

TOMPKINS COUNTY WATER QUALITY STRATEGY

2019-2021



Tompkins County Water Resources Council
Adopted: November 2018

Water Resources Council Members

Voting Members

Seat

Agriculture

Cornell Cooperative Extension

Environment

Environmental Management Council

Soil and Water Conservation District

Tompkins County Environmental Health

Tompkins County Legislature

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**Tompkins County Water Resources Council
Water Quality Strategy**

2019-2021

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION AND BACKGROUND.....	1
Water Quality Strategy.....	1
Tompkins County Water Resources Council	2
II. WATER RESOURCES	2
<i>Map: Watersheds</i>	3
Importance of Surface Water	4
Invasive Species.....	4
Stormwater	5
Importance of Groundwater	5
Aquifers.....	5
<i>Map: Tompkins County Confined Aquifers Studies</i>	7
Importance of Riparian Corridors	8
Importance of Wetlands	8
<i>Map: Tompkins County National Wetlands Inventory</i>	10
<i>Map: Tompkins County Wetlands Identified by CLWN</i>	11
III. PROCESS FOR ASSESSING WATER RESOURCES	12
Waterbody Inventory/Priority Waterbodies List.....	12
Classification of Waters	13
Environmental Resource Mapper.....	13
Other Watershed Plans.....	13
Upper Susquehanna Coalition’s Watershed Restoration and Protection Plan	14
Owasco Lake Watershed Management Plan.....	14
Cayuga Lake Watershed Restoration and Protection Plan.....	15
Tompkins County Agricultural Environmental Management Strategic Plan	15
IV. TOMPKINS COUNTY WATER RESOURCE PRIORITIES.....	15
Surface Water.....	16
Groundwater.....	17
Riparian Corridors.....	18
Wetlands.....	18
Harmful Algal Blooms.....	18
Cayuga Lake Total Maximum Daily Load	20
V. GOALS AND ACTION ITEMS	20
Update of Priority Action Items from the 2016-2018 WQS	20
Priority Action Items for the Tompkins County WRC	21
General On-Going/Administrative WRC Tasks	23
Action Items to be Considered by Others	23
Action Items Suggested, but not Included	24
List of Acronyms	26

1. INTRODUCTION AND BACKGROUND

The preservation and improvement of the waters of Tompkins County are of increasing and vital importance to the health, welfare, and economic well-being of the present and future inhabitants of the County. The water resources of the County — including both surface water and groundwater — are:

- A source of drinking water;
- An economic resource for tourism and recreation;
- A necessary component for supporting agriculture, water-based businesses, and other businesses;
- Crucial for the flora and fauna of the region; and
- A part of the system for treating human, industrial, and agricultural waste.

These water resources are integral parts of the environmental fabric and add to the quality of life for residents and visitors alike.

The land area of Tompkins County is in three watersheds: Cayuga Lake and Owasco Inlet, both of which flow north into the Oswego River basin and then into Lake Ontario, and the Susquehanna River basin, which flows south into the Chesapeake Bay. Over 350 square miles (223,792 acres) of Tompkins County are in the Cayuga Lake basin, 34 square miles (21,753 acres) are in the Owasco Inlet basin, and over 96 square miles (61,459 acres) are in the Susquehanna River basin.

New York State has agreements with the U.S. Environmental Protection Agency (EPA) to implement the various provisions of the federal Clean Water Act and the Safe Drinking Water Act. As part of this effort, and in conjunction with the NYS Soil and Water Conservation Committee, the NYS Department of Environmental Conservation (DEC) encouraged the creation of county-level Water Quality Coordinating Committees.

In 1992, the Tompkins County Board of Representatives appointed a Water Quality Steering Committee consisting of persons with technical backgrounds in water resources issues. Their initial task was to draft a Water Quality Strategy Plan. The Board of Representatives adopted this first plan on June 16, 1992.¹ This initial concept has evolved to include planning for comprehensive water resources management. That document is now known as the Tompkins County Water Quality Strategy (WQS). The WQS helps define local pollution and degradation concerns and informs local governments and agencies as they work to correct current, and prevent potential, problems.

Water Quality Strategy

This WQS serves to guide policy and activities related to water issues in Tompkins County. The purpose of the WQS is to analyze the status of water resources, prioritize issues and concerns, and lay out recommendations for how to address the prioritized water quality issues and concerns throughout the County. The WQS does this by setting goals and defining objectives. The WQS also seeks to reduce conflicts and/or redundancy and to promote the sharing of information and resources among agencies, organizations, and public interest groups with significant water-related programs.

In order to protect and enhance the quality of local water resources, it is important for Tompkins County to work in a coordinated manner with local, regional, state, and national government agencies and entities, and with other organizations, groups, and individuals. In order to direct the efforts of Tompkins County and to assist in establishing partnerships for the protection and improvement of water resources, it is important to have an established strategy that should be used to guide the allocation of financial resources and determine future work related to water resources in the County.

¹ Resolution No. 192 of 1992.

The Water Resources Council of Tompkins County, with input from the public and interested agencies, is responsible for revising and updating the WQS. An update of the WQS should be accomplished at least every three years.

The Tompkins County Water Resources Council (WRC). The Tompkins County Board of Representatives created the WRC and related Technical Committee in 1997² to advise the Board of Representatives on matters affecting the preservation, enhancement, and use of water resources in the County. In 2000, the WRC was restructured by the Board of Representatives³ to merge technical and policy memberships and provide for participation by any person with expertise and/or interest in the County's water resources.

The WRC also serves as the County's Water Quality Coordinating Committee, while maintaining its role as an advisory committee to the Tompkins County Legislature.⁴ In addition, the WRC strives to stay informed about, and comment on, topical issues with a strong relationship to water quality and/or quantity. It participates in opportunities to comment on related projects and issues, such as dredging, gas drilling operations, and municipal water treatment options. It is also alert to emerging contaminants and responds as deemed appropriate.

Another important function of the WRC is to provide a venue for water organizations to communicate with one another and the public, as well as to collaborate with other organizations and agencies on activities that further WQS goals.

II. WATER RESOURCES

For the purposes of this document, it is useful to distinguish between surface water, for which there is a substantial body of information, and groundwater, about which much less is known. However, it is important to note that surface water and groundwater interact, making them part of the same system and, ultimately, one resource. Wetlands and riparian corridors are transition zones between aquatic and terrestrial environments and play a critical role in maintaining water quality.

Surface water and groundwater are extensively used for:

- Drinking water for individual wells and municipal and other large systems
- Agriculture
- Recreation
- Water-based businesses
- Wastewater disposal
- Cooling and heating
- Plant and animal habitat, and
- Stormwater transport

Maps of Tompkins County watersheds, surficial aquifers, and wetlands are provided in this document. A map of municipal and abandoned landfill sites in Tompkins County, as well as the aforementioned maps, is available at the Tompkins County Department of Planning and Sustainability (TCDPS).

² Resolution No. 181 of 1997.

³ Resolutions No. 57 of 2000 and No. 211 of 2000.

⁴ The Tompkins County Board of Representatives, prior to April 2003.

Watersheds



Importance of Surface Water

Surface water is the drinking water source for over half of Tompkins County residents. Three water treatment facilities in Tompkins County use surface water as their source:

- Bolton Point, which is run by the Southern Cayuga Lake Intermunicipal Water Commission using Cayuga Lake as its water source;
- Cornell University Water Filtration Plant, which uses Fall Creek; and
- City of Ithaca Water Treatment Plant, which uses Six Mile Creek.

In addition, several public drinking water systems rely on groundwater sources (springs, wells, or infiltration galleries) that have been identified by the Tompkins County Department of Health (TCDH) as “groundwater under the direct influence of surface water” (GWUDI). This means that the quality of this water is similar to that of surface water. To make it safe for drinking, it must be treated to achieve the required standards for clarity and the reduction of microorganisms. True groundwater may only need disinfection to meet water quality regulations.

Surface water is vulnerable to contamination from a host of point and non-point pollution sources. There is almost no activity in the County that does not in some manner have the potential to impact our surface water resources. (For more details see “Surface Water” on page 16.)

Regulations intended to protect surface waters can be and are enacted at every governmental level. The federal government has passed the Water Pollution Control Act (Clean Water Act) and the Safe Drinking Water Act, both of which are enforced by the EPA. The EPA has empowered local wastewater pretreatment programs to enforce federal, state, and local sewer discharge regulations. New York has Public Health Law and Environmental Conservation Law enforced, respectively, by the Health Department and the DEC. These laws and regulations affect the taking and use of water from, and the discharges back to, the environment. Tompkins County has its Sanitary Code, which provides protection from on-site sewage systems and other discharges and regulates drinking water systems. In addition, under NYS Public Health Law, public water purveyors can enact watershed rules and regulations to protect their sources of water (only the City of Ithaca and Cornell University did so, decades ago), but enforcement of these regulations was nearly nonexistent. However, in 2008, the City of Auburn and Town of Owasco in Cayuga County began enforcing the Owasco Lake watershed rules, which affect the Village of Groton, a large part of the Town of Groton, and smaller parts of the Towns of Lansing and Dryden.

Invasive Species. In 2014, New York State passed new regulations targeting aquatic invasive species. Boaters in New York, including on Cayuga Lake, are now required to clean and drain boats both prior to launching from and when exiting boat launches. These regulations are part of an aggressive effort to prevent invasive species from entering and damaging New York waterbodies. The harmful impacts that aquatic and terrestrial invasive species have on water quality can be profound. Invasive species can degrade water quality in numerous ways, including:

- Out-competing beneficial native species;
- Causing excessive growth in waterbodies, which can lead to decreased light penetration, reduced flow, increased nutrient load and biomass decomposition, and decreased dissolved oxygen;
- Increasing erosion by out-competing or killing native vegetation that helps to secure stream banks and soil; and
- Providing conditions conducive to the growth of harmful blue-green algae.

The Tompkins County Environmental Management Council maintains and updates a “Regional Invasive Species List.”

Stormwater. Stormwater has a strong influence on surface water quality. When it rains, water flows over forests, fields, driveways, lawns, roads, parking lots, and farms throughout the watershed as it travels to streams, lakes, and ponds. Along the way, stormwater picks up soil, chemicals, and other pollutants. Polluted stormwater degrades our lakes, rivers, wetlands, and other waterways. Nutrients, such as phosphorus, can cause the overgrowth of aquatic plants and algae. Toxic substances from motor vehicles and the application of pesticides and fertilizers threaten water quality and can kill fish and other aquatic life. Bacteria from animal wastes and improper connections to storm sewer systems can make lakes and waterways unsafe for wading, swimming, and fish consumption. Eroded soil in the form of sediment is a pollutant as well, and can cloud waterways and interfere with the habitat of fish and plant life.

Since 2010, developments that disturb more than one acre of land must use design practices (Green Infrastructure) to control stormwater quality by filtration and reduce runoff quantity by providing for infiltration of a portion or all of the increased volume of stormwater due to the increased impervious area.⁵

Importance of Groundwater

Groundwater resources are an important source of water for residential, commercial, and industrial uses. In Tompkins County, groundwater is a primary source of drinking water for slightly less than half of residents. The TCDH maintains a list of public groundwater systems in the County. The list includes restaurants, mobile home parks, schools, campgrounds, apartment buildings, and municipal water systems. In addition, thousands of rural residents receive their drinking water from individual private wells.

In many areas, the groundwater interacts with surface water. Therefore, the water in these areas should be considered a single system. At these interfaces, each system can contaminate the other, requiring careful and prudent protection of both. Contaminated aquifers that discharge to streams can result in long-term contamination of surface water; conversely, streams can be a major source of contamination to aquifers. Groundwater typically contributes more than half of the total annual flow to local streams and creeks.

Aquifers. Unconfined aquifers are replenished (recharged) by infiltration of precipitation from the ground above and, in some areas, by seepage loss of surface water to the aquifers below. Impervious surfaces (such as paved roads and parking lots, roofs, buildings) increase runoff. These impervious surfaces threaten to reduce the amount of recharge to aquifers by inhibiting the percolation of precipitation. Confined aquifers are partially protected by an impermeable soil or rock layer that prevents water from entering the aquifer directly from the ground surface. These aquifers are recharged from areas (sometimes miles away) called aquifer recharge areas where the impermeable layer doesn't exist.

Compared to surface water supplies, groundwater supplies are better protected from contamination by their overlying geologic materials. However, once an aquifer is contaminated, it is very difficult to clean up. Often the solution to a contaminated groundwater supply is not remediation of the aquifer. Rather, it is often more effective, but still expensive, to treat the pumped water prior to distribution and human consumption. Sources of groundwater contamination include fuel and other chemical spills; unmaintained on-site wastewater treatment systems; chemicals applied to land surfaces, such as fertilizers, manure and pesticides; unlined landfills; illegal informal dumps; chemical injection for drilling hydraulic fracturing of wells and for disposal of related wastes; and road salt application. Taking proactive measures is important to protect groundwater supplies. Such measures might include:

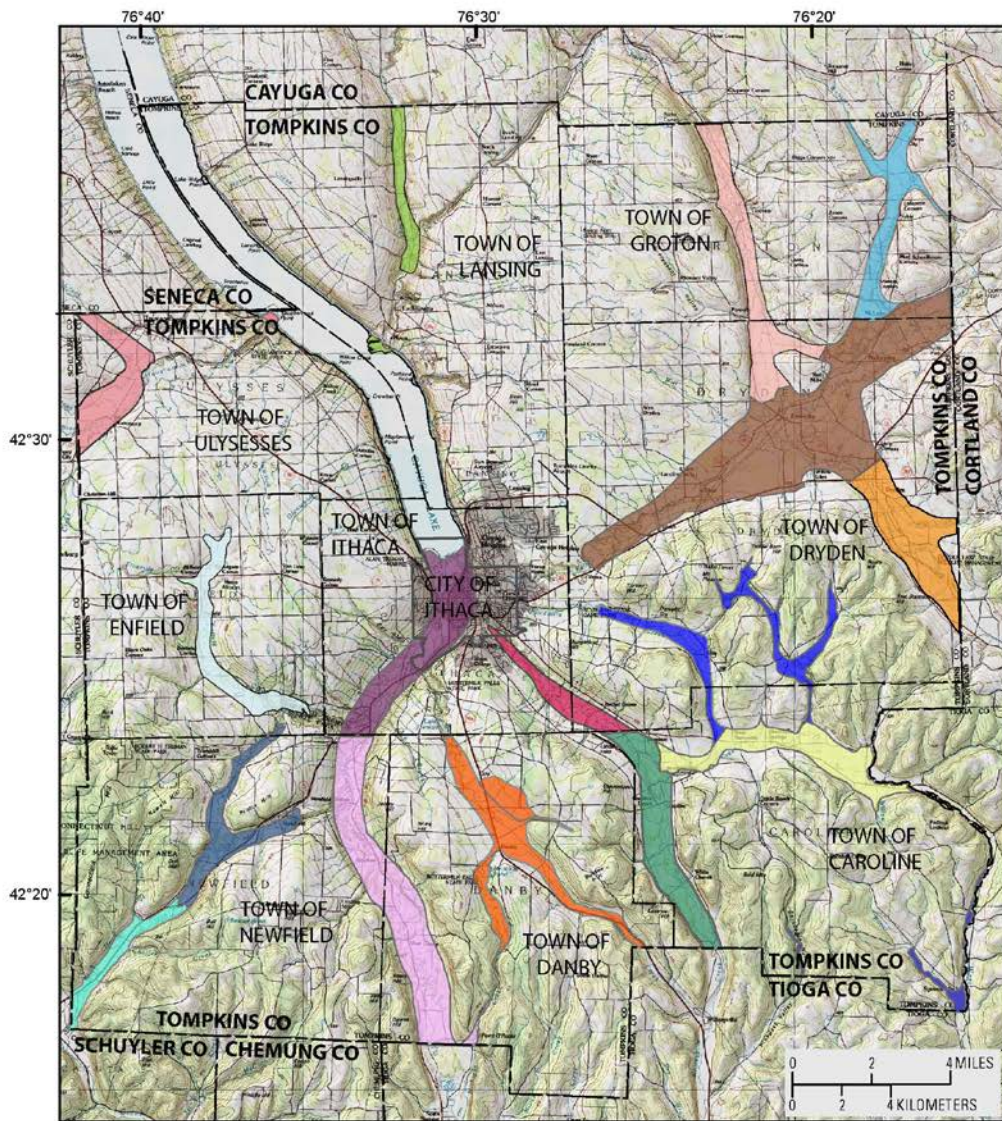
- Preventing the loss of natural wetlands, with their beneficial services for purifying water;
- Minimizing chemical use;

⁵ Although the Federal Emergency Management Agency (FEMA) provides access to flood insurance based on federal flood maps, the maps for Tompkins County are significantly out of date. Up-to-date maps would provide municipal officials, developers, residents, and others with much needed information.

- Utilizing best management practices (BMPs) for fertilizers and manure application (such as testing soil before applying fertilizer and timing applications for maximum uptake);
- Reducing pesticide use by practicing integrated pest management;
- Properly designing and maintaining landfills;
- Remediating spills and abandoned dumpsites;
- Properly siting, designing, and maintaining on-site wastewater treatment systems;
- Maintaining petroleum storage facilities;
- Preventing or properly managing underground injection or use of chemicals; and
- Ensuring stormwater infiltration practices control or prevent contamination of groundwater.

Unlike surface water, which flushes contaminants downstream relatively quickly, groundwater in aquifers moves relatively slowly and can take from a couple of years to more than decades to move from the point of origin to the point of discharge. Once contaminated, an aquifer can become unusable, and often remediation is not technologically or economically feasible, especially for small or rural communities.

Because of the paucity of information about groundwater resources in Tompkins County, efforts to collect additional data and information about these resources have been ongoing since 2002 through a cooperative study program of confined aquifers done jointly by Tompkins County, the applicable town(s), New York State, and the United States Geological Survey (USGS). (Aquifer studies are available through the USGS publications warehouse.)



Basemap created with TOPOI, scale 1:100,000
 2003 National Geographic (www.nationalgeographic.com/topo)

Aquifers mapped Miller (2000)

EXPLANATION
 Aquifer reach names

Completed (published)

- Upper Sixmile Creek and W Br Owego Creek valleys
- Lower Six Mile Creek and Willseyville Creek valleys
- Lower Six Mile Creek valley (Towns of Dryden and Ithaca)
- Virgil Creek valley
- Buttermilk Creek and Danby Creek valleys
- Pony Hollow valley

Completed (in review or layout)

- Enfield Creek valley
- Owasco Inlet valley
- West Br. Cayuga Inlet and Fish Kill valleys

Proposed

- Salmon Creek/Myers Point/Locke Creek
- Lower Cayuga Inlet valley
- Lower Fall Creek valley
- Cascadilla Creek valley and upland Six Mile Creek valley
- Taughannock Creek valley and delta
- Upper Cayuga Inlet valley
- Upper Fall Creek valley
- West Br. Owego Creek valley and tributaries

Figure 1. Status of aquifer mapping as of October, 2018, Tompkins County, New York.

Importance of Riparian Corridors

Riparian corridors are the lands bordering streams and represent a transition zone between aquatic and terrestrial ecosystems. Though riparian areas and stream buffers generally comprise a small proportion of the landscape, they provide a disproportionately high amount of habitat and ecosystem benefits, including protecting water quality, stabilizing streams, minimizing flood damages, and enhancing ecological diversity.

Adequately vegetated riparian corridors provide a variety of benefits. Vegetated stream buffers and other riparian areas can help improve water quality by capturing and filtering out sediments, nutrients, and other pollutants and by moderating stream temperatures. Buffers support aquatic ecosystems and enhance habitat and biodiversity by providing a supply of plant detritus as food for aquatic food webs, structural complexity for aquatic habitat, and shade for stream channels in summer. Other non-water resource benefits include providing terrestrial wildlife habitat and travel corridors, minimizing property damage from flooding, and reducing municipal investment in stormwater management infrastructure.

Scientific recommendations for appropriate buffer widths vary considerably and depend on the management goal. The minimum width of a vegetated stream buffer should be 100 feet to provide water quality and aquatic habitat protection benefits, 165 feet for stream bank stabilization and detrital input benefits, and 330 feet for wildlife habitat for terrestrial mammals.⁶

Importance of Wetlands

Wetlands such as swamps and marshes are often easily recognizable, but some wetlands, such as forested wetlands and wet meadows, are not obvious because they are dry during part of the year. The quality and quantity of wetlands also vary greatly depending on local conditions such as soil type, climate, hydrology, level of precipitation, and human disturbance.

According to the DEC, “Freshwater wetlands are those areas of land and water that support a preponderance of characteristic wetlands plants that out-compete upland plants because of the presence of wetlands hydrology (such as prolonged flooding) or hydric (wet) soils. Freshwater wetlands commonly include marshes, swamps, bogs, and fens.”

Wetlands are a critical component of natural ecosystems and provide a variety of benefits, such as (1) filtering harmful toxins, nutrients, and sediment from surface and stormwater runoff; (2) storing floodwaters and reducing the magnitude of flood events; (3) providing valuable habitat for a diverse array of flora and fauna, including many rare, threatened, or endangered species; and (4) maintaining surface water flow during dry periods. Landscape position influences wetland function, with headwater wetlands providing stream base-flow augmentation, and lower elevation wetlands providing floodwater storage. The recreational uses associated with wetlands are also very diverse and include bird watching, hunting, fishing, and botanical tourism, all of which provide direct economic benefits to local communities.

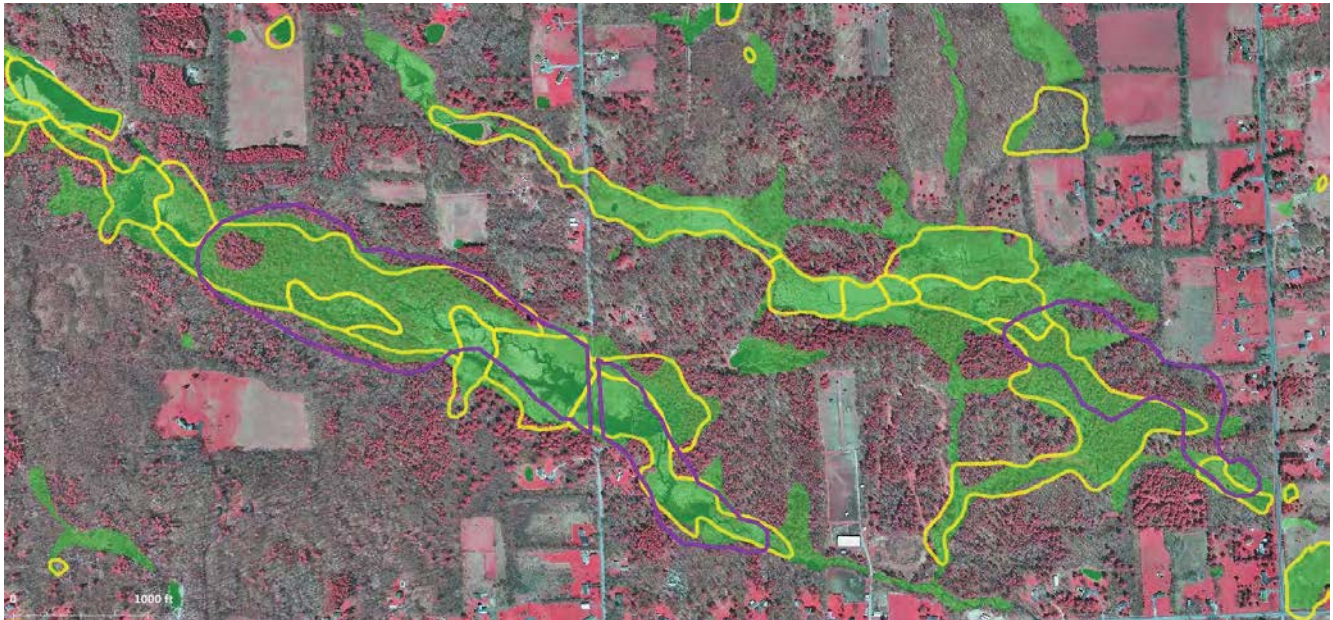
In 2016, the Cayuga Lake Watershed Network (CLWN), with additional financial support from the Park Foundation and Tompkins County, published *Wetland Mapping for Tompkins County, New York* (referred to as the CLWN analysis). Based on more detailed, up-to-date information than that available to the DEC or the U.S. Army Corps of Engineers (USACE) when they produced wetland maps, and using currently available technology, a new wetland map was developed for the entire County. In total, more than 15,000 acres of wetlands were mapped.

⁶ Enhancing Water Resources in Tompkins County: Benefits of Riparian Areas and Stream Buffers. 2006. Tompkins County Planning Department.

The DEC-regulated wetlands cover approximately 5,600 acres, and the National Wetlands Inventory (NWI) (which includes many of the DEC-regulated wetlands) shows approximately 10,800 acres of federally identified wetlands (per CLWN analysis, 2016). While historically the federal government — through the USACE — played an important role in protecting wetlands, U.S. Supreme Court decisions in 2001 and 2006 confused and complicated which streams and wetlands are protected by the Clean Water Act.

As of the preparation of this WQS, the Clean Water Rule and federal definition of “waters of the US” are moving targets. A new Clean Water Rule became effective in 2015; however, the U.S. Court of Appeals for the 6th Circuit issued a stay on the rule. In February 2017, the President of the United States issued an executive order directing the EPA and the USACE to review and rescind or revise the 2015 rule — on which the agencies are currently working. The federal agencies are enforcing the 1986/1988 definition. The change in acreage of wetlands under federal jurisdiction in Tompkins County is unknown.

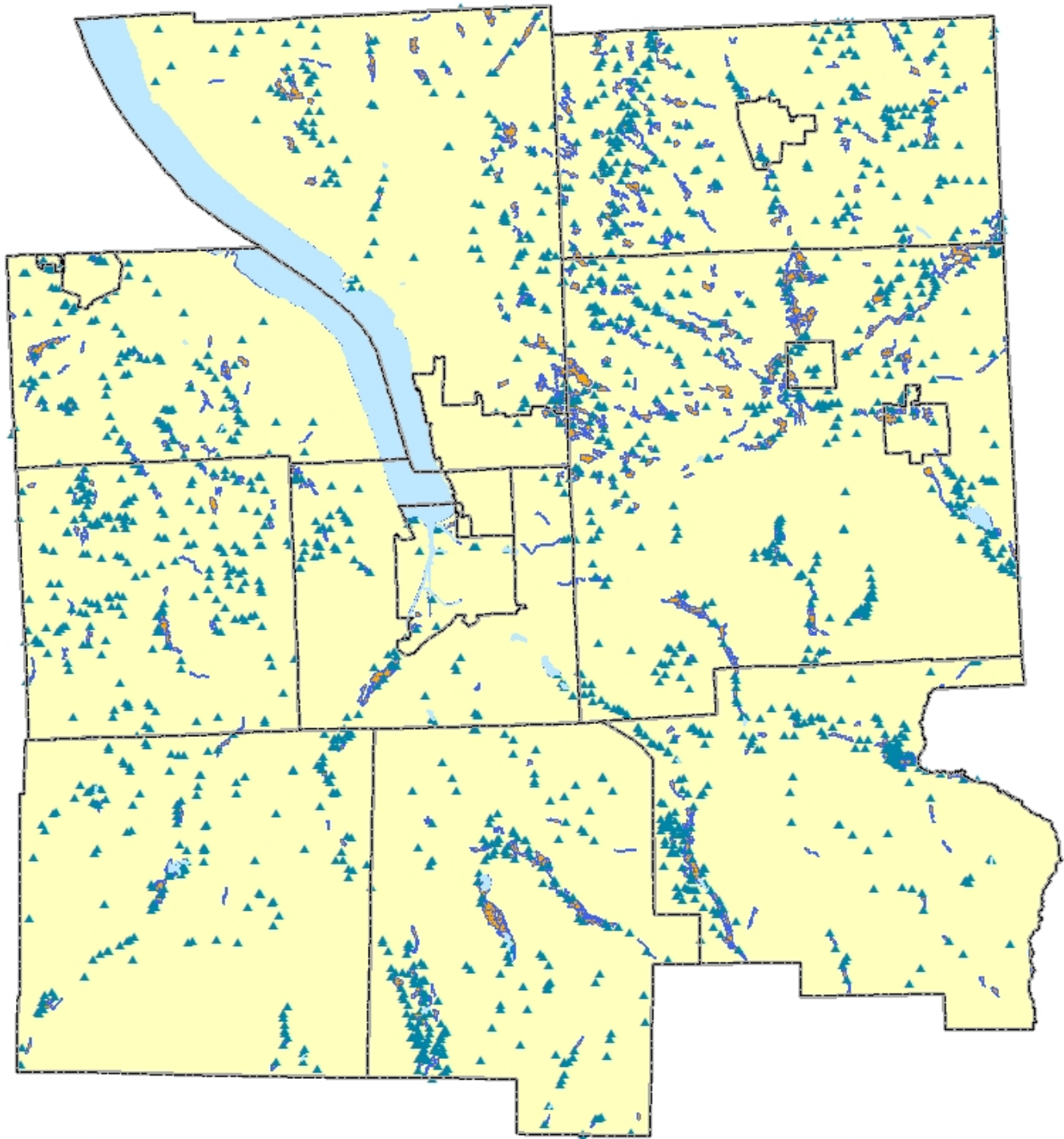
As an example of the wetlands mapping project, the image below shows wetland boundaries identified by the DEC (purple outline), NWI (yellow outline), and CLWN analysis (green). This demonstrates the spatial inaccuracy of existing maps used by local municipalities and state and federal agencies when initially identifying wetland locations.



While the DEC and the USACE regulate certain wetlands, additional steps can be taken locally to protect and enhance wetlands:

- Wetland restoration projects can help provide some of the benefits provided by natural wetlands that may have been lost.
- Communities can educate landowners on the importance of wetlands.
- Municipalities can consider wetlands in their comprehensive plans, zoning ordinances, and subdivision and site plan reviews.
- A municipality can adopt and enforce a wetland protection ordinance to protect wetlands that might not be protected under state and federal laws. The WRC has drafted a model ordinance.
- A local government can establish a wetland conservation easement program, similar to agricultural easement programs.

Tompkins County National Wetlands Inventory



0 0.5 1 2 3 4 Miles

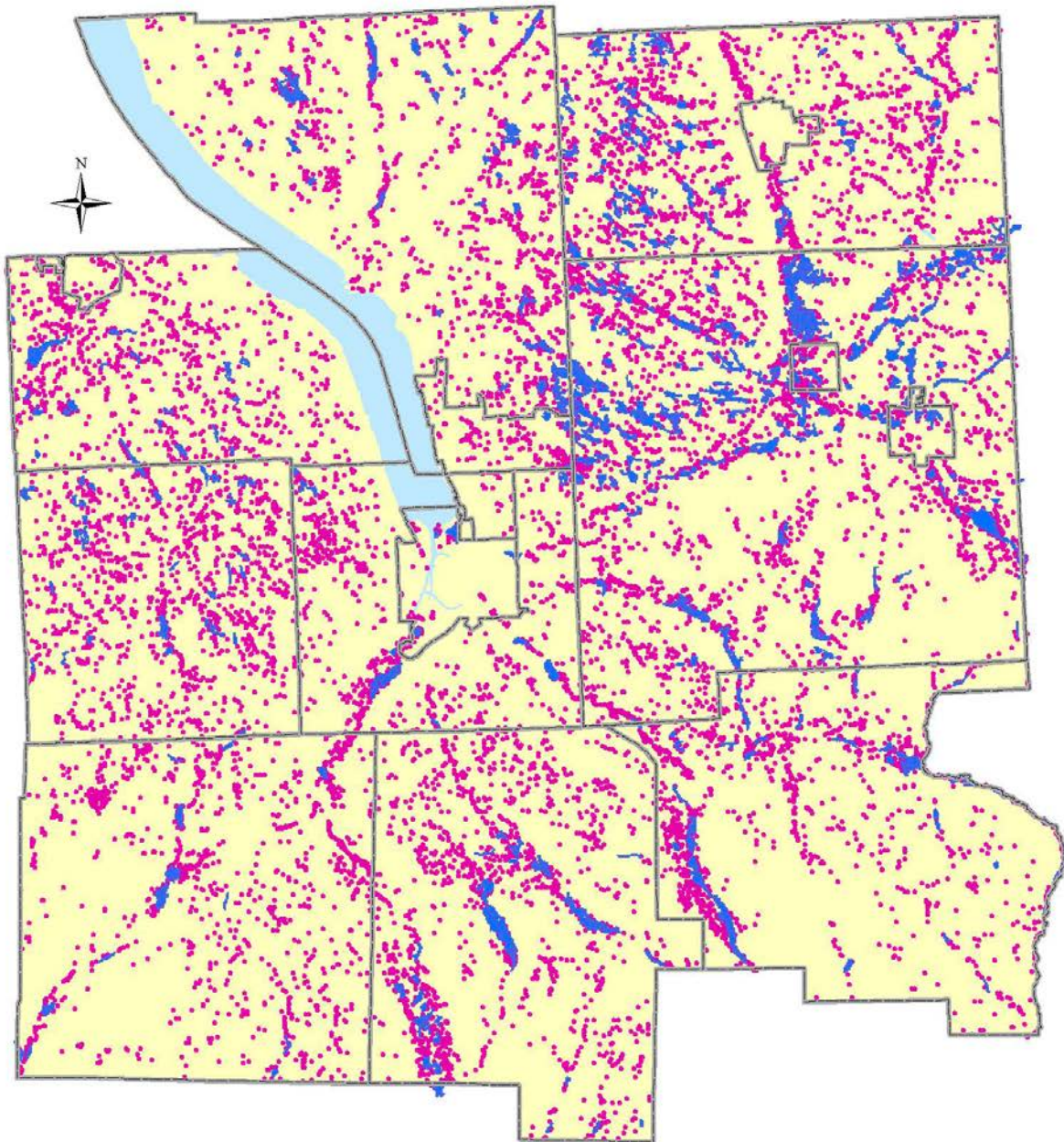
Source: National Wetlands Inventory
publication range 1979-1994



Tompkins County Planning Department

- ▲ Wetlands less than 5 acres (not to scale)
- Wetlands 5 acres or more
- Open Water
- Municipalities

Tompkins County Wetlands Identified by CLWN



- Tompkins County Wetlands Less than 5 acres
- Tompkins County Wetland Inventory 2012 (5 acres and greater)
- Open Water
- Municipalities

0 0.5 1 2 3 4 Miles

Source: 2012 Wetlands Inventory, Nick Hollingshead



Tompkins County Department of Planning and Sustainability

III. PROCESS FOR ASSESSING WATER RESOURCES

The priorities to be developed by the Water Resources Council in our Water Quality Strategy have been and will be substantially based on the DEC Priority Waterbodies List (PWL).

Waterbody Inventory/Priority Waterbodies List

The DEC maintains water resources information through its Waterbody Inventory/Priority Waterbodies List (WI/PWL) database. The Waterbody Inventory (WI) refers to a listing of all waters, identified as specific individual waterbody segments, or assessment units, within the state. The WI includes both assessed and currently unassessed waters. The PWL is a subset of waters in the WI that have documented water quality impairments, minor impacts, and/or threats. The WI/PWL assessments provide the foundation for both the state's compilation of the biennial Section 305(b) Water Quality Report on all waters of the state, and for the development of the Section 303(d) List, which is comprised of waters that do not meet water quality standards, do not support water uses, and require development of a TMDL (Total Maximum Daily Load).⁷

The DEC develops and updates the PWL using a combination of stakeholder input and DEC monitoring results. The PWL is updated on a statewide, five-year rotating schedule, and is used by the DEC and other agencies as a primary resource for water resources management and funding. In Tompkins County, the southern end of Cayuga Lake is listed as impaired for bathing and recreation due to algal/weed growth, nutrients, and silt/sediment. Until 2014, Cayuga Lake was also listed as impaired by pathogens. This listing was removed based on data submitted to the DEC by WRC members representing the Ithaca Area Waste Water Treatment Facility (IAWWTF) and the Community Science Institute (CSI).

For waters that are determined to be impaired, states must consider the development of a TMDL or other strategies to reduce the input of the specific pollutants. Impaired waterbodies and their related pollutants are published by the DEC on the NYS Section 303(d) List of Impaired/TMDL Waters. The most recent list, published in 2016, identifies the southern end of Cayuga Lake as impaired by two pollutants: phosphorus and silt/sediment.

Most of the phosphorus that enters the southern end of Cayuga Lake is bound up with sediment carried by Fall Creek, Cayuga Inlet, and Six Mile Creek. This sediment is largely the result of stormwater runoff and erosion of stream banks. The loss of natural wetlands in the valley at the south end of the lake that would act as sediment traps has contributed to sedimentation in the southern end of Cayuga Lake. A TMDL or other strategy to address phosphorus will likely need to address methods to reduce the amount of phosphorus found in these tributaries. In addition to sediment-bound phosphorus, phosphorus also enters the southern end of the lake from point sources, including wastewater treatment plants and the Cornell Lake Source Cooling heat exchange facility. It is easier to control/regulate point sources than non-point sources. In recent years, tertiary phosphorus treatment systems have been installed at the IAWWTF and Cayuga Heights Sewage Treatment Plant, significantly reducing their contributions of phosphorus.

As a condition of continuing the NYS discharge permit for the Lake Source Cooling facility, the DEC and Cornell University agreed to conduct a detailed study of the sources and ultimate use of phosphorus in Cayuga Lake. The study built a mathematical water quality model of Cayuga Lake and its watershed and a detailed analysis of the shallow southern end of the lake in order to provide a better understanding of where phosphorus comes from and how it affects the lake ecosystem. Based on the results of the model, the DEC determined that a TMDL is necessary to address the amount and concentration of phosphorus in the southern end of Cayuga Lake

⁷ More detail regarding the WI/PWL assessment effort can be found on the DEC website at <http://www.dec.ny.gov/chemical/23846.html>.

as well as threats to public drinking water supplies throughout the lake. As of this writing,⁸ the DEC is in the midst of preparing the TMDL for Cayuga Lake. A draft report is expected to be released for public review and comment in the near future.

Classification of Waters. All waters of the state are provided a class and standard designation based on existing or expected best usage of each water or waterway segment.

- Classification AA or A is assigned to waters used as a source of drinking water.
- Classification B indicates a best usage for swimming and other contact recreation, but not for drinking water.
- Classification C is for waters supporting fisheries and suitable for non-contact activities.
- The lowest classification and standard is D.

Waters with classifications A, B, and C may also have a standard of (T), indicating that the waters may support a trout population, or (TS), indicating that the waters may support trout spawning (TS). Special requirements apply to sustain these waters that support these valuable and sensitive fisheries resources.

Certain waters of the state are protected on the basis of their classification. Streams and small waterbodies located in the course of a stream with a classification of AA, A, or B, or with a classification of C with a standard of (T) or (TS) are collectively referred to as "protected streams," and are subject to the stream protection provisions of the Protection of Waters regulations.

Small ponds and lakes with a surface area of 10 acres or less, located within the course of a stream, are considered to be part of a stream and are subject to regulation under the stream protection category of the DEC Protection of Waters program.

Environmental Resource Mapper. This new web-based interactive mapping application developed by the DEC can be used to identify protected streams based on their classification. It can also be used to create simple maps that can be submitted as part of the Protection of Waters Permit Application process.

The EPA is promoting an overhaul of the 303(d) program that will allow for methods other than TMDLs to be used to improve water quality. The overhaul will also give states more flexibility to prioritize waterbodies and provide protection for high priority waterbodies that are not currently impaired. The DEC is in the process of implementing this program.⁹

Other Watershed Plans

Previous versions of the WQS used the following watershed plans to further define goals and objectives:

- Upper Susquehanna Coalition's Watershed Restoration and Protection Strategies
- Owasco Lake Watershed Management Plan
- Cayuga Lake Watershed Restoration and Protection Plan
- Tompkins County Agricultural Environmental Strategic Plan

Upper Susquehanna Coalition's Watershed Restoration and Protection Strategies

⁸ October 16, 2018

⁹ More information can be found at EPA's website:

<http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/programvision.cfm>

In 1998, the EPA mandated that states identify watersheds in need of restoration and develop a schedule for addressing identified priorities. As part of this effort, the DEC initiated the Unified Watersheds Assessment (UWA) process and categorized all major watersheds in New York State based on their need for remediation. Because of strong stakeholder support and the availability of recent monitoring data, the Susquehanna and Chemung River basins were chosen as a pilot for the UWA and subsequent Watershed Restoration and Protection Strategies (WRAPS) processes.

The Upper Susquehanna plan has not been updated; however, the Tompkins County Soil & Water Conservation District has completed several projects in that watershed that are in line with the goals of the plan. The Upper Susquehanna plan was completed under the WRAPS process. The WRAPS program has been superseded by the EPA's new 303(d) Vision Program.

Owasco Lake Watershed Management Plan

The Owasco Lake Watershed Management and Waterfront Revitalization Plan (2016) examines the state of Owasco Lake and its watershed, how water quality and habitat conditions are changing, and the challenges of meeting community goals for continued use and enjoyment of the lake. The plan recommends specific actions needed to restore and protect Owasco Lake and its watershed for future generations.

Owasco Lake and its tributaries are an important resource to the communities within the watershed. Owasco Lake provides municipal water to 44,000 Cayuga County residents via the City of Auburn and Town of Owasco water filtration plant. Tompkins County is the headwaters of the Owasco Lake Inlet watershed, a large portion of which falls within the Town of Groton and smaller portions within the Towns of Dryden and Lansing.

According to the plan, cyanobacterial blooms, also known as harmful algal blooms (HABs), have been detected in Owasco Lake in recent years and are of great concern for recreational users and suppliers of potable water. Water quality monitoring data suggest that the lake's conditions are deteriorating, and that nutrient enrichment is a presumed cause. Based on the decline in water quality conditions and the increasing frequency of HABs, in 2014 the DEC listed Owasco Lake as impaired for both water supply and recreational uses. The DEC also reported the types and sources of pollutants that are interfering with the recreational and water supply uses. Pollutant types are listed as pathogens and HABs; pollutant sources are listed as agriculture (as a source of phosphorus promoting HABs) and waterfowl (as a source of pathogens).

The plan includes recommendations grouped into eight broad categories: planning; measures to reduce non-point source pollution; lake level management; monitoring and assessment; recreation and waterfront revitalization; water and wastewater infrastructure; institutional structure for lake and watershed management; and outreach and education. According to the plan, the portion of the Owasco Lake watershed located in Tompkins County is considered of low priority since less than half of the subwatershed is devoted to agriculture and is of relatively low susceptibility to non-point source pollution.

The watershed rules and regulations for Owasco Lake are enforced by the watershed inspector. The Watershed Inspection Program was established through an agreement between the City of Auburn, Town of Owasco, Cayuga County agencies, and other Owasco Lake advocates and works closely with the Cayuga County Soil and Water Conservation District. The program operates in accordance with NYS Public Health Law and employs both a watershed specialist and inspector. The specialist and inspector perform a variety of tasks to ensure the ecological health of Owasco Lake and its tributaries.

Cayuga Lake Watershed Restoration and Protection Plan

In 2017, the Cayuga Lake Watershed Restoration and Protection Plan (RPP) was updated through the joint efforts of the Cayuga Lake Intermunicipal Organization (IO) and the CLWN under the sponsorship of the Town

of Ithaca, with a grant from the NYS Department of State. The process drew in hundreds of people, dozens of agencies, and numerous experts to update the plan and develop new recommendations for action.

The central 2017 goals of the RPP are “to inspire, to prioritize actions and strategies, and to bring about legislative change vital to protecting and preserving Cayuga Lake and its watershed.”

The IO’s top priority recommendations for action are drawn from the 2017 plan’s individual chapters and the work of water quality experts. The recommendations fall into four broad categories:

- Monitoring of the lake and its tributaries for the restoration and protection of the watershed;
- Stormwater management and erosion control to minimize the contributions of pollutants and sediment associated with runoff;
- Collaboration and coordination among the six counties, 34 towns, nine villages, and one city in the Cayuga Lake watershed;
- Public education and engagement to help preserve, protect, and restore Cayuga Lake and its watershed.

Tompkins County Agricultural Environmental Management Strategic Plan

The Agricultural Environmental Management (AEM) program is managed by the NYS Department of Agriculture and Markets, in partnership with the United States Department of Agriculture, the NYS Soil and Water Conservation Committee, and the 53 County Soil and Water Conservation Districts (SWCDs) across the state. The AEM program is part of New York State Agriculture and Markets Law and is in place to provide all state SWCDs with a consistent level of non-competitive funding and a uniform methodology to help manage farms in an environmentally responsible manner. As a statewide recognized planning and implementation tool, the AEM program makes it possible for a greater number of farms to access various cost-share grant programs to improve environmental practices while also documenting current best management strategies as they pertain to natural resources.

The Tompkins County AEM five-year strategic plan was adopted by the Tompkins County SWCD Board of Directors in 2015 to guide the program through 2019. The plan breaks out by watershed important water quality issues and concerns that can be addressed by improved agricultural BMPs. The priority watersheds (in rank order) that will be addressed on a farm-by-farm basis are Fall Creek, Salmon Creek, Owasco Inlet, Cayuga Inlet, and Taughannock Creek. The priority resources, issues, and concerns contained in the document were identified from the NYS PWL, stakeholder meeting input, and other plans mentioned above.

IV. TOMPKINS COUNTY WATER RESOURCE PRIORITIES

Although the resolution creating the Water Resources Council calls for establishing priorities for action, to date it has seemed sensible to work in parallel on five areas: Cayuga Lake, Cayuga Lake tributaries and watersheds, aquifers, tributaries to Lake Ontario, and tributaries to the Susquehanna River and Chesapeake Bay. Priorities, yet to be developed by the WRC will attempt to reflect the importance of each waterbody to the people of Tompkins County.

Surface Water

Cayuga Lake is an iconic part of Tompkins County. It is the number one water resource priority not only because of its size and many uses but also because most of Tompkins County lies within its watershed. Notably, it is a drinking water source for many County residents.

Therefore, protecting its water quality is of vital importance. This requires protecting the tributaries and other surface water and groundwater sources, riparian corridors, and wetlands within its watershed. It follows that it is important to identify existing and likely sources of pollution. These include, but are not limited to:

Non-point sources:

- Fuel and other chemical spills;
- Illegal dumping (via sewer or public access to streams);
- Failing on-site wastewater treatment systems;
- Proper and improper application of fertilizer (including manure) and pesticides (both agricultural and residential);
- Runoff from concentrated livestock operations;
- Pet waste;
- Erosion from construction sites;
- Erosion from agricultural practices;
- Erosion from improper road bank and ditch maintenance (erosion from all sources significantly increases during severe storm events);
- Invasive species (both aquatic and terrestrial);
- Riparian development;
- Road and airplane deicing materials;
- Runoff from parking lots and other impervious surfaces, treated or not;
- Air pollutant deposition (e.g. heavy metals from combustion, acid rain, and salt fines from Cargill);
- Leachate routinely discharged from Cayuga power station coal ash waste piles; and
- Microplastics (plastic <5 mm long).

Point sources:

- Treated wastewater discharges, containing many emerging contaminants; and
- Cornell Lake-Source Cooling.

Actions to minimize these pollutants include:

- Maintain natural wetlands with their beneficial services for purifying water;
- Utilize BMPs for nutrient management;
- Reduce fertilizer and pesticide use by practicing integrated pest management;
- Implement BMPs to reduce both agricultural and urban runoff and erosion;
- Prevent the introduction and spread of aquatic and terrestrial invasive species;
- Properly site and maintain on-site wastewater treatment systems;
- Re-vegetate road ditches and banks (e.g., hydro-seeding);
- Protect and restore riparian corridors, including wetlands; and
- Support wastewater treatment plant upgrade initiatives.

It is important to recognize that “the solution to pollution is not dilution.”

Beyond the lake, surface water and groundwater rankings will be based on scientific data, the interaction with and the impact on the larger watershed to which it contributes, and the major use(s) of the individual waterbody.

The WRC determined that the data and information in both the Cayuga Lake Watershed Preliminary Characterization and the Cayuga Lake RPP should guide priority rankings for all waterbodies in that watershed. Priorities in Tompkins County reflect and are consistent with priorities and needs of the watershed as a whole. Information from the DEC's PWL was also used and combined with the data from the characterization and the RPP to establish priorities.

Tompkins County also has tributaries that are the headwaters for other major watersheds, including Owasco Inlet, which flows into Lake Ontario, and the Susquehanna River, which flows into the Chesapeake Bay. Because of the importance of these tributaries to not only the residents of Tompkins County but to neighboring counties and the watersheds overall, these have been ranked separately. These waterbodies are no less important than those of the Cayuga Lake watershed, and it seems unreasonable to prioritize them on a comparative basis with Cayuga Lake and its tributaries. Specific waterbodies have unique challenges and affect the larger waterbodies to which they contribute. Our challenge is to address them in the appropriate manner.

Other data related to the Cayuga Lake watershed include long-term (10+ years) data sets for all major tributary streams collected through ongoing partnerships between CSI and local volunteer groups and currently comprising over 53,000 certified test results for phosphorus and nitrogen nutrients, suspended solids, chloride, *E. coli* and other water quality parameters (results available on the CSI website together with maps and graphs). These results and data stemming from other, shorter-term projects and studies will be used to help establish management priorities for specific stream catchment areas impacted by non-point source pollutants as well as unacceptably high point source discharges.

Groundwater

As mentioned above, there is a paucity of groundwater information in Tompkins County. The DEC's PWL does not include groundwater, and the IO's RPP barely touches on groundwater. To help address these gaps, the USGS published a reconnaissance-level map in 2000 showing the extent of unconsolidated aquifers in Tompkins County. Data used to develop this map included: (1) water-well drillers logs, (2) highway and other construction test-boring logs, (3) well data gathered by the County Department of Health, (4) test-well logs from geohydrologic consultants that conducted projects for site-specific studies, and (5) well data collected during past investigations by the USGS and entered into the National Water Information System database.

In 2002, Tompkins County, at the recommendation of the Planning Department, began a countywide aquifer study to learn more about aquifers in Tompkins County by investigating 17 aquifer reaches. To date, the studies of five aquifer reaches have been completed, another is in preparation for publication, and two are presently under investigation. (See map in previous section.)

Since 2000, DEC has required water-well drillers to provide a well completion report (well log) to the well owner and to the State. The log indicates well construction, type of material the well penetrated, and details such as the location, well depth, length of casing, and yield of the well.

Informational resources for assessing potential sources of groundwater contamination include the Tompkins County Abandoned Landfills map (available for review in the office of the TCDPS), and "An Evaluation of Risks Associated with Underground Storage Tanks in Tompkins County" initiated by the Tompkins County Environmental Management Council in cooperation with TCDH and the then Tompkins County Board of Representatives (February 1991).

Another source of information about groundwater and potential sources of contamination are the Source Water Assessment Reports prepared for each community public water system in 2002-2005 by the NYS Health Department or its consultant. These reports identify inner and outer assessment zones for wells, and potential contaminant sources (sewage systems, fuel storage areas, mines, etc.) within these zones. The sources are

assigned a risk based on the type of land use, geology, size and number of contaminant sources, and past water-quality history.

Riparian Corridors

There is limited information available on riparian corridors in Tompkins County in the Cayuga Lake Watershed Preliminary Watershed Characterization and the RPP. The RPP cites significant development (38-81% area developed) along all tributaries in the Cayuga Lake watershed.

Wetlands

The DEC classifies wetlands according to their functions, values, and benefits, and this classification serves as a useful guideline for establishing priorities for wetland protection (see Part 664 of the DEC Rules and Regulations¹⁰ for the complete classification). Four ranked regulatory classes of wetlands are defined by the DEC, with Class I wetlands considered to be the most valuable. The NWI classification does not rank wetlands or consider function; it is based primarily on soil composition, vegetation, hydrology, and water chemistry. Information on DEC-designated and federally designated wetlands is readily available, and other sources of information also exist (Tompkins County Natural Resources Inventory, Cayuga Lake Watershed Preliminary Watershed Characterization, and the RPP).

As noted in Section II of this document, the final Clean Water Rule that is intended to clarify the types of waters, including streams and wetlands, protected by the federal government was published in the June 29, 2015, Federal Register and became effective August 28, 2015. However, US Court of Appeals for the 6th Circuit issued a stay on the rule. In February 2017, the President of the United States issued an executive order directing EPA and the USACE to review and rescind or revise the 2015 rule – on which the agencies are currently working. The federal agencies are enforcing the 1986/1988 definition.

At the state level, the DEC regulates wetlands of at least 12.4 acres in size, and smaller wetlands of unusual local importance. Taken together, these regulations have the effect of leaving responsibility for regulation of isolated wetlands of less than 12.4 acres to local governments. Identification and protection of these otherwise unregulated wetlands is also a priority.

The WRC did a pilot study and found that between 8% and 19% of the wetland acreage surveyed may no longer be regulated under the Clean Water Act because they are geographically isolated or lack a significant influence on navigable water. Wetlands and riparian corridors can be protected in Stormwater Management Laws or by adopting stand-alone wetlands and riparian corridor protection laws, such as the sample law approved by the Water Resources Council. With funding from the County and the Park Foundation, the WRC partnered with CLWN and a local consultant to identify and map all wetlands in the County using remote sensing data. A pilot effort focused on the Town of Dryden (Tompkins County's largest town) and found 5,641 acres of wetlands, which is 2,406 acres more, and with different boundaries than, wetlands identified by the NWI. The wetlands for the remainder of the County were mapped in 2016; municipalities in the County can use the wetlands maps to support the adoption and implementation of a wetlands protection law and planning and development will have better reference information.

Harmful Algal Blooms

In early 2018, the Governor's Office announced the creation of an expert panel and local steering committees to develop action plans to address HABS. The \$65 million initiative to combat HABS in Upstate New York

¹⁰ <http://www.dec.ny.gov/regs/4612.html>

includes Cayuga and Owasco Lakes. The State's Water Quality Rapid Response Team, national experts, and local stakeholders developed action plans for each waterbody to identify contributing factors fueling HABs and action plans to reduce the sources of pollution that spark algal blooms.

The Harmful Algal Bloom Action Plan - Cayuga Lake listed 17 Priority 1 Projects considered necessary to manage water quality and reduce HABs in Cayuga Lake. Two of these actions are identified as actions to undertake within the next three years and are summarized here. Many of these recommendations have already been identified as important actions to address other water quality issues.

1. Implement runoff reduction BMPs on agricultural and non-agricultural lands. These BMPs would be implemented by local SWCDs and other partners and include:
 - Cover crops on cropland that is prone to erosion and nutrient runoff when left unprotected;
 - Field erosion control systems;
 - Stabilization of drainage swales through establishment of vegetation;
 - Installation of check dams;
 - Stream bank stabilization using both hard armoring and natural stream design methods;
 - Installation of control facilities at the outlets of drainage swales;
 - Implement runoff reduction BMPs for farmsteads;
 - Conduct a pilot test on drainage tile BMPs;
 - Establish vegetated riparian buffers; and
 - Rehabilitate degraded vegetated buffers to improve riparian habitat function.
2. Implement roadside ditch and culvert improvement projects on currently failing ditch systems. Best management practices could include:
 - Timing of cleanout;
 - Properly sizing culverts and channels;
 - Use of erosion control practices; and
 - Installation of check dams or other facilities.

The Harmful Algal Bloom Action Plan - Owasco Lake listed 15 Priority 1 Projects. Seven of these actions are identified as actions to undertake within the next three years:

1. Maximize coordination and equitable allocation of resources through the Owasco Lake Watershed Management Council.
2. Increase SWCD staffing through appropriations to focus capacity to plan and implement projects.
3. Implement various erosion and sediment control and land conservation projects. These would be implemented by local SWCDs, municipalities, and non-profit organizations, and include:
 - a. Implementation of cover crops on cropland that is prone to erosion and nutrient runoff when left unprotected.
 - i. Utilize a cost-share program where the State provides financial and technical support to farmers to plant cover crops on agricultural fields.
 - b. Implementation of a cost-share program where the State provides financial and technical support to farmers for manure storage, transfer, and application.
 - c. Establishment of vegetated riparian buffers.
 - d. Rehabilitation of degraded vegetated buffers.
4. Establish a program to work with crop farmers that accept manure from Concentrated Animal Feeding Operations (CAFOs) to properly store and apply the material.
5. Implement AEM Tier 3A Resource Management Plans and AEM Tier 3A Nutrient Management Plans for non-CAFO beef/dairy operations.
6. Implement a livestock exclusion program, including:
 - a. Installation of fencing on stable portions of the stream banks.
 - b. Installation of livestock watering stations outside the limits of riparian areas.

- c. Installation of stable stream crossings.
 - d. Establish vegetated riparian buffers within the fenced exclusion limits.
 - e. Rehabilitate degraded vegetated buffers within the fenced exclusion limits.
7. Perform a pilot study to evaluate the phosphorus removal efficiency of stormwater management techniques.

Cayuga Lake Total Maximum Daily Load

Water quality in most of Cayuga Lake meets water quality standards for the protection of recreational uses. The one exception to this assessment is in the shallow south end of the lake where sediment and nutrient loads from various sources result in weed and algal growth and high turbidity that impair summer recreational uses. Because of this, the “shelf” on the southern end is listed as impaired on the DEC 303d list, and therefore a TMDL is required.¹¹

As of this writing,¹² the DEC is in the midst of preparing the TMDL for Cayuga Lake. A draft report is expected to be released for public review and comment in the near future. The WRC may want to play a role in implementing the recommendations in the TMDL, and this WQS may need to be updated at that time.

V. GOALS AND ACTION ITEMS

The action items of the Water Quality Strategy are in accordance with the six goals established in prior WQS documents:

- Goal A: Protect and enhance surface water quality.
- Goal B: Protect and enhance groundwater quality and quantity.
- Goal C: Protect and restore riparian corridors.
- Goal D: Protect and restore wetlands.
- Goal E: Participate in the creation and implementation of relevant watershed plans and initiatives that impact Tompkins County.
- Goal F: Educate and inform municipal officials, the public, professionals, agency staff, and the media about water quality concerns and protective policies and practices.

The action items have been selected and prioritized in consideration of the purview and resources of the WRC as well as their timeliness and Council member interests and abilities.

Update on Priority Action Items from the 2016-2018 WQS

Participate in the update of the NYS Section 303(d) List of Impaired/TMDL Waters.

The WRC’s Monitoring Partnership continues to work closely with the DEC, meeting every one to three months with DEC officials, to talk about the Impaired Waterbodies list and the proposed TMDL for Cayuga Lake.

Keep municipal and county officials informed of existing federal/state/local wetland regulations and changes to those regulations.

No relevant regulations have been proposed or revised.

Provide comment on the High Hazard Pipeline Inventory.

The inventory has been completed.

¹¹ From *Cayuga Lake Total Maximum Daily Load (TMDL) FAQ*. May 2017. DEC.

¹² October 16, 2018

Level of Effort Required: Moderate

Likely Schedule: 2019 and beyond

General On-Going/Administrative WRC Tasks

In addition to the action items identified above, the WRC undertakes other actions, some unrelated to water quality and others of an on-going or administrative nature. The latter are partially listed below.

- Update the Tompkins County WQS every three years. For next update, focus on mission/purpose, prioritized water quality concerns, and WRC role in implementing the strategy.
- Report annually (in April) to the relevant committee of the Tompkins County Legislature about the accomplishments of the WRC.
- Provide a venue for water organizations to communicate with each other and the public.
- Take a role in tracking and participating in DEC regulatory, permitting, and enforcement actions.
- Participate in opportunities to comment on projects: for example, dredging, gas drilling operations, or IAWWTF options.
- Seek funding for WQS actions.
- Identify emerging contaminants and issues and identify appropriate action (research, education, etc.).
- Refresh WRC website.
- Update, as needed, brochures on paddling, watercraft regulations, watershed agencies, and arsenic in wells.

Action Items to be Considered by Others

In preparing this Water Quality Strategy, the WRC identified a number of actions that were more appropriately addressed by other organizations:

- Promote the use of BMPs and buffers on agricultural lands to control erosion and runoff from farm fields and farmsteads. [SWCD]
- Promote the voluntary U.S. Department of Agriculture Conservation Reserve Enhancement Program for livestock exclusion from streams. [Natural Resources Conservation Service]
- Promote participation of agricultural operations in voluntary environmental risk evaluation (AEM process) and voluntary state and federal cost-share programs to protect and enhance water quality. [SWCD]
- Implement policies to reduce the use of road salt, or other chemicals that may impact water quality, by road maintenance organizations. [municipalities]
- Promote intermunicipal cooperation for compliance with EPA/DEC Phase II Stormwater Regulations. Foster public awareness, participation, and education on this issue. [SCTC]
- Prepare annual report on stormwater permit implementation and compliance. [SCTC]
- Promote intermunicipal cooperation and establish a schedule for the use of the County Street Sweeper/Vacuum truck. [County Highway Division]
- Promote monitoring efforts in the Owasco Lake watershed within Tompkins County. [Owasco Lake Watershed Inspector]
- Work with citizen monitoring groups, CSI, and others to collate monitoring data for the Owasco Lake watershed in Tompkins County and report information to DEC on a PWL worksheet to assist DEC in updating the PWL. [Owasco Lake Watershed Inspector]
- Support coordinated stormwater management practices. [SCTC]
- Determine status of stream biota health. [several agencies]
- Promote continued operation of existing stream gages on Cayuga Lake tributaries and assist in identifying funding sources for that purpose. [USGS]
- Initiate new aquifer studies under Tompkins County's Aquifer Study Capital Program. / Complete aquifer studies. [USGS]

- Map location of all on-site wastewater treatment systems and individual water supplies using GIS. [TCDH]
- Provide oversight of operation of existing individual septic tanks. [TCDH]
- Update the Cayuga Lake Watershed Restoration and Protection Plan. [IO]
- Report to WRC on the Tompkins County Legislature's and constituent municipalities' work to support the Cayuga Lake Intermunicipal Organization agreement and implementation of the Restoration and Protection Plan. [IO]
- Report to WRC on the Tompkins County Legislature's, constituent municipalities', and the Upper Susquehanna Coalition's (USC) work in support of the Susquehanna Tributary Strategy. [USC]
- Report to WRC on the Tompkins County Legislature's and constituent municipalities' work in support of the Owasco Lake Watershed Management Plan. [Owasco Lake Watershed Inspector]
- Educate agricultural operations about the voluntary state environmental risk evaluation (AEM process) and cost-share programs to implement practices to protect and enhance water quality. [SWCD]
- Provide education to contractors, developers, municipal highway employees, municipal officials, and code enforcement officers on erosion control, stormwater regulations, and protection. [SCTC]
- Promote the Stream Corridor Protection Program. [TCDPS]
- Educate the public, municipal officials, and others on issues related to invasive aquatic species. [CCETC]
- Update floodplain maps. [FEMA/DEC]
- Undertake channel maintenance in the City of Ithaca. [City of Ithaca]
- Promote the Cayuga Lake Intermunicipal Organization. [IO]
- Inventory roadside erosion potential. [SCTC]
- Promote stream corridor protection efforts, including the stream buffer planting guide, riparian protection agreements with landowner, and model stream buffer ordinances. [TCDPS]

Action Items Suggested, but not Included

In preparing the WQS, a number of potential action items were identified. Some are action items from the most recent WQS, some were identified during brainstorming sessions, and others were action items suggested in other water resources plans. These are listed here for reference.

- Monitor existing potential sources of water pollutants, e.g. the old coal ash landfill associated with the power plant in Lansing, wind-borne coal ash from the same source, salt mining.
- Promote stenciling of all storm drains.
- Provide public education on discharge of wastewater from boats.
- Determine the carrying capacity of Cayuga Lake for boating activity.
- Provide buoys within 500 feet of water intakes in Cayuga Lake.
- In concert with landowners and lessees, support regulations and programs that encourage riparian corridor protection and restoration.
- Promote non-polluting recreational uses of Cayuga Lake, such as non-motorized boats and photography.
- Promote training opportunities for local municipal staff (Code Enforcement Officers) for enforcement of existing individual water supply regulations.
- Conduct Water Week activities.
- Complete and update annually a brochure of local water/watershed agencies and organizations for distribution at public events, such as Water Week.
- Raise awareness of watershed issues with youth groups and schools.
- Educate public on the public/private responsibility for water quality.
- Identify practices of pharmacies that accept unused drugs for disposal.
- Expand WRC membership to include watershed representatives from each municipality.
- Develop incentives for stream buffer protection.
- Evaluate existing educational and planning materials for use in promoting the protection of wetlands.

- Investigate possibilities for web-based dissemination of information on wetlands.
- Educate landowners on erosion control.
- Educate residents about how everyday activities (lawn care, use and disposal of pharmaceuticals, etc.) impact water quality.
- Keep municipal and county officials informed of existing federal/state/local wetland regulations and changes to those regulations as deemed appropriate.
- Collaborate with other organizations (e.g., CLWN, IO, Discover Cayuga/Floating Classroom, TCDH) on educational activities that further WQS goals./Collaborate on educational activities with other watershed organizations such as the Floating Classroom, the SWCD, the SCTC, and the Hydrilla Task Force.
- Provide public education on the byproducts of Stage II disinfectants used by water purveyors.
- Provide public education on aquatic plants.
- Identify and educate the public on new regulations affecting water purveyors.
- Establish a Lake-Friendly Farm program to recognize individual efforts to reduce water quality impacts of agricultural operations.
- Provide public education on pollution by microbeads and microplastics.
- Track SPDES Permit violations at the power plant in Lansing.
- Provide assistance to municipalities that wish to protect groundwater sources through local programs.
- Promote intermunicipal cooperation for the protection of riparian corridors.
- Develop long-term strategy to assist the County and municipalities with easement stewardship responsibilities.
- Acquire and collate wetland delineation data from major projects and municipal reviews.
- Develop a framework that uses municipal and community goals (e.g., protection of groundwater and surface water quality, flood storage, and habitat conservation) and activities (e.g., land development projects and community-based stewardship) to promote the protection of functions provided by wetlands. / Collaborate with municipalities and local organizations to [align/integrate/etc.] community goals and activities to promote the protection of wetlands and the functions they provide. This framework can incorporate existing municipal and community goals and activities, such as protection of groundwater and surface water quality, flood storage, habitat conservation, land development projects, and community-based stewardship.
- Identify the status of local wetland regulations and provide assistance to municipalities, on request.
- Delineate wetlands in the County.
- Provide information for the next anticipated 2016 US EPA Clean Watersheds Needs Survey (2015).
- Establish a coordinated response team for managing newly identified invasive aquatic species infestations.
- Work with municipalities/IO/agencies to secure funding for erosion control.
- Work to secure Finger Lakes-Lake Ontario Watershed Protection Alliance funding for erosion control.
- Create a surface water data-sharing structure.
- Encourage development of a stream sediment-monitoring program.
- Promote monitoring efforts in the Upper Susquehanna watershed within Tompkins County.
- Characterize nutrient loading in small watersheds.
- Investigate types and sources of groundwater data currently being collected.
- Evaluate the impact of pollution from pesticides.
- Evaluate bio-solids spreading potential for water contamination and identify appropriate actions.
- Identify circulation patterns in Cayuga Lake.
- Develop a database of well logs.

ACRONYMS

AEM	Agricultural Environmental Management
BMP	Best Management Practices
CAFO	Concentrated Animal Feeding Operations
CLWN	Cayuga Lake Watershed Network
CSI	Community Science Institute
DEC	New York State Department of Environmental Conservation
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GWUDI	Groundwater Under the Direct Influence of Surface Water
HABs	Harmful Algal Blooms
IAWWTF	Ithaca Area Wastewater Treatment Facility
IO	Cayuga Lake Watershed Intermunicipal Organization
NWI	National Wetlands Inventory
PWL	Priority Waterbodies List
RPP	Cayuga Lake Restoration and Protection Plan (prepared by the CLWN)
SPDES	State Pollutant Discharge Elimination System
SCTC	Stormwater Coalition of Tompkins County
SWCD	Soil and Water Conservation District
TCDH	Tompkins County Department of Health
TCDPS	Tompkins County Department Planning and Sustainability
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers
USC	Upper Susquehanna Coalition
USGS	United States Geological Survey
UWA	Unified Watersheds Assessment
WIPWL	Waterbody Inventory/Priority Waterbodies List
WQS	Water Quality Strategy
WRAPs	Watershed Restoration and Protection Strategies
WRC	Tompkins County Water Resources Council