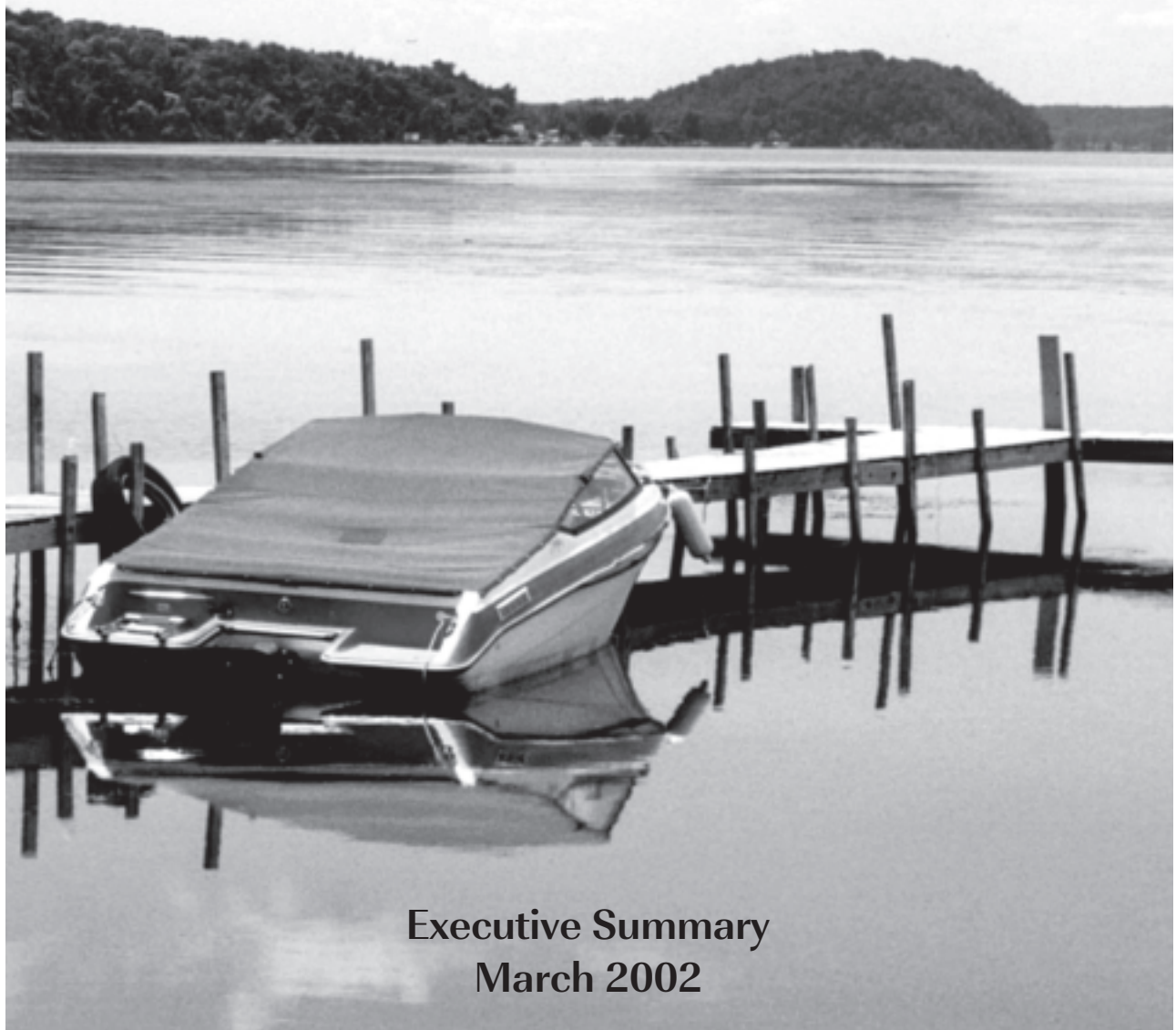


land *to* lake
perspectives



A Watershed Management Plan for Saratoga Lake



Executive Summary
March 2002

land to lake perspectives



A Watershed Management Plan for Saratoga Lake March 2002

The US Environmental Protection Agency has provided funding for this project under the Wetland Development Grant Program.

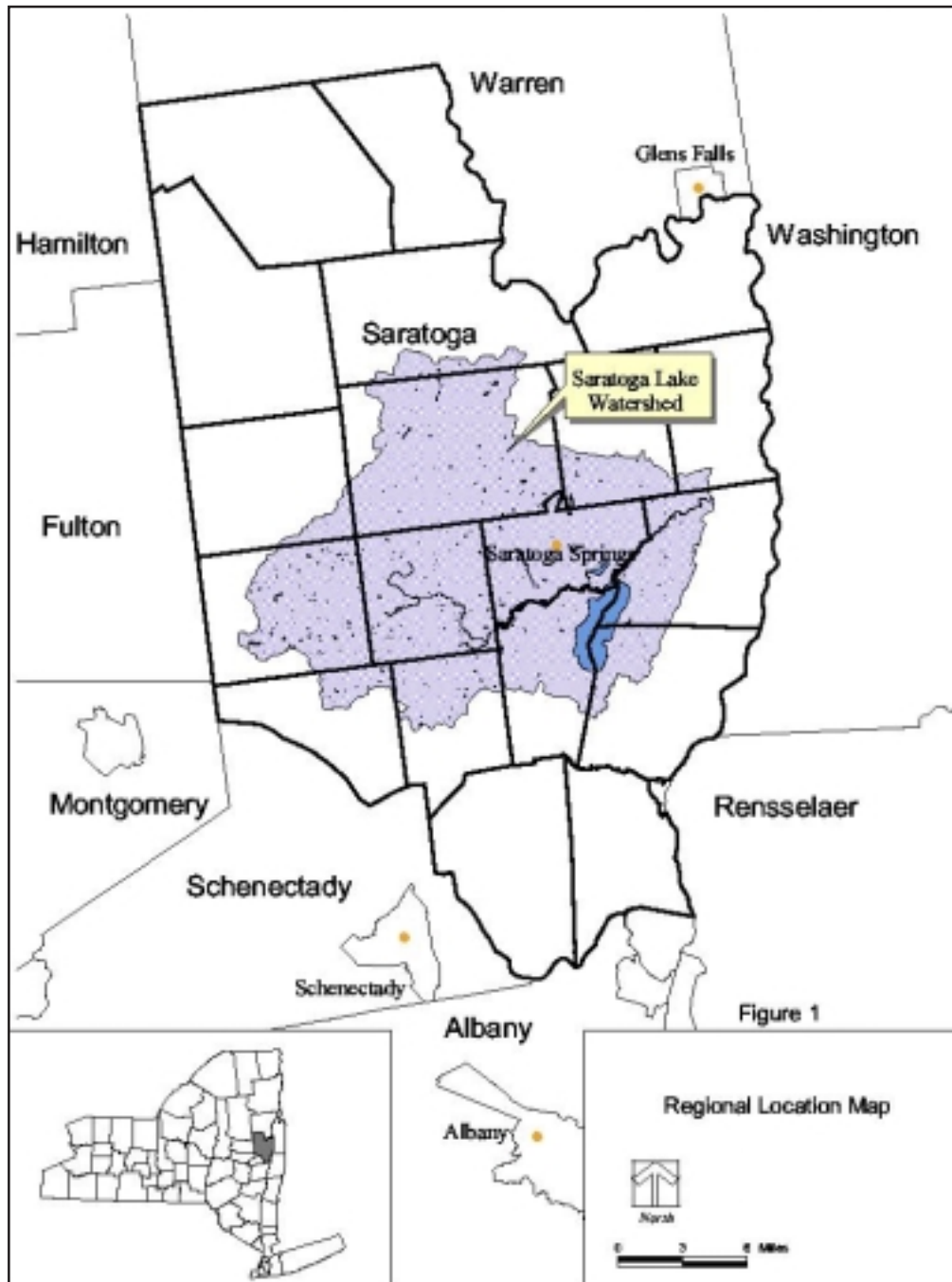
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abbreviations & glossary of terms

NYSDEC	New York State Department of Environmental Conservation	Chlorophyll <i>a</i>	A compound that produces food in a plant
NYSDOH	New York State Department of Health	Milfoil	Eurasian watermilfoil; a nuisance aquatic plant species
NYSDOT	New York State Department of Transportation	Nitrogen	Plant nutrient
NYSOPRHP	New York State Office of Parks, Recreation & Historic Preservation	Phosphorus	Plant nutrient
NWI	National Wetlands Inventory	Non-point Source	Water runoff from land (street runoff)
PDR	Purchase of Development Rights	Point Source	A pipe discharge from a factory or sewage treatment facility
SEQRA	State Environment Quality Review Act	Secchi Depth	Measure of water clarity made by observing an 8" black and white disk lowered into the water
SLA	Saratoga Lake Association	SONAR	Fluridone
SLPID	Saratoga Lake Protection and Improvement District	SONAR AS	Fluridone aqueous solution
SLWAC	Saratoga Lake Watershed Advisory Committee	SONAR PR	Fluridone precision release herbicide
USEPA	United States Environmental Protection Agency	SONAR SRP	Fluridone slow release pellet
WQCC	Water Quality Coordinating Committee	Watershed	Land that drains to a waterbody



Saratoga Lake Watershed Boundary Map

Municipalities in the Saratoga Lake Watershed of Saratoga County

- | | |
|-------------------------|--------------------------|
| Town of Ballston | Town of Milton |
| Village of Ballston Spa | Town of Providence |
| Town of Charlton | Town of Saratoga |
| Town of Corinth | City of Saratoga Springs |
| Town of Galway | Town of Stillwater |
| Town of Greenfield | Town of Wilton |
| Town of Malta | |

executive summary

Introduction

The Saratoga Lake Protection and Improvement District (SLPID) received a grant in 1999 from the US Environmental Protection Agency under the Wetland Development Grant Program to prepare an update to the Saratoga Lake Diagnostic Feasibility Study and Management Plan completed in 1983. The 1983 plan focused primarily on in-lake water quality improvement techniques. An important outcome of the 1983 Plan was the adoption of NYS legislation that created the Saratoga Lake Protection and Improvement District (SLPID) and a taxing district to fund an aggressive and long-term weed control program for Saratoga Lake.

The new plan summarizes information about the lake since 1983 and takes a broader look at conditions throughout the watershed. It broadens the scope of the 1983 Plan by examining changes in land uses as they have influenced water quality across the Saratoga Lake's entire 244 square mile watershed. Over the past two years, this watershed project has focused on working with local governments in the watershed to implement strategies designed to improve and protect its water resources. SLPID has worked extensively on managing problems in the lake itself and examining watershed issues on a case by case basis. As recommended in the 1983 Plan, in-lake management to date has focused primarily on the control of invasive Eurasian watermilfoil.

The first water quality study of Saratoga Lake occurred in 1899. This study ultimately led to the construction of the first municipal sewage treatment

plant in the watershed and the dramatic curtailment of wastewater flows from material manufacturing. An inventory of biological resources focusing on the Upper Hudson River watershed was conducted in 1932. This analysis was more of a biological survey, but did contain some information on the physical and chemical quality of Saratoga Lake.

There are five municipal entities that represent Saratoga Lake interests: the City of Saratoga Springs, the Towns of Malta, Saratoga, and Stillwater and the County of Saratoga. In addition, there are two organizations that have a direct interest: the Saratoga Lake Association (SLA), a private, nonprofit organization; and the Saratoga Lake Protection and Improvement District (SLPID), a public agency created by the New York State Legislature. The two organizations have been well represented in the development of this report and have provided valuable input on many levels.

Watershed Approach

The Saratoga Lake watershed covers a 244 square mile area representing nearly one-third of Saratoga County. As a result, land use activities throughout the watershed have had a direct impact on water quality in Saratoga Lake. The removal of municipal sewage out of the watershed and the elimination of septic systems adjacent to the lake during the 1980's logically leads one to conclude that non-point sources are the leading cause of nutrient loading to Saratoga Lake and the primary cause of its water quality degradation since the 1980's.

The watershed-based approach to water quality planning and management considers Saratoga Lake and its entire drainage area as a whole, interconnected complex system. A watershed is defined as a catch

basin in which all water that lands in the basin eventually ends up in a single delivery point, in this case, Saratoga Lake. Actions that are based on watershed boundaries rather than municipal boundaries can better target the pollution point and non-point sources that are in need of mitigation. The watershed approach also offers a unique opportunity for citizens to get involved in the process. It is a method for communities to link together to develop innovative ways to solve pollution problems within their local watershed boundaries. It is hoped that this watershed planning approach will encourage local communities and their organizations to take action together thereby giving this effort the best chance for long-term success.

Community Participation

Numerous agencies and organizations are currently involved in various initiatives to manage and protect Saratoga Lake and its watershed. Implementation of the Saratoga Lake Watershed Management Plan relies upon these groups to continue these successful efforts and expand their capabilities through the formation of watershed partnerships.

The Saratoga Lake Watershed Advisory Committee (SLWAC) was formed in June 2000 to represent interest groups and communities within the watershed. SLWAC met from June 2000 through December 2001. Topics covered included water-based recreation, water quality, land use and growth trends, aquatic plant management strategies, and stream corridor protection. The meetings provided an opportunity to take an in-depth look at watershed issues from which the Advisory Committee developed the goals, objectives and the recommendations that comprise the Saratoga Lake Watershed Management Plan.

This public participation plan has directed the effort to provide outreach and to receive public input regarding the watershed planning process. Four newsletters have been widely distributed to residents within the Saratoga Lake Improvement and Protection District, the watershed and to community leaders. Approximately 1,500 newsletters were mailed. The final newsletter in the first quarter of 2002 provided an executive summary of the Watershed Management Action Plan. In addition, special presentations have been made on a regular basis to all municipal planning boards within the watershed to make them aware of the watershed planning efforts and Advisory Committee activities. The project has a web site (<http://www.sara-lake.org>) where it posts all the meetings, meeting minutes, reports, newsletters, newspaper articles and other relevant materials for easy public access.

The Physical Setting

Saratoga Lake, located in Saratoga County, New York, is in the southern foothills of the Adirondack Mountains approximately 21 miles north of Albany. The lake is approximately 4.5 miles long and 1.5 miles wide, and has 6 square miles of surface area or 3,840 acres and 23 miles of shoreline. Average water depth is 25 feet with a significant shallow shoreline zone out to a distance of 1,500 feet around most of the lake. The deepest point is located in the north central portion of the lake and is 95 feet with a smaller well of approximately 51 feet deep located in the southern portion of the lake just west of Snake Hill. Thick beds of Eurasian watermilfoil are prevalent in Saratoga Lake and are crowding out native aquatic plants and interfering with recreational pursuits. Manning's Cove remains predominantly free of milfoil and is an extremely popular mooring spot.

Kayaderoseras Creek is the largest tributary to Saratoga Lake. There are 14 direct tributaries to Saratoga Lake, however, only four are significant in terms of size and contribution to Saratoga Lake. These include Mill Branch, Drummond Creek, Kayaderoseras Creek, and Coffey Creek. Kayaderoseras Creek has its origin in the Town of Corinth before it flows through the towns of Greenfield, Milton, and Malta, eventually entering the northwest portion of Saratoga Lake. Fish Creek is the only outlet and flows in a northeasterly direction eventually discharging into the Hudson River at the Village of Schuylerville.

The Saratoga Lake watershed encompasses all or parts of 11 towns in Saratoga County including the Village of Ballston Spa and the City of Saratoga Springs. The topography of the watershed is typical for that of the Hudson/Mohawk River Valleys with generally flat or gentle slopes. The exception is the

northwest portion of the watershed that consists of steep slopes and irregular terrain. The highest elevation in the watershed is 1,997 feet. The average elevation of Saratoga Lake is 203 feet above sea level.

Soils in the watershed vary greatly depending on location and range from highly erodible to very stable. Most drinking water supplies in the county are derived from aquifers within the unconsolidated deposits of sand and gravel or from the underlying bedrock formations.

The watershed landscape can be generally characterized as land that has long ago been cleared for farming and is slowly changing over to forestlands as farm fields are abandoned. A significant amount of the old forests and the new growth in these areas are now being replaced by suburban residential development. This development continues to spread into the watershed in a pattern that radiates outward from the urban fringe of the City of Saratoga Springs, and the towns of Stillwater and Malta.

Social and Economic Setting

The geographical location of Saratoga County accounts for its interesting and colorful history. The Saratoga Lake Watershed's earliest inhabitants were the Mohawk and Iroquois Indians, who used the land for hunting, fishing, and farming. Saratoga County later became the theater of many important Colonial events, including the Battle of Saratoga, which is considered the turning point of the Revolutionary War. After the Revolution, the towns with waterpower; Ballston, Corinth, Milton, Providence, Saratoga, and Stillwater developed into industrial mill towns in the 1800's.

The economies of the other towns within the watershed revolved primarily around agriculture. Agriculture remains a vital element of Saratoga County's economy. Agricultural uses are slowly but steadily succumbing to suburban development. The Saratoga region is most widely known for the natural mineral waters in Saratoga Springs and Ballston Spa, the

Saratoga Racetrack, the Saratoga National Historical Park and the Saratoga Performing Arts Center.

Saratoga County began to experience significant land use changes following the construction of the Adirondack Northway in the late 1960's. Many of the fastest growing communities in Saratoga County are also Saratoga Lake watershed communities. The watershed is quickly transitioning from an area of aging urban and village centers with an economy strongly dependent on tourism and a strong rural working agricultural landscape, to a busy working cityscape dotted with sprawling suburbs in the countryside. This shift in land use is reflected most dramatically in the loss of working farms. In the last forty years, Saratoga County has lost over 130,000 acres of active farmland. Despite this significant loss, agriculture remains the largest single land use in Saratoga County.

Water Quality

The completion of the Saratoga County Sewer District's municipal wastewater treatment plant in the Town of Halfmoon in 1977 resulted in all municipal sanitary wastes from Saratoga Springs and Ballston Spa being diverted out of the Saratoga Lake watershed. The 1983 Saratoga Lake Study and Management Plan indicated that the implementation of this county wastewater treatment project resulted in a fifty-percent reduction in phosphorus loading and a twenty-percent reduction in nitrogen loading to Saratoga Lake. Although this had a very positive impact on Saratoga Lake's water quality, the improved water clarity ultimately caused plant life in the lake to proliferate. Nutrients remaining in the bottom sediments continue to provide fertility for the aquatic plants to grow and the improved water clarity further exacerbates this condition.

The nutrient load carried by Kayaderosseras Creek has decreased during the last 18 years. The level of total phosphorus in the Kayaderosseras Creek may have decreased by 40-50% when compared to levels found during 1981 and 1982 based on samples collected in August 2000. Based on the apparent decrease in total phosphorus loading, a similar decrease in lake total phosphorus should be expected, however, this has not occurred.

Water quality improvements to Saratoga Lake have been minimal since the early 1980's despite the diversion of municipal sanitary wastes out of the watershed for the past 25 years. Increased development in the watershed is the likely cause since it appears to be contributing phosphorous, sedimentation, and other pollutants through uncontrolled and untreated stormwater runoff. This type of pollution has its own devastating effects on the environment by altering fish and wildlife habitat, impairing aesthetics, by reducing recreational appeal and lowering property values. Future watershed management efforts should focus on both the reduction of stormwater from existing sources and the prevention of new sources throughout the watershed.

The relationship between phosphorus and chlorophyll *a* is represented as a simple mathematical equation. This enables for the prediction of ranges of chlorophyll *a* or phosphorus when one of the values is known. Using the above mathematical relationship, it was determined that the improved water clarity of Saratoga Lake as measured by Secchi depth readings could not be explained by the levels of phosphorus found in the lake. It was concluded that the presence of zebra mussels, rather than lower levels of phosphorus, was responsible for the improved water clarity in the lake.

During the summer of 2000, a study was conducted to monitor the water quality of Saratoga Lake. The primary objective was to obtain current limnological data that could be compared with historical data to determine water quality trends. The results of this study indicated that the 1983 Saratoga Lake Study and Management Plan's target goal of a 3.0-3.5 Secchi depth has indeed been met. The expected phosphorus reduction that could have been responsible for the increase in Secchi depth has not been achieved, however. The increase in Secchi depth is, therefore, most likely due to the filter feeding of an increasing zebra mussel population.

Saratoga Lake Aquatic Vegetation Management

Eurasian watermilfoil (milfoil) is the primary nuisance aquatic plant species of concern in Saratoga Lake. It has been the focus of a management program since 1984, the first year of aquatic weed harvesting and overwinter lake level drawdown at Saratoga Lake. These programs have been successful in improving boat access and possibly increasing aquatic plant diversity in Saratoga Lake due to the reduction of the milfoil canopy. The harvesting program relies on mechanical aquatic harvesting and requires significant amounts of labor and equipment; it is believed this program could be improved by changing control methods and updating equipment. Another key activity since the mid-1980s has included the annual drawdowns which reduces the water level in the lake to expose, dry out, and freeze near shorebeds of milfoil. The annual drawdown combined with ice scour has been extremely effective in eliminating milfoil in these areas.

Finally, Saratoga Lake was treated with an experimental application of SONAR (fluridone) in two 100-acre sites during the summer of 2000. Milfoil was not immediately controlled by two initial SONAR SRP (slow release pellet) applications, necessitating follow-up treatments with SONAR AS (aqueous solution) later in the summer to reach the desired level of control. Reasonable carryover benefits were achieved in the South Plot during the 2001 season. Milfoil regrowth in the North Plot, however, suggested that the root structures of milfoil were not effectively

controlled by the 2000 treatment regime. Fluridone treatment at Saratoga Lake may still be a viable and effective control of milfoil and has strong public support among the lake community. A new formulation of SONAR that releases active ingredients at faster rates will be available by 2003 along with improved treatment methods that may be more effective in controlling future milfoil in Saratoga Lake. This plan recommends the inclusion of regular Sonar aquatic herbicide applications in Saratoga Lake as an element of any future aquatic plant control program.

Saratoga Lake Public Water Supply

Saratoga Lake is currently being considered by the City of Saratoga Springs as a primary public drinking water source for the City and possibly some surrounding communities. The City is presently completing a Draft Environmental Impact Statement which will evaluate Saratoga Lake and other water supply alternatives which might be available. If Saratoga Lake is utilized by the City as a primary public drinking water source, this new demand would change the existing sole recreational use of the lake to distinctly multiple-use with an emphasis on potable water supply. If Saratoga Lake is utilized as a public water supply, management and operation plans will need to be developed to protect the lake's water quality. The Saratoga Lake Watershed Management Plan does not take a position on the use of Saratoga Lake as a future public water supply source.

Natural Resources and Wildlife Habitat

There are abundant natural resources in the Saratoga Lake watershed that provide high quality wildlife habitat. Because wetlands perform significant functions that range from improving water quality in the watershed to providing critical habitat for wildlife, existing watershed wetland acreage needs protection. Since wetland losses are often incremental, involving small wetlands which add up to a significant losses over time, municipalities need to be fully aware of the locations, the functions and the value of wetlands within their communities. Local watershed approaches need to enhance public awareness of wetland values and increase wetland protection while providing more certainty to the development community in the permitting process. Past outreach methods have been successful in educating the general public regarding the protection and benefits of regulatory programs for wetlands.

In March 2000, the USEPA and Fish and Wildlife Service released a National Wetlands Inventory (NWI) Report for Saratoga County. According to the NWI Report, Saratoga County has 42,801 acres of wetlands and 20,954 acres of deep-water habitats. Wetlands alone account for about 8% of the County land area, while deep-water habitats comprise about 4% of the County's land area. The remaining 88% of Saratoga County consist of upland areas. Saratoga County's wetlands consist of mostly forested types (72%), followed by emergent wetlands (8%), scrub/shrub wetlands (7%), shallow water wetlands (7%), and emergent/shrub wetlands (6%).

Watershed Areas in Need of Protection

The Saratoga Lake Watershed Advisory Committee has identified the following areas within the Saratoga Lake watershed as those needing permanent protection from development:

- Land surrounding existing protected lands including county and state forests, town parks, and land trust preserves.
- Land along highly erodible streams and large waterbodies including Kayaderosseras Creek, Spring Run, Fish Creek, Lake Lonely, and Loughberry Lake.
- Bear Swamp, (Q-11 on the NYSDEC Freshwater Wetland maps)
- Undeveloped lands surrounding Manning's Cove on the northwest portion of Saratoga Lake.
- Undeveloped lands surrounding Saratoga Lake.
- Agricultural lands.
- Threatened headwater wetlands and waterbodies.

Recreational Resources

Saratoga Lake has a long history of recreational boating use. Perhaps most famous was its use as a destination for rowing competitions from various college teams during the first half of the twentieth century. While competitive rowing is still a sport on the lake, other recreational pursuits, primarily power boating, dominate the lake now. Saratoga Lake is a popular recreation destination due to its proximity to the Capital District and the Adirondack Northway. The lake also supports an excellent warmwater fishery and hosts numerous annual statewide fishing tournaments.

Public access to the lake includes the heavily used Saratoga Lake State Boat Launch and nine commercial marinas. The Saratoga Lake Sailing Club and several rowing clubs also have access to the lake, and three restaurants offer either boat access or marina facilities/dock space. There is no publicly owned beach, however there are several beaches and picnic areas available to the public at various marinas. There are currently no regulations limiting the number, concentration, or size of the docks which can be installed on Saratoga Lake.

A recreational use study was undertaken during the summers of 2000 and 2001 to examine the existing warm weather recreational use on Saratoga Lake. The study found that the peak active boat use on Saratoga Lake was 250 boats. Since there is approximately 3,000 acres of usable lake surface for motor boating, this represents 12 acres per boat.

In recent years, Saratoga Lake has experienced a significant increase in the number, size and types of boats on the lake. This increase has occurred while the amount of open water in which to navigate has not changed due to the continued proliferation of Eurasian watermilfoil in the shallower portions of the lake. The increased demand for space in which to launch, dock, navigate and otherwise enjoy the lake is creating the need for recreational planning and possible regulation of such use of the Lake. Records kept at the NYS boat launch show substantial annual increases in its use during the last 5 years. Boats have also increased in size, creating larger wakes. This creates a concern for small craft boaters on Saratoga Lake as well as an increase in potential shoreline erosion.

Land Use Regulatory Network

Land uses within the Saratoga Lake watershed are regulated by a wide array of planning boards and local legislative bodies. The Saratoga Lake Watershed Advisory Committee identified a serious lack of consistency in the land use regulatory framework used by individual communities within the watershed regarding best management practices control of stormwater runoff, erosion, land management particularly during the construction phase, and Saratoga Lake shoreline protection. There is a great need to standardize these land use regulations so that uniform levels of protection of stream corridors and lakes is provided throughout the watershed.

goals & recommendations

Stormwater Management and Erosion Control

GOAL:

Reduce nutrients, sediment runoff from both developed and undeveloped land in the Saratoga Lake watershed by creating a balanced approach of watercourse buffers, improved treatment in travel corridors and better shoreline management.

STATEMENT OF NEED:

Non-point sources of pollution are directly related to a wide variety of human impacts upon Saratoga Lake and the watershed. Increased levels of nutrients, sediments, and

other pollutants from both developed and undeveloped lands and highways located within the watershed are a constant and cumulative source of pollution.

RECOMMENDATIONS:

	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
1. Some communities have stream corridor protection standards. A standard ordinance with uniform methods of protection such as a standard buffer zone should be incorporated in municipalities with stream corridor protection rules. These standards will address variable buffer zones for particular streams, wetlands and shorelines.	SLPID, County, Towns	Ongoing	Individual Communities
2. Establishing greater uniformity between the stormwater ordinances in Wilton, Greenfield, and Malta should be a near term goal. Stormwater management ordinances should be implemented in the Towns of Ballston, Galway, Saratoga, Stillwater, the Village of Ballston Spa, and the City of Saratoga Springs.	Municipalities	Ongoing	Individual Communities
3. Monitor point and non-point sources of pollution in the watershed. Develop an annual tributary and stormwater outfalls inventory program to identify pollution sources. Local governments should maintain existing retrofitting programs for storm drain systems based upon the findings of the monitoring program.	SLPID	Ongoing Annual Grants	NYS Nonpoint Source Implementation Grants Program
4. Communities should have capital facilities accounts for the above retrofitting programs.	NYS DOT, SLPID, Municipalities	Summer 2002	NYS DOT
5. An erosion control and stormwater runoff stabilization and revegetation plan should be developed for Route 9P along Saratoga Lake.	SLPID and Local Businesses	Ongoing	Local Business
6. Create a model Saratoga Lake shoreline vegetation buffer demonstration project where the public can easily view it.	SLPID, WQCC	Ongoing	Water Quality Coordinating Committee
7. Provide educational materials to watershed residents on lakeshore and watercourse buffers and vegetation.	Municipal H'way Departments	Ongoing	
8. Provide municipal highway departments with educational materials to reduce highway-related pollution to watercourses within the watershed.	Cornell Cooperative Extension Local Roads Program		

Natural Resources Protection

GOAL:

Protect and conserve the physical environment of the Saratoga Lake watershed. Preserve and protect the ecological integrity of watershed natural resources. Manage fish and wildlife populations and ecological communities to provide continuing social and environmental benefits. Maintain, enhance, restore and protect habitat quantity, quality, and diversity necessary to support the living resources of the Saratoga Lake watershed.

STATEMENT OF NEED:

The habitats of the Saratoga Lake watershed include the broad open waters of the Lake, the rivers and streams that flow into it, wetlands and shallow water flats, forests, and agricultural lands. Although fish may be Saratoga Lake’s most obvious resource, many other animals and plants depend on the Lake. Humans are also part of the ecosystem, and in many places the effects of human activities and

development have had severe adverse consequences on local watershed ecosystems. Incremental loss of small wetlands adds up to a significant loss of wetlands over time. There are many aquifers within the Saratoga Lake watershed. Increased municipal and residential development put additional demands on these aquifers and increases the risk of depletion of these resources.

RECOMMENDATIONS:

	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
1. It is recommended that municipalities develop a consistent and coordinated approach to protecting and managing wetlands within the Saratoga Lake watershed. This can be accomplished through better identification and protection of wetlands consistent with state and federal law. SLPID should work with local watershed communities to identify effective means of enforcement of wetland regulations.	Municipalities/ SLPID	Ongoing	EPA Environmental Education Grant Program
2. Protect regionally important wetlands such as the Great Bear Swamp.	Land Trust/ Landowners	Ongoing	No Cost
3. Develop a system of identifications, analysis and prioritization for future sensitive watershed areas and “special places” within the Saratoga Lake watershed including preservation recommendations.	Land Trust/ Communities	Ongoing	No Cost
4. Create a list of priority areas for the purchase of conservation easements and fee title interests to protect stream buffer areas along the Kayaderosseras Creek headwater wetland areas and significant wildlife habitats within the Saratoga Lake watershed.	Land Trust/ Communities	Ongoing	No Cost
5. Continue to manage the watershed fisheries so that populations are stable, abundant and healthy.	DEC	Ongoing	No Cost
6. Require as part of fishing derbies held on Saratoga Lake that reports of the total fish catch be submitted to NYSOPRHP, SLPID and DEC.	NYS Office of Parks, Recreation & Historic Preservation	2002	No Cost
7. Increase participation and support of local, county, state and federal Purchase of Development Rights (PDRs) within the Saratoga Lake watershed.	Land Trust, SLPID, Communities	Ongoing	No Cost

Saratoga Lake Management

GOAL:

Improve Saratoga Lake and watershed stream water quality. Water quality protection is a watershed issue which must be addressed at water sources.

STATEMENT OF NEED:

There are many town and countywide issues associated with improving water quality that need to be addressed at various levels of government. It is important to build a cooperative approach to

remediate common water quality problems and increase communication and coordination among all levels of government, as well as the public and the private sector.

RECOMMENDATIONS:

<i>RECOMMENDATIONS:</i>	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
1. SLPID should establish an Implementation Committee consisting of key government leaders and SLPID representatives to identify needs and to implement the Saratoga Lake Watershed Management Plan. This group would be responsible for examining all watershed needs including the lack of enforcement of land use regulations, potable water supply issues and the need for increased non-point source control.	Saratoga County Board of Supervisors	April 2002	Saratoga County, Municipalities, SLPID
2. Create the position of a Saratoga County Water Quality Manager to provide a consistent and professional approach in addressing watershed management issues both in the Saratoga Lake watershed and throughout Saratoga County. It is necessary to establish this position at a county level to facilitate meeting the objectives of coordinating water quality protection throughout the entire Saratoga Lake watershed. The Manager would: <ul style="list-style-type: none"> • Assist SLPID with the management of Saratoga Lake, including the aquatic weed control and water level management programs. • Provide technical support to Planning Boards, Zoning Administrators and building inspectors throughout the watershed. • Assist Saratoga County communities with watershed planning including the implementation of the recommendations in this plan, stream corridor protection, wetland protection and the EPA Phase 2 stormwater management requirements. • Assist in the long-term implementation of the Implementation Committee's recommendations. 	Saratoga County Board of Supervisors	May – Oct. 2002	Saratoga County, Municipalities, SLPID
3. Develop a public outreach plan to include a bi-annual newsletter to all watershed town and village boards, planning boards, interested individuals, and organizations. This should be designed to inform the public of the implementation progress of the watershed management plan.	Implementation Committee, County Planning or Consultants	June 2002	SLPID Saratoga County, Municipalities

continued

Saratoga Lake Management *continued*

RECOMMENDATIONS:	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
4. Establish a permanent facility to adequately protect SLPID's vital records on a long-term basis. Space allocation should be considered in any future improvements at the Saratoga County Municipal Center, the Town of Malta Office or the NYS Boat Launch.	SLPID	2002-2003	Involved Municipalities
5. Implement a Saratoga Lake watershed stewardship program for residents, visitors and schools, which use Saratoga Lake watershed resources. Create comprehensive ongoing water resources educational programs and fund them through cooperative partnerships with local agencies and organizations.	County Planning	December 2002 Application Deadline	EPA Environmental Education Grant
6. Enact a Consistency Review Law to establish consistent review requirements and procedures for actions involving the four communities that are contiguous to Saratoga Lake. This local law would require each board, department, or officer of these communities who directly undertake, permit, fund or otherwise approve any project, use, or activity within the Saratoga Lake waterfront to be consistent to the maximum extent practicable with the applicable State and local policies recommended in this watershed plan.	County Planning/ Municipalities		
7. Lake levels of Saratoga Lake should continue to be monitored on a regular basis throughout the year. Lake drawdown policies should be revised to address issues beyond recreation, including flood control, water quality, lake access, and better weed control.	SLPID	Ongoing	No Cost
8. Subject the construction or repair of seawalls on Saratoga Lake to site plan review by local planning boards. Review criteria should relate to preserving the lake's natural shoreline to the greatest extent possible.	Municipalities/ County Planning	Ongoing	No Cost
9. Applications for new docks or expansions of existing docks should be forwarded to SLPID for comment when or if they are reviewed by local municipality.	County Sheriff	Ongoing	No Cost
10. Engage a grants writer to prepare applications for various grants to obtain project funding.	SLPID to Obtain Project Funding	Ongoing	SLPID

Invasive Species Management

GOAL:

Prevent the introduction of, and control where possible and appropriate, nuisance non-native species which currently or potentially may cause damage to Saratoga Lake. Preserve and protect the ecological integrity of the Saratoga Lake watershed aquatic communities.

STATEMENT OF NEED:

Introduced non-native aquatic plants and animals which have become established in the Saratoga Lake watershed pose significant threats to native plants and animals of the watershed and impair recreational uses

there. The aquatic weed harvesting program at Saratoga Lake needs to be re-evaluated to increase its utility in controlling nuisance aquatic weeds at Saratoga Lake.

RECOMMENDATIONS:

	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
1. Refine and implement a comprehensive management plan for nuisance non-native aquatic plant species that utilizes an integrated approach of harvesting, lake level drawdown, herbicides and limited dredging.	SLPID	Summer 2002	SLPID, County
2. Complete a quantitative macrophyte survey of Saratoga Lake and Fish Creek every three years to assess the density and diversity of aquatic plants.	SLPID	Summer 2005	SLPID, County and Towns
3. Combine annual harvesting and the application of herbicides into the long-term plant management strategy. Future fluridone applications may include the use of liquid formulations in the later season. Larger treatment areas should be treated with the pellet formulation. An application of SONAR PR precision release fluridone is recommended upon registration of the product by NYSDEC.	SLPID	Summer 2003	SLPID, County
4. Continue harvesting and improve the program's efficiency by extending the harvesting season through November 15 or as long as plants are standing in the water column, and begin the season as early as practicable.	SLPID	Summer 2002	SLPID
5. Improve record keeping by incorporating the use of a standard spread sheet to track the amounts of plants harvested, hours of effort and approximate location of harvesting completed per day.	SLPID	Summer 2002	SLPID
6. Stay informed on the use of fluridone throughout New York State and the Northeast.	SLPID	Ongoing	SLPID
7. Purchase a new aquatic weed harvester in five to seven years. The new harvester should have an auxiliary power unit to increase the speed of movement to an off-loading point.	SLPID	Summer 2003 Or 2004	SLPID, Grants

continued

Invasive Species Management *continued*

RECOMMENDATIONS:	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
8. Identify areas of water chestnut infestation in Saratoga Lake and in its watershed. Use aquatic herbicides to control water chestnuts. Select a treatment program that will eliminate water chestnut. A Smalley dredge may be an appropriate means to control water chestnut in some areas.	SLPID	Summer 2002	SLPID
9. Clarify SLPID's legislative authorization to work within the Fish Creek channel. Seek taxing authority for lands along Fish Creek. Consider amending SLPID's legislative authorization to include additional areas within the Fish Creek channel	SLPID	Ongoing	SLPID, Towns, County

Water Quality Monitoring

GOAL:

Reduce nutrient, salt, sediment, and other non-point pollutant inputs to Saratoga Lake to maintain a healthy and diverse ecosystem.

STATEMENT OF NEED:

Increased development within the Saratoga Lake watershed has had a negative effect on its environmental quality. High levels of phosphorus have increased weed and algae growth, which alters fish and wildlife habitat, impairs scenic views, reduces

recreational appeal, impairs water supplies and lowers property values. Watershed management efforts should focus on both reducing nutrient inputs from existing sources and the prevention of increases from new sources.

RECOMMENDATIONS:	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources</i>
1. A long-term water quality monitoring program for the lake and selected entering streams should be established.	SLPID	Summer 2002	SLPID
2. All applications for potable water supply use of Saratoga Lake must be completely reviewed in conformity with the NYS State Environmental Quality Review Act and by the appropriate state agency.	NYSDEC/ NYSDOH	Unknown	None

Recreation

GOAL:

Manage Saratoga Lake, its shoreline and its tributaries for a diversity of recreational uses while protecting its natural and cultural resources.

STATEMENT OF NEED:

The location, easy access, and dramatically improved water quality make Saratoga Lake a popular destination for visitors and local residents. The future safety, quality of recreational experiences and the

watershed’s natural and cultural resources are at risk because of increasing recreational uses in specific areas of the lake.

RECOMMENDATIONS:	<i>Responsible Party</i>	<i>Timeframe</i>	<i>Potential Funding Sources*</i>
1. Communities around the lake should adopt marina standards that address parking, boat pump-out facilities, dock length, and quick launching as part of their individual land use code. SLPID should comment on future proposals for expansions of marinas during the local SEQRA process to assure that responsible design standards for marinas are considered.	SLPID/ Municipalities	Ongoing	No Cost
2. Coordinate and improve police and marine patrol enforcement of existing laws and regulations governing Saratoga Lake. State regulations for no-wake zones should be enforced and better enforcement should occur on Fish Creek.	County	Ongoing	Individual Agencies
3. Keep no-wake, 5-mph buoys in place until after all rowing events have ended in the fall.	County/ NYS Office of Parks, Recreation & Historic Preservation	Ongoing	No Cost
4. Post speed limits for boats at the entrance to Kayaderosseras Creek and the Lake Lonely outlet.	County/ NYS Office of Parks, Recreation & Historic Preservation	Ongoing	No Cost
5. Continue patrols in areas of high use and on weekends.	County Sheriff/ NYS Police/ NYS Office of Parks, Recreation & Historic Preservation	Ongoing	Individual Agencies

land *to* lake
perspectives



A Watershed Management Plan for Saratoga Lake
March 2002