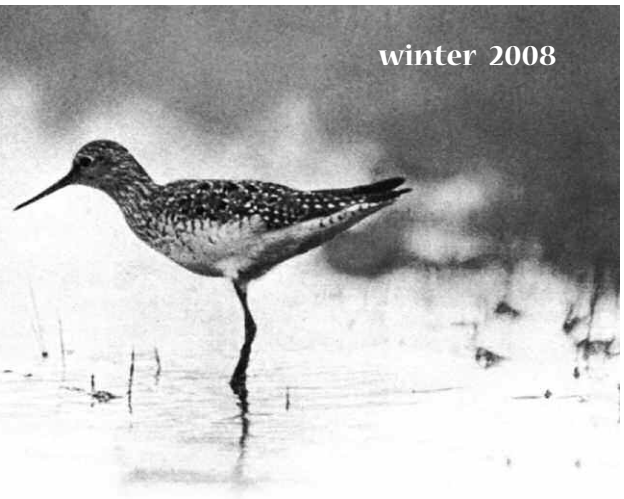
CAYUGA LAKE WATERSHED
Network News
winter 2008



INSIDE...

Stormwater Runoff: Problems and Solutions

Liz Patterson, Ithaca NY
Essay Contest Winner, Tied for 1st Place, Adult Category

Beauties like this native purple aster are well suited for bioretention, such as rain gardens, that retain and treat rain water.

In summer when dark storm clouds billow over the southwestern hills of Cayuga Lake and thunder booms through the valley I am thankful for the coming rains that will nourish our lawn and gardens. Until a few years ago these drenching rains also gave me something I wasn't so thankful for – a leaky basement. So, I was quite happy when we finally decided to have rain gutters installed at our house. The gutters solved the basement problem by directing the rain waters away from our home's foundation.

We live on a steep hill so any rain not absorbed into the ground cascades down the hillside. The runoff makes its way to Six Mile Creek, which flows into Cayuga Lake. Cayuga's outlet is at the north end of the lake where the waters join the Seneca River, which is part of the Oswego River Basin. The basin connects to Lake Ontario, then the St. Lawrence Seaway, and finally the Atlantic Ocean. It is an amazing hydrological cycle.

Liz Patterson

Recognizing this ecological path I contemplated the consequences of just letting the unabsorbed stormwater cascade down the hill. If problems are caused by this, what are they? And what steps could I take to prevent these problems?

A quick search on the internet gave me plenty of information about the problems associated with stormwater runoff. I learned that as stormwater runoff flows through residential neighborhoods and towns it collects many things in its path: fertilizers, pesticides, oil, gas, other automotive fluids, soap, pet waste, de-icing salts, litter, cigarette butts, even household chemicals. These impurities adversely impact fish and other water wildlife as well as our drinking water systems. The National Resource Defense Council reports that one quart of motor oil can spoil 250,000 gallons of drinking water! ...

Not only that, the rushing runoff of stormwater causes stream and creek bed erosion and disturbs wildlife habitats. The eroded soils, along with leaves and grass clippings caught in drainage systems, add to the sediment carried into Cayuga Lake. Heavy sediment causes another long list of problems, particularly when it is polluted.

This was enough to convince me of the importance of creating a way of allowing as

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WATERSHED STEWARD'S MESSAGE

You Won an Award!

After publishing the fall newsletter that featured recognition of contributions, I was pleasantly surprised to accept an award on your behalf.

The NYS Soil and Water Conservation Society honored the Cayuga Lake Watershed Network with the prestigious Merit Award for outstanding education and outreach. The Lake-friendly Farm and road ditch education programs were specifically noted. The Merit Award recognizes outstanding activity that protects soil, water and related natural resources.

It truly is your award. The difference we make is possible because of the contributions we receive from the individuals, families, municipalities, agencies and businesses who give money, time, expertise, goods and services. Pat yourself on the back for a job well done. Your support helps keep Cayuga Lake clean for current and future generations.

Sharon Anderson

Sharon Anderson (right), accepts the Merit Award from Brian Boerman (left), President of the Soil and Water Conservation Society, at the Society's Annual meeting.

Stormwater Runoff: Problems and Solutions

continued from cover

much stormwater as possible to soak into our yard (without, of course, having it seep into our basement). Where my gardening plans in the past focused on deer resistant plants, bioretention will now be included in my landscape design. Bioretention gives water time and space to soak into the soil. In this way, plants, worms and microbes have the opportunity to process the water. Nutrients can be absorbed, and some pollution can be broken down.

… Probably the best first step is to track where excess water travels on our property. Once we observe the path of the water we can then map out where to add some diversions like rain gardens, grassy swales and retaining banks.

Next, I'll take some time choosing plants that can survive being drenched but can also survive dry spells. Our weather in the Cayuga Lake area tends to follow the very wet to quite dry pattern. For information on which plants fit this pattern I consulted the Cornell County Cooperative Extension's brochure "A Selection of Plants for Rain Gardens." The brochure is beautiful, very informative, and can be found on-line (Visit www.CayugaLake.org, under "What's New" select Rain garden). Some of the plants that do well in rain gardens and have the deer resistant qualities I am looking for are: aster, astilbe, bee balm, Joe-Pye weed, coneflower, geranium, some ornamental grasses, and ferns.

Additional flowers, bushes, and ground covers are also being added to the overall design of our yard. I want to reduce the area of the grass lawn so less mowing is required. With our patchy lawn I feel that choices other than grass will help reduce erosion. Where the lawn is mowed, we will leave the grass clippings where they are cut. This will help recycle nutrients and reduce erosion as well. Adding mulch to flower beds and the areas around bushes and trees also helps tremendously in retaining water.

On the side of the house where our vegetable garden grows I plan to put rain barrels at the downspouts of the gutters. The collected water will benefit our veggies during those summer dry spells. Many rain barrels are on the market in various sizes and include special safety and mosquito-proof features. The styles range from wooden whiskey barrels to polyethylene kits. Instructions can be found on-line for how to set up a rain barrel system.

"Some of our new ornamental grasses and ground covers will be planted near the storm drains to help reduce erosion and catch loose items that could clog the drainage system."

Another step I have done in the past but hope to be more diligent with in the future is helping to keep the path of municipal storm drains clear of leaves, sediment, litter and debris. Some of our new ornamental grasses and ground covers will be planted near the storm drains to help reduce erosion and catch loose items that could clog the drainage system.

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Cayuga Lake Watershed Network

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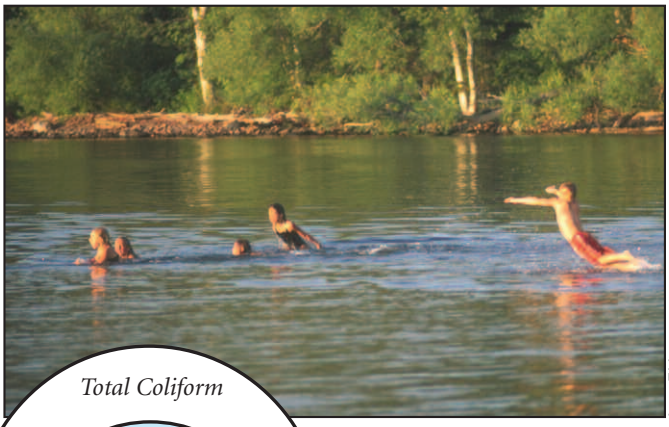
Keeping Water Disease Free

by Ruthanna Hawkins and Sharon Anderson

Contact with polluted water can make people sick. Boating or showering with lake water or swimming in a stream can cause illness if the water is fouled with disease-causing organism such as bacteria and viruses. Sewage is one source of these organisms that can cause gastrointestinal and other illnesses.

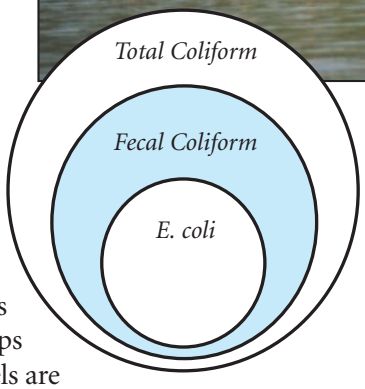
Water-borne disease can potentially affect the economy, as well as posing an immediate health risk to people who use the water. Negative publicity about unhealthy water could drive away tourists. According to the NYS Department of Economic Development, tourism in Tompkins County alone contributes $45,000,000 annually to the local economy. Once understood, such health and economic disasters can be averted.

Water samples are regularly collected from public swimming areas such as the state parks and youth camps to make sure that bacteria levels are within health standards. If bacteria levels rise above a threshold, the beach is closed until the water is clean enough to be safe. It is important to remember that samples collected at swimming beaches provide information on the water quality at that point along the shoreline, at that time. The results are not indicative of the water quality for the lake as a whole, over time.



Jane Elder

Clean water is important for recreation as well as drinking.



Left, E. coli *is a type of fecal coliform, which in turn is a subset of coliform bacteria. Generally not harmful, they are used as indicators of potential health risks.*

Source: Tompkins County Health Dept.

Bacteria As An Indicator

Bacterial monitoring is a practical tool for assessing the quality of water and any potential health risk. Since the early 1800s, the presence and density of bacteria known as fecal coliform have been used to evaluate the health risk of surface water. As the name suggests, fecal coliform is found in feces and it naturally resides in the intestines of healthy warm-blooded animals including humans, agricultural animals, pets, and wildlife. One commonly known type of fecal coliform bacteria is *Escherichia coli* (generally referred to as *E. coli*). Fecal coliforms are a subset of all coliforms (see figure). They are not usually harmful themselves but their presence may indicate fecal contamination and the existence of disease-causing bacteria, viruses and protozoan. Since fecal coliforms typically die rapidly outside the body, their presence in water indicates recent contamination.

Reducing the Risks

Feces can enter streams, ponds and lakes directly, be carried by water that flows over land, or come from sewage or stormwater facilities. One source of sewage can be septic systems that are not properly treating wastewater. The failure rate of septic systems around Cayuga Lake is not known and is hoped to be less than the 49 percent failure rate found in lakeshore systems around Otsego Lake.

Reducing the amount of fecal matter that gets into the tributaries and the lake is the first defense in keeping our water clean. Regular septic system maintenance, landscaping to sponge up surface runoff, and use of agricultural Best Management Practices that limit the movement of contaminants from barnyards are vital steps. On a smaller but still significant scale, collecting dog wastes and discouraging the feeding of waterfowl are actions that help keep bacteria from entering waterways.

Stormwater runoff is one of the biggest sources of fecal contamination for urbanized areas. By preventing stormwater from reaching water bodies, fecal contamination from wildlife and pets is reduced. Slowing the flow of water also slows the flow the contaminants and allows for more natural filtering and cleansing. Management efforts aimed at reducing the quantity of flowing stormwater include rain gardens and disconnecting roadside ditches from streams.

Tracking the Source

While discovering that pathogens or indicators are present is an important step in reducing health risks, tracing these contaminants back to their source and stopping them there is even better protection. Finding the sources aids in the creation of targeted, cost-effective management responses. In addition, locating the source lessens finger – pointing, and facilitates effective methods of cleanup and prevention.

As an example, the source of high levels of bacteria that closed shellfishing in Maine was unknown for years. A detective process identifies pet wastes as the source of 65 percent of the bacteria sampled. Once the contamination was tracked to the source, it was easy to implement a

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Welcome New Board Members!

The Board of Directs sets the overall direction and polices for the Cayuga Lake Watershed Network. There are 15 Directors; all are volunteers. Four Directors are selected from each of the three counties with lakeshore properties (Cayuga, Seneca and Tompkins). Up to three other Directors may reside anywhere in the watershed and therefore are referred to as "At-Large".

Eric Riegel – Seneca County
Eric Riegel, a Seneca County businessman, is the owner of Riegel Marine. He has gained community wide admiration for his willingness to help his clients, and even other's clients, when they are in a pinch regarding their "lake experience". He is known around the Lake as a guy you can count on when you are in "trouble" with docks, boats, or other malfunctions, breakdowns, or even emergencies. Eric is also an ardent outdoorsman, and conservationist, has board experience on the Seneca County Ducks Unlimited Chapter, and is thought of as a pillar in the community. He loves his job because of his love for Cayuga Lake. He lives on the lake in Varick with his wife, Merri, who serves on the Board of Seneca County Cooperative Extension and the Romulus Foundation for Educational Opportunities.

Joe Cambridge – Tompkins County
Joe Cambridge is an English professor at Tompkins Cortland Community College. He has published in *Fly Fisherman*, and writes for and is active with the Federation of Fly Fisherman, Trout Unlimited, Adirondack League, and the Community Fly Fishers (educating young people to fly fish). He has a particular interest in the catch and release programs to enhance and develop improved species, tourism, and enjoyment of our natural resources. He lives in Newfield.

Mark Delaney – Cayuga County
Mark Delaney was born and raised on what is now Spruce Haven Farm. He has worked as a key member of the crop and manure application team. In 2006, he accepted responsibility as the environmental steward for the farm. These duties include insuring proper implementation of the Nutrient Management Plan and for the appearance of the farmstead and attention to detail of any activity that would lead to a loss of nutrients from the farm.

Deb Grantham – At-Large
Deb is a Senior Extension Associate in Water Resources Management and an Assistant Director with Cornell Cooperative Extension. Her areas of expertise include: Nonpoint source pollution control, safe drinking water and remote sensing. She served as Chair for the Cayuga Lake Watershed Intermunicipal Organization, as well as being a founding member. She resides in Dryden.

Twelve Directors come from the counties that border the lake. Three additional Directors may reside anywhere in the watershed.

Ronda Fessenden – Cayuga County
Ronda is manager of "Tender Loving Compost" at Fessenden Dairy, LLC in King Ferry, which has been in the family for six-generations. The composting operation is an important step in managing the nutrients on the farm and is part of a process that allows better stewardship of the land, lake and our environment. Ronda believes in the importance of educating people about caring for the Earth and helping them to understand that we can and must protect our water and environment. She has lived in the Finger Lakes for 20 years.

Chuck Kroll – At-Large
Chuck Kroll is a trained hydrologist with experience in various Finger Lakes. He oversees several faculty positions in the growing department of Environmental Resources and Forest Engineering at SUNY-ESF. He lives in Ithaca.

Water Conservation Starts at Home

In such a water-rich area, it is easy to take water for granted, especially if the water in your home comes from a municipal supply. Those dependent on private wells often have to be more conscious of water use, and the rest of us should heed their conservation habits.


Jim Cunningham

Wastewater treatment plants provide vital service but take energy. Four percent of the nation's electricity use goes to moving and treating water and wastewater, according to the University of Michigan's Center for Sustainable Systems.

Global climate change is likely to bring the Finger Lakes region more hot, dry summers. While the annual precipitation may stay in its current range, the portion that falls during the summer growing season is expected to decrease. With warmer temperatures, evaporation will be greater, decreasing available water. Furthering the problems, scientists predict a greater frequency of extreme events such as heavy rains and thunderstorms, events where much of the water runs off the land. Water goes rushing downstream with too little soaking in to replenish groundwater that feeds the lake and streams between rains. In the future, we may not have the abundance of water to which we have been accustomed.

Jim Cunningham

Before incoming wastewater, influent, is clean enough to be released back into the environment, effluent, it goes through extensive processing.

Even when water is plentiful, our use of water consumes energy that contributes to global warming. One community in the eastern US reported that approximately 25 percent of the municipality's energy use went to water and wastewater treatment plants. The national estimate is that nearly 80 percent of the municipal cost for processing water is used for electricity. It takes energy to transform lake, creek and ground water into potable water. Pumps then move the water up slope towards our homes and to elevated tanks to create adequate water pressure. After use, wastewater destined for a municipal treatment plant goes through an extensive treatment process with stages such as settling tanks, biological digestion, separation and dewatering of the solids and disinfection of the effluent, the out flow to the lake or stream. Some wastewater treatment plants can reduce the consumption of fossil fuels by reclaiming energy from the byproducts of the treatment process, such as capturing methane gas from biosolids.

Water Conservation Starts at Home

Residential water demand typically accounts for nearly three-fourths of the total municipal water use. During these cold months virtually all water use is within the home. Start now to establish good conservation habits and when the warm weather arrives you can add in water conservation practices for the landscape.

The bathroom is the easiest place to start conserving water. When brushing teeth or shaving, turn off the water rather than letting it run continuously. Install low-flow toilets and showerheads. Conventional toilets constitute close to 40% of all residential use. Fixing a leak can also bring huge water savings. One leaky toilet can waste up to 200 gallons a day and a leaky faucet can waste up to 15 gallons a day.

In the kitchen, scrape dishes before or instead of rinsing them. If you hand wash don't let the water run continuously and if using a dishwasher operate it only when it is completely full.

For more information visit www.epa.gov/water/citizen/thingstodo.html and click on "How to Conserve Water and Use it Effectively."

Keeping Water Disease Free *continued from page 3*

successful educational campaign on proper pet waste disposal and stop the problem at its source.

Collectively, these detective techniques are called microbial source tracking. The Watershed Network is working with engineering students and faculty at Cornell University to apply microbial source tracking to selected creeks to discern its local value. For more information on this cutting-edge technology and bacterial concerns in the south end of Cayuga Lake visit *www.CayugaLake.org* and select the report on bacteria spike in the south basin of Cayuga Lake.

Lakescape for a Healthier Lake and You Could Win $500

New York State Federation of Lake Association (NYSFOLA) is hosting a Lakescaping Competition. The purpose of the competition is to improve the health and appearance of New York's lake shorelines and to increase awareness of the benefits of good shoreline management. All members of the Cayuga Lake Watershed Network are is eligible to enter since the organization is a member of NYSFOLA. The top two winning entries will each receive a $500 check towards the purchase of materials.

Benefits of a Healthy Lakeshore:
Healthy plantings along lakeshores provide numerous benefits to the humans and wildlife that depend on the lake:

- plant roots hold soil, reducing erosion and turbidity in the lake;
- plant roots and organic soils help to filter out septic wastes and other groundwater contaminants;
- plant stems and leaves provide habitat for aquatic insects, fish, frogs, and other wildlife.

How to Enter?
Fill out one of the Lakescaping Competition Forms available at www.CayugaLake.org or request a printed copy from NYSFOLA. Submit all materials by June 15, 2008 to: Nancy Mueller; NYSFOLA Manager; P.O. Box 84; Lafeyette, NY 13084-0084.

You will need to include the following:

- one to three photos showing current condition of the shoreline expanse you intend to landscape
- a rough schematic showing your landscaping plans – both a cross-section and an aerial (planar) view; along with measurements of shoreline length and width
- a list of materials (including plant types) and a budget for your planned work.


NALMS.org

Woody plants can be place to hold soil in place and still allow for sweeping views.

Winners will be chosen based on:

- how well plantings will reduce soil erosion through coverage or width
- use of native plantings
- extent of area improved - length and width of area covered
- attractiveness of plantings
- most thrifty use of resources

Owners of winning lakeshores must be willing to have their lakeshores photographed for use by NYSFOLA, including inclusion in a newsletters and future contest promotion.

Stormwater Runoff: Problems and Solutions *continued from pasge 2*

I can't wait to see what unfolds with our revised landscaping ideas. I have a renewed appreciation for the gifts of the rains and snows now. And I look forward to seeing the results of incorporating bioretention in our gardening plan. As water from morning dew drops to giant lakes sustains us, so it is also our responsibility to sustain our precious water resources.

Editor's Note: Read the full essay including Patterson's listing of stormwater resources at www.CayugaLake.org. Rain gardens and wetspots in a yard will be covered during the Natural Landscapes: Beautiful & Sustainable session of the Spring Conference. See back page.

Environmental Quality Program Reaches Out to Small Farms

Comprehensive Nutrient Management Plans are an important tool for promoting the compatibility of environmental quality and agricultural production. Since these plans truly are comprehensive, they are not inexpensive and therefore often out of reach for small farms. New this year, farms smaller than the regulated CAFOs (concentrated animal feeding operations) are eligible to apply for Environmental Quality Incentive Program (EQIP) funds to create a Comprehensive Nutrient Management Plans. EQIP is a voluntary program administered by the Natural Resources Conservation Service. Expanding eligibility for EQIP funds could help smaller farms expand their work as environmental stewards and meet the current criteria for the Watershed Network sponsored Lake-friendly Farm award program. Contact the local NRCS for more information about EQIP.

Small livestock or crop farm operations may apply for funds to support environmental protection.

The Swampy Past of Stewart Park

By W. Rachel Singley, Wells College Student and Watershed Network Intern

Stewart Park is and has been a significant piece of Ithaca's culture and community. Centrally located on the southern most tip of beautiful Cayuga Lake, countless members of the Finger Lakes community, as well as national and international tourists, converge on Stewart Park each year.

This location, however, has not always been so central to Ithaca. Stewart Park was once part of a large marsh on the edge of town. It received water from the tributaries now known as Sixmile, Fall and Cascadilla Creeks, and Cayuga Inlet. In 1790 the fate of the marsh changed when soldier Andrew Moody of the Revolutionary Army drew and was granted military lot number 88, which included the large marsh. In the same year Mr. Moody sold the lot to James Renwick, who already held over 600 acres along the eastern side of the lake. The location of the marsh on the lake's tip and its proximity to the center of town made it a desirable piece of land, even if it was a wetland.

Photo courtesy of The History Center in Tompkins County

Renwick Park, the predecessor of Stewart Park, drew crowds to enjoy the lakeshore, music concerts and vaudeville shows.

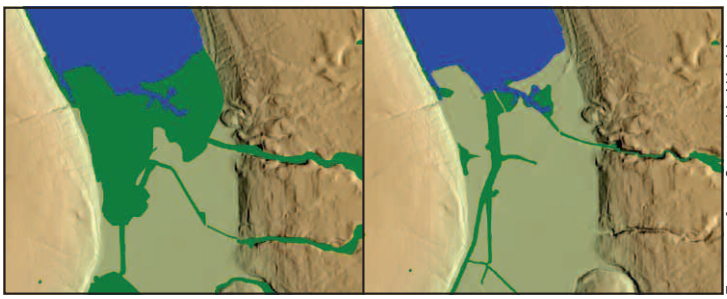
In the early 1890's the street railway flourished as a method of transportation. To capitalize on the popularity of the street car and to fund the future of the street rail way, the Cayuga Lake Railroad Company bought Renwick's land and constructed an amusement park that would quite literally lay for foundation the creation of the park we have today. Revelers would, of course, travel by rail to enjoy vaudeville shows, concerts, a zoo, an ice cream parlor, a large pavilion, lawns, wooded paths, a bathhouse, a casino and even, on some nights, fireworks over the lake. In the process of building these attractions, the marsh was filled in to create solid ground on which the park could be built. This alteration, the loss of a natural wetland, was accomplished using horse-drawn carts to haul in gravel from a nearby pit. A channel was also built to redirect the water to the lake.

The new Renwick Park was a huge success until 1910, when interest dwindled in local destinations, and people traveled outside of Ithaca more readily. The park was used briefly as the set for silent films from 1915 – 1919. After this, the park fell into disuse. The park was resurrected in 1920, when Ithaca's mayor Edwin C. Stewart decided that Ithacans should be able to enjoy their own waterfront without trespassing on private land owned by the railway company. During his term the city bought the waterfront park for $30,000. To aid in this effort to reclaim an important part of Ithaca's culture, Mayor Stewart gave $150,000 of his own money to be used in the reclamation and rehabilitation of the park. Sadly, Mayor Stewart died in office, never to see the completion of his vision. Today, the park bears his name.

After Stewart's death, Mayor Herman Berholtz was in charge of the park's rehabilitation. He expanded the park to the land on the east side of the previously constructed channel, and more gravel was used to raise large sections of the remaining low, wet areas. This filling was also in response to local concerns over the spread of malaria, which was linked to the local mosquito populations.

When a wetland is lost, so is the natural filtering of sediment, nutrients and other pollutants. Even without human disturbance the four tributaries entering the south end of the lake would naturally carry sediment. Sixmile Creek alone drains 50-square miles of land to the southeast of the lake, bringing with it all the runoff from land that has erodible glacial soils. Clear cutting for forest products and agricultural one hundred years ago allowed tons of soil to be dumped into the creeks, some of which is still working its way slowly to the lake (See Announcements: Sixmile Creek Forum page XXX.). Historically, the sediment would have naturally settled out in the marsh, before it flowed into the lake. Sediment is one of the lake's biggest pollutants. Once in the lake, sediment clouds the water, limiting sunlight penetration, burying fish spawning areas and bringing nutrients that feed water weeds, among other negative impacts.

On the plus side, Stewart Park provides valuable lake access and green space to the largest population center in the watershed. It is still an important community gathering place, a place for family picnics and setting for quiet contemplation. Enjoyment of the lake adds to the quality of life of residents, draws visitors and tourist dollars, and fosters appreciation for the lake which inspires people to protect it.



Engineers for a Sustainable World

These maps compares the extensive wetlands pre-1895 (left) with the scant wetlands that remain today (right)

ANNOUNCEMENTS

Cayuga Inlet & Waterfront Clean up
Sat. March 29, 12:30-3:30
Join us for all or part of the afternoon to cleanup the shoreline from Cass to Stewart Parks. Wear sturdy shoes and dress for the weather.

Students from the Wells College Greens joined neighborhood residents in cleaning up the shoreline.

Trash bags and gloves will be provided. Meet at Cass Park. Co-sponsored by the Water Resources Council, Cayuga Waterfront Trail and the Waterfront District Assoc. Registration requested. Contact the Watershed Network at 607-532-4104 or manager@cayugalake.org.

Salmon and Fall Creek Cleanups
Annual cleanups are being planned for Fall and Salmon Creeks. Visit our website and watch for your spring newsletter to get all the details. Each year we remove many pounds of trash from the creeks and their banks.

Cayuga Lake Spring Conference
April 12 ***(Hold the date)***
Ithaca location to be announced.

- Global Climate Change: implications for water resources. Susan Riha, Cornell University
- Management of Onsite Wastewater Treatment Systems: learning from Otsego Lake. Win McIntyre
- Cayuga Inlet Dredging. Liz Moran, Ecologic, LLC
- Biological Monitoring. Susan Cushman, Hobart William Smith
- Water Monitoring Guidance. Cayuga Lake Watershed Network
- Nuisance Aquatic Weeds: the role of land use. Paul Lord, SUNY Oneonta
- Natural Landscapes: Beautiful & Sustainable, Dan Segal, the Plantsmen Nursery

NYS Federation of Lake Assoc. Annual Conference
May 2, 3 and 4
White Eagle Conference Center, Hamilton, NY
The potpourri of topics includes Invasive Species Control, Lake Ecology, Water Monitoring, Keyhole Development and much more. The programs are geared to citizens interested in lakes. Visit www.nysfola.org or contact the Watershed Network for conference details.

The Mission... *The Cayuga Lake Watershed Network seeks to protect and improve the ecological health, economic vitality and overall beauty of the watershed through education, communication and leadership.*

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