

Improving Water Quality In Monroe County



Issue 7

Summer 2001

The Oatka Creek Watershed Committee

Protection of Monroe County's water resources entails stewardship on a whole-watershed basis; this effort requires the involvement of all stakeholders within the basin. Committees consisting of citizens and municipal officials have been formed to take the planning and evaluation roles that were traditionally the responsibility of government agencies. The membership of these groups was formerly based on political boundaries, but today is based on natural drainage-area boundaries. These groups include members from all parts of each watershed that have an interest in the remediation of a water resource degraded by human actions throughout its course.

Watershed Committees

Monroe County adopted a whole-watershed approach in the Rochester Embayment Remedial Action Plan (RERAP), which was developed in 1993, in response to the designation of the Rochester Embayment of Lake Ontario and the lower Genesee River as an "Area of Concern" by the International Joint Commission in 1981. The RERAP also includes the three contributing watersheds of the Rochester Embayment (Lake Ontario West Basin, The Genesee River Basin, and the Lake Ontario Central Basin) rather than focusing only on the specific area of concern.

Implementation of RERAP involves the formation of watershed committees. One such committee, the Irondequoit Watershed Collaborative, begun in 1996, consists of municipal representatives whose goal is to plan a comprehensive approach to stormwater management within the Irondequoit Creek basin to

protect the water quality of Irondequoit Bay and Irondequoit Creek. A second committee, Greece Citizens for a Clean Environment, formed in 1994, has spearheaded water-quality monitoring and remediation actions in the Northrup Creek-Long Pond watershed. A third committee, which is concerned with a tributary to Black Creek (a major tributary to the Genesee River), was formed in 1996-97 and is likely to expand in the future to address water-quality issues throughout the entire watershed.

Oatka Creek Watershed Committee

A 1998 symposium, "Caring for Creeks," spotlighted several watersheds in Monroe County and efforts to protect them. As a result, a group of representatives met to assess and protect Oatka Creek. This group, now called the Oatka Creek Watershed Committee, is made up of representatives from the following locations throughout the watershed:

- The Village of LeRoy Conservation Board,
- The Rochester Area Community Foundation,
- The Monroe County Water Quality Coordinating Committee,
- The Genesee County Water Quality Coordinating Committee,
- The Genesee County Soil and Water Conservation District,
- The Wyoming County Soil and Water Conservation District,
- The Wyoming County Water Quality Coordinating Committee,
- The Genesee Land Trust,
- The Friends of Oatka Creek, and
- The Village of Scottsville, and
- Monitoring at Oatka Creek

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Spring Creek starts as a limestone spring in the Village of Caledonia in Livingston County and flows north through the hamlet of Mumford, Monroe County where it meets Oatka Creek. Spring Creek is important to the ecosystem of Oatka Creek because ground water that discharges to Spring Creek has a moderating effect on temperature of Oatka Creek (especially during the summer months) and also helps balance the chemistry.

The mission of the Oatka Creek Watershed Committee is to preserve the pristine character and water quality of Oatka Creek for future generations through the development, promotion, and implementation of an Oatka Creek Watershed Management Plan.

Funding received from the Finger Lakes-Lake Ontario Watershed Protection Alliance has enabled officials from all municipalities in the Oatka Creek watershed to develop a watershed-management plan. Through their efforts, historical and current resource information from a variety of sources has been assembled, and a contractor has been hired to prepare a state-of-the-basin report that would serve as the first chapter of the watershed-management plan. A preliminary draft of this document was distributed at a second "Caring for Creeks" conference in the spring of 2000. The Oatka Creek committee has published and distributed a newsletter, is developing a website, has participated in local and regional water-quality management events, and is actively involved in developing long-term funding sources to continue its work.

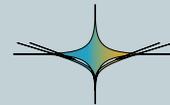
Monitoring at Oatka Creek

Several related efforts are underway to obtain data on the quantity and quality of Oatka Creek:

- *Researchers from the University of Rochester, in conjunction with the Rochester Area Community Foundation and the Monroe County Environmental Health Laboratory, have conducted a project to measure trace-metal concentrations along Oatka Creek during all seasons. The report of their findings is still in preparation; but preliminary results confirm the high quality of the water.*
- *The U. S. Geological Survey (USGS), in conjunction with the U. S. Army Corps of Engineers, is monitoring flow near the headwaters of Oatka Creek at Warsaw, New York in Wyoming County, and at Garbutt in Monroe County, 4.2 miles from the mouth, as part of the flow-regulation system for the Mount Morris Dam on the Genesee River.*

Long-term water-quality monitoring was begun in

- *1997 as part of a USGS/Monroe County cooperative monitoring program. Automatic sampling equipment was installed at the USGS streamflow-gaging station at Garbutt in 1997, and samples are analyzed for nutrients, common ions, and suspended solids. Data collected at this site are published in an annual USGS data report for western New York and are also available on the USGS website (<http://ny.usgs.gov>).*



Oatka Creek Facts

Hydrologic Unit Code (HUC):	— 04130003
Stream Length:	— 58 miles
Drainage area:	— 215 square miles
Land Use:	— Primarily agriculture, forest, some small urban areas
Water Uses:	— Recreational boating; fishing; potable water source for Warsaw and LeRoy; irrigation, industrial and POTW discharges
NYSDEC Classification(s):	— B(T) [Primary Contact Recreation, Trout], C(T) [Secondary Contact Recreation, Trout], C [Secondary Contact Recreation, non Trout]

Thermal Monitoring of Stormwater

Substantial amounts of contaminants from commercial and residential developments within Monroe County are carried to nearby surface-water bodies by stormwater that falls on impervious surfaces such as roads, driveways, and parking lots and quickly enters streams via storm sewers and direct runoff during stormflow. Among these contaminants are oil, solvents, and fertilizers. Stormflow-detention basins were installed during the mid-1960's in Monroe County to control stormflows as great as those that result from 25-year storms. The detention basins (which generally are dry except during storms and snowmelt periods) receive and detain stormwater, then gradually release it downstream. Although the basins minimize downstream flooding, they provide little water-quality improvement.

Integrating wetland plants into the design of flood-detention basins can improve stormwater quality. In the late 1980's, the USGS and the Monroe County Environmental Health Laboratory (MCEHL) demonstrated the effectiveness of "created wetlands"

(streamflow-detention basins that were designed to allow the growth of wetland plants). In 1993, Monroe County received a grant to assist municipalities in the conversion of streamflow-detention basins to "created wetlands." During the first 6 years, 15 "created wetlands" were completed. Preliminary data indicate that a "created wetland" will remove an average of 33 percent of the total phosphorus and 16 percent of orthophosphorus in detained stormwater (Gary Brown, MCEHL, written commun., 2001).

In recent years, the New York State Department of Environmental Conservation (NYSDEC) has raised concern as to whether the discharge from "created wetlands" and stormflow-detention facilities results in temperature increases that can be detrimental to trout populations in receiving streams. The temperature of water detained within a "created wetland" typically increases during the summer (June - September) through solar warming; also water entering the wetland is often warmer than that in the receiving streams because it has been in contact with heated impervious surfaces. The NYSDEC threshold levels for thermal discharges to trout waters are as follows:

1. No discharge at a temperature over 70° F to streams classified for trout shall be permitted at any time .
2. From June through September, no discharge shall be permitted that will raise the temperature of the stream more than 2° F over that which existed before the addition of heat of artificial origin (NYSDEC 1991)¹.

The thermal effects of discharges from "created wetlands" and nonvegetated detention basins require evaluation and comparison to define the effects of stormwater-detention basins on receiving-stream temperature.



USGS streamflow-gaging station along Oatka Creek near Garbutt, NY. These sites are monitored as part of the flow-regulation system for the Mount Morris Dam on the Genesee River.

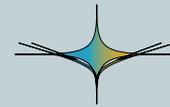
¹ New York State Department of Environmental Conservation, 1991, Water Quality Regulations for Surface Waters and Groundwaters, 6NYCRR Parts 700-705: Albany, NY.

In 1999, representatives from the NYSDEC, the USGS, the Monroe County Soil and Water Conservation District, and the Monroe County Health Department developed a plan to monitor the thermal effects of discharge from stormwater basins. Five sites discharging to trout streams or their tributaries in the Irondequoit Creek basin were chosen (see map below). Together the sites represent all of the common basin types such as dry basins, shallow ponds with wetland plants, and deep ponds with wetland plants.

Monitoring with HOBO temperature probes (range 4 to 158 °F; accuracy $\pm 1^\circ$ F) was completed in 1999 and 2000. These compact canister-type probes, which were programmed to record temperature in 10-minute increments (1999) and 15-minute increments (2000), were placed in the inlets and outlets of the basins and in the receiving tributary above and below the discharge. Temperatures were recorded from June 4 through September 30 in 1999 and from June 1 to September 30 in 2000. Rainfall data were obtained

from the MCEHL rain gage in Ellison Park, within the Town of Penfield. The rain gage and all basins being studied are within eight-miles of each other.

Much progress has been made in evaluating the thermal effects of the basins, but the data are inconclusive at this time. Several factors, which include the receiving tributary's size, the degree of wetland-plant maturity in the basin, and the detention time of stormwater within the basins complicate the interpretation. Agency representatives plan to review the current data and design the monitoring plan for 2001. The Monroe County Development Review Committee is recommending shallow ponds with wetlands as the design of choice for detention basins in new residential and commercial developments. Constructing basins to optimize sediment and contaminant removal by maximizing the detention time will help to preserve the quality of Monroe County's streams, rivers, bays, and lakes.



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Base from U.S. Geological Survey, digital data, 1:100,000, 1983

Locations of detention basins monitored for temperature.