

# Lake Water Quality Program

Environmental Planning Initiatives

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## 2012 Annual Report

## 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 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:

- 48 lakes sampled for spring phosphorus
- 26 lakes sampled for late summer phosphorus
- 28 lake stewardship groups
- 6 lakes stocked with milfoil weevils
- 10 lake stewardship grants awarded
- 6 Lake Advisory Panel meetings held
- 6 shoreline visits conducted



**LAKE WATER QUALITY PROGRAM COMPONENTS**

**Spring Phosphorus Sampling Program**

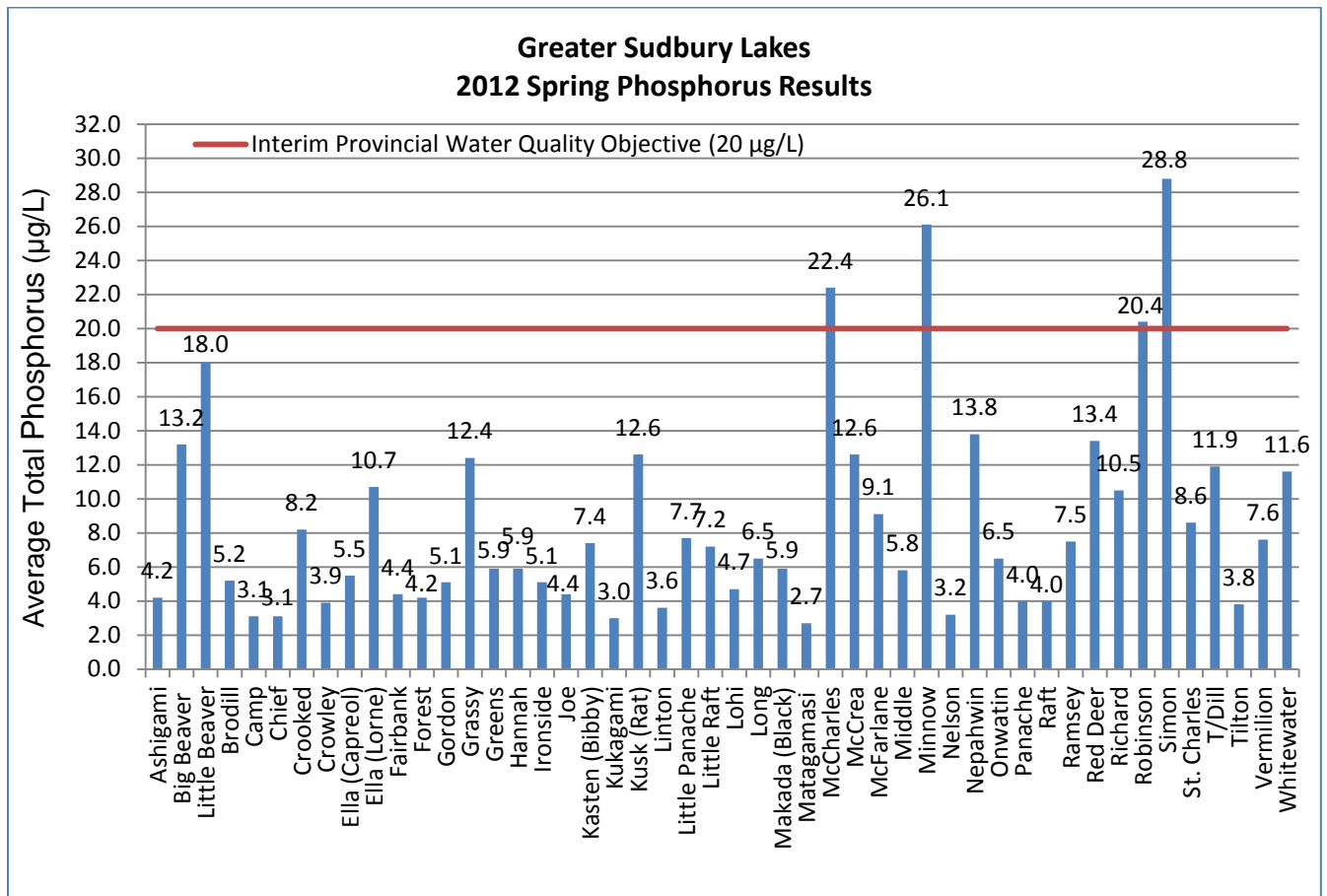
The City of Greater Sudbury has been sampling local lakes for spring phosphorus for the past 11 year. In May, the spring phosphorus program sampled 48 lakes throughout Greater Sudbury. These lakes were chosen based on their historical phosphorus levels, waterfront development pressures, and requests 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”.

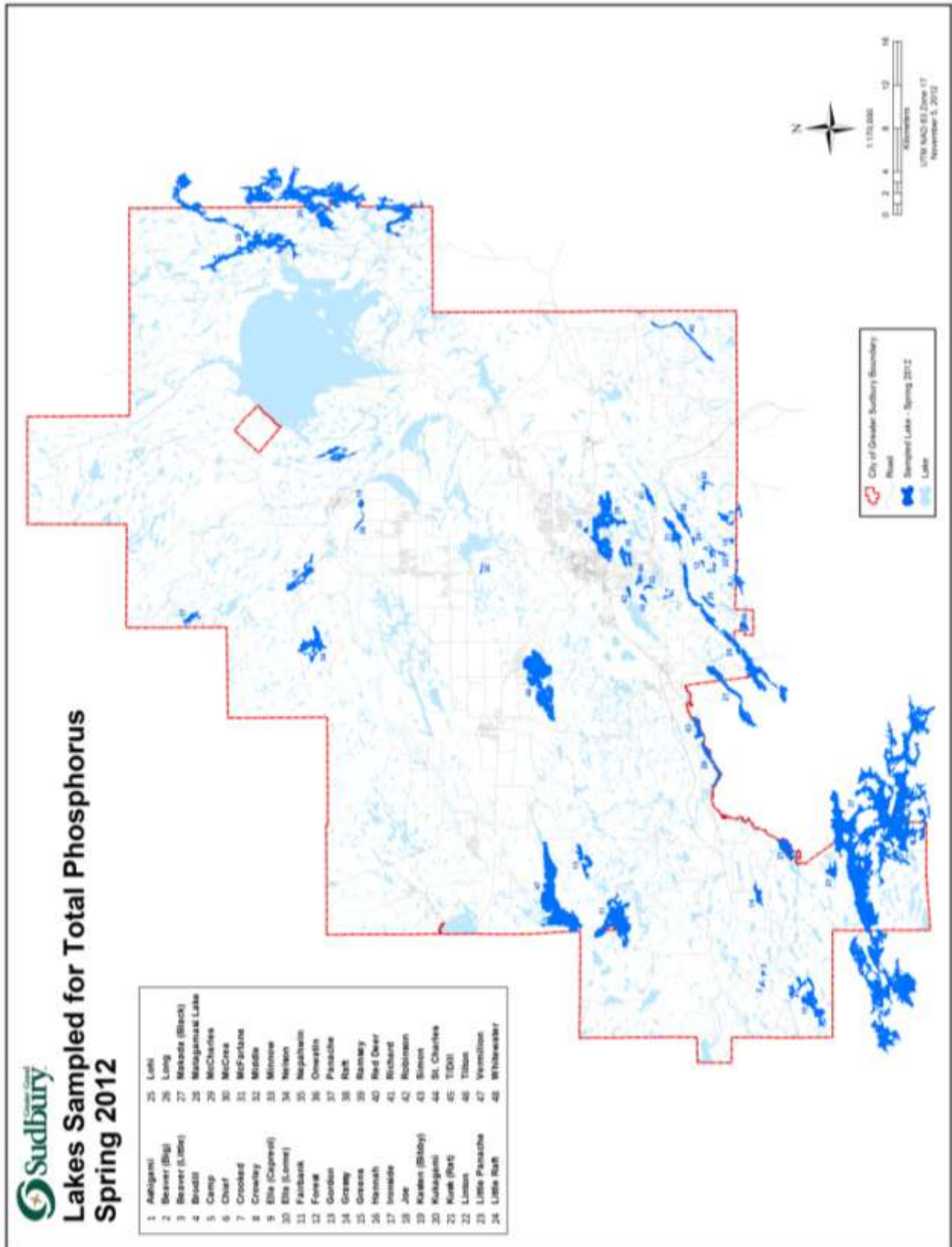


Phosphorus enters a lake primarily through surface water runoff from human sources such as septic systems, fertilizers, agriculture practices, municipal and industrial wastewater and detergents. As well, depending on the type of ground cover, soil conditions and bedrock, phosphorus can enter a lake by way of natural sources.

**Spring Phosphorus Results**

The spring phosphorus sampling was conducted for 48 lakes on May 11, 2011. Results for the lakes that were sampled are shown in the graph below. Of the lakes sampled, 4 lakes had phosphorus concentrations greater than the Interim Provincial Water Quality Objective of 20 µg/L (micrograms per litre), which indicates a lake is eutrophic or nutrient rich.





### Late Summer Phosphorus Sampling

During the month of August and September, 26 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.



### Temperature

Temperature readings measure the intensity of heat stored in the lake. Temperature patterns affect the solubility of many chemicals compounds and influences the effects of pollution on aquatic life.

### Dissolved Oxygen

Dissolved oxygen concentration is an indicator of a lake's ability to support aquatic life. Dissolved oxygen measures the concentration of oxygen dissolved in water. Adequate levels of dissolved oxygen are required for the survival of fish and other aquatic organisms. Dissolved oxygen levels above 5 milligrams per litre (mg/L) are considered optimal for most aquatic organisms.

### Secchi Depth

Secchi depth is a measure of water clarity. Water clarity is determined by natural water colour, know as dissolved organic carbon (DOC) content, or from an increase in nutrient input from surrounding watershed.

### Milfoil Weevil Stocking Program

Many lakes in Greater Sudbury have become overrun with Eurasian Watermilfoil, an aggressive invasive aquatic plant that outcompetes native plant species. Since it can form large, dense mats, milfoil can interfere with boating, fishing, and swimming. 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 6 lakes with the native water milfoil: Simon, 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 2<sup>nd</sup> year Progress Report is available under separate cover.



**Minnow Lake Phosphorus Reduction**



This year was the third year for the EOS-2000 coherent water resonator in Minnow lake. This unit is powered by solar panels and emits a very low level electromagnetic pulse into the lake by way of an antenna. The coherent water resonator is designed to increase oxygen levels in the lake which in turn helps prevent the release of phosphorus from the bottom sediments of the lake. By limiting available phosphorus, algae growth is inhibited. Baseline water sampling on Bethel Lake for Dissolved Oxygen and Total Plate Count

was conducted to gather data for this urban lake.

**COMMUNICATIONS and COMMUNITY OUTREACH**

**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 'lake-friendly' cleaning product and an "On the Living Edge" handbook for waterfront living.

**World Water Day**

The Lake Water Quality Program participated in a World Water Day event on March 22 hosted by Conservation Sudbury at the Living with Lakes Centre on the shore of Ramsey Lake. Displays from Conservation Sudbury, Source Water Protection, Junction Creek Restoration, the City of Greater Sudbury's EarthCare Sudbury and Lake Water Quality were on hand to education and raise awareness of Sudbury water resources.



**Phosphorus Lawn Fertilizer By-Law**

On April 20, 2011, the Greater Sudbury Watershed Alliance presented to Policy Committee a request for a municipal by-law to restrict the use of lawn fertilizers that contain phosphorus. The Committee directed staff to prepare a report on the subject that would include a by-law as one of the options. The Lakes Advisory Panel at its June 9<sup>th</sup> meeting recommended that Council pass a by-law to restrict the sale and use of lawn fertilizers containing phosphorus.



As of April 1, 2012, a new City of Greater Sudbury by-law restricts the use of lawn fertilizers containing phosphorus, in an effort to protect the health of local lakes. With this new by-law, lawn fertilizers containing phosphorus may only be used when: starting a new lawn from sod or seed during the first growing season; a test performed by an accredited soil testing service shows the soil's phosphorus level is not sufficient to support a lawn; or for agricultural application, sod farms and golf courses.

### Annual Water Gathering

For the past several years, the City of Greater Sudbury's Lake Water Quality Program has hosted the Annual Water Gathering, formerly known as the Living With Lakes Forum. This event is to inform the community of the current year's program achievements, showcase the efforts of the lake stewardship groups and answer any related questions that residents may have.

This year's event was held on April 26 with guest speaker Dave Mercer, celebrity fishing guru and host of the television show "Facts of Fishing". Approximately 200 people attended and about 95% were "new faces", people that had never before come out to a water gathering before. This family event was well received and aimed communicating good lake stewardship practices to local fishers of all ages.



### Septic System Information Night

The Lake Water Quality Program hosted a very successful, free Septic System Information Night on Thursday, May 24 in the Atlas Copco Theatre at Dynamic Earth. Approximately 120 people attended this event. This information session for waterfront landowners featured two guest speakers. First, Dr. Doug Joy, the Director of the Ontario Rural Wastewater Centre, presented the different septic system technologies and their pros and cons. Dr. Joy is a faculty member of the University of Guelph's School of Engineering, where his teaching and research focus on water resources engineering. The second speaker was an Environmental Health Officer from the Sudbury & District Health Unit, Mr. Richard Auld, who spoke on best practices and maintenance recommendations for septic systems.



### Sudbury Children's Water Festival

This was the sixth year that the Lake Water Quality Program participated in the water festival and it was a huge success with over 800 students grade 3 students visiting the festival and attending bilingual activity centres. The Lake Water Quality Program 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 Sudbury is organized by the Sudbury & 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.

<u>Community Volunteers</u>	<u>Technical Experts</u>	<u>Councillors</u>
Lin Gibson, Chair	Burgess Hawkins – Sudbury & District Health Unit	Jacques Barbeau
Dan Bazinet, Co-Chair	Dr. John Bailey – Vale Living With Lakes Centre	Joe Cimino
John Bassett	Dr. Charles Ramcharan – Laurentian University	Terry Kett
Sharon Bennett	Ed Snucins – Ontario Ministry of Environment	
Robert Hay	Natalie Webster –Conservation Sudbury	
Christine Hurst	Mark Simeoni – City of Greater Sudbury	
Debbie Lee		
Lilly Noble		

**LAKE STEWARDSHIP GRANT ASSISTANCE PROGRAM**

**Introduction**

The Lake Stewardship Grant Assistance 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. Established as a pilot project in 2005, the Program assists Lake Stewardship Groups in carrying out projects that protect and improve the water quality and natural environment of the lakes. There are currently 28 Lake Stewardship groups in the City.

**Background**

In fulfilling its mission to, “serve as a watershed steward on behalf of all citizens in the community and actively promote and protect the ecological health of the lakes”, the Lakes Advisory Panel decided to initiate the Lake Stewardship Grant Assistance Program to encourage and support the development and activities of Lake Stewardship Groups. City Council approved recommendations to earmark funds from the Lake Water Quality Program’s budget to be used for the grant program. Proposed projects were required to demonstrate how they would improve or protect the water quality of the lake and/or watershed and increase support from the lake community. Successful applicants were chosen by the Lakes Advisory Panel. In total, 10 applications for funding were received with each applicant receiving a \$500 grant except for Lohi lake stewardship which received \$250. The following is a summary of the activities and accomplishments of these successful projects.

**FUNDING RECIPIENTS FOR 2012**

***Fairbank Lake Camper’s Association***

*Project Name: Shoreline Shrubs*

Funds will be used to purchase native plants (Staghorn Sumac and Red-osier Dogwood shrubs) that will be used to prevent shoreline erosion. Property owners will be educated on the importance of maintaining a natural shoreline buffer to prevent shoreline erosion.

**Greater Sudbury Watershed Alliance (GSWA)**

*Project Name: Getting to Know the Greater Sudbury Watershed Alliance*

The Alliance will be using the funds to create and print brochures about their organization to be handed out at community events. They hope to create awareness and recruit new members to the GSWA.

**Lake Panache Campers Association Inc. (LPCA)**

*Project Name: Lake Panache Stewardship*

Funds will be used for water sampling, the creation and distribution of an association newsletter with the goal to educate their members and to recruit new members.

**Lohi Lake Stewardship**

*Project Name: Newsletter*

The funding will be used to continue to communicate with lake residents in regards to keeping the lake environmentally safe. The main use of the money will be to continue with distributing newsletters.

**Long Lake Stewardship**

*Project Name: Newsletter*

The funding will be used to continue to communicate with lake residents in regards to keeping the lake environmentally safe. The main use of the money will be to continue with distributing newsletters.

**Ramsey Lake Stewardship Committee**

*Project Name: Raising Awareness about lake water quality issues in the Ramsey Lake Watershed*

Funds will be used to participate in a variety of community events to reach out to the Ramsey Lake watershed residents. They will also publish a short story to reach out to young people to emphasize stewardship of our lakes. They will also participate with local children in a Yellow Fish Road program.

**Richard Lake Stewardship**

*Project Name: Annual Lake Clean Up and BBQ*

Volunteer scuba divers will assist with cleaning garbage and map out dangerous obstacles in the water. Sponsors will donate all food and drinks for the BBQ. Funding will go towards renting the property, tipping fees, gloves and administrative costs: signs, printing, photocopying. Information sessions and presentations on Phosphate levels along with media coverage from TV, radio and print will take place.

**Robinson Lake Stewardship Committee**

*Project Name: Robinson Lake –Lily Creek Watershed Education Project*

Funds will be used to prepare information sheets on the nature trails around Robinson lake. Also will prepare information on the health of the lake and how be good stewards of the lake by engaging nearby schools in environmental issues.

**St. Charles Lake Watershed Stewardship Committee**

*Project Name: Shoreline Planting*

Funds will be used to natural plants to entice new members to their committee and to naturalize more of the shorelines on St. Charles, Middle and Hannah lakes.

**Valley East Ratepayers Association (Frenchman, Hanmer, Joe and Dixon Lakes)**

*Project Name: Shoreline Reclamation*

Funds will be used to purchase natural shoreline trees, plants and grasses to prevent shoreline erosion around these lakes.

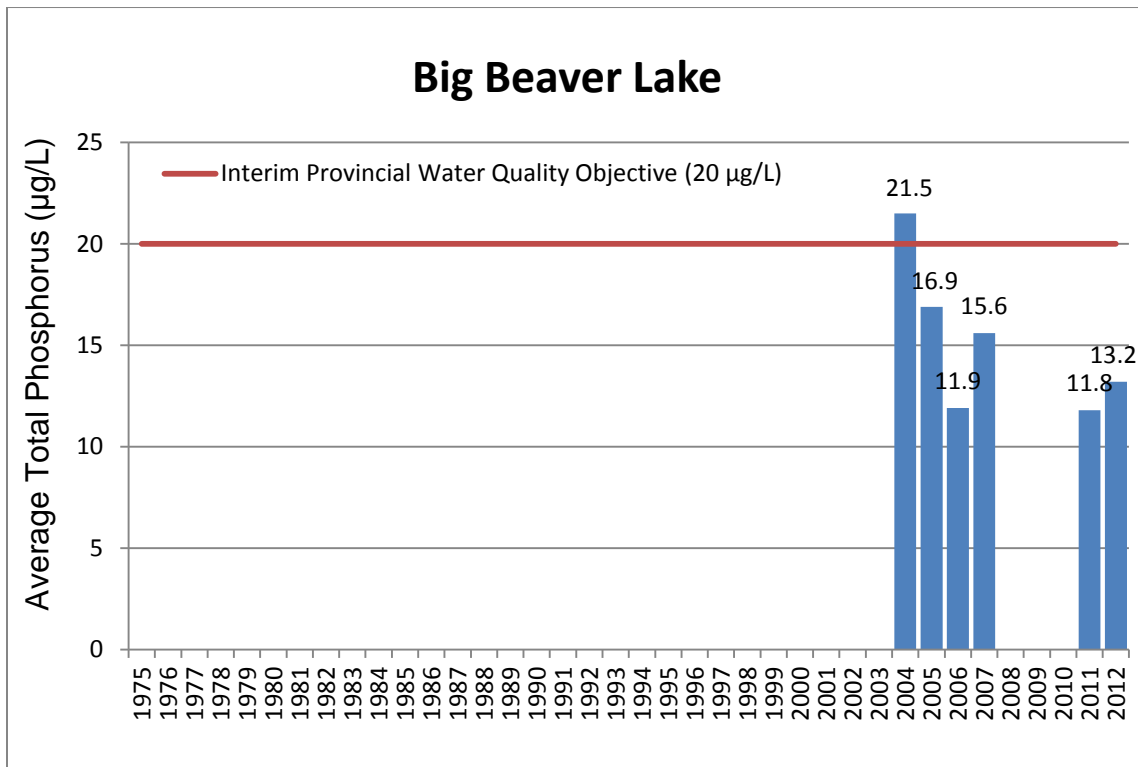
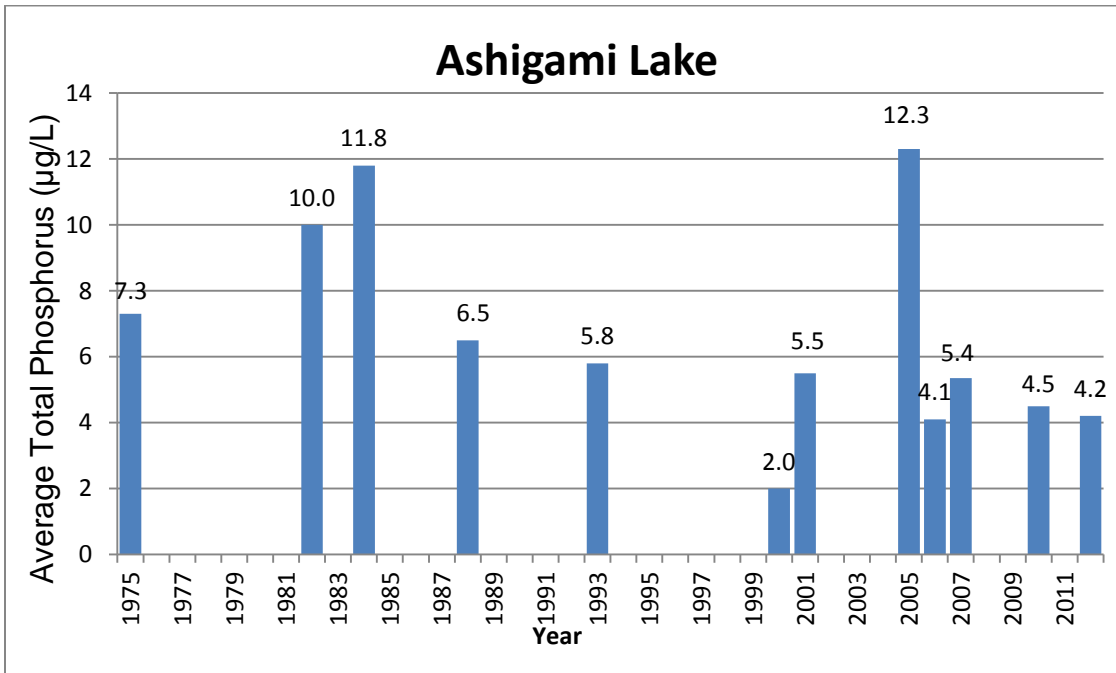
### Stewardship Groups

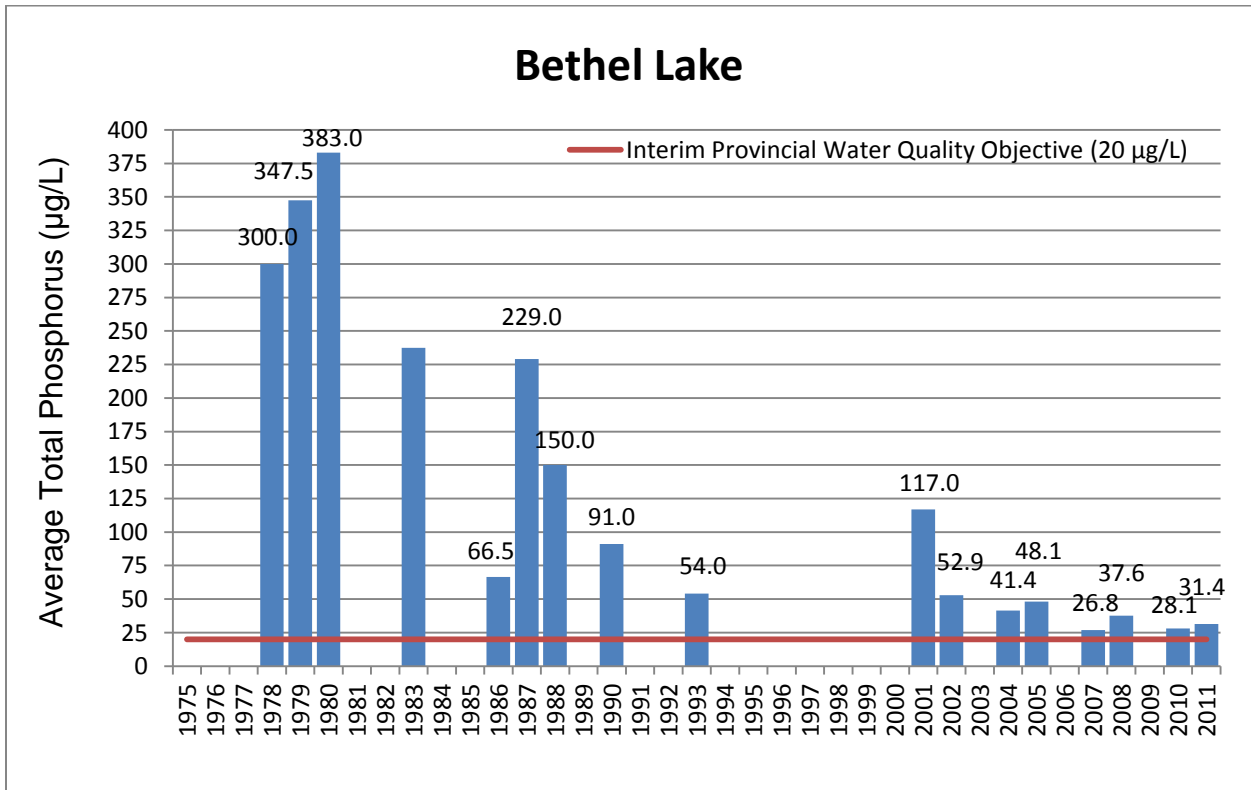
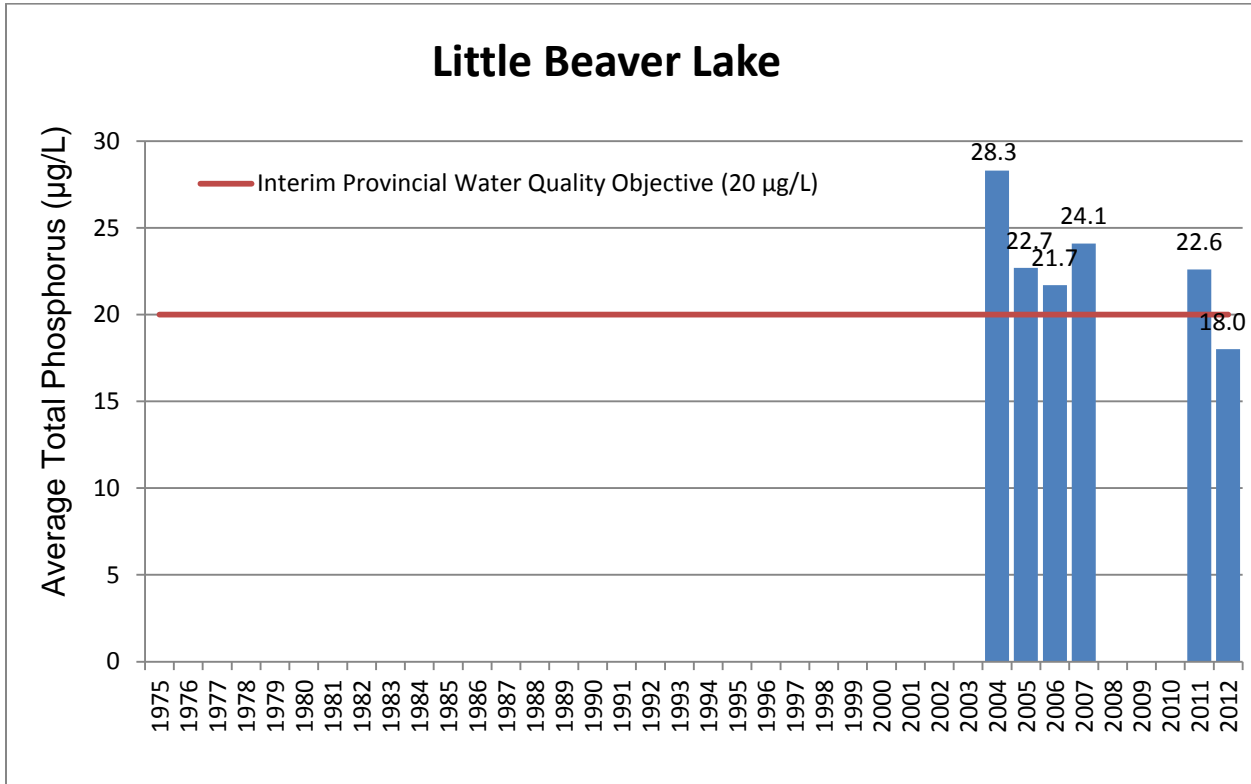
Currently there are 28 lake stewardship groups throughout the Greater Sudbury area, acting as important agents for positive change in shoreline living practices.

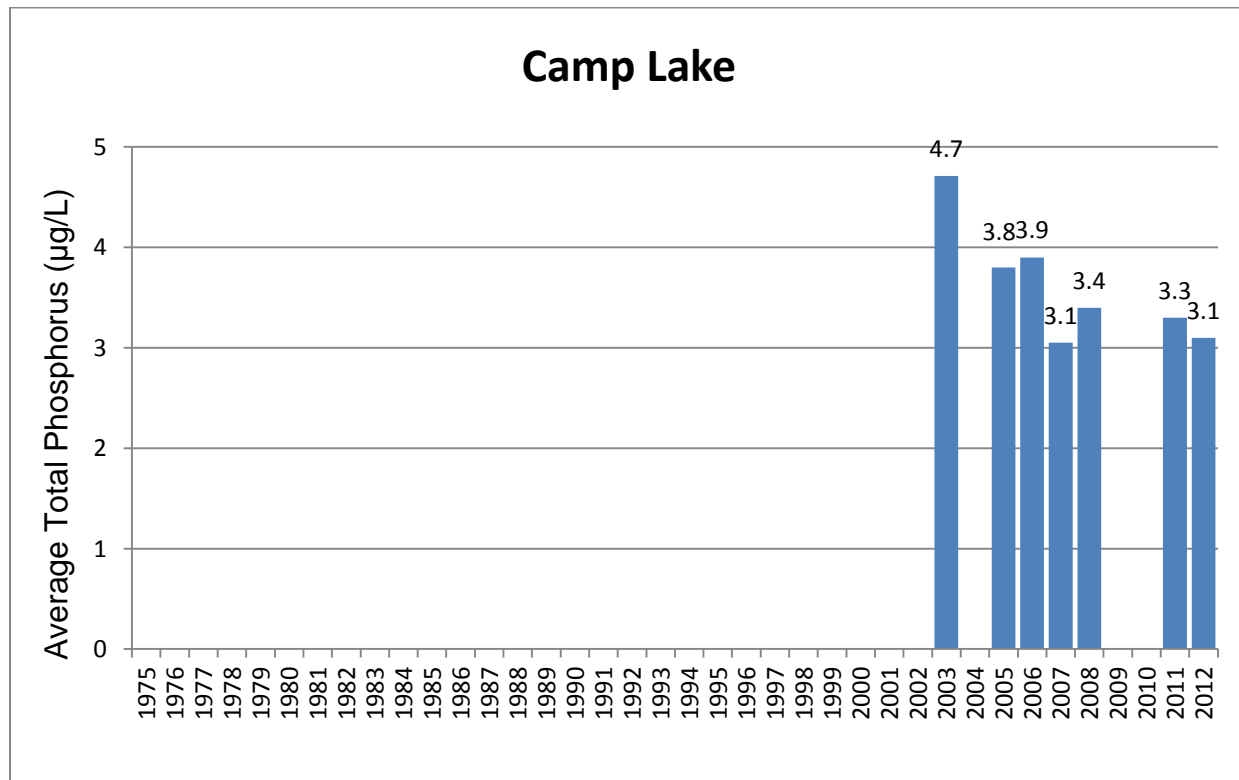
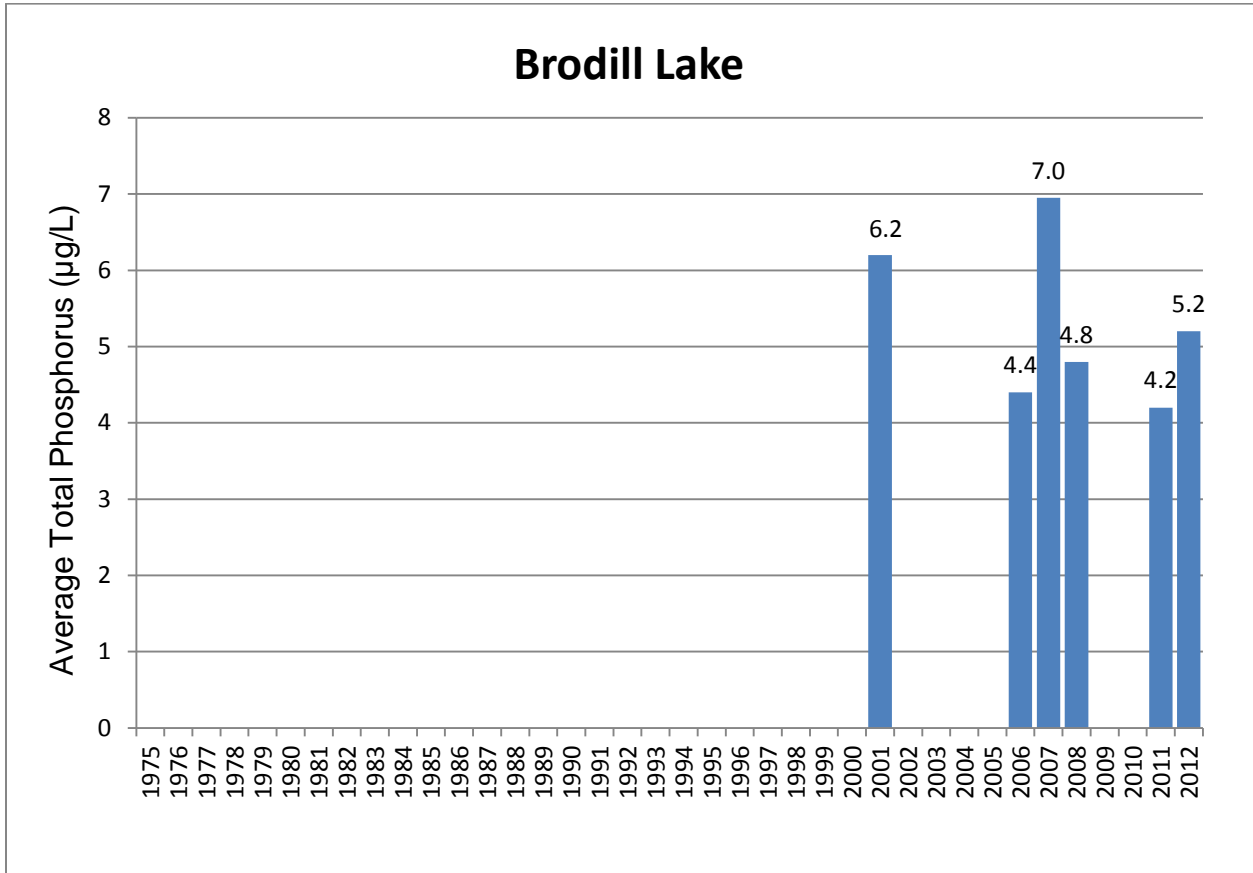
#### List of current lake stewardship groups in Greater Sudbury

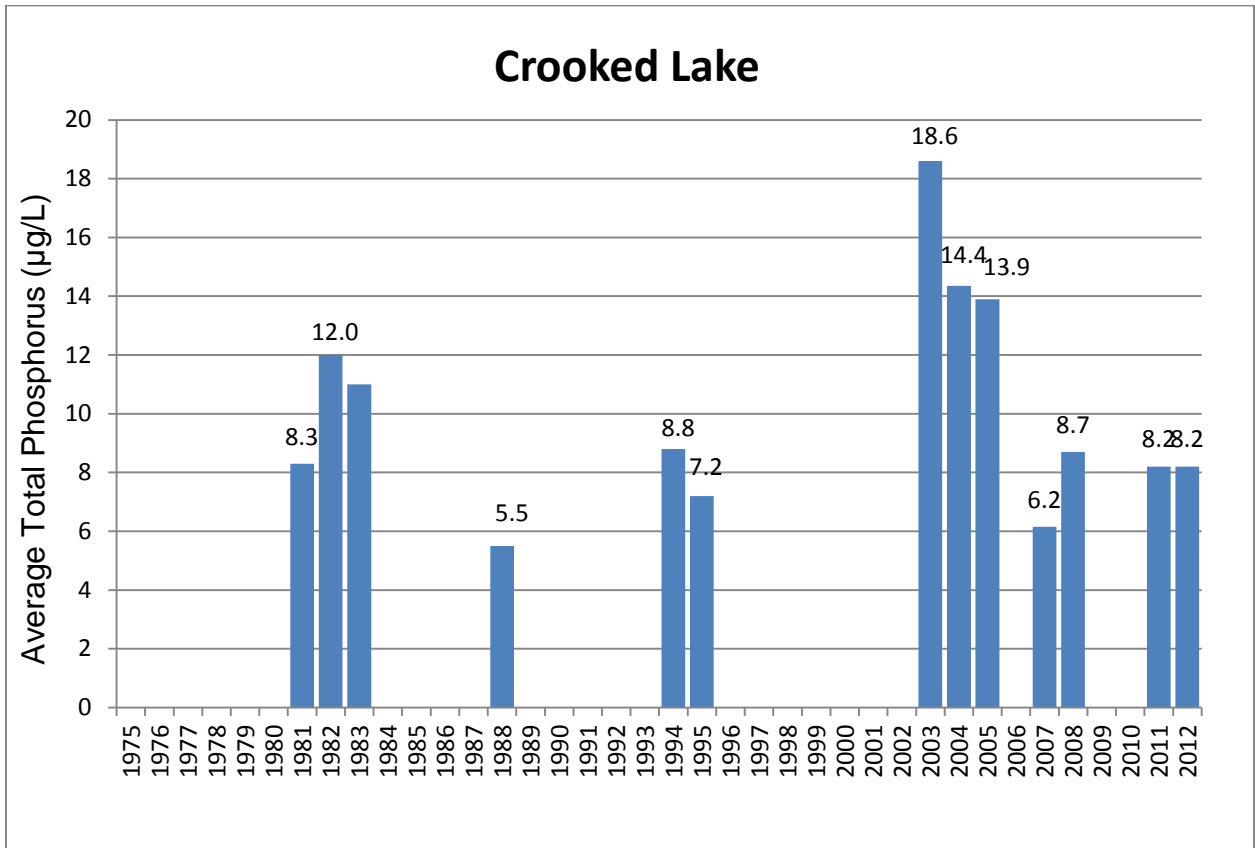
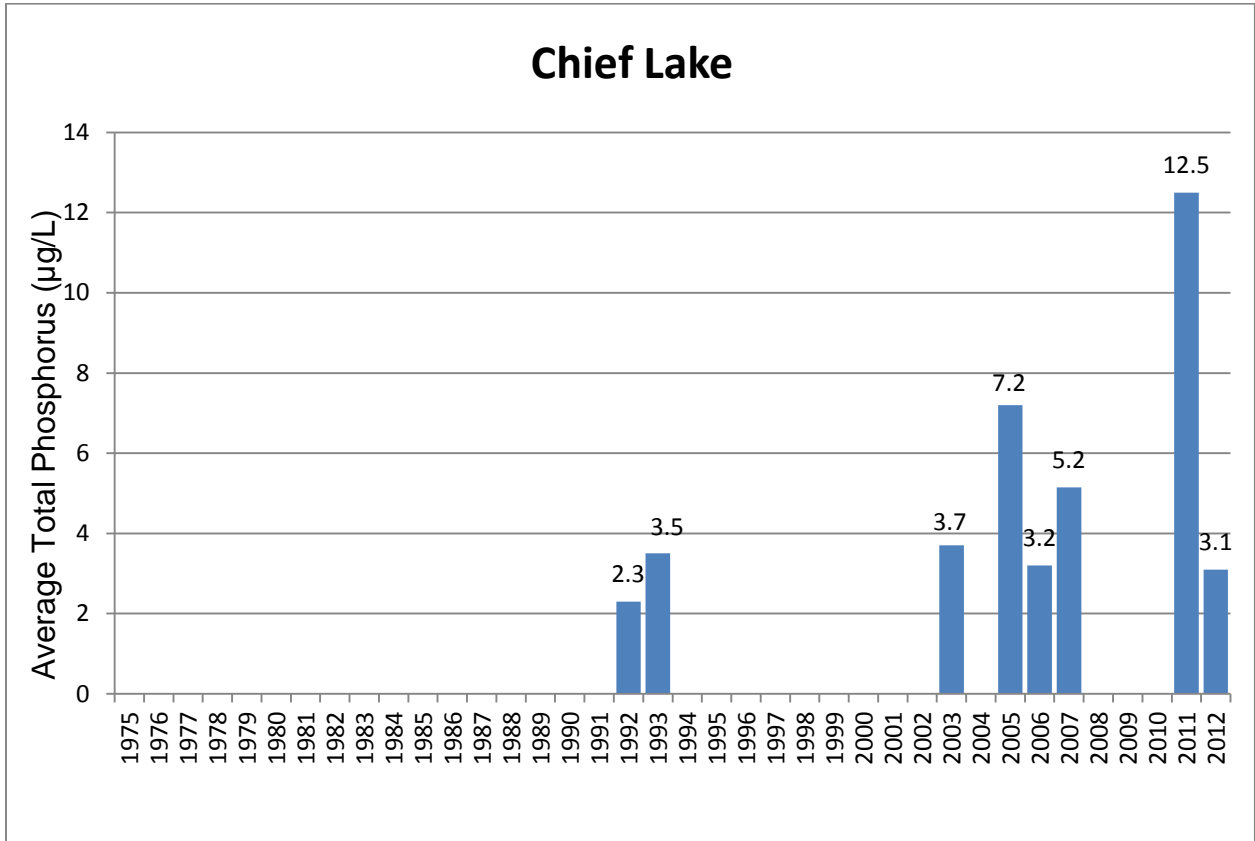
Stewardship Group	Lake	Website/Email
Friends of Bennett Lake	Bennett	
Black Lake	Black Lake	
Broder 23	Broder 23	
Crooked Lake	Crooked Lake	
Fairbank Lake Cottagers Association	Fairbank	
Friends of McFarlane Lake	McFarlane	mcfarlanefriend@eastlink.ca
Grassy Lake	Grassy	
Ironside Lake	Ironside	
Kukagami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

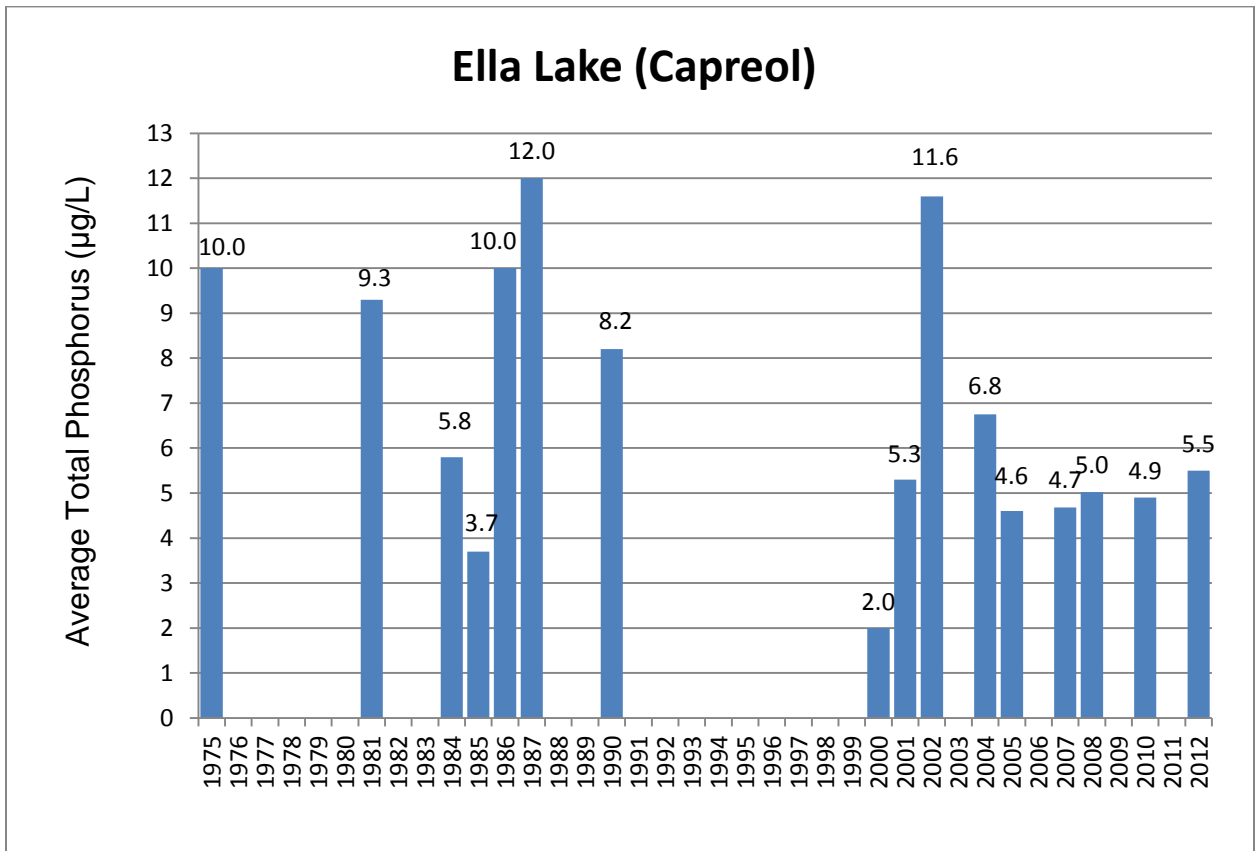
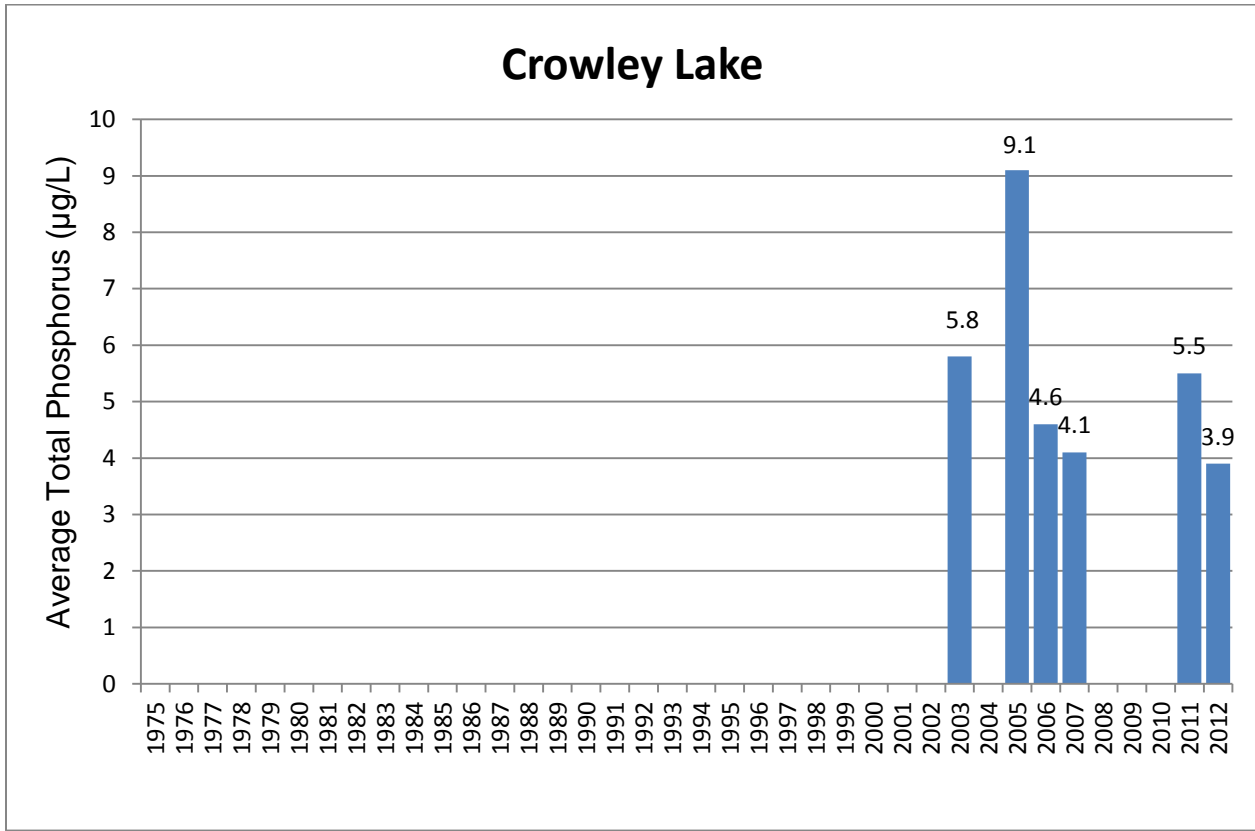
## **Spring Phosphorus Results for lakes sampled in 2012**

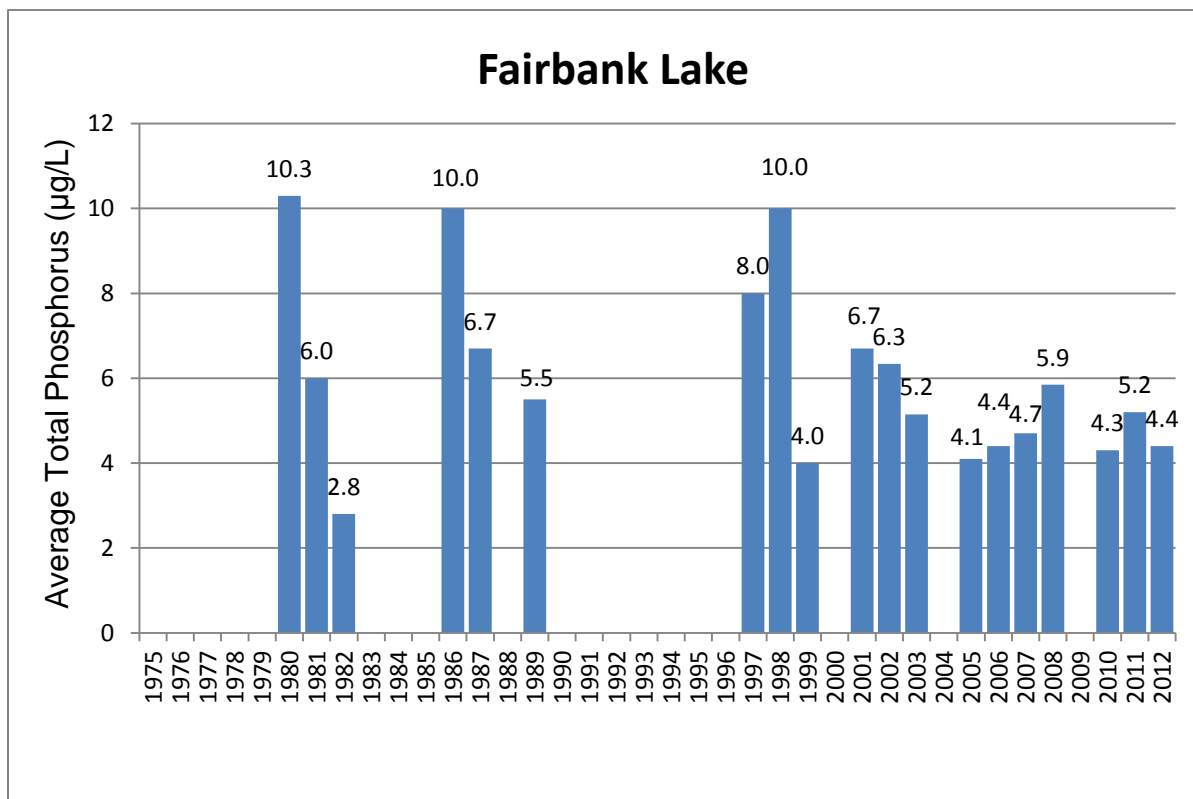
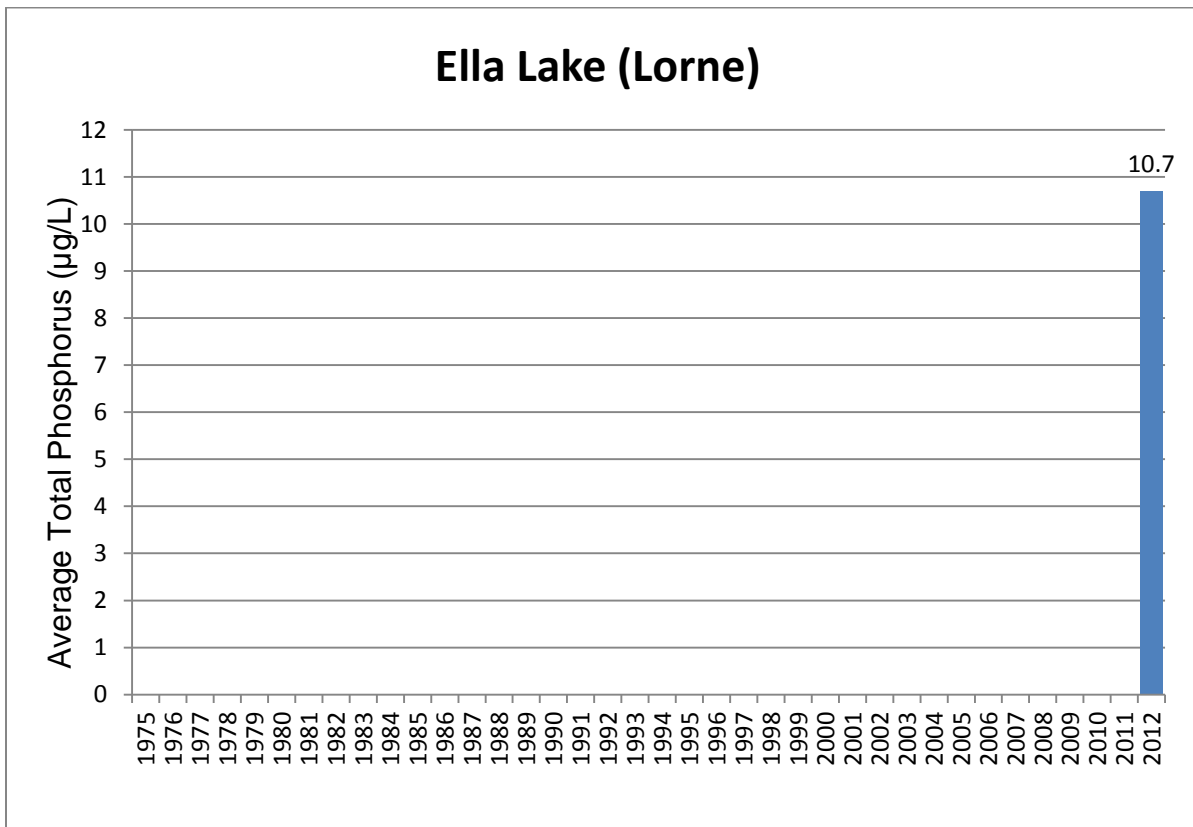


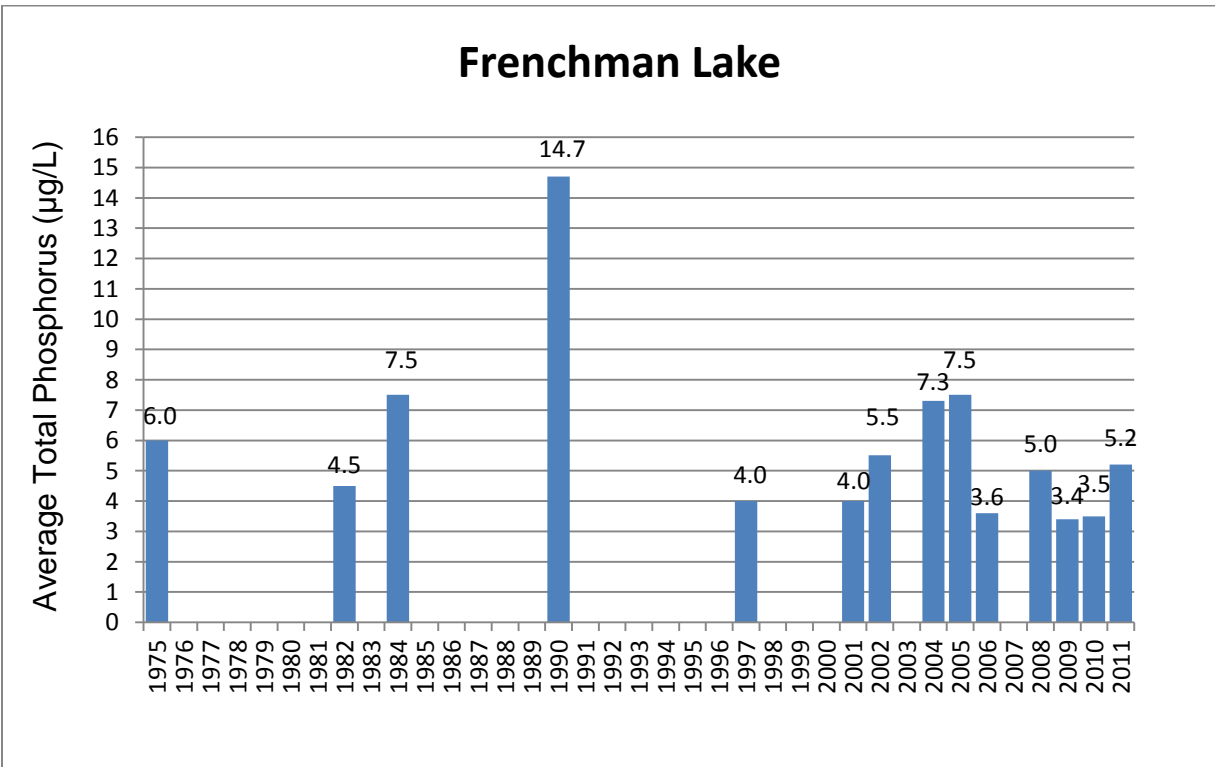
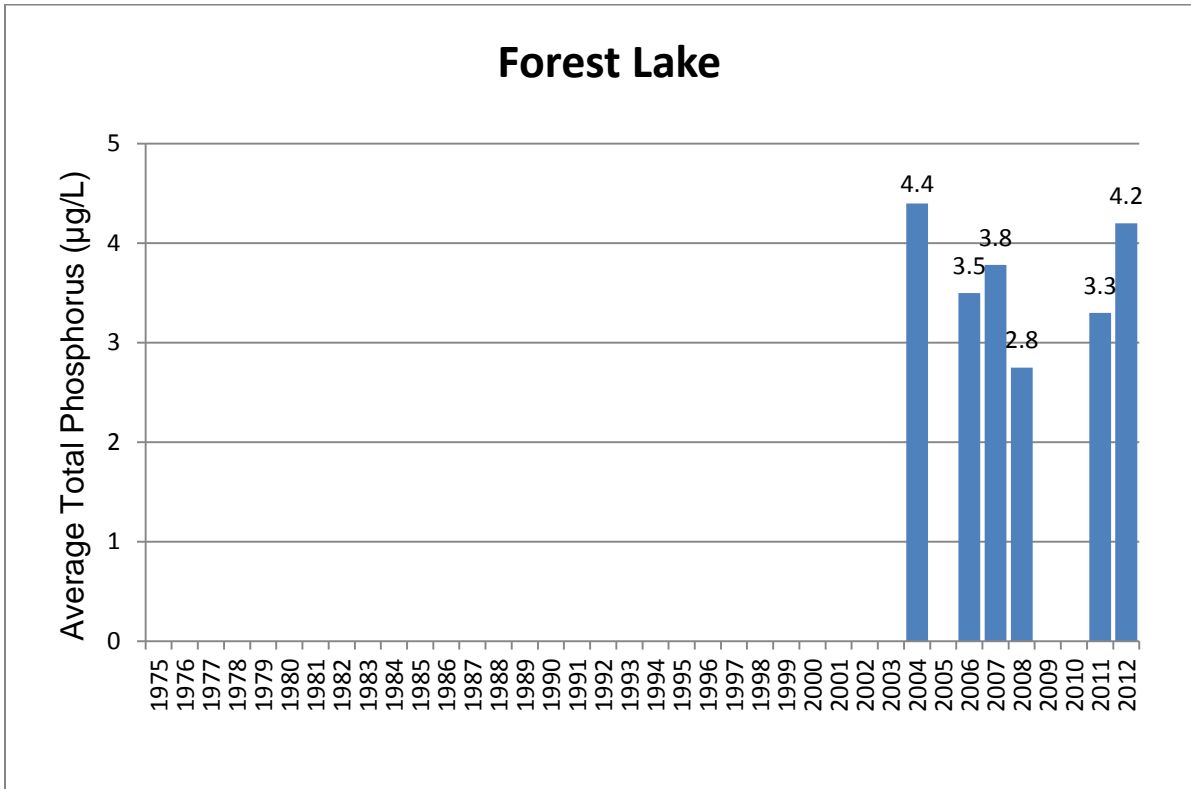


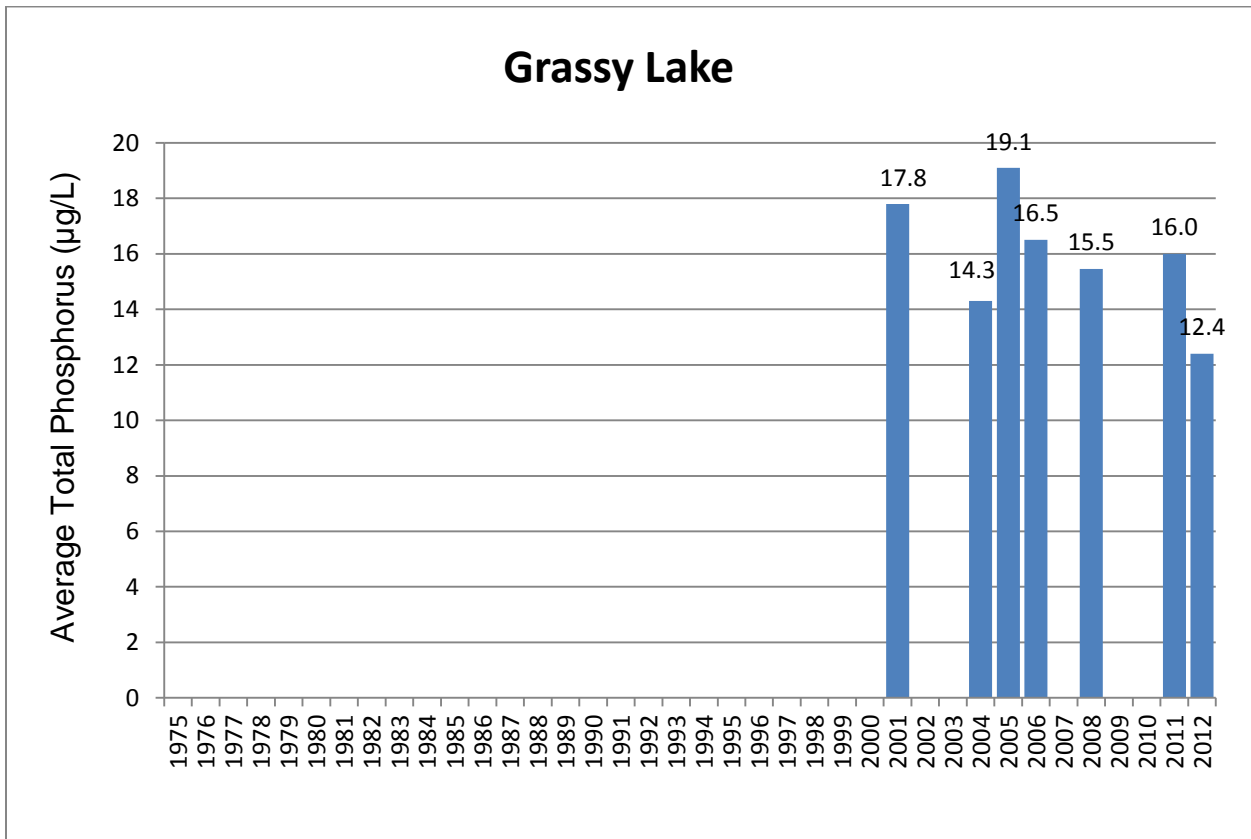
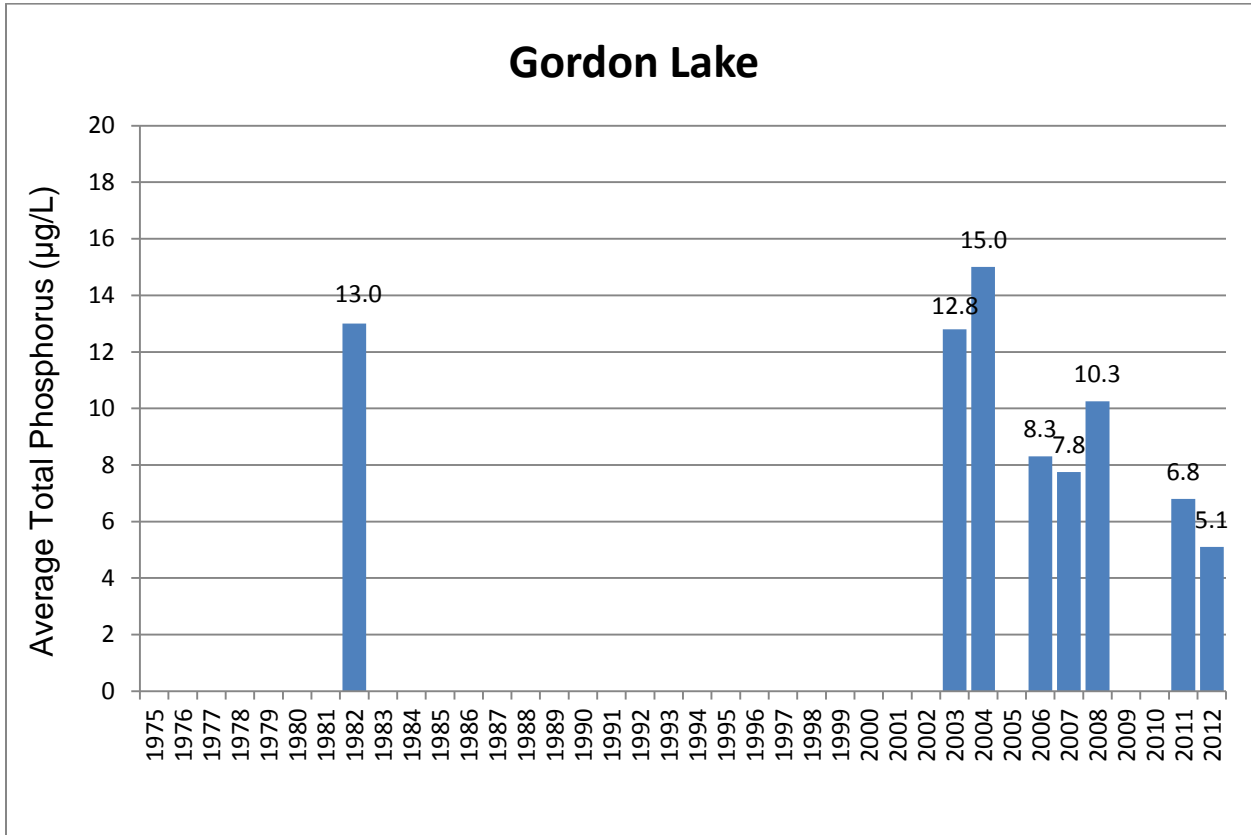


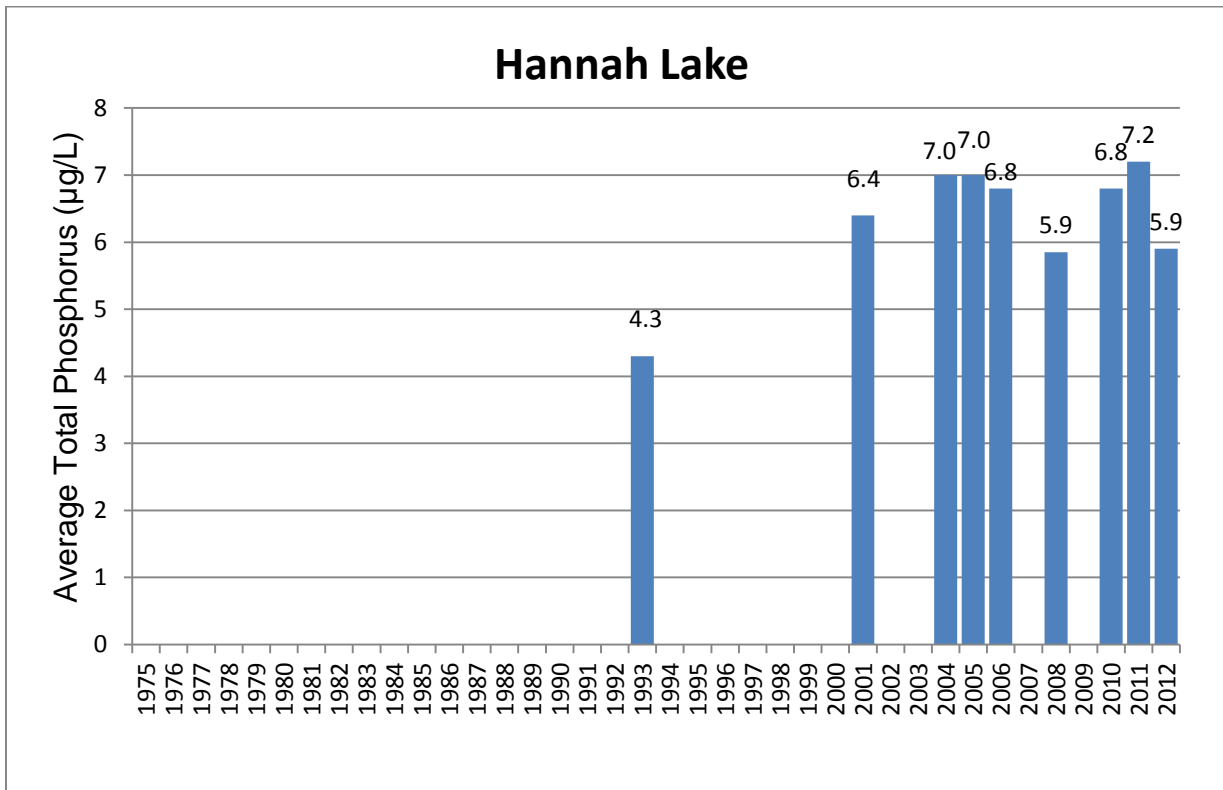
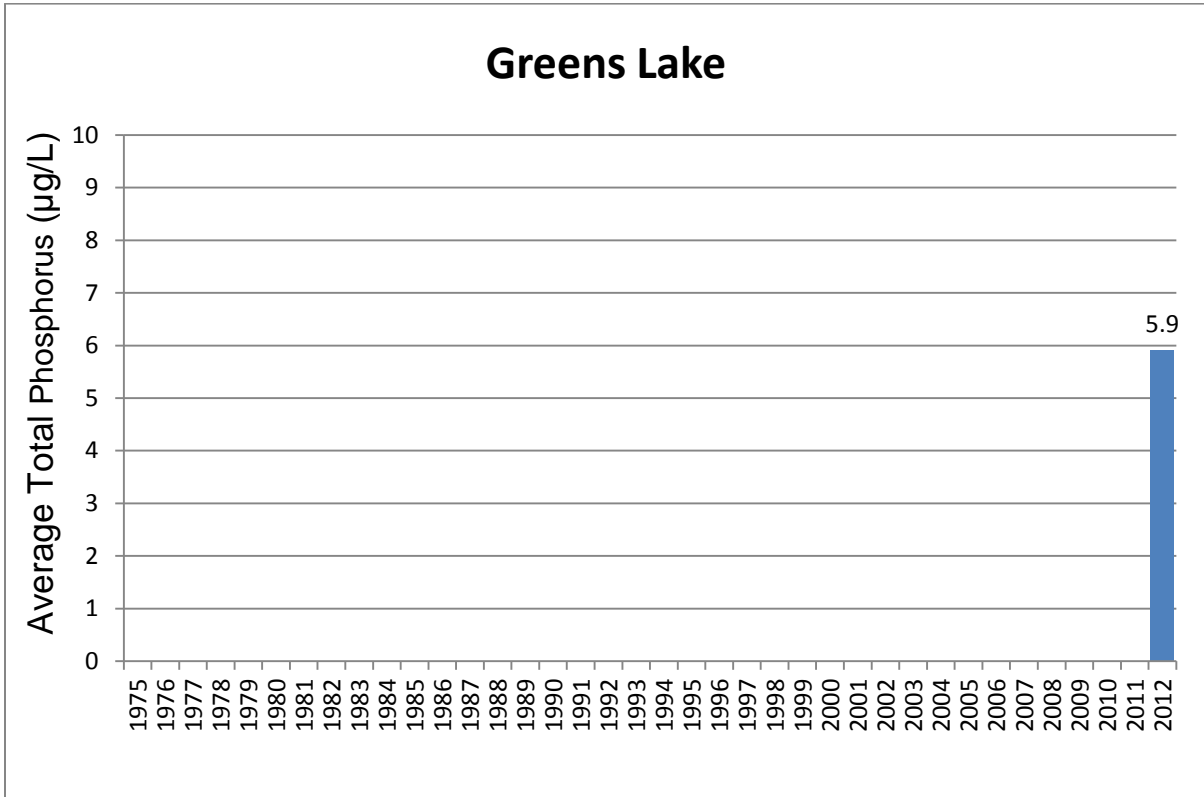


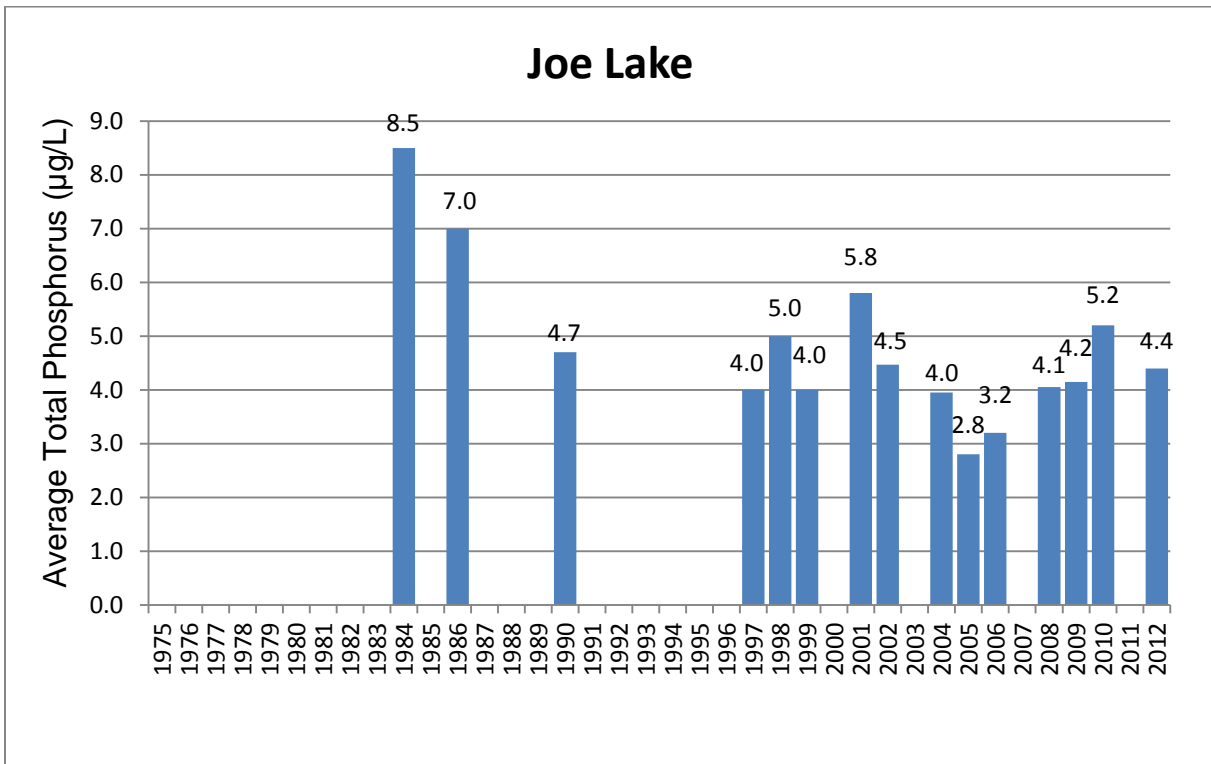
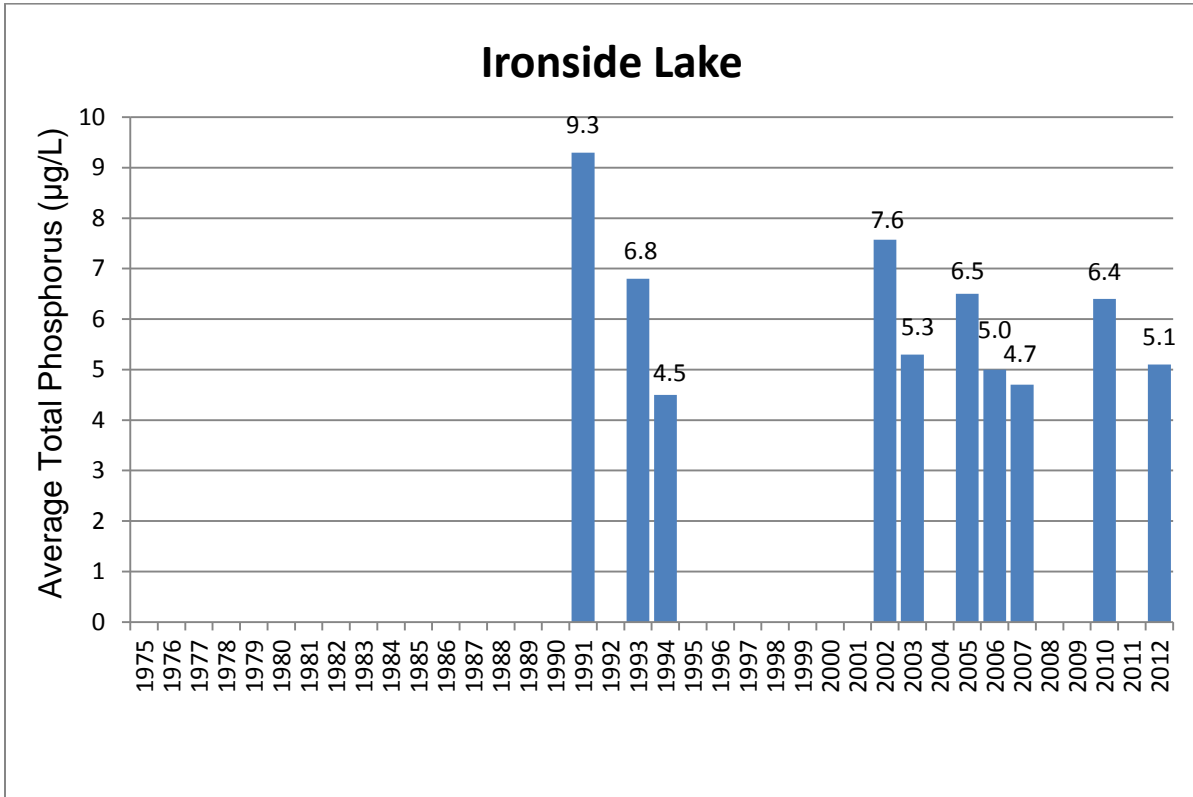


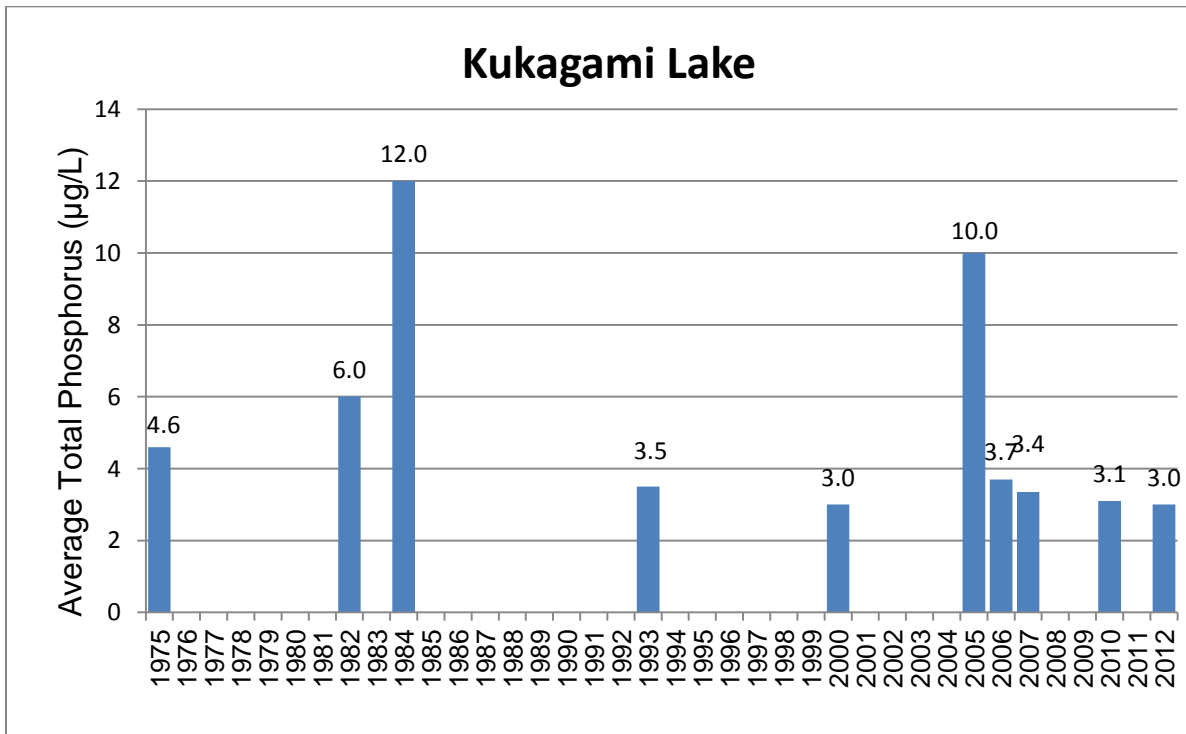
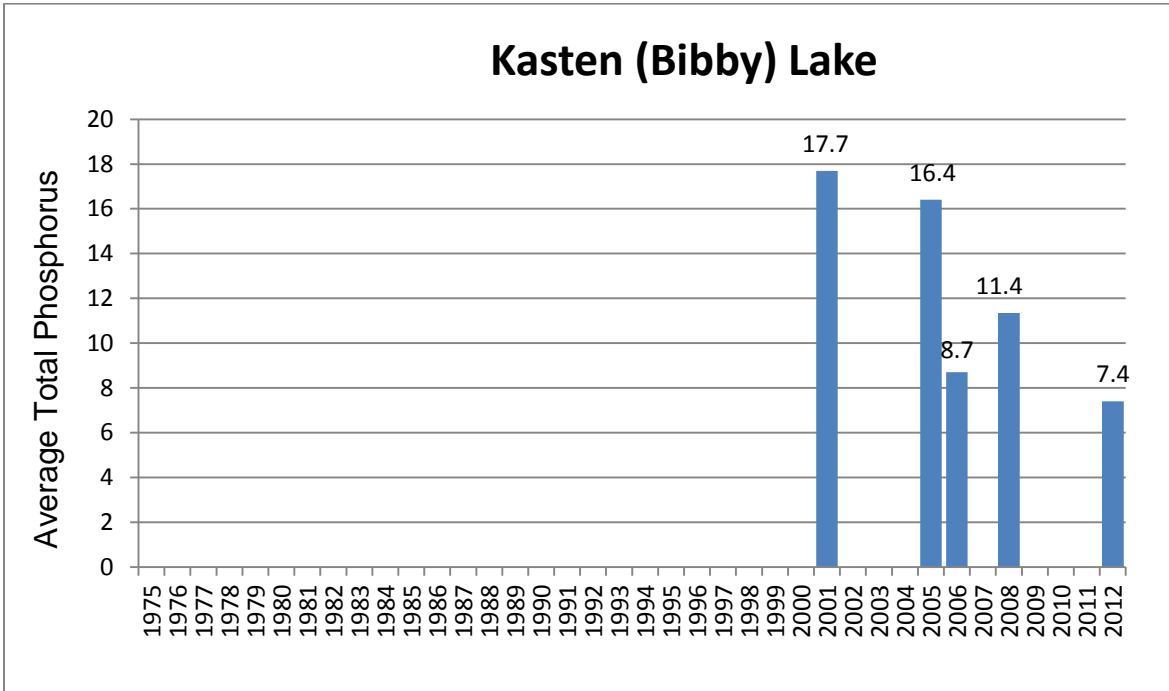


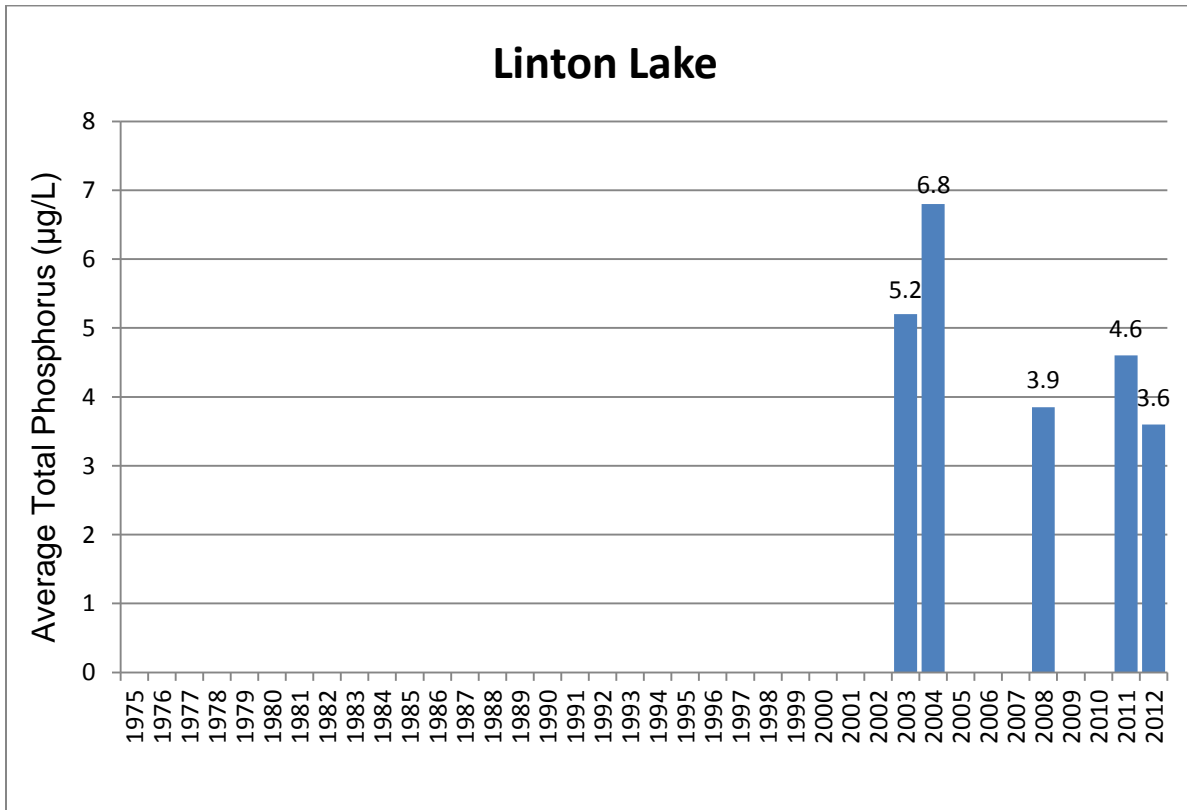
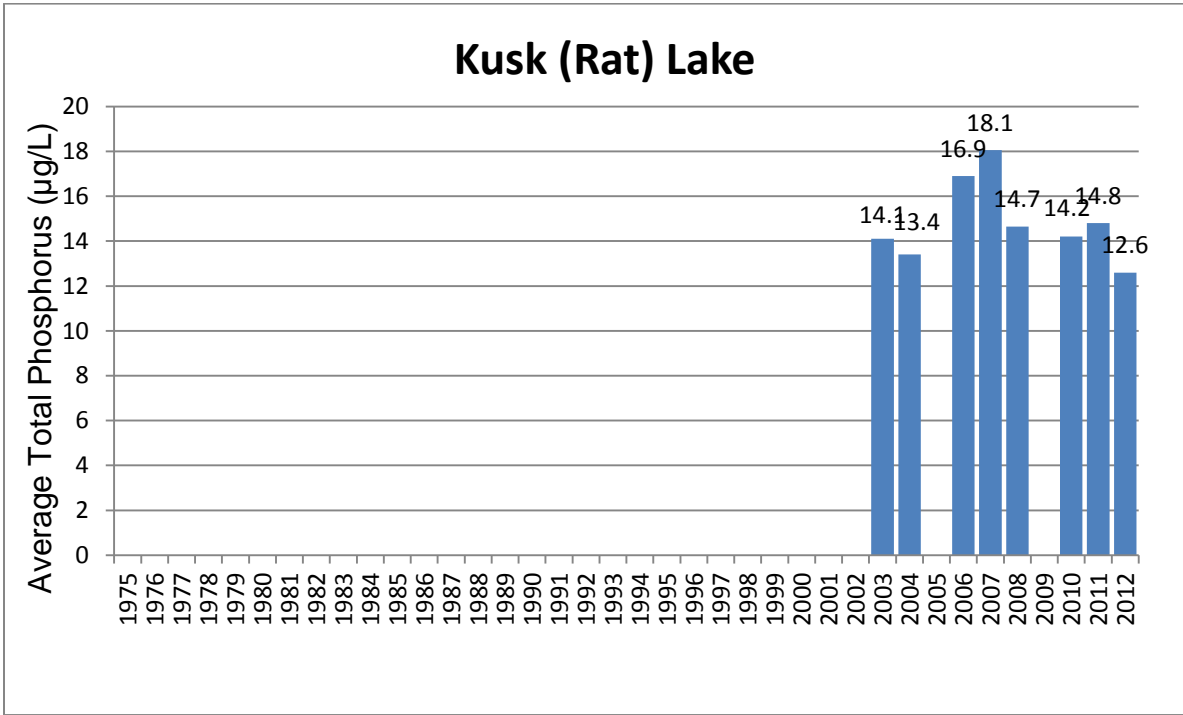


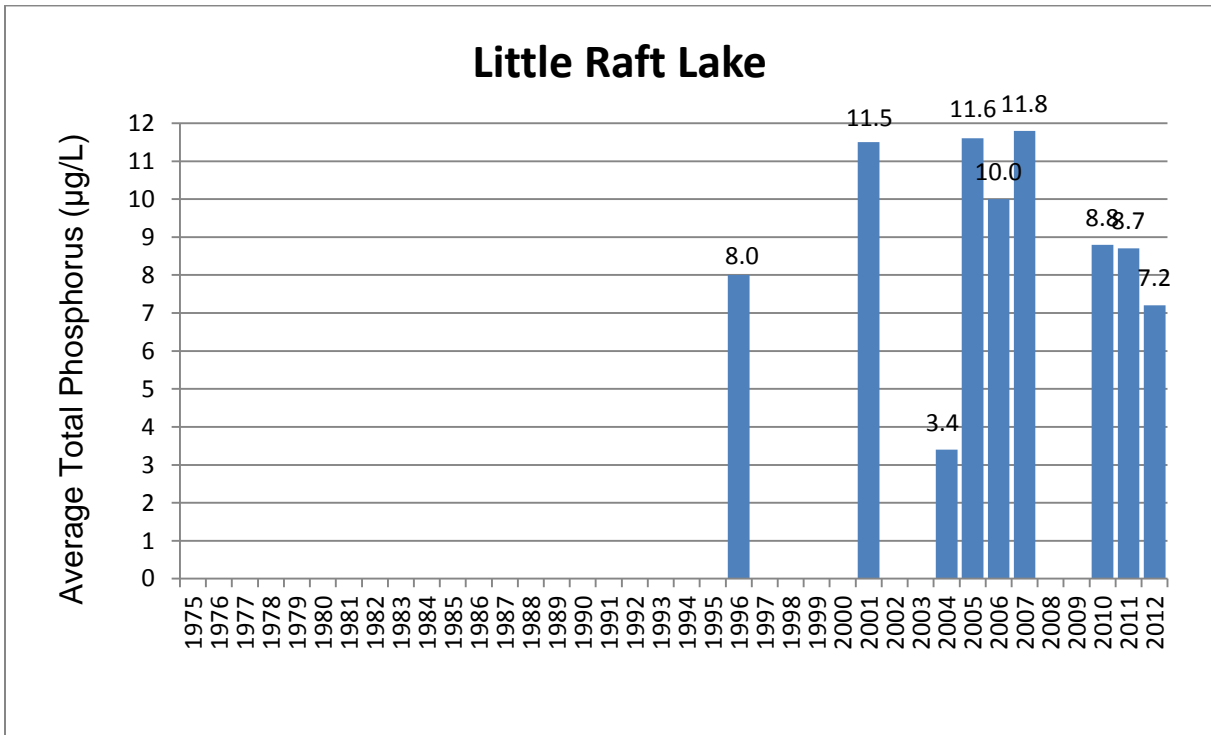
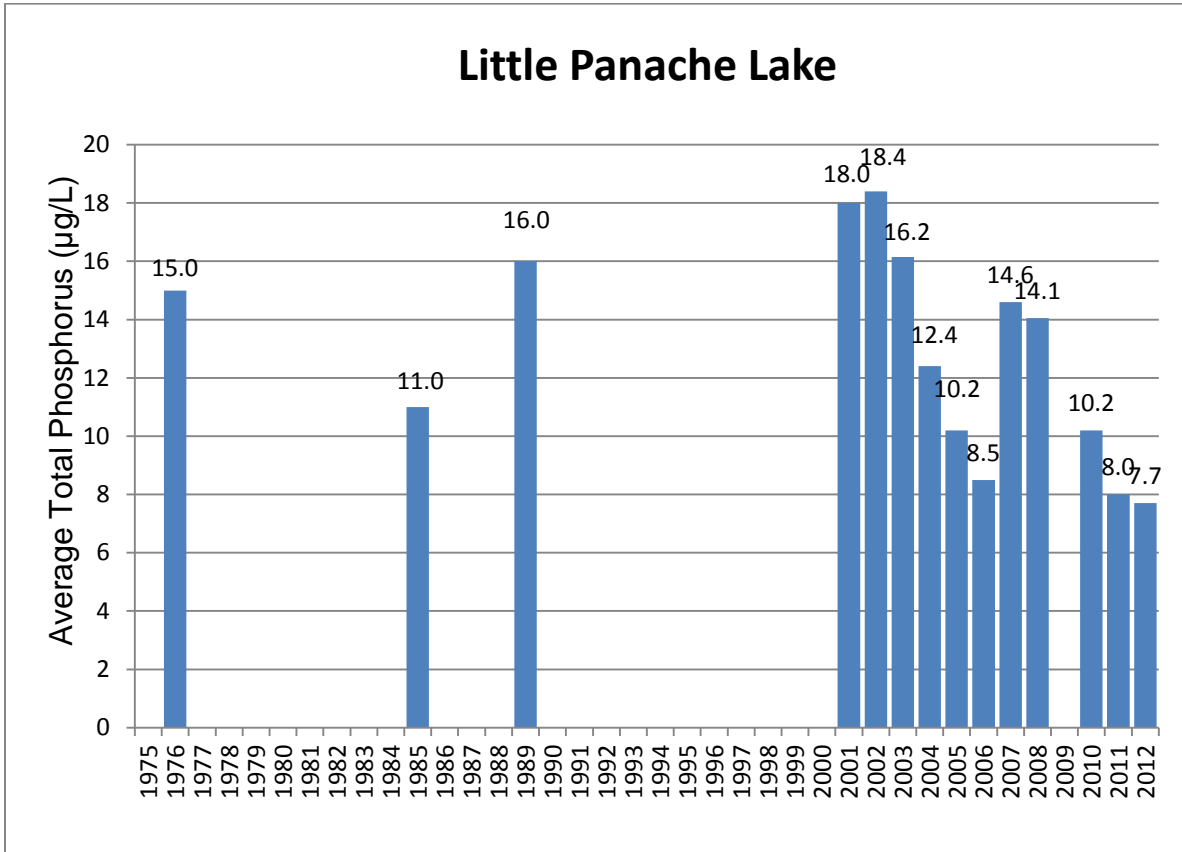


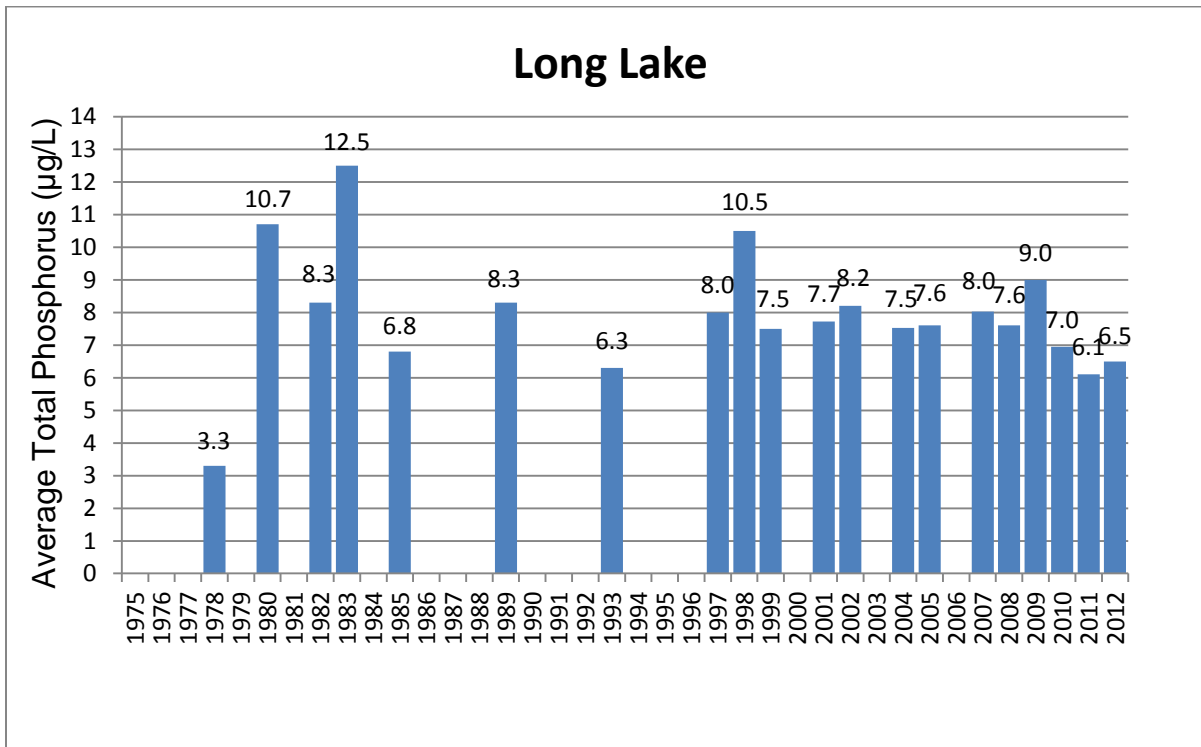
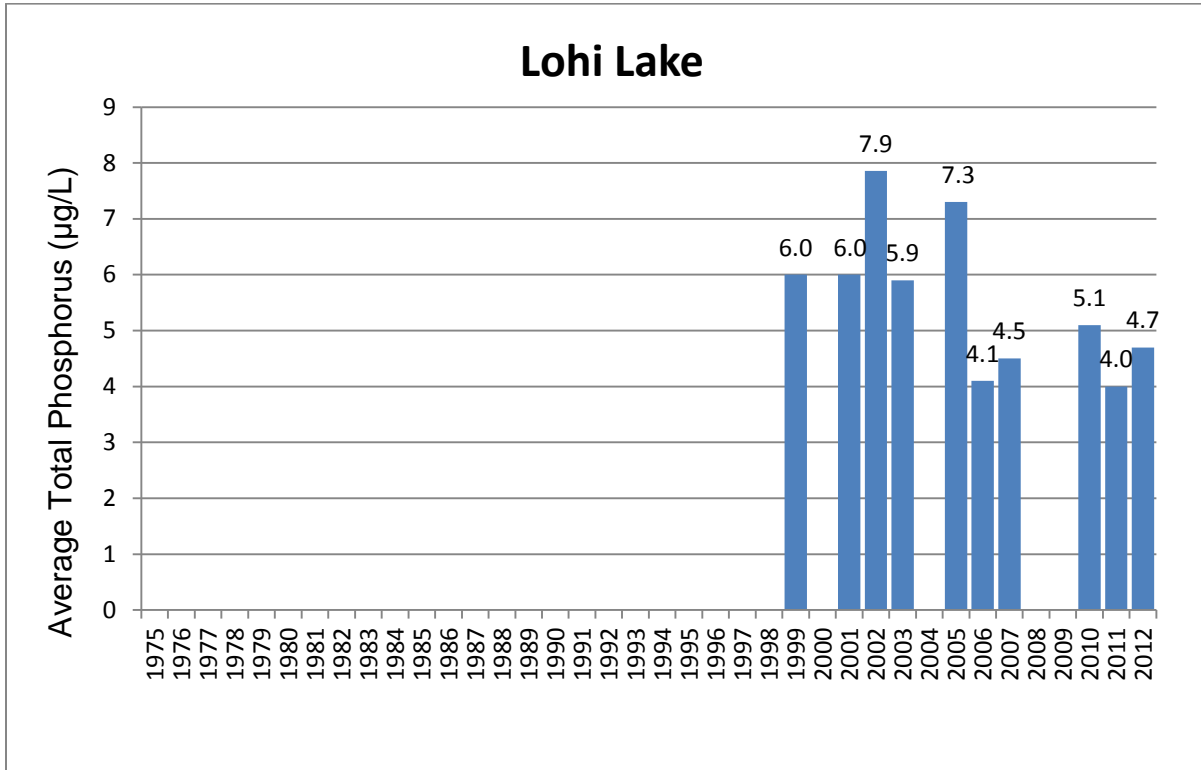


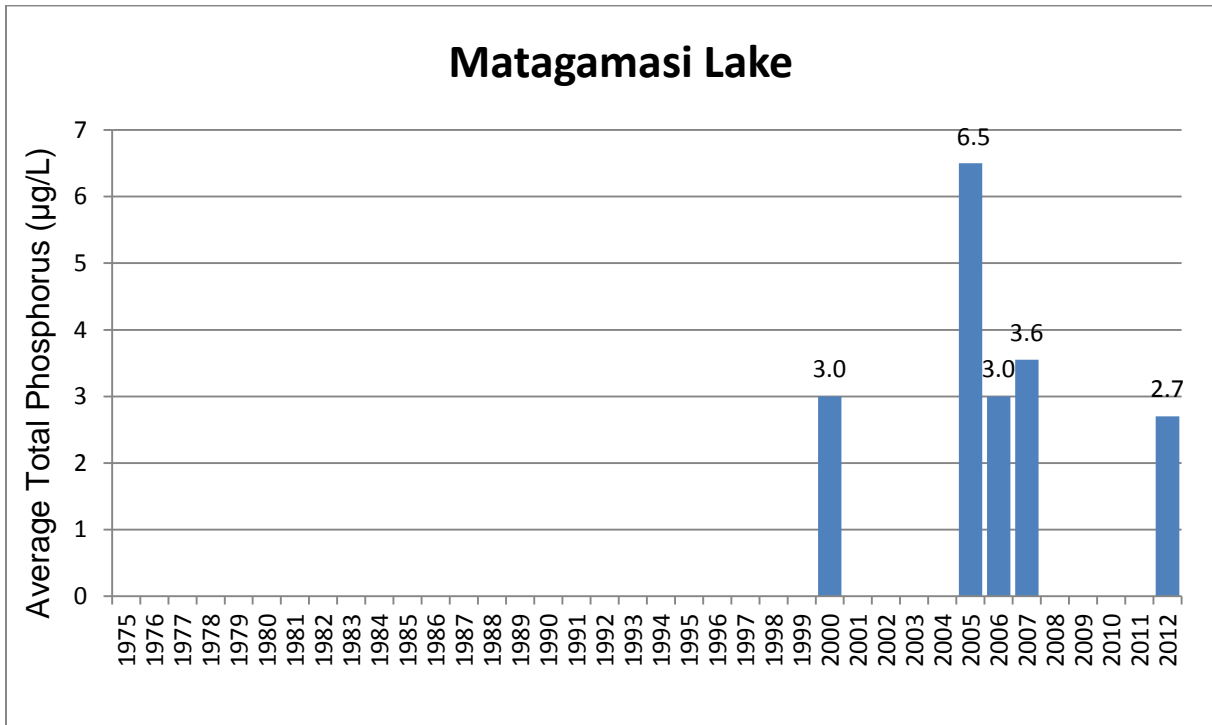
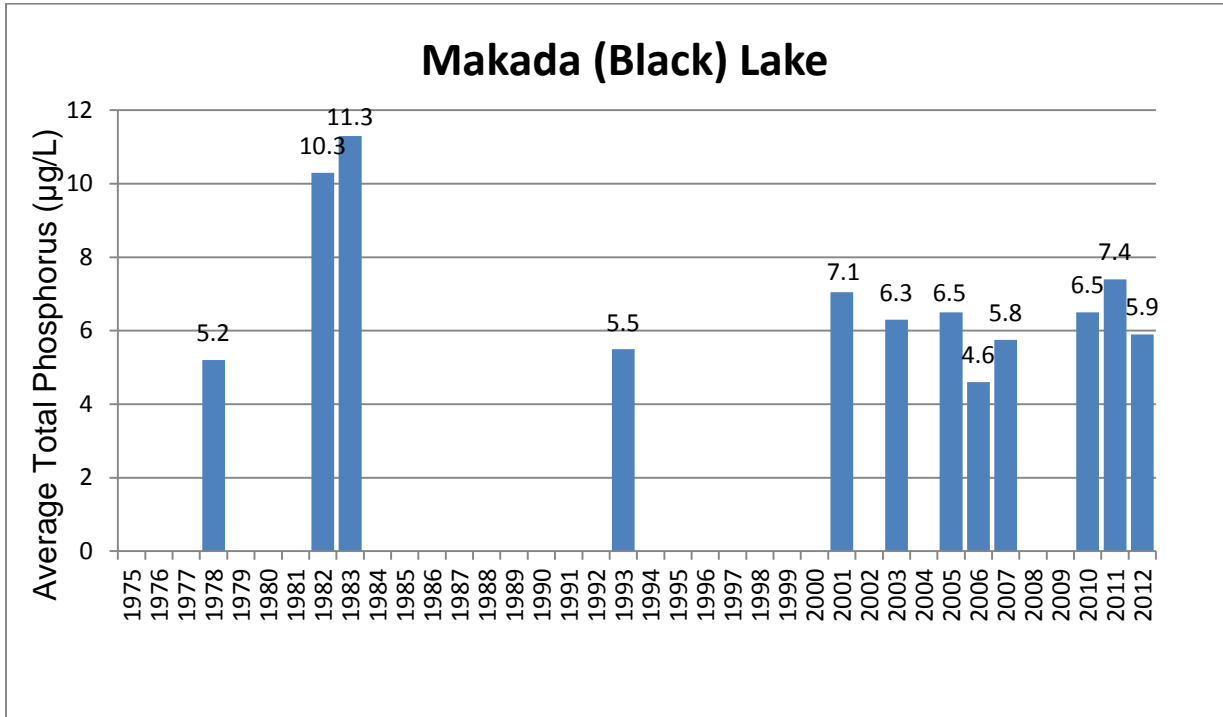


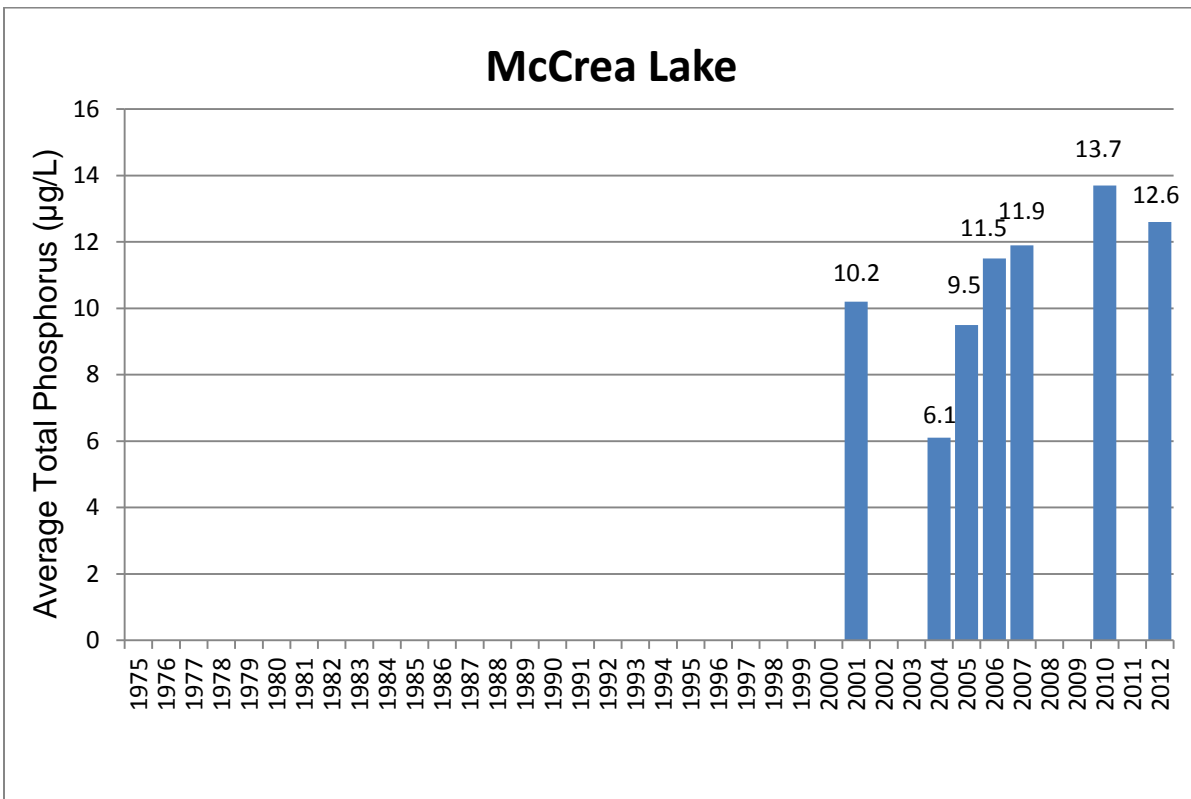
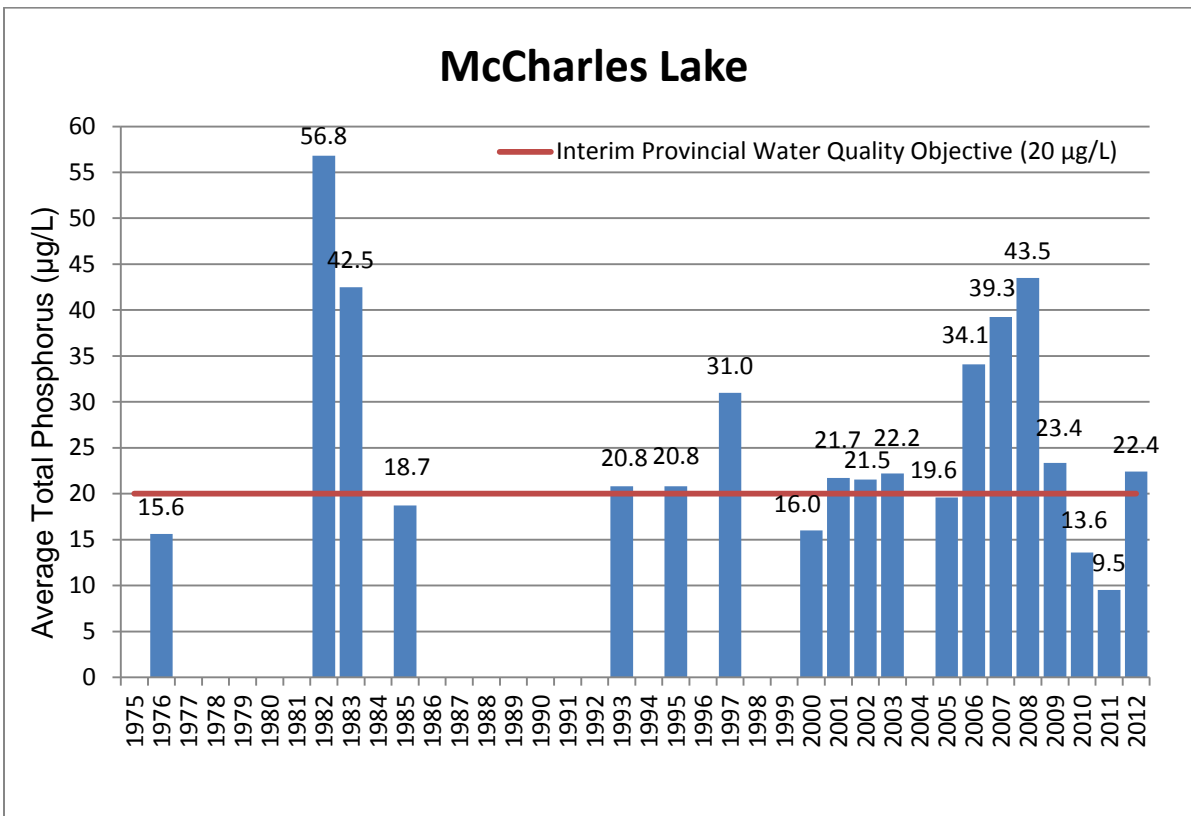


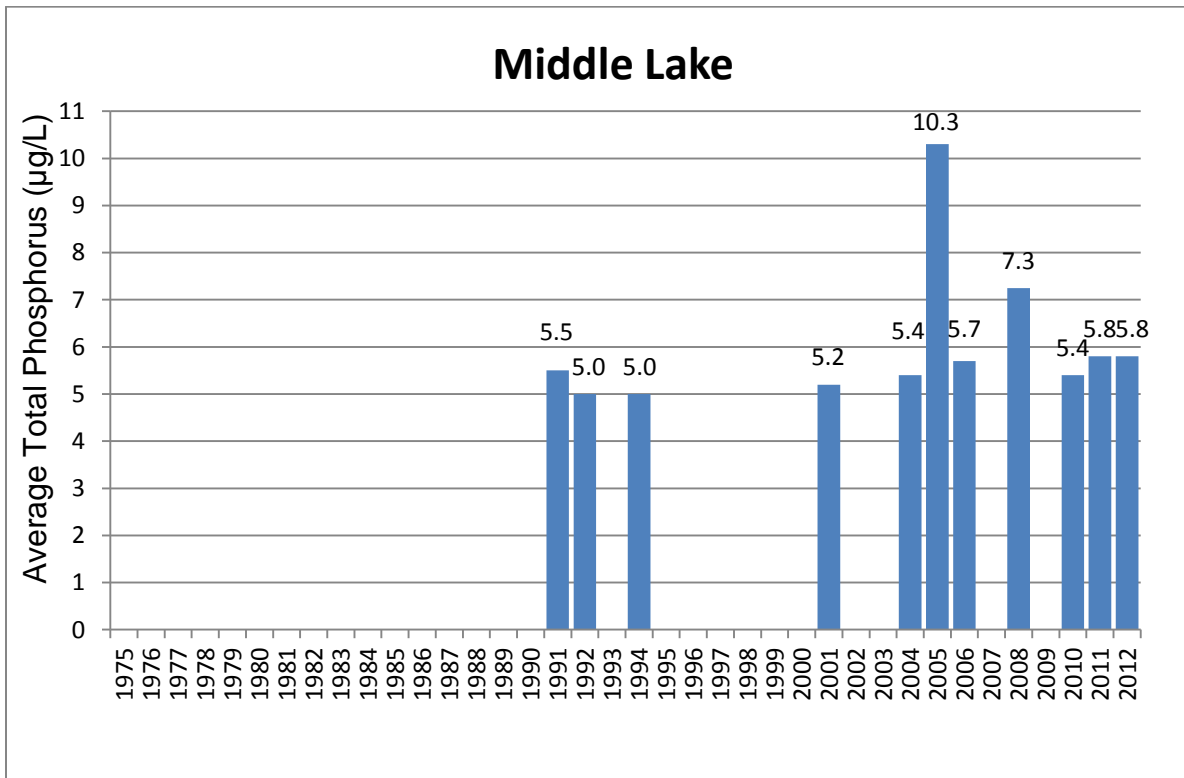
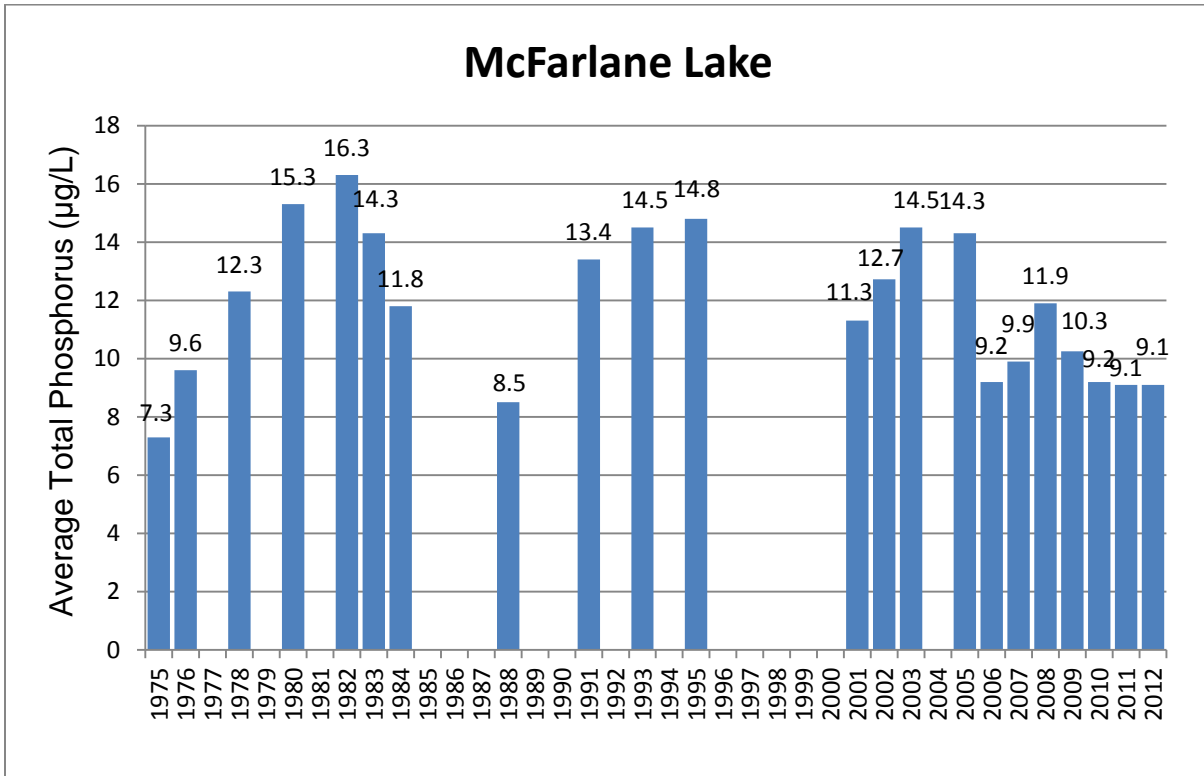


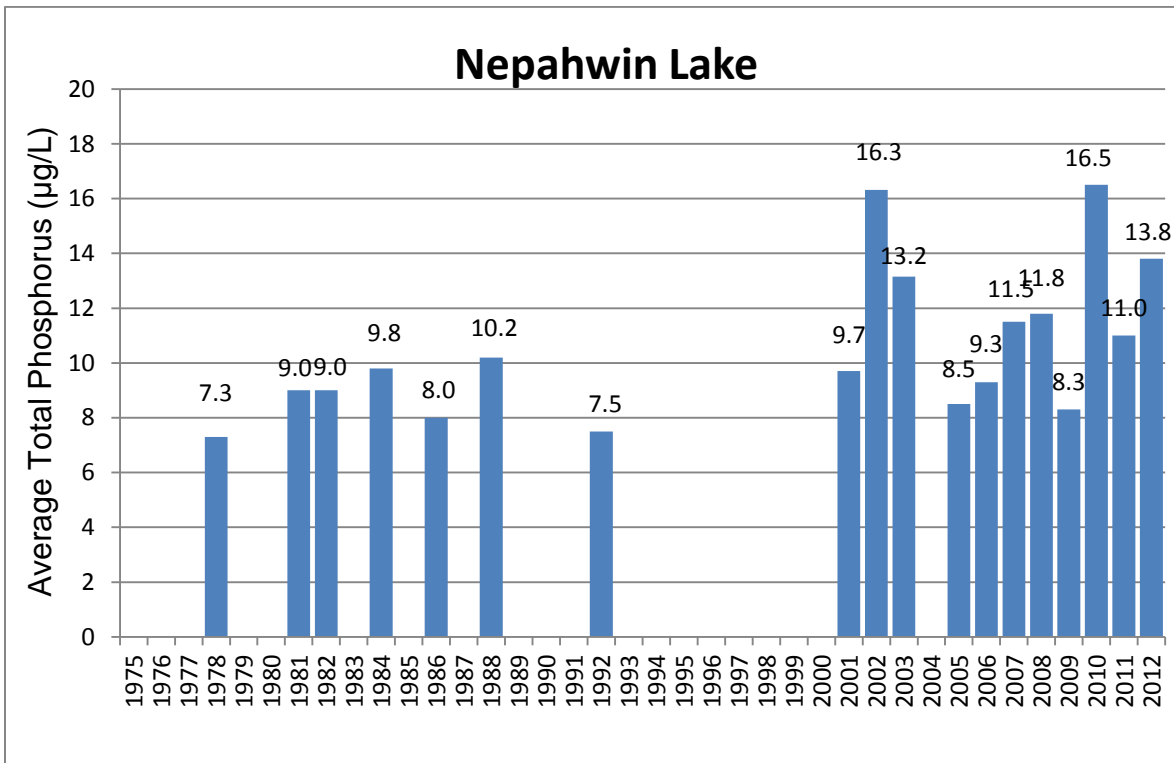
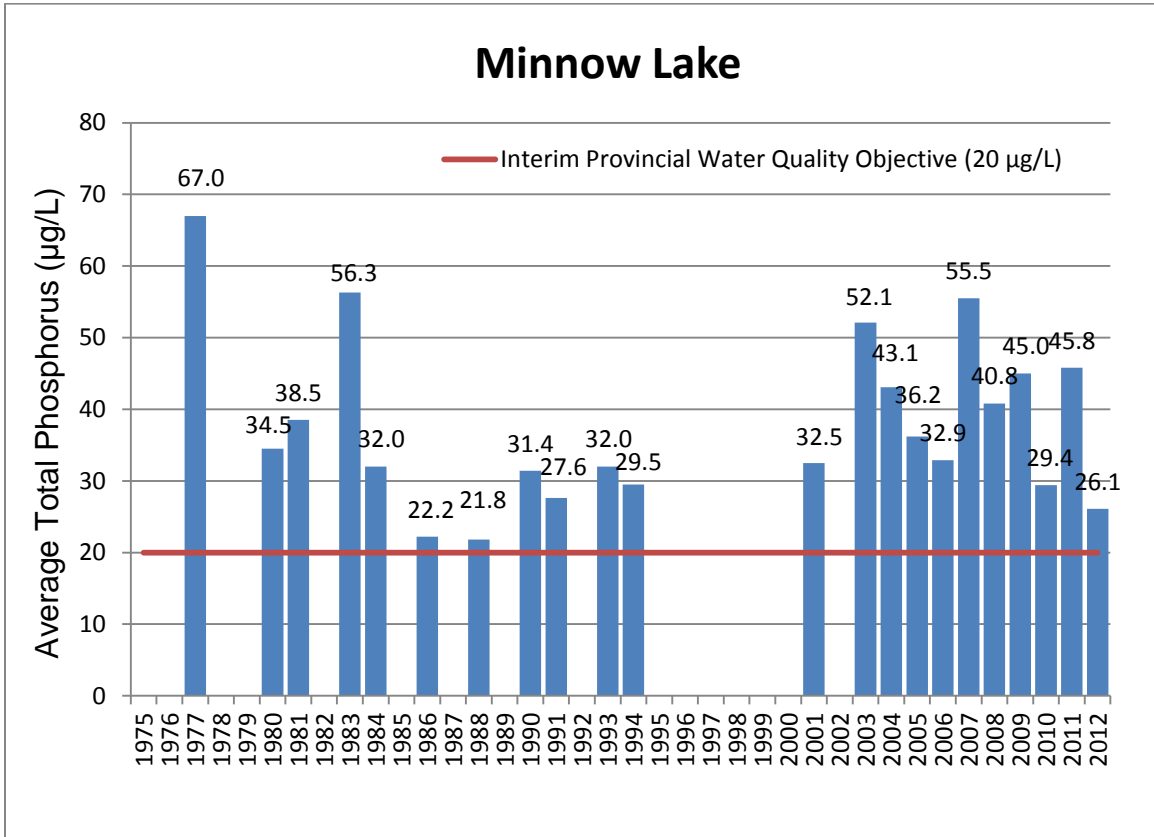


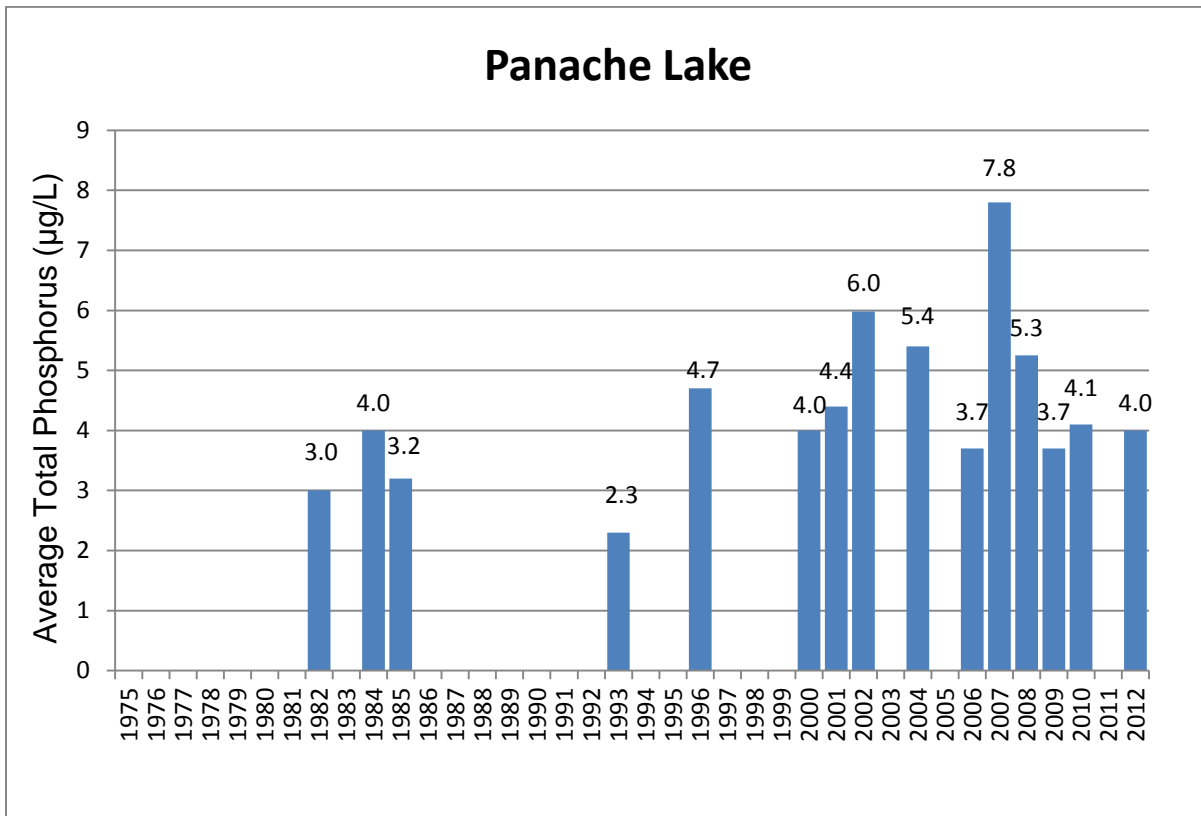
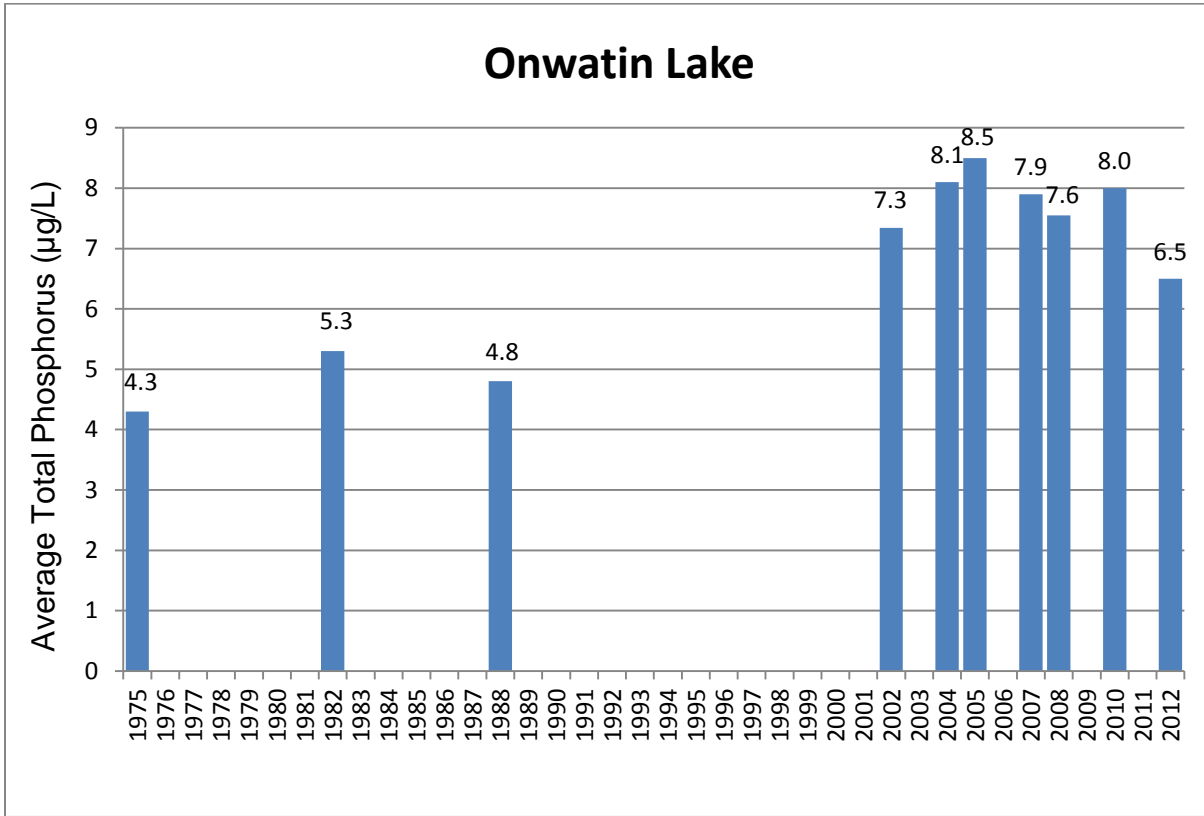


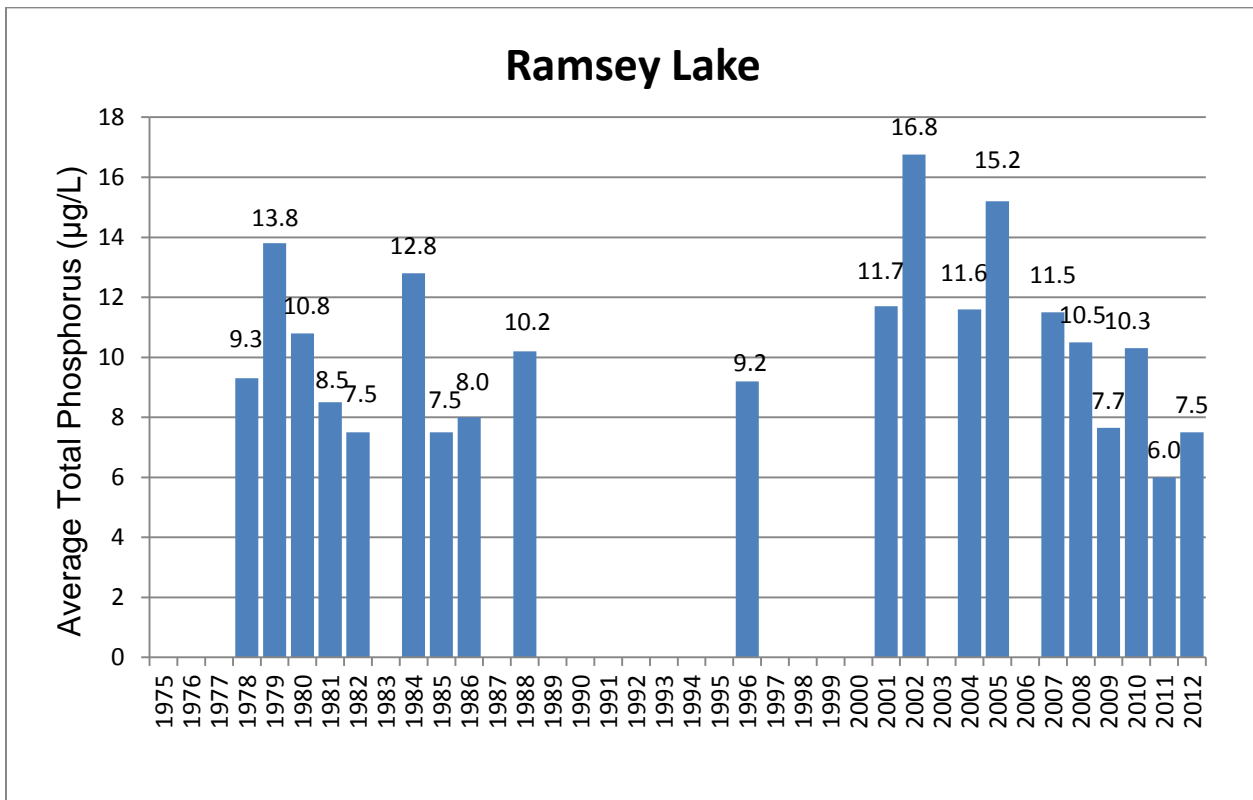
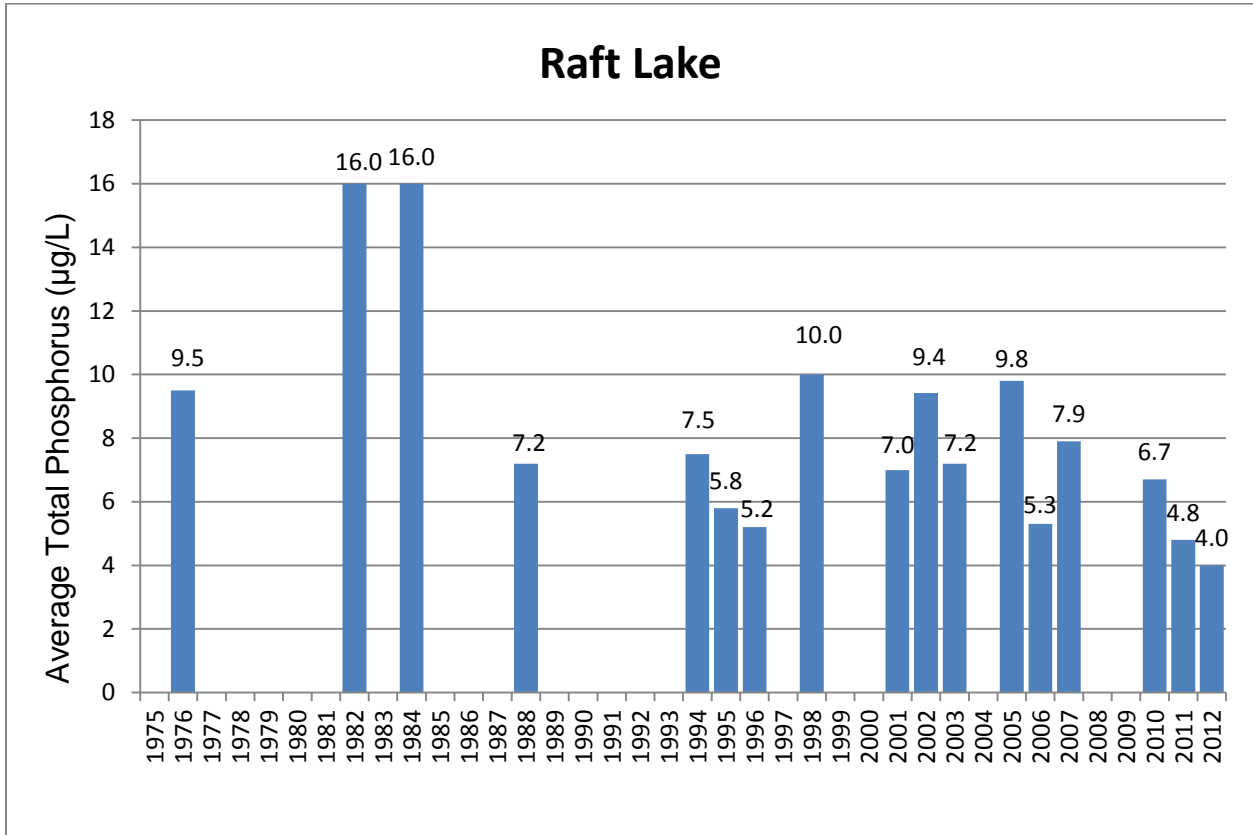


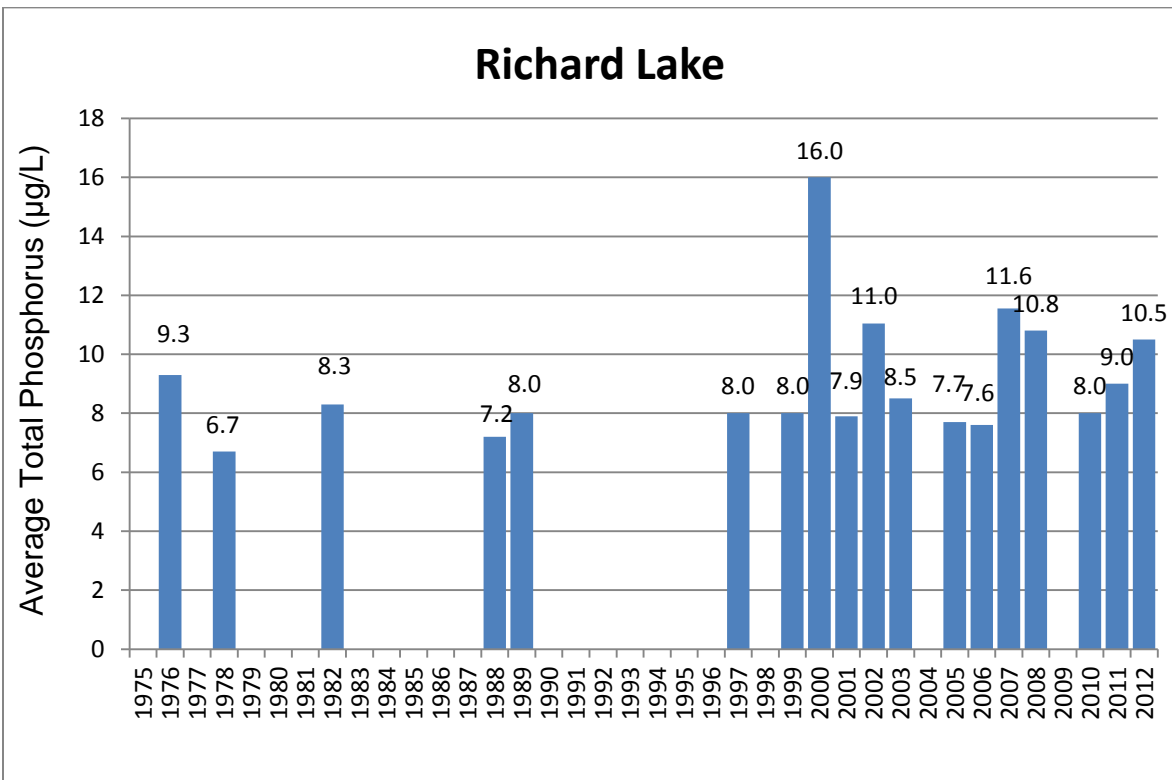
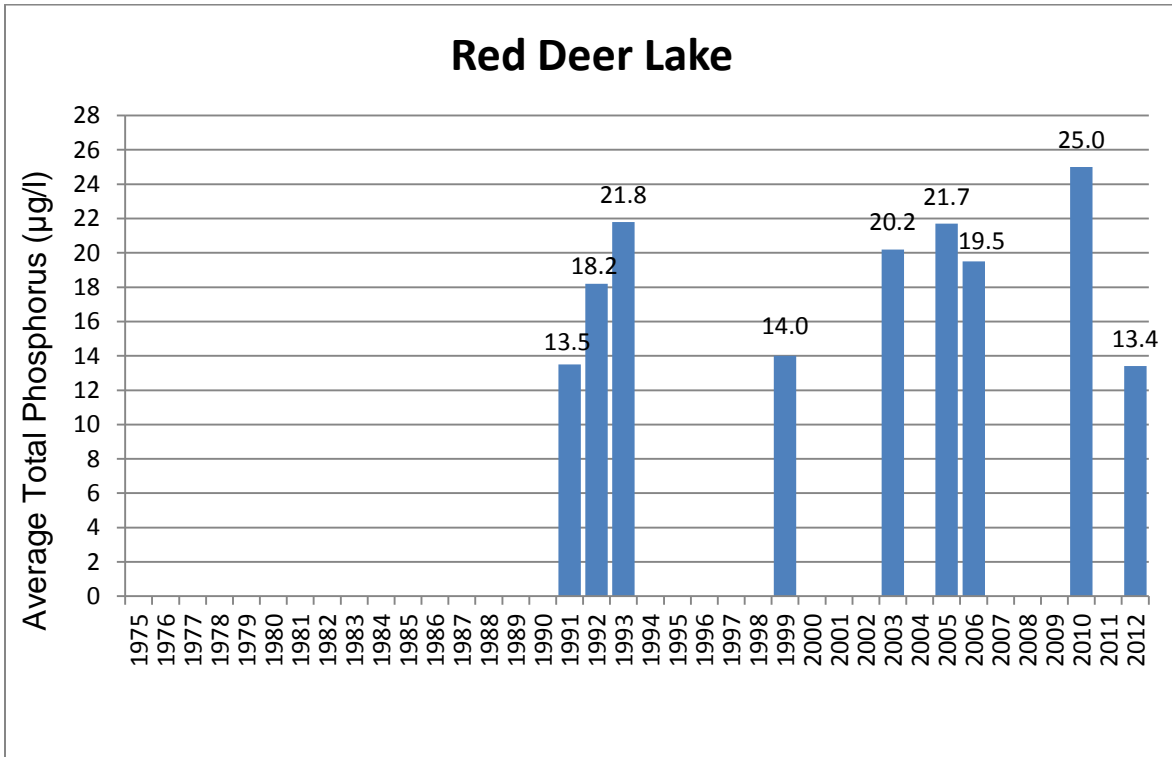


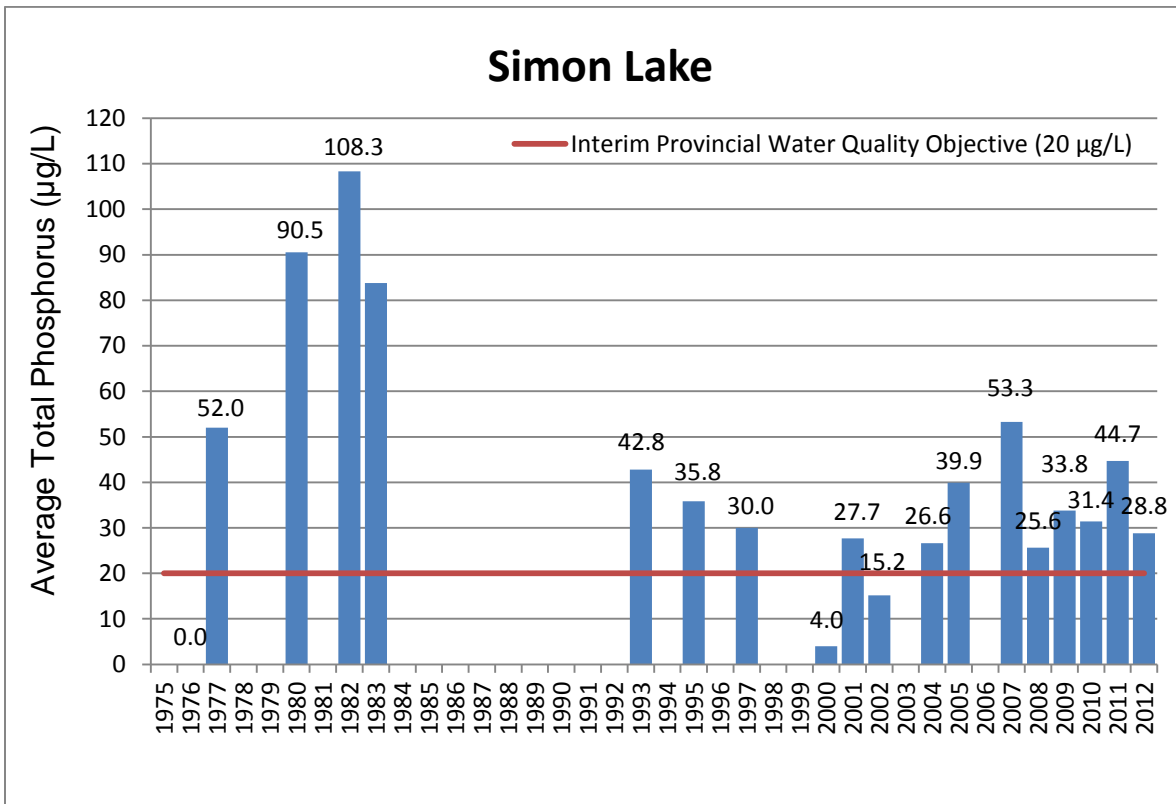
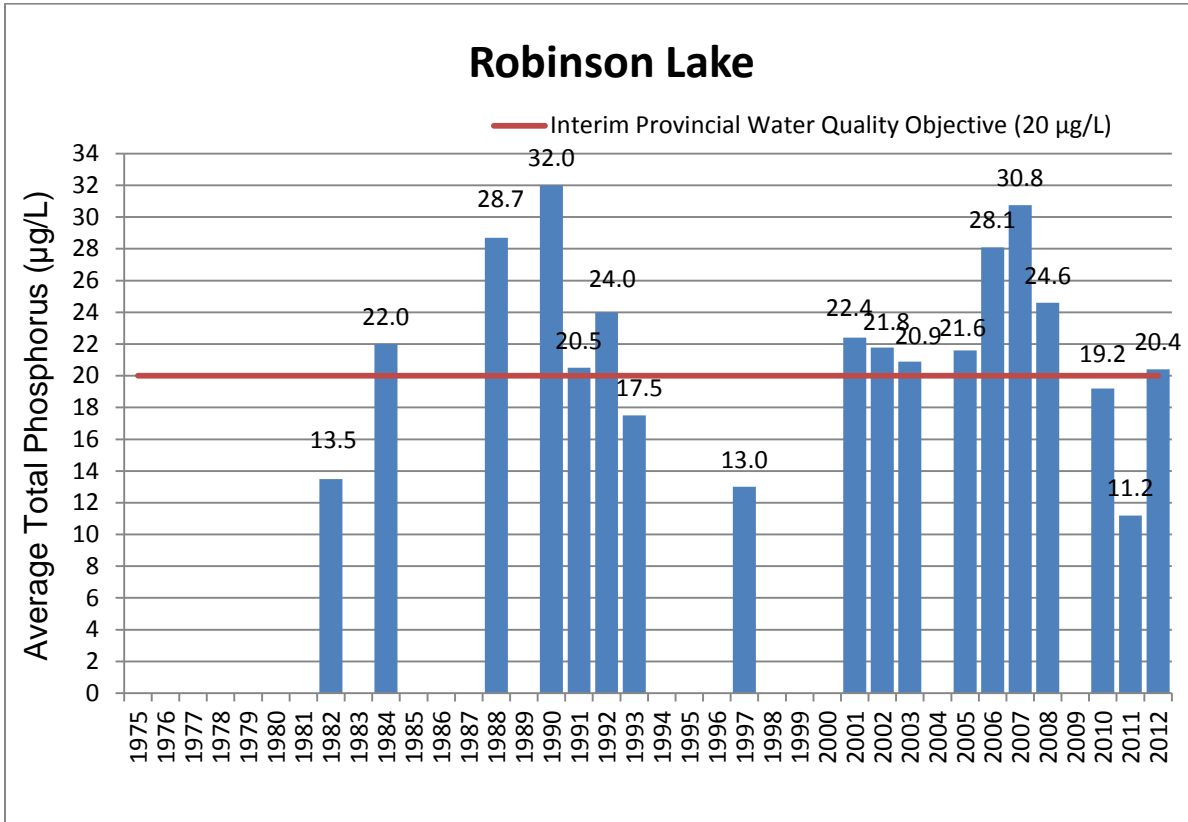


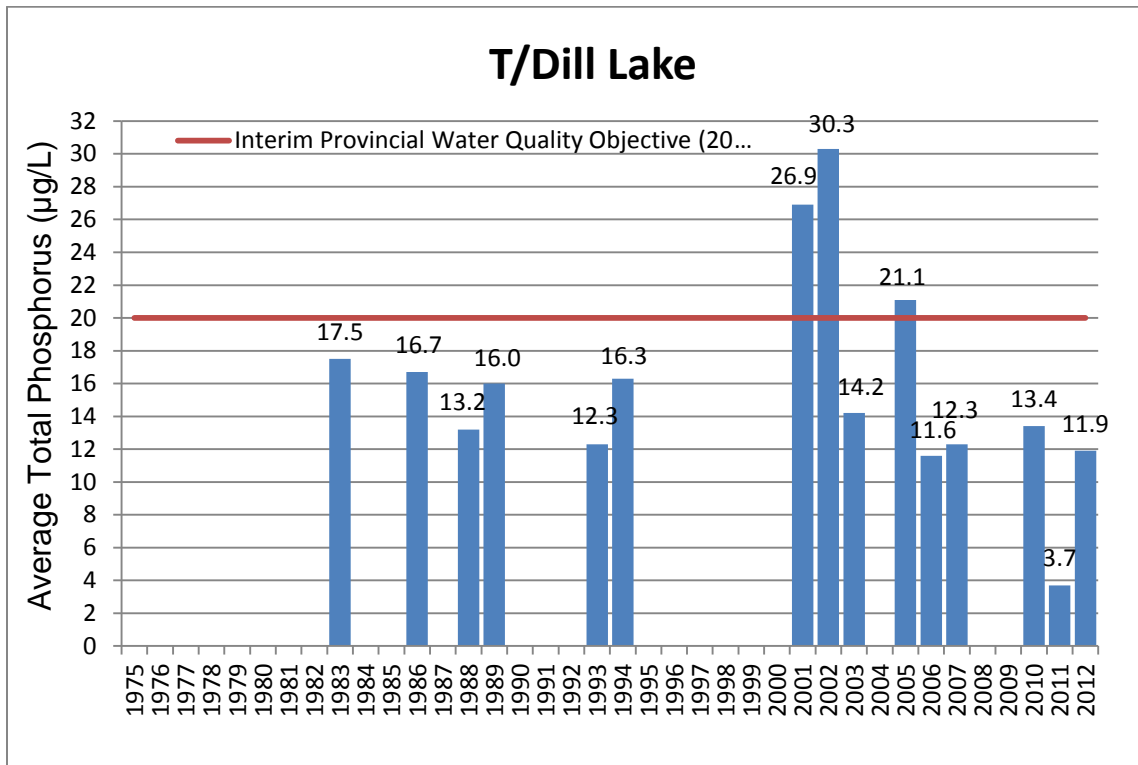
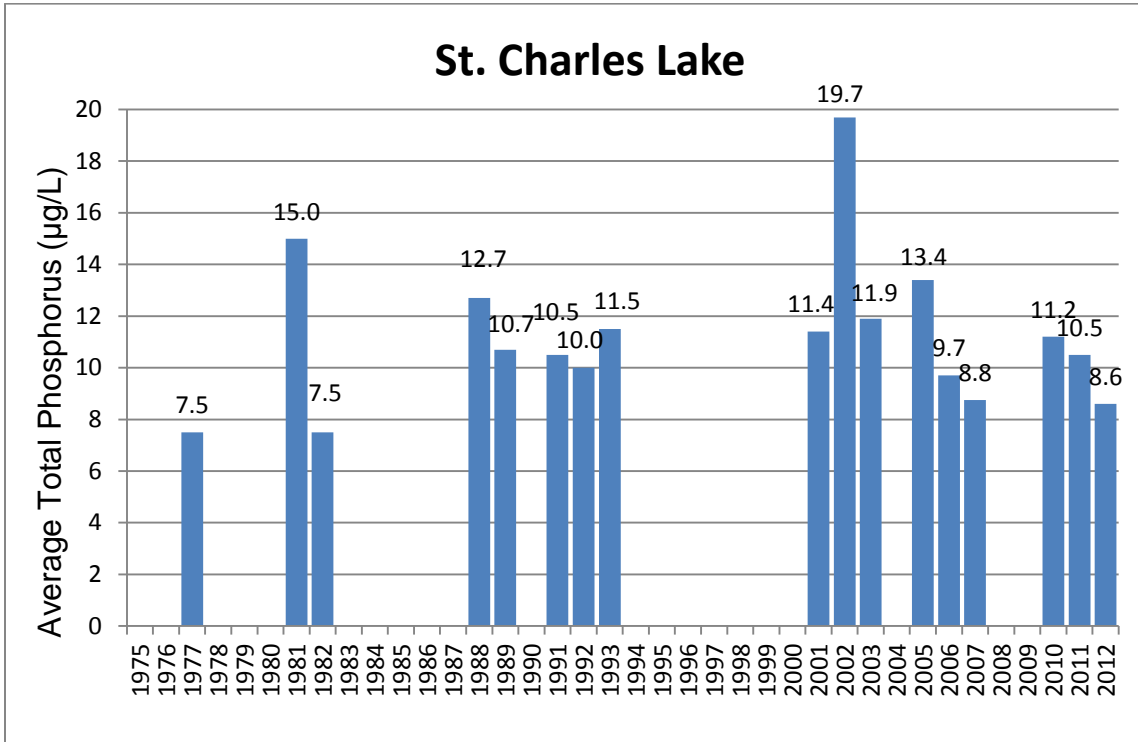


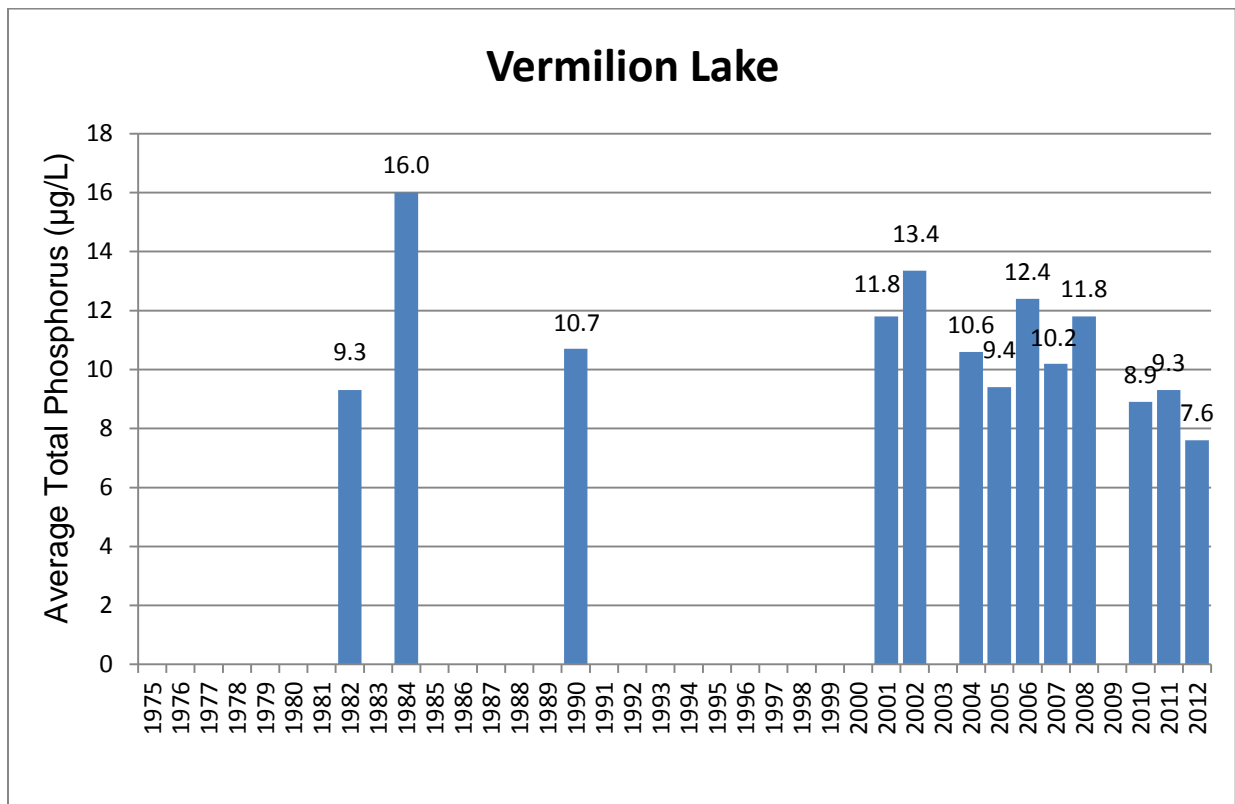
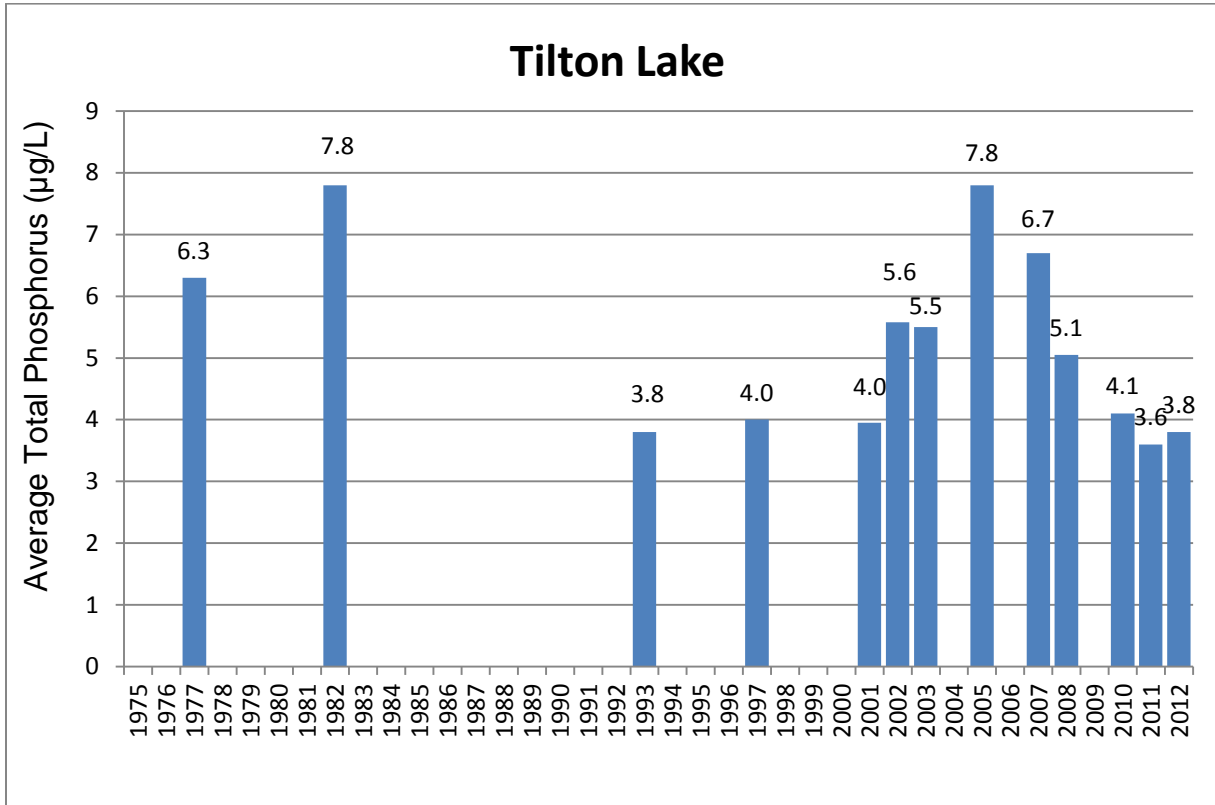


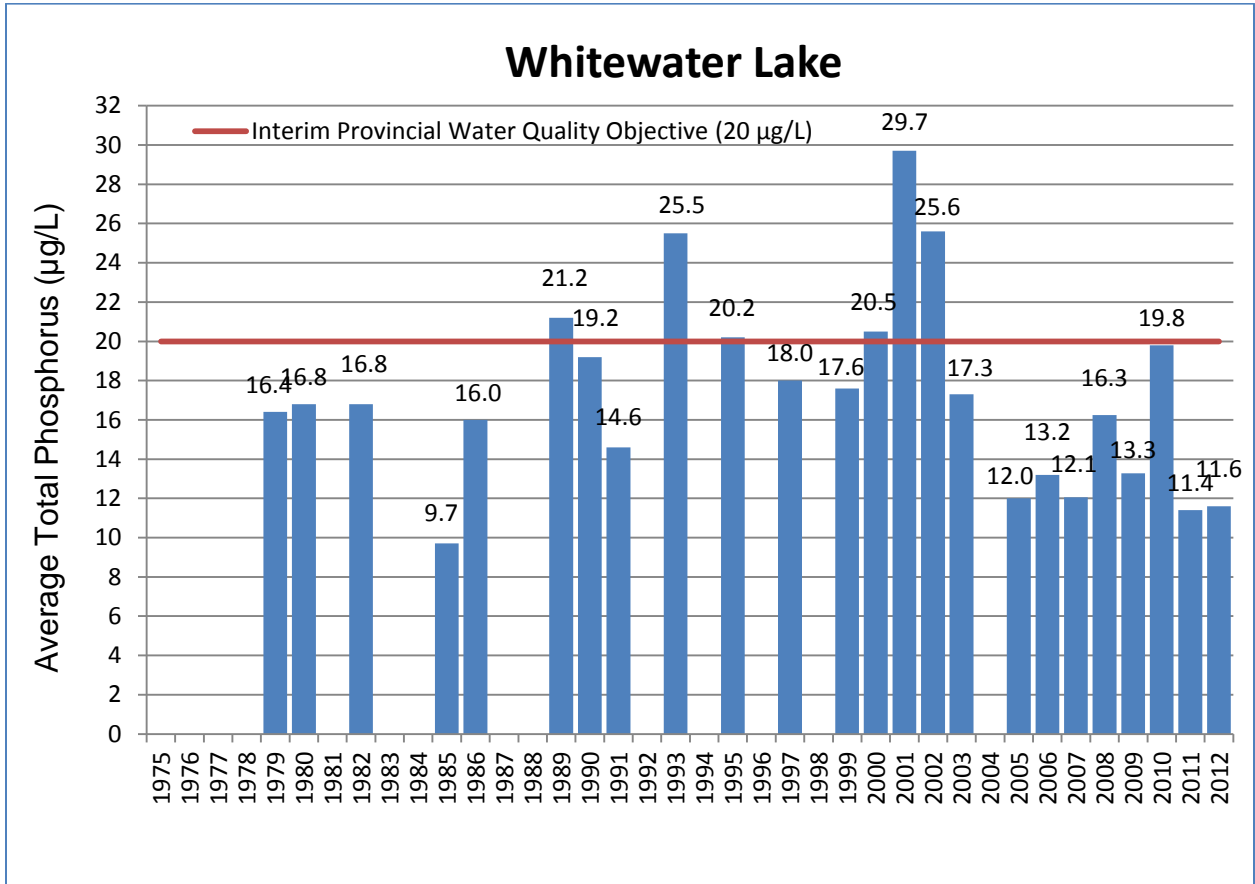












## **Contact Us**

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