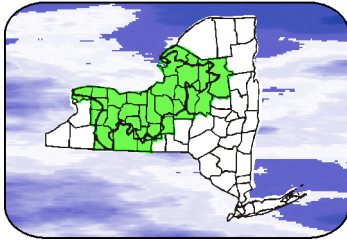


# The Information Exchange



## The Newsletter of the Finger Lakes - Lake Ontario Watershed Protection Alliance

(An Affiliate of the Finger Lakes Association, Inc.)

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## Agriculture's Role in Protecting the Environment Understanding CAFOs and AEM

By Judson Reid, Cornell Cooperative Extension, Yates County

Agricultural lands provide one very clear and obvious benefit to people: Sustenance. They provide other, sometimes less obvious, benefits to communities including groundwater recharge, wildlife habitat, and scenic landscapes. Not properly managed, agricultural lands can contribute nutrients, sediments, pathogens, and chemicals to lakes and groundwater. Environmental impacts of farming are coming under increased local scrutiny as concerns about manure odors, potential contamination of water and impacts on soils arise. This increases the importance of programs designed to strengthen agriculture's positive contribution to environmental management by reducing or eliminating nutrient and pesticide contamination of ground and surface waters and sedimentation of lakes and streams.

### The CAFO Program: A Regulatory Approach

Under the federal Clean Water Act, all livestock farms must implement Comprehensive Nutrient Management Plans (CNMPs) by 2009. These plans consider a range of actions to minimize water quality and public health impacts from Concentrated Animal Feeding Operations, or CAFOs. To understand what makes a CAFO a CAFO, it helps to understand more generally how animal feeding operations are defined.

An Animal Feeding Operation (AFO) is a lot or facility where animals are stabled or

confined and fed or maintained for a total of 45 days or more in any 12-month period, and the animal confinement area does not sustain crops, vegetation, forage growth, or post-harvest residues in the normal growing season. Two or more animal feeding operations under common ownership are a single animal feeding operation if they physically adjoin each other, or if they use a common area or system for the disposal of wastes. Animal units are key for deter-

mining if an AFO is a CAFO as well as understanding applicable permit requirements.

The concept of animal units is weight-based and equals approximately 1,000 pounds of live weight body mass, although the formula is weighted to account for differences in livestock manure. To determine the number of animal units to qualify an operation as a CAFO, we use the following factors in Table 1, multiplied by the total number of animals.

**Table 1. Factors for determining total number of animal units**

Livestock Animal <sup>1</sup>	Factor
• Dairy heifers, slaughter or feeder cattle	1
• Mature dairy cattle	1.4
• Swine over 55 pounds	0.4
• Sheep	0.1
• Horses	2.0
• Poultry	0.01

<sup>1</sup>To calculate the number of units for animals not listed, or for young stock such as calves, estimate the average weight of the animal, multiply by the number of animals, and divide by 1,000.



Yates County Mennonite farm

With an understanding of animal units, we can now look at three scenarios under which a farm is designated a CAFO:

1. A farm with 1,000 animal units or more is automatically a CAFO.
2. Farms with 300-999 animal units, with the potential to discharge pollutants to surface waters.
3. Any AFO found to be a *significant source* of surface water pollution.

tial utilize the AEM tiered evaluation process (described in a section below) to help establish/support this determination.

### **Implications for CAFOs**

All existing CAFOs were required to apply for a general permit by submitting a Notice of Intent (NOI) to DEC by January 1, 2000. New CAFOs must file at least 30 days before they begin operation. Facilities filing by December 31, 1999 with 1,000 animal

and other professionals in the field. The 312 Plan looks at feed lot management, manure handling and storage, manure application, land management and record keeping. 312 Plans also address milkhouse center wash water, silage leachate, and soil erosion. The fate of on-farm nutrients is a primary concern in the planning process. The plan documents the Best Management Practices (BMPs) being used on the farm. Under the CAFO permit, no discharge of wastewater to surface water is allowed, except in the event of a 25-year (or more) storm.

Any scenario where water comes into contact with a farm related-process must be examined to determine if there is a potential pollutant discharge. The following sources are commonly assessed:

- Spillage or overflow from animal or poultry watering systems.
- Washing, cleaning or flushing of pens, barns or manure pits.
- Direct contact swimming, washing, or spray cooling of animals.
- Leachate from silage and feed storage areas.
- Wastewater generated in the production of intermediate or final products such as eggs and milk.
- Precipitation which comes into contact with any area where organic materials are stored, fed or wasted such as silos, bunk silos, organic bedding storage, grain storage, commodity buildings, feed bunks, and manure or wastewater storage or treatment facilities.

Wastewater does not include precipitation that comes into contact with pastures; crop fields; driveways; roof areas; laneways where animals do not congregate; crop fields where manure is applied in accordance with the permit; or vegetated filter areas that are designed and maintained in accordance with the permit.

Smaller farms may be interested in the benefits of having the NRCS 312 Comprehensive Nutrient Management Plan required of CAFOs. In fact, operators of several small farms in the Keuka Lake watershed have inquired about applying for a permit. Currently they cannot. Instead, they are encouraged to participate in the voluntary *Agricultural Environmental Management* (AEM) program that implements conservation practices as per NRCS 312 standards. AEM is a statewide program that began in 1996 under the Department of Agriculture and Markets and is carried out locally mainly through county Soil and Water Conservation Districts. The Keuka Lake watershed AEM initiative (Yates and



*Keuka Lake Watershed: An agricultural landscape and AEM pilot program*

How is potential to discharge pollutants to surface waters determined? The term *potential to discharge* is taken from EPA regulation 40 CFR Part 412, and derives from the definition of "point source" found at 40 CFR 122.2. Point source is defined as "any discernible, confined, and discrete conveyance ... from which pollutants are or may be discharged."

According to this definition, there does not have to be an actual or ongoing discharge to be considered a point source, but only the possibility or potential for a discharge to take place. The DEC does not visit potential sites to make this determination. This determination is entirely up to the owner or operator of the AFO. However, if a discharge incident occurs as the result of a 25-year storm or less, or if a complaint arises which raises concern for compliance with Environmental Conservation Law, DEC could investigate, at which time the claim of no potential to discharge would be closely examined. It is also recommended that AFOs without discharge poten-

units have 18 months to submit a Comprehensive Nutrient Management Plan, and those with 300-999 animal units have 24 months.

It is significant that the Clean Water Act redefines animal feeding operations as point sources of pollution, thus requiring a State Pollution Discharge Elimination Systems (SPDES) permit for operation. CAFOs are subject to legal action for failure to comply with the conditions of the permit. In New York State, the DEC, in cooperation with the New York State Department of Agriculture and Markets and the agriculture industry, developed the CAFO permit in accordance with federal (EPA) CAFO standards. This permit requires that the farm have the Comprehensive Nutrient Management Plan, prepared by a New York State certified nutrient management planner and developed according to USDA Natural Resource Conservation Service standard 312, to properly manage wastes. The plans are sometimes referred to as "312 Plans", and are usually developed with a certified planner in conjunction with the farmer



Steuben Counties) was designated as a pilot program by the Department of Agriculture and Markets.

### **Agricultural Environmental Management (AEM) The Voluntary Approach**

Before 1990, federal clean water legislation focused on point source pollution, such as that flowing out of a pipe. In 1990 this focus broadened to include non-point source pollution, that which you cannot trace to a specific point or pipe (like runoff from land and erosion along streams). Under the 1990 Coastal Zone Act Reauthorization Amendments (CZARA), states are required to develop enforceable management practices for activities identified as causes of nonpoint source pollution. The AEM Program is New York State's response to broadened federal clean water legislation and public concerns about the environmental impacts of farming practices.

AEM is a multi-agency program that provides farmers with technical, educational and, in some cases, financial assistance to address environmental concerns on their farms. Across the state AEM programs help individual farmers implement Best Management Practices that can enhance farm profitability while decreasing risks of contaminant leaching and runoff.

### **How AEM Works**

Common partners in the AEM program include New York State Departments of Agriculture and Markets, Health, Environmental Conservation, county Soil and Water Conservation Districts (SWCD), Cornell Cooperative Extension (CCE), Natural Resources Conservation Service (NRCS), and the Farm Service Agency (FSA). The SWCD is the lead agency in Yates County for conducting AEM planning and implementation projects with farmers. Working one-on-one with farmers, a set of tiered worksheets are used to identify critical environmental concerns and determine structural designs or management practices to address these concerns.

Funding to cover 75-87.5% of costs for implementing practices may be available through various federal, state, and local programs. NRCS and FSA administer federal funds appropriated through the 1996 Farm Bill. The NYS Department of Agriculture and Markets administers funds available through the NYS Agricultural Nonpoint Source Abatement and Control Program. Counties have made funds available through the Finger Lakes – Lake Ontario Watershed Protection Alliance, and environmental,

sportsman's, and community watershed protection organizations also have provided farmers with financial assistance to implement specific BMPs.

It should be noted that AEM participants are not required to accept any type of funding. In Yates County some participating farmers have installed BMPs based on technical recommendations from agency personnel but covered the financial burden entirely by themselves.

### **Yates County AEM**

There are a number of factors that make AEM in Yates County particularly interesting. Agriculture is a growing industry in Yates County, with some 810 operations today encompassing about 50 percent of the land area. The number of dairy operations doubled between 1980 to 2000, from one to two hundred, opposite the trend experienced elsewhere in New York State. The grape industry has grown 15 to 20 percent annually over the last decade. The newest agricultural sector to take off is the fresh market/greenhouse. With only a handful a fresh market growers just a few years ago, there are close to 100 today. Participation in Yates County AEM reflects this diverse agricultural base, with dairy, grape and vegetable operations participating.

The Keuka Lake watershed was selected by NYS Agriculture and Markets as a pilot watershed to test AEM concepts. In this local setting, many farmers have demonstrated a sense of environmental stewardship in their business decisions and an interest in using the tools available to make their farm operations "lake friendly." Take, as one example, Fred Frank, president of Dr. Konstantin Frank's Vinifera Wine Cellars. To voluntarily upgrade his wastewater system, Mr. Frank located his new leach field exactly where the engineer who did the percolation tests told him was most suitable: Directly under some of his oldest and most productive vineyards. Mr. Frank removed some of his best grapevines to accommodate the project. He claims he probably could not have done so without the help of the AEM program and cost-share incentives. The end result is he's pleased to be "a lake friendly winery" adding, "With all of us working together to preserve Keuka Lake, everyone benefits – tourism, the local economy, everyone!"

Another factor contributing to robust farmer participation in AEM is that the prominent watersheds (Canandaigua Lake, Flint Creek, Keuka Lake and Seneca Lake) in Yates County have a history of cooperative watershed protection. Canandaigua and Keuka

Lakes have comprehensive watershed management plans that identify agriculture, as well as 15 other sources, as potential pollutant contributors, as well as specific recommended actions to minimize impacts on water quality. These watershed management plans were developed with public involvement and are holistic in approach, so that no one stakeholder group (like farmers) perceives itself to be unfairly targeted as a source of pollution or left out of the management planning and decision making process. A similar process is underway for the Seneca Lake watershed. With broadly accepted watershed management plans in place, AEM leaders are positioned well to seek competitive grant funds from government sources to implement recommendations on agricultural lands.

The major environmental foci of the AEM program in Yates County are nutrients and manure, fertilizer, and crop management. Silage, fuel and pesticide storage is also reviewed with the farmer. Pathogens such as giardia and cryptosporidium (serious threats to human health, especially for infants and those with compromised immune systems), are also considered. Runoff contaminated by manure from young stock (less than six months old) can be a source of these pathogens in surface waters (like Seneca, Canandaigua and Keuka Lakes) which serve as public drinking water supplies. On Yates County crop farms, such as vineyards, site characteristics, erosion potential, fertilizers, and pesticides are considered in AEM planning. Avoiding runoff or leaching of nutrients and pesticides is a common goal on crop and livestock farms.

AEM can also be an appropriate vehicle to assist farmers in meeting the environmental challenges and requirements of managing an Animal Feeding Operation or Concentrated Animal Feeding Operation. A certified planner can facilitate the planning with the farmer, bringing to the process the necessary technical resources for design and implementation and assisting with the acquisition of resources to get the job done. Ultimately, a healthier, more viable farm operation can result as many factors and issues are considered together (agronomy, agricultural engineering, animal science, pest management, farm economics, etc.).

### **Environmental Protection Benefits**

Agriculture is a mainstay of the economy in Yates County and New York State. It plays

*(continued on page 11)*

## Bringing Up Environmental Stewards

By Betsy Landre, Editor

Ask those environmental stewards **A**know if they can point to an individual or event that triggered their appreciation for the natural world and undoubtedly they can. For some, it was a relative or a friend of the family. For others, it was a camp experience or trip to a pristine place. More often than not, it was a schoolteacher. When I think about the time when I first began to really take notice of the environment, I think of Gloria Mabie, my fifth and sixth grade teacher in the Fayetteville-Manlius School District (I was fortunate to have her for two years). In her class, we raised crayfish, made our own paper from pulp, explored bird habitats and behaviors at the Montezuma National Wildlife Refuge, and got our feet wet, often literally, through hands-on activities aimed at

teaching us about the natural world. It was Mrs. Mabie who sparked my fascination in Nature's amazing patterns and intricate relationships (at the time I just called it "cool"). Add the study of how human actions affect the environment, and the mere fascination is transformed into concern and, often, the decision to help protect the health of our environment.

We are fortunate to live in a region abounding with lakes, rivers, streams, agricultural lands and forests. Several processes we can control threaten our water resources, like urban sprawl, erosion from agricultural and non-agricultural lands and lawn care practices. Primarily, what we need is will (for a strong public will can produce the financial, legal, and other resources needed). **We**

**need a regional population of stewards.** Our schools represent one vehicle for getting there. After all, I have yet to meet a kid who really has discovered the environment and remained blasé about it.

At a time when much of the talk on education deals with academic standards and testing, school safety and facilities (admittedly important topics), it is invigorating to find schools and programs in our region taking the initiative to teach kids about our environment in some innovative ways. In the following column, FL-LOWPA's Program Assistant Helen Bagley of Pulteney and Mary Catt of Seneca Falls — both involved parents and environmental stewards in their own right — show us two local schools, one public and the other parochial, bringing up environmental stewards. □

## The ECO Program at Marcus Whitman School District

By Helen Bagley, Water Resources Board Program Assistant

**I**magine building your own canoe, and then paddling it along one of New York's rivers or lakes. This would be a dream for many people at any age, but it is a reality for 50 lucky students from Marcus Whitman Central School in Rushville, New York. The canoe-building project, along with many other experiential studies, is part of the Environmental Classroom Opportunity (ECO) Program.

The ECO Program is an alternative, environmentally focused two-year program for 6<sup>th</sup> and 7<sup>th</sup> grade students. Malcolm McKenzie and John Reid, teachers at the Marcus Whitman Central School, developed it four years ago. They wanted a program that would spur the interests of students at the middle school level, a critical age for exploration and self-development. Using the natural resources of the area, they created the ECO Program, which incorporates the traditional school curricula with hands-on learning activities such as hiking trail maintenance and construction, maple syrup production, species habitat development, water quality testing, canoe construction, gardening, fish stocking, and many other environmental projects.

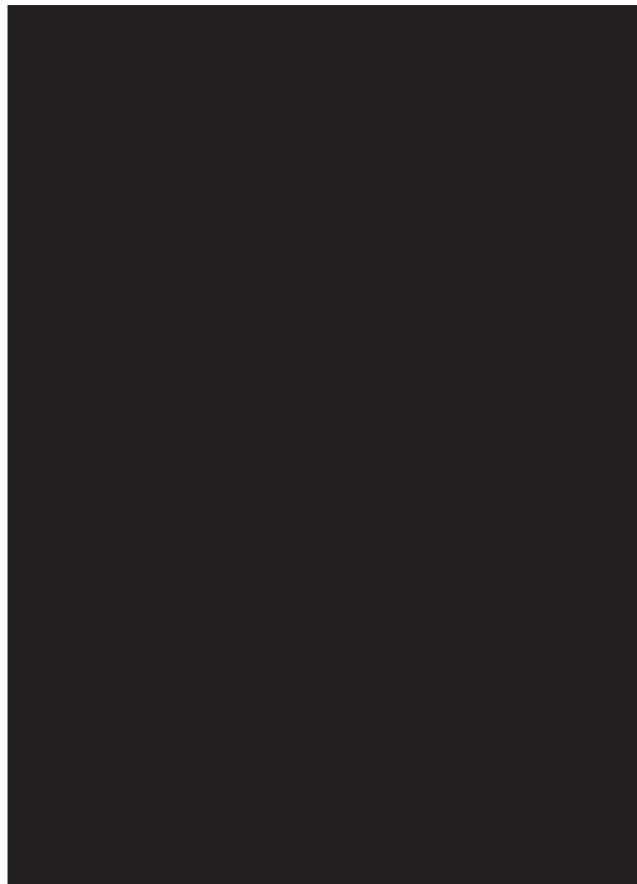
The ECO Program is currently located at the Cummings Nature Center

in South Bristol, NY. This 900-acre natural campus, with woodlands, fields, streams and ponds, provides a living laboratory for the student's studies. Recently, AgriLink

Foods granted Marcus Whitman Central School 186 acres of suitable land in Middlesex, NY to be used as a future ECO campus. Located only three miles from the main school campus, this new location will eventually allow more children to participate in aspects of the ECO program while maintaining regular access to school district resources. Relocation to the new site will take several years as funding is obtained.

The ECO Program is staffed by a four-member teaching team and is assisted by several paraprofessionals. Flexible block scheduling is used to provide time for learning projects and teaching sessions, and to work around weather conditions. The fifty participating students are selected through a lottery system. There are a few students from other districts, paying their own tuition. The students vary academically and are balanced for gender only. A personal willingness to participate is expected because it is the choice of the student to attend the program.

The program is heavily science-based, and extensive writing is required. Students keep journals of their experiences in the program. Specific guidelines for the journal entries ensure that the scientific inquiry, mathematical calculations, illustrations, findings, and thought provoking



*Students build a canoe.*

questions are included.

Science is explored in-depth through the various field projects. In a recent year, the students conducted water quality monitoring in the Flint Creek watershed. Samples were taken at different times of year at five stream locations. The students measured and analyzed dissolved oxygen, alkalinity, turbidity, phosphate and fecal coliform. They also identified macroinvertebrates as an indicator of water quality. In the future, Canandaigua Lake Pure Waters, Ltd., a citizen organization devoted to the protection of Canandaigua Lake, will use the ECO Program students to monitor sites of interest in the Canandaigua Lake watershed.

Learning to work together is a valuable life skill developed in this program. Many projects require a team effort. On my

visit to the ECO Program, I had the opportunity to observe the team effort first-hand. A few miles down the road from Cummings Nature Center, at the West Hollow Boat Company, students are building a cedar and canvas canoe of 1880 design. Under the supervision of Patrick Smith, owner of the shop, the students are directed in the task at hand. One student stands ready with a drill, while others work together to quickly bend the steamed cedar rib to fit properly on the boat frame. It is very noisy as Mr. Smith and students cheer each other on to do the job right. The whole atmosphere is upbeat and encouraging, something that is especially needed at this grade level.

Students in the ECO Program also work independently. Many serve as docents for school groups and the general public within

the Cummings Nature Center Programs. Some students have taught water quality monitoring skills to eighth grade students at the Marcus Whitman High School Biology field day program. Each student must take an active role in assessing their work through writings, portfolios, and student led parent/student/teacher conferences.

Students that graduate from this program achieve different levels of academic success as they go on in their school careers. The main benefit of this program is the positive sense of self that is developed by each student through this unique experience. Students gain an awareness of their natural environment and an understanding of personal and communal responsibility. As stated by ECO teacher Malcolm Mackenzie, "It is a small harbor here, where we learn to sail well in the big ocean." □

## St. Mary's School Watershed Project

*By Mary Catt, St. Mary's School Watershed Project, Seneca Falls, NY*

The St. Mary's School Watershed Project reached more than 170 children pre-K through eighth grade during the 2000-2001 school year with hands-on learning activities. Twenty community organizations partnered with the Watershed Project to help integrate science, social studies, math, English language arts and computer technology into lessons about local communities and the environment. "Generous, talented people from watersheds across the Finger Lakes led our students and teachers through hands-on activities which prepare them to solve real-life problems," said Fred Smith, principal of St. Mary's and founder of the Watershed Project. Donated in-kind services to the Project by area organizations totaled \$15,000.

"Project objectives were ambitious. We wanted the whole school to go forward on this," Smith said. "Our partners donated talent and the tools to foster holistic learning. The result is a school filled with students and staff who understand how watersheds work and how they can be stewards."

Liberty Boat Tours of Seneca Falls donated boat tours of the local watershed to discover its working history and ecology. Students traveled the Seneca-Cayuga Canal and circled Van Cleef Lake, where remnants of an 1800s water-powered manufacturing complex remain. The children also participated in a service project by picking up trash, clearing and mulching walking paths, and plant-

ing wildflowers on Waterloo's three-acre Oak Island in the Seneca-Cayuga Canal. Seneca County Cornell Cooperative Extension staff helped design the clean-up plan for Oak Island, St. Mary's "adopted" island. The Village of Waterloo donated public works staff to facilitate this stewardship project and Country Max of Waterloo donated the wildflower seeds.

Jim Hughes of the Waterloo Historical Society highlighted the economic and cultural history of Oak Island and local waterways. This presentation was made in the (circa

1832 MacDougall Schoolhouse in Romulus, Seneca County. Students re-enacted the period and discussed how commerce and travel in local watersheds evolved during the past two centuries.

The Seneca County Water Quality Coordinating Committee donated 200 Austrian pine seedlings for students to plant at home on Arbor Day. The Seneca Museum of Waterways and Industry in Seneca Falls provided museum tours for students and donated use of its facility for in-service watershed cur-

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*In the field, stream sampling*



## Managing Invasive Aquatic Vegetation in Oswego County

By John DeHollander, Oswego County Soil and Water Conservation District

In 1989, Oswego County implemented its first year of its water quality program funded through the Finger Lakes – Lake Ontario Watershed Protection Alliance (FL-LOWPA), referred to at the time as the Aquatic Vegetation Control Program. State funds were targeted to programs developed locally to address local needs. Management of invasive aquatic vegetation – non-native species such as Eurasian watermilfoil and more recently water chestnut – has been an ongoing program focus for Oswego County's FL-LOWPA program.

Lake Neatahwanta, a 750-acre lake, located between the City of Fulton and the Town of Granby, has been a top water quality priority in Oswego County. Shoreline recreation, boating, and aesthetic enjoyment of this lake have been restricted by dense weed growth. Management strategies have included harvesting about 25 acres of primarily Eurasian watermilfoil annually, opening up channels to improve fishing access, and clearing shoreline areas near public access points. These strategies have improved recreational uses of the lake by treating the symptoms of a long-term problem, nutrient enrichment of this shallow lake. Other strategies, like installation of Best Management Practices along the tributaries to the lake, have reduced nutrients and sediments entering the lake that provide conditions for the spread of dense aquatic vegetation. Over the course of the FL-LOWPA program, other local waterbodies have needed relief from invasive aquatic vegetation, and the harvesting program has been implemented at Wright's Landing at Oswego Harbor; North Sandy Pond; Sunset Bay on Lake Ontario in the Town of Scriba; and most recently in a section of Oneida Lake.

During the 1990s, local concern about aquatic vegetation control began to shift to a new species. A different non-native plant, the water chestnut (*Trapa natans* L.), was affecting the recreational use of Ox Creek, a primary tributary to the Oswego River. Water chestnut is a glossy, green, triangular-leaved plant that can easily choke waterbodies, out competing the native flora. Because its foliage can create a dense, nearly impenetrable mat at the surface, fishing, swimming, boating, and other recreational activities are severely limited. In recent years, there were approximately 40 acres of water chestnut present, while harvest activities concentrated on a targeted area of only 23 acres due to pro-

gram limitations. This effort opened up the mouth of Ox Creek to the Oswego River, affording fishermen access to navigate their boats to an excellent fishing spot.

Currently, our attention in Oswego County is directed to the control of the water chestnut. This plant has now spread into many reaches of the Oswego River, as far north as Minetto, near the New York State Canal System Lock #5. It is also now established in the Oneida River, and approximately six acres at the western end of Oneida Lake are affected.



Water chestnut (*Trapa natans*)

Knowing the shallow depths and soft sediments at the bottom of Oneida Lake, resource managers and informed citizens are concerned that Oneida Lake will be prime territory for the expansion of the water chestnut.

Managing the county harvesting program in multiple waterbodies where resource uses are simultaneously limited poses challenges. With a single harvesting machine, servicing these areas relies upon good scheduling and assistance from local highway departments, private citizens, as well as local matching funds. Limited mechanical harvesting, however, will probably not be enough to control water chestnut within an open riverine system. For con-

tainment and/or eradication to be successful, other control approaches must be considered.

Chemical treatment using an herbicide is not an option in open waters under New York State law. Physical removal by hand pulling is another strategy, but may not be enough to control the spread of the plant. Local riparian landowners have struggled to use this approach for years, but have not been able to inhibit reproduction of the plant. Area resource managers are currently investigating possible biological control agents for water chestnut. As this invasive plant plagues waterbodies in other parts of the northeastern United States including Lake Champlain, there is knowledge and experience to be shared.

To facilitate the dialogue on management options, Oswego and Madison Counties co-sponsored in June a water chestnut mini-conference in Syracuse, New York. This forum was funded in part through a Special Projects Fund grant through FL-LOWPA.

Researchers and experts came together to discuss the latest work and approaches to controlling water chestnut. Resource managers in Oswego County realize that more financial and program resources are needed to prevent the potentially devastating effects of water chestnut on public waterways in this region.

Until a more comprehensive management strategy is established, Oswego County will continue to dedicate FL-LOWPA resources to mechanically harvest priority areas to provide relief and public access to water resources at critical times of the year. Resource managers in Oswego County invite all stakeholders to help establish and work toward common goals for a better, more enjoyable environment. □



Harvesting invasive aquatic vegetation on the water chestnut, call John DeHollander at (315) 592-9663.

## Regional Partnerships ñ The Backbone Of The Oneida Lake Watershed Management Plan

By Anne B. Saltman, Central New York Regional Planning & Development Board

### BACKGROUND: A WATERSHED EFFORT IS LAUNCHED

**R**egional partnerships make sense! Water resource management frequently extends beyond county and agency boundaries, often making regional collaborations an absolute necessity. These partnerships often serve as a fundamental building block for successful environmental strategies. In our case, the Oneida Lake Task Force has been a guiding influence in building and maintaining momentum with the Oneida Lake Watershed Management Plan.

Three years ago, the Central New York Regional Planning & Development Board (CNY RPDB) launched a New York State Department of Environmental Conservation (DEC) funded project to develop a strategy for the southern region of the Oneida Lake watershed. An important first step in this initiative was to identify the primary decision-makers. We then developed the Oneida Lake Task Force, a partnership of agencies, organizations, non-profit and homeowner groups, and other key decision-makers throughout the watershed. These partnerships have formed the foundation of our work and have contributed to the success of the Oneida Lake watershed program to date. As a result of these partnerships, many groups have looked beyond agency and county borders to identify common goals and to share resources and talents.

One of several important partners over the past three years has been the Oneida Lake Association. The CNY RPDB has been very fortunate to have the support of this influential, well-established group that has served as a leading force in educational initiatives and lobbying for lake issues since 1945. The Cornell Biological Field Station is another essential connection. Cornell has taken the lead in conducting extensive research on lake ecology and exotic species and has contributed valuable support to the CNY RPDB-sponsored tributary monitoring program in 1999 and 2000.

### ISSUES OF CONCERN

The issues in the Oneida Lake watershed are challenging and diverse. Cormorants, zebra mussels, and water chestnut are relatively recent, uninvited guests that have dramatically modified the lake's biological compo-

sition and chemistry. Oneida Lake enjoys a reputation as a fishing treasure, providing anglers with more fish per acre than any other lake in the Northeast. With a recent decline in walleye and yellow perch populations, fisheries management has been a central focus of the Lake Association and science community. Additional issues deal with overuse of the lake resources, including boating, jet skiing and other recreational opportunities. The five-county watershed has diverse ecological characteristics, geology, and human influences. Urban and agricultural land use in the southern portion of the watershed has led to a decision by the Task Force Technical Committee to select sediment and nutrient runoff as the central focus of the tributary monitoring program.

### PLANS FOR THE FUTURE

The CNY RPDB recently secured United States Environmental Protection Agency and DEC funding to extend our efforts from the southern region project to a full watershed management plan. Our goals for the next three years are ambitious. A watershed characterization report, regional collaborations with GIS mapping, municipal outreach initiatives, educational workshops and conferences, implementation projects to reduce pollution loading to the lake, and the preparation of a watershed management plan are slated for the next few years. A multi-county, basin-wide tributary monitoring program will be implemented this summer

through a unique partnership between the CNY RPDB, several county organizations, in some cases through their respective FL-LOWPA programs, and two academic institutions.

As we approach the management planning process, the Oneida Lake watershed community is following in the footsteps carved by many other New York State lake communities over the past twenty years. Numerous challenges are anticipated in the months to come. Our central goal is to encourage watershed municipalities to take a leading role in the planning process. This is an ambitious task, as the watershed covers portions of five counties and over sixty municipalities (Figure 1).

The success of this project will be based on continued regional partnerships. Through the Task Force Committees, the CNY RPDB is strengthening alliances with influential wa-

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Figure 1. The Oneida Lake Watershed covers many jurisdictions.

## New Cooperative Programs Underway

### **FL-LOWPA's Special Projects Fund**

**T**he Special Projects Fund is a competitive grant program administered by FL-LOWPA providing incentive through seed money for member counties to develop and implement innovative, cooperative watershed-based nonpoint source pollution control programs with broad benefit. Five projects received FY 2000 Special Projects Fund grants totaling \$48,148 and began this past spring. Projects funded include:

#### **Highway Superintendents Roads and Water Quality Education Program**

\$8,500 - Sponsored by Chemung County Soil and Water Conservation District, in partnership with Yates, Ontario, Schulyer, Steuben, and Seneca County SWCDs, and Canandaigua Lake Watershed Council.

Local studies have documented that erosion from 2,054 miles of public roads continues to be a major source of sedimentation within the Canandaigua, Keuka and Seneca Lakes watersheds of Chemung, Ontario, Schuyler, Seneca, Steuben and Yates Counties. A Roads Stabilization Grant has been awarded to each watershed, and is being implemented. To enhance and strengthen this implementation with an education component, funding will be used to reprint and purchase copies of reference materials that can help town highway superintendents to positively impact water quality through Best Management Practices like road ditch stabilization. Through participation in the Highway Superintendents Roads and Water Quality Education Program, highway superintendents will receive the "Highway Superintendents Road and Water Quality Handbook" and "New York Contractors Erosion and Sediment Control Field Notebook". Technical workshops on specific practices and methods will follow the initial, more general session.

#### **Land Coverage Data Development for the Canandaigua Lake Watershed**

\$13,000 - Sponsored by Ontario County Department of Planning and Research, in partnership with Canandaigua Lake Watershed Council and Yates County SWCD

Canandaigua Lake provides a water supply for over 50,000 people, and generates millions of dollars each year through recre-

ational activities. The watershed is experiencing substantial development pressure and changing land-use. To help maintain and enhance the high water quality in the Canandaigua Lake watershed, up to date and accurate land coverage data will be obtained and incorporated into the current Geographic Information System (GIS). Ontario County has contracted with Pictometry Incorporated to take digital photographs and these images will be used to create digital land coverage data for the entire watershed. This data resource, in combination with a sampling program, will provide the information necessary to determine sources of pollution within the watershed and appropriate implementation measures.

#### **Algae Bed Patterns in the Rochester Embayment and Western Shoreline of Lake Ontario**

\$3,148 - Sponsored by Monroe County Health Department, in partnership with the Rochester Institute of Technology, and Orleans and Niagara County SWCDs

The problem of rotting algae along the Lake Ontario shoreline has been a concern to residents and local governments for many years. Public beaches have been closed due to algae which has washed up and collected along shorelines. Decaying algae provides a growth and nutrient source for bacteria that poses a health risk to bathers, as well as a nuisance due to odors generated by the large amount of decomposing organic matter. This study will focus on using remotely sensed imaging spectrometer data to map the location and potentially the biomass of algal beds in the shoreline region of western Lake Ontario from Wayne County to the Niagara River plume.

RIT's Modular Imaging Spectrometer Instrument (MISI), carried on a light aircraft, will be used to acquire image data of the lake in many spectral bands across the visible, near infrared, and thermal spectrum. Algae beds will be located and mapped. Field sampling will be done to verify the MISI data collection technique. Data will be used in decisions regarding potential remedial and future watershed management actions.

#### **Monitoring the Trophic State of Cayuga Lake**

\$12,000 - Sponsored by Tompkins County SWCD, in partnership with Seneca

County SWCD, Tompkins County Planning, and City of Ithaca

Cayuga Lake and several of its major tributaries are drinking water sources for many residents in the Cayuga Lake watershed. Silt, nutrients, and bacteria have been identified as the primary causes of water quality impairment of these waterbodies. Although several years of successful Bond Act grants are funding \$10 million for streambank stabilization and wastewater collection and treatment upgrades, no funding has been granted for determining the effectiveness of these and other non-point source efforts. FL-LOWPA funding will be used to secure the equipment needed to establish baseline water quality conditions and evaluate pollution reduction measures in the Cayuga Lake watershed. Monitoring will also assist in determining the need for additional pollution control practices to eliminate and/or reduce discharge of the pollutants.

#### **Determining Species Diversity in Herkimer and Oneida County Waters as an Indicator of Watershed Health**

\$11,500 - Sponsored by Herkimer County SWCD, in partnership with Herkimer and Oneida County Water Quality Coordinating Committees and Upper Mohawk Valley Regional Water Board

Oneida and Herkimer County Water Quality Committees recognize the need to expand the knowledge base and update information on species diversity in Oneida and Herkimer County waters. Changes due to the establishment of industry and hydrologic modifications have taken place within the watersheds since the last comprehensive information was gathered. Microbiological sampling in multiple basins within the two-county area will be used to determine species diversity. The data obtained will aid in determining the level of water quality impacts in each of the basins and will help to facilitate watershed modeling and planning decisions.

The Special Projects Fund Review Committee changes for each year of funding and is comprised of three FL-LOWPA representatives representing a cross-section of agencies in the three FL-LOWPA regions (East, Central, and West). The review committee is appointed to rank proposals and submit recommendations for funding to the Executive Committee. The committee in this round included: Scott Ingmire (Madison County), Patrick Reidy (Cortland County) and George Squires (Genesee County). Special thanks



## Mark Your Calendar!

- August 4-5, 2001, 10-5 each day. *A Cleaner, Greener Home*, Monroe County Seneca Park Zoo, Rochester, NY. 7<sup>th</sup> Annual Environmental Fair. Learn about environmental issues, the work of organizations, and what you can do to help. Contact Abby deMey-Weaver at (716) 336-7216.
- October 2-3, 2001. Empire State Plaza Convention Center, Albany, NY. *Waterfront Rediscovery Conference: Quality Coasts, Quality Communities*. Sponsored by NYS Department of State, check [www.dos.state.ny.us](http://www.dos.state.ny.us) for updates.
- October 23-24, 2001, Auburn Holiday Inn. *10<sup>th</sup> Annual Sustainable Watersheds Conference*, sponsored by Finger Lakes – Lake Ontario Watershed Protection Alliance. Lake Ontario Basin theme. Watch our web site at [www.fllowpa.org](http://www.fllowpa.org) for more info, or contact Betsy Landre, (315) 536-7488 or e-mail [wrb@eznet.net](mailto:wrb@eznet.net).
- October 29-30, 2001, Holiday Inn-Turf, Albany, NY. *17<sup>th</sup> Annual NYS GIS Conference*. Contact Horace Shaw at ESF Continuing Education at (315) 470-6891 or e-mail at [hbsshaw@esf.edu](mailto:hbsshaw@esf.edu).
- November 7-9, 2001, Madison, WI. *2001: A Lake Odyssey*. 21<sup>st</sup> International Symposium, North American Lake Management Society. Contact Program Chair: Richard Lathrop at (607) 261-7593 or e-mail at [rlathrop@facstaff.wisc.edu](mailto:rlathrop@facstaff.wisc.edu).

## New Citizen Outreach in the Genesee River Watershed

The largest river system in western New York, the Genesee River flows north from its source in Pennsylvania to Lake Ontario at Rochester, New York. Community organizers Laura Arney and Sue Mihalyi perceived that, although there have been a variety of public and private programs to improve Genesee River watershed water quality and its uses, a sustained, whole-watershed stakeholder group is needed to foster communication, develop a sense of ownership, and promote stewardship across the watershed. The newly focused Friends of the Genesee Watershed has begun networking with interested organizations and individuals to explore how a partnership of citizens, agencies, interest groups, municipalities and other stakeholders can serve as a catalyst and outreach vehicle in this vast watershed. They are examining models for watershed outreach and stewardship, recognizing the benefits of working with existing organizations and programs. Anyone interested in helping to launch the Friends of the Genesee Watershed or desiring more information can contact Laura Arney at (716) 334-8548 or Sue Mihalyi at (716) 271-7713. □



*Paddling down the Genesee River*

## Looking Under Sodus Bay

### Sediment Core Sample Reveals 300+ Years of Water Quality History

By Robert K. Williams, Wayne County SWCD

In 1998 the Wayne County Soil & Water Conservation District in cooperation with the Department of Biological Sciences at SUNY Brockport collected a sediment core sample of the bottom of Great Sodus Bay to determine historical changes in the bay's ecosystem. By observing, aging and quantifying

the organisms and chemicals within specific portions of the core, researchers can better interpret historical water quality conditions and changes in the bay's ecosystem. After the sample was collected it was transferred to the Canadian Center for Inland Waters where it was frozen and parti-

tioned into one centimeter sections which were individually dated using radioactive dating. The sample was analyzed and interpreted by researchers at SUNY Brockport.

Through this investigation, we have learned that phosphorus levels in the bay were relatively low from the late 1600s to the late 1700s. The arrival of European settlers into the watershed, land clearing, agriculture, the opening and closure of sawmills and gristmills appear to be major historical influences in water quality. Modern influences may include hurricane Agnes, the establishment of a coal trestle and the west shore sewer system. So far the core has revealed 338 years of evidence of the impact human activity has on water quality. Knowing the history of the bay's ecosystem may help us to manage it's future! □

For more information please contact the Wayne County SWCD at 10 Leach Road, Lyons or e-mail at robert-williams@ny.nacdn.net.org.

## FL-LOWPA Conference Revisits the Basin in 2001

The 10<sup>th</sup> Annual Sustainable Watersheds Conference will be held at Auburn Holiday Inn, **October 23-24, 2001**. The public is encouraged to attend. The 2001 forum revisits the Lake Ontario Basin, on FL-LOWPA's five-year rotation. In other years, the conference moves around the region, focusing on water quality concerns and programs in one part of the Basin. The last time the event focused on the Basin as a whole was in 1996 in Rochester, NY. In that year the conference was co-sponsored by the Water Quality Board of the International Joint Commission, serving as the Board's first Lake Ontario Basin public meeting.

The 2001 forum will again include information on a basin-wide scale, such as the **state of Lake Ontario ecosystem, water level management and withdrawals, and state and federal program updates**. The forum will also address processes that must occur at the local level to achieve regional sustainability.

Stakeholders will have a chance to have their ideas heard through facilitated **break out**

sessions for major drainage basins within the Lake Ontario region. The conference will include time for interaction between attendees and exhibits from around the region.

A unique feature of the forum this year will be participation of a **group of international watershed management practitioners** who, just prior to the conference, will have participated in the two-week Watersheds and Communities Workshop hosted by the Cornell International Institute for Food, Agriculture and Development (CIIFAD) and Center for the Environment. These international colleagues will report on what they have learned from their upstate New York "watershed planning laboratory", and the ideas they will take back to their home countries. This is an interesting opportunity to find out what community programs in our region have to offer the world!

Registration materials will be mailed in the second part of August. You can obtain those materials from our Web site, [www.fllowpa.org](http://www.fllowpa.org), at that time. □

## The Information Exchange

is published by the Water Resources Board (WRB), a group of representatives from 25 counties in upstate New York which comprise the Finger Lakes - Lake Ontario Watershed Protection Alliance (FL-LOWPA) funded by New York State. The primary purpose of FL-LOWPA is to foster coordinated watershed management activities and exchange information related to the condition of surface water bodies in New York's Lake Ontario Basin.

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**WRB Chairperson** Jeff Parker

**WRB Program Coordinator/TIE**

**Editor** Betsy Landre

**WRB Program Assistant**

Helen Bagley

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Submissions are encouraged.

Address all queries to:

**TIE - Water Resources Board**

309 Lake Street

Penn Yan, NY 14527

[www.fllowpa.org](http://www.fllowpa.org)

E-mail: [wrb@eznet.net](mailto:wrb@eznet.net)

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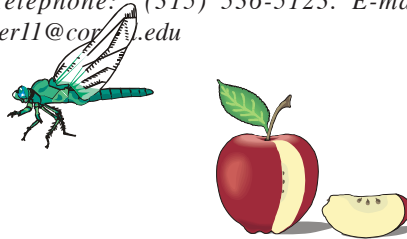
## Agriculture

(continued from page 3)

a major role in subjective measures of quality of life that come from rural landscapes, scenic vistas, open spaces, and the simple pleasure of buying and eating fresh, local produce. Visitors and tourists come to our region for the pastoral landscapes and products of agriculture, like Finger Lakes wines, upstate apples, cheeses, and a host of other products. If you come to a place like Yates County, it is easy to see the benefits agriculture brings to human communities. Water quality and environmental protection is another benefit we can add to the list, as farmers work steadily through AEM and CAFO compliance, and cooperatively within watershed management programs, and government and private

partners cooperatively with government and private partners in watershed management programs. The goals of a healthy environment, sustainable agricultural resource base, and viable agricultural industry are indeed compatible and attainable with the appropriate voluntary and regulatory tools and support structures in place in New York State. □

Contact Judson Reid at CCE-Yates County, 110 Court St., Penn Yan, NY 14527. Telephone: (315) 536-5123. E-mail: [jer11@corvax.edu](mailto:jer11@corvax.edu)



## Schools

(continued from page 5)

riculum training. The Town of Fayette contributed use of its town quarry for fossil collection by St. Mary's middle school students.

Resource people from across the Finger Lakes region visited St. Mary's to share their knowledge about how local watersheds were formed, and what kinds of animals live in them today. John VanNeil, conservation professor at Finger Lakes Community College, spent a day at St. Mary's School teaching students about the birds living in local watersheds. Marva Gingrich, Montezuma National Wildlife Refuge educator, trained students and staff on the refuge and the hydrology of watersheds.

Sharon Anderson, Cayuga Lake Watershed Network steward, coached classes through water experiments and Marion Balyszak of Seneca Lake Pure Waters Association spoke to students about citizen and local government involvement in watershed protection. Roxanna L. Johnston, environmental analyst at Ithaca Area Wastewater Treatment Facility, demonstrated how water is processed by municipalities, created terrariums with students, and led 30 first and second graders on a field trip to a Waterloo stream, where they observed aquatic insects in their habitats, and studied them under microscopes. More than 300 students from St. Mary's and St. Patrick's Schools in Seneca Falls gathered in Waterloo to personally meet

five raptors and their caretaker, Wild Wings (Hilton, New York) Executive Director Alice Bryant.

Students also learned about the formation of the Finger Lakes Region through presentations by staff at the Paleontological Research Institute of Ithaca. They built their own managed watershed models using everyday and kid-friendly items like plaster of Paris, clay, paint, wood chips, stone "rip-rap," tablecloths, cookie dough, frosting, sprinkles and gummy fish.

Art and writing projects supplemented field trips and presentations, and students researched watershed topics using resources available through the Internet at the school's computer lab. Seventh grader Chyna Tribble won first place in a regional watershed essay contest sponsored by the Cayuga Lake Watershed Network. The Discovery Channel interviewed a St. Mary's teacher and her sixth grade daughter about the Watershed Project; the segment is scheduled to air in fall, 2001.

The St. Mary's School Watershed Project operates on the belief that teaching children about the values of local water resources in a hands-on and meaningful way will foster local stewardship of these resources in years to come. For more information on the St. Mary's Watershed Project, contact Mary Catt at 4507 County Rd. 124, Seneca Falls, NY 13148. □

## Oneida Lake

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tershed organizations to achieve our program goals. We'll take one step at a time – committed to cooperation, communication, and teamwork – as we forge ahead with the management plan.

## WHAT DO WE HOPE TO ACCOMPLISH?

The development of a watershed management plan is a critical step in long-term protection of our local water resources. The plan will provide a unique opportunity for all interested parties to identify the key water resource issues of concern, to prioritize these issues, and to discuss specific plans for the protection and improvement of our local lakes and streams. Not only does planning for the future make sense, but in most lake communities, enhanced partnerships, local-level participation, and a well-orchestrated strategy for watershed management also provides greatly improved opportunities for state and federal funding.

As part of this process, information about the natural environment and cultural influences will be summarized into one comprehensive report that can then serve as a convenient reference for local decision-makers. With some work, program efficiency will also be strengthened and communication among watershed stakeholders will be nurtured as we work together for a common goal.

Our combined efforts are designed to reduce nonpoint source pollution. High quality water and the protection of critical areas such as wetlands, fish spawning areas, and wildlife habitat will help to maintain land values, boost recreational opportunities, and strengthen the local economy. In addition, our knowledge of water chemistry and stream characteristics will be enhanced through the continuation of tributary water quality monitoring.

Finally, successful education programs for community leaders, homeowners, and all lake users will boost public awareness of our valuable water resources, thereby leading to responsible care, wise management decisions regarding watershed protection, and a healthy local economy as we pave the way for future generations.

For more information on watershed management planning for Oneida Lake, contact Anne Saltman at Central New York Regional Planning and Development Board, 126 N. Salina Street, 100 Clinton Square, Suite 200, Syracuse, NY 13202 Tel. (315) 422-8276 □



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