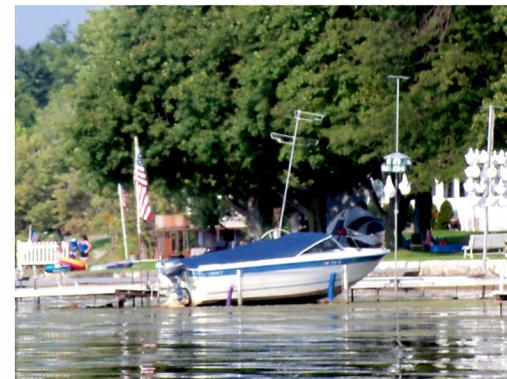


Conesus Lake Annual Report Card



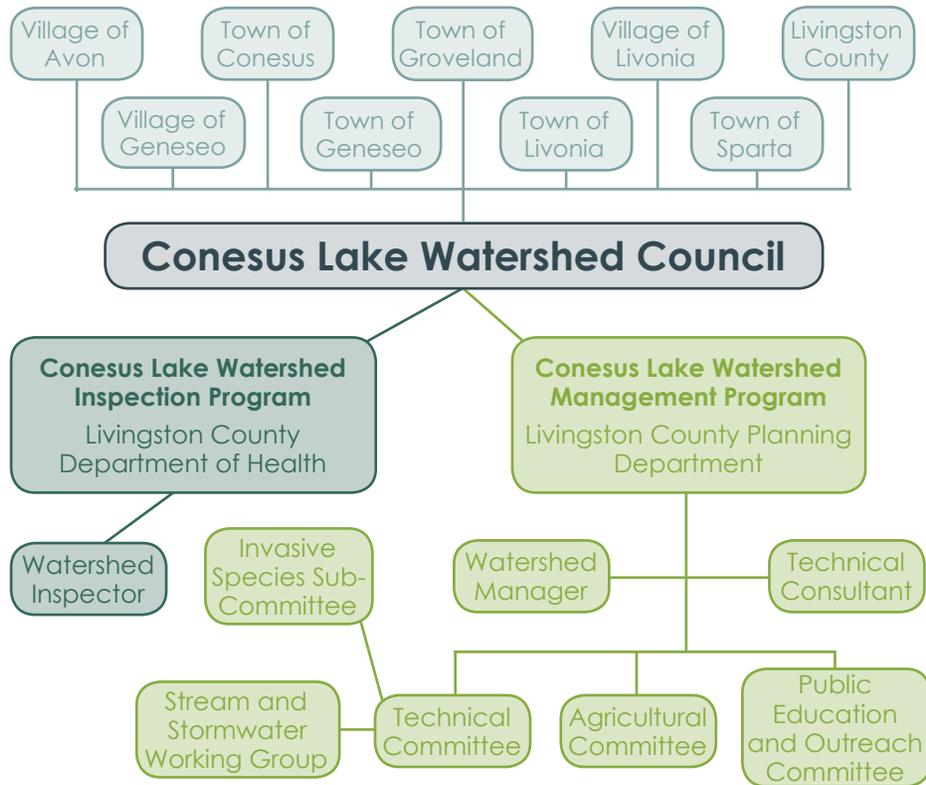
Conesus Lake Watershed Council

2015



About the Conesus Lake Watershed Council

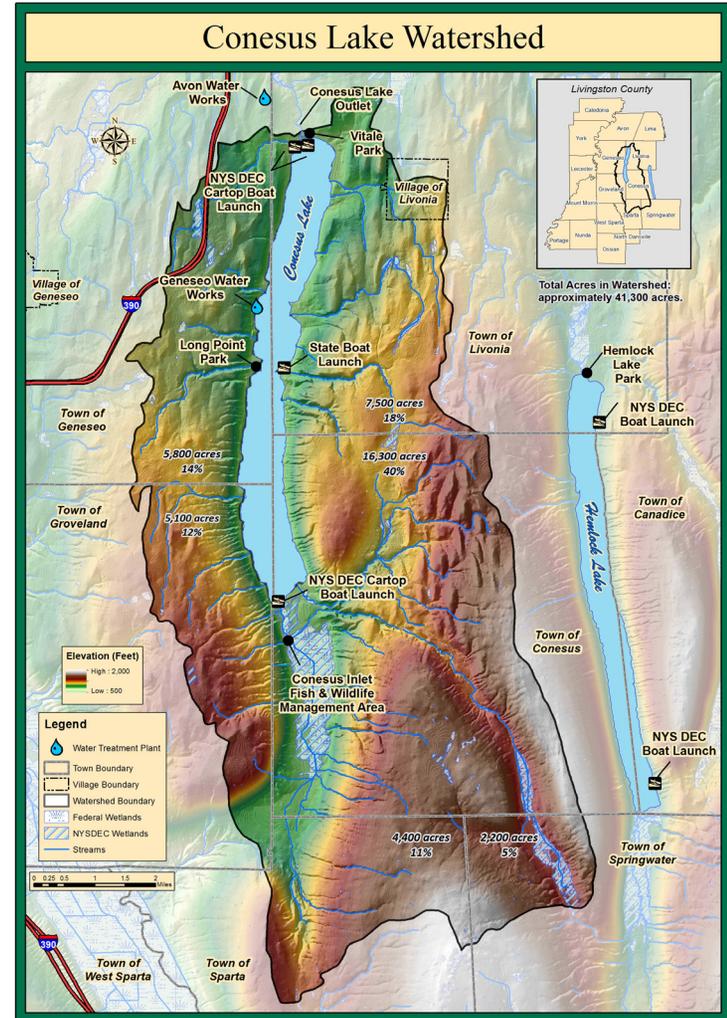
The Conesus Lake Watershed Council is an inter-municipal organization established in 2003 to govern the implementation of the Conesus Lake Watershed Management Plan. Council membership is composed of towns and villages with land within the watershed boundaries and water purveyors who use Conesus Lake as a public water supply. The Council oversees the Conesus Lake Watershed Management Program and the Conesus Lake Watershed Inspection Program. Three committees and two sub-committees comprised of local stakeholder agencies and organizations report to the Watershed Council.



Conesus Lake Watershed Council governing structure

Purpose of this Document

Recommendation H-2 in the Conesus Lake Watershed Management Plan (2004) is to prepare an annual update summarizing the status of activities in the watershed, particularly the ongoing efforts to reduce nonpoint source pollution. The Annual Report Card provides a forum for tracking water quality conditions in Conesus Lake and highlighting implementation projects and new developments.



Summary of Major Accomplishments

Since its formation in 2003, the Conesus Lake Watershed Council has coordinated implementation of the recommendations of the Conesus Lake Watershed Management Plan. Restoring the health of the lake and its watershed requires a sustained effort across multiple partnerships and a focus on many deeply interconnected issues. Progress in implementation of the Conesus Lake Watershed Management Plan continued in 2015. Highlights include:

Conesus Lake Annual Monitoring

SUNY Brockport monitored water quality parameters both in-lake and in the long-term USDA study tributaries.

SUNY Geneseo studied the effect of wind driven internal phosphorus loading patterns on blue green algae blooms.

Invasive Species

- Continued implementation and update of the Conesus Lake Watershed Council's Invasive Species Prevention and Response Plan (2013).
- Chinese Mystery Snail was documented in Conesus Lake.
- No new, high priority aquatic invasive species discovered in 2015.
- The Watercraft Steward Program added additional coverage in 2015 and inspected 5,131 boats, 1,216 more than in 2014.

Watershed Inspection Program

- The Watershed Inspector responded to 25 complaints, monitored 41 construction sites and issued 3 violations.
- The Department of Health continued its public bathing beach program through 2015, processing 45 water samples.

Harmful Algal Blooms

- The Conesus Lake Watershed Council updated the Blue Green Algae Early Detection and Rapid Response Plan.
- New advisory signage and educational brochure updates were developed by the Department of Health for use during blue green algae blooms.

Stream Restoration and Stormwater Management

- Streambank remediation construction was completed on lower Long Point Creek in the Town of Geneseo and began on North Gully in the Town of Livonia as part of the EPF Streambank Remediation Grant Program.
- A stream and stormwater working group was established to oversee a new stream and stormwater program initiative.
- The Town of Livonia received grant funding from the New York Department of State for a stormwater study for the Wilkins Creek sub-watershed.

Agricultural Best Management Practices

- The Natural Resources Conservation Service supported the installation of cover crops on 649 acres of watershed farms.
- The Livingston County Soil and Water Conservation District installed 950 feet of underground outlet, 1,750 feet of sub-surface drainage, 1.4 acre water and sediment control basin, and a terrace system on three watershed farms.



Water Quality Monitoring

Researchers from SUNY Brockport and SUNY Geneseo regularly monitor Conesus Lake to assess long-term trends in water quality and trophic status, evaluate the food web and plankton community, survey the species diversity and relative abundance, and study other emerging issues.

Stream Water Quality Assessment of Long Point Gully, Graywood Gully, and Sutton Point: Conesus Lake Tributaries

Theodore W. Lewis and Joseph C. Makarewicz

The Department of Environmental Science and Biology, The College at Brockport, State University of New York

December 2015

Background:

In 2011, the SUNY Brockport team developed a graphical index of stream discharge versus parameter concentration based on historical spring data from 2003-2010. This approach, referred to as the Stream Watershed Quality Index, is a viable, cost-effective tool for continued evaluation of the water quality and performance of the best management practices. Indices were developed for six parameters: total suspended solids (TSS), total phosphorus (TP), soluble reactive phosphorus (SRP), nitrate, total Kjeldahl nitrogen (TKN), and sodium. The indices were applied to six sub-watersheds with historical data: Cottonwood Gully, North McMillan Creek, Graywood Gully, Creek, Sutton Point Creek, and Sand Point Gully. The results of this program are used to assess whether conditions in streams draining these watersheds are improving, getting worse, or not changing.

2015 Objective:

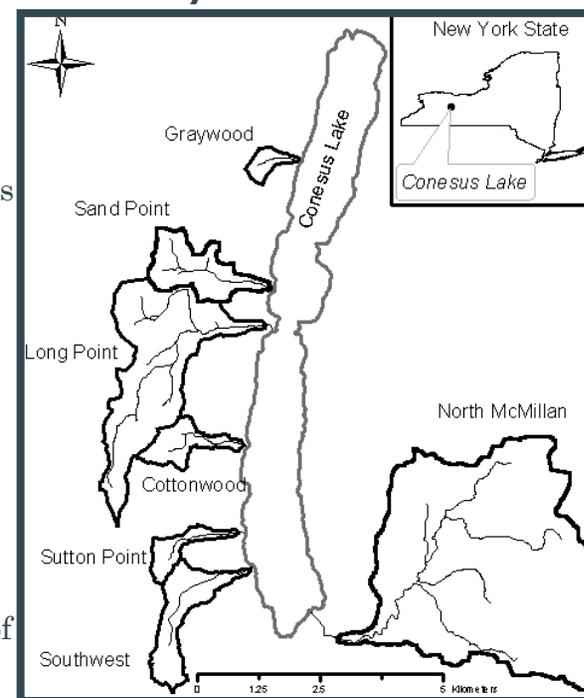
Utilize the Stream Watershed Quality Index for watershed health on three sub-watershed tributaries (Long Point Gully, Sutton Point and the Graywood Gully) where best management practices (BMPs) were recently implemented. The implementation of this tool will allow the Council to evaluate the status of watersheds; that is, are they improving, getting worse, or not changing. In addition, these tools can be used to evaluate the impact of known changes in watersheds, such as BMPs, on water quality. An evaluation using a tool of this nature should provide further direction to the Conesus Lake Watershed Management Plan.

Graywood Gully was under BMP construction during the summer of 2015 while BMPs were implemented in the winter of 2014 in Long Point Gully and in the summer/fall of 2014 in Sutton Point.

Methods:

Water samples were taken weekly from April 29 to July 14, 2015. In addition, discharge measurements were taken using measured stream levels at the time of sampling. These levels were converted to discharge using rating curves and statistical relationships developed during the five years

Study Subwatersheds



of intensive stream monitoring from 2002 to 2006. A total of fourteen sets of water samples were taken, 6 of which were under rain event conditions. Samples were preserved, and analyzed using approved standard methods (APHA 1999). The previously constructed Stream Water Quality Assessment Index was utilized on three tributaries (Long Point Gully, Sutton Point, and Graywood Gully).

Results:

In general, levels of total phosphorus, total suspended solids and nitrate showed improvements that may be attributed to the implementation of additional BMPs that were designed to control overland runoff and sediments. TP did not decrease in Graywood Gully, which may be due to the fact that the BMP implementation was not complete until the summer of 2015.

Soluble reactive phosphorus increased in the red zone, indicating degrading water quality for this parameter over historical values in all three watersheds in 2015.

Sodium, a component of deicing salt, was elevated in the stream water of Long Point Gully and Sutton Point.

The data are plotted on the index as black markers; the data in the “green” zone represent improving conditions, while data in the “red” zone indicate degrading conditions.

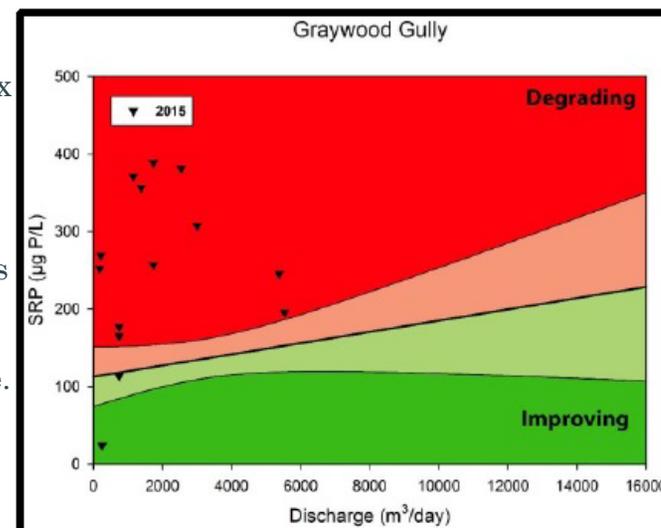
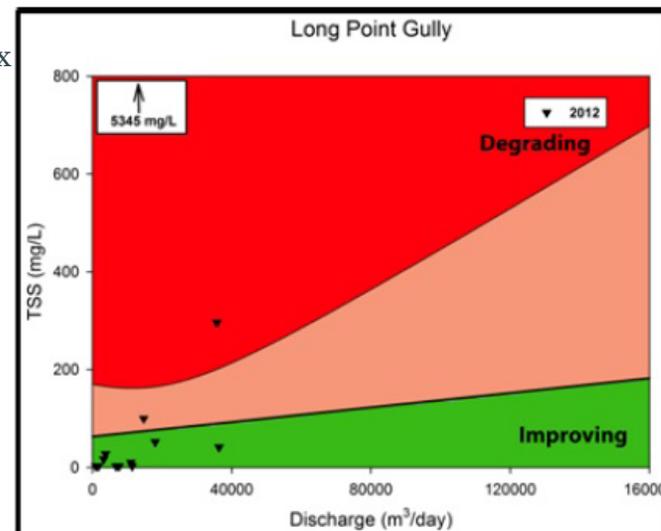
Recommendations and Findings

Progress continues to be made in the management of the Conesus Lake watershed. This is especially true for nutrients that are associated with loss of particulate matter from the watershed as well as erosion itself.

Best management practices that are designed specifically to control the soluble fraction of phosphorus should be considered a priority in the Conesus Lake watershed.

The Stream Watershed Index appears to be a valuable tool in evaluating the watersheds of Conesus Lake, allowing comparisons with past data and thus assisting in decision making concerning watershed management.

The Stream Watershed Index also appears to be valuable in assessing the impact of additional BMPs implemented in the watersheds of Conesus Lake. If financially appropriate, monitoring of watersheds should continue as a mechanism to evaluate land-use practices, to advocate changes, evaluate additional BMP implementation and to assist in future planning.



Linkage Between Water Column Mixing of Phosphorus and Onset of Cyanobacteria Blooms In Conesus Lake, (NY)

Isidro Bosch, Daniel Connors, Conor McCabe, Gordon Wong, Alyssa Bowling and Angela Kubik

Department of Biology, State University of New York at Geneseo

December 1, 2015

Background:

Potentially toxic cyanobacterial blooms pose a threat to water quality and recreational use of waters in the Conesus Lake watershed. Cyanobacterial blooms, sometimes referred to as harmful algal blooms or blue green algae blooms, occur naturally, but have seen an increase in frequency since the 1990s. Cyanobacterial blooms can be triggered by urban and agricultural runoff, malfunctioning septic systems, high water temperatures, or internal phosphorus nutrient loading.

Blooms of the cyanobacteria *Anabaena* have been a common summer occurrence in Conesus Lake for more than a decade. The extent of these blooms varies from one year to the next. In some years the bloom have been sparse and short lived, while in other years surface slicks have covered the northern region of the lake. Typically the colonies die off within a week or two, but in 2014 the summer bloom persisted well into September and forced multiple days of beach closings, especially in the north basin. There is no record of an *Anabaena* bloom having produced significant levels of cyanotoxins in Conesus Lake. However the risk posed by high density slicks of any cyanobacteria species cannot be ignored. By contrast, blooms of *Microcystis aeruginosa* are less frequent and typically have occurred in the fall, but there are several reports of these blooms producing elevated

concentrations of microcystins that could pose risks to human health.

The predictable onset of *Anabaena* blooms locally in mid-summer indicates that some consistent set of conditions might be acting as

a trigger in Conesus Lake. Unlike, other common species of cyanobacteria, *Anabaena* are capable of fixing their own nitrogen, meaning they use chemical forms that are not available to other species. Therefore, the trigger may be related to the availability of phosphorus, which is in very limited supply during mid-summer. Phosphorus can either enter the lake externally from sources off the landscape via streams and tributaries or by internal loading. The sediment on the bottom of the lake is laden with stored phosphorus. When conditions at the bottom of the lake are anoxic, meaning oxygen is not present, phosphorus stays bound in the sediment particles and is not available to algae for growth. During the summer months the lake is stratified and conditions at the bottom of the lake are generally anoxic, however, wind can mix oxygenated water from the surface of the lake down into the bottom sediments in areas with shallower depths. The presence of oxygen releases phosphorus from the sediment into the water column where it can fuel cyanobacteria and other algal growth.

The study looked at whether phosphorus accumulated in deeper waters through internal loading processes could be delivered to surface waters by wind-mediated mixing and trigger for summer blooms. This sequence of events is more likely to unfold in the north basin of Conesus Lake, where water column stratification may be less stable due to shallower waters.



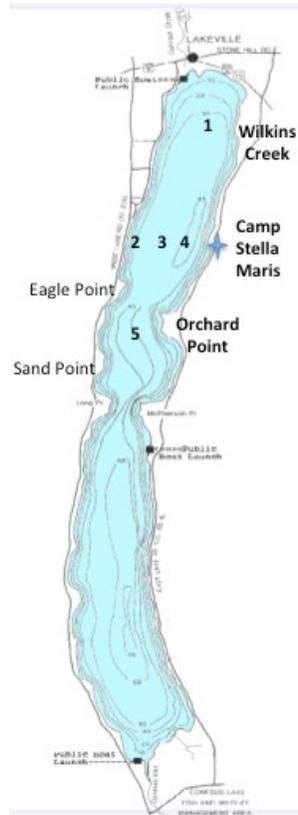
Anabaena under the microscope.

2015 Objective:

Determine if summer blooms of cyanobacteria in the shallow north basin of Conesus Lake are associated with episodes of wind-driven, partial mixing of the water column that deliver soluble phosphorus nutrients to cyanobacteria in surface waters.

Methods:

Five stations in the north basin were sampled from June 16 - Oct. 20, 2015. A combination of wind data, weekly water column profiles and biweekly laboratory chlorophyll-a assays, analysis of surface and near bottom nutrient concentrations and direct counts of cyanobacteria colony and cell numbers were used to explore the link between the mixing of the water column and the onset of blooms.



Sample Sites

Results:

On three occasions, following days of high winds, a 1-2 m deepening of the thermocline was observed, which indicated that partial mixing of the water column had occurred. These partial mixing events were associated with increases in surface concentrations of dissolved phosphorus, elevated phytoplankton chlorophyll-a concentrations and spikes in the numbers of single cell and colonial cyanobacteria in surface waters. With intensive monitoring of winds and water column stratification it may be possible to forecast potential

cyanobacterial blooms in Conesus Lake.

The dominant colonial cyanobacteria during blooms were species of *Anabaena* that historically have been dominant in Conesus Lake. Colonies of *Microcystis aeruginosa* were seen in nearly all samples, but the numbers throughout the season were relatively low compared to *Anabaena*.

Concentrations of microcystins and anatoxins during blooms were not detectable or were well below the caution thresholds for recreational public health advisory of 6 and 80 µg/L, respectively (EPA). The blooms of cyanobacteria that took place in Conesus Lake in summer and early autumn 2015 did not pose a significant health risk to lake users or to the water supply.

Recommendations and Findings:

With more intensive monitoring of wind and water column stratification it may be possible to forecast potential cyanobacterial blooms in Conesus Lake.

It may be that partial mixing of phosphorus from bottom waters creates conditions that favor nitrogen-fixers like *Anabaena*, whereas species like *Microcystis aeruginosa* that are incapable of fixing nitrogen are more likely to dominate after external loading events which deliver both phosphorus and nitrogen to the lake. Further research is needed to explore the role of these other potential triggers and to establish the relative importance of wind-driven partial mixing in promoting blooms.

Invasive Species

Invasive species, by definition, are non-native, introduced species that cause harm to the environment, human health, and/or economy. Humans have dramatically increased the rate of spread of new species through international trade and travel. Invasives out compete and displace native species in their new environment. In the absence of natural predators, invasive species can grow relatively unchecked and disrupt the native ecosystem. In response to the discovery of highly invasive Hydrilla verticillata in nearby Cayuga Lake Inlet in 2011, the Conesus Lake Watershed Council established an Invasive Species Sub-Committee tasked with drafting and implementing the Invasive Species Prevention and Response Plan (2013). Implementation efforts continued in 2015.

Volunteer Monitoring

The Conesus Lake Association (CLA) trained 9 volunteer monitors to identify invasive species during two sessions held on August 2 and August 6, 2015. A new canoe and kayak monitoring group is being established. Twelve volunteers have been recruited for 2016.

Hydrilla (*Hydrilla verticillata*) is an invasive aquatic plant that roots in the sediment and forms dense mats at the surface of the water that block sunlight to native plants below, crowd out native fish habitat, and impede swimming and boating. On September 20, 2015, Conesus Lake Association volunteers conducted a Hydrilla Hunt on Conesus Lake using rake toss surveys. Two areas were searched: East Lake Road Boat Launch and Freedom Point near the lake outlet. No hydrilla plants were found during the field surveys.

Chinese Mystery Snail

Chinese Mystery Snail (*Cipangopaludina chinensis*) was observed at both the north and south ends of Conesus Lake

in 2015. Live specimens obtained by the Conesus Lake Watershed Inspector and Watershed Manager on August 18, 2015, were positively identified by NYSDEC Region 8 biologists. Researchers from SUNY Brockport also independently identified Chinese Mystery Snail in Conesus Lake in 2015.



Chinese Mystery Snail

Chinese Mystery Snail prefers freshwater lakes with soft, muddy or silty bottoms. The United States Geological Survey (USGS) states that the species has had no known ecological impacts on ecosystems in the Great Lakes region where it has been introduced and is relatively benign. There is an unrealized potential for Chinese Mystery Snail to serve as a vector for the transmission of parasites and diseases that can affect other native snail and mollusk species. There are no known control methods for Chinese Mystery Snail.

Using species research and local information, the Invasive Species Sub-Committee employed the Invasive Species Management Decision Analysis Tool developed by The Nature Conservancy and outlined in the Invasive Species Prevention and Response Plan to determine proper course of action for the Chinese Mystery Snail Infestation. Due to the benign ecological effects and absence of control methods, the Sub-Committee recommended not pursuing further management action for the Chinese Mystery Snail. A fact sheet was developed for distribution during the upcoming summer season to inform lake users about the new species and encourage reporting suspected sightings for the purpose of determining the extent of the infestation.

Update to the Conesus Lake Watershed Invasive Species Prevention and Response Plan

The Conesus Lake Watershed Council approved updates to its Invasive Species Prevention and Response Plan at its December 11, 2015, meeting. The August 2015 discovery of Chinese Mystery Snail was the first invasive species sighting to be run through the Plan's response protocol. The Invasive Species Sub-Committee and Technical Committee suggested edits to the Plan following the discovery of Chinese Mystery Snail. Changes included updates to the public notification strategy, establishment of a high priority aquatic species list, inclusion of new legislation passed since 2013, and the addition of Cornell Cooperative Extension of Livingston County and Finger Lakes Partnership for Regional Invasive Species Management (PRISM) as formal partners.

Invasive Species Disposal Stations Installed at Waterfront Parks

Conesus Lake Association volunteers constructed two additional wooden invasive species disposal stations for installation at informal launch sites at Long Point and Vitale Parks. The Livingston County Planning Department funded the signage for the disposal stations, using grant funds from the Finger Lakes-Lake Ontario Watershed Protection Alliance (FLOWPA).

Four wooden invasive species disposal stations have been previously installed at the New York State Office of Parks, Recreation and

Historic Preservation (NYSOPRHP) and the New York State Department of Environmental Conservation public boat launches.

Watercraft Steward Program

The primary pathway by which hydrilla and other invasive species reach inland waterways is by "hitchhiking" on recreational boats and trailers or in the live wells of fishing boats. Watercraft Steward Programs educate the community on the risk of spreading invasive species via recreational boating and assist boaters in performing inspections and invasive species decontamination.

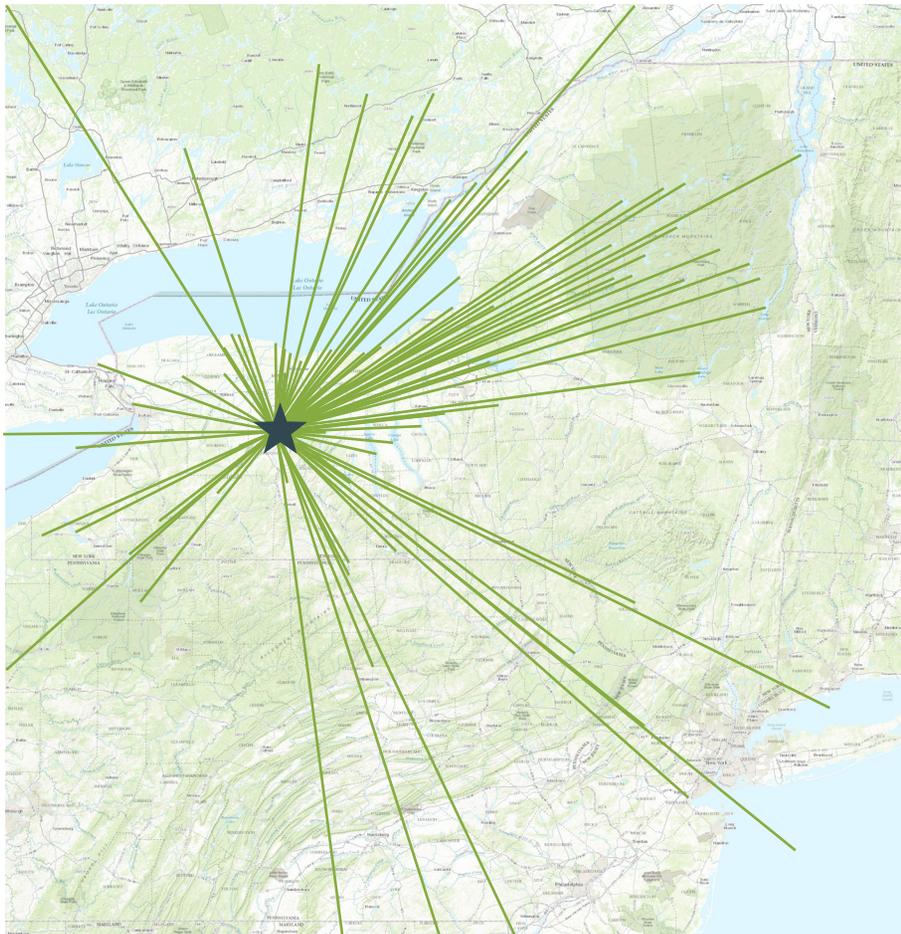
The Conesus Lake Watercraft Steward Program was continued in 2015 through an effective collaboration among the Livingston County Planning Department, the Livingston County Cornell Cooperative Extension (CCE),



2015 Watercraft Stewards

SUNY Geneseo, the Conesus Lake Association (CLA), and the Livingston County Office of Workforce Development. Livingston County CCE provided in-kind services to house and supervise three stewards whose salaries were funded by the CLA and Livingston County FLOWPA funds. An additional watershed steward was employed through the Livingston County Office of Workforce Development's Summer Youth Employment Program (SYEP), which is funded through NY Works. The SYEP provides wages, Workman's Compensation and insurance coverage, and employment prescreening for economically disadvantaged youth ages 16-20.

2015 Last Waterbody Visited



The Summer Youth Employment Program participant, trained and supervised by CCE, assisted with staffing at the state boat launch for five weeks during July and August. In 2015, the Watercraft Stewards staffed the boat launch from Memorial Day through Labor Day. They were present for twelve hours each Friday, Saturday, and Sunday as well as four hours each Tuesday evening. Additional coverage for Monday, Wednesday, and Thursday was added for 2015 based on analysis of NYSOPRHP and 2013 Finger Lakes Institute Watercraft Steward Program launch usage data. A total of 5,131 boats were inspected, and over 12,000 boaters were reached with information about invasive species prevention.

Watercraft Steward Program Data

	2014	2015
Days at launch	58	83
Boats recorded	3915	5131
Non risk boats (last launch Conesus)	2898	3560
Risk boats (last launch other)	1017	1671
% of boats non risk	74%	67%
% of boats risk	26%	33%
Boats found with organisms attached	73	121
Percent of total boats	1.8%	2.4%
Percent of risk launches	12%	10%
Prior contact with a Steward Q1	58%	80%
Prior contact with a Steward Q4	80%	89%
Prevention steps taken prior to launch	N/A	21%
Total Steward hours	676.5	890
Total coverage hours at launch	520.5	797

Watershed Inspection Program

The objective of the Conesus Lake Watershed Inspection Program is to help protect and enhance Conesus Lake as a potable water source. Conesus Lake is a valuable resource for Livingston County; protection of the water supply is important for health of the community. With the cooperation and contributions of the two purveyors of public water (Villages of Avon and Geneseo), and five surrounding towns, the inspection program became a reality on August 31, 1998. The Livingston County Department of Health provides the Conesus Lake Watershed Inspector who responds to concerns regarding water quality and non-point sources of pollution in the watershed.

Watershed Inspections

The Conesus Lake Watershed Inspector responds to water quality complaints made by watershed residents and other members of the public. The Inspector also conducts routine watershed surveillance monitoring construction sites, erosion, sewage overflows, blue green algae blooms, flooding, bathing beaches, and other activities including public education.

Inspection Activities

Complaints	25
Construction Projects	41
Violations	4
New Septic Systems	3
Repaired Septic Systems	2
Sewage Overflows	1
Bacteriological Bathing Beach Water Samples	45
Beach Closures	1
Educational Events	3
Special Water Samples	4
Damaging Flooding Events	1

Complaint Breakdown

Sediment and Erosion	16
Drainage	2
Sewage Discharge	2
Agricultural Related	1
Nuisance	1
Weeds/Algae/Odor	3
Total	25

Drinking Water

The New York State Department of Environmental Conservation classifies Conesus Lake as a Class AA waterbody, designating its best use as a public drinking water supply. One of the goals of both the Watershed Inspection and Management Programs is to ensure this best use. The Villages of Avon and Geneseo both use Conesus Lake as the source for their public water supply. Through these two purveyors, Conesus Lake water supplies 18,000 users and 10 water districts, including the Villages of Avon and Geneseo, and portions of the Towns of Avon, Geneseo, Leicester, and York.

Conesus Lake Drinking Water Facts and Figures

	Village of Avon	Village of Geneseo
NYSDEC Allocation	3.5 MGD	3 MGD
Plant Rating	1 MGD	2 MGD
2015 Usage (gallons)	310,500,000	392,000,000

MGD: (million gallons per day)

Bathing Beach Monitoring

The Livingston County Department of Health (LCDOH) collects nearshore water samples at designated bathing beaches each summer and tests for the presence of fecal coliform bacteria. Fecal coliform bacteria are used as an indicator of recent contamination of water by fecal material. While the coliform bacteria may not be pathogenic (disease-causing), their presence means that other harmful microbes may be in the water. Three bathing beaches: Long Point Beach, Southern Shores Beach, and Camp Stella Maris were routinely monitored throughout the recreational season.

Results are compared to the state ambient water quality standards for bacteria, which are used by the New York State Department of Environmental Conservation (NYSDEC) to evaluate whether a waterbody supports its designated best uses and by the New York State Department of Health (NYSDOH) to evaluate suitability for swimming at designated beaches.

The NYSDEC ambient water quality standard for fecal coliform bacteria is 200 colony forming units per 100 mL of lake water (cfu/100 mL), calculated as the geometric mean of at least five samples per month. A single sample maximum

count (1000 cfu/100 mL) is also enforced by the NYSDOH for public beaches. The current bathing beach monitoring program collects weekly samples during the summer recreational season.

The summer-averaged results for all beach locations ranged between non-detect (<5 cfu/100mL) and 240 cfu/100mL. No result exceeded the single sample limit of 1000 cfu/100 mL. The highest bacterial count at a designated bathing beach during the summer of 2015 was collected off a dock at Long Point Beach. The Department of Health is able to report full compliance with fecal coliform bacteria standards at the three monitored bathing beaches.

The LCDOH also collected samples at locations on Camp Run Drive and Big Tree Road in 2015, following reported overflows of the sanitary sewer. Samples were collected at the end of docks June 15th and 16th. Samples on the 15th were 4,200 and 4,600 cfu/100 mL respectively. By the 16th, these values dropped to 300 and 320 cfu/100mL. The Livingston County Water and Sewer Authority has undertaken a 2015 collection system study to determine the alternatives to work toward a solution to the overflow of sewage during storm events that have taken place over the last two years. Implementation of the first phase of the study is underway in 2016.

Beach Closure Days

	2015			2014			2013			2012			2011		
	HAB	Bact.	Turb.												
Long Point	0	0	1	2	0	0	1	0	0	1	0	0	0	0	0
Stella Maris	0	0	0	8	0	0	1	0	0	5	0	0	0	0	0
Southern Shores	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0

HAB: Harmful Algal Blooms Bact: Bacteria Turb: Turbidity

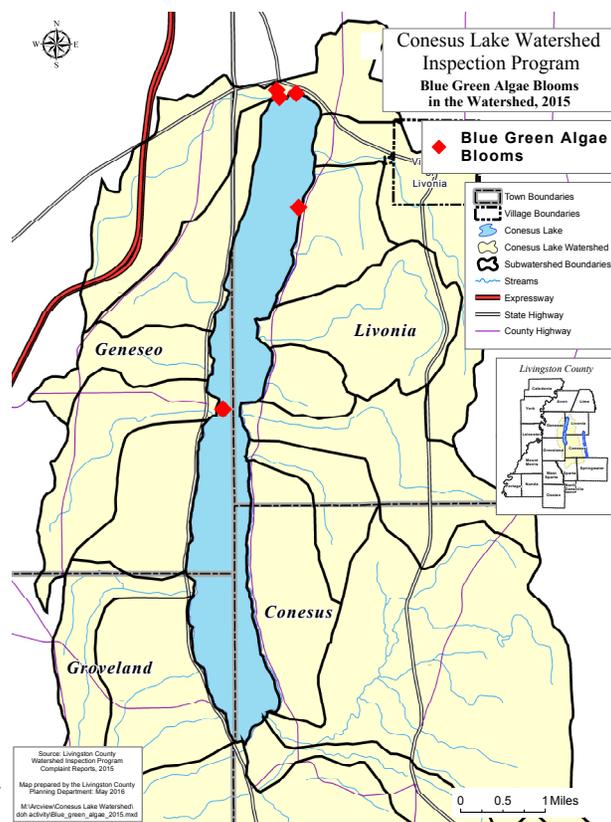


Harmful Algal Blooms

Harmful algal blooms, or HABs, are algal blooms that have the potential to cause illness or harm in humans and animals. Often HABs are composed of blue-green algae, also known as cyanobacteria. These harmful forms of algae are naturally present in very low concentrations in lakes and streams, but can form concentrated blooms or surface scums following certain key environmental and weather conditions that encourage algal growth. During the summer and fall the Watershed Inspector conducts routine surveillance for HABs and responds to reports of blooms from the Sheriff's Marine Patrol and citizens on the Lake.

2015 Bloom Season

The Harmful Algal Bloom season in 2015 was mild in comparison to previous years. An HAB was reported on July 22, 2015, in the old Conesus Lake outlet at the Freedom Bridge in Vitale Park. An investigation revealed that the HAB was isolated to that location. On October 8th, HABs were identified on the shorelines at Long Point, Vitale Park and along the Northeast shoreline. In all instances the



Conesus Lake Blue-Green Algae Early Detection and Rapid Response Plan was implemented. No beaches were closed in 2015 due to HABs. Maps depict the location of reported harmful algal blooms in 2015.

Blue Green Algae Early Detection and Rapid Response Plan

The Conesus Lake Watershed Council updated the Blue Green Algae Early Detection and Rapid Response Plan and the Department of Health updated the accompanying public educational brochure. Updates to the plan include new public notification procedures. New advisory signage was developed by the Department of Health for use during blue green algae blooms.

BLUE-GREEN ALGAE BLOOM HEALTH ADVISORY

Blue-green algae bloom(s) have been spotted in this body of water.

- Blue-green algae (BGA) can cause severe skin irritation and other adverse health effects.
- Don't swim, wade or fish near blooms or surface scum
- Don't drink the water
- Keep children and animals away from any blooms or scum
- Rinse with clean water if exposed
- Consider medical attention if you experience symptoms of nausea, vomiting, or diarrhea; skin, eye or throat irritation, allergic reactions or breathing difficulties. Report symptoms to the Livingston County Department of Health.

For more information contact the Livingston County Department of Health, Center for Environmental Health (585) 243-7280
www.livingstoncounty.us/doh.htm
<http://livingstoncounty.us/planning.htm>

Bloom Notice Signage

Stream Restoration and Stormwater Management

Climate Change predictions for the Finger Lakes Region forecast an increase in the frequency and intensity of heavy rain events and corresponding streambank erosion and localized flash flooding, In light of increased development pressures in the watershed compounding these issues, focus has rightly turned toward stream system restoration and stormwater management to help alleviate effects on water quality and public and private property.

Environmental Protection Fund Streambank Remediation Grant Program

As part of the EPF Streambank Remediation Grant Program administered by the Livingston County Planning Department, the streambank reach on Long Point Creek in the Town of Geneseo between West Lake Road and Conesus Lake was completed in 2015.



Hydroseeding and live stakes on lower Long Point Creek, May 2015

Most of the construction work on North Gully in the Town of Livonia east of East Lake Road was completed through Fall 2015 as part of the EPF Streambank Remediation Grant Program. The project halted for the winter but is expected to be completed with final bank stabilization in 2016.

Permitting and easements for the Upper Long Point Creek, Wilkins Creek and N. McMillan streambank remediation projects, which are also part of the EPF Streambank Remediation Grant Program, moved forward in 2015

Before

Streambank erosion on North Gully Creek, 2006



After

Creekbed moved away from high bank, bank protection added, November 2015



Before

High bank erosion on North Gully Creek, 2013

**After**

High bank protection and floodplain bench added on North Gully Creek, November 2015

**Stream and Stormwater Initiative**

A Stream and Stormwater Sub-Committee was established to oversee a new stream and stormwater program initiative. The Sub-Committee identified existing problems and set programming and educational priorities for the 2015 and 2016 work programs. The Watershed Manager gave a presentation at the Conesus Lake Association's Annual Meeting in September that explained hydrological processes

and their effect on water quality. Residents were shown examples of accessible green infrastructure practices designed to alleviate common residential stormwater and water quality problems. In December 2015, the Watershed Manager and Genesee Finger Lakes Regional Planning Council Senior Planner gave a presentation at the Conesus Town Hall on hydrological processes, effect of steep slopes on soil erosion, and common land use practices that protect water quality and steep slopes. Audience members included Town Board members, Code Enforcement Officers, Planning and Zoning Board members, and concerned shoreline and watershed residents.



Steep slope workshop, December 2015

New programs planned for implementation in 2016 include a regulatory tool-kit, a stream assessment program, riparian and shoreline best practices workshop, and code review for watershed municipalities.

Wilkins Creek Sub-Watershed Stormwater Study

The Town of Livonia received grant funding on behalf of the Town and Village of Livonia through the New York Department of State's Local Waterfront Revitalization Program for a stormwater study for the Wilkins Creek sub-watershed. Wilkins Creek is the most developed sub-watershed leading into Conesus Lake. The study will examine and identify strategies to slow down the movement of stormwater into Wilkins Creek via green infrastructure and other stormwater management practices. Zoning and land use regulations will be analyzed to assess potential impact of development on the stormwater system. The study will offer recommendations on physical projects and updates to municipal regulations to improve water quality.

Agricultural Best Management Practices

Agricultural Best Management Practices (BMPs) help protect water quality by reducing nonpoint sources of pollution on farms. Nonpoint source pollution occurs when rainfall moves over and through the ground picking up loose soil, nutrients, and other pollutants. BMPs function to keep soil and nutrients on the farm and out of ditches, gullies, and streams that flow into lakes and other waterbodies. The same nutrients that help plants grow in the field can contribute to plant growth in a lake in the form of weeds and algae.

The Livingston County Soil and Water Conservation District and the Natural Resources Conservation Service conduct an upland watershed protection program for agricultural land uses to reduce nonpoint sources of pollution from entering waterbodies throughout the watershed.

The Livingston County Soil & Water Conservation District installed 500 feet of underground outlet and a large 1.5 acre water and sediment control basin on a farm in the watershed. The District also installed an additional 450 feet of underground outlet, 1,750 feet of sub-surface drainage, and a 25 year storm event terrace system on two other watershed farms in 2015. The Natural Resources Conservation Service supported the installation of 649 acres of cover crops on farms within the watershed.



Maxwell Farm, Geneseo



Installation of underground outlet and water and sediment control basin

Trends and Recommendations

Identifying emerging trends and issues and establishing recommendations helps guide the Conesus Lake Watershed Council's yearly Work Plan.

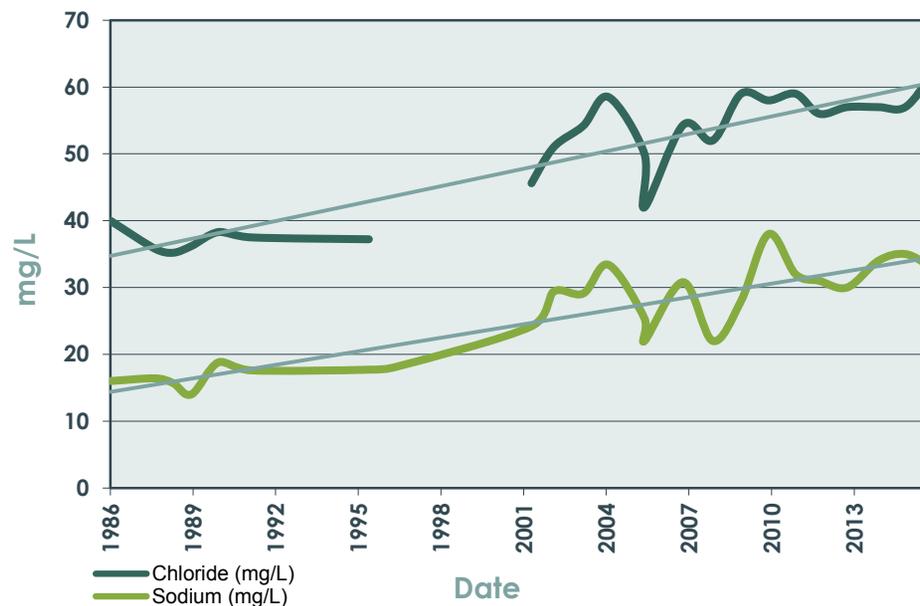
Emerging Trends and Issues

- Increases in sodium and chloride levels in treated water at both the Village of Avon and Village of Geneseo water treatment plants. Sodium levels exceed the recommended levels for consumption by individuals on severely restricted sodium diets.
- An increase in the frequency and intensity of heavy rain events leading to increases in natural and stormwater related high flow events contributing to property and infrastructure damage.

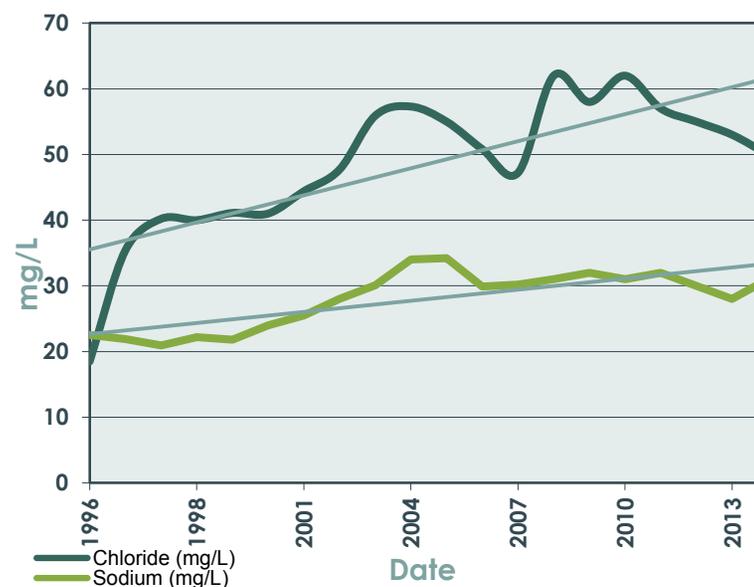
Recommendations

- Ramp up public education initiatives related to stream and stormwater management.
- Reach out to municipalities regarding land use practices effect on stormwater, soil erosion, and water quality.
- Continuation of invasive species prevention projects, including the watercraft steward program at the East Lake Road Boat Launch.
- Develop a system of measures to evaluate Conesus Lake Watershed Council work program implementation for use in subsequent end of year analyses and reports.
- Continue water quality parameter monitoring program.
- Conduct further investigation into potential causes and solutions to help mitigate increases in sodium levels.

Village of Avon



Village of Geneseo



Increasing sodium and chloride trends at the Villages of Avon and Geneseo water treatment plants (DOH).

#	Recommendation	Priority	Actions
All	Secure funding Outside of the EPF funding source to implement CLWMP activities. Investigate and apply for funds from grants opportunities as they arise.	High	<p>The Watercraft Steward Program applied for funding for additional steward hours through the Finger Lakes Partnership for Regional Invasive Species Management (PRISM) sub-contract awards</p> <p>The Town of Livonia applied for a Consolidated Funding Application grant for a Wilkins Creek subwatershed stormwater planning study.</p> <p>A Great Lakes Restoration Initiative grant application was submitted by Genesee/Finger Lakes Regional Planning Council (GFLRPC) for additional streambank stabilization along North McMillan Creek.</p>
A-1	Review and amend zoning regulations to improve consistency in near-lake areas.	High	<p>Planning Staff participated in the Geneseo and Conesus zoning updates, Springwater comprehensive plan update, and the Town of Geneseo's Agriculture and Farmland Protection Plan. The Town of Sparta received funding for Agriculture and Farmland Protection Plan. The Planning Department will be providing staff assistance.</p>
A-3	Develop public education campaigns on BMPs for lake and watershed residents.	High	<p>A stream/stormwater working group was created. Membership included representatives from the Planning Department, Department of Health, County Highway Department, Emergency Management Office, Water and Sewer Authority, and Soil and Water Conservation District. Additional agencies and organizations were selected to participate in future meetings. The group discussed programming and public education priorities for 2015 and 2016 work plans. Agency and municipal personnel attended a NYSDEC sponsored FEMA floodplain workshop in Spring.</p> <p>The Watershed Manager presented on watershed hydrology, rain gardens, and green infrastructure at the Conesus Lake Association's (CLA) Annual Meeting in September.</p> <p>An educational kiosk featuring green infrastructure and native plants was installed at the Long Point Park demonstration rain garden.</p> <p>The Watershed Inspector presented on watershed issues to youth audiences at both the Way-Co Health Fair and Cuylerville Rod and Gun Club.</p>

#	Recommendation	Priority	Actions
A-3	Develop public education campaigns on BMPs for lake and watershed residents.	High	<p>The Conesus Lake Watershed Council co-sponsored a December workshop for municipal, planning, and code enforcement officials and watershed residents on stormwater, erosion and sediment control laws and zoning practices. The Watershed Manager presented on how slope and stormwater affect erosion potential and water quality. The Genesee Finger Lakes Regional Planning Council presented on common land use regulations and green infrastructure practices that help to ameliorate effects on water quality.</p> <p>The Watershed Manager presented website updates to the Conesus Lake Watershed Council at its August 14th meeting. Updates included pages on invasive species, blue green algae, best management practices, and a comprehensive list of reports and publications. The new pages are coordinated with the Department of Health's Watershed Inspection Program webpage.</p> <p>The Watershed Manager presented on the Conesus Lake Watershed Invasive Species program for two environmental science classes at Avon High School. Students participated in a class project creating and presenting invasive species educational brochures.</p>
B-1	Secure funding to help mitigate the financial impacts of changes in agricultural practices on the producers.	High	<p>In progress. Agencies will continue these activities annually as part of their existing programs.</p>
B-2	Implement practices that will reduce nonpoint source pollution from farms.	High	<p>The Natural Resources Conservation District supported the installation of 649 acres of cover crop throughout the watershed.</p> <p>The Soil and Water Conservation District (SWCD) installed 500 feet of underground outlet, 750 of subsurface drainage, and a 75,000 + square foot water and sediment storage to address surface runoff from a 39 acre watershed on a watershed farm.</p> <p>A 25 year storm event terrace system with a 450 foot underground outlet and 1,000 feet of sub-surface drainage was installed by the SWCD on a second farm.</p>

#	Recommendation	Priority	Actions
B-2	Implement practices that will reduce nonpoint source pollution from farms.	High	The SWCD is working on the design and layout of a two terrace system to address gully and sheet erosion, which is currently under construction on a third farm.
C-1	Develop and implement program to restore and stabilize streambanks in the watershed.	High	Easements and permits were secured for the project on North Gully Creek. Construction began in November. North McMillan, Wilkins, and lower Long Point reaches are in the planning and permitting stages.
C-3	Develop public education campaigns on the impact of human activities on the health of the Lake.	Med.	The CLA distributed fifty three welcome to the lake kits new lakeshore residents this year.
E-2	Develop a public education campaign promoting invasive species awareness	High	The CLA staffed an invasive species prevention booth at the Arts and Craft Show in July.
G-1	Investigate and implement effective methods to control the spread of non-native (exotic) organisms	High	The Watercraft Steward Program hired three stewards for the 2015 boating season and coordinated with the Workforce Development Summer Youth Employment Program to hire an additional steward to join the Cornell Cooperative Extension stewards at the boat launch during July. Stewards started at the Boat Launch on May 22nd. Launch data was compiled and analyzed by the CLA. The CLA's Hydrilla Hunt took place on September 20th. No hydrilla or other invasive species were detected. The CLA trained 9 volunteer monitors to identify invasive species during two sessions held on August 2nd and August 6th. A new canoe and kayak monitoring group is being established. Twelve volunteers have been recruited for 2016.

#	Recommendation	Priority	Actions
G-1	Investigate and implement effective methods to control the spread of non-native (exotic) organisms	High	<p>The Watershed Manager and CLA partners participated in the Finger Lakes PRISM Full Partnership meeting and Aquatic Working Group meetings throughout the year. The Watershed Manager participated on the PRISM Steering Committee.</p> <p>The CLA constructed two additional wooden invasive species disposal stations for watercraft access points around the lake with signs provided by the Planning Department. A disposal station has been installed at Long Point Park, and another is also slated for Vitale Park.</p>
G-2	Develop and implement a program for cleaning accumulated aquatic plants and algae along the shoreline of Conesus Lake.	High	<p>Livingston County Department of Health developed new advisory signage for blue green algae blooms.</p> <p>The Department of Health updated the blue green algae public education brochure and Blue Green Algae Early Detection and Rapid Response Plan. The Conesus Lake Watershed Council (CLWC) approved the updated Plan at its August Meeting.</p>
G-4	Initiate effort to determine if in-creased stocking of walleye fingerlings, or other species, would be an effective biological control in Conesus Lake.	High	<p>New York State Department of Environmental Conservation stocked 32,500 1.5 inch walleye fingerlings on 6/24.</p> <p>The CLA stocked 1,200 8-10 inch fingerlings in late fall.</p>
H-1	Conduct an annual monitoring pro-gram of Conesus Lake and its watershed. An annual monitoring meeting should be held to coordinate the monitoring program.	High	<p>The Annual Monitoring Meeting was held on January 17, 2015.</p> <p>The Livingston County Department of Health continued the public bathing beach monitoring and blue green algae programs during 2015.</p> <p>SUNY Brockport and SUNY Geneseo researchers monitored tributaries and internal phosphorus loading patterns.</p>
H-2	Prepare and distribute an annual Conesus Lake and Watershed Report Card.	High	<p>2014 Report Card was completed and presented to the CLWC at its May meeting.</p>

Conesus Lake Watershed Council

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