

land to lake perspectives

The Saratoga Lake Watershed Newsletter



Volume 1 Issue 3

June 2001

chairmen's column

Saratoga Lake State of the Lake Report and Watershed Management Plan will be completed and available for public comment in late June. This plan will be a substantial update of the 1986 Diagnostic Feasibility Study. Some of the topics that will be covered in the new watershed management plan will include: implementation techniques; nonpoint source control; point source monitoring; aquatic plant management; and water related recreation.

- Implementation will include a continuation of the cooperative approach of working with communities in the watershed and the development of the position of a full time watershed technical assistant to work on watershed planning initiatives and in-lake management of aquatic plants.

- Nonpoint source control will include working with communities to retrofit stormwater discharges with advanced pollution control technology such as Stormceptor, Stormfilter, and Vortechnic Stormwater Concentrators.

- Point source monitoring will concentrate on organizing a program of annual stream inventories to detect point discharges.

- The aquatic plant management program will focus on continued harvesting using improved techniques and a completed inventory of aquatic plant life every two years. The program will also work to refine use of Sonar, seek adequate funding for a new Sonar application and continue to monitor weevil predation on milfoil.

- The section on water recreation will consider many recommendations including monitoring the lake's water quality and boat numbers annually, providing standards for marina site plan review, requiring marinas to provide pump-out services, advocate no further expansion of parking at the state boat launch, and adding improvements at the state boat launch including rest rooms and picnic grounds, restricting boat speed between Route 9P and Stafford's Bridge Road bridge, and restricting docks on residential property to use by riparian owners.

This is an important time for the Saratoga Lake Protection and Improvement District and we need your continued input and support as the Advisory Committee develops recommendations for the Watershed Management Plan. There has been much discussion regarding the City of Saratoga Springs efforts to use Saratoga Lake as a drinking water source. While there is certainly a relationship between these projects, for our purposes, they are two separate projects and will need to be addressed as such. Let's keep our attention on the bigger picture and present a plan that seriously confronts the numerous important issues before us.

Lynnwood Taylor and Bob MacMillan
Co-Chairmen, Watershed Advisory Committee



new water quality data collected

Adirondack Ecologists of Crown Point conducted a study to monitor the water quality of Saratoga Lake during the summer of 2000. The primary objective of the project was to obtain current limnological data that could be compared with historical data. By comparing this information, we may be able to determine whether there are any noticeable trends in the water quality of Saratoga Lake. Secondary objectives of the water quality testing were to assess whether the Sonar treatment, initiated in 2000, would have a significant impact on the water quality of Saratoga Lake. Water quality data may also be a factor in the success or failure of the milfoil-eating weevil experimental release project.

The study involved collecting surface water and deep-water samples at both the north and south basins of Saratoga Lake in June and August. In addition, water samples were taken at the mouth of the Kayaderosseras Creek and from a site in the lake's outlet (Fish Creek). All samples were analyzed for total and reactive phosphorus, total nitrogen, nitrate, chloride, conductivity, total dissolved solids, and turbidity. Water surface samples were additionally analyzed for pH, alkalinity, ammonia, silica, sodium, magnesium, calcium, potassium, and iron. Chlorophyll *a* levels were also measured. A dissolved oxygen and temperature profile was performed at both lake

basin-testing stations in June and August. Secchi disk transparency data were also obtained at this time.

The limnological information was obtained at Saratoga Lake to maintain the database already established and to provide valuable comparison data. A seasonal comparative of north basin historical total phosphorus (TP), Secchi disk transparency (SDT), and chlorophyll *a* (Chl *a*) data obtained via the CSLAP (Citizen's Statewide Lake Assessment Program) from 1993-1997 and data collected by Adirondack Ecologists during the summer of 2000 is displayed in the table on the next page.

According to these data, both the June and August 2000 samples possessed lower TP and chlorophyll *a* levels than were measured, on average, from 1993 to 1997. The results of the dissolved oxygen/temperature profiles performed at the north and south lake basin testing sites on June 21 indicated that the respective water columns of both basins were well-oxygenated down almost entirely to the lake bottom. The August 28 profile indicated that Saratoga Lake was stratified, with the thermocline starting between 11 and 12 meters. The hypolimnetic waters of both basins were anaerobic, with profound oxygen depletion present in the north basin beneath 8 meters depth.

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new water quality

During the period of April through June 2000, water samples were taken from 3 locations for the City of Saratoga Spring's Water Source Development Project. Most of the variations between parameters can be accounted for by differences in sampling techniques and different time periods for each respective set of samples.

As part of the SLPID watershed study, water samples were taken along the Kayaderosseras Creek. Samples were taken starting at the NYS Route 29 fishing access site. Five other sampling points were spread along the course of the Creek near locations of other major input streams.

Looking at the data for the watershed water quality changes between Rock City Falls and Lewis Road, conductivity illustrates an increase in the total dissolved salts in the water. The Lewis Road site is below the Glowegee Creek, which receives a permitted discharge from the Kesslering Training Facility. The second increase in conductivity occurs downstream of Geyser

Brook, which is recharged by mineral springs and receives some runoff from suburban areas.

The next water quality parameter that shows changes along the Kayaderosseras is coliform. Fecal coliforms are bacteria found in human derived wastewater while fecal strep is a bacteria more closely associated with animals. The upper watershed above Lewis Road may be impacted by the animal related wastewater bacteria while the Kelly Park sample shows stronger influence by human-related wastewater bacteria. This could be caused by the adjacent urbanized area, leaking pipes or by overflow structures in the village.

The source of the increase should be the subject of further sampling to determine whether it can be eliminated. The last comparison is between the years of 1982 and 2000. The pH and alkalinity have not changed during the last 18 years. The conductivity levels were lower in 1982 and higher in 2000. This could be caused

by the differences in water volumes during the prior months or changes in land use during that period of time. Finally, the amount of phosphorus in the Kayaderosseras Creek has dropped since 1982. Looking at all the 1982 data, regardless of the streamflow, shows that more phosphorus was moving down the Kayaderosseras at that time. ♦

Nonpoint source pollution:

Most of the existing significant sources of nutrient enrichment to Saratoga Lake can be traced to nonpoint sources. Nonpoint sources are diffuse and they include poor septic systems in close proximity to stream courses or the lake's shoreline, rural, woodland, and urban runoff. Nonpoint nutrient sources are integrally related to existing land use practices within any given drainage area.

Comparison of 1993-97 CSLAP, 2000 Adirondack Ecologists Data and 2000 City of Saratoga Springs Data for Saratoga Lake.

	TP(ug/l)	SDT(m)	Chl a(mg/l)
Oct. - May 1972 (USEPA)	25	2.75	12.7
CSLAP (5-year mean, June)	14.4	3.4	6.23
Adirondack Ecologists (6/21/00)	12.4	4.2	4.98
CSLAP (5-year mean, August)	17.8	2.2	18.50
Adirondack Ecologists (8/28/00)	17.3	3.2	12.96
Spring 2000 (City of Saratoga Springs)	13.8	3.3	3.9

Improving Eurasian watermilfoil control

Harvesting, a key aquatic vegetation control activity since the mid-1980's, was developed to provide access from docks to navigable waters offshore. Over recent years, harvesting has become largely a mowing program, running about 16 weeks a year and removing 913 loads, or 1000 tons of wet milfoil. Harvesting can be conducted to better control milfoil growth by cutting early in the season and later into the fall, and by using bigger harvesters to go deeper. Both of these actions will change the focus of the existing program from navigational access and aesthetics to reducing the size of the milfoil beds by increasing stress on the plants.

Another important aquatic weed control activity since the mid-1980's is the annual fall lake drawdown which reduces the water level to expose, dry out, and freeze plants in the shallow water zone. Combined with ice scour, drawdown has been shown to be an effective technology in reducing the density of milfoil in shallow zones.

Herbicide applications have been frequently used in New York State for partial lake treatment. Aquatic herbicide applications were completed on Saratoga Lake to evaluate the potential for use of Sonar (fluridone) to control Eurasian watermilfoil. Sonar pellet and liquid treatments were conducted during the summer of 2000. Treatments were also conducted later in the summer in an attempt to attain better control. Overall, Sonar treatments were effective in controlling the milfoil, but took a prolonged period of time. Monitoring of the project will continue in 2001. ♦



human impacts on saratoga lake

Key Findings on Water-Based Recreation

The location, easy access, and dramatically improved water quality of Saratoga Lake make it a popular destination for visitors and local residents. Special events on the lake which attract residents of the Capital District and beyond, include a long-standing YMCA Swim Marathon, regional sailing races, rowing practices, and races of local clubs and associations along Fish Creek. Fishing competitions and the fishing quality of the lake are also a large draw.

The increase in recreational uses and boat registration, the seasonal homes converting into permanent residences, and overall rising population of the Capital District has created the need for a management plan for recreation on Saratoga Lake. The quality of recreational experiences and the watershed's natural and cultural resources are being threatened by increasing recreational uses in specific areas of the lake. A number of important issues need to be addressed to maintain high quality recreational experiences into the future. These issues include public access, the number and types of conflicting recreational uses, safety and enforcement concerns, and the continued degradation of natural resources.

Public access to the lake includes the State Boat Launch and the marinas, which offer day use launching, and parking and dock rental space for the season. The Saratoga Lake Sailing Club and several other rowing clubs also have access to the lake, as do three restaurants which offer either boat access or marina facilities/dock space. There is no public beach on Saratoga Lake, however, there are several beaches and picnic areas offered at various marinas.

Boating Trends

Nationally, New York State ranks high in the number of registered boats and the numbers continue to rise every year. There were 13,247 motorboats registered in Saratoga County in 1998, ranking it seventh in the state, only surpassed by counties adjacent to Long Island Sound, Lake Ontario and Lake Erie. The number of boats registered in Saratoga County increased by 1,830 over the last three years. Registration records also indicate that the vast majority of boaters in Saratoga County recreate primarily in the waters of Saratoga County. This is important to note because it means that most future new boaters will become new boaters on Saratoga Lake.

The physical characteristics of Saratoga Lake create space partitioning and lead to the segregation of different recreational uses. Weed beds limit access of powerboats and jet skis from reaching the areas frequented by fishing boats. Manning's Cove and the lake below the bluff near the South Shore Marina are popular areas for boats to congregate. Problems potentially arise during special circumstances when all boats would suddenly be active, as in the event of a sudden thunderstorm. ♣



Navigation Hazards

Saratoga Lake is relatively easy to navigate. There are no islands and the only land obstacles that limit sight are Snake Hill, the Ditch, Manning's Cove area, and the channel near the 9P Bridge at the mouth of Fish Creek. There are buoyed areas associated with shallow depths and the channels that are cut into the weed beds to allow for passage of boats from docks into the open area of the lake. The area surrounding the Route 9P Bridge is also buoyed.

Numerous weed beds ring the lake out to a depth of 12-15 foot depths. The plants have a limited ability to grow in depths of 18 feet or more with the lack of sunlight being the primary limiting factor. Improved water clarity has the capacity to expand the area in which the weeds can grow.

Navigational concerns include a decreased area in which boats can navigate. Racing events can occasionally become navigational obstacles and, even a safety risk on the lake. Races that are currently held on the lake include rowing races on Fish Creek and the annual Swim Marathon which utilizes the entire length of the lake.

In addition to the New York State Laws governing all waterways, there are some SLPID regulations specific to Saratoga Lake:

- *The lake speed limit is 45 mph during the daytime and 25 mph at night. For areas 200 feet from shore, docks and piers, there is a 5 mph no wake policy. The channel 1,200 feet to either side of the Route 9P Bridge is also a 5 mph no wake zone and buoys are in place to warn boaters.*
- *There is a noise regulation in place for boats with engines which exceed 75 decibels.*
- *In season, carp bow hunting is allowed. It is, however, prohibited within 500 feet of an occupied dwelling.*
- *Jet skis must remain 200 feet from all objects. It is advised that there be no wake jumping, chasing of water birds, and over use of any section of the lake. Idle speed should be used in areas with a depth of four feet or less.*

The Saratoga County Sheriff, the Office of Parks and Recreation and the Department of Environmental Conservation Marine Patrol handle enforcement of these regulations on Saratoga Lake. Local fire departments also have access to the water in case of emergency. ♣

Questions? Call Dean Long or Tracey Clothier at the LA Group, P.C. at 587-8100 or visit www.sara-lake.org

recreational capacity analysis

An important component of the Watershed Management Plan is an assessment of the health and recreational value of Saratoga Lake. These two aspects are linked because the value of a

- Types of surface use
- Recreational carrying capacity
- Facilities available to boaters and other lake users
- Possible conflicts in use of the lake
- Possible limits to recreational uses
- Law enforcement and accident reports
- Regulations on the lake
- Concerns of residents, businesses, visitors

Two methods were used in order to determine the types of surface use. A Boat Survey was initially conducted in order to determine the peak time of day, or the hour with the heaviest boat use, approximate number of boats at peak time, where and what types of use take place, and boating changes that occur throughout the day. Part of this survey included a gross boat count of all boats moored on the lake. The second aspect included a look at special uses, including uses by fishing clubs, fishing tournaments, swim competitions, sailboat races and rowing competitions.

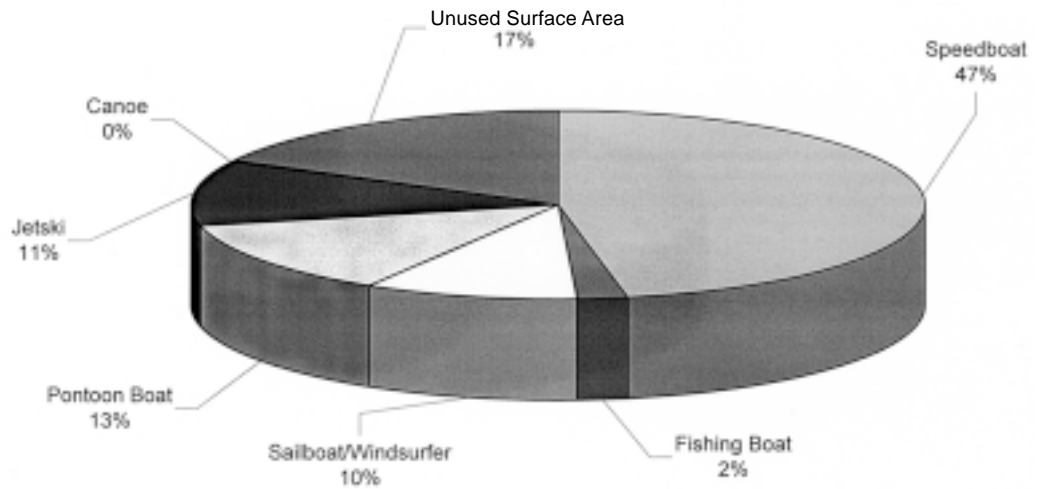
Interesting patterns of lake surface use emerged as a result of the Boat Survey. To date, active boats on Saratoga Lake have been observed a total of four days, an hour each on a Tuesday, Saturday and Sunday, and six hours on a separate Saturday. The single hour days were observed during the suspected high use time of day around three o'clock. Each day was sunny and warm. Boaters tended to congregate in Manning's Cove and along the bluff near 9P before Stony Point Road where they moored and enjoyed the water. Most of the active boating (jetskiing, waterskiing) took place in the, deeper area of the lake, north and east of Manning's Cove. Fishing took place during the mid-morning, along the edges of the lake near the weed beds, especially around Snake Hill. Fishing boat activity tended



Recreational Carrying Capacity

Carrying capacity standards are designed to determine the maximum number of vessels that the surface of the lake can accommodate before travel becomes too congested and safety and/or the quality of the recreational experience is compromised. A variety of factors are taken into consideration for the creation of surface use recreational carrying capacity standards. These include the type of vessel, types of use and the physical limitations of the waterway. Standards vary from study to study and region to region, ranging from 6 acres per boat to 40 acres per boat. For the purpose

**Saratoga Lake Recreational Carrying Capacity
Distribution of Uses on Surface Area
August 26, 2000, 3:00pm-4:00pm**



to taper off as the day grew later, and the lake was taken over by faster boats.

In order to determine the peak hour of boating usage and also to observe types of uses throughout the day, a Boat Survey of active boats was conducted on Saturday, August 26, 2000. Boats were counted from the Bluff above South Shore Marina along Route 9P. From this viewpoint, most of Saratoga Lake could be observed. These numbers were added to the results of the count from the second viewpoint, the State Boat Launch. The State Boat Launch was visited in order to count the number of trailers carrying boats during the day so as to establish an estimated number of day users. Observations of boats in the channel under

of this report, the general standards utilized by New York State in the State Comprehensive Outdoor Recreation Plan (SCORP) are being used. They call for 8 acres of lake surface use area for most boats, 15 acres for waterskiers or jetskiers and 1 acre for canoes.

Saratoga Lake has a total surface area of 4,028 acres, approximately 3,367 of which are navigable for the purposes of recreational activities. Using the above standards for surface use, roughly 337 boats can comfortably and safely operate on the lake at one time. Results of the active boat count survey taken on Saturday, August 26, 2000, indicated that

the 9P bridge, the main section of the lake and on Fish Creek were made from the boat launch.

The results of this survey show the peak of active boat use on Saratoga Lake on 8/26/00 to be from approximately 2:45 until 4:00 PM with a maximum of 297 boats. The pie chart illustrates the various types of boat activity on August 26, 2000. Approximately 47% of the total number of boats on the lake (176) were speedboats, 13% (48) were pontoons, 11% (22) were jet skis, 10% (36) were sailboats, 5% (7) were canoes, and 2% (8) were fishing boats. A shift in types of boats occurs during the daytime hours when there is a marked decrease in the number of fishing boats and increase in jet skis as the day progresses. ♠

at peak use, an estimated 297 boats were in use on Saratoga Lake on this date. This represents approximately 11 acres of lake surface area per boat, just slightly above the 10-acre standard. This information should serve as a signal that steps should be taken in the near future to limit the number of boats on Saratoga Lake. ♠

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alternative regulatory approaches

Saratoga Lake is rapidly approaching its carrying capacity. There are several approaches that can be employed to keep the number of boats below levels that may be unsafe. These include the following techniques:

- Limited access
- Uniform standards for docks and moorings
- Prohibited expansion of marinas
- User permits and fees
- Restricted use zones

Outside of a regulatory framework, the best way to manage the number of boats using Saratoga Lake is to prohibit the state boat launch from expanding its parking lot and/or number of launch ramps. NYS Parks & Recreation is presently contemplating a parking lot expansion because the demand for parking often exceeds existing capacity on busy weekends.

Employing some kind of regulatory controls, including dock standards, user fees and boat permits each have positive and negative impacts for the lake community. There are presently no standards regarding the length, width, or number of docks, moorings or boathouses in any of the communities surrounding the lake- City of Saratoga Springs and the towns of Malta, Stillwater, and Saratoga. While it is not possible to know how many residential docks are presently being used by nonresidents, one can assume that there are numerous private arrangements for dock rental space throughout the lake. Commercial marinas appear to be at capacity most of the time which puts additional pressure on homeowners to open their docks to nonresidents.

On the surface, this does not seem to be a significant issue, but it is the collective impact of the potential for many new boats on Saratoga Lake at private docks, as well as the potential expansion of marinas, that may make it an issue in the near future. A prohibition to this activity (allowing for the grandfathering of existing situations) or the application of a uniform set of standards for private settings and commercial settings would give an adequate level of control. Limiting the number of docks permitted on individual properties would also have lakewide aesthetic and environmental benefits, and improve safety.

There are also no established standards for the operation of marinas on Saratoga Lake. At a minimum, proposed new or expansion of commercial docks should be subject to local site plan review in all localities that have jurisdiction on the lake. Model standards should, at a minimum, address standards for marina pumpout facilities, runoff from maintenance areas, and provisions for picnic sites, garbage disposal and restrooms.

The down side of regulating docks is that some entity has to be in charge of the regulating and enforcement. The municipalities around the lake could adopt a uniform code and manage docks and marinas on their own. An alternative is for SLPID to assume this responsibility. This may or may not be within the realm of their jurisdiction and would need further investigation.

The number and type of docks a homeowner can construct is usually regulated



by lake frontage. However, there are some communities that choose to make projects such as dock construction subject to site plan review. Review criteria most often include meeting the following criteria:

- Will the proposed facility create a volume of traffic, which will tend to be unsafe or cast an undue burden of traffic on the lake near the facility?
- Will it be compatible with adjacent development?
- Will it be compatible with the maintenance of the natural beauty of the lake;
- Will it be structurally safe for use by the intended users?
- Will it be a source of nuisance or annoyance to neighbors?
- Are there adequate parking and sanitary facilities?
- Will the facility serve the public or have limited or no public benefits?
- Will the proposed facility obstruct or occupy too great an area of the public water in relationship to its utility to the general public?
- Is there adequate water depth available for the project without churning up the bottom sediments?
- Is the facility compatible with the adjacent water use area?

Marinas and docks should also be subject to the State Environmental Review Act (SEQRA) which requires related cumulative impacts to be addressed.

A sample set of dock standards for residential docks are as follows (source: Lake George Park Commission):

- 45-65 ft 1 straight dock
- 66-150 ft 1 straight, T, L, or U shaped dock
- 151-250 ft 2 straight, T, L, U or a single E shaped dock
- 251-500 ft 3 straight, T, F, U or 2 -E shaped docks

Dock length - up to 40 ft
 Dock Width - up to 8 ft
 Maximum surface area - 700 square ft

To offset costs relating to the regulation of docks, the Lake George Park Commission collects dock fees from both homeowners and commercial operations on Lake George. Together the 2,828 residential docks alone brought in an estimated \$70,000 in revenues for the Lake George Park Commission (LGPC) in 1999. LGPC also collects fees for boat registrations. The 2,266 motor boats registered on Lake George in 1998 paid an average of \$25 in 1998 bringing in an additional revenue stream of more than \$56,000 which is used to run the Marine Patrol and other programs that provide safety education to lake users.

It is questionable whether the boat and dock fee system is a deterrent to visiting Lake George boaters. When the fees were initially instituted on Lake George in 1986, there was a reduction in the number of boats for a period of a few years and then the number rebounded back up to pre-registration fee levels. Undoubtedly, the same phenomenon would occur at Saratoga Lake. Unless boat and dock fees are high enough, they will not likely act as a mechanism to control the number of boaters on Saratoga Lake. There would be value, however, in developing a reliable revenue stream to create a fund for patrols, safety, boater education and other programs.

An alternative would be to dedicate all boat launch fees to a fund reserved for lake management purposes on Saratoga Lake.

The potential for additional boats on Saratoga Lake is very high. Public perception about the lake's water quality is generally quite positive especially since water clarity has improved and attention has focused on lake management over the last few years. It can also be assumed that a majority of the boats being sold in the area to new boaters will make their primary destination Saratoga Lake.

Local control of boats and docks will be addressed in the Watershed Management Plan. Public input on this subject is essential in shaping the right solution to what is facing Saratoga Lake in the very near future. ♠

catch anything?

Fishing is a lifetime leisure sport that can be enjoyed by people of all ages. Saratoga Lake and its surrounding tributaries have some of the best fishing in the region, and in an effort to maintain fish populations and to enhance the sport of fishing, the NYSDEC stocks a number of different streams throughout the watershed. In the year 2000, the Kayaderosseras Creek was stocked with over 11,000 Brown Trout at locations in Greenfield and Milton. Other tributaries stocked with Brown Trout include Bog Meadow Brook in Saratoga, stocked with 360, Glowegee Creek in Milton, stocked with 380 fish, 800 fish in Geyser Brook and Slade

Brook in Saratoga Springs, and 1400 Brown Trout were released into La Rue Creek in Ballston. The DEC released over eight million Walleye into Saratoga Lake in Stillwater.

Saratoga County and the Town of Milton have also participated in fish stocking. Milton released 1800 Rainbow Trout into the Kayaderosseras Creek from Rock City Falls to Factory Village. Saratoga County released 1900 Brook Trout into the upper Kayaderosseras. Overall, over 18,000 Trout were released into the Saratoga Lake Watershed.

Current fishing regulations for the Kayaderosseras Creek prohibit fishing from

March 16 to April 15 from the section of Creek from Saratoga Lake until the first railroad bridge on the Kayaderosseras Creek. From the railroad bridge upstream, trout fishing is permitted year-round. The NYSDEC has purchased public fishing rights (PFR's) on many sections on the Kayaderosseras Creek. PFR's are currently located in Corinth, South Corinth, North Greenfield, Middle Grove, Rock City Falls, West Milton, Milton Center and Ballston Spa. Use of the PFR sites for activities other than fishing is prohibited. For complete list and map, log onto DEC's website at www.dec.state.ny.us

land trust: helping to advance watershed conservation goals

The Land Trust of the Saratoga Region (LTSR) is one of more than 75 local land trusts across the state striving to conserve important land resources for public benefit. LTSR has been assisting landowners and towns in the Saratoga Region with land conservation and stewardship since 1988. LTSR currently manages or owns over 1100 acres, and expects to double that number by the end of 2001.

The major component of LTSR's efforts is the Special Places Program, a comprehensive, common sense approach to land conservation. Incorporating input from landowners, towns, villages, and cities within the Saratoga Region, LTSR has developed 14 priority program areas. Four of the priority program areas are located in the Saratoga Lake Watershed, and will be incorporated into the draft Watershed Management Plan for review and comments.

LTSR continues to seek partners in maintaining the health and vitality of the Saratoga Lake Watershed and the Saratoga Region through land stewardship and conservation. If you are interested in exploring conservation partnership possibilities, please contact the Land Trust at 584-9934 or visit their website at <http://family.knick.net/landtrst> to learn more.

Future 2001 Meetings for the Saratoga Lake Watershed Advisory Committee

All Meetings are open to the public and held at the Ballston Spa County Complex Cooperative Extension Auditorium-Building 5, 50 West High Street • 7:00 to 9:00 PM

Thursday, July 12th:

Presentation of Draft Watershed Management Plan

Thursday, August 2nd:

Public Outreach Meeting, Draft Watershed Management Plan

Information about the project is always available on our website: www.sara-lake.org

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