

**TOMPKINS COUNTY  
WATER QUALITY STRATEGY  
2009 Update**



**Adopted by the  
Tompkins County Water Resources Council  
April 20, 2009**

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## I. 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 -- both surface water and groundwater -- are

- a drinking water supply;
- an economic resource for tourism and recreation;
- a necessary component for supporting agriculture, water-based businesses, and other businesses;
- 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) in the Owasco Inlet, and over 96 square miles (61,459 acres) flow to the Susquehanna River basin.

New York State (NYS) has agreements with the United States 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, whose initial task was to draft a Water Quality Strategy Plan. The Board of Representatives adopted this first plan on June 16, 1992.<sup>1</sup> This initial concept has evolved to now include comprehensive water-resources management planning. The document is now referred to as the Tompkins County Water Quality Strategy (WQS). The WQS helps define local pollution and degradation concerns. As such, the WQS informs local governments and agencies as they work to correct current and prevent potential problems.

### *Water Quality Strategy (WQS)*

This WQS serves to guide policy and activities related to water issues in the County. The purpose of the WQS is to analyze the status of water resources, prioritize issues and concerns, and lay out how to address the prioritized water-quality issues and concerns throughout Tompkins County. The WQS does this by setting goals and defining objectives. The WQS also works 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 the 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 work 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. It should be used to guide the allocation of financial resources and determine future work related to water resources in the County.

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

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<sup>1</sup> Resolution No. 192 of 1992.

## *Participating Partners*

Tompkins County Water Resources Council (WRC). The Tompkins County Board of Representatives created the WRC and related Technical Committee in 1997<sup>2</sup> to advise the County 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 Representatives<sup>3</sup> 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.<sup>4</sup>

Cayuga Lake Watershed Intermunicipal Organization (IO). In 1999, under a NYS Department of State grant, the Cayuga Lake Watershed Intermunicipal Organization was formed to develop a comprehensive characterization of the Cayuga Lake Watershed and an accompanying Watershed Management Plan (the first version, entitled "Watershed Restoration and Protection Plan (RPP)", was issued in July 2001). Tompkins County is a founding member of this organization; the County, by area, accounts for about 40% of the Cayuga Lake watershed. This places the County's WQS in a regional context, and opens the way for broader coordinated protection of our single most notable water resource, Cayuga Lake.

Upper Susquehanna Coalition (USC). The Upper Susquehanna Coalition (USC), established in 1992, is a network of county natural resource professionals that develops strategies, partnerships, programs, and projects to protect the headwaters of the Susquehanna River and Chesapeake Bay watersheds. USC members include Soil and Water Conservation Districts from 16 counties in New York and Conservation Districts from three counties in Pennsylvania. Each member has signed a Memorandum of Understanding that reflects endorsement of the development of non-point source projects on a watershed basis. Tompkins County, which represents 2% of the Upper Susquehanna River Basin, became a member of USC in 1999.

Stormwater Coalition of Tompkins County (SCTC). The Stormwater Coalition of Tompkins County was established in October 2003 and is comprised of representatives from Tompkins County; City of Ithaca; Towns of Caroline, Dryden, Ithaca, Lansing, Newfield and Ulysses; and Villages of Cayuga Heights and Lansing. The New York State Department of Environmental Conservation (NYSDEC), New York State Department of Transportation, Tompkins County Soil and Water Conservation District (TCSWCD), Tompkins County Cooperative Extension (CCE), Cornell University, Ithaca City School District, BOCES, T.G. Miller Engineers, Cayuga Lake Watershed Intermunicipal Organization (IO), and Cayuga Lake Watershed Network (Network) also participate in and contribute to the group.

The Stormwater Coalition of Tompkins County was formed to meet the needs of municipalities that must comply with the U.S. EPA Phase II stormwater regulations. These municipalities are owners of municipal separate storm sewer systems (MS4s) and are required to meet the "minimum measures" of the law. A second component of these regulations is a statewide requirement for all land disturbance activities (such as construction) that exceed one-acre in size to apply for a stormwater permit. Some local laws may have stricter requirements.

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<sup>2</sup> Resolution No. 181 of 1997.

<sup>3</sup> Resolutions No. 57 of 2000 and No. 211 of 2000.

<sup>4</sup> The Tompkins County Board of Representatives, prior to April 2003.

## 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 also play a critical role in maintaining water quality. Maps of watersheds, surficial aquifers, wetlands, and municipal and hazardous waste sites in Tompkins County are provided in the Appendices.

Surface 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
- Stormwater transport
- Flood control.

### *Importance of Surface Water*

Surface water is the drinking water source for approximately 58,000 Tompkins County residents or about 55% of the population of Tompkins County. There are three water treatment facilities in Tompkins County using surface water as their source:

- Bolton Point which is run by the Southern Cayuga Lake Intermunicipal Water Commission using Cayuga Lake
- Cornell University Water Filtration Plant using Fall Creek
- City of Ithaca Water Treatment Plant using Six Mile Creek.

In addition, several drinking-water systems rely on groundwater (springs, wells, or infiltration galleries) that are considered “groundwater under the direct influence of surface water” (GUDI). This means that the microscopic quality of this water is similar to that of surface water and in order to make it safe for drinking it must be treated like surface water to remove any harmful organisms. True groundwater may only need disinfection to meet water quality regulations, but surface water (and GUDI sources) must also be filtered to achieve the clarity and reduction of microorganism standards.

Surface water is vulnerable to 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. Sources of surface-water contamination include fuel and other chemical spills, failing on-site wastewater treatment systems, improper application of fertilizer and pesticides (both agricultural and residential), improper manure-spreading practices, treated wastewater discharges, erosion from construction sites, runoff from concentrated livestock operations, erosion from agricultural practices, improper road bank and ditch maintenance, road and airplane deicing materials, untreated or poorly treated urban storm-water runoff, illegal dumping (via public access to streams), riparian development, runoff from parking lots and other impervious surfaces, and air pollution (e.g., open burning can produce dioxins that travel in air, attach to particles, and reach surface water via rain). Actions to minimize these problems include:

- maintain natural wetlands with their beneficial services for purifying water,
- utilize best management practices for nutrient management,
- implement best management practices to reduce both agricultural and urban runoff and erosion,
- reduce pesticide use by practicing integrated pest management (IPM),

- 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
- reduce nutrient discharges from wastewater treatment plants.

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 and both are enforced by the Environmental Protection Agency. New York State has the Public Health Law and Environmental Conservation Law enforced by the Health Department and the Department of Environmental Conservation. 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 that 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 (WRR) through the Public Health Law to protect their sources of water (only the City of Ithaca and Cornell University did so, decades ago) – but enforcement of these regulations is nearly nonexistent. Recently (2008), however, the City of Auburn and Town of Owasco in Cayuga County have begun enforcing the Owasco Lake WRR, which affects the Village of Groton, a large part of the Town of Groton, and smaller parts of the Towns of Lansing and Dryden.

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 algae. Toxic substances from motor vehicles and improper 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 the waterway and interfere with the habitat of fish and plant life.

### *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 about 45% of the residents of Tompkins County. The Tompkins County Department of Health maintains a list of public groundwater systems in the county. The list includes restaurants, mobile home parks, schools, campgrounds, apartment buildings, and village water systems. In addition, thousands of residents receive their drinking water from individual private wells.

Groundwater also interacts with surface water to form one system. At these interfaces, each can contaminate the other, requiring careful and prudent protection of both. Groundwater typically contributes more than half of the total annual flow to local streams and creeks.

Aquifers are replenished by the percolation, or infiltration, of surface water through the soils into the aquifers below. The creation of impervious surfaces (such as pavement from roads or parking lots, roofs, buildings, etc.) can inhibit this replenishment by reducing the land area that contributes to an aquifer. These contributing areas are called “recharge areas” and their conversion to impervious surfaces threatens aquifers by inhibiting the percolation of precipitation and surface water through the soil. In addition, any contaminant contained in or near an aquifer and/or its recharge area may also potentially contaminate the aquifer.

Compared to surface-water supplies, groundwater supplies are relatively well protected 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 contaminant sources but treatment of extracted water prior to distribution and human consumption. Sources of groundwater contamination include fuel and

other chemical spills; on-site wastewater treatment systems; fertilizer, manure, and pesticide application; unlined landfills; illegal informal dumps; inappropriate siting of activities; dumps; 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,
- utilizing best management practices 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 (IPM),
- properly designing and maintaining landfills,
- remediating spills and abandoned dumpsites,
- properly siting and maintaining on-site wastewater treatment systems, and
- maintaining petroleum storage facilities.

Unlike surface water, which flushes contaminants downstream relatively quickly, groundwater in aquifers migrates 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 degraded, an aquifer can become unusable, and oftentimes remediation is not technologically or economically feasible, especially for small or rural communities. Moreover, because of groundwater and surface water interactions, contamination in an aquifer may eventually contaminate surface water as well.

Because of the paucity of information about groundwater resources in the County, efforts to collect additional data and information about Tompkins County's groundwater resources should be made.

#### *Importance of Riparian Corridors*

Riparian corridors are the lands bordering streams and represent a transition zone from aquatic to terrestrial ecosystems. Adequately vegetated riparian corridors stabilize stream banks and prevent erosion, trap sediment and nutrients, improve floodwater retention and groundwater recharge, and shade stream channels in summer. The Cayuga Lake Watershed Restoration and Protection Plan (RPP) defines the riparian corridor to be 150 feet from the centerline of each major stream. The RPP reports significant development within the riparian corridors along most tributaries in the Cayuga Lake watershed. The Tompkins County Comprehensive Plan calls for establishment of riparian buffers, and suggests a minimum of 200 feet.

#### *Importance of Wetlands<sup>5</sup>*

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.

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, and fishing, botanical tourism, all of which provide direct economic benefits to local communities.

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<sup>5</sup> According to 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."

Tompkins County contains approximately 5,632 acres of NYSDEC-regulated wetlands (wetlands of at least 12.4 acres unless they have unusual importance), and 19,803 acres of federally identified wetlands (including NYSDEC-regulated wetlands). While, historically, the federal government, through the Army Corps of Engineers, played an important role in protecting wetlands, a 2001 U.S. Supreme Court decision determined that most isolated wetlands are no longer subject to such regulation. The federal government has not issued formal guidelines as to what constitutes an isolated wetland but Federal law defines wetlands as areas “that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions.” In general practice, the U.S. Army Corps of Engineers, the federal agency that administers the Clean Water Act, considers isolated wetlands to be those that have no surface water connection to navigable waters or their tributaries. The change in acreage of wetlands under federal jurisdiction in Tompkins County is unknown.

### **III. PROCESS FOR ASSESSING WATER RESOURCES**

The priorities to be developed by the WRC in our WQS will be substantially based on the NYS Department of Environmental Conservation (DEC) Priority Waterbodies List (PWL), the Cayuga Lake Watershed RPP, the Susquehanna River WRAPS, the Owasco Lake Watershed Report and Management Plan (See Surface Waters Table in Appendices for a summary of these classifications in Tompkins County.) Following is a discussion of each process.

#### *New York State Department of Environmental Conservation (DEC) Priority Waterbodies List (PWL)*

DEC develops and updates the PWL using a combination of stakeholder input and DEC monitoring results. The PWL includes a list of water bodies that do not meet their designated uses (see description of designated uses below) and a data sheet that describes the conditions, causes and sources of water quality degradation for each of the respective listings.

The PWL is updated on a statewide, five-year rotating schedule, and is used by DEC and other agencies as a primary resource for water resources management and funding. The most recent Oswego River/Finger Lakes Basin report was issued as a Final Draft Report in February 2008. In Tompkins County, the southern end of Cayuga Lake is listed as impaired for bathing and recreation due to algal/weed growth, nutrients, pathogens, and silt/sediment.

Water-quality designations are developed by DEC and used in the PWL. All waters in New York State are assigned a letter classification that denotes their best uses. Letter classes such as A, B, C, and D are assigned to fresh surface waters, and SA, SB, SC, I, and SD to saline (marine) surface waters. Best uses include: source of drinking water, swimming, boating, fishing, and shellfishing. The letter classifications and their best uses are described in regulation 6 NYCRR Part 701. The classification of individual bodies of surface water is in regulation 6 NYCRR Chapter X (Parts 800 - 941), and on the *Environmental Resource Mapper*.<sup>6</sup>

The most pristine waters are assigned a classification of N; while the least protected waters are assigned a classification of D. Additional classifications of “T” or “TS” can be added if a water body has sufficient amounts of dissolved oxygen to support trout and trout spawning. Water bodies that are designated as C(T) or higher [i.e., C(TS), B, or A] are collectively referred to as “protected streams,” and are subject to additional regulations.

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<sup>6</sup> <http://www.dec.ny.gov/animals/38801.html>

### Stream Classifications

Class	Best Use
N	Enjoyment of water in its natural condition
AA	Drinking (treatment may be required)
A	Drinking (treatment may be required)
B	Primary Contact Recreation (Bathing)
C (T)	Fish Propagation and Survival (trout)
C	Fish Propagation and Survival
D	Fishing (Will not support fish propagation)
Source: New York State Department of Environmental Conservation	

#### *Intermunicipal Organization's Restoration and Protection Plan*

The characterization of Cayuga Lake included compilation and synthesis of existing data, including that from universities and government agencies. New data were also collected through studies commissioned by the Intermunicipal Organization (IO). The Technical Advisory Committee (TAC) of the IO was responsible for characterization of the ground and surface water quality; issues and potential and existing sources of ground and surface water contamination in the watershed were identified and prioritized.

Concurrently, representatives of IO member municipalities developed lists of priority concerns, including issues of economic development and sustainability. Thereafter, through public and municipal discussion and refinement, a combined list was created.

The TAC synthesized these data to create a list of priority issues for the Cayuga Lake Watershed. Some of the priorities include additional monitoring to fill knowledge gaps. Actions to address the priority water-quality issues were developed. The TAC and other committees of the IO developed measures (targets) and goals for the actions. Additional public comment on the priority issues and proposed actions, measures, and goals was sought through a series of four public meetings and watershed-wide publicity seeking comment by mail and e-mail.

Within Tompkins County, the following water-resource issues are documented and highlighted in the Cayuga Lake Watershed Characterization and the RPP:

- Sediment (streambank and roadbank)
- Phosphorus (derived from the Ithaca Area Waste Water Treatment Plant, Fall Creek, Cayuga Inlet, the Cayuga Heights Waste Water Treatment Plant, Lake Source Cooling, and Salmon Creek)
- Heavy metals (limited data and monitoring for this)
- Pathogens (limited data and monitoring; mostly from wastewater treatment plants)
- Non-point source pollution (some septic systems, urban runoff)
- Herbicides
- Wetland and riparian corridor protection and restoration

Copies of the Characterization and RPP are available at the Tompkins County Planning Department and local municipal libraries. They can also be viewed on the IO's website.<sup>7</sup>

#### *Upper Susquehanna Coalition's (USC) Watershed Restoration and Protection Strategies*

In 1998, EPA mandated that states identify watersheds in need of restoration and develop a schedule for addressing identified priorities. As part of this effort, DEC initiated the Unified Watersheds Assessment (UWA) process and categorized all major watersheds in NY 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

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<sup>7</sup> <http://www.cayugawatershed.org>

were chosen as a pilot for the UWA and subsequent Watershed Restoration and Protection Strategies (WRAPS) processes.

With the goal of developing WRAPS for all appropriate organizations and agencies to address prioritized water resources needs and concerns within the Susquehanna and Chemung River basins, DEC and the USDA Natural Resources Conservation Service worked cooperatively with representatives from federal, state, and local government; nonprofits; the general public; and other interested stakeholders. Together they developed a WRAPS document using evaluation data; the scientific expertise of staff members; a Geographic Information Systems (GIS) inventory of water quality, natural resources, land use, and other data; public input to identify watershed priorities and needs; compiled information about existing watershed planning efforts; local stakeholder involvement; and workshops to analyze collected information and develop and review remediation strategies.

#### *Owasco Lake Watershed Management Plan*

The development of the Owasco Lake Watershed Management Plan (finalized in July 2001) is the result of collaboration, cooperation, and work of agency staff, municipal officials, and the public throughout the watershed. Owasco Lake and its tributaries are an important resource to the communities within the watershed. 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.

The “State of the Owasco Lake Watershed” report, produced by the Owasco Lake Management Plan Steering Committee and the Cayuga County Water Quality Management Agency, with support from NYS DEC and the Owasco Watershed Lake Association, was the first step in the development of the Owasco Lake Watershed Management Plan (Management Plan). Released in January 2000, the State of the Lake Report is used as a companion document to the Management Plan. The State of the Lake Watershed Report contains information on watershed characteristics, land use, economy, cultural resources, laws, ordinances, regulations, management programs, municipalities, and issues of concern. The information contained in it was utilized in the development of the Management Plan that reflects community priorities and concerns.

The Watershed Management Plan contains suggested actions for the issues of concern identified in the State of the Watershed Report. It documents on-going lake management efforts, serves as a guide for future development and environmental initiatives in the watershed, and lists sources of revenue to fund projects.

To view the State of Owasco Lake Watershed Report and Management Plan, visit the Cayuga County Water Quality Management Agency’s website.<sup>8</sup>

## **IV. TOMPKINS COUNTY WATER RESOURCE PRIORITIES**

Although the resolution creating the WRC 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 water body to the people of Tompkins County.

### *Surface Water*

Cayuga Lake is considered the number one priority overall because of its size and many uses and because most of Tompkins County lies within its watershed. However, since Cayuga Lake is the ultimate receiver of the majority of Tompkins County’s surface water resources, immediate attention needs to be given to its major

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<sup>8</sup> [www.co.cayuga.ny.us/wqma](http://www.co.cayuga.ny.us/wqma)

tributaries. It is a drinking water source to a large percentage of residents of the county and serves many of the other residents in various capacities. Protecting its water quality requires protecting the contributing surface water and groundwater sources, riparian corridors, and wetlands within the watershed.

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 water body. 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 water bodies 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 our neighboring counties and the watersheds overall, these have been ranked separately. These water bodies 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 water bodies have unique challenges and affect the larger water bodies to which they contribute. Our challenge is to address them in the appropriate manner.

Other data related to the watershed stem from a variety of monitoring activities and projects. These will be identified and consolidated, especially those stemming from the Sixmile Creek and Fall Creek monitoring groups.

### *Groundwater*

As mentioned above, there is a paucity of information about groundwater resources in Tompkins County. The DEC's PWL does not include groundwater; the IO's RPP barely touches on groundwater. To help address these gaps, the United States Geological Survey (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 Tompkins 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 USGS and entered into the National Water Information System database. In 2002, the Tompkins County Planning Department proposed a countywide aquifer study to learn more about aquifers in Tompkins County by conducting investigations of 17 aquifer reaches. To date, three aquifer studies have been completed (Upper Sixmile Creek/West Branch Owego Creek, Virgil Creek Valley, and Willseyville Creek Valley), and an additional one is underway (Upper Buttermilk Creek/Danby Creek).

Since 2000, DEC has required 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 (included in the Appendices), the Tompkins County Potentially Contaminated Sites map (available for review in the office of the Tompkins County Planning Department), and "An Evaluation of Risks Associated with Underground Storage Tanks in Tompkins County" initiated by the Tompkins County Environmental Management Council in cooperation with the Tompkins County Department of Health 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) in 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 New York State DEC Rules and Regulations<sup>9</sup> 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 NYSDEC-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, recent changes to federal wetlands regulations now exempt isolated wetlands from federal protection. The federal government has yet to provide a formal rule as to what constitutes an isolated wetland, and the reduction in acreage of federally regulated wetlands in Tompkins County is unknown. 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 Water Resources Council's Wetlands Committee 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. The Committee has suggested that wetlands and riparian corridors be protected in Stormwater Management ordinances and is also drafting a model ordinance for municipalities without Stormwater Management ordinances.

## **V. WATER QUALITY GOALS**

The objectives and activities of the Water Quality Strategy are organized under six goals:

- 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, and evaluate the desirability and feasibility of creating new 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.

Activities that could not be assigned due to a lack of available resources are also identified.

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<sup>9</sup> <http://www.dec.ny.gov/regs/4612.html>

## **Goal A: Protect and enhance surface water quality.**

### *Objective 1: Control/reduce sediment.*

- Work with municipalities/IO/agencies to secure funding for erosion control. (Suggested lead: SWCD, SCTC)
- Promote the use of Best Management Practices and buffers on agricultural lands to control erosion and runoff from farm fields and farmsteads through the use of AEM evaluation worksheets and subsequent implementation. (Suggested lead: SWCD, NRCS)

### *Objective 2: Stormwater Compliance/Efforts*

- Promote intermunicipal cooperation for compliance with EPA/DEC Phase II Stormwater Regulations. Foster public awareness, participation, and education on this issue. (Suggested lead: SCTC, SWCD)
- Provide education to landowners on erosion control. See Goal F.
- Provide workshops for contractors, developers, municipal highway employees, municipal officials, and code enforcement officers. See Goal F.
- Report on stormwater permit implementation and compliance, and associated programs to reduce buildup on streets and in storm drains that cause flooding and increased inputs to waterbodies. (Suggested lead: SCTC, municipalities)
- Promote stenciling of all storm drains. (Suggested lead: SCTC, Municipalities)
- Promote intermunicipal cooperation and establish a schedule for the use of the County Street Sweeper/Vacuum truck. (Suggested lead: TC Highway Department, SCTC, SWCD)
- Explore the possibility of hiring specific stormwater staff for the county to assist all municipalities and the county implement the stormwater program to comply with Phase 2 regulations. (Suggested lead: SCTC)

### *Objective 3: Undertake monitoring efforts for surface water.*

- Create a surface water data-sharing structure. (Suggested lead: WRC Monitoring Committee, Citizen Monitoring Groups, Monitoring Partnership, CSI)
- Collate and analyze surface water quality monitoring efforts. (Suggested lead: WRC Monitoring Committee)
- Work to identify gaps in surface water quality data and knowledge. (Suggested lead: WRC Monitoring Committee, Partnership)
- Develop a stream sediment-monitoring program. (Suggested lead: WRC Monitoring Committee, Partnership, SCTC)
- Implement the Southern Cayuga Lake Monitoring Plan. (Suggested lead: WRC Monitoring Committee, Partnership)
- Promote continued operation of existing stream gages on Cayuga Lake tributaries and assist in identifying funding sources for that purpose. (Suggested lead: WRC Monitoring Committee, USGS)
- Promote monitoring efforts in the Owasco Lake and Upper Susquehanna Watersheds within Tompkins County. (Suggested lead: WRC Monitoring Committee, SWCD)
- Review and comment on Lake Source Cooling Monitoring Plan. (Suggested lead: WRC Monitoring Committee, Partnership).

### *Objective 4: Control/reduce other non-point source pollutants.*

- Review existing data gaps and investigate phosphorous contributions to Cayuga Lake. (Suggested lead: WRC Monitoring Committee).
- Monitor enforcement of local watercraft regulations (e.g., noise, speed) and undertake methods to encourage enforcement of these regulations. (Suggested lead: WRC Cayuga Lake Recreation Committee)
- Promote nutrient management planning for all agricultural operations through the use of the Cornell Cropware Program. (Suggested lead: SWCD, NYS Soil and Water Conservation Committee, NRCS)

- Promote the voluntary USDA Conservation Reserve Enhancement Program (CREP) for livestock exclusion from streams. (Suggested lead: SWCD, NRCS)
- Promote participation of agricultural operations in voluntary environmental risk evaluation (AEM process) and voluntary state and federal cost share programs to implement practices to protect and enhance water quality. (Suggested lead: SWCD, NRCS)

*Objective 5: Participate in updating of DEC Priority Waterbodies List for the Finger Lakes/Lake Ontario basin and the Upper Susquehanna basin.*

- Continue to be engaged in the DEC Priority Waterbodies List and recommend changes. (Suggested lead: WRC Monitoring Committee, SWCD, County Planning)
- Work with citizen monitoring groups, CSI and others to collate monitoring data for all monitored waterbodies within the county and report information to DEC on a Priority Waterbodies List (PWL) worksheet to assist DEC in updating the PWL. (Suggested lead: WRC Monitoring Committee)

## **Goal B: Protect and enhance groundwater quality and quantity.**

*Objective 1: Implement additional data collection and studies of groundwater resources in Tompkins County.*

- Initiate new aquifer studies under the County's Aquifer Study Capital Program. (Suggested lead: TCPD, TCHD)
- Pursue a program to map the location of all on-site wastewater treatment systems and individual water supplies using GIS. (Suggested lead: TCHD)

*Objective 2: Evaluate the level of protection of existing groundwater sources used for municipal and individual supplies.*

- Identify where the county could appropriately assist municipalities in this protection effort. (Suggested lead: WRC Aquifer Committee)
- Encourage local municipalities to require a well log for the issuance of a Certificate of Occupancy. (Suggested lead: none identified)
- Support development of workshops about source water protection for individual drinking water systems. See Goal F.

*Objective 3: Coordinate and keep abreast of ground-water monitoring efforts in the county.*

- Inventory types and sources of groundwater data currently being collected. (Suggested lead: WRC Aquifer Committee)

## **Goal C: Protect and restore riparian corridors.**

*Objective 1: Collect additional data on riparian corridors in Tompkins County.*

- Continue to collect data from municipalities working on mapping riparian corridors in Tompkins County. (Suggested lead: TCPD)
- Map riparian corridors including their associated wetlands areas. Describe the topography for each tributary. (Suggested lead: TCPD, WRC Wetlands Committee)

*Objective 2: Preserve healthy riparian corridors and restore degraded riparian corridors.*

- In concert with landowners and lessees, support regulations and programs that encourage riparian corridor protection and restoration. (Suggested lead: SWCD/TCPD)
- Structure a model stream buffer ordinance that can be utilized by local municipalities to protect or enhance local stream buffer protection efforts. (Suggested lead: TCPD)
- Develop and maintain Riparian Protection Agreements to protect projects funded by the Tompkins County Flood Hazard Mitigation Program. (Suggested lead: TCPD)
- Develop and implement sample vegetation plans for various creek restoration and flood hazard mitigation projects. (Suggested lead: TCPD/SWCD)

- Research and evaluate approaches to riparian corridor protection. (Suggested lead: TCPD)
- Establish priorities for the protection of riparian corridors, by corridor, and promote intermunicipal cooperation for the protection of important corridors. (Suggested lead: WRC)

*Objective 3: Provide for the long-term management of protected riparian corridors.*

- Create model riparian buffer conservation easement language that can be used to formally protect land along creek corridors. Model easement language to include a model baseline report and monitoring plan. (Suggested lead TCPD)
- Develop long-term strategy to assist County and local municipalities with easement stewardship responsibilities. (Suggested lead: TCPD/Tompkins County Conservation Partnership)

#### **Goal D: Protect and restore wetlands, and evaluate the desirability and feasibility of creating new wetlands.**

*Objective 1: Collect additional data on wetland resources in Tompkins County.*

- Acquire and collate wetland delineation data from major projects and municipal reviews. (Suggested lead: TCPD)
- Develop a framework for prioritizing wetlands for protection and investigate characterization/assessment procedures for prioritization. Initially focus on Cayuga Inlet. (Suggested lead: WRC Wetlands Committee)
- Identify and map all wetlands that are not currently regulated by DEC or the federal government and are therefore vulnerable to disturbance and destruction from development.<sup>10</sup> Initially start in the City of Ithaca. (Suggested lead: WRC Wetlands Committee)

*Objective 2: Preserve existing wetlands and restore valued wetland functions.*

- Propose and support local ordinances, regulations, and programs for protecting wetlands and wetland functions. Develop a model ordinance. (Suggested lead: WRC Wetlands Committee/SWCD/TCPD/NRCS)
- Keep municipal and county officials informed of existing federal/state/local wetland regulations and changes to those regulations as deemed appropriate. See Goal F.
- Develop a framework that will utilize municipal and community goals (such as protection of groundwater and surface water quality, flood storage, and habitat conservation) and activities (such as land development projects and community-based stewardship) to promote the protection of functions provided by wetlands. (Suggested lead: WRC Wetlands Committee)

*Objective 3: Contribute to efforts to educate the public and governmental officials about wetlands.*

- Evaluate existing wetland educational and planning materials<sup>11</sup> for use in promoting the protection of wetlands. (Suggested lead: WRC Wetlands Committee/TCPD)
- Investigate possibilities for web-based dissemination of information. (Suggested lead: WRC Wetlands Committee)

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<sup>10</sup> Wetlands committee members will, as time permits, perform field surveys and other research to improve existing wetland databases and identify vulnerable wetlands. Results of the research will be archived with the wetlands committee of the WRC and distributed to agencies, municipalities and other interested parties as deemed appropriate.

<sup>11</sup> Such materials may come from the Tompkins County Environmental Management Council, Tompkins County Planning Department, United States Environmental Protection Agency, New York State Department of Environmental Conservation, New York State Wetlands Forum and Association of State Wetlands Managers, and web-based resources.

**Goal E: Participate in the creation and implementation of relevant watershed plans and initiatives that impact Tompkins County.**

- Evaluate the status of and encourage completion of watershed assessments on all major sub-watersheds in the county as funding becomes available, and disseminate information to relevant municipalities and organizations (assessments have been completed on Sixmile Creek, Fall Creek, Salmon Creek & Cayuga Inlet). (Suggested lead: TCPD/SWCD)
- Report to WRC on the Tompkins County Legislature's and constituent municipalities' work to support the IO agreement and implementation of the RPP. (Suggested lead: County Legislative Liaison/IO Chair)
- Report to WRC on the Tompkins County Legislature's, constituent municipalities' and the Upper Susquehanna Coalition's work in support of the Susquehanna Tributary Strategy. (Suggested lead: SWCD/USC Coordinator)
- Report to WRC on the Tompkins County Legislature's and constituent municipalities' work in support of the Owasco Lake Watershed Management Plan. (Suggested lead: TCHD/SWCD /Owasco Lake Watershed Inspector)
- Update the Tompkins County Water Quality Strategy every three years. (Suggested lead: WRC Water Quality Strategy Committee)

**Goal F: Educate and inform municipal officials, the public, professionals, agency staff and the media about water quality concerns and protective policies and practices.**

*Objective 1: Promote programs that further WQS goals.*

- Report annually (in April) to the relevant committee of the Tompkins County Legislature about the accomplishments of the WRC. (Suggested lead: WRC Vice Chair)
- Provide educational strategies to support Goals A through E. (Suggested lead: WRC Education Committee)
- Provide education to landowners on erosion control. (Suggested lead: SCTC)
- Update, as needed, Frequently Asked Questions sheets for major pollutants and for surface water and groundwater quality threats for distribution at public events/presentations. (Suggested lead: WRC Education Committee/TCHD)
- Educate residents about how everyday activities (lawn care, use and disposal of pharmaceuticals, etc.) impact water quality. (Suggested lead: CCE/SWCD)
- Keep municipal and county officials informed of existing federal/state/local wetland regulations and changes to those regulations as deemed appropriate. (Suggested lead: WRC Wetlands Committee/WRC Education Committee)
- Update and reprint as needed brochures about watercraft regulations and recreational boating concerns in Tompkins County. (Suggested lead: WRC Cayuga Lake Recreation Committee)
- Investigate possible future public access sites in the Tompkins County portion of Cayuga Lake for launching non-motorized watercraft, fishing, and views and prepare brochures listing these as well as other pertinent aspects for these user groups. (Suggested lead: WRC Cayuga Lake Recreation Committee)
- Investigate a Cayuga Lake "trail" for people-powered boats. (Suggested lead: TCPD/WRC Cayuga Lake Recreation Committee)
- Promote non-polluting recreational uses of Cayuga Lake, such as muscle-powered boats and photography. (Suggested lead: WRC Cayuga Lake Recreation Committee)
- 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. (Suggested lead: SWCD, NRCS)

- Promote training opportunities for local municipal staff (Code Enforcement Officers) for enforcement of existing individual water supply regulations. (Suggested lead: WRC Aquifer Committee)
- Organize regional outreach opportunities to assist in distributing tools developed through the Tompkins County Stream Corridor and Management Program (model easement language, model ordinance, riparian buffer agreement). Outreach to include the development of web-based interactive video. (Suggested lead: TCPD)
- Provide education to contractors, developers, municipal highway employees, municipal officials, and code enforcement officers on storm water regulations and protection. (Suggested lead: SCTC, SWCD)
- Collaborate with other organizations (e.g., Cayuga Lake Network, IO, Floating Classroom) on educational activities that further WQS goals. (Suggested lead: WRC Education Committee)
- Conduct Water Week activities. (Suggested lead: WRC Education Committee)
- Raise awareness of watershed issues with youth groups and schools. (Suggested lead: SWCD/Network/CCE/WRC Education Committee)
- Coordinate educational activities outlined in the Storm water Phase II implementation grant with the Floating Classroom. (Suggested lead: SWCTC/WRC Education Committee)
- Complete and update annually a brochure of local water/watershed agencies and organizations for distribution, such as at Water Week. (Suggested lead: CCE)
- Support development of workshops about source water protection for individual drinking water systems. (Suggested lead: Network/TCHD)

*Objective 2: Provide for transfer of information among organizations working on water related activities.<sup>12</sup>*

- Provide a venue for water organizations to communicate with each other and the public. (Suggested lead: WRC)

*Objective 3: Comment on topical issues with a strong relationship to water quality and/or quantity.*

- Participate in opportunities to comment on projects: for example, dredging, gas drilling operations, City Water Treatment options. (Suggested lead: Ad hoc committees of 3 or more members, as needed)

### *Unassigned Activities*

There are numerous other activities that could, and should, be pursued, but were not included because they required a larger commitment than can be made in the next three years. Two examples are:

- Develop watershed regulations for the Cayuga Lake watershed.
- Research and evaluate planned and existing wetlands construction and replacement projects in Tompkins County, and provide feedback to local municipalities.

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<sup>12</sup> See the Appendix of the Tompkins County Water Quality Strategy “Organizations that Influence Water Resources in Tompkins County”