoil: Long, Richard, McFarlane, Grant and St. Charles lakes. This is a three-year program to increase the natural milfoil weevil population in area lakes. The 3rd and final year Progress Report is available under separate cover.

Photo courtesy of EnviroScience

Community Outreach

Love Your Lake Program

The City of Greater Sudbury's Lake Water Quality Program worked with local area lake associations to deliver the Love Your Lake Program in the summer of 2013.

The Love Your Lake program is of a lake-wide shoreline survey conducted on a property-by-property basis. The purpose of the survey is to acquire an accurate picture of the current state of a lake's shoreline. This is done by assessing the amount of natural shoreline versus the degree of development on the waterfront. The survey is completed by applying a detailed protocol to each property on the lake. In total, 455 shoreline properties were surveyed on St. Charles, Hannah, Middle and Fairbank lakes.

Lake Water Quality technicians completed a data sheet that inventoried shoreline structures, natural habitat features, areas of erosion and other key features. This information was then used to prepare an

individualized stewardship information report that outlines specific actions that each landowner on the lake could take to improve their lake water quality.

The Love Your Lake program is an opportunity for waterfront owners to learn more about how they can have a positive impact on their lake's water quality and is non-regulatory. The information from the survey is intended strictly for each landowner and is not shared with any level of government or other third party.

Shoreline Home Visit Program

New summer cottages and year-round waterfront home development has increased over the past decade. Many people are moving into some of the most sensitive and important ecosystems we have - our shorelines. As a result, there have been many shoreline alterations throughout the City that are impacting the health of our lakes.

The Lake Water Quality Program co-ordinated the Shoreline Home Visit Program. These visits provided waterfront homeowners with advice on healthy shoreline practices including how to best manage their shoreline, protect the lake water quality, and maintain the health of the ecosystem. The visits are free, confidential and non-regulatory. Homeowners received additional information specific to their needs as well as a complementary Nature Clean product and an "On the Living Edge" handbook for waterfront living.

Sudbury Children's Water Festival

This was the 7th year that the Lake Water Quality Program participated in the water festival and it was a huge success with over 800 grade 3 students visiting the festival and attending bilingual activity centres. The Lake Water Quality Program staff present taught students the need for diversity in shorelines and the impacts and causes of erosion. Each teacher received posters and handouts for their classrooms. The Children's Water Festival in Greater Sudbury is organized by the Sudbury and District Health Unit with the support of many community organizations.

Natural Shoreline Demonstration Site

In the spring and fall of 2009, the City of Greater Sudbury's Lake Water Quality Program in partnership with Science North and the Nickel District Conservation Authority's Source Water Protection Program established a Natural Shoreline Demonstration site on Ramsey Lake. Funding for this educational project was received from the Ministry of Environment's Source Water Protection Program, the City of Greater Sudbury and Science North. Natural shoreline planting workshops and tours of the demonstration site are available to the community and shoreline homeowners to learn how they can improve the health of shorelines on their property.

Lakes Advisory Panel

The Lakes Advisory Panel is appointed by City Council to provide advice and recommendations to the municipality on matters relating to lake water quality in Greater Sudbury. The current Panel members were appointed in 2010 for a four-year term, ending with the term of Council in 2014.

Members

The Lakes Advisory Panel is made up of three City Councillors, six community volunteers, six technical experts and two City staff.

Community Volunteers

Dan Bazinet, Chair
Lin Gibson, Vice- Chair
John Bassett
Robert Hay
Christine Hurst
Debbie Lee
Lilly Noble
Wendy Wisnieswki

Technical Experts

Burgess Hawkins – Sudbury & District Health Unit
John Bailey – Vale Living With Lakes Centre
Charles Ramcharan – Laurentian University
Ed Snucins – Ontario Ministry of Environment
Natalie Webster –Conservation Sudbury

City Councillors

Jacques Barbeau
Joe Cimino
Terry Kett

Lake Stewardship Grant Assistance Program

Introduction

Established as a pilot project in 2005, Lake Stewardship Grant Program assists lake stewardship groups in carrying out projects that protect and improve the water quality and natural environment of the lakes. The Grant Program is funded by the City of Greater Sudbury through its Lake Water Quality Program. The Lakes Advisory Panel awards individual grants to stewardship groups in Greater Sudbury.

Grant applicants were required to demonstrate how their proposed project would improve or protect the water quality of the lake and/or watershed and increase support from the lake community. In total, 11 applications for funding were received with each applicant receiving $545.54. The following is a list of the successful applicants.

Funding recipients for 2013

Azilda Community Action Network
Project Name: Lake Stewardship Signs

Fairbank Lake Camper's Association
Project Name: Sewage and Gray Water Treatment Program Awareness

Friends of Bennett Lake
Project Name: Bennett Lake Trail Upgrades

Four Lakes Community Association
Project Name: Signage Project

Lake Wahnapitae Lake Stewardship
Project Name: Education

Long Lake Stewardship
Project Name: Newsletter

Minnow Lake Restoration Group
Project Name: Storm water analysis and sediment mapping

Ramsey Lake Stewardship Committee
Project Name: Raise awareness about lake water quality in Ramsey Lake watershed

St. Charles Lake Watershed Stewardship Committee
Project Name: Shoreline Planting

Simon Lake Stewardship
Project Name: Reduce Phosphorus! How you can help!

Vermilion River Stewardship
Project Name: Vermilion River Stewardship Brochure

Stewardship Groups

Currently, there are 28 lake stewardship groups throughout the Greater Sudbury area, acting as important agents for positive change in shoreline living practices.

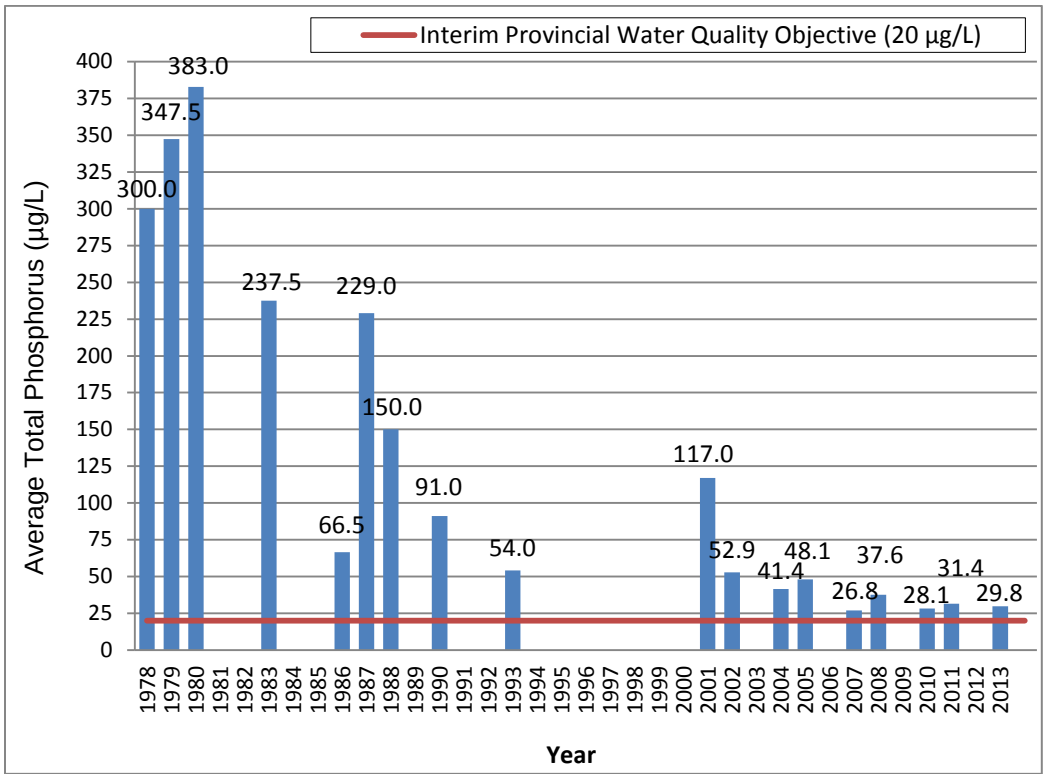
The following is a list of the active lake stewardship groups in Greater Sudbury.

Stewardship Group	Lake(s)	Website/Email
Friends of Bennett Lake	Bennett Lake	
Black Lake	Black Lake	
Broder 23	Broder 23 Lake	
Crooked Lake	Crooked Lake	
Fairbank Lake Cottagers Association	Fairbank Lake	
Friends of McFarlane Lake	McFarlane Lake	mcfarlanefriend@eastlink.ca
Grassy Lake	Grassy Lake	
Four Lakes Association	Joe, Hanmer, Frenchman and Dixon Lakes	
Ironside Lake	Ironside Lake	
Kukagami Lake Campers Ass.	Kukagami Lake	
Kusk (Rat) Lake	Kusk (Rat) Lake	
Lake Nepahwin Stewardship Group	Nepahwin Lake	
Lake Panache Campers Association	Panache Lake	www.lakepanachecampers.com
Lohi Lake	Lohi Lake	
Long Lake Stewardship	Long Lake	
McCrea Lake Stewardship Group	McCrea Lake	
Minnow Lake Restoration Group	Minnow Lake	www.minnowlake.ca, info@minnowlake.ca
Richard Lake Stewardship	Richard Lake	www.richardlakestewardship.com
St. Charles Lake	St. Charles Lake	www.stcharles.ca
Silver Lake	Silver Lake	
Simon Lake	Simon Lake	www.simonlakestewardship.ca
Vermilion Lake	Vermilion Lake	
Windy Lake Stewardship	Windy Lake	
Onwatin Lake Stewardship	Onwatin Lake	www.onwatinlakestewardship.com
Ramsey Lake Stewardship Committee	Ramsey Lake	ramseylake@live.com www.sites.google.com/site/ ramseylakestewardshipcommittee/home
Vermillion River Stewardship	Vermillion River	www.vermilionriverstewards.ca
Whitewater Lake	Whitewater Lake	www.azilda.ca
Lake Wanapitei Lake Stewardship	Wanapitei Lake	

Spring Phosphorus Graphs for Lakes Sampled in 2013

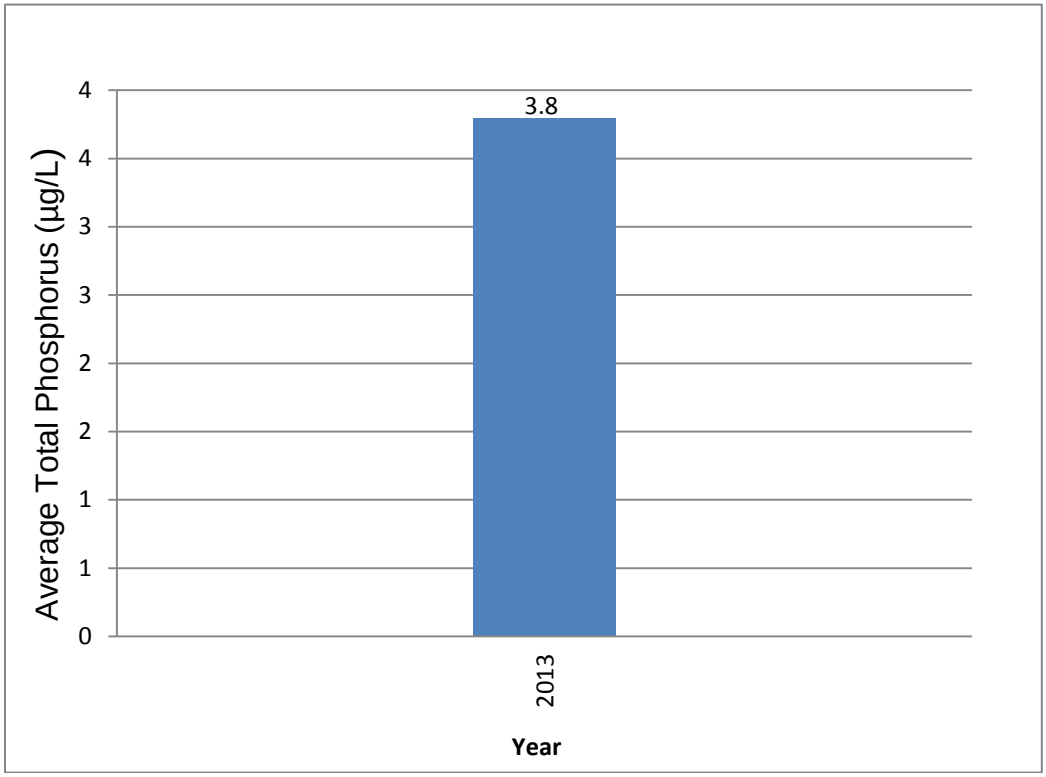
Bethel Lake

The bar graph below indicates the spring phosphorus results for Bethel Lake from 1978 to 2013.



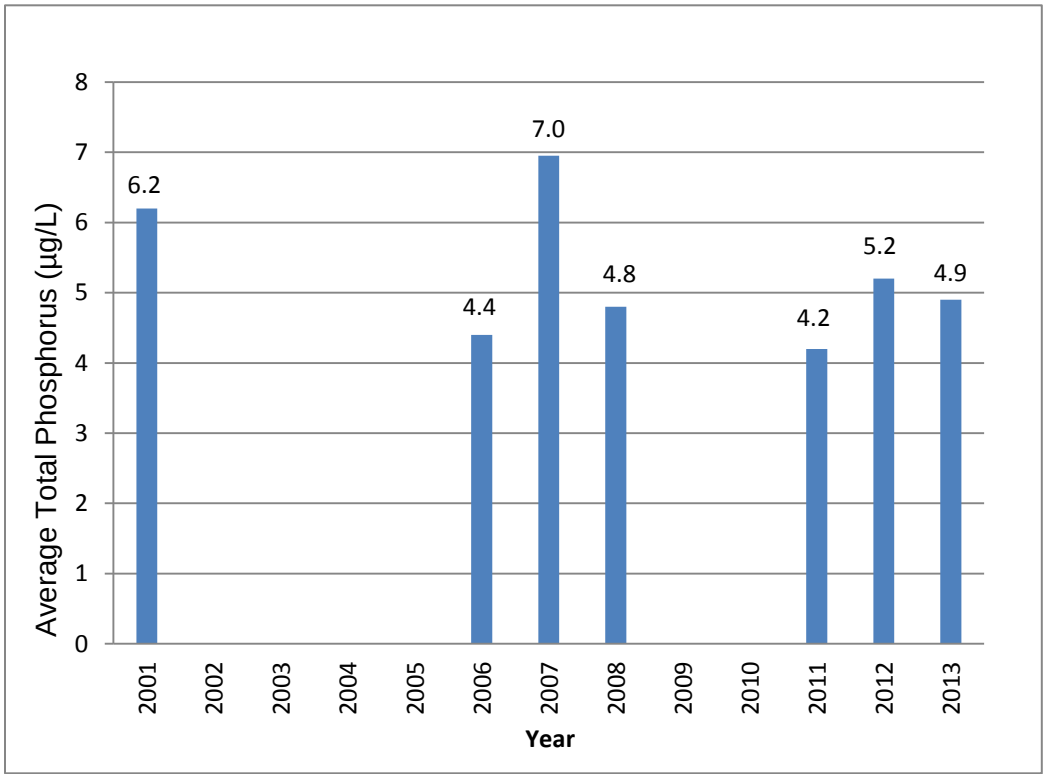
Broder Lake

The bar graph below indicates the spring phosphorus results for Broder Lake for 2013.



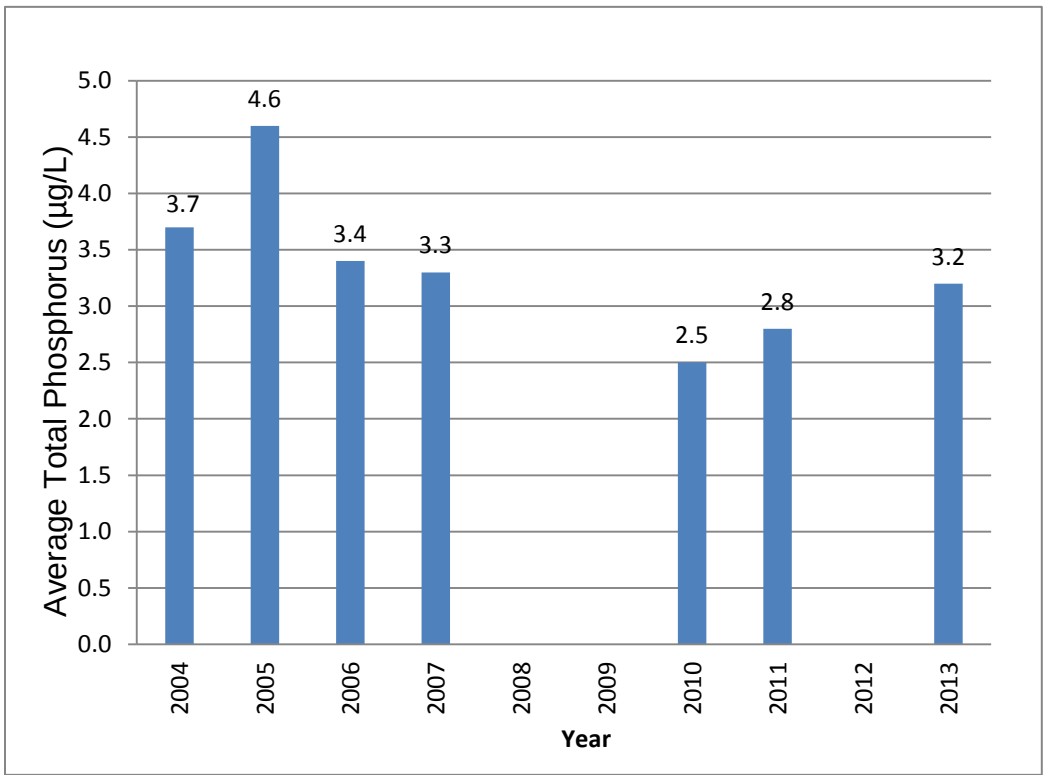
Brodill Lake

The bar graph below indicates the spring phosphorus results for Brodill Lake from 2001 to 2013.



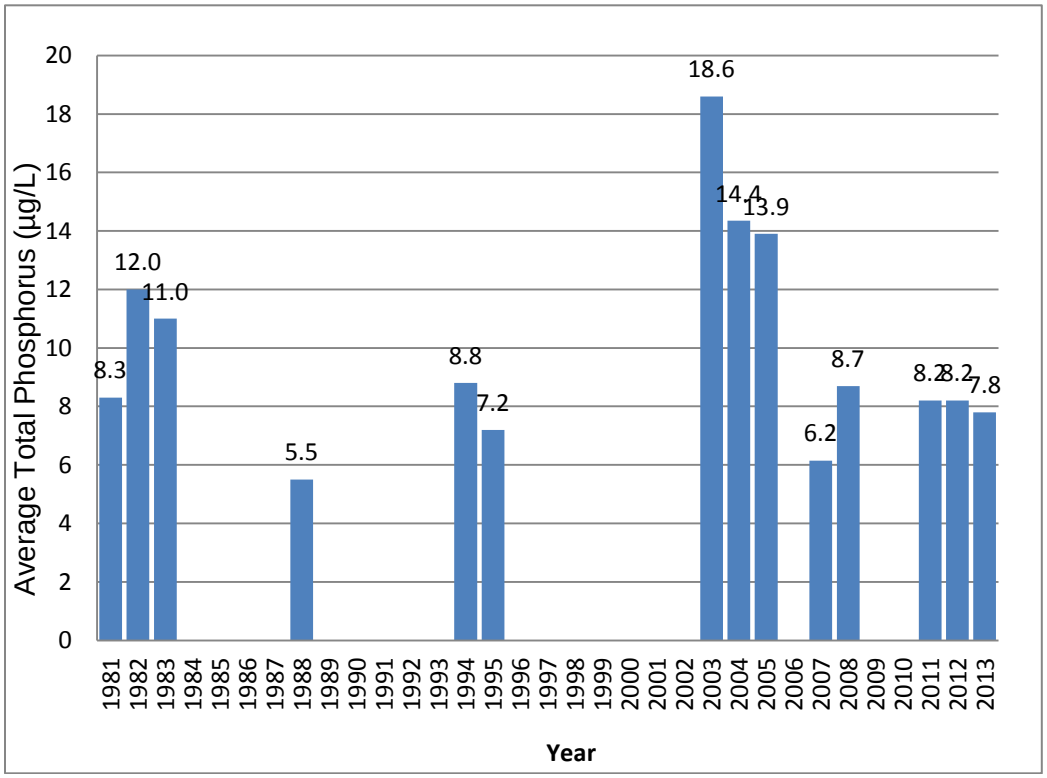
Clearwater Lake

The bar graph below indicates the spring phosphorus results for Clearwater Lake from 2004 to 2013.



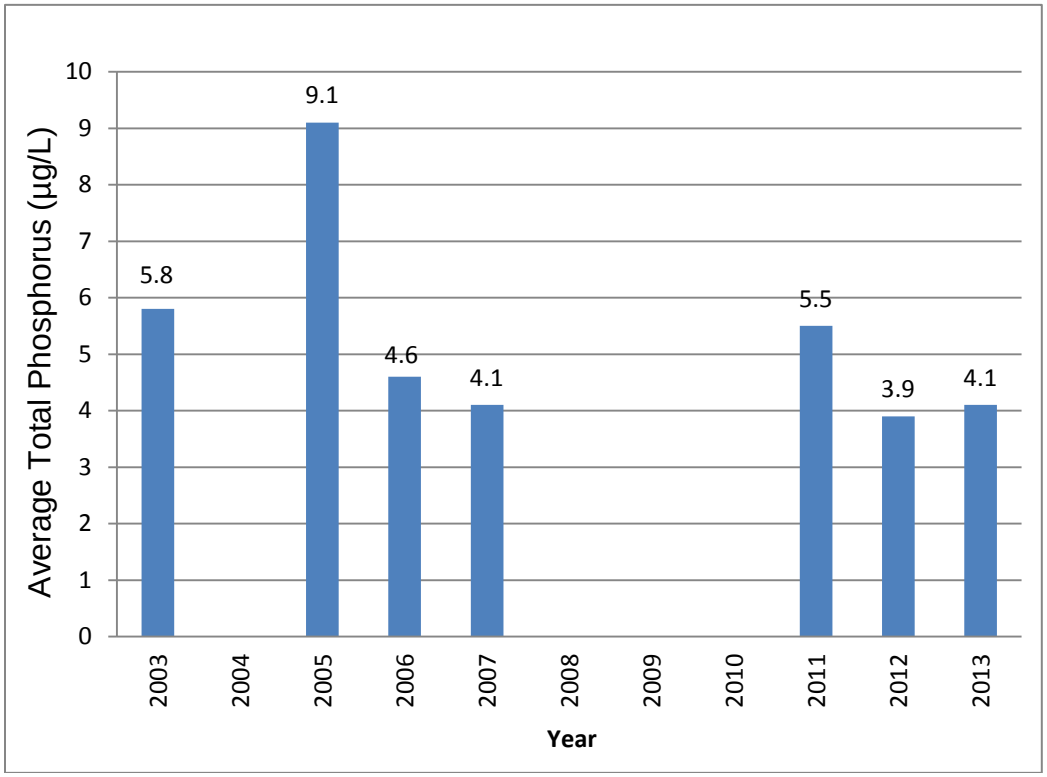
Crooked Lake

The bar graph below indicates the spring phosphorus results for Crooked Lake from 1981 to 2013.



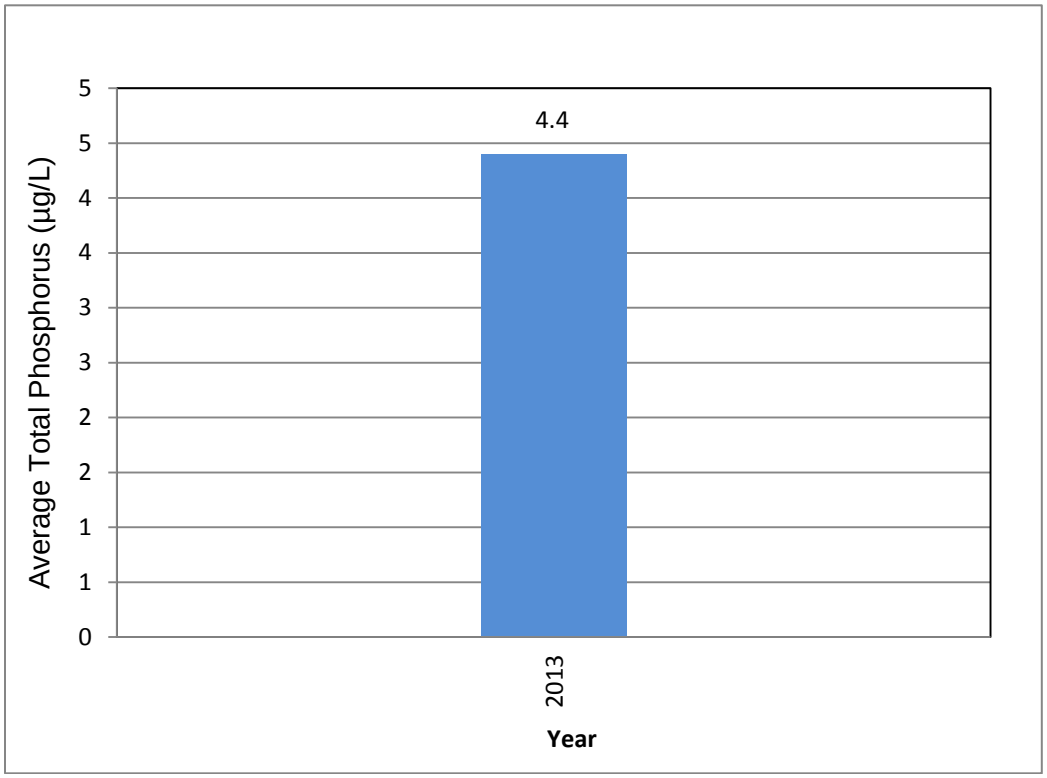
Crowley Lake

The bar graph below indicates the spring phosphorus results for Crowley Lake from 2003 to 2013.



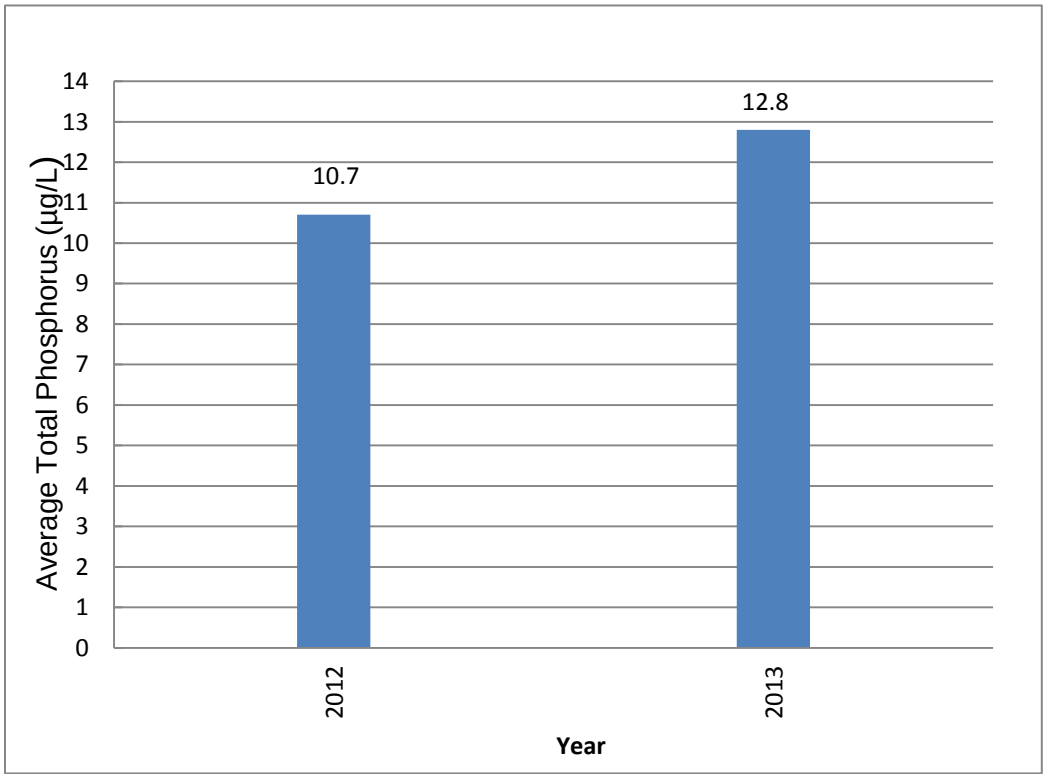
Dixon Lake

The bar graph below indicates the spring phosphorus results for Dixon Lake for 2013.



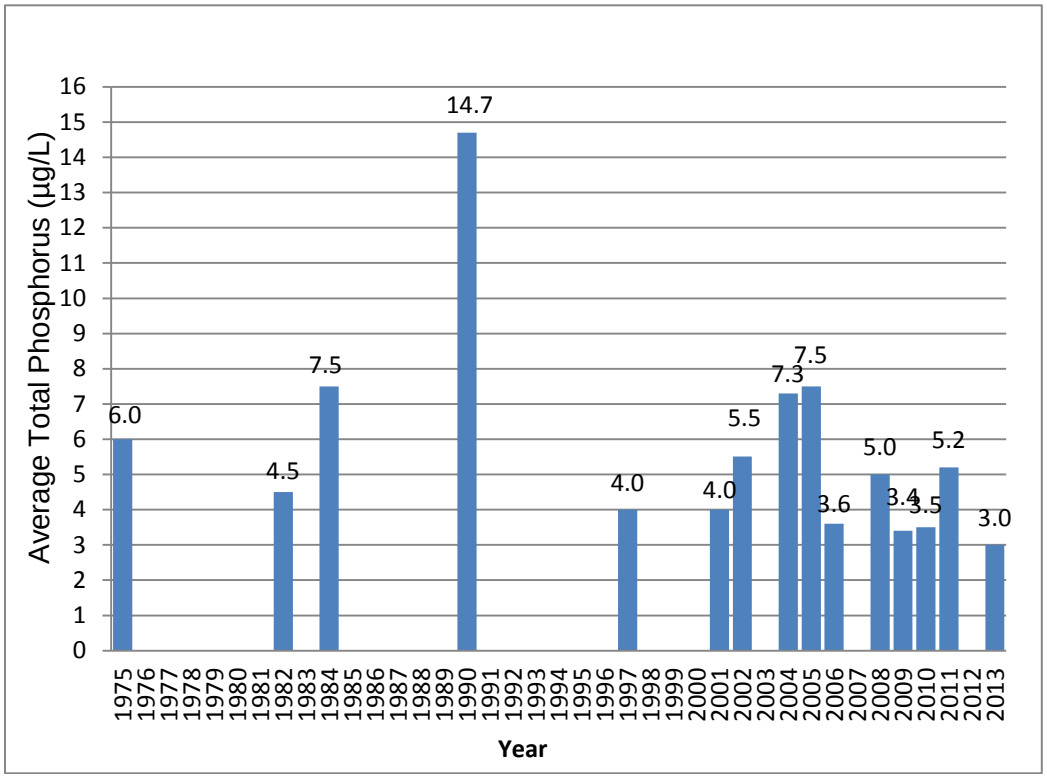
Ella Lake

The bar graph below indicates the spring phosphorus results for Ella Lake in Lorne Township for the years 2012 and 2013.



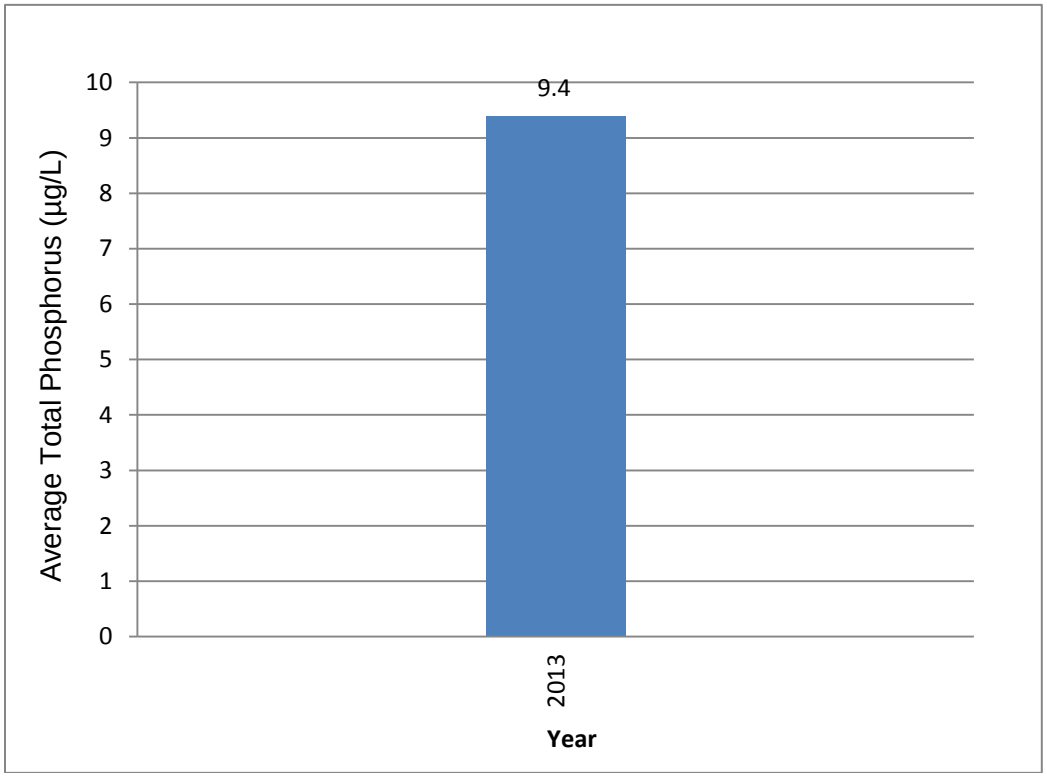
Frenchman Lake

The bar graph below indicates the spring phosphorus results for Frenchman Lake from 1975 to 2013.



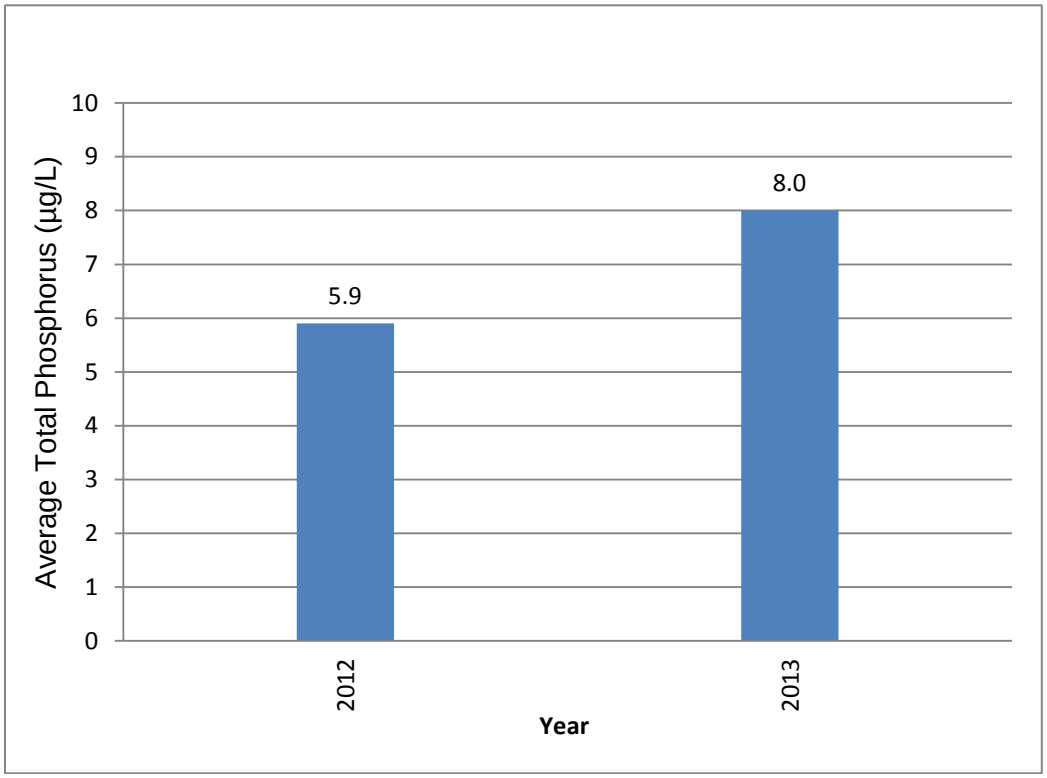
Grant Lake

The bar graph below indicates the spring phosphorus results for Grant Lake for the year 2013.



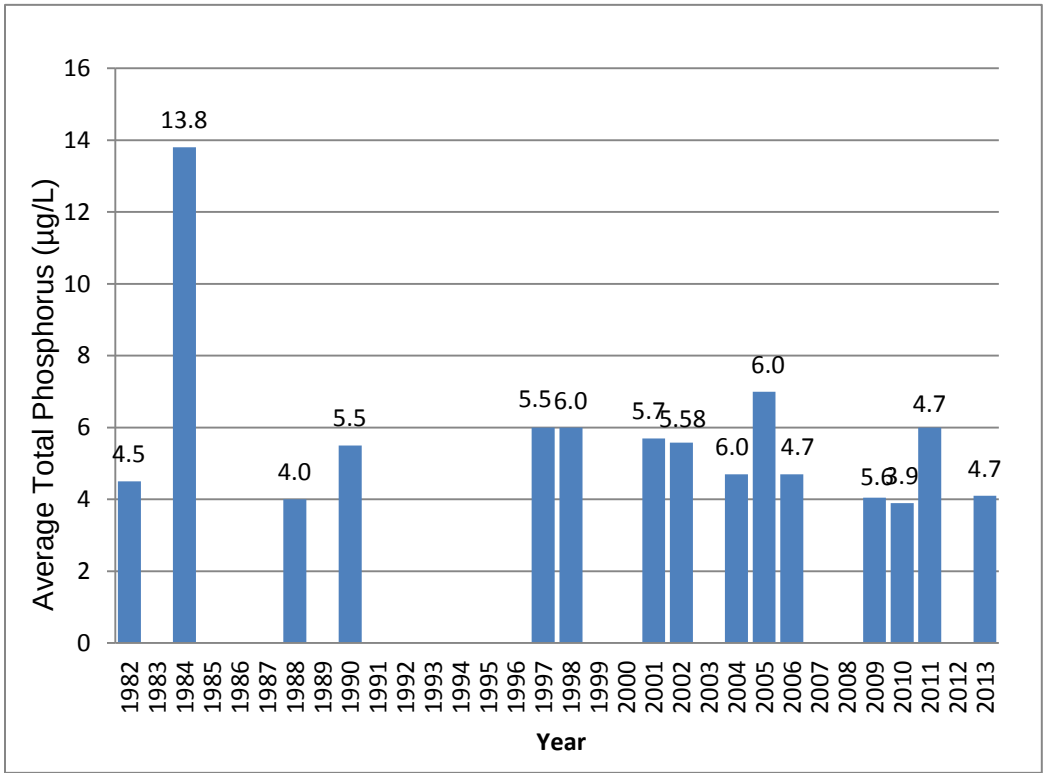
Greens Lake

The bar graph below indicates the spring phosphorus results for Greens Lake for the years 2012 and 2013.



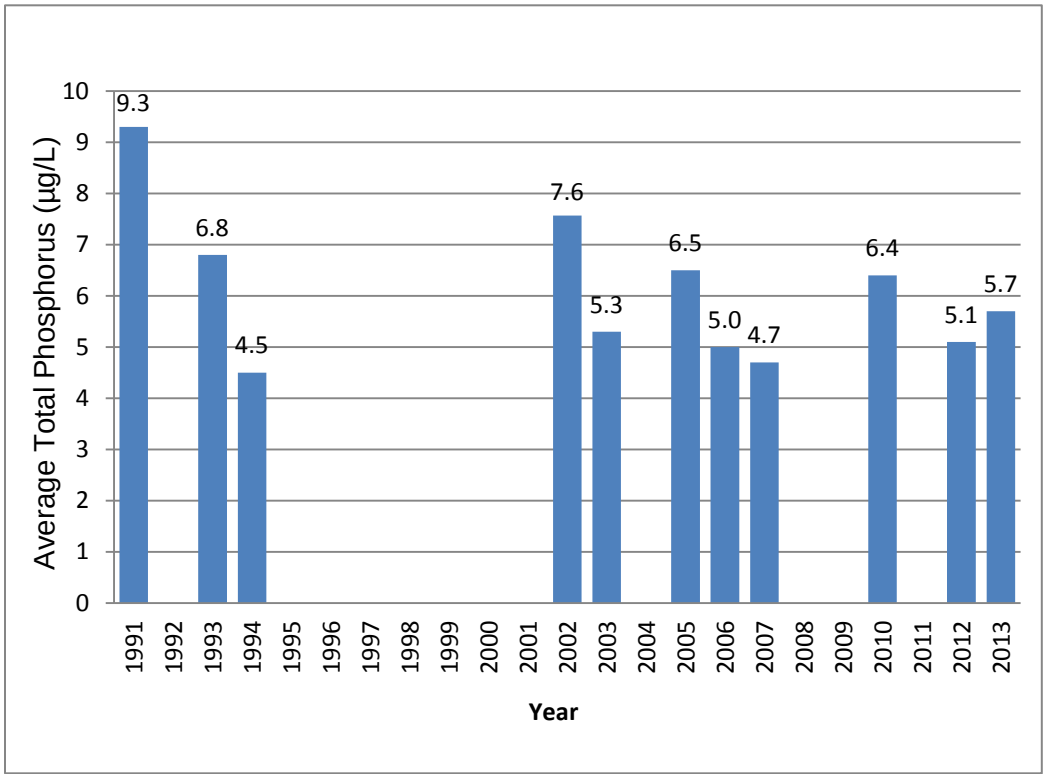
Hanmer Lake

The bar graph below indicates the spring phosphorus results for Hanmer Lake from 1982 to 2013.



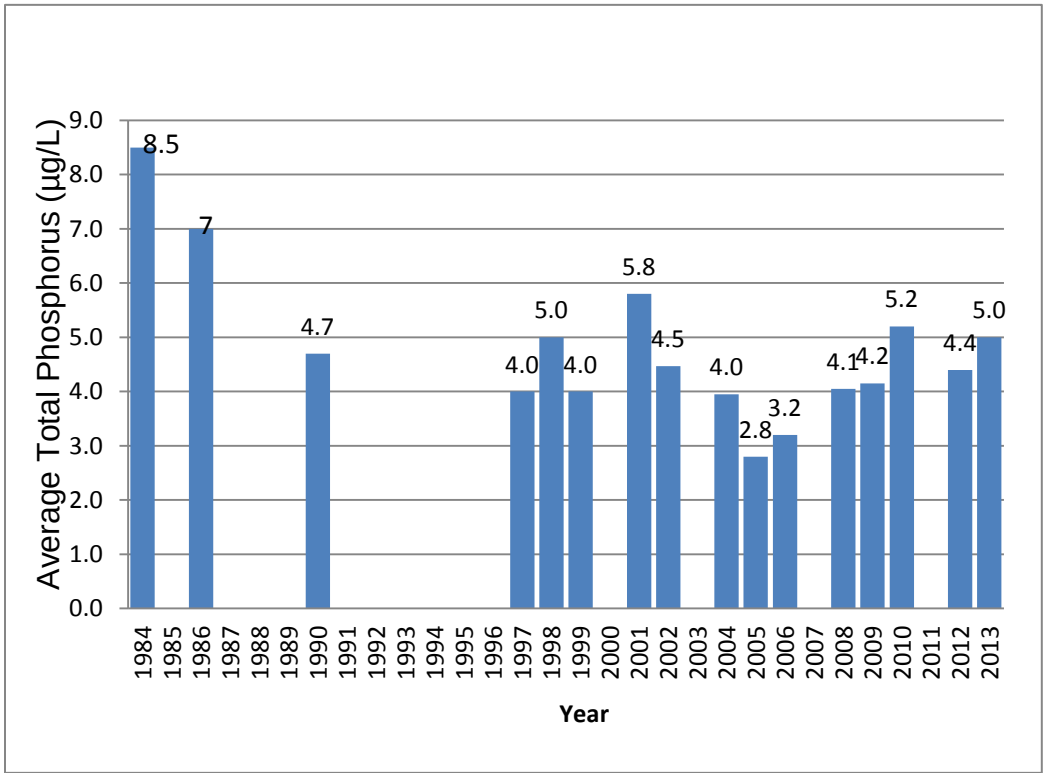
Ironside Lake

The bar graph below indicates the spring phosphorus results for Ironside Lake from1991 to 2013.



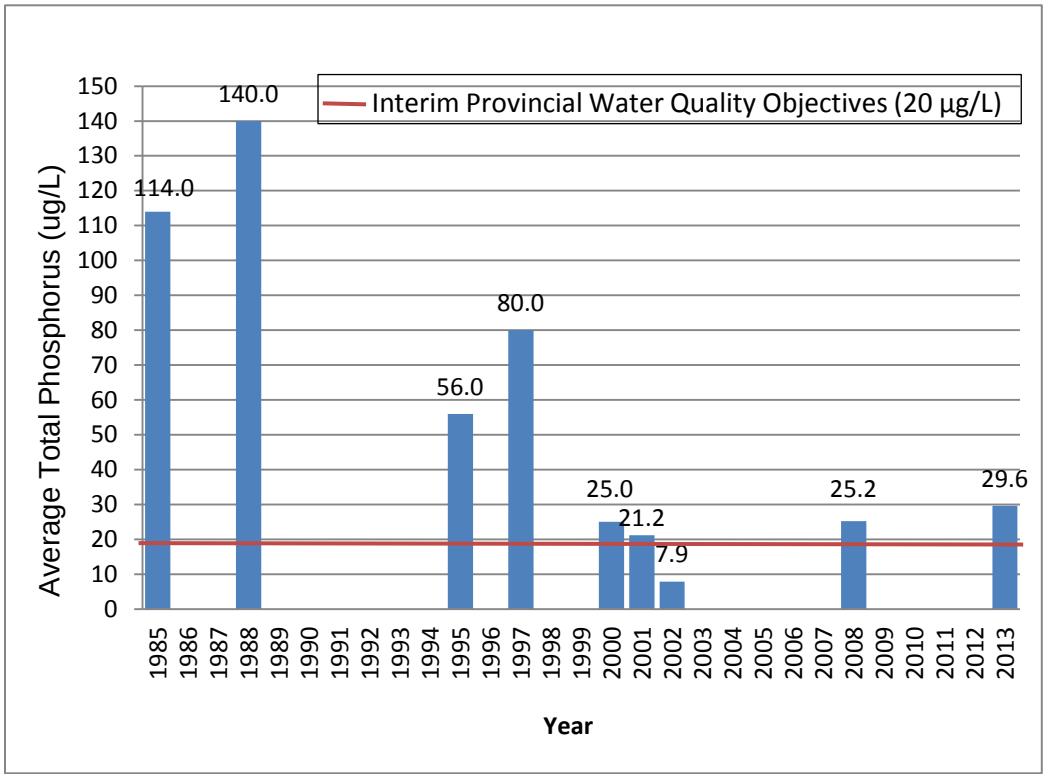
Joe Lake

The bar graph below indicates the spring phosphorus results for Joe Lake from 1984 to 2013.



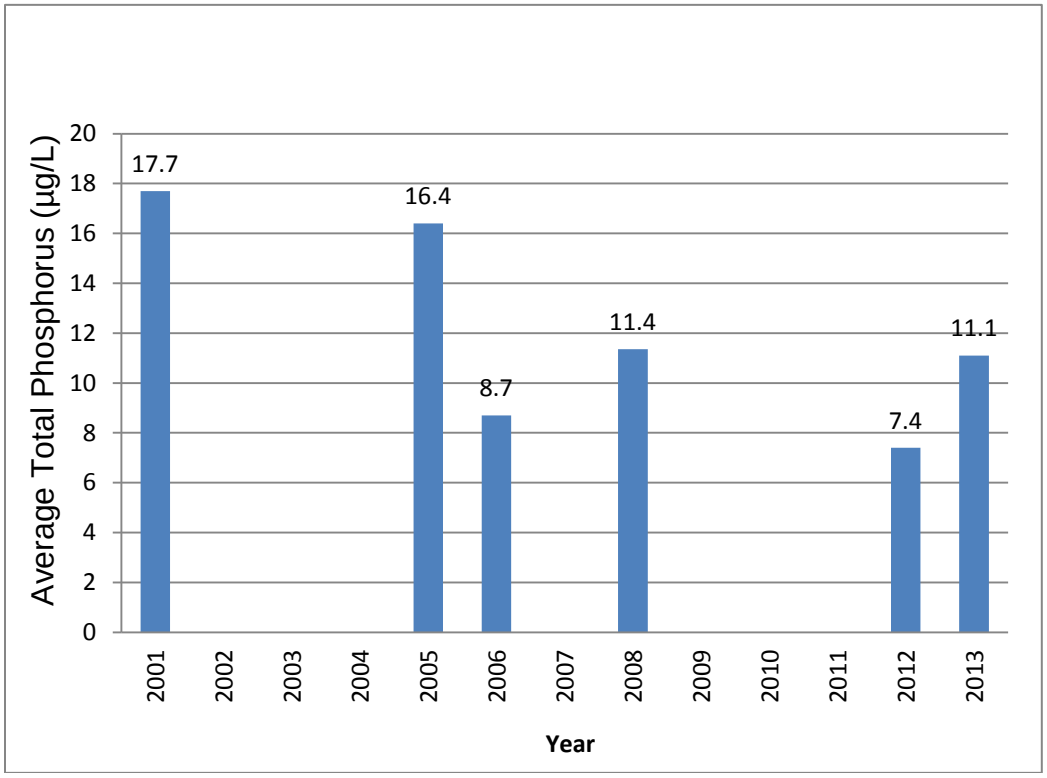
Kelly Lake

The bar graph below indicates the spring phosphorus results for Kelly Lake for 1985 to 2013.



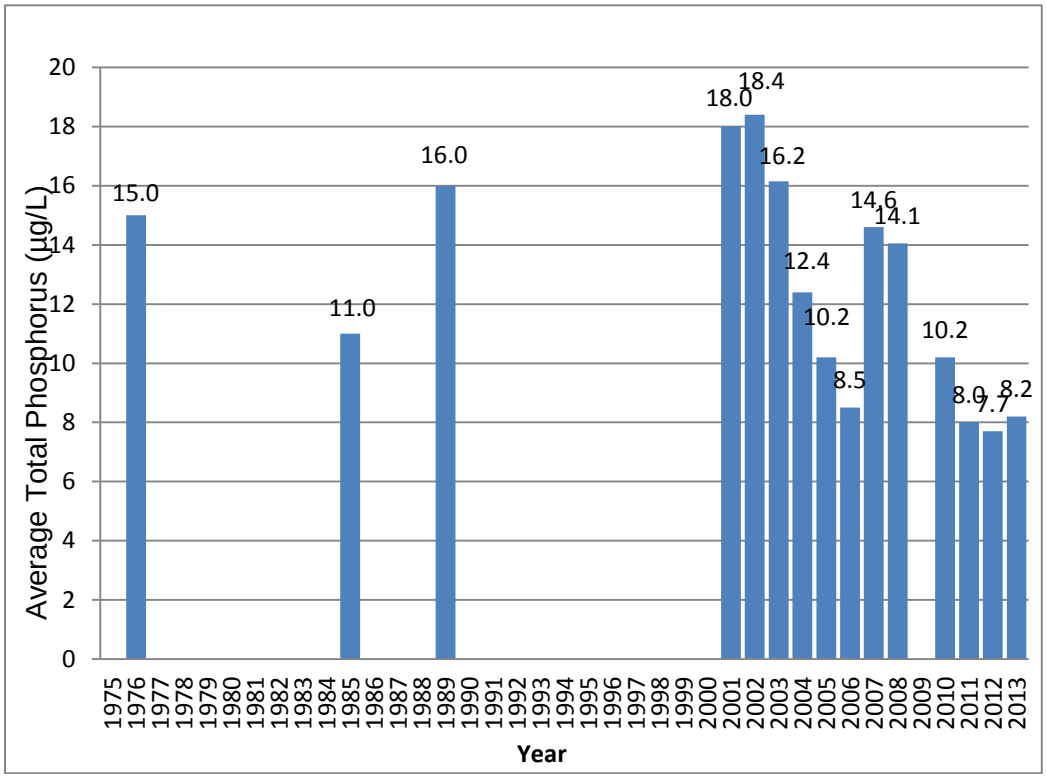
Kasten Lake

The bar graph below indicates the spring phosphorus results for Kasten Lake from 2001 to 2013.



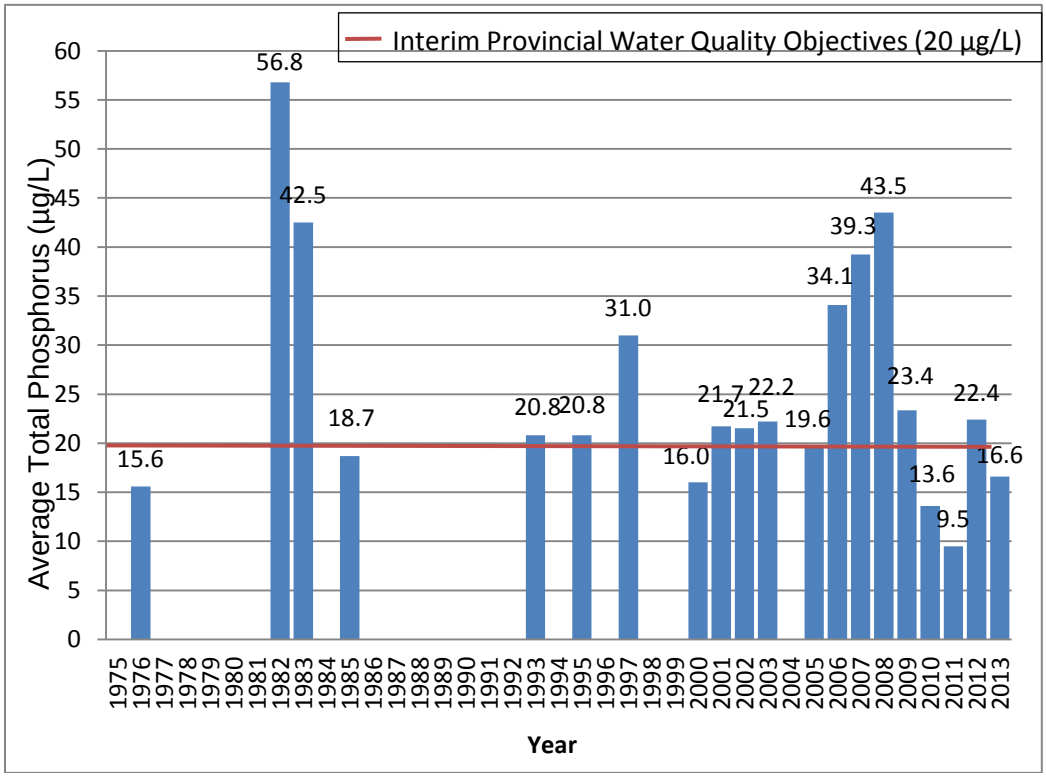
Little Lake Panache

The bar graph below indicates the spring phosphorus results for Little Lake Panache from 1976 to 2013.



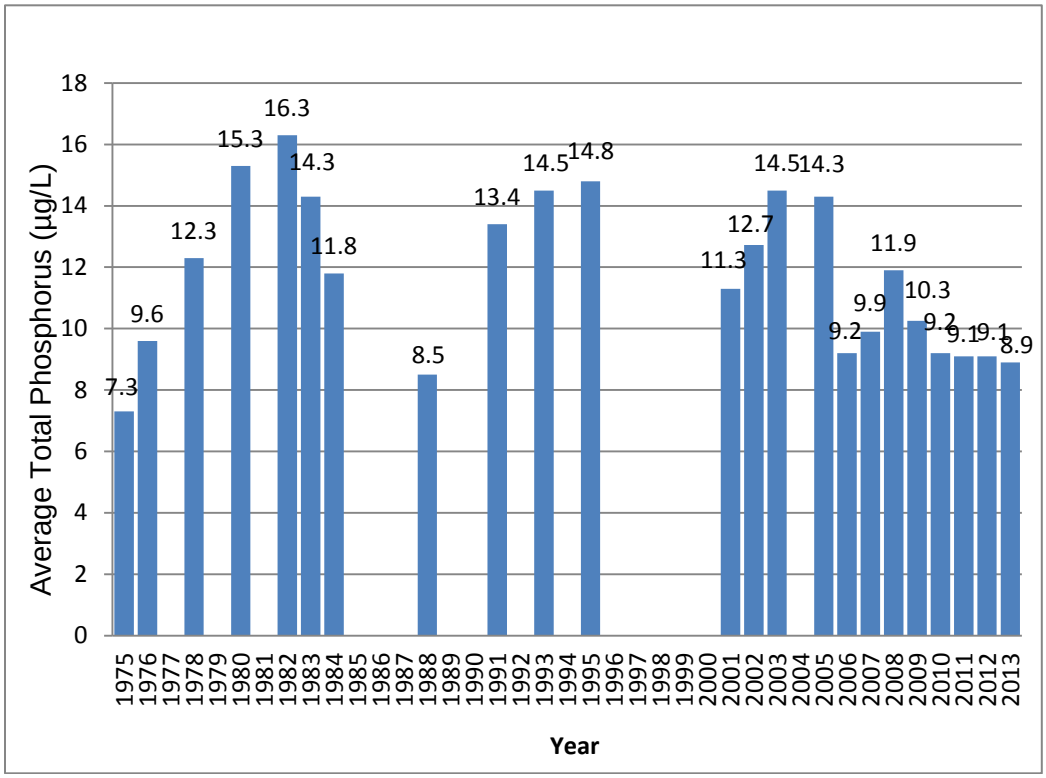
McCharles Lake

The bar graph below indicates the spring phosphorus results for McCharles Lake from 1976 to 2013.



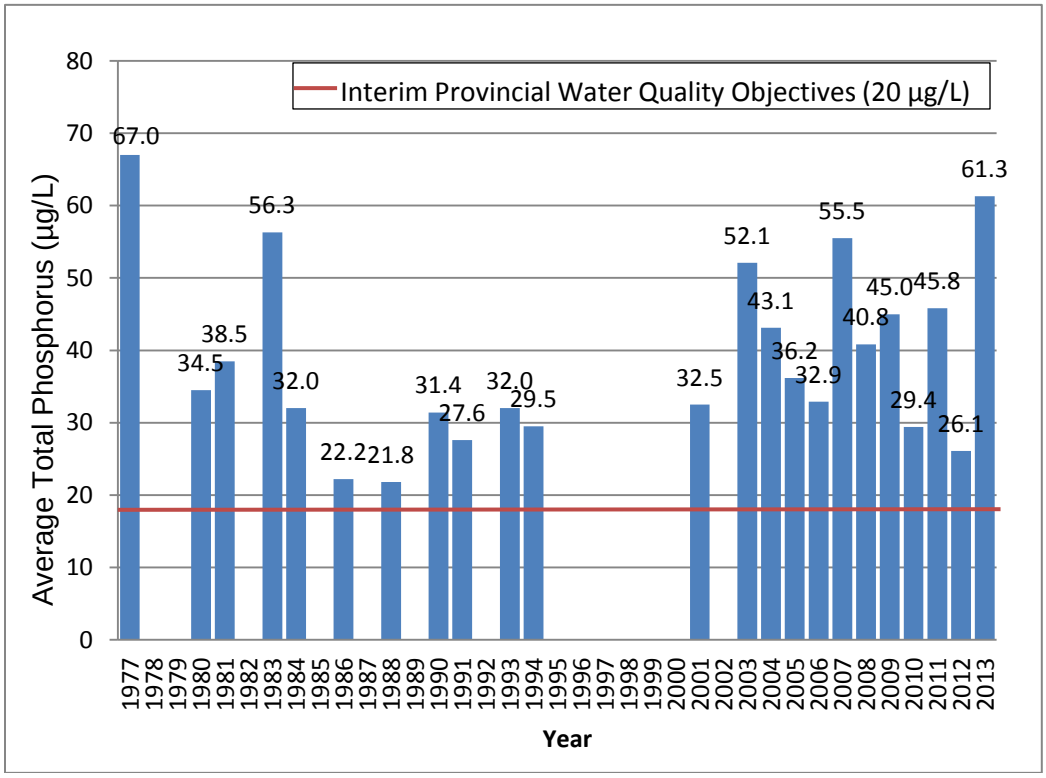
McFarlane Lake

The bar graph below indicates the spring phosphorus results for McFarlane Lake from 1975 to 2013.



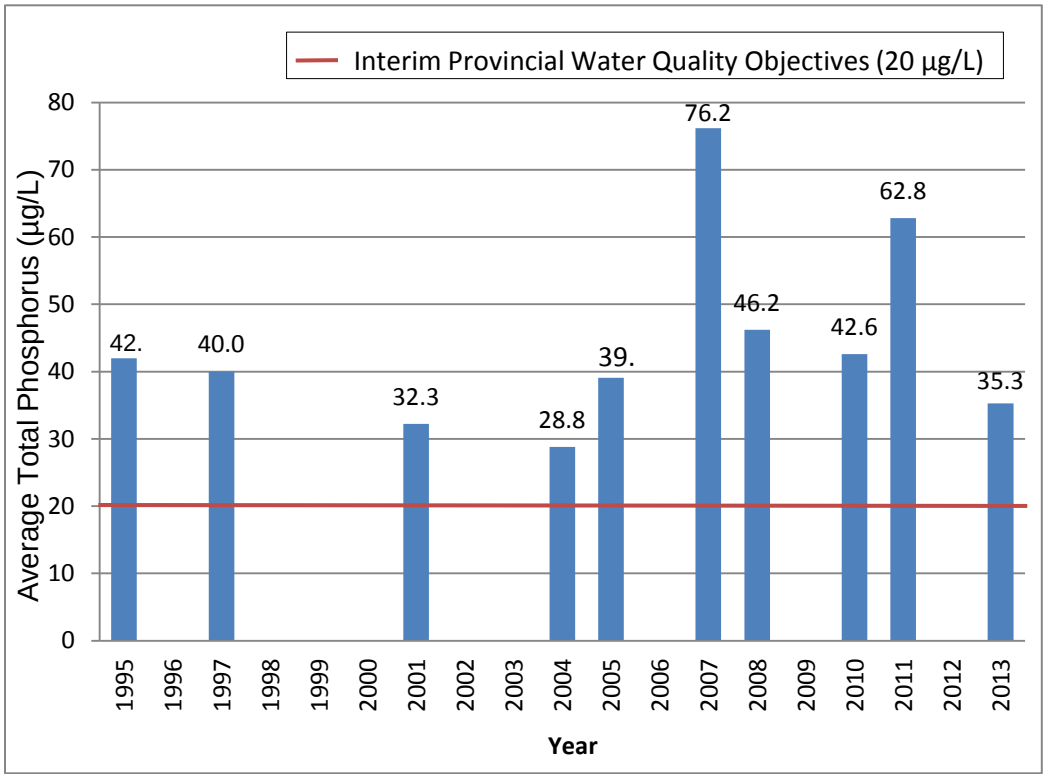
Minnow Lake

The bar graph below indicates the spring phosphorus results for Minnow Lake from 1977 to 2013.



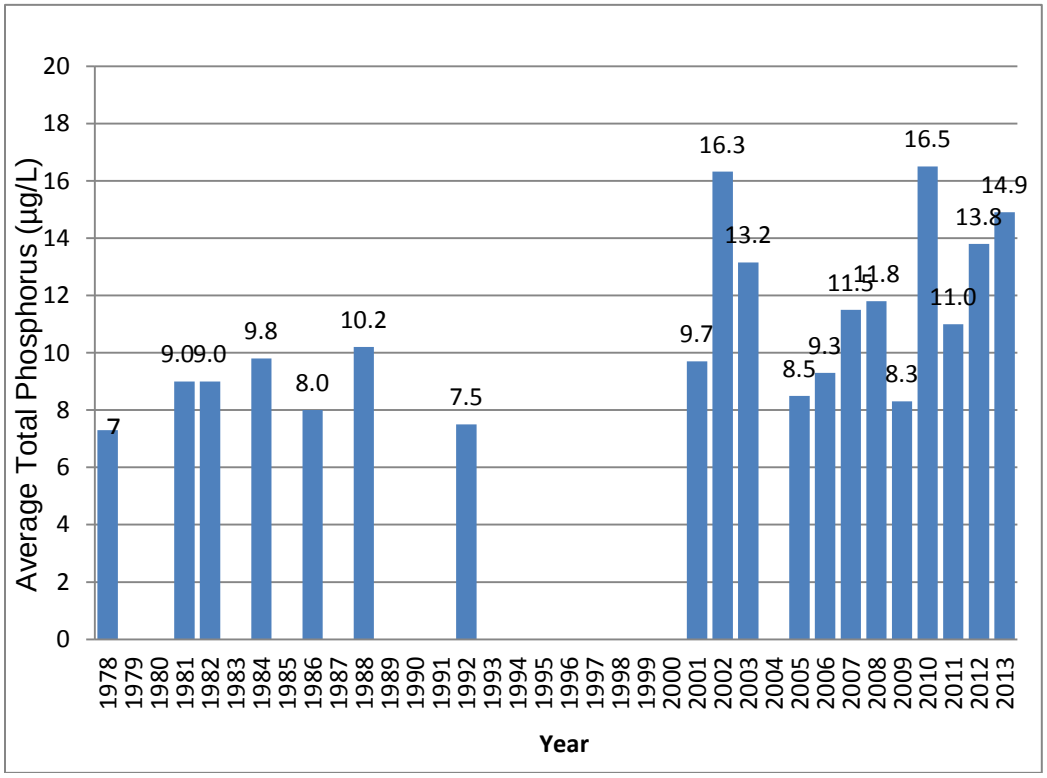
Mud Lake

The bar graph below indicates the spring phosphorus results for Mud Lake from 1995 to 2013.



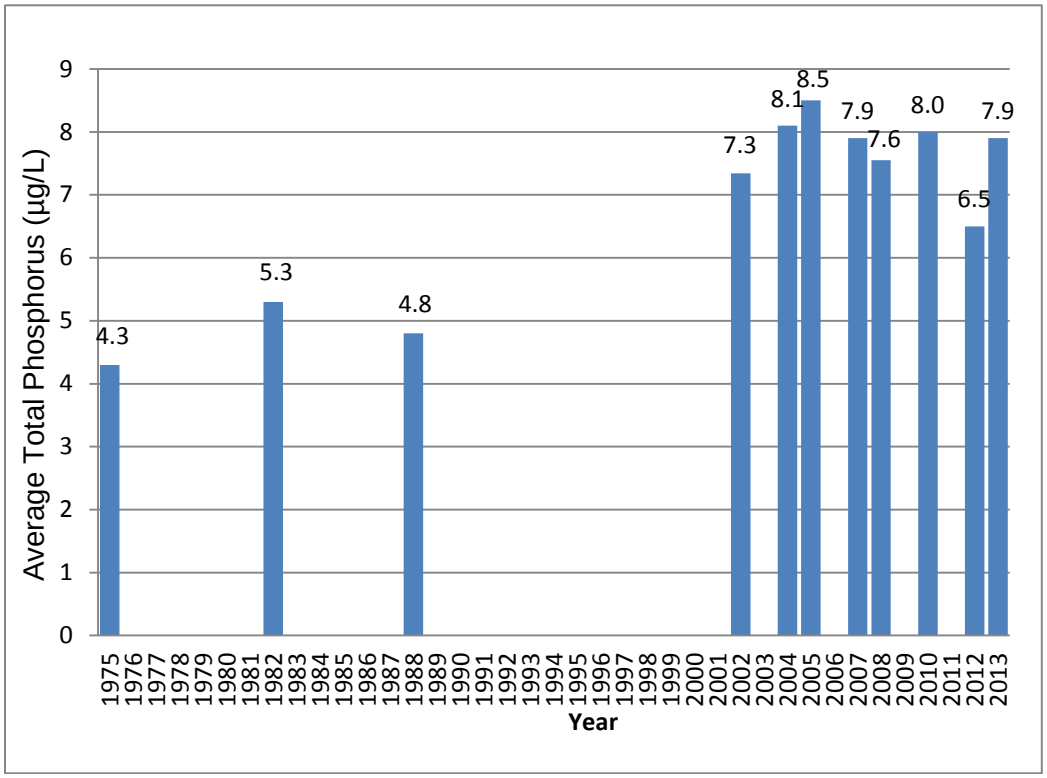
Nephawin Lake

The bar graph below indicates the spring phosphorus results for Nephawin Lake from 1978 to 2013.



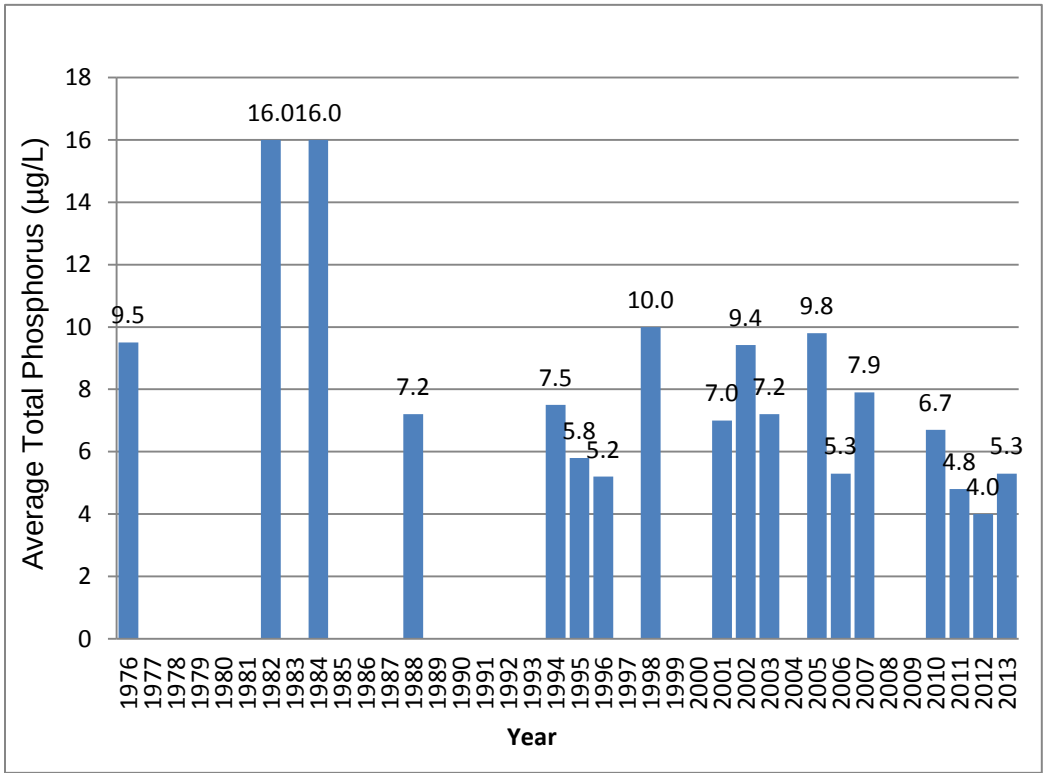
Onwatin Lake

The bar graph below indicates the spring phosphorus results for Onwatin Lake from 1975 to 2013.



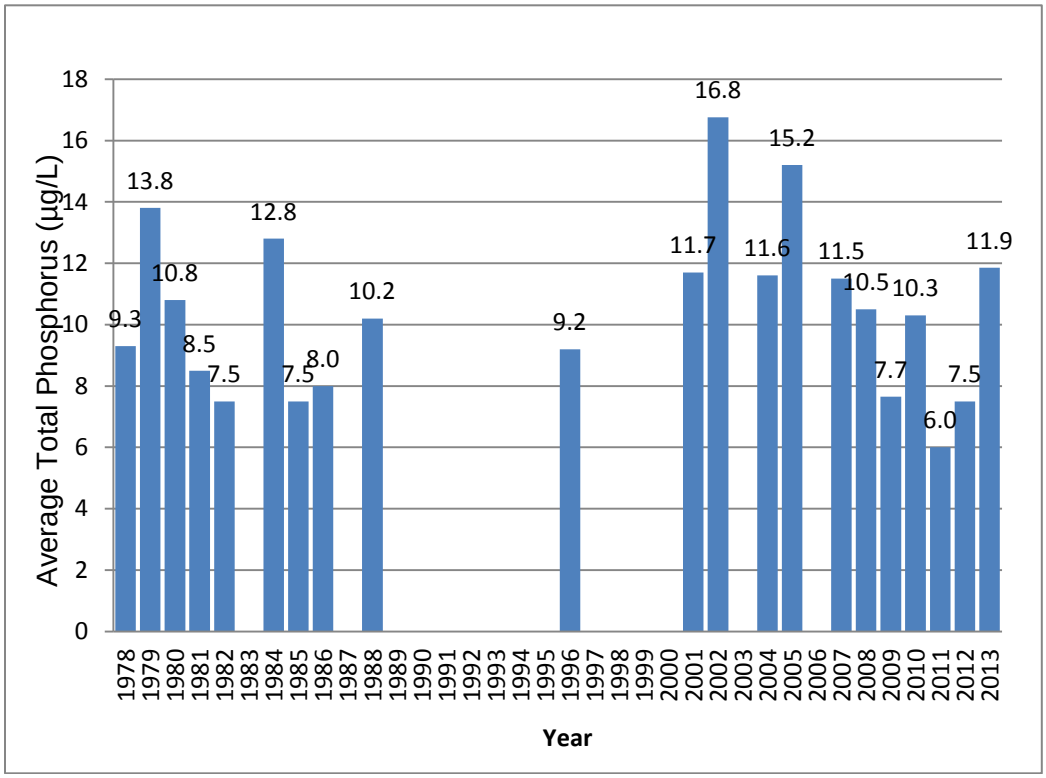
Raft Lake

The bar graph below indicates the spring phosphorus results for Raft Lake from 1976 to 2013.



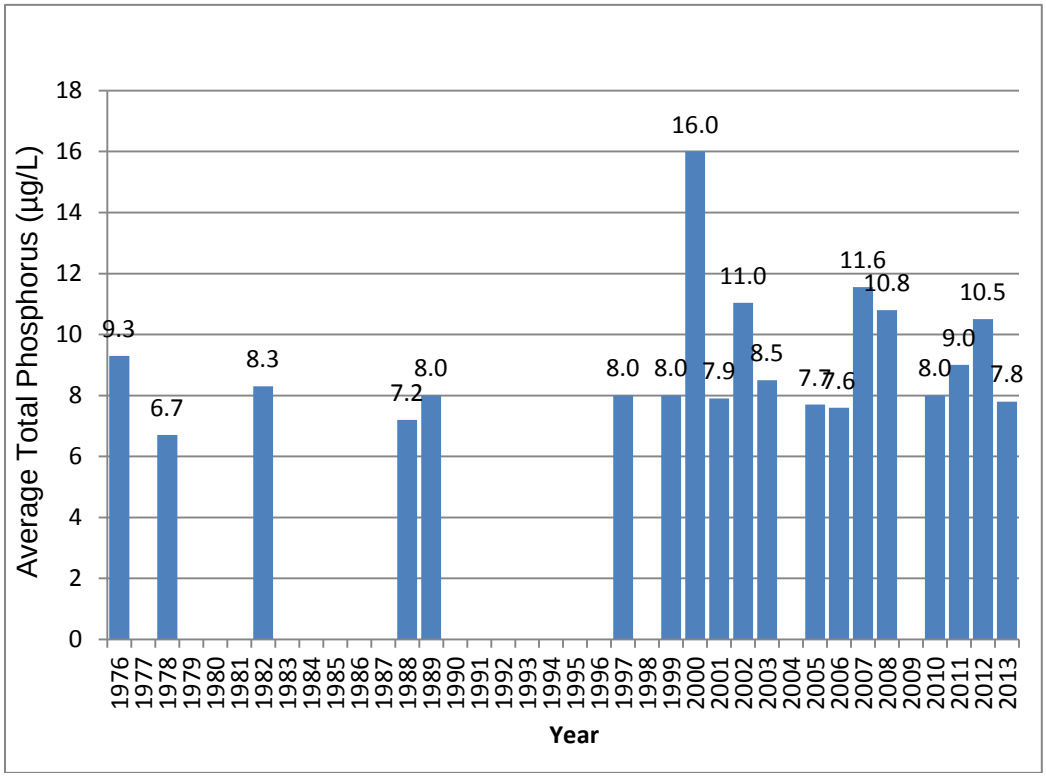
Ramsey Lake

The bar graph below indicates the spring phosphorus results for Ramsey Lake from 1978 to 2013.



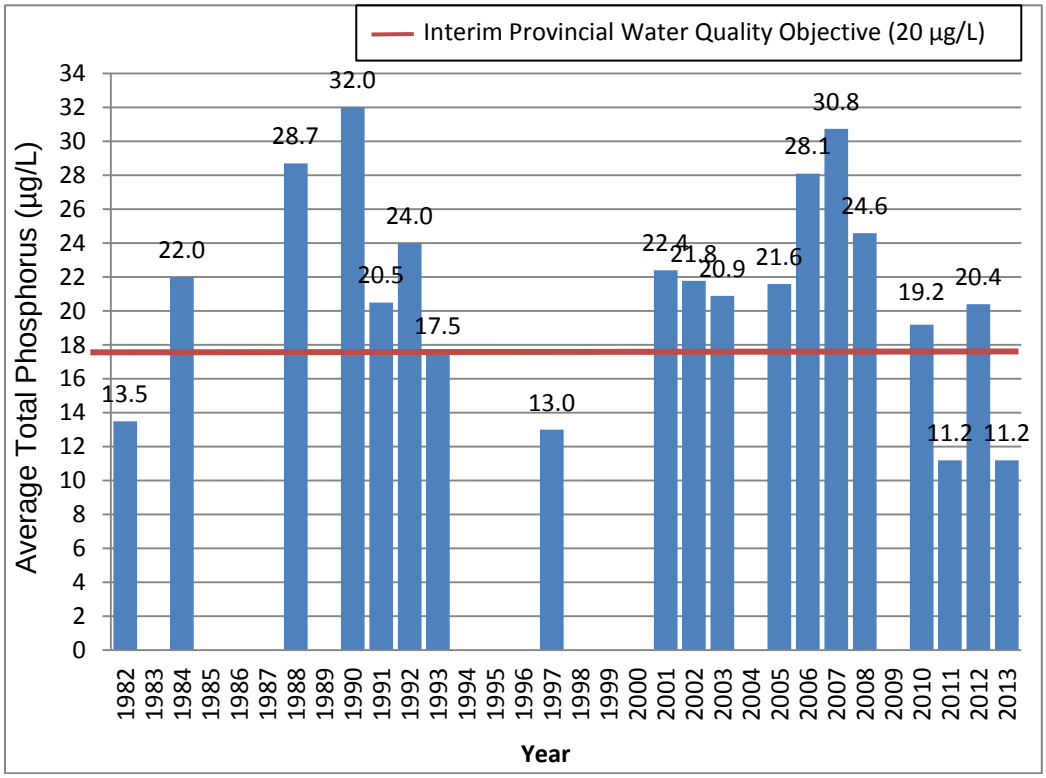
Richard Lake

The bar graph below indicates the spring phosphorus results for Richard Lake from 1976 to 2013.



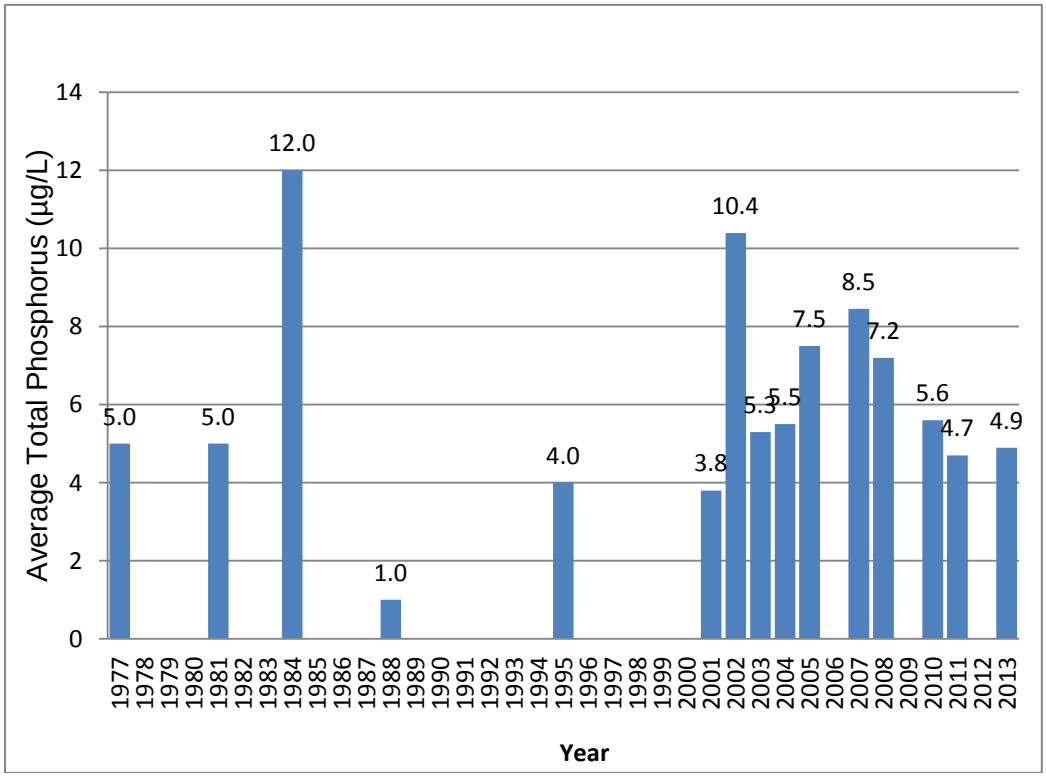
Robinson Lake

The bar graph below indicates the spring phosphorus results for Robinson Lake from 1982 to 2013.



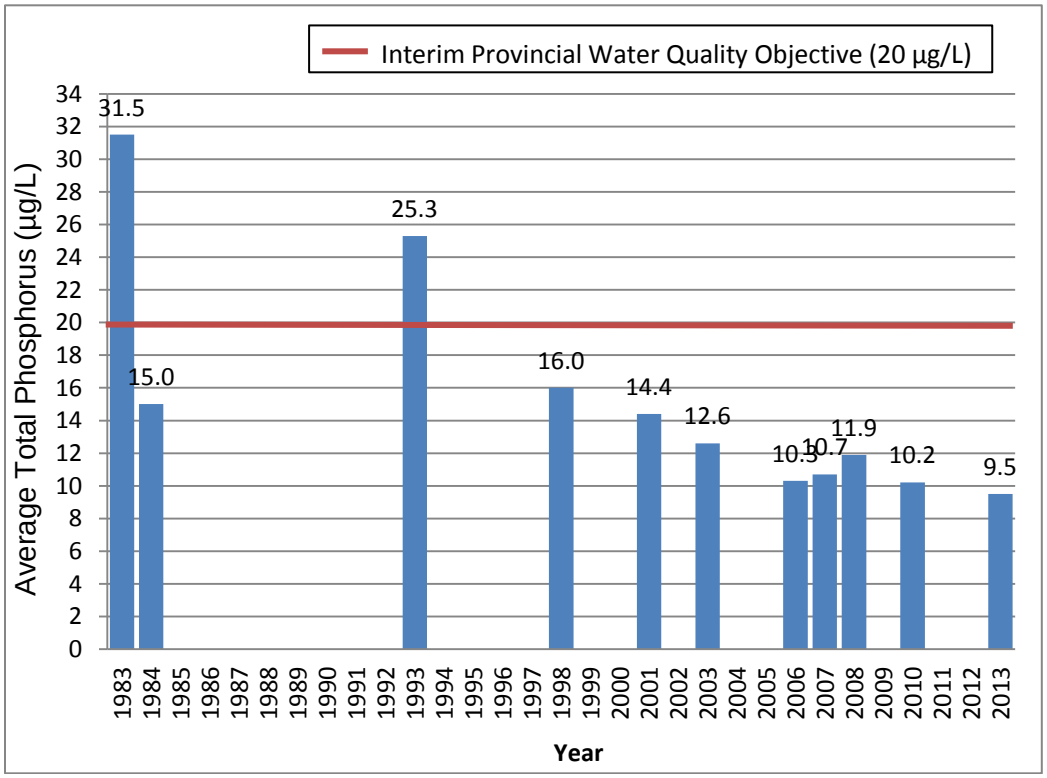
Silver Lake

The bar graph below indicates the spring phosphorus results for Silver Lake from 1977 to 2013.



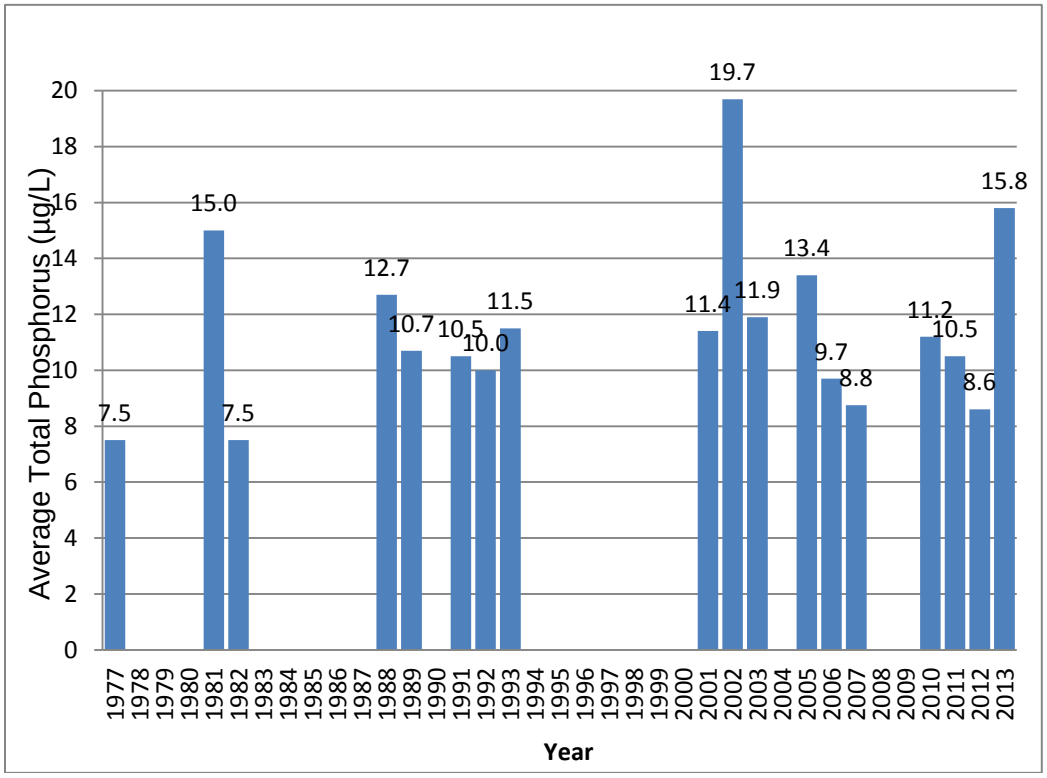
Skill Lake

The bar graph below indicates the spring phosphorus results for Skill Lake from 1983 to 2013.



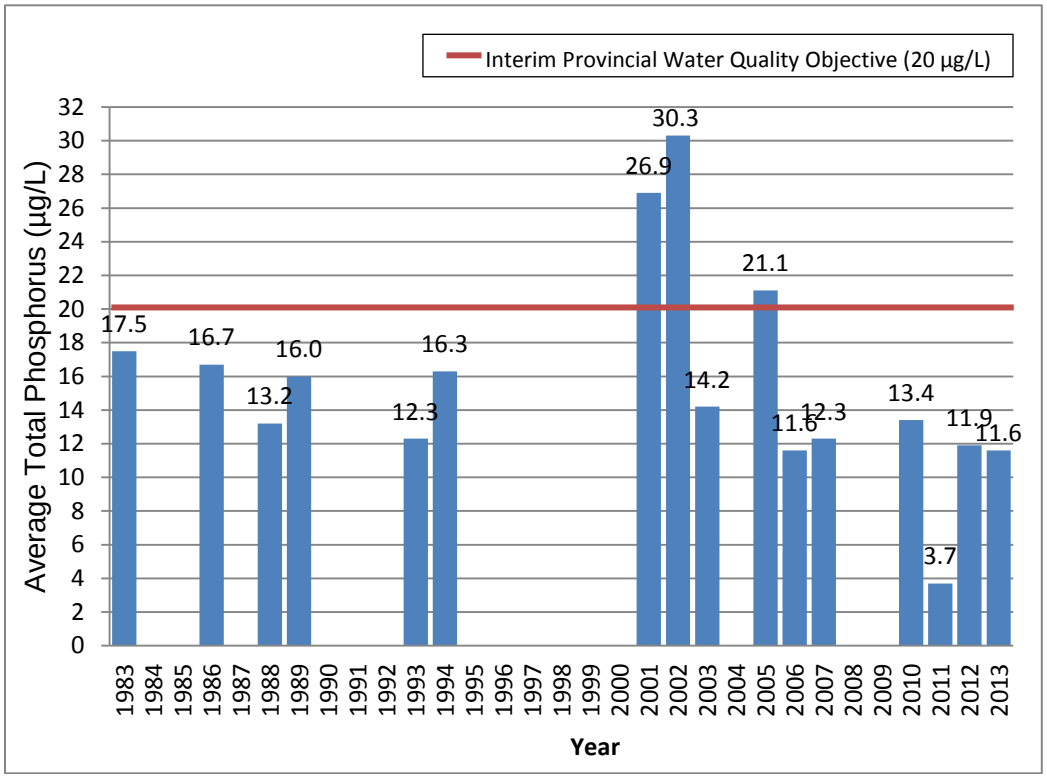
St. Charles Lake

The bar graph below indicates the spring phosphorus results for St. Charles Lake from 1977 to 2013.



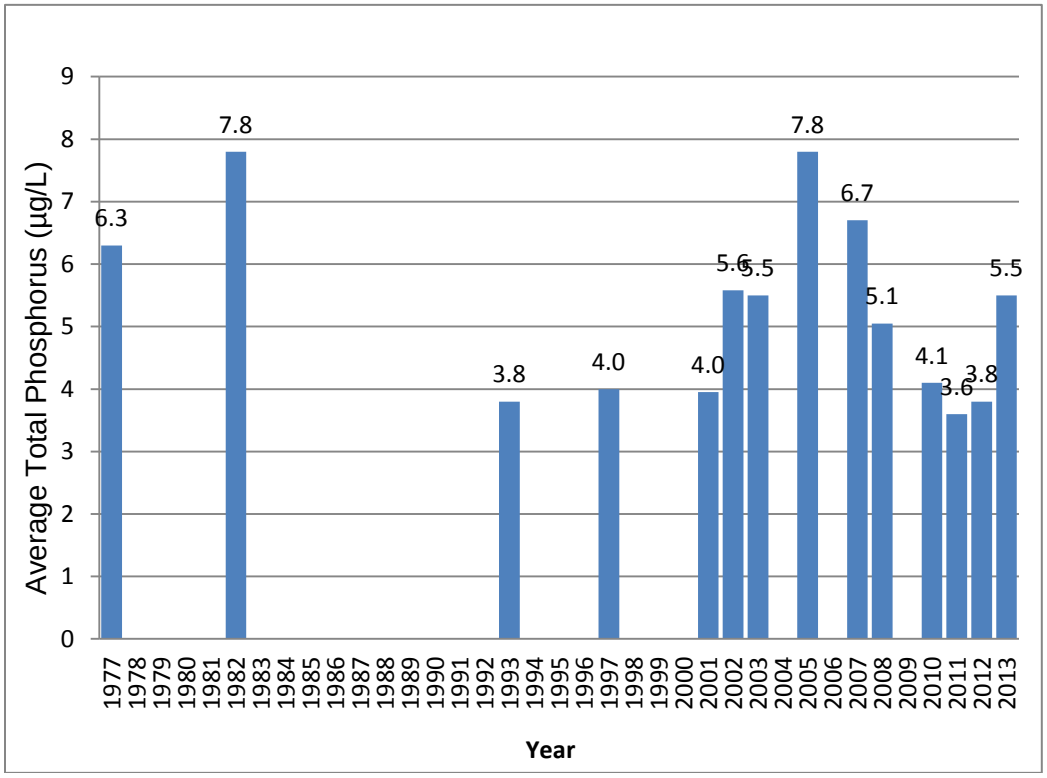
T/Dill Lake

The bar graph below indicates the spring phosphorus results for T/Dill Lake from 1983 to 2013.



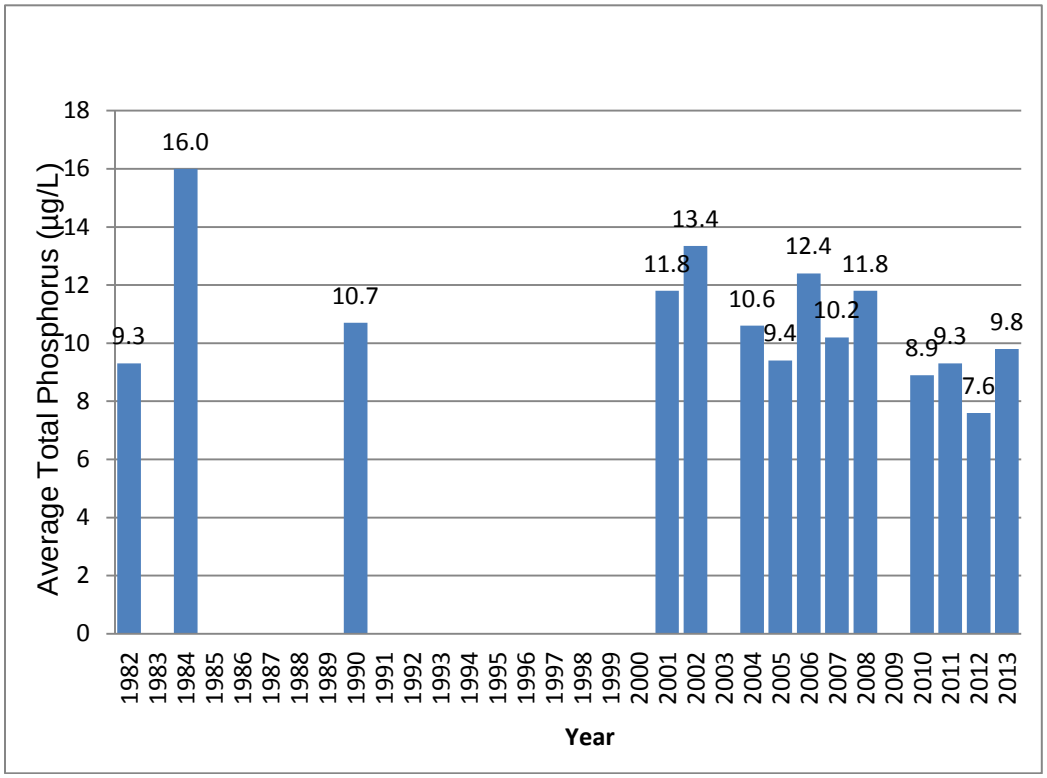
Tilton Lake

The bar graph below indicates the spring phosphorus results for Tilton Lake from 1977 to 2013.



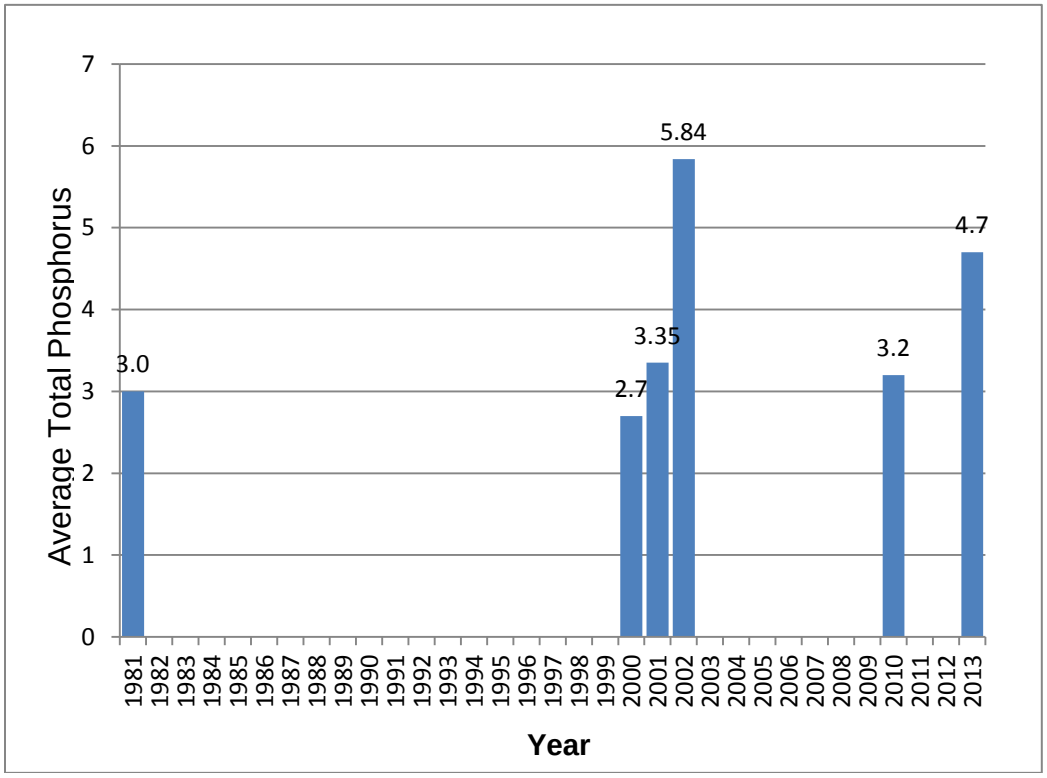
Vermilion Lake

The bar graph below indicates the spring phosphorus results for Vermilion Lake from 1982 to 2013.



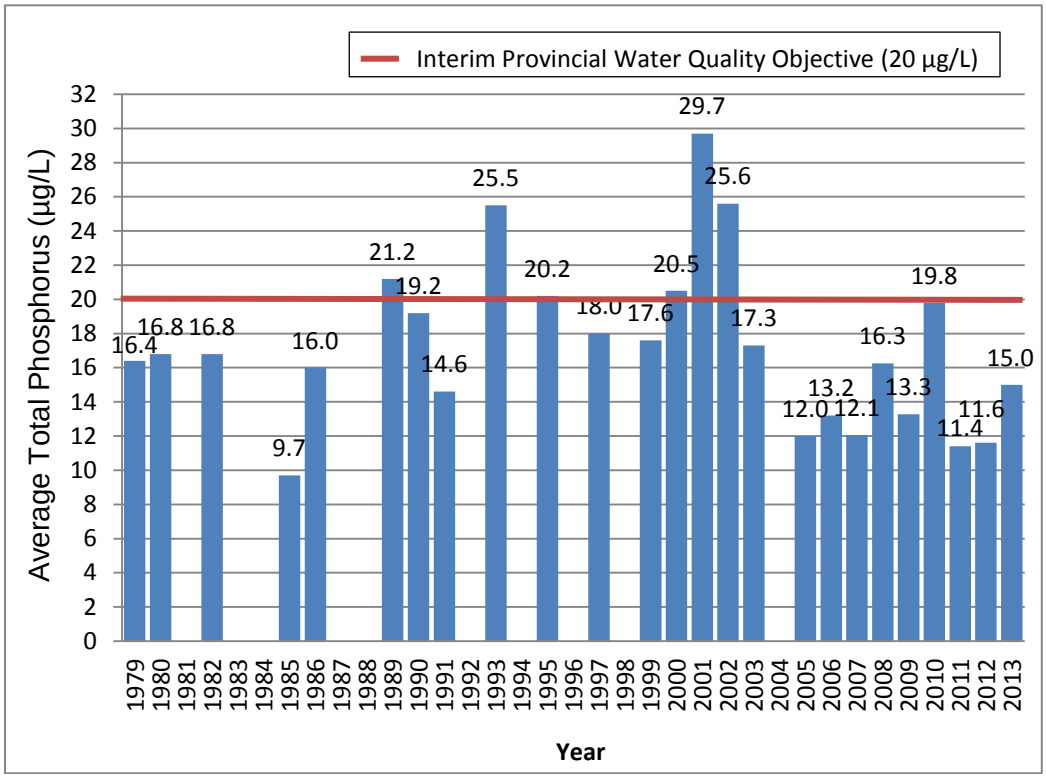
Wanapitei Lake

The bar graph below indicates the spring phosphorus results for Wanapitei Lake from 1981 to 2013.



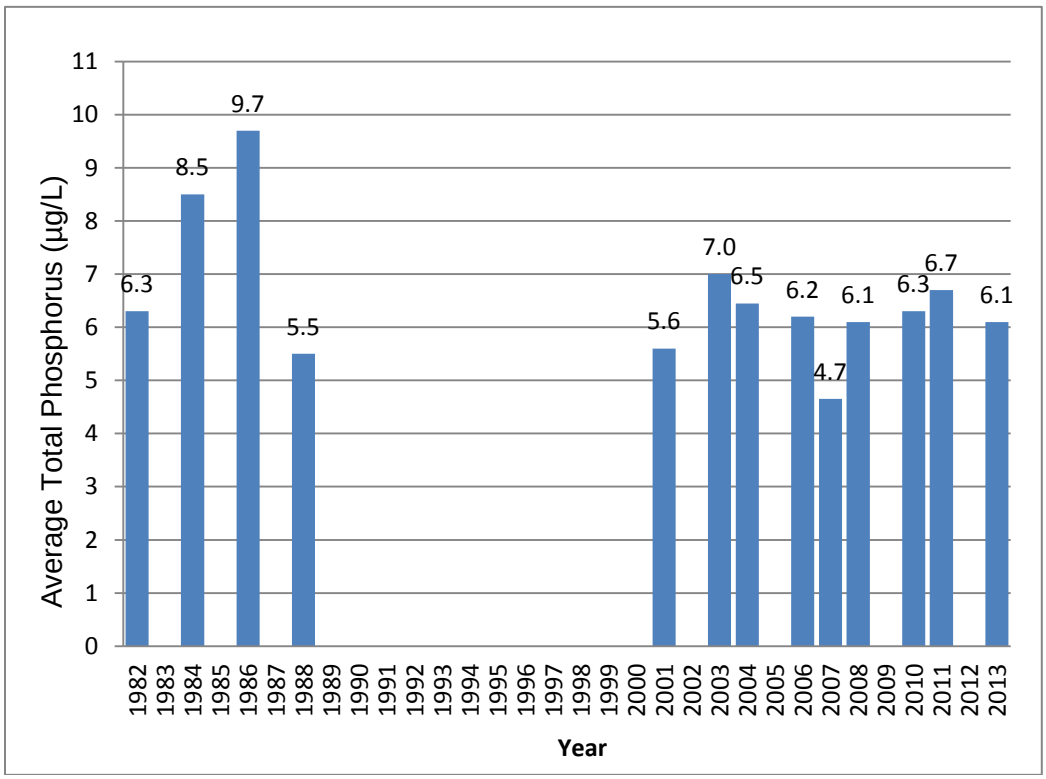
Whitewater Lake

The bar graph below indicates the spring phosphorus results for Whitewater Lake from 1979 to 2013.



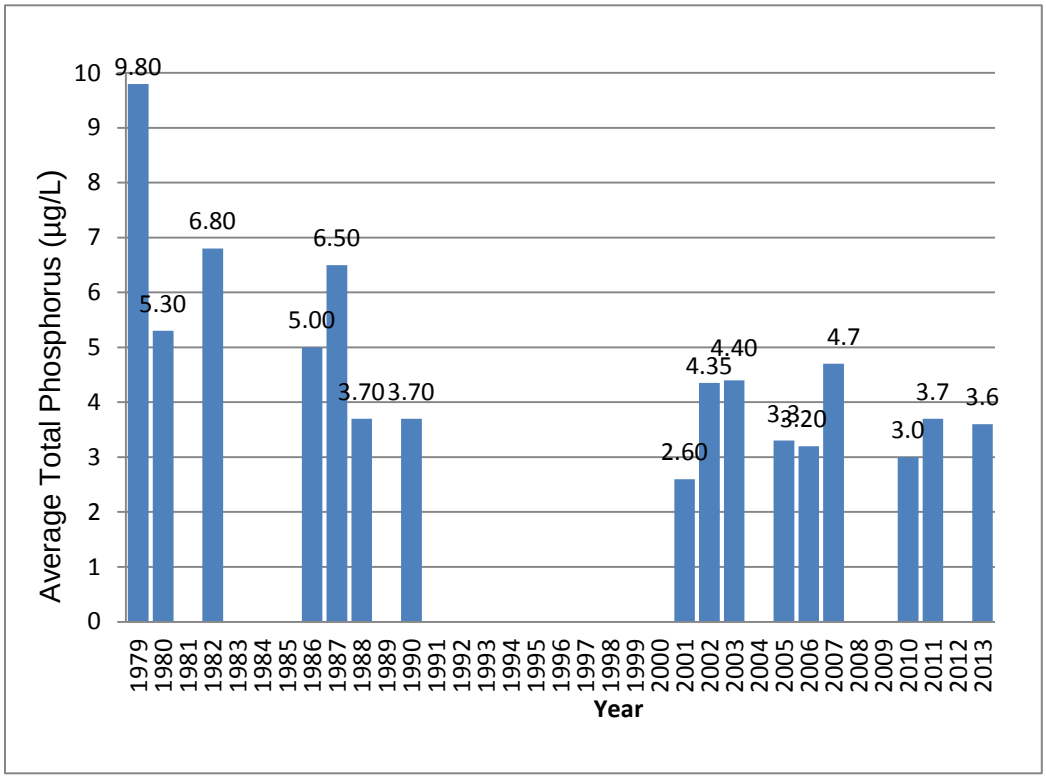
Whitson Lake

The bar graph below indicates the spring phosphorus results for Whitson Lake from 1982 to 2013.



Windy Lake

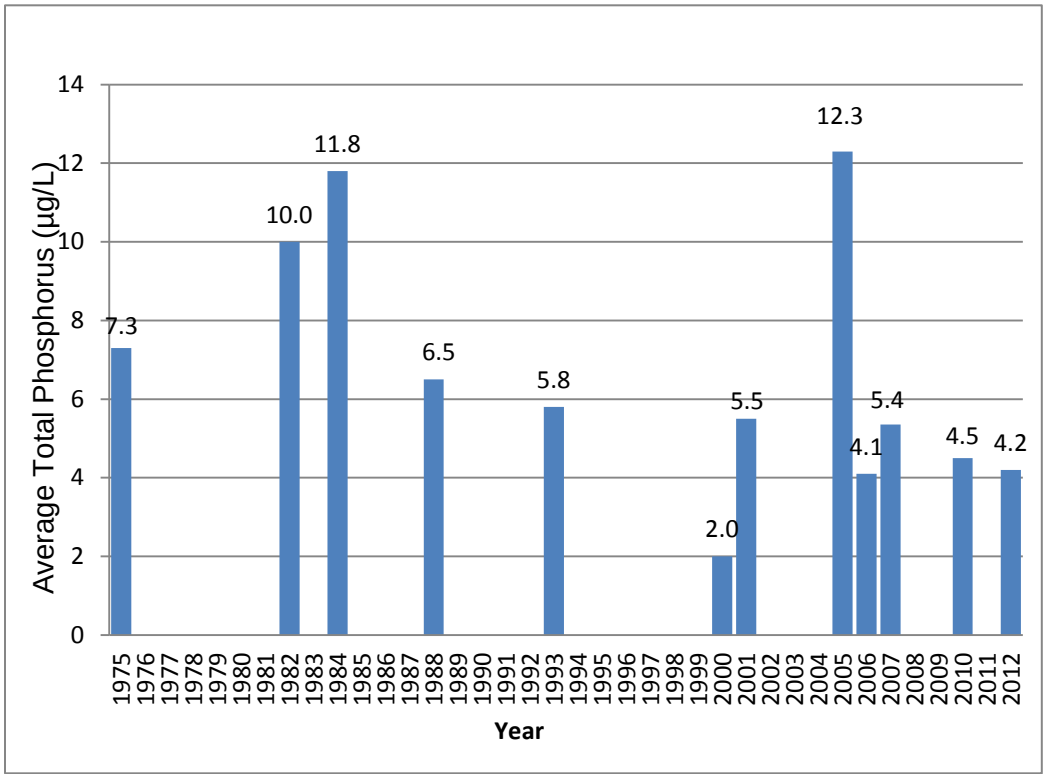
The bar graph below indicates the spring phosphorus results for Windy Lake from 1979 to 2013.



Spring Phosphorus Results for All Other Lakes not Sampled in 2013

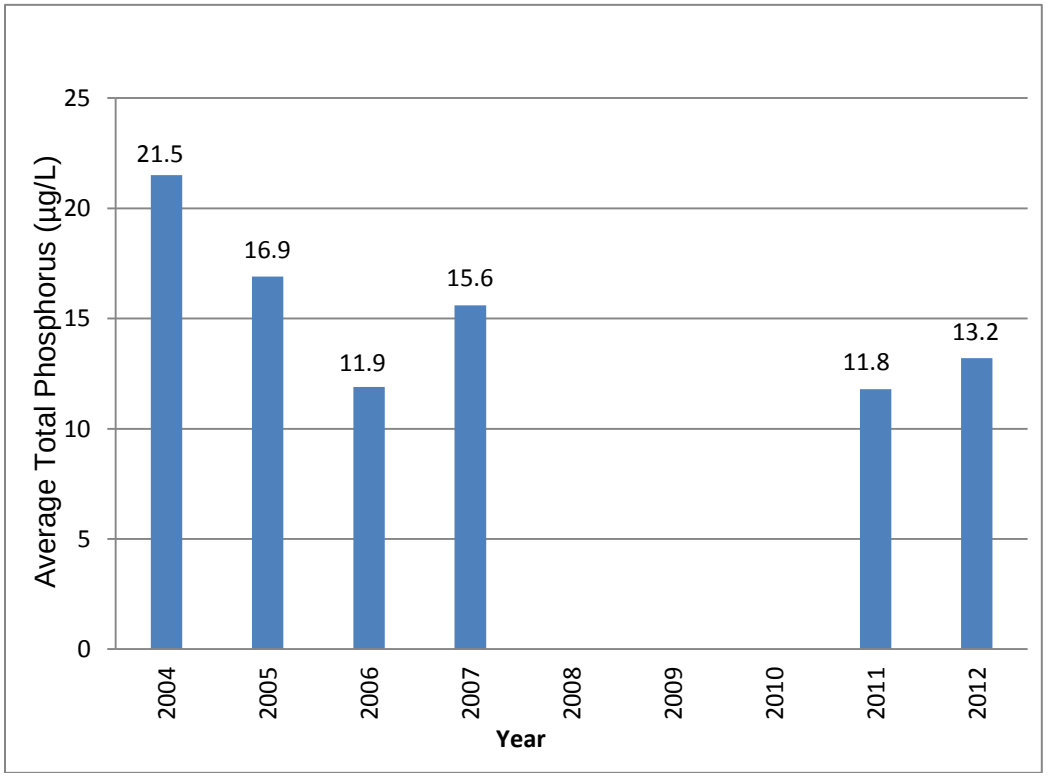
Ashigami Lake

The bar graph below indicates the spring phosphorus results for Ashigami Lake from 1975 to 2012.



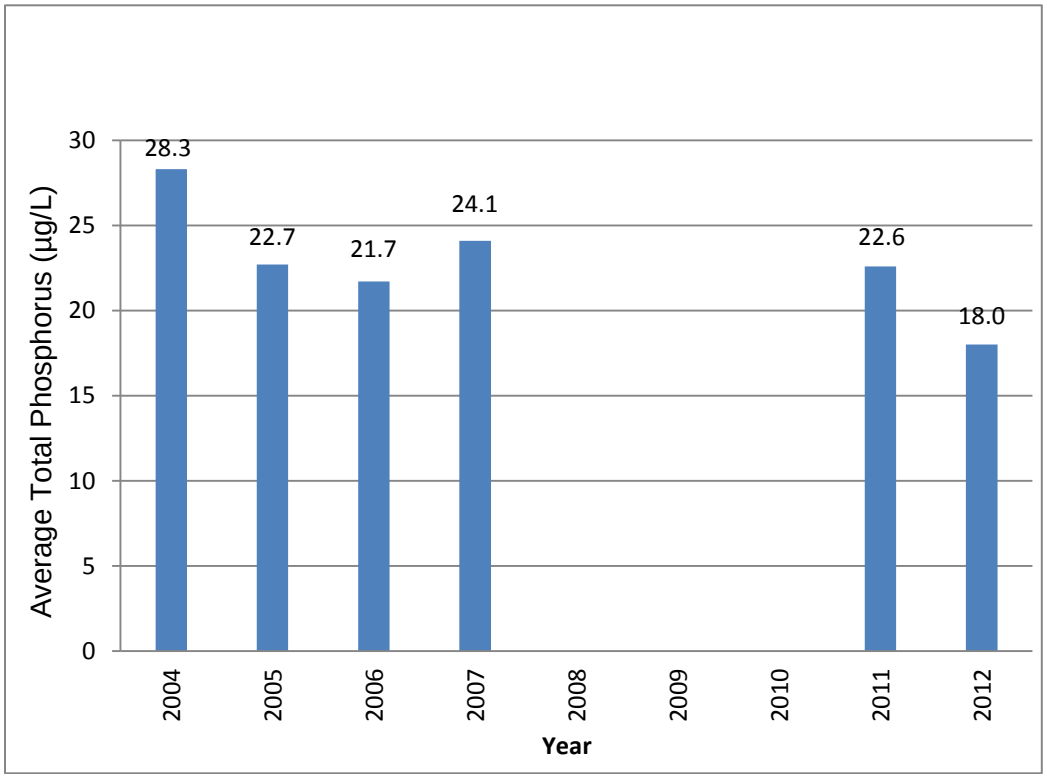
Big Beaver Lake

The bar graph below indicates the spring phosphorus values for Big Beaver Lake from 2004 to 2012.



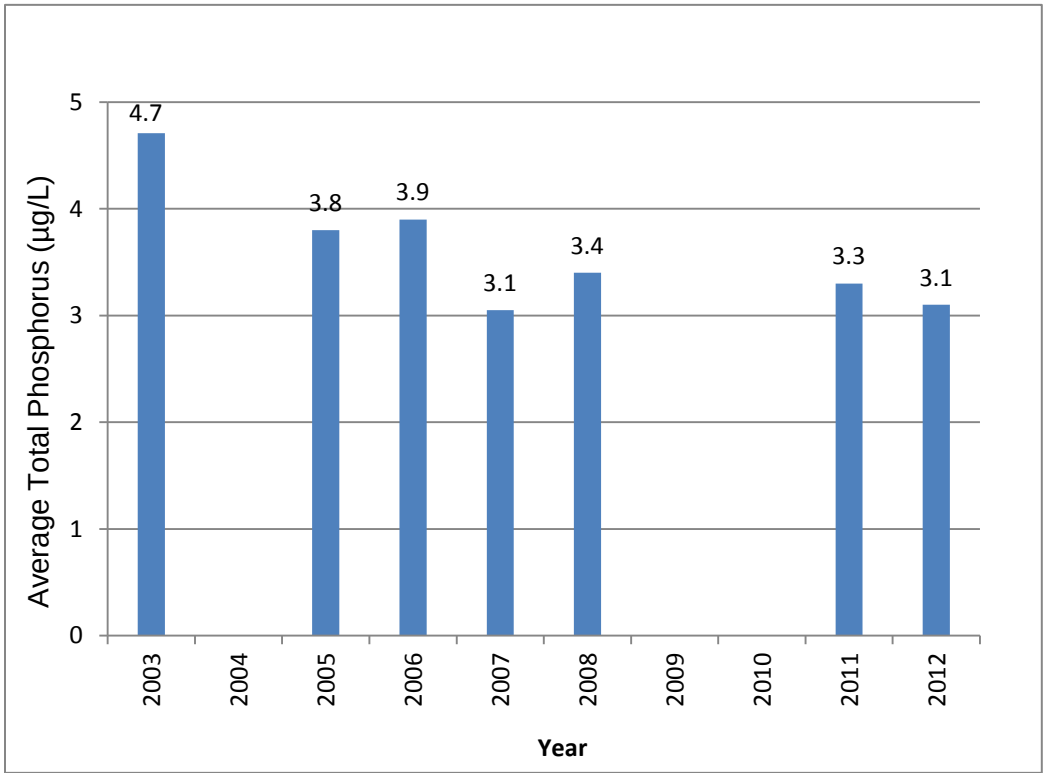
Little Beaver Lake

The bar graph below indicates the spring phosphorus values for Little Beaver Lake from 2004 to 2012.



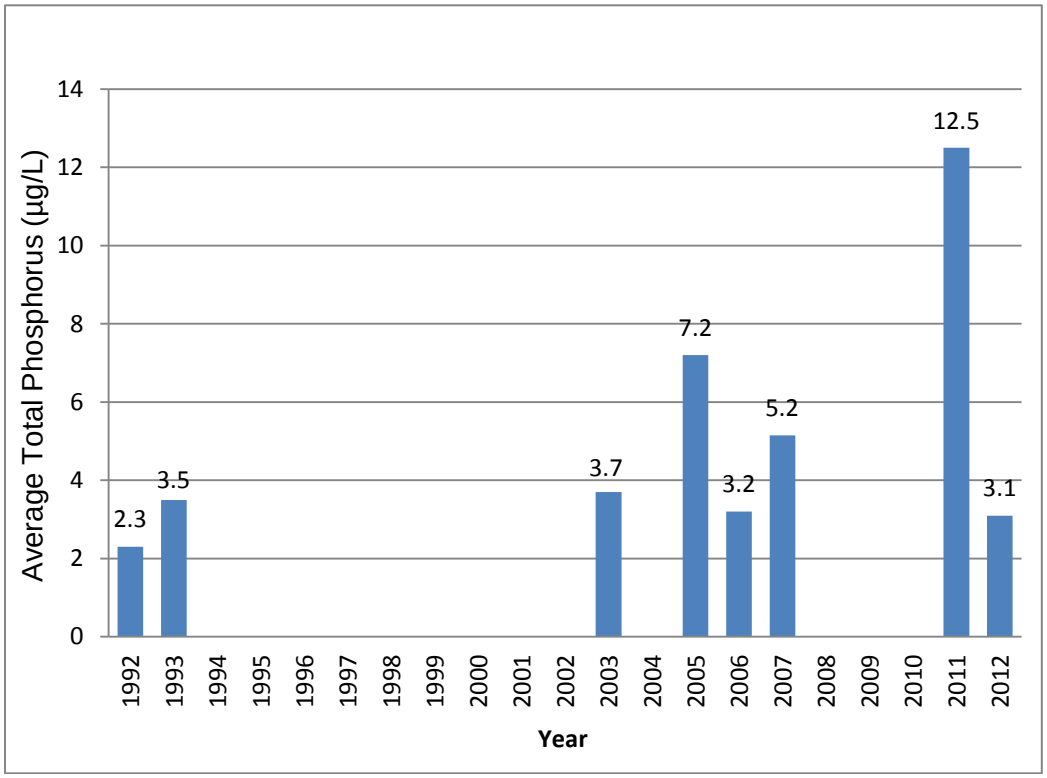
Camp Lake

The bar graph below indicates the spring phosphorus values for Camp Lake from 2003 to 2012.



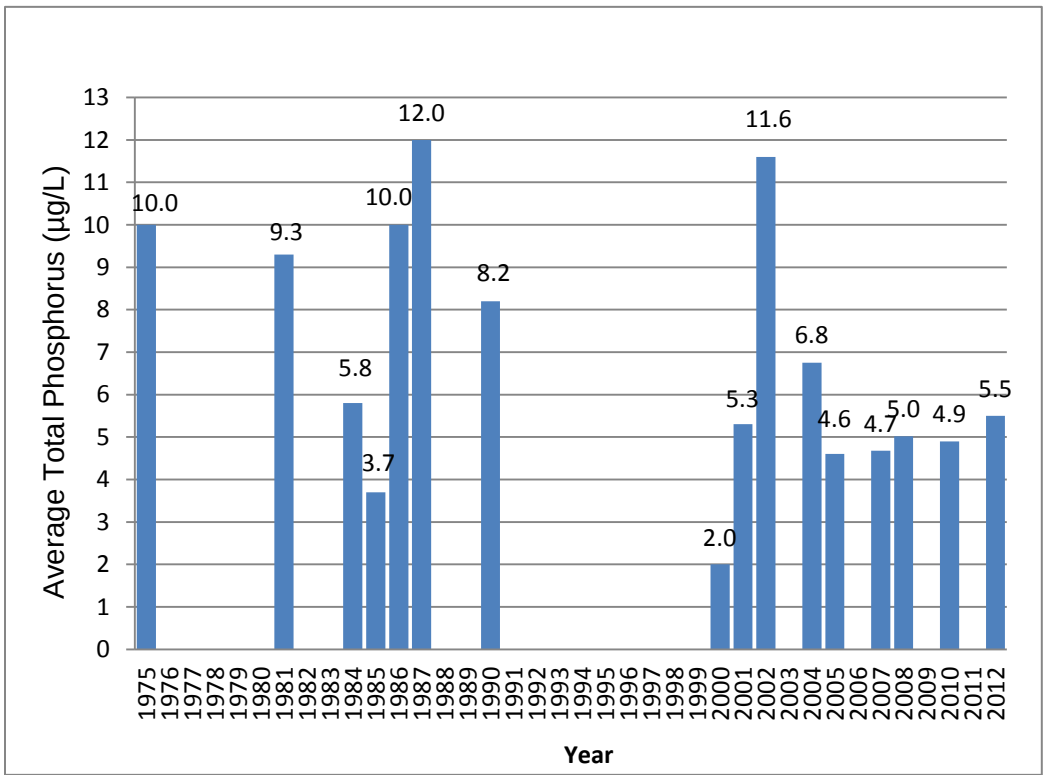
Chief Lake

The bar graph below indicates the spring phosphorus values for Chief Lake from 1992 to 2012.



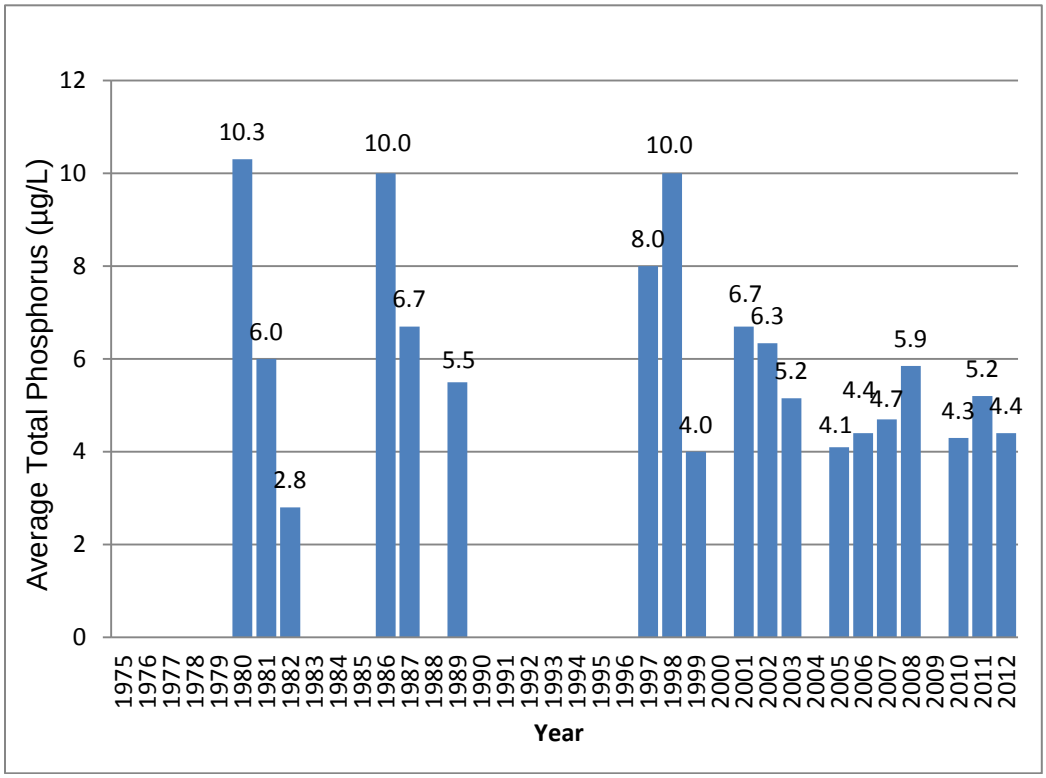
Ella Lake

The bar graph below indicates the spring phosphorus values for Ella Lake in Capreol Township from 1975 to 2012.



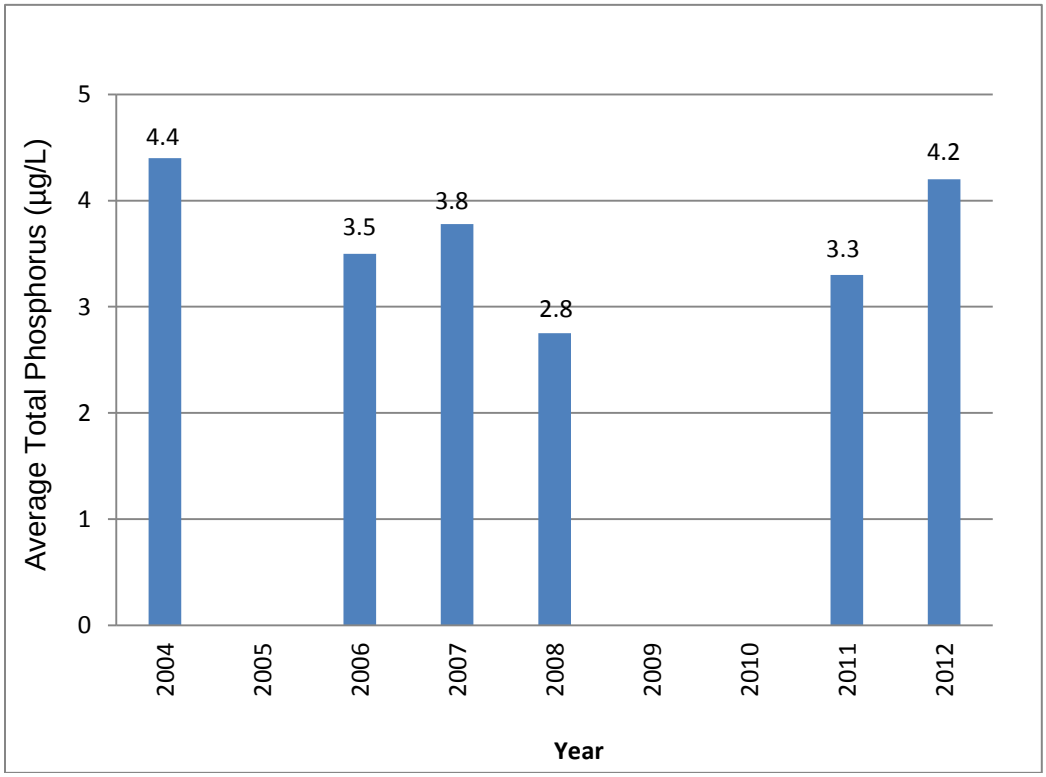
Fairbank Lake

The bar graph below indicates the spring phosphorus values for Fairbank Lake from 1980 to 2012.



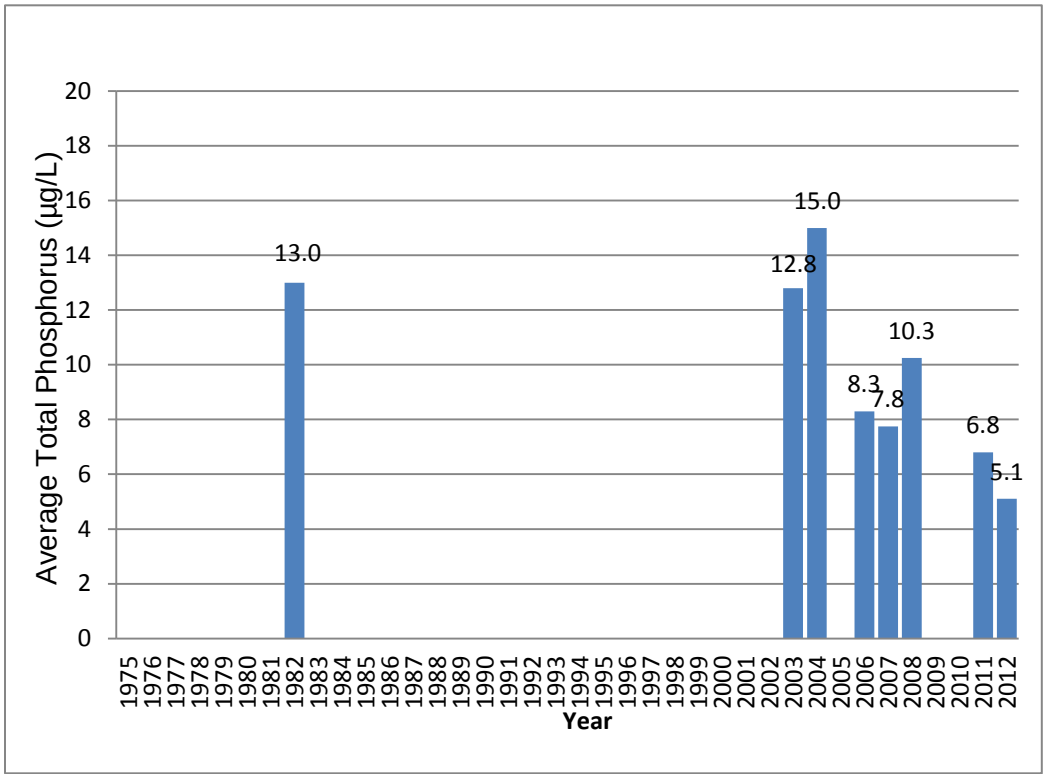
Forest Lake

The bar graph below indicates the spring phosphorus values for Forest Lake from 2004 to 2012.



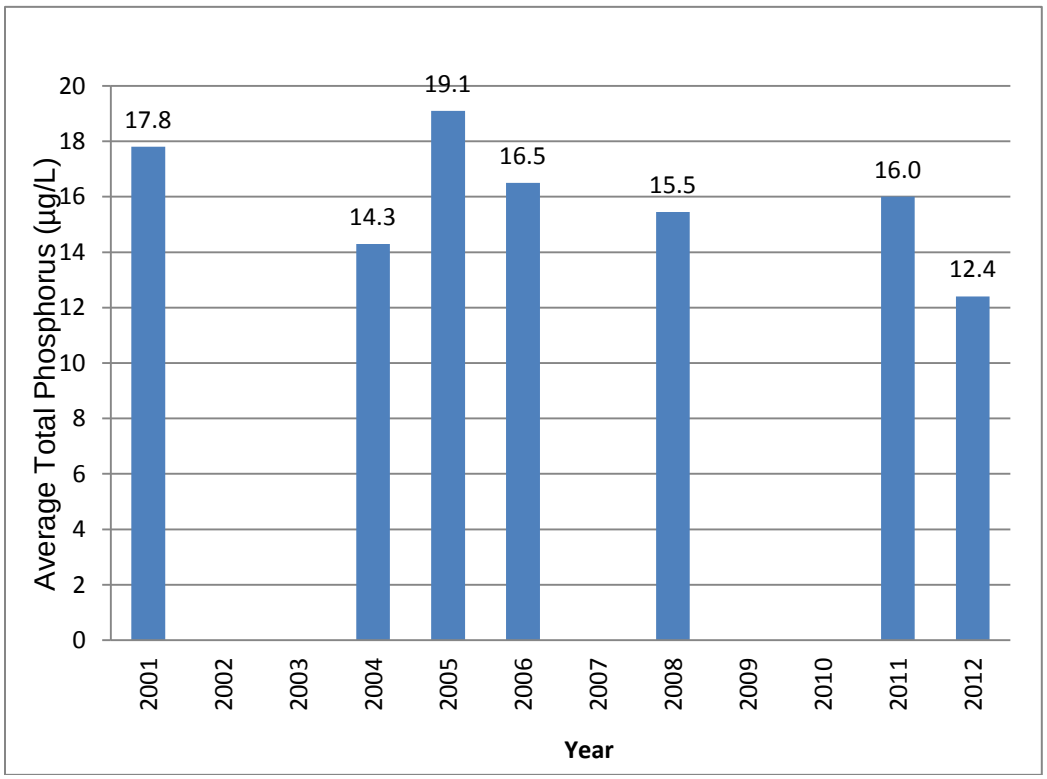
Gordon Lake

The bar graph below indicates the spring phosphorus values for Gordon Lake from 1982 to 2012.



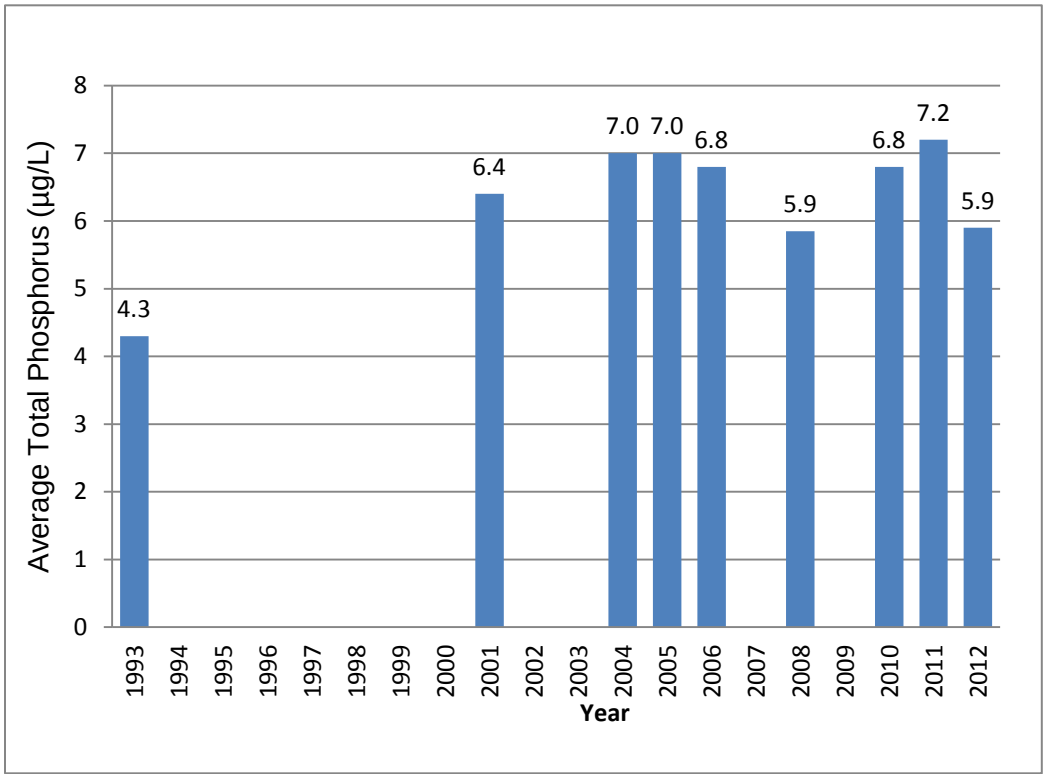
Grassy Lake

The bar graph below indicates the spring phosphorus values for Grassy Lake from 2001 to 2012.



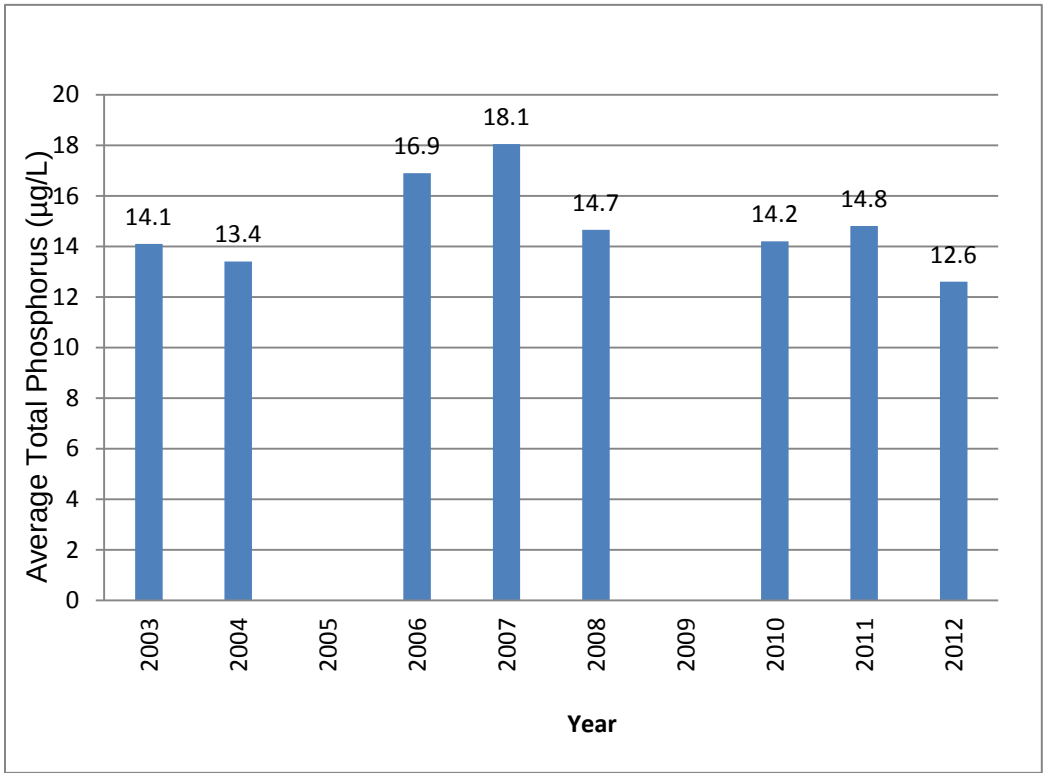
Hannah Lake

The bar graph below indicates the spring phosphorus values for Hannah Lake from 1993 to 2012.



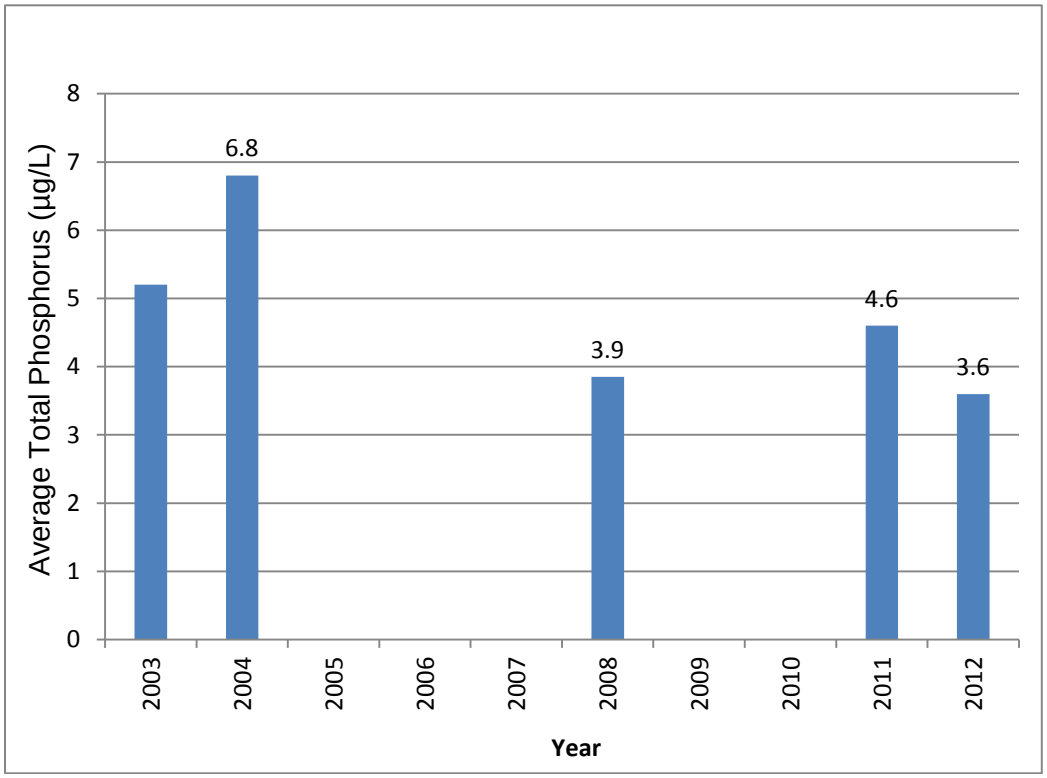
Kusk (Rat) Lake

The bar graph below indicates the spring phosphorus values for Kusk (Rat) Lake from 2003 to 2012.



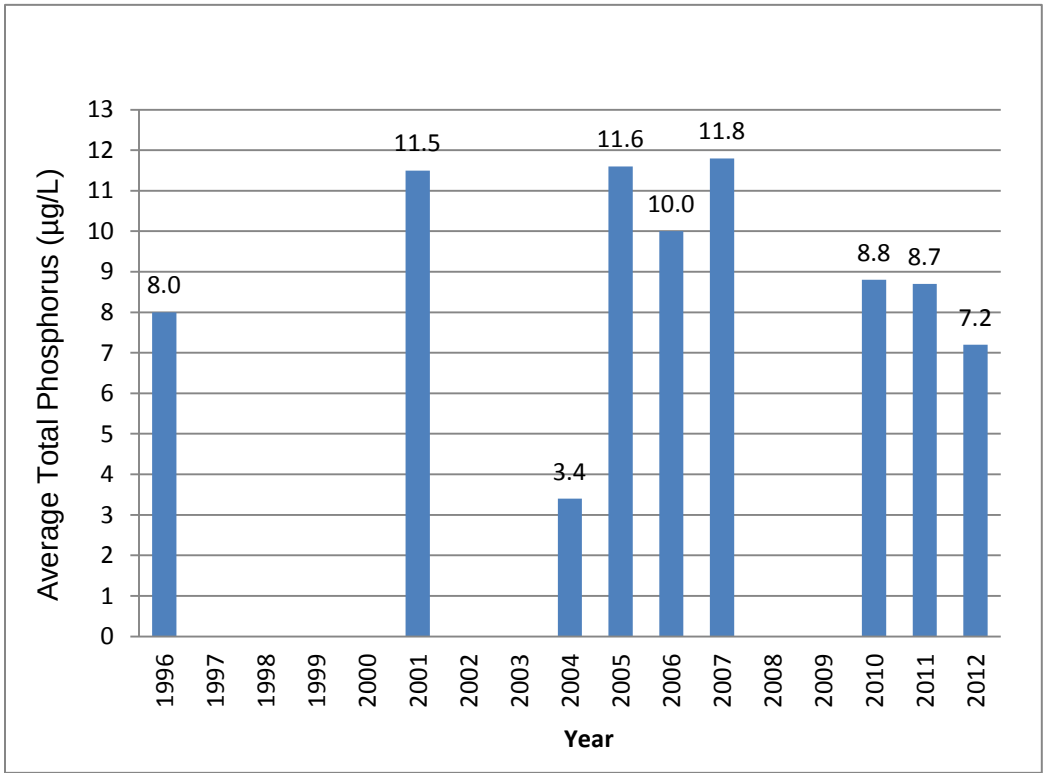
Linton Lake

The bar graph below indicates the spring phosphorus values for Linton Lake from 2003 to 2012.



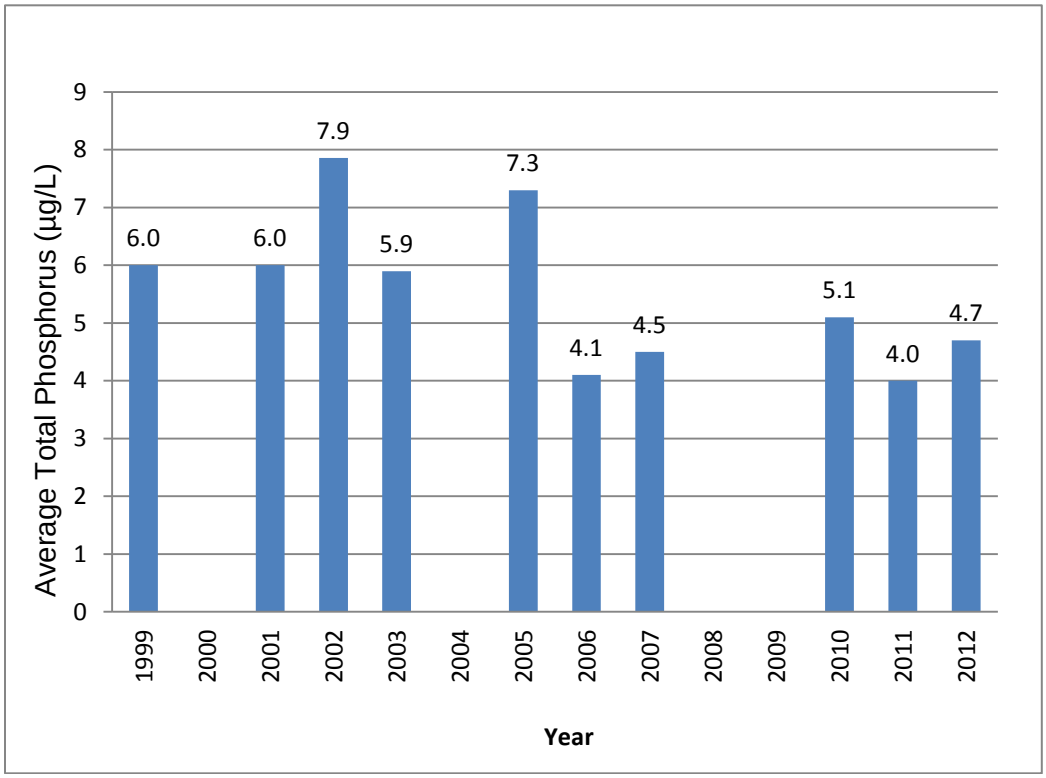
Little Raft Lake

The bar graph below indicates the spring phosphorus values for Little Raft Lake from 1996 to 2012.



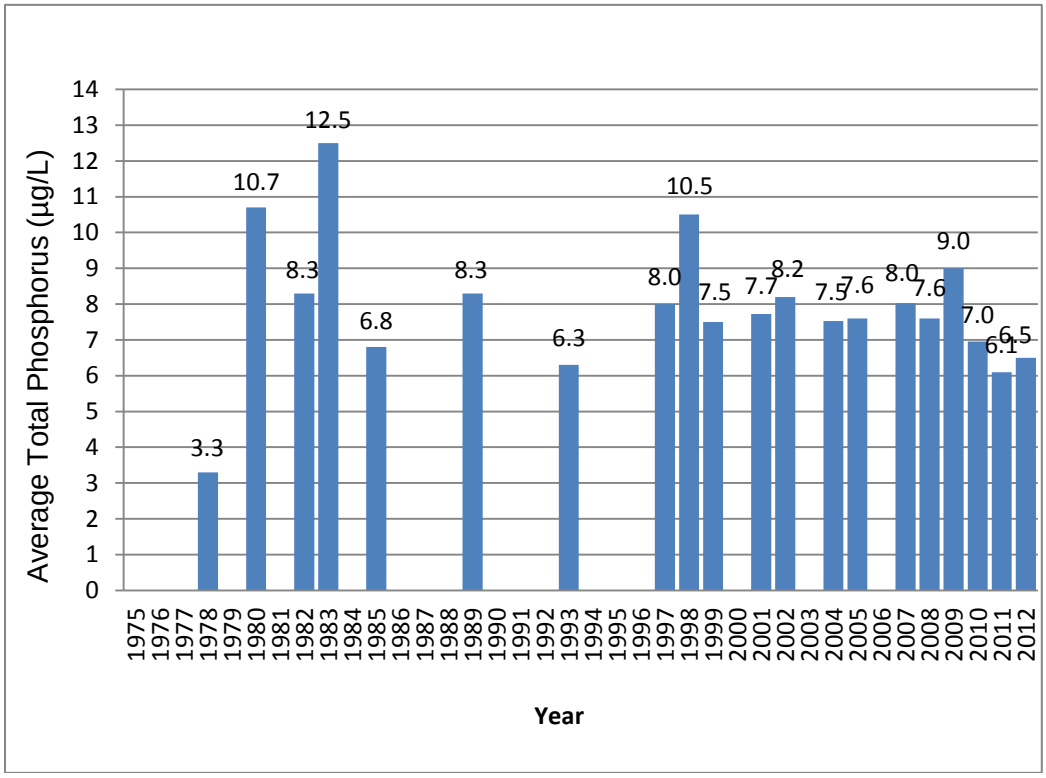
Lohi Lake

The bar graph below indicates the spring phosphorus values for Lohi Lake from 1999 to 2012.



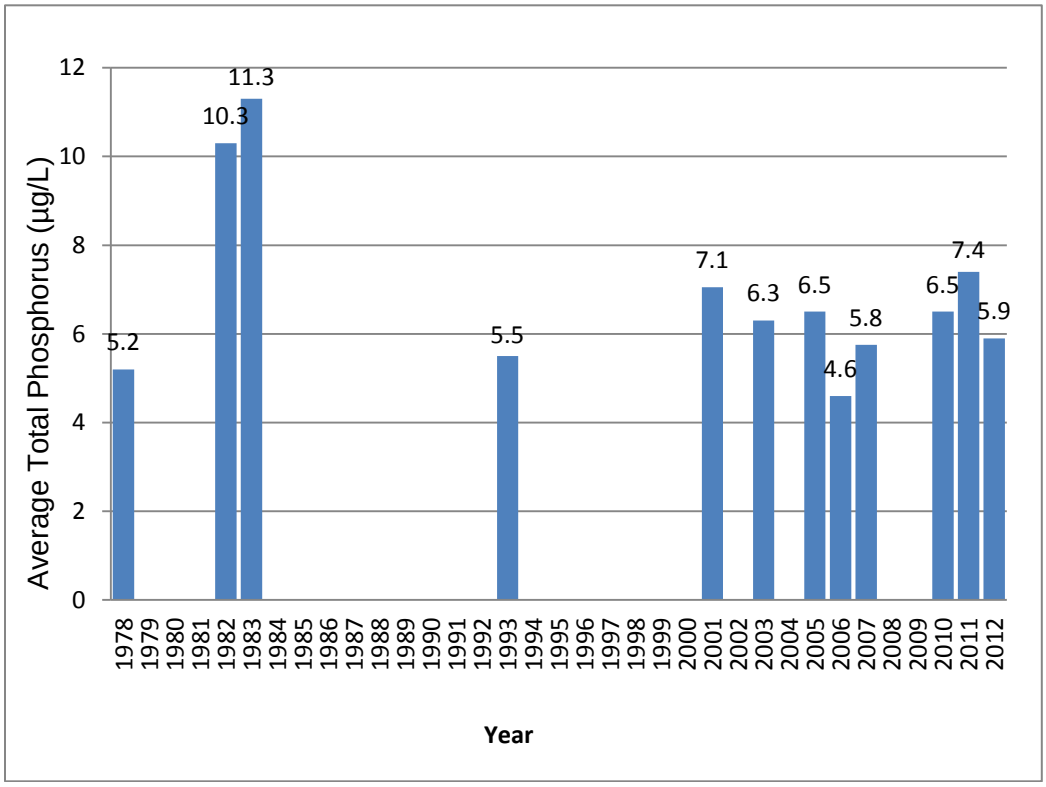
Long Lake

The bar graph below indicates the spring phosphorus values for Long Lake from 1978 to 2012.



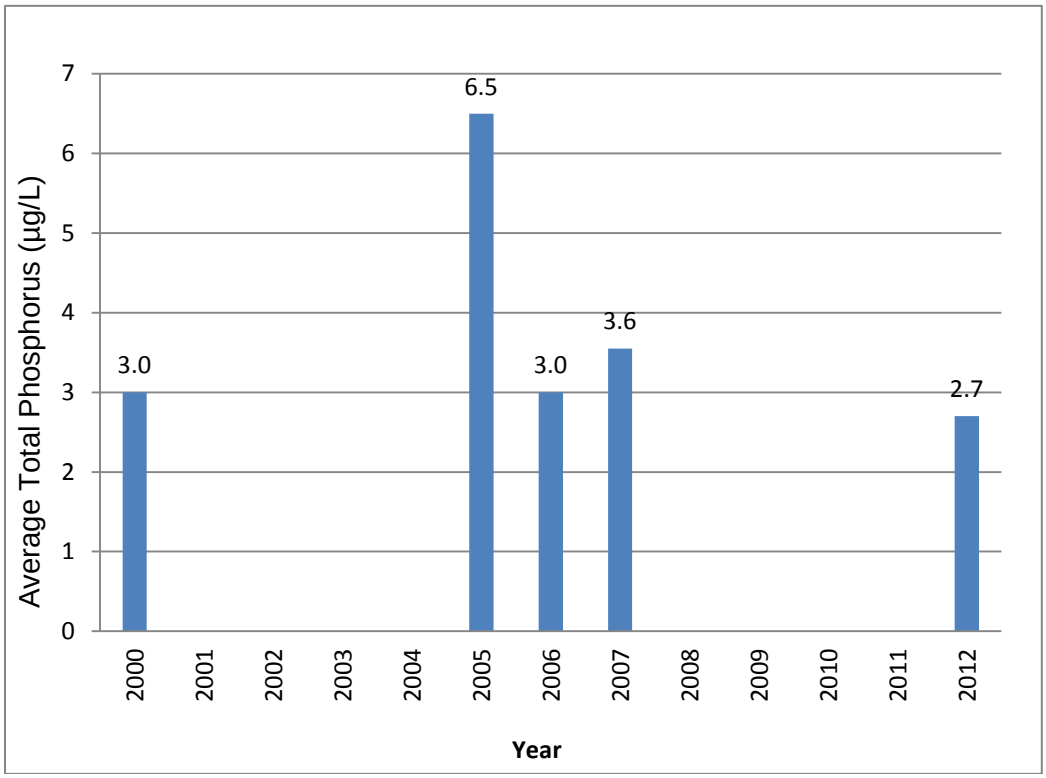
Makada (Black) Lake

The bar graph below indicates the spring phosphorus values for Makada (Black) Lake from 1978 to 2012.



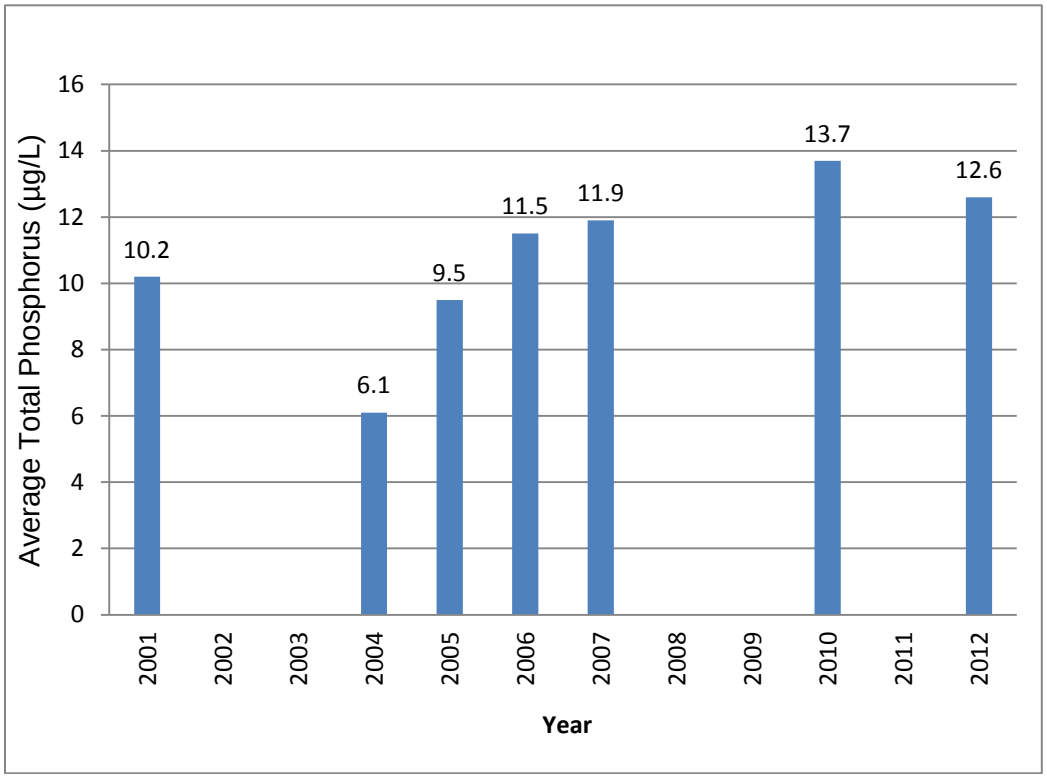
Matagamasi Lake

The bar graph below indicates the spring phosphorus values for Matagamasi Lake from 2000 to 2012.



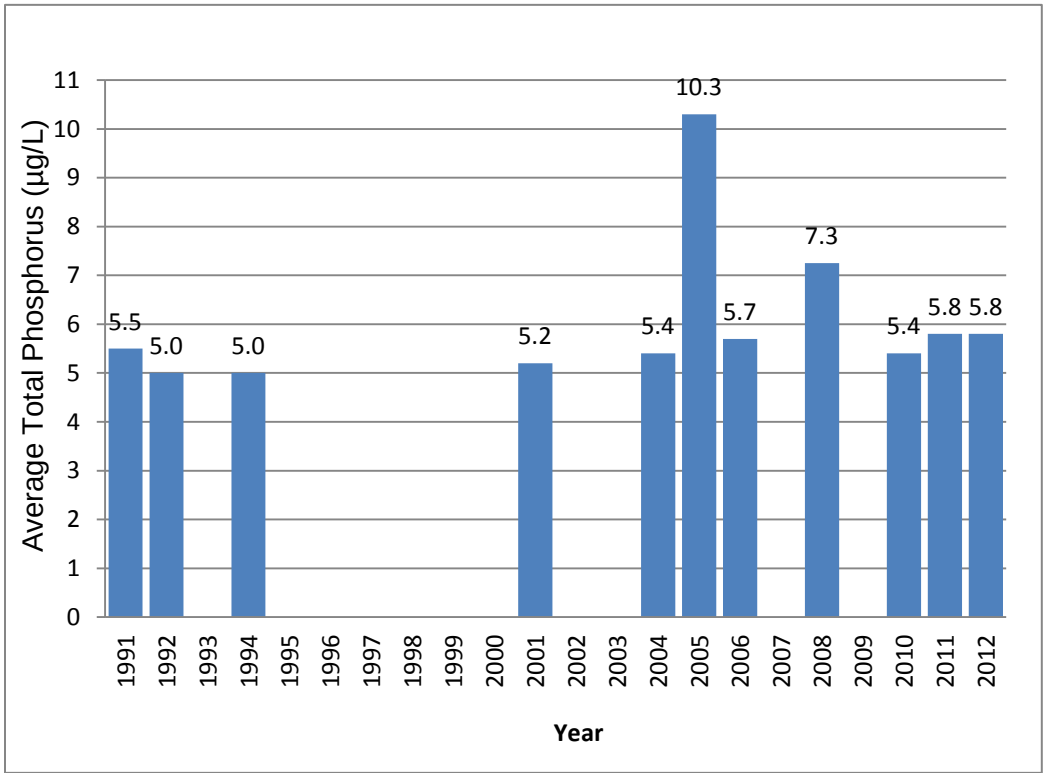
McCrea Lake

The bar graph below indicates the spring phosphorus values for McCrea Lake from 2001 to 2012.



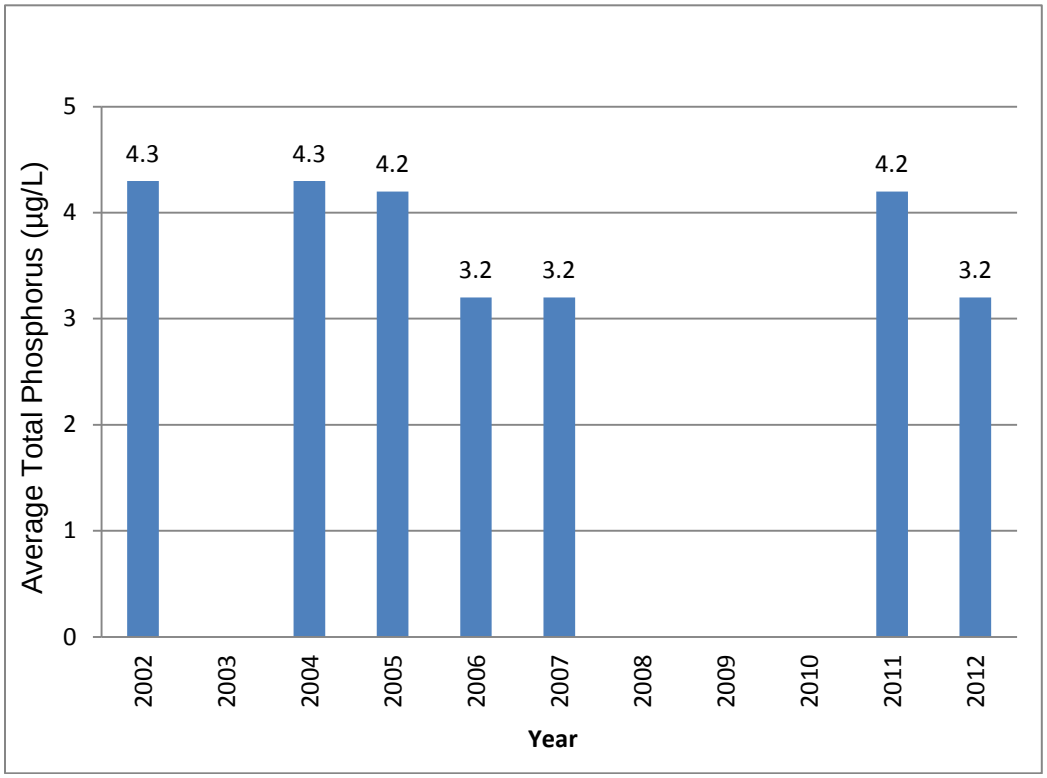
Middle Lake

The bar graph below indicates the spring phosphorus values for Middle Lake from 1991to 2012.



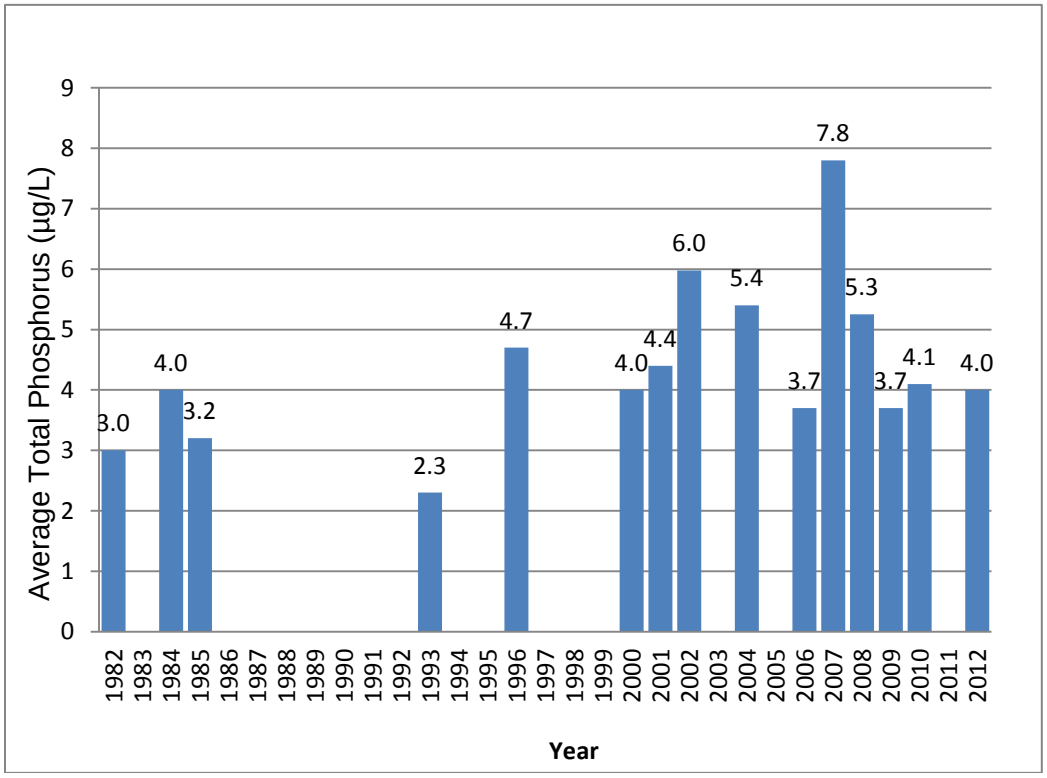
Nelson Lake

The bar graph below indicates the spring phosphorus values for Nelson Lake from 2002 to 2012.



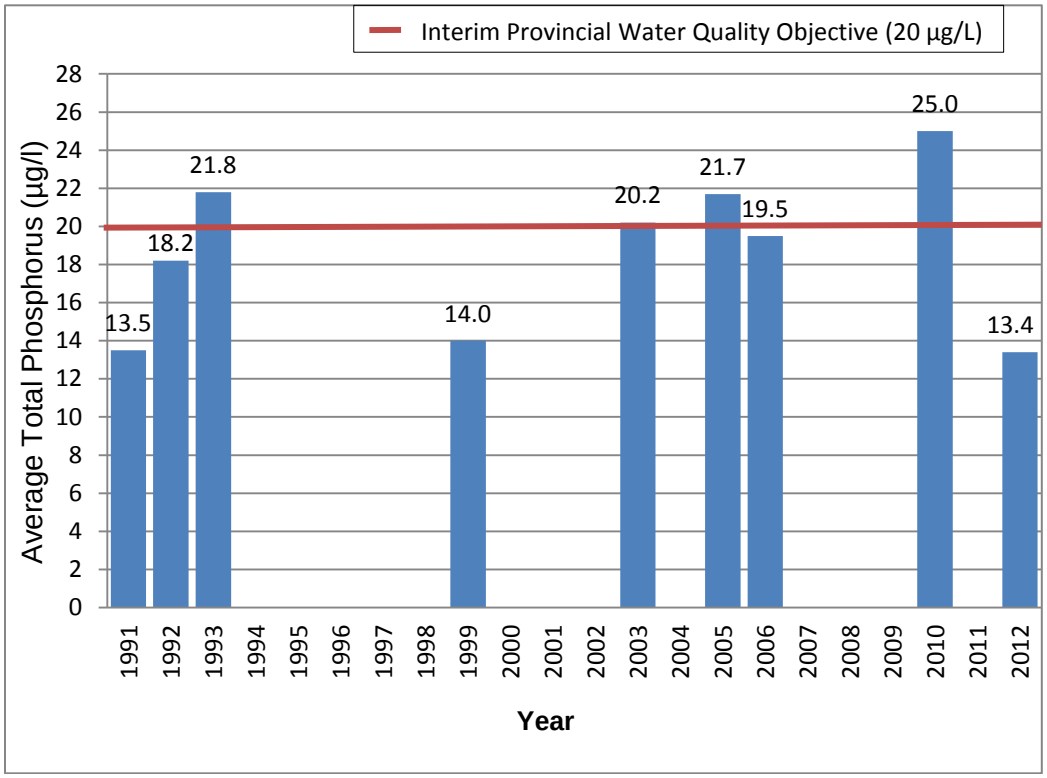
Panache Lake

The bar graph below indicates the spring phosphorus values for Panache Lake from 1982 to 2012.



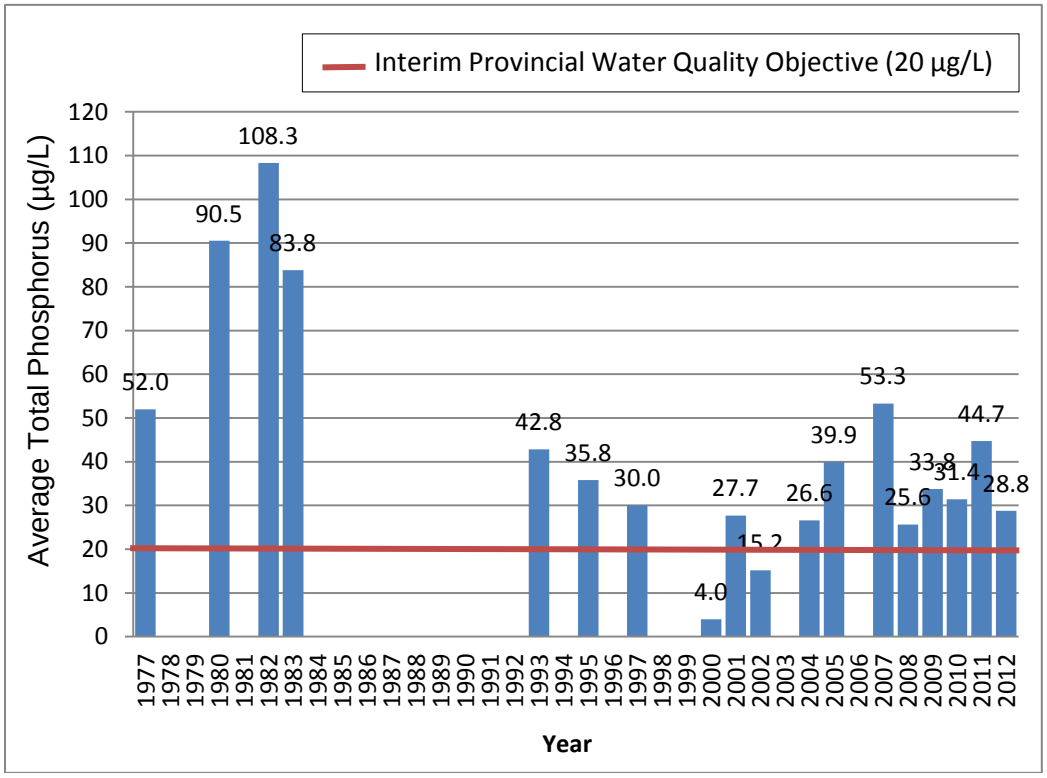
Red Deer Lake

The bar graph below indicates the spring phosphorus values for Red Deer Lake from 1991 to 2012.



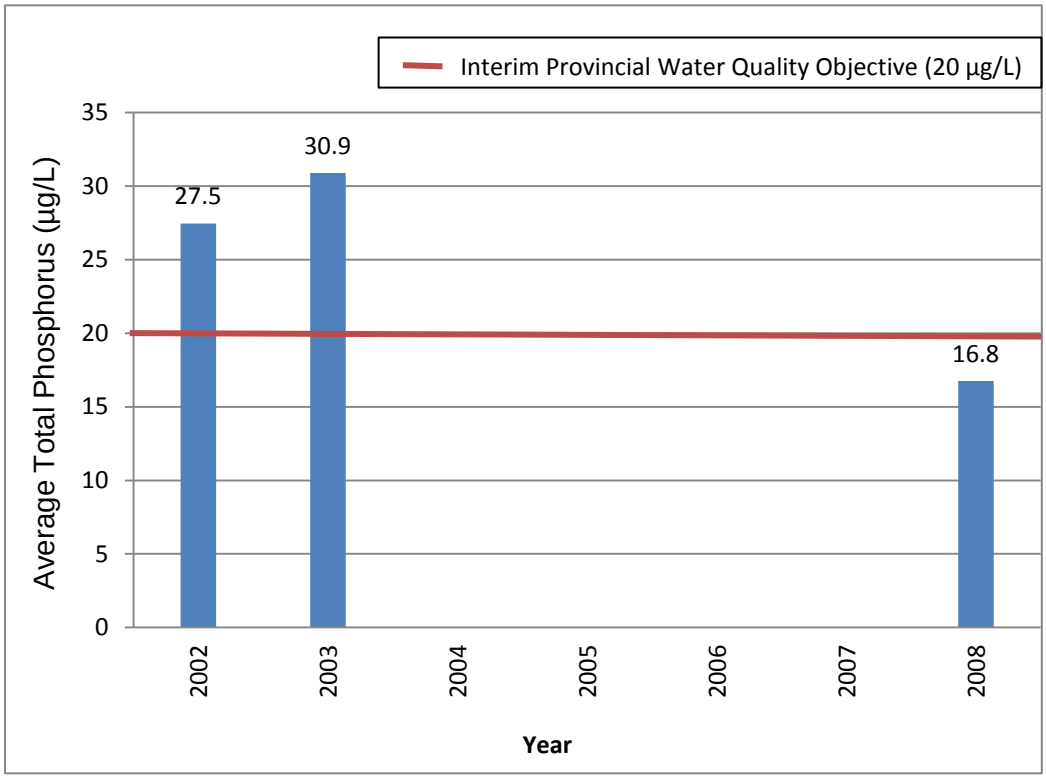
Simon Lake

The bar graph below indicates the spring phosphorus values for Simon Lake from 1977 to 2012.



Simmons Lake

The bar graph below indicates the spring phosphorus values for Simmons Lake from 2002 to 2008.



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