

ACTION PLAN ~ PROVINCE LAKE

WHY IS AN ACTION PLAN NEEDED?

Province Lake is listed on the NH Department of Environmental Services (NHDES) 2010 and 2012 draft 303(d) list as impaired for Aquatic Life Use due to high levels of chlorophyll-a and total phosphorus. It is also on the 2012 draft list as impaired for Primary Contact Recreation (swimming) due to the presence of cyanobacteria. A steering committee, comprised of representatives from the Province Lake Association (PLA), the Acton Wakefield Watersheds Alliance (AWWA), NHDES, and the Maine Department of Environmental Protection (MDEP), and with technical support from FB Environmental Associates set a water quality goal to prevent the future occurrence of these toxic cyanobacteria blooms on Province Lake. This will require reducing the amount of pollutants (especially phosphorus) that are getting into the lake by 25% over the next 10-15 years. This reduction will prevent 113 kg (250 lbs.) of phosphorus from entering the lake annually.

HOW WAS THE ACTION PLAN DEVELOPED?

The action plan was developed through the combined efforts of the PLA, the Province Lake Watershed Plan Steering Committee, and the public because of feedback provided during the community forum held at the Greater Wakefield Resource Center in Union, NH on January 18, 2014. It was further supplemented by those unable to attend via feedback received from a posting of a draft plan on the PLA website in February 2014.

HOW DOES THE ACTION PLAN WORK?

This action plan is a critical component of the Province Lake Watershed Management Plan (due out the summer of 2014) because it provides a list of specific strategies for improving water quality. A 25% reduction is no easy task, and because there are many diffuse sources of phosphorus getting into the lake from existing residential development, roads, septic systems and other land uses in the watershed, it will require an integrated and adaptive approach across many different parts of the watershed community to be successful. The action plan provides the means to make the water quality goal a reality.

The action plan will also help foster further thinking about long-term strategies for improving the water quality and related natural resources within the Province Lake watershed, and to promote communication between citizens, municipalities, and state agencies. The action plan outlines pollution reduction targets, responsible parties, potential funding sources, approximate costs, and an implementation schedule for each task within each of the five categories. Current cost estimates for each action item will need to be adjusted based on further research and site design considerations.

WHO WILL IMPLEMENT THE PLAN?

The Province Lake Action Plan will be led by the combined efforts of the PLA and AWWA in coordination with a watershed steering committee. Local participation is an integral part of the success of this plan, and should include the leadership of NHDES, MDEP, local municipalities (including Wakefield, Effingham, New Hampshire and Parsonsfield, Maine) schools, community groups, local businesses, road associations, and individual landowners. The steering committee will need to meet regularly and be diligent in coordinating resources to implement practices that will reduce nonpoint source pollution in the Province Lake watershed, thereby eliminating the occurrence of toxic cyanobacteria blooms in the lake.

THREATS TO WATER QUALITY

In addition to developing a list of proposed actions, the more than sixty attendees at the January 2014 community forum identified what they perceive as the major threats to the water quality in Province Lake. These threats were developed by subgroups of individual stakeholders as outlined below for six major categories: septic systems, shoreline development, municipal ordinances, roads, recreation/boating, and water quality monitoring. The action plan was designed to address these threats.

IDENTIFIED THREATS TO PROVINCE LAKE	
CATEGORY	DESCRIPTION OF THREATS
Septic Systems	<ul style="list-style-type: none"> Leaking systems (lack of awareness about problem systems), old systems No systems – cesspools, outhouses Water quality impacts during septic system replacement (e.g., tree removal and erosion) Small lot size High-density lots Proximity to wetlands, and lake Overuse Lack of adequate maintenance/ pumping (lack of knowledge of necessity to do so)
Shoreline Residential BMPs	<ul style="list-style-type: none"> Shoreline erosion along Bailey Road Dog waste; lack of education about effects of waste Lack of knowledge of programs and threats Erosion at campgrounds Large lawns at water's edge Lack of well vegetated shoreline buffers Uncontrolled runoff from developed features on residential lots
Municipal Ordinances & Land Conservation	<ul style="list-style-type: none"> Building density Inappropriate land use (chemical hoarding) Conversion of forest land to other uses Full build-out more dense than desired Impervious surface regulation inconsistencies; types and extent of allowable impervious (e.g. decks vs. pavement) Stream buffer encroachment Inconsistent regulations among watershed towns Insufficient communication between stakeholders and planning boards Lack of consistent septic system regulations Conversion of camps to year-round use Lack of funding to fix problems Old septic systems & outhouses

IDENTIFIED THREATS TO PROVINCE LAKE

CATEGORY	DESCRIPTION OF THREATS
Roads	<ul style="list-style-type: none"> • Public use in sensitive shoreline areas • Lack of educational efforts (signs, pamphlets) • Improper road maintenance • Poor road design
Recreation/Boating	<ul style="list-style-type: none"> • Boating (shallow coves - easy to ground propeller, "powering on" creates holes) • Fireworks discharged into lake (effect of chemical pollution) • Lack of bathrooms for swimmers • Parking - parking and launching boats destroys ground
Water Quality Monitoring & Assessment	<ul style="list-style-type: none"> • Potential effect of dam management on lake flushing rate • Beaver dams on South River • Development (existing and future), including campgrounds • Logging • Frequency/timing of monitoring (weekday vs. weekend monitoring) • Small drainages carrying pollutants from developed land • Outhouses • Air quality • Climate change • Invasive aquatic plants • Canada geese

THE ACTION PLAN

The action plan consists of action items to help address threats identified within the six major categories: 1) Septic Systems, 2) Shoreline Best Management Practices (BMPs), 3) Roads, 4) Municipal Ordinances and Land Conservation, 5) Recreation/Boating, and 6) Water Quality Monitoring.

Septic Systems

Septic system effluent typically stores a thousand times the concentration of phosphorus in lake waters, which means that a small amount of effluent could have a major impact on the lake. An old or improperly maintained septic system can also result in the delivery of disease-causing bacteria resulting in gastro-intestinal illness in swimmers. Untreated septic waste may contain chemicals and hormones used in pharmaceutical and personal care products, which can reach lake water if a system is not working properly. Inundation of systems by groundwater greatly enhances the transport of phosphorus and pathogens to the lake. Therefore, it is critical to ensure adequate setbacks and good vertical separation from the seasonally high groundwater table.

Based on the watershed modelling that has been completed, wastewater systems, including septic systems, outhouses and cesspools are the second largest source of phosphorus to Province Lake. The combined categories of old septic systems (>20 years), cesspools, and outhouses were estimated to provide over 81% (66.2 kg) of the phosphorus load from the wastewater category. A strong wastewater inspection and maintenance program will reduce phosphorus and bacteria loading to Province Lake. Significant reductions in phosphorus loading to the lake will be achieved if landowners take responsibility to check their systems, and make necessary upgrades, especially to old systems, cesspools and outhouses.

SEPTIC SYSTEMS

Target Pollutant Reduction Goal = [20-25 kg Phosphorus/yr]

ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Septic System Upgrades & Technical Assistance					
Mandatory Inspections & Pumping	<ul style="list-style-type: none"> Require inspections and maintenance of septic systems and repair at time of property transfer. Require inspections and maintenance of septic systems for all new permit requests. 	PLA, Towns, Landowners	Grants, Towns, Landowners	2015-2025	\$250/system
Community Septic Systems	Install community septic systems for cluster developments (campgrounds & small camps with outhouses).	PLA, Towns, Landowners	NHDES, Grants, Low-interest loans	2016-2018	\$20-\$30,000 per community for initial installation
Targeted Septic Installation	Install new septic systems at high-risk sites (old systems, on slope, close to water).	PLA, landowners	NHDES, Grants, Landowners	2014--2018	TBD
Landowner Assistance	Offer free landowner assistance (technical, permitting and grants) for septic system maintenance and upgrades.	PLA, AWWA, Towns	NHDES	2015-2017	\$1,500
Dye Testing	Encourage and help fund voluntary dye testing for homeowners to evaluate septic system performance.	PLA, AWWA	NHDES, Towns	2015-2017	TBD
Group Discounts	Coordinate group septic system pumping discounts (PLA member pumping discounts).	PLA, AWWA	NHDES	Start 2015	n/a
Cost Sharing	Investigate grants and low-interest loans to provide cost-share opportunities for septic system upgrades.	PLA, AWWA	Volunteers	Immediately	n/a
Septic System Fund	Designate a single pot of conservation dollars for the lake that can be used for septic system upgrades.	PLA, AWWA	Volunteers	Beginning 2015	\$1,000
Septic Education & Outreach					
Targeted Septic Outreach	Focus outreach on septic survey results with focus on older systems, close to the shoreline, rarely pumped, outhouses and cesspools.	PLA	Grants, Volunteers	2014-2016	\$1,000
Campgrounds	Focus septic maintenance education at campgrounds.	PLA, AWWA	Volunteers	2014-2016	\$500
Door to Door	Conduct door-to-door septic education to follow-up on septic survey.	PLA, volunteers	Volunteers	2015-2016	\$250
Septic Socials	Host septic socials, and develop a "Poop Troop".	PLA, AWWA	Grants	2015-2017	\$500
Septic System Flyer	Develop an educational flyer about septic systems and disseminate with tax bills.	PLA, AWWA	Volunteers, Grants	2014-2015	\$1,000
Septic Provider List	Create and distribute a list of septic service providers (create magnets, etc.).	PLA	Volunteers, Fundraisers	2015	\$500
Septic System Tracking					
Septic Database	Encourage town officials to track septic system pumping and upgrades; develop database.	PLA, Towns	Volunteers, Towns	2014-2016	\$500

Shoreline Best Management Practices (BMPs)

Direct shoreline areas are typically among the highest for pollutant loading for most lakes given their close proximity to the lake, and desirability for development. It is estimated that the greatest loading to Province Lake is from the direct shoreline area, which includes the area within 250' of the lake. The shoreline deserves special attention in any lake protection plan, and Province Lake is no exception.

Best Management Practices (BMPs) are restoration tools that property owners can use to minimize impacts from stormwater runoff and restore degraded shoreline areas. This could be as simple as planting vegetated buffers, installing gravel driplines along roof edges, and ensuring that paths and driveway runoff is filtered into the ground rather than running overland and into the lake. Coordination with landowners is crucial for successful implementation of BMPs identified in this action plan because mitigation measures will need to be implemented on private land. Roads and septic systems are not included in this portion of the action plan, but are addressed as their own category within the action plan.

SHORELINE BEST MANAGEMENT PRACTICES (BMPs)					
Target Pollutant Reduction Goal = [30-45 kg Phosphorus/yr]					
ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Shoreline BMPs & Technical Assistance					
High Priority BMPs	Implement BMPs at high priority sites identified by the technical committee following the 2013 watershed survey. Includes roads, residential properties, beach and boat launches, etc.	PLA, AWWA	NHDES, MEDEP, Towns, States	Beginning 2014	\$25,000
Medium & Low Priority BMPs	Utilize the BMP matrix to prioritize and address medium and low priority BMPs.	PLA, AWWA	NHDES, AWWA	2016-2018	\$10,000
Golf Course	Work with the golf course to review 2013 report recommendations and implement strategies for protecting lake water quality.	PLA, AWWA	Volunteers, Golf course	2014-2016	TBD
Boat Launch	Stabilize the boat launch on Bonnyman Rd.	PLA and Towle Farm	NHDES, Donations	2014-2015	\$10,000
Youth Conservation Corps (YCC)	Coordinate with the Acton Wakefield Watersheds Alliance (AWWA) to enlist Youth Conservation Corps (YCC) implementation and outreach activities throughout the watershed.	PLA, AWWA	NHDES, Towns, Private Landowners	Beginning 2014	\$10,000
Certified Contractors	Require contractors to have adequate training in the installation and maintenance of Low Impact Development (LID) and BMPs for all permit work.	PLA, Towns	Contractors	Beginning 2014	n/a
Shoreline Vegetation	Install stormwater best management practices (vegetation) along beach side of road.	PLA, AWWA, Towns	Grants, Towns, States	2014-2016	TBD
Plant Sale	Organize and host an annual spring plant sale. Plants can be used for shoreline buffer plantings.	PLA	N/A	Spring 2014 and ongoing	n/a

SHORELINE BEST MANAGEMENT PRACTICES (BMPs)

Target Pollutant Reduction Goal = [30-45 kg Phosphorus/yr]

ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Conservation/Water Quality Fund	Work with three watershed towns to develop a conservation or water quality fund.	PLA, AWWA, Towns	N/A	Start 2015	n/a
Shoreline Education & Outreach					
BMP Demonstrations	Working with partners, set-up demonstration projects with focus on high-visibility residential BMPs in targeted locations throughout the watershed.	PLA, AWWA, Towns	NHDES, Grants	Beginning in 2014	\$10,000
Self-assessment Quiz	Develop and send/post on-line, a self-assessment quiz helping homeowners to determine whether or not they have an erosion problem.	PLA, AWWA	Grants, Donations	2015 and 2020	\$500
Door-to-Door BMP Education	Enlist volunteers (including neighborhood reps) to go door-to-door to inform neighbors about erosion, BMPs, and programs that can help.	PLA	Volunteers	2015-2017	n/a
Educational Signage	Install educational signs at select locations, such as "Scoop the Poop!"	PLA, Towns	Grants, Fundraisers	2015-2017	\$250
BMP Brochure	Develop and send letters to residents in the spring showing before/after photos of BMPs.	PLA, AWWA	Donations, Fundraisers	Spring 2015	\$1,000
Beach Clean-Up	Organize an annual volunteer beach clean up.	PLA, AWWA	Volunteers, Donations	Annually beginning in 2014	
Discovery Cruises	Organize an annual discovery cruise/paddle on the lake.	PLA, AWWA	Volunteers, Grants	Annually beginning in 2015	\$250
PLA Website	Keep Province Lake Association website current, and include up to date information about bloom conditions and beach closures.	PLA	Donations, Fundraisers	Annually, beginning in 2014	\$100
Publicity	Publicize events and lake quality updates through local newspapers and PLA newsletter.	PLA	Donations, fundraisers	Annually, beginning in 2014	\$500
BMP Tracking					
BMP Tracking & Monitoring	Track BMPs as sites are identified and BMPs are implemented.	PLA, AWWA	Grants	Annually, beginning in 2014	\$1,000
Long-term BMP Monitoring	Re-survey implemented BMP sites every five years and develop a tracking system to document long-term functionality.	PLA, AWWA	Grants	Every five years starting 2019	\$1,000

Roads

The 2013 Province Lake Watershed Survey identified sixty-one sites that are resulting in the delivery of nutrients and other pollutants entering the lake. Of these, 20% are associated with state, town or private roads. Five of these sites are located on Route 153, and deemed the most significant threat to water quality among road sites identified in the watershed due to proximity to the lake, and heavy use in the summer time. The remaining sites are located on private and town roads, many of which slope toward the lake, depositing sand and gravel directly into the water.

ROADS					
Target Pollutant Reduction Goal = [50-75 kg Phosphorus/yr]					
ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Roadway BMPs					
Private Roads	Assist road associations with BMP installation on private roads.	PLA, AWWA	MEDEP, grants	2015-2017	\$5,000
Upgrade public roads	<ul style="list-style-type: none"> Upgrade public roads annually using recommended BMPs from watershed survey, UNH Roads Scholar reference and Maine Camp Road Manual. 	Towns, States	Towns, MDOT, NHDOT,	Annually	TBD
	<ul style="list-style-type: none"> Work with the towns to address erosion on Bonnyman and Bailey Roads. 	PLA, Towns	NHDES, MEDEP		
On-Going Collaboration with States	<ul style="list-style-type: none"> Continue relationship with both states about issues on Route 153 Set up annual meeting to discuss road problems as needed. 	PLA, AWWA, MDOT, NHDOT	n/a	Annually	n/a
Roadside Parking	<ul style="list-style-type: none"> Work with NHDOT/MDOT to develop alternatives to minimize impacts from roadside parking, foot traffic & boat launching along Route 153 beach. Work with stakeholders to develop design alternatives to reduce erosion. Explore the possibility of adding signs and extending the existing guardrail along the north side of Route 153. 	PLA, AWWA, States	MDOT, NHDOT	2014-2015	TBD
Roadside Vegetation	Install stormwater Best Management Practices (e.g. vegetation) along beach side of road.	PLA, AWWA, Towns , States	NHDES grants, states, towns	Ongoing, beginning 2014	TBD
Roadway Education & Outreach					
Road Maintenance Workshop	Educate town officials, road maintenance personnel, and contractors through roadway BMP outreach workshops.	PLA, AWWA	Grants, towns	Annually, beginning 2015	\$1,000
Road Associations	Host a workshop for road associations, and encourage new associations where needed.	PLA, AWWA, Towns	Grants	Every 2 years, beginning 2015	\$1,000

Municipal Ordinances

Municipal land-use regulations are a guiding force for where and what type of development can occur in a watershed, and therefore, how water quality is affected because of this development. The build-out analysis conducted by FB Environmental indicates that there is considerable need for improvement in protecting water quality through non-structural BMPs such as municipal ordinance adoption or revisions, especially as it relates to new development. Action items related to this element have been divided into those relating to septic systems, and the adoption of new ordinances or incorporation of new language (watershed-wide) including the need for a low impact development (LID) strategy (watershed-wide).

MUNICIPAL ORDINANCES & LAND CONSERVATION					
<i>Target Pollutant Reduction Goal = [85-95 kg Phosphorus/yr]</i>					
ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Septic Systems					
Site Plan Review & Septic System Regulations Assessment	Review town site plans and septic system rules.	PLA, Towns, Consultant	Grants	2014-2016	\$1,500
Planning Board Meetings	Communicate regularly with the Planning Boards of the three towns about Province Lake efforts by attending regular meetings.	PLA	Volunteers	Ongoing	n/a
Grandfathering	Develop non-regulatory approaches for addressing grandfathered wastewater systems.	PLA, Consultant	Towns, Grants	2014-2015	\$1,000
Expansions	Improve ordinances to consider more than just number of bedrooms when doing expansions.	PLA, Consultant	Towns	2015-2017	\$1,500
Municipal Ordinances- New & Upgrades to Existing					
Conservation Subdivisions	Increase incentives for conservation subdivisions in town ordinances.	PLA, Towns, AWWA	Towns, Grants	2015-2017	\$1,500
Low Impact Development (LID)	Develop new policy to encourage Low Impact Development (LID) for all future development including additions.	PLA, Towns, AWWA	Towns, Grants	2015-2017	\$1,500
Setbacks, Buffers & Lot Coverage	Improve ordinances to include mandatory setbacks, riparian buffers between development and waterbodies, and maximum lot coverage restrictions.	PLA, Towns, AWWA	Towns, Grants	2015-2017	\$1,500
Open Space	Encourage towns to adopt open space guidelines for conservation subdivisions.	PLA, Towns, AWWA	n/a	Beginning 2015	n/a
Land Conservation					
Landowner Outreach	Conduct outreach to large landowners (particularly those facing generational change) to discuss conservation options.	PLA, Local Land Trust	n/a	2015-2016	\$100
Land Conservation Workshop	Ask Moose Mountain Regional Greenways (MMRG) and Francis Small Heritage Trust to host a land conservation workshop for landowners in the watershed.	PLA	Grants, Donations	2015-2016	\$500

Recreation and Boating

Recreational users of Province Lake may not be aware of the effects that their actions have on the water quality of the lake. Twenty-three percent of sites identified in the 2013 watershed survey were located at beach access sites. Parking on the beach destroys the vegetation along the shoreline, which naturally filters pollutants in stormwater from roadways and other developed land areas. Maintenance of boat launches is needed to prevent erosion at these sites. Lastly, resuspension of sediments and nutrients by heavy boat traffic in the lake is a real concern that needs additional research and attention. Not only will preventing the physical stirring up of sediments by boat traffic help reduce the potential for ongoing cyanobacteria blooms, it may also help prevent other negative effects of boating on the lake including increased turbidity, decreased water clarity, metal and gasoline inputs, shoreline erosion, effects on rooted aquatic plants, invertebrates, fish, waterfowl and other aquatic wildlife. Actions related to recreation and boating include a combination of BMPs, education and outreach, and strategic funding to implement the strategies.

Recreation & Boating					
Target Pollutant Reduction Goal = [TBD kg Phosphorus/yr]					
ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Best Management Practices (BMPs)					
Private Boat Launch	Stabilize boat launch.	PLA and Towle Farm	NHDES Grant, donations	2014-2015	TBD
Beach Bathrooms	Install port-a-potties at Rt. 153 beach area; utilize PLA sponsors.	PLA, beach landowners	Private Sponsors	2015-2016	TBD
Boat Traffic Study	Investigate the effects of boat traffic on in-lake water quality.	PLA	Grants, UNH, Plymouth State	2015	TBD
Education & Outreach					
Lake Host/Boat Launch Brochure	Create a lake host program and distribute information about maintaining boat launches to landowners.	PLA & Towle Farm	Grants, Donations	2015-2016	\$500
Recreational Boating Mailing	Create and distribute an informational mailing to landowners (including new landowners) about the effects of recreational boating on water quality; educate the public about boating issues and etiquette in shallow areas.	PLA, AWWA	Grants	2015	\$1,000
Fireworks Research & Education	Investigate the effects of fireworks on lake water quality, and distribute information via website, or develop an informational brochure on results.	PLA, UNH	Grants	2015-2016	\$500
Educational Kiosk	Install a kiosk with educational posters/signs conveying issues related to boat launch, no wake zone, cyanobacteria at swimming areas.	PLA, Towle Farm	Donations/ Grants	2015-2016	\$1,500

Recreation & Boating					
Target Pollutant Reduction Goal = [TBD kg Phosphorus/yr]					
ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Funding					
Donations	Build a donation box, and encourage landowners to donate to fixing boat launch, BMPs in common areas, water quality monitoring, etc.	PLA & Towle Farm	Donations	2014-2015	\$100

Monitoring and Assessment

Monitoring programs are crucial to evaluating the effectiveness of watershed planning activities, and to determine if water quality goals are being achieved over the long-term. This Action Plan includes recommendations for enhancing current water quality monitoring efforts, including sample collection from various tributaries, and continuation of the Weed Watch program. Since volunteers typically conduct many different monitoring activities, it will be critical to continue building on the success of PLA's ongoing education and outreach programs.

MONITORING AND LAKE ASSESSMENT					
Water Quality Goal = [25% reduction in Total Phosphorus or 10.8 ppb]					
ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Monitoring					
Extend Monitoring Season	Extend lake monitoring season April through November to capture spring and fall cyanobacteria bloom conditions.	PLA, VLAP, AWWA	PLA, NHDES	Beginning 2014	\$500
Weekend Monitoring	Add weekends in addition to standard weekday measurements to get a better sense of high-use water quality conditions.	PLA, VLAP	PLA, NHDES	Beginning 2014	n/a
Weed Watch & Lake Host Programs	PLA to continue weed watch program to keep invasive species from entering Province Lake; conduct routine surveys of dam, tributaries and shallows during summer months.	PLA	PLA, Volunteers	Ongoing 2014	n/a
Volunteer Monitors	Recruit and train new Volunteer Lake Assessment Program volunteers.	PLA, VLAP	Volunteers, VLAP	2014	n/a
Secchi Disk Monitoring Frequency	Extend Secchi Disk Transparency Frequency from once/month to weekly or biweekly (esp. for transparency).	PLA, VLAP	Volunteers	Beginning 2014	n/a
Tributary Monitoring	Continue monitoring key tributaries throughout the watershed; include wet weather, or storm samples.	PLA, VLAP	PLA	Beginning 2014	\$1,200
Weed Watch Program Leader	Recruit a new volunteer Weed Watch Program leader.	PLA	PLA, Volunteers	2014	n/a

MONITORING AND LAKE ASSESSMENT

Water Quality Goal = [25% reduction in Total Phosphorus or 10.8 ppb]

ACTION ITEM	DESCRIPTION	RESPONSIBLE PARTY	FUNDING SOURCE	SCHEDULE	SUGGESTED ANNUAL COST
Monitoring					
Weather Station	Investigate the benefits of weather monitoring for air quality/wind/visibility; if feasible, set up monitoring station using automated data loggers.	PLA	PLA, UNH, Grants	2015	TBD
Cyanobacteria Monitoring	Work with UNH and NHDES to implement a formal cyanobacteria monitoring program for Province Lake.	PLA, UNH, NHDES	PLA, NHDES, UNH	2015	TBD
Cyanobacteria Workshop	Host a hands-on cyanobacteria workshop in coordination with UNH.	PLA, UNH, AWWA	UNH, Grants, Donations	2015-2016	\$500
Sediment Cores	Work with UNH to examine sediment cores for phosphorus, copper and other parameters; use students to assist with studies.	PLA, UNH	UNH	2013/2014	n/a
Dam Management	Utilize long-term dam level information to determine stream discharge at outlet; determine if dam management needs adjustment to prevent algal blooms.	PLA, Dam Committee, NHDES Dam Bureau	PLA, Consultant	2015	\$1,500

SUMMARY

The Province Lake Watershed Management Plan Steering Committee should work toward implementing the action plan and identifying improvements as needed. The formation of smaller action committees would result in more efficient implementation of the Province Lake Action Plan.

The estimated load reductions for each of the categories above were designed to meet the target goal of a 25% phosphorus reduction in Province Lake. These actions will improve lake water quality so that all residents and visitors alike will be able to swim, fish, boat and enjoy the many benefits that Province Lake has to offer now and for future generations. To be successful, the action strategies listed above will require an integrated and adaptive approach across many different parts of the watershed community to be successful. The action plan provides the means by which to make the water quality goal a reality.