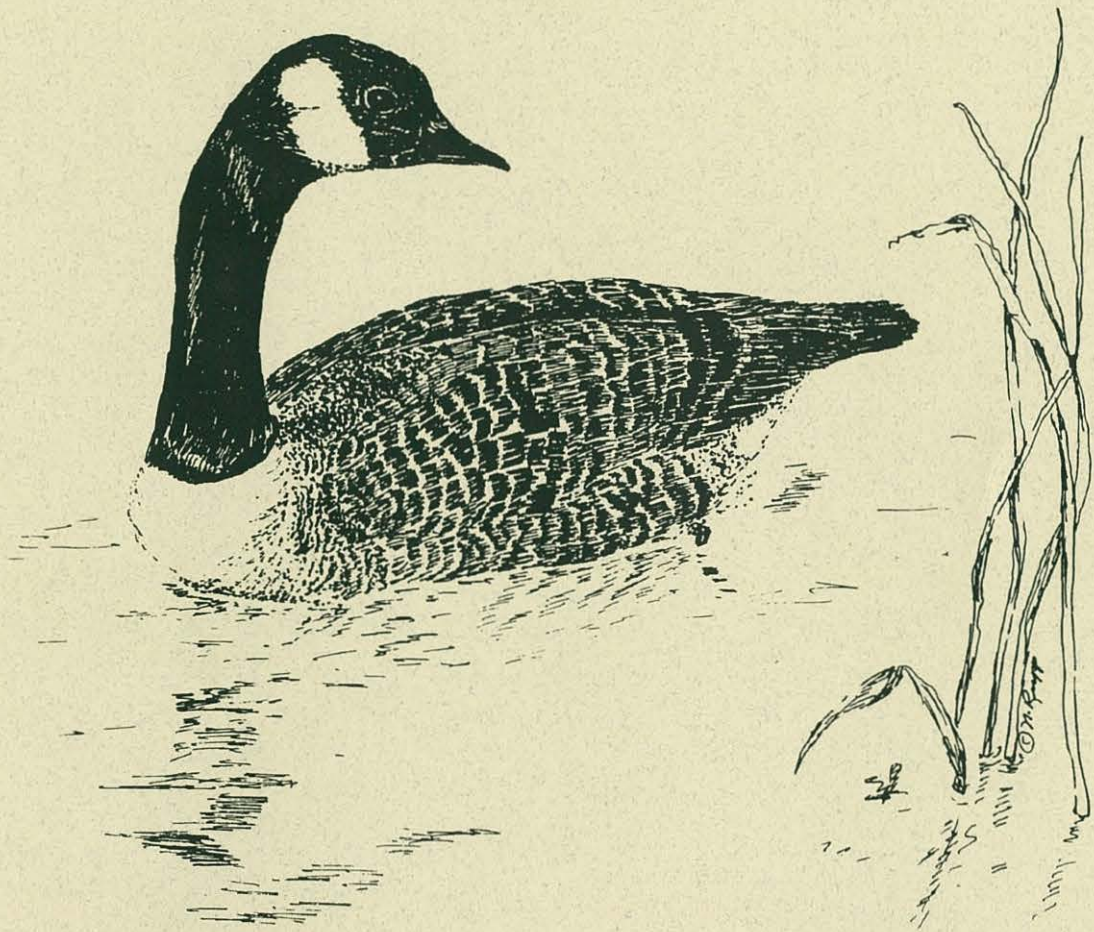


Rochester Embayment Remedial Action Plan 2002 Addendum



**Jack Doyle, County Executive
Monroe County**

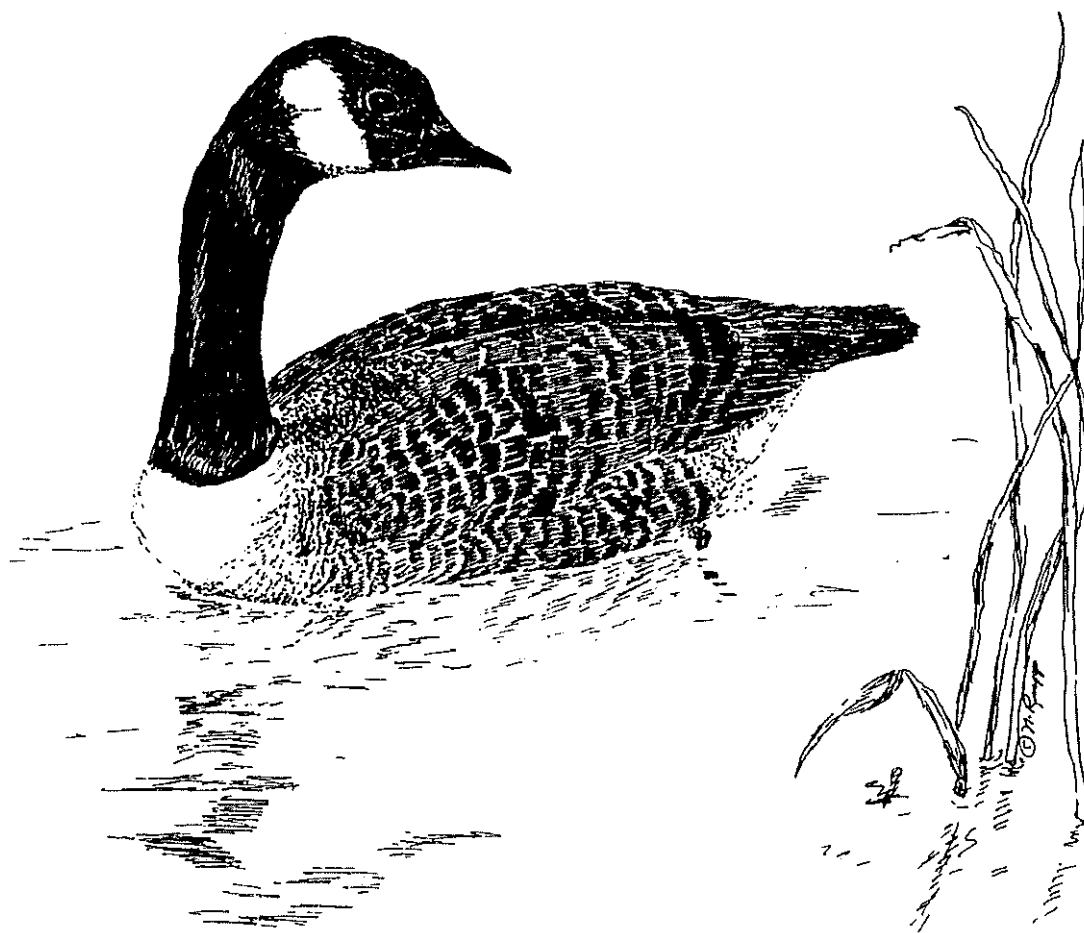
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Dept. of Environmental Conservation**

Rochester Embayment Remedial Action Plan 2002 Addendum



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Coordination:

Carole Beal

Persons and groups who made proposals for new remedial measures, studies and monitoring methods:

Margy Peet, Monroe County Department of Health

Paul Sawyko, Monroe County Water Quality Management Advisory Committee

Paula Smith, Monroe County Soil and Water Conservation District

Toxics Oversight Committee

Evaluation Committee for New RAP proposals:

See Chapter 1 for list of members

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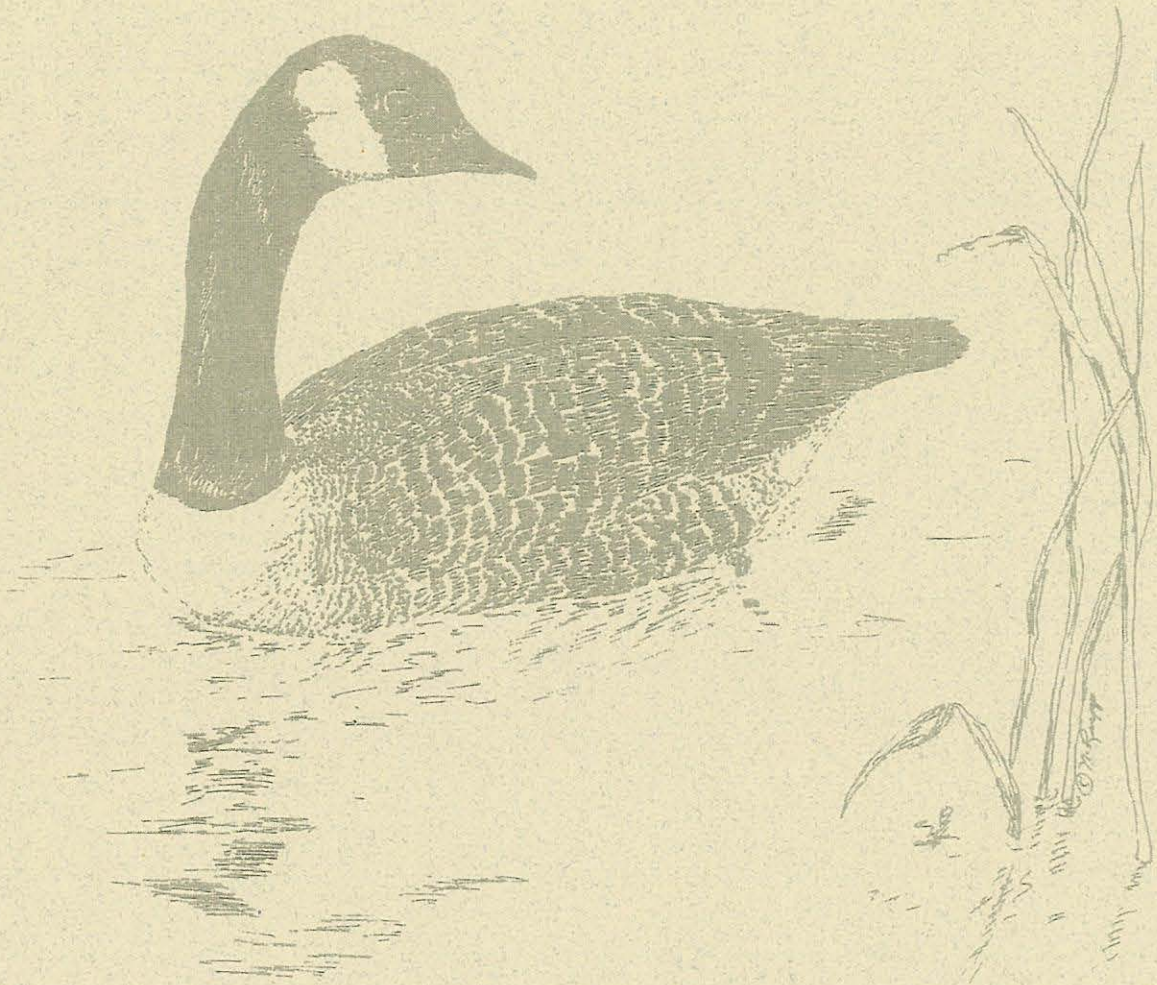
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Chapter 1: Introduction



Chapter 1: Introduction

1.1 Background

The *Rochester Embayment Remedial Action Plan* (RAP) was developed and is being implemented in order to advance the Great Lakes Water Quality Agreement between the United States and Canada. The stated purpose of the Agreement is to “...restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem.” As part of the effort to fulfill this mission, the International Joint Commission (IJC) identified 43 Areas of Concern (AOC) within the Great Lakes Basin, including the Rochester Embayment of Lake Ontario. The AOCs are locations that are characterized by serious pollution problems and are the focal points of Great Lakes remedial activities. The Agreement required that a RAP be developed and implemented for each AOC so that water quality is restored and protected.

The Rochester Embayment RAP was developed in two stages and has had two addenda.

- The *Stage I RAP* (1993):
 - established water quality goals and objectives,
 - described water quality conditions/problems, and
 - identified pollutant sources.
- The *Stage II RAP* (1997):
 - provided additional information regarding the causes and sources of water quality problems,
 - described completed and ongoing actions/remedial measures,
 - identified new actions/remedial measures that are needed to restore water quality, and
 - described studies and monitoring programs that are needed to complete identification of water quality problems and track progress in restoring water quality.
- The *RAP 1999 Addendum*
- This *RAP 2002 Addendum*

The Rochester Embayment AOC is defined as the approximately 35 square mile portion of Lake Ontario between Nine Mile Point in the Town of Webster and Bogus Point in the Town of Parma. The AOC also includes the approximately six-mile reach of the Genesee River, from the Lower Falls to the mouth, that is influenced by water levels in Lake Ontario. Because a watershed approach was taken in the preparation of the RAP, the study area also included the approximately 3,000 square mile watershed that drains to the Rochester Embayment and therefore impacts water quality in the Embayment.

1.2. Submission of New RAP Proposals

A recommended remedial measure in the *Stage II RAP* is to “Continually evaluate and implement proposals for possible new remedial measures” (Section 7.40 of the *Stage II RAP*). This remedial measure provides for evaluation of new proposals every three years. The first evaluation was to take place soon after *Stage II RAP* completion. It began in 1998 and was completed in 1999 (*Rochester Embayment Remedial Action Plan 1999 Addendum*). The evaluation included proposals for studies and monitoring methods, as well as remedial measures.

The evaluation was undertaken in a manner similar to that applied to remedial measures, studies and monitoring methods for the *Stage II RAP*.

1.3 Evaluation Committee for New RAP Proposals

The second evaluation of new proposals began in 2001 and was completed in 2002. The members of the Evaluation Committee were:

Gerry Ernst and John Ernst	Citizen representatives on Monroe County Water Quality Management Advisory Committee (WQMAC)
Chris Fredette	Public interest group representative on WQMAC; Monroe County Water Quality Coordinating Committee (WQCC)
Matt Gillette	New York State Department of Environmental Conservation; WQCC
Margy Peet	Monroe County Department of Health; WQCC
Paula Smith	Monroe County Soil and Water Conservation District; WQCC
Max Streibel	Public official representative on WQMAC; Town of Greece Deputy Supervisor

1.4. Steps in evaluating and ranking the new RAP proposals

1.4.1. Ranking method

The 2001/2002 proposal ranking method differed from those in the *Stage II RAP* and *1999 Addendum*:

- There were only three separate proposals for remedial measures that required evaluation (see Sections 2.1a, 2.1b and 2.2).
- The one proposal for a study and the one proposal for a monitoring method were withdrawn (see Sections 3.1 and 4.1).
- The evaluation was conducted mostly by mail and e-mail. There was one meeting to achieve consensus at the end of the process.

Each Committee member received a copy of the three proposals to be evaluated and simply checked whether each proposal should be “high priority,” “recommended, or “not recommended at this time.” There was immediate consensus on two of the proposals.

For one proposal there was a tie between “high priority” and “recommended.” When e-mail methods failed to break the tie, the Committee met for an open discussion and consensus was achieved.

1.4.2. Review of the Committee’s recommendations

The text of the proposals and the Evaluation Committee’s recommendations were submitted simultaneously to the members of WQCC, the WQMAC and the Monroe County Water Quality Management Agency (WQMA). The members of these groups were given two weeks to express any negative comments. None were received and the ranking was considered to be approved. The text and rankings were forwarded to the New York State Department of Environmental Conservation.

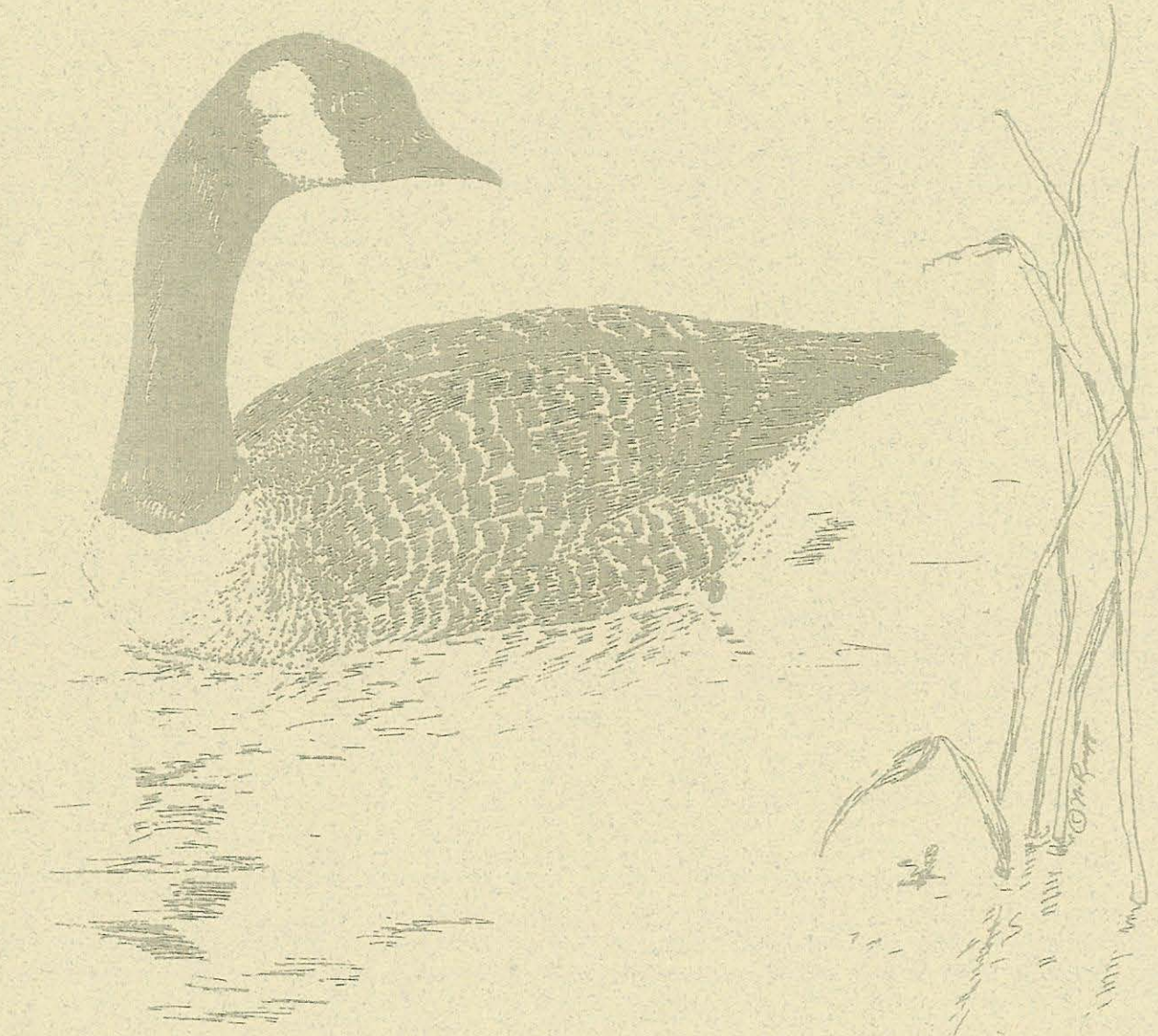
1.5. Incorporation of the new proposals into the RAP

The high priority and recommended remedial measures were incorporated into the RAP in the form of this Addendum (see Section 2.3). The tables in Sections 2.3, 3.2 and 4.2 contain comprehensive lists of all the remedial measures, studies and monitoring methods of the *Stage II RAP*, the *1999 Addendum*, and this *2002 Addendum*. The newly added proposals are shown by shading. Some of the remedial measures, studies and monitoring methods are completed, ongoing or underway. This information is noted in the tables.

1.6. State Environmental Quality Review

New York State Environmental Quality Review was addressed during the completion of the *Stage II RAP*. (See *Stage II RAP* Section 10.4 and Appendix H). The proposals ranked as “high priority” and “recommended” that are being added to the RAP by incorporation into this *2002 Addendum* do not impact the negative declaration given to the Stage II RAP. (A negative declaration means that the project will *not* have a significant impact on the environment.)

Chapter 2: Remedial Measures



Chapter 2: Remedial Measures

2.1. Develop a Strategy for Reduction of Sediment in the Genesee River

Background

Status: Proposal a: Recommended

Proposal b: High priority

Use impairment(s) addressed: #7, 10, 11, 14

Additional information:

The *Stage I RAP* (1993) identifies Genesee River bank erosion as a known source contributing to four use impairments (pages 6-3, 6-4 and 6-5):

- Restrictions on dredging activities
- Beach closings
- Degradation of aesthetics
- Loss of fish and wildlife habitat

Six counties comprise the Genesee River watershed: Allegany, Genesee, Livingston, Monroe, Ontario, and Wyoming.

In the *Stage II RAP* (1997) one of the studies proposed was “Compare historic and modern channel erosion rates within the Mt. Morris to Genesee reach of the Genesee River floodplain and their relationship to downstream sediment loadings” (pages 4-13, 4-14 and 4-15). Dr. Richard Young of SUNY Genesee published a limited study (aerial photography and radiocarbon samples from Genesee River sediments) in 1997, *Postglacial to Modern Channel Erosion and Overbank Deposition Rates: Mt. Morris to Genesee Reach, Genesee River, NY*. The study documents post-dam increases in erosion due to the dam itself, and to deforestation and agriculture. A study conclusion is: “The rate of bank erosion (channel migration) below the Mt. Morris Dam may be more than twice as rapid in the post-dam period compared with average prehistoric rates.” Dr. Young notes that one of the most direct ways to potentially reduce bank erosion would appear to be the establishment of natural vegetation along unprotected stream banks, especially along reaches bordered by agricultural land (see proposal b).

In 1994 the Akzo Nobel salt mine in Livingston County collapsed near Cuylerville, NY. Additional erosion-related concerns arose as a result. Subsidence locally lowered the Genesee River channel bed and floodplain elevations by up to several feet for a few miles upstream and downstream from the mouth of Beards Creek. (Local bed elevations in Beards Creek at the collapse site were lowered by up to 12 feet.) There is a potential for unpredictable locally increased lateral erosion and channel widening or erratic migration of the Genesee River. Such behavior may occur relatively suddenly if unspecified hydraulic thresholds are exceeded. Erosion measurements and channel behavior in the reach from Mt. Morris to Genesee may be anomalous for a period of several more years, especially during high water stages.

The *RAP 1999 Addendum* proposed a remedial measure (pages 2-5 and 2-6) that involves the possible initiation of a study to be undertaken by the U.S. Army Corps of Engineers (USACE)

and the U.S. Geological Survey (USGS) to determine how to reduce erosion due to the presence of the Dam. The focus of the remedial measure was to support the proposed study by communicating with the USACE and USGS about the potential benefits of the study for water quality in the Area of Concern. As of 2001, this study has not taken place, nor has the communication.

A Monroe County Streambank Erosion Assessment Program was begun in 1999 by the Monroe County Soil and Water Conservation District (SWCD) and is expected to continue through October 2001. River erosion downstream of the Town of Avon is scheduled for assessment by the Monroe County SWCD in September 2001 and will become baseline data for future studies.

Another example of regional commitment to erosion control is the draft *State of Conesus Lake: Watershed Characterization Report*, which identified erosion and sediment as a significant contributor to the problems of water quality in Conesus Lake, Livingston County. As a result of the report, a Model Erosion and Sediment Control Law has been developed. It was endorsed by a Policy Committee and submitted to the Town Boards in the Conesus Lake Watershed.

Proposal a: Advocate for a U.S. Army Corps of Engineers (USACE) sediment transport model for the Genesee River and facilitate the involvement of a stakeholders group in model development

Description: Sediment transport model development is suggested in order to effectively target remedial actions for sediment loading in the Genesee River. Section 516(e) of the Water Resources Development Act of 1996 authorizes the USACE to develop sediment transport models for Great Lakes tributaries. A strategy for implementing the Section 516(e) authority was developed in cooperation with the Great Lakes Commission. The Genesee River was among 15 rivers listed in the first set of priority tributaries for model development. Staff of the Monroe County Soil and Water Conservation District and Monroe County Water Quality Planning Bureau would advocate for the initiation of a sediment transport model for the Genesee River watershed.

The model would simulate the erosion, transport and deposition of sediments within the watershed. It would be used to:

- Evaluate and compare the effectiveness of soil conservation and other source control measures on the loadings of sediments and sediment contaminants to the Genesee River and Lake Ontario.
- Plan action to improve water quality and assist in planning efforts in local watersheds.
- Prioritize areas within a watershed that are contributing a large portion of the sediment load.

It is assumed that the impact of the Mt. Morris Dam on the rate of erosion in the Genesee River would be considered in the model.

USACE works in partnership with state/local stakeholders in the development of the models. Once the model is complete, the USACE transfers the model to the state/local stakeholders. The purpose of the stakeholders group is to:

- Ensure that the local community wants and needs a sediment transport model application.

- Give input on what data is needed, what is available, and what types of outcomes and tools the local community would like to obtain from the model.
- Ensure that someone in the community is able to maintain and use the application after the Corps completes its effort to develop it.

Staff of the Monroe County Soil and Water Conservation District and Monroe County Water Quality Planning Bureau would facilitate the involvement of a stakeholders group with representatives from the six counties that comprise the Genesee River watershed. An effort would be made to recruit stakeholders from the following organizations:

- NYSDEC
- Natural Resources Conservation Service
- County Soil and Water Conservation Districts
- County Water Quality Coordinating Committees
- County Environmental Management Councils
- Farm Service Agency
- Municipal Planning Boards and Conservation Boards
- Genesee/Finger Lakes Regional Planning Council
- Dr. Richard Young, SUNY Geneseo and other interested academics
- City of Rochester
- Monroe County Environmental Health Laboratory and Monroe County Water Quality Planning Bureau
- U.S. Geological Survey
- Great Lakes Commission
- U.S. Fish and Wildlife Service

Time required: Time for organizing and facilitating a stakeholders group would total approximately 40 hours. Input from stakeholders would require approximately 4 hours per person.

Estimated costs:

Model development: Federally funded.

Time for organization and facilitation by Monroe County staff (in-kind service):

\$35/hour x 40 hours = \$1,400.

Stakeholders time (in-kind service) to give input into the model is estimated to cost:

25 persons x \$35/hour x 4 hours/ person = \$3,500.

Possible funding sources: USACE (full federal funding for the model); contribution of time by stakeholders

Possible implementors: USACE, agencies that contribute to a stakeholders group

Expected benefits:

- Tool for prioritizing areas within the Genesee River basin that are contributing a large portion of the sediment load
- Tool for evaluation and comparing the effectiveness of soil conservation and pollution prevention options

- Information about the impact of the Mt. Morris Dam on streambank erosion
- Potential reduction in dredging required at the mouth of the River by USACE and others

Proposal b: Provide technical services to property owners in the area below the dam where erosion rates are the highest

Description: Technical services would include U.S. Department of Agriculture (USDA) cost-share programs that would provide incentives to landowners to vegetate eroding streambanks. Other local, state, and federal cost-share programs would be utilized to complement the effort.

Additional information:

The Conservation Reserve Program (CRP), enacted in 1985, enables producers to retire highly erodible or environmentally sensitive cropland, usually for 10 years. Participants receive annual rental and cost-sharing payments, and technical assistance to install approved plantings. The Farm Service Administration (FSA) administers the program, while the Natural Resources Conservation Service (NRCS) provides technical assistance. While the intent of the CRP is to treat polluted runoff before it enters a stream, rather than to address streambank erosion, the end result here would benefit both. Producers with eroded banks along the Genesee River, downstream of the Dam, would be sought to enroll their land into this program. The program will pay producers approximately \$40/acre for up to 100 foot buffer on either side of the River in 2 counties, Monroe and Livingston (the buffer width depends on the bank slope and here may warrant the maximum 100 foot width). The program will also cost-share with the producer for trees and other plantings for soil stabilization.

Time required:

An estimate of the time required to inform and sign up producers is 3 years. During this time, the eroded banks could also be planted. Hardy establishment of the vegetation may take longer, an estimated 5 years.

Estimated costs:

The costs of the program include USDA NRCS and FSA staff time estimated at 200 hours/year for 3 years at \$35/hour. Additional costs will include annual payments to producers ranging from \$30-\$80/acre/year for the length of the contract (10-15 years). Depending upon the width of the buffers, up to 730 acres are eligible to be enrolled. Establishment costs are 90% paid for by USDA. Landowners can be expected to pay up to \$20/acre to establish the buffer, while the government contribution may reach \$180/acre.

USDA Staff Time	\$21,000
Annual land payment	\$21,900-\$58,400
Establishment costs	
Government share	\$131,400 (maximum)
Landowner share	\$14,600 (maximum)

Possible funding source: USDA Farm Service Agency

Possible implementors: Livingston and Monroe County offices of USDA

Expected benefits: Expected benefits include reduced rates of erosion due to establishing vegetation on the floodplain.

2.2 Conduct a Lake Ontario Algae Cause and Solution Workshop

Background

Status: High priority

Use impairments addressed: 8, 10, 11

Additional information: The problem of rotting algae along the Lake Ontario shoreline has been a concern to residents and local governments in Monroe and other Lake Ontario shoreline Counties for many years. The rotting algae has contributed to temporary closures of Ontario Beach in Monroe County and has resulted in ever increasing numbers of complaints from residents living along the entire Lake Ontario shoreline within Monroe County. The problem of rotting algae contributes to three use impairments identified in the Rochester Embayment Remedial Action Plan (beach closings, degradation of aesthetics, and eutrophication).

Algae wash up onto beaches and collect in nearshore areas, especially where they are trapped by natural and manmade shoreline depressions and extensions. The decaying algae provide both a substrate for growth and a nutrient source for bacteria that pose a risk to the health of swimmers and, at Ontario Beach, necessitate beach closing. Algae shield bacteria from ultraviolet penetration that would otherwise kill the bacteria. Also, the physical existence of large algae accumulations creates unsafe conditions for swimmers. The odors caused by the decomposing organic matter impact residences and recreational and associated commercial operations in and near the lakeshore. There is a need to understand the causes of the increased amount of algae and the potential for solutions. The information can then be communicated to lakeshore residents and recreational users.

The identification of locations where the algae is growing is currently under investigation by the Rochester Institute of Technology through the use of hyperspectral imaging. The results of that work are expected to explain only where the algae are growing. It is not expected to provide an explanation of which algae growth factors have the greatest impact on the phenomenon of ever increasing accumulations of algae or what, if anything, can be done to effectively manage the growth and accumulation of algae.

In addition to the hyperspectral imaging project, the U. S. Army Corps of Engineers is sponsoring a habitat restoration feasibility study in the Ontario Beach area. The feasibility study goal is to identify the best method of improving the environmental quality of the Ontario Beach study area. Several remedial alternatives have been identified and compared with respect to their cost and effectiveness. As part of that effort, the Corps has proposed to conduct some field demonstration projects of possible alternatives during the summers of 2001 and 2002.

Proposal: Conduct a one-day workshop on Lake Ontario algae growth

Description: It is proposed to sponsor two scientific roundtable discussions in a one-day workshop on the topic of Lake Ontario algae growth. The morning roundtable would include five biologists and/or other scientists from the New York Great Lakes Research Consortium to speak

about one or more of the eight factors believed to be contributing to the increasing growth of algae in Lake Ontario. These factors are: phosphorus levels, zebra mussels, hard surfaces on the bottom of Lake Ontario, Lake Ontario water clarity, physical disturbances of algae, winds and currents, water temperatures, and natural and manmade traps. The desired outcomes of the morning roundtable would be to:

- (a) Identify and explain the factors that contribute to the algae growth
- (b) Identify hypotheses regarding the apparent or perceived increase in algae growth and accumulation along the Lake Ontario shoreline,
- (c) Identify additional research needs to understand the increased algae growth and the potential for intervention, and
- (d) Provide information that can be used to develop accurate and effective educational tools for the general public that is impacted by the algae throughout the summer months.

The afternoon roundtable would include five engineers and/or scientists from the Great Lakes Research Consortium and public agencies (for example the U. S. Army Corps of Engineers and their consultants). The afternoon roundtable participants would build upon information presented in the morning roundtable to discuss the pros, cons, and practicalities of any kinds of efforts to manage the growth and accumulation of algae along the Lake Ontario shoreline. The expected outcomes of the afternoon roundtable would be to:

- (a) Identify past successful and unsuccessful efforts to manage large-scale algae growth and accumulation along with information about why those projects were or were not successful.
- (b) Identify potential management ideas for algae growth and accumulation and the pros and cons of each of those ideas.
- (c) Identify additional research needs to evaluate management options for algae growth and accumulation.
- (d) Provide information that can be used to help guide public policy decisions related to the management of algae in Lake Ontario.

Jack Manno of the Great Lakes Research Consortium has agreed to assist in identifying the most appropriate speakers from the Great Lakes Research Consortium. The invited audience would include all members of the Great Lakes Research Consortium, members of the Finger Lakes/Lake Ontario Watershed Protection Alliance, government decision-makers, and interested members of the public including lakeshore residents.

Proceedings of the two roundtables would be prepared and distributed to the participants and attendees. The information in the proceedings would be used to pursue additional needed research, and to develop a core of scientific information to use in evaluating algae accumulation interventions and in communicating with the public.

Time required: 18 days (144 hours) for planning the workshop

<u>Estimated costs:</u> Time for 1 junior planner and 1 senior planner	\$3,000
Meeting transcript	\$475
Room and equipment expenses	\$300
Printing of announcement and proceedings	\$1,000
Mailing expenses	\$300
Speaker travel expenses	\$1,500
Speaker and moderator food costs	\$425
	<u>\$7,000</u>

A fee would be charged to attendees to cover food costs.

Possible funding sources: Grant, in-kind services

Possible implementers: Monroe County Department of Health, New York Great Lakes Research Consortium

Expected benefits:

- Better understanding about the factors that may contribute to algae growth in Lake Ontario
- Identification of research needs on algae growth and management options
- Information that can be used to develop educational tools for the general public
- Algae management ideas
- Information that can be used to help guide public policy decisions related to the management of algae in Lake Ontario

**2.3. Status of Monroe County Remedial Measures Selected as High Priority and Recommended
Based on Stage II RAP Chapter 7 (Urban) and 1999 and 2002 Addenda
(Proposals added in 2002 are shaded.)**

Abbreviations:

COE	(U.S. Army) Corps of Engineers	NYSDEC	New York State Department of Environmental Conservation
EMC	(Monroe County) Environmental Management Council	SWCD	(Monroe County) Soil and Water Conservation District
EPA	(U.S.) Environmental Protection Agency	USGS	United States Geological Survey
GFLRPC	Genesee/Finger Lakes Regional Planning Council	WQCC	(Monroe County) Water Quality Coordinating Committee
NRCS	(Federal) Natural Resources Conservation Service	WQMAC	(Monroe County) Water Quality Management Advisory Committee
FL-LOWPA	Finger Lakes-Lake Ontario Watershed Protection Alliance		

Remedial Measures	Location of De-scription	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
<i>High Priority Remedial Measures</i>				
Provide technical services to property owners in the area below the dam where erosion rates are the highest	RAP Addendum Section 2.1	High priority	Farm Service Agency, Livingston and Monroe Co. offices of USDA	
Conduct a one-day workshop on Lake Ontario algae growth	RAP Addendum Section 2.2	Completed	Monroe Co. Dept., NY Great Lakes Research Consortium	Workshop was held in May 2002.
Complete basin water quality plans for the Lake Ontario West, Genesee River and Lake Ontario Central/Irondequoit basins; focus on plans for individual stream watersheds within the basins	Stage II RAP Section 7.23	2 plans completed; 3 plans underway	Counties, SWCDs, municipalities	Plans completed for Irondequoit Creek and North Chili tributary of Black Creek. Plans underway for Long Pond-Northrup Creek, greater Black Creek, and Oatka Creek.
Implement a half-day workshop for municipalities and their engineers about stormwater pollution prevention plans	RAP 1999 Addendum Section 2.8	Completed	Health Dept, SWCD, NYSDEC, municipalities	Workshop hosted in 2001.
Reevaluate the rankings of remedial measures, studies and monitoring methods every 6 years	RAP 1999 Addendum Section 2.9	High priority	Health Dept	Not yet done
Continue developing and implementing intermunicipal agreements (IMAs) between Monroe County & the municipalities to protect water quality	Stage II RAP Section 7.9	Ongoing	County, municipalities	6 IMAs in effect. In 2002 also negotiated a Stormwater Coalition IMA.

Remedial Measures	Location of De-scription	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
Support a proposed study on ways to reduce erosion in the Genesee River due to the flow regime from the dam	RAP 1999 Addendum Section 2.2	Plans underway	COE, USGS, municipalities, universities	The COE will begin developing a sediment loading model for the River in 2003.
Develop created wetlands that manage stormwater quality by instituting intergovernmental agreements	Stage II RAP Section 7.10	Ongoing	County, municipalities	There was an IMA with each of the towns that participated in conversion projects (now expired).
Expand the Highway Projects Task Group effort to include state and municipal departments of transportation and public works	Stage II RAP Section 7.10	High priority	NYS Dept of Transportation, County, municipalities	Highway efforts currently focus on County roads. Towns and NYSDOT participate on the Stormwater Coalition, and a grant to develop a roadway stormwater program was received by the County in 2002.
Organize a workshop to educate the development community, municipalities and the general public about the impact of impervious surfaces on water quality, and possible mitigating strategies	Stage II RAP Section 7.11	Completed	Health Dept, County Planning & Development, EMC, private consultants, Planning Council	Hosted 2-day workshop in 2001 with approx. 130 attendees.
Continue the dry basin conversion program to manage stormwater quality	Stage II RAP Section 7.10	Ongoing	County, municipalities	Dry basin conversion expected in the Town of Ogden using FL-LOWPA funds.
Conduct a demonstration of a swirl concentrator as a stormwater management strategy for urbanized areas	Stage II RAP Section 7.10	Ongoing	SWCD, municipality	Demonstration and monitoring conducted at a town department of public works.
Develop watershed-based drainage plans that identify drainage-related water quality problems and recommend remedial actions such as creation of stormwater wetlands	Stage II RAP Section 7.10	2 plans completed; 3 plans underway	Counties, SWCDs, municipalities	Plans completed for Irondequoit Creek and North Chili tributary of Black Creek. Plans underway for Long Pond-Northrup Creek, greater Black Creek, and Oatka Creek.
Form a small business task group to introduce pollution prevention options, and initiate mentor and volunteer consultant programs	Stage II RAP Section 7.4	1st project completed	County, City of Rochester, NYSDEC, businesses	A manual and poster for auto recyclers was prepared and distributed during 2001. A NYSDEC workshop for auto recyclers was conducted in spring 2001. A brochure for home auto mechanics was prepared in 2002.
Establish an IGA with the COE to prevent future increase in the area of the Turning Basin that is dredged	RAP 1999 Addendum Section 2.4	High priority	COE, Monroe County	No action

Remedial Measures	Location of Description	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
Provide technical assistance to small wastewater treatment plants if necessary to reduce phosphorus discharges	Stage II RAP Section 7.13	Underway	County, municipalities	May use FL-LOWPA funds to help Village of Honeoye Falls institute phosphorus removal after they decide on system upgrade.
Study the benefits of a NYS substance ban policy that would prioritize chemicals for banning; study the legal authority for banning the chemicals	Stage II RAP Section 7.3	High priority	WQMAC, County, NYSDEC	No action
Establish a policy for "package" wastewater treatment plants	Stage II RAP Section 7.13	High priority	Health Dept, NYS-DEC	No action
Establish a local water quality nonprofit organization that would plan, coordinate, fund and implement educational activities	Stage II RAP Section 7.22	Completed	County, Rochester Museum & Science Center (RMSC)	In 2001 the Water Education Collaborative (WEC) was established at the RMSC. The WEC consists of existing agencies & organizations with an interest in water quality education and is seeking to fund and increase education in the community.
Prepare a list of programs, contacts and elementary school curricula that can be distributed to teachers; include information on local wetlands and activities for different age groups	Stage II RAP Section 7.17	Completed	Colleges, Sea Grant, Cooperative Extension, NYSDEC, teachers assns, school board assns	
Enact a long-term agreement with the U.S. Army COE to ensure that restrictions on overflow dredging in the Rochester harbor continue despite changes in personnel and political climate	Stage II RAP Section 7.8	High priority	County, COE, NYS-DEC	Some work initiated. Put on hold in fall of 2002 due to staff reductions at Monroe County Health Department.
Establish a pollution prevention team to focus on one or more chemical pollutants, identify sources and options for pollution prevention, and prepare a work-plan to eliminate discharges of the chemical(s)	Stage II RAP Section 7.4	One project completed	County, medical and dental communities, academia	Project was mercury pollution prevention. A manual was prepared for hospitals, distributed in the Rochester Embayment watershed and to other hospitals in U.S and Canada, and available on the web. A booklet and poster were prepared for dentists, distributed in the Rochester Embayment watershed.
Establish an annual phosphorus pollutant loading goal for the Embayment; set annual pollutant loading limits for watershed wastewater treatment plants that will help to achieve this goal	Stage II RAP Section 7.13	Data collection and <i>concentration</i> goals complete	County, WQMAC, municipalities, academia	Data collection and <i>concentration</i> goal setting were done in conjunction with developing delisting criteria for the eutrophication use impairment. The determination of a <i>pollutant loading goal</i> is not considered feasible.

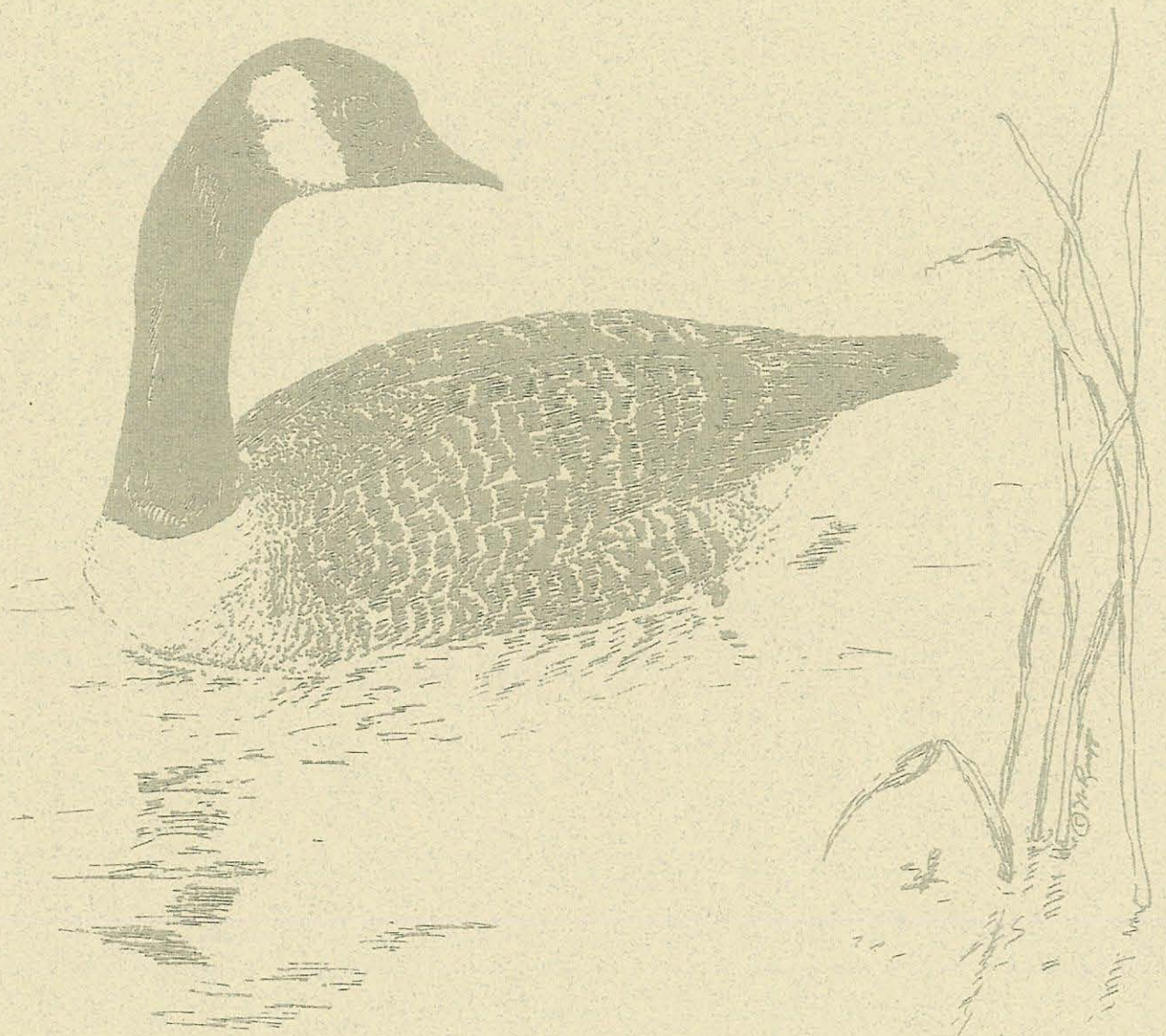
Remedial Measures	Location of Description	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
Stencil storm drains with the message "Do Not Dump – Drains to Stream"; educate the neighborhoods and others about proper disposal of household hazardous substances	Stage II RAP Section 7.6	Ongoing	Dept. Environmental Services, Health Dept, Cooperative Extension, towns, transportation Departments, Water Education Collaborative	Monroe County Department of Environmental Services is coordinating efforts. The Water Education Collaborative provides support. This could be expanded in the future in process of implementing the Phase II stormwater regulations.
<i>Recommended Remedial Measures</i>				
Initiate a public education program about identification of equipment containing PCBs	Stage II RAP Section 7.1	Recommended	Industrial, commercial & municipal entities; public environmental interest groups	No action
Use intergovernmental agreements to facilitate the use of municipal land-use powers to protect fish and wildlife habitat	Stage II RAP Section 7.20	Recommended	County, municipalities	No action
Advocate for a COE sediment transport model for the Genesee River and facilitate the involvement of a stakeholders group	RAP 2002 Addendum Section 2.1	Plans underway	COE, Genesee watershed county and city departments & agencies, NYSDEC, GFLRPC, Farm Service Agency, municipal boards, academia, USGS, US F&W	The COE will begin developing a sediment loading model for the River in 2003. A stakeholders group will be involved.
Evaluate new proposals for remedial actions, studies and monitoring methods every 3 years	Stage II RAP Section 7.24	2 evaluations completed	County, WQMAC, WQCC, municipalities, academia	<i>Rochester Embayment Remedial Action Plan 1999 Addendum and 2002 Addendum</i>
Plan annual workshops for local officials to educate about the benefits of wetlands and how land use decisions affect wetlands; include a wetland tour as part of each workshop	Stage II RAP Section 7.17	Ongoing	EMC, Nature Conservancy, Health Dept, County Planning & Development, NYSDEC, SWCD, Fisheries Advisory Board, Planning Council, Town Supervisors Assn.	Several workshops were hosted from 1999 through 2002.

Remedial Measures	Location of Description	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
Municipalities should initiate pollution prevention within their own programs as educational examples for the communities	Stage II RAP Section 7.4	One ongoing; others underway	County, towns, villages	The City of Rochester has a pollution prevention program. A task group is developing stormwater pollution prevention training for municipalities as part of preparation for federal Phase II Stormwater Regulations.
Promote interaction with decision makers for other Lake Ontario RAPs and the Lakewide Management Plan about sources of critical pollutants that are located outside the Rochester Embayment watershed	Stage II RAP Section 7.2	Recommended	WQMAC	No action
A student intern would perform a literature search on phosphorus emissions from wastewater treatment plant sludge incinerators to determine the fate of phosphorus	Stage II RAP Section 7.13	Completed	Health Dept, County Env. Services	
Create an Agricultural Best Management Practices (BMPs) Coordinator position to facilitate the increased implementation of BMPs	Stage II RAP Section 7.14	Recommended	WQCC, SWCD, Cooperative Extension, NRCS	No action
Develop and staff a speakers bureau to solicit audiences and give presentations of slide shows or videos on the value of wetlands	Stage II RAP Section 7.17	Ongoing	EMC, Nature Conservancy, NYSDEC, Health Dept.	As requested. Not a formal pro-active program.
Promote the use of biofilters through the continued establishment of intergovernmental agreements	Stage II RAP Section 7.10	Recommended	County, municipalities	No action
Electric utilities should accelerate the reduction of PCBs in equipment	Stage II RAP Section 7.1	Recommended	Electric utility	No action
Develop partnerships among the Genesee /Finger Lakes Regional Planning Council, Monroe County, not-for-profit organizations and municipalities to facilitate the use of municipal land use powers to protect habitat	Stage II RAP Section 7.20	Recommended	GFLRPC, County, NYSDEC, municipalities, nonprofit organizations	No action
Create a full-time position to coordinate water quality education activities in Monroe County	Stage II RAP Section 7.22	Completed	County, Rochester Museum and Science Center	A Collaborative Director position was established to lead the Water Education Collaborative.

Remedial Measures	Location of De-scription	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
Investigate the feasibility of pumping contaminated fluid at the site of the Brewer St. tunnel under the Genesee River and remediating it	Stage II RAP Section 7.7	To be initiated	RG&E, Rochester Pure Waters, County Env. Services	In 2002 Monroe County and Rochester Gas & Electric signed a voluntary agreement with the NYSDEC to perform an environmental investigation and cleanup at the Brewer St. site.
Implement a program to identify and rank critical habitat in and along waterways with the goal of restoring, enhancing and protecting the most significant habitats	Stage II RAP Section 7.19	Recommended	WQMAC, EMC, NYSDEC, nonprofit organizations, SWCD, WQCC, Health Dept, County Planning & Development	No action
Use the intergovernmental agreement process to encourage municipalities to address the impacts of impervious surfaces on water quality by revising their parking regulations or by encouraging cluster development and the use of porous paving materials	Stage II RAP Section 7.11	Recommended	County, municipalities	No action. Could be addressed via Phase II stormwater regulations.
Implement a lawn care education program for neighborhoods adjacent to water bodies with a history of eutrophication problems; include meetings with neighborhood associations and field visits	Stage II RAP Section 7.15	Pilot project completed	Cooperative Extension, County	The 1-year pilot of the Great Lawns/Great Lakes program was completed in 2001. The Program Coordinator has given presentations throughout the County on environmentally friendly lawn care.
Coordinate the use of Master Gardeners to educate homeowners regarding lawn care methods that protect water quality	Stage II RAP Section 7.15	Pilot project completed	Cooperative Extension, County	Master Gardeners are used as part of the Great Lawns/Great Lakes program.
Communicate with the International Joint Commission and the St. Lawrence River Board of Control about the need to consider environmental interests, as well as other interests, in managing lake levels	Stage II RAP Section 7.18	Recommended	WQCC	No action
Implement the Monroe County Cornell Cooperative Extension's proposal to demonstrate the impact of yard maintenance activities on water quality	Stage II RAP Section 7.15	Ongoing	Cooperative Extension, County	The homeowner participants in the Great Lawns/Great Lakes program complete a pre-and post-training behavior survey. No water quality monitoring is conducted.
Communicate with the NYSDEC about Monroe County sites listed in the NYS Hazardous Substance Waste Disposal Site Study to promote remediation of local sites	Stage II RAP Section 7.5	Ongoing	NYSDEC, Monroe County Waste Site Advisory Comm.	

Remedial Measures	Location of Description	Status if underway or Priority, Oct. 2002	Responsible Entities	Additional Information
Institute streambank erosion control programs as part of developing watershed-based drainage plans	Stage II RAP Section 7.16	Ongoing	County, municipalities	Streambank erosion inventory completed in 2001. Some sites have been remediated with FL-LOWPA funds. Additional funds are being sought.
Develop a program for removal and disposal of equipment containing PCBs within industrial, commercial, municipal and residential locations	Stage II RAP Section 7.1	Recommended	Industrial, commercial & municipal entities; Monroe Co. Hazardous Waste Collection Facility	No action
Educate developers about the history of contamination in the Genesee River gorge	Stage II RAP Section 7.7	Recommended	Health Dept, EMC, City of Rochester	No action
Promote changes to NYSDEC's existing antidegradation policy that would specify a process for reviewing proposed actions that would result in discharges that significantly lower water quality	Stage II RAP Section 7.3	Recommended	Monroe County; WQCC, NYSDEC	No action

Chapter 3: Studies



Chapter 3: Studies

3.1. Review of Wildlife Deformities or Reproductive Problems in the Rochester Embayment (withdrawn)

Background

Status: Proposal withdrawn (see reasons below)

Use impairment addressed: #5

Additional information: “Bird or animal deformities or reproductive problems” (Use Impairment #5) was listed in the *Stage I RAP* as a use impairment based only on mink reproductive problems, not on bird or animal deformities or any other reproductive problems. The Toxics Oversight Committee (TOC), while preparing delisting criteria for the four identified toxics-related use impairments (#1, #3, #5, #6), realized how little information exists on bird or animal deformities and reproductive problems in the Rochester Embayment Area of Concern. TOC members believed that this is a knowledge gap that should be filled.

Proposal

Description: A comprehensive literature review and survey of deformities or reproductive problems would be conducted by one or more college undergraduate or graduate students as a senior-year or master’s degree thesis. The student would work under the supervision of a professor in the field of environmental or biological science. The study would include birds, terrestrial animals and aquatic life. It would also include information about possible causes of any deformities or reproductive problems found within the Rochester Embayment.

In addition to the literature search, the study would involve communication with persons who have opportunities to make observations on wildlife deformities or reproductive problems, such as researchers, conservationists, bird watchers, fish and wildlife biologists, hunters, trappers, and fisherman. Contacts with knowledgeable persons could be made through local colleges and universities, government agencies, and outdoors-oriented organizations. The student should consult members of the TOC at the beginning of the study to learn about appropriate literature resources and contacts.

Additional information: The proposal was withdrawn for the following reasons.

- There is very little information available in the literature or “first-hand” knowledge from naturalists, biologists, etc. that focuses on the Rochester Embayment.
- If the scope of the literature search is all species Great Lakes-wide, it would be a huge task beyond the scope of an unpaid MS thesis, and what we need is AOC-specific information.
- Any new study should await the results of a current SUNY Brockport thesis project. A student is performing a complete literature review on mink. The student will also investigate the diets of river otters in the Black Creek watershed of the Rochester Embayment AOC.
- This type of information will probably be gathered sooner or later without our input. For example, Great Lakes ecosystem indicators are being developed to inform the public and report progress in restoring and maintaining the Great Lakes ecosystem. New information

about these indicators would be presented every two years at a U.S. Environmental Protection Agency/Environment Canada State of the Lake Ecosystem Conference (SOLEC).

The TOC has suggestions for future consideration of a similar proposal:

- A general literature search could help a student determine what to look for in the Rochester Embayment AOC. The student could then design a project or series of projects to look for the documented problems locally.
- Instead of broadening the literature search to the Great Lakes, it could be broadened to Lake Ontario.
- The literature search could be broadened to the Great Lakes, but looking at individual species and/or certain problems. Then a series of projects specific to the Rochester Embayment watershed could be designed.

Time required: Two or three academic years (note: this is how long it takes to do a MS research thesis)

Estimated costs: The student would conduct the study for academic credit and would not be paid. \$500 would be needed for photocopying, supplies and mileage.

Possible funding sources: Funding agency that includes mini-grants

Possible implementor: College or university

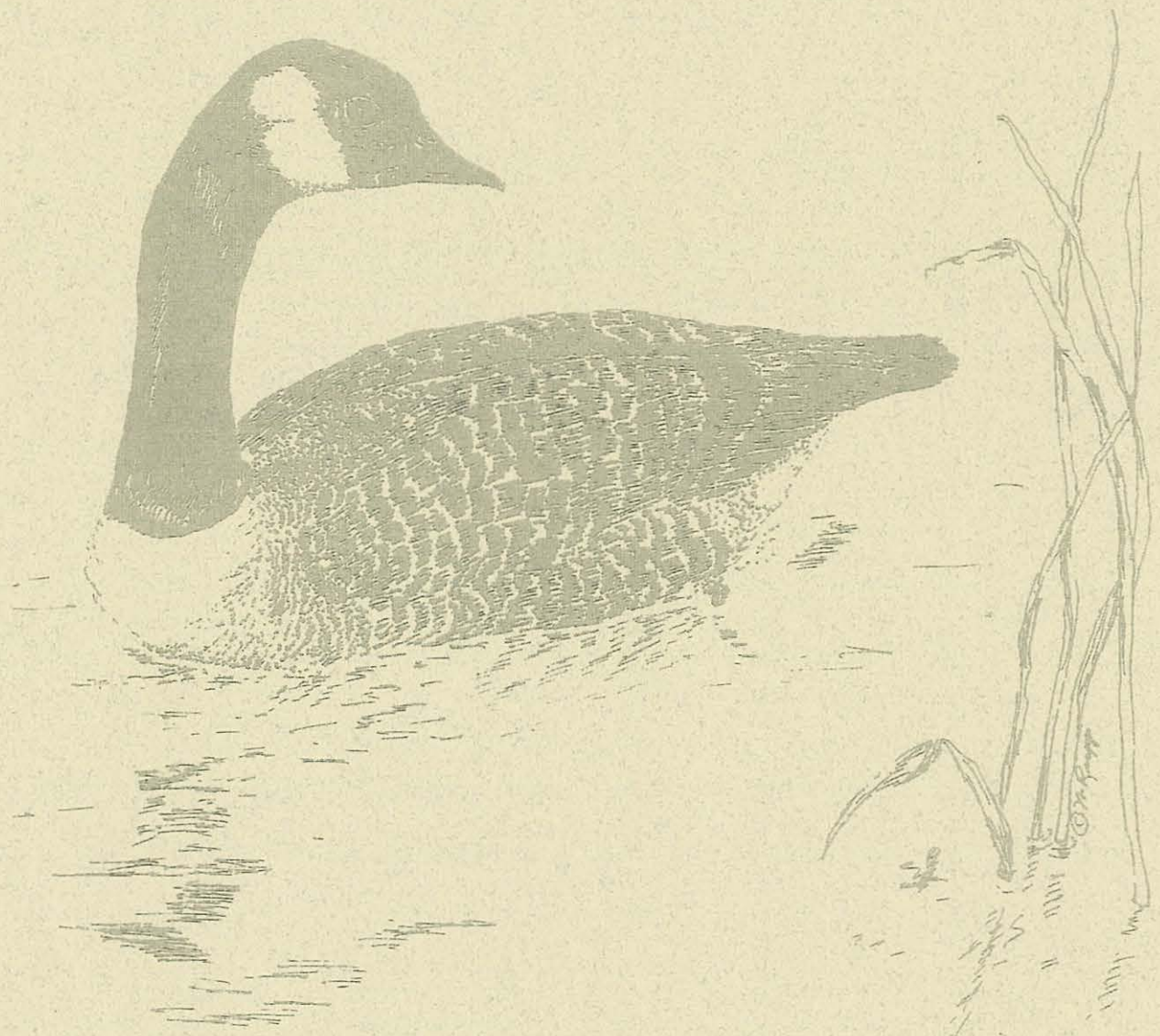
Expected benefits: Further understanding about the environmental health of the Rochester Embayment watershed. Information pertinent to the delisting of use impairment #5. A greater understanding of whether or not use impairment #4 (fish tumors or other deformities) is a concern in the Rochester Embayment AOC.

**3.2. Status of Studies Based on Stage II RAP Chapter 4 and 1999 Addendum
(No studies were added in 2002. Studies are listed in approximate order of priority.)**

Study	Location of Study Description	Status Oct. 2002	Additional Information
Study to determine if the Lake Ontario portion of the Rochester Embayment suffers from degradation of benthos (organisms living on the bottom of a body of water)	Stage II RAP Section 4.5	Completed	Performed by SUNY Brockport professor with NYGLPF support
Discover the reasons for the large differences from year to year in Toxics Release Inventory (TRI) data	RAP 1999 Addendum Section 3.8	No action	
Identify and eliminate problems caused by in-building drains and cross connections	RAP 1999 Addendum Section 3.12	Ongoing	Performed by Monroe County Department of Environmental Services
Study to determine if populations of phytoplankton (microscopic algae) and zooplankton (microscopic aquatic animals) in the Lake Ontario portion of the Rochester Embayment are impaired	Stage II RAP Section 4.7	No action	
Determine and evaluate alternatives for the uses of pesticides and herbicides in Monroe County	RAP 1999 Addendum Section 3.11	No action	
Study alternatives for the use of herbicides to control roadside vegetation on the Monroe County highway system	RAP 1999 Addendum Section 3.10		Some alternatives evaluated in 1999.
Genesee River erosion study focusing on the area between the Letchworth Park flood control dam and Genesee	Stage II RAP Section 4.4	Phase I completed; Phase II ongoing	Performed by SUNY Genesee professor with U.S. Army COE support. The COE will begin developing a sediment loading model for the River in 2003.
Study to verify whether or not fish in the Rochester Embayment have a chemical flavor or odor	Stage II RAP Section 4.1	No action	
Incidence of fish tumors or other fish deformities in the Rochester Embayment watershed	Stage II RAP Section 4.3	No action	
Estimate of the amount of cadmium and lead in runoff due to wear of vehicle tires	Stage II RAP Section 4.8	No action	
Study to learn if contaminants affect the benthic community in the lower Genesee River and, if so, which ones	Stage II RAP Section 4.6		Will be done by NYSDEC as part of Rotating Intensive Basin Studies (RIBS) and benthic delisting criteria monitoring
Study to verify whether a fishless segment exists in the lower Genesee River	Stage II RAP Section 4.2	Completed	Performed by NYSDEC. Publication: <i>Lower Genesee River Study</i>

Study	Location of Study Description	Status Oct. 2002	Additional Information
Update of the pollutant loadings of the Genesee River and wastewater treatment plants	Stage II RAP Section 4.10	No action	
Quantification of the amount of cyanide discharged into the air from wastewater treatment plant sludge incinerators	Stage II RAP Section 4.9		Sludge incinerators in Monroe County have been or are in process of being replaced by landfilling.

Chapter 4: Monitoring Methods



Chapter 4: Monitoring Methods

4.1. Use Aquatic Macrophyte as a Biomonitor of Organic Contaminants (withdrawn)

Background

Status: Withdrawn until next evaluation period

Use impairment(s) addressed: 1, 3, 5, 6

Proposal: Use the aquatic macrophyte *Vallisneria americana* as a biomonitor of organic contaminants

Description: The use of *Vallisneria americana* as a biomonitor of organic contaminants has been shown to be effective in numerous studies conducted by the University of Windsor within the St. Clair and Detroit River areas. Based upon their results, this technique may have high potential as a biomonitor for use in many RAP areas, especially those focusing on organic contaminants.

The method is a relatively inexpensive indicator to note trends or compare sites. It indicates *total* impact. It does not differentiate the impact of single chemicals.

This technique must be considered as being in the developmental stage since there appears to be no use of it outside of the academic studies previously conducted. Therefore at this time it has been concluded that the development of the technique should be followed or pursued as a research endeavor, and not currently be proposed as a RAP monitoring method. This decision should be re-visited in three years at the time of RAP monitoring program review.

**4.2. Status of Monitoring Methods Based on Stage II RAP Chapter 9
and 1999 Addendum**

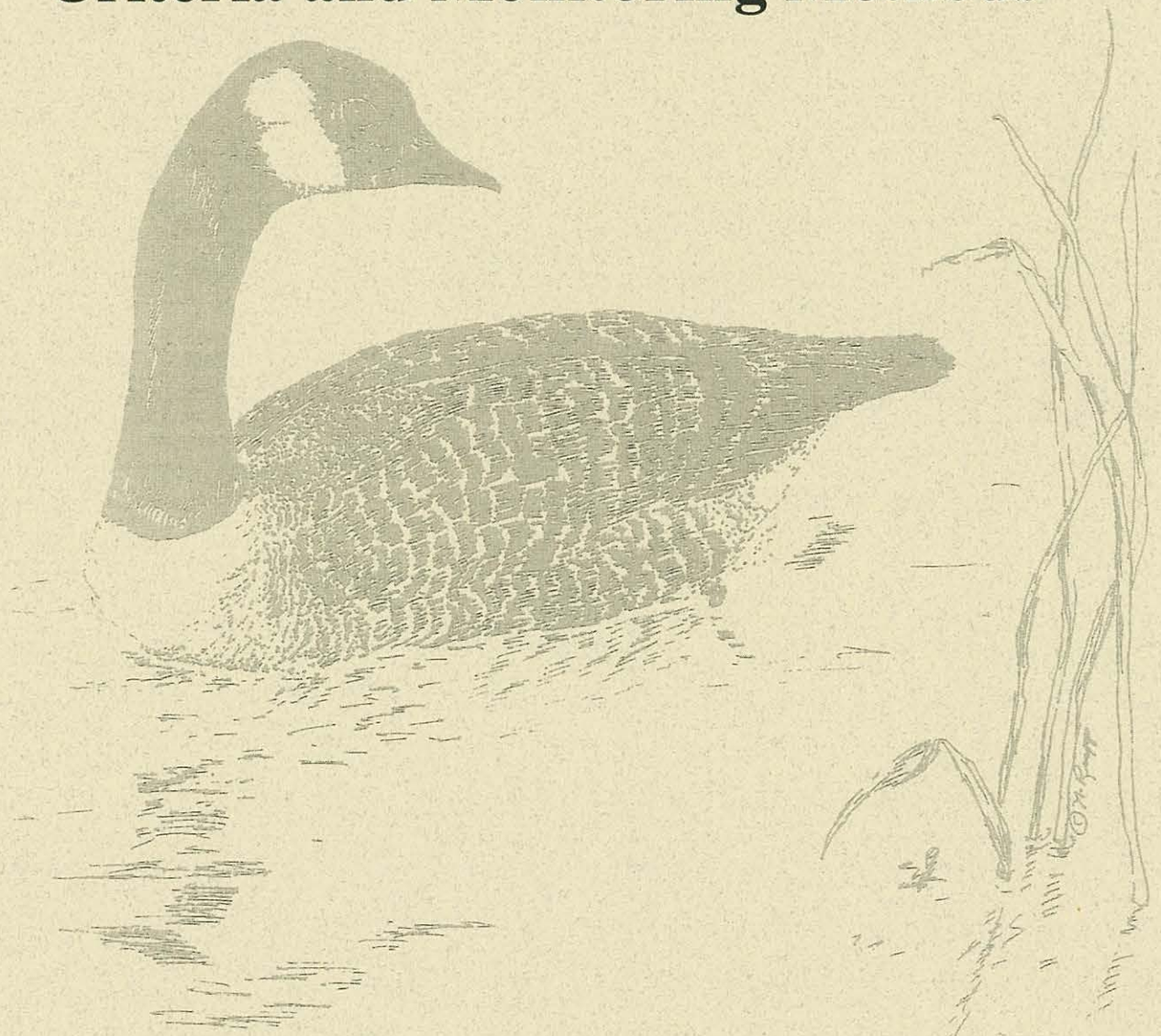
(No monitoring methods were added in 2002. Monitoring methods are listed in approximate order of priority.)

Monitoring Method	Location of Monitoring Method Description	Status March 2002	Additional Information
Monitor levels of toxic chemicals in resident turtles	Stage II RAP Section 9.1	Research underway	Being conducted by SUNY Brockport professor with NYGLPF support.
Monitor species diversity and abundance of benthic and water-column macroinvertebrates (aquatic animals without backbones).	Stage II RAP Section 9.1		Recommended as part of toxics delisting criteria monitoring. May be performed by RIBS.
Monitor benthic and water-column <i>Chironomid</i> (midge fly) larvae deformities	Stage II RAP Section 9.1	No action	
Measure phosphorus loading trends from the Genesee River at an agricultural and an urban location to learn their relative contributions	Stage II RAP Section 9.3	No action	
Determine the status of chemical seeps on the face of the Lower Falls of the Genesee River	Stage II RAP Section 9.8		Recommended as part of Aesthetics delisting criteria monitoring
Use volunteers to collect and monitor litter in and along waterways	Stage II RAP Section 9.9	Ongoing	Community Water Watch program and the annual Coastal Cleanup Event
Determine the status of populations of phytoplankton (microscopic algae) and zooplankton (microscopic aquatic animals) in the lower Genesee River portion of the Rochester Embayment	Stage II RAP Section 9.12		Monitoring of <i>zooplankton</i> recommended as part of plankton delisting criteria monitoring.
Implement citizen monitoring of stream habitat	Stage II RAP Section 9.13	Ongoing	Community Water Watch program
Monitor road salt usage	Stage II RAP Section 9.17	Research has begun.	A roadway stormwater management grant was received in 2002.

Monitoring Method	Location of Monitoring Method Description	Status March 2002	Additional Information
Monitor enforcement efforts for New York State Department of Environmental Conservation permits for stormwater discharges	Stage II RAP Section 9.14	No action	
Continue Monroe County Water Authority monitoring of turbidity for the Lake portion of the Rochester Embayment	Stage II RAP Section 9.10	Ongoing	
Build upon the existing Marsh Monitoring Program and the proposed Reference Wetlands System to monitor wetland habitat quality and quantity	Stage II RAP Section 9.13	Pilot program completed	Trial of Community Wetlands Watch program completed in 2001.
Utilize an intern to develop and conduct a water quality survey	Stage II RAP Section 9.15	Completed	Publication: <i>Water Quality Opinion Survey 2000</i>
Coordinate with a professional pollster to conduct a water quality survey	Stage II RAP Section 9.15		
Obtain data from the U.S. Army Corps of Engineers on required sediment sampling in the Rochester harbor	Stage II RAP Section 9.2	Data available upon request	
Monitor other (than the Lower Falls) chemical seeps in the Genesee River gorge	Stage II RAP Section 9.8	No action	
Compile and interpret data from existing habitat monitoring programs	Stage II RAP Section 9.13	No action	
Continue monitoring water quality at Ontario beach during the swimming season	Stage II RAP Section 9.6	Ongoing	Performed by Monroe County Health Department
Continue monitoring zebra mussel population trends as part of inspection of water intakes	Stage II RAP Section 9.11	Ongoing	
Continue Monroe County Water Authority monitoring of turbidity in the lower Genesee River portion of the Embayment	Stage II RAP Section 9.10	Ongoing	
Create a centralized and easily accessible database for all water quality data produced within Monroe County	Stage II RAP Section 9.18	Completed	USGS data is available on the County website.
Periodically inventory municipalities on their land use policies designed to help meet water quality goals	RAP 1999 Addendum Section 4.3	No action	
Encourage more stringent permit limits and increased monitoring if and when permit limits for chemicals on the list of High Priority Chemical Pollutants are documented	RAP 1999 Addendum Section 4.4	No action	

Monitoring Method	Location of Monitoring Method Description	Status March 2002	Additional Information
Establish volunteer environmental observers to report on unusual discharges to water	Stage II RAP Section 9.14	Ongoing	Community Water Watch program
Prepare periodic status reports on nuisance algae in Lake Ontario	Stage II RAP Section 9.3	Research on algae began in 2000 and is continuing.	
Monitor chloride concentrations in the Salmon Creek/Braddock Bay system	Stage II RAP Section 9.17	No action	
Organize volunteer <i>Cladophora</i> algae observers who would report to the Monroe County Health Department	Stage II RAP Section 9.7	Town of Greece residents track algae.	
Document changes in SPDES permit limits for chemicals on the list of high priority chemical pollutants when permits of Rochester Embayment watershed facilities are renewed	Stage II RAP Section 9.14	No action	
Use aerial photography to monitor <i>Cladophora</i> algae beds	Stage II RAP Section 9.3	Underway	Being conducted by Rochester Inst. of Technology Imaging Center with support from NYGLPF, Monroe County and FL-LOWPA
Conduct a survey of Monroe County businesses on the impacts of raw water turbidity on the cost of doing business	Stage II RAP Section 9.10	No action	
Conduct a survey of county or regional industries, agriculture and golf courses on the impact of zebra mussel on the cost of doing business	Stage II RAP Section 9.11	No action	

Chapter 5: Use Impairment Delisting Criteria and Monitoring Methods



Chapter 5. Use Impairment Delisting Criteria and Monitoring Methods

The delisting criteria and monitoring methods for the use impairments identified in the Rochester Embayment were developed by five committees during 1990 and 2001. Representatives of environmental organizations, academia, and local businesses were included on these committees.

The delisting criteria and monitoring methods for each use impairment were approved by two Monroe County agencies: the Water Quality Management Advisory Committee and the Water Quality Coordinating Committee. It is anticipated that the Water Quality Management Agency will also approve them by the end of 2002.

The delisting criteria and monitoring methods are described in chart format.

Use Impairment #1: Fish and Wildlife Consumption Advisories

Assumptions

1. For this use impairment, the area of interest is the lower Genesee River and the Rochester Embayment. Contaminant input comes from the entire watershed.
2. LaMPs and other RAPs will address contaminants of concern from outside the Rochester Embayment watershed. The Binational Toxics Strategy will address air-borne contaminant input from outside the Great Lakes Basin.
3. The contaminants of concern for these delisting criteria are PCBs, mirex and dioxin.

Use Impairment #1: Fish and Wildlife Consumption Advisories	
Delisting Criteria	Monitoring Methods
<p>Periodic or continuous monitoring will be conducted until it is confirmed that a use impairment no longer exists. At such time, no further monitoring is necessary for <i>delisting</i>. Additional studies may be performed in the future, but the purpose and details of those studies would be determined by a different group or groups.</p>	
<p>1. There are no Area of Concern-specific fish and wildlife consumption advisories issued by New York State; <u>and</u></p>	<p>Monitor annual New York State Department of Health (NYS-DOH) fish and wildlife consumption advisories.</p>
<p>2. There is no significant contaminant input from the Rochester Embayment watershed contributing to contaminant levels in fish and wildlife tissue that require fish and wildlife consumption advisories, as indicated by the following:</p> <ul style="list-style-type: none"> • Tissue concentrations of contaminants of concern in representative samples of resident fish and wildlife are lower than the guidelines requiring advisories.* 	<p>Identify the best resident species to monitor for tissue concentrations of dioxins/furans, PCBs and mirex/photomirex.</p> <p>Request that the New York State Department of Environmental Conservation sample tissue of the resident species in the area of interest and evaluate the results against the New York State Department of Health consumption advisory criteria.</p>
<p>*Note: A natural restoration time period will likely occur between low contaminant levels in the environment and low contaminant levels in tissues.</p>	<p>Notes:</p> <ul style="list-style-type: none"> • A SUNY Brockport study is proposed to identify the best resident species to monitor and to develop a model correlating air, water, sediment and tissue concentrations of dioxins/furans, PCBs and mirex/photomirex. • Use lipid normalization as an interpretation method.

Use Impairment #3: Degradation of Fish and Wildlife Populations

Assumptions

1. For this use impairment, the area of interest is the lower Genesee River and the Rochester Embayment, associated wetlands, and nearshore areas. Contaminant input comes from the entire watershed.
2. LaMPs and other RAPs will address contaminant input from outside the Rochester Embayment watershed. The Binational Toxics Strategy will address air-borne contaminant input from outside the Great Lakes Basin.
3. The high level of PCBs in fish in the Area of Concern is thought to be the main reason for the absence of mink. Habitat factors are also likely to contribute to the impairment. Physical and biological habitat factors have been evaluated by the Habitat Oversight Committee and are addressed in delisting criteria for Use Impairment #14.

Use Impairment #3: Degradation of Fish and Wildlife Populations	
Delisting Criteria	Monitoring Methods
Periodic or continuous monitoring will be conducted until it is confirmed that a use impairment no longer exists. At such time, no further monitoring is necessary for <i>delisting</i> . Additional studies may be performed in the future, but the purpose and details of those studies would be determined by a different group or groups.	
Environmental conditions in the Area of Concern support healthy, self-sustaining communities of fish and wildlife, as indicated by:	
<ol style="list-style-type: none"> 1. Representative samples of water do not exceed NYSDEC ambient water quality standards for the protection of aquatic life and/or for protection of wildlife*, <u>and</u> <ul style="list-style-type: none"> • NYSDEC, Division of Water (June 1998). <i>Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limits</i>, Technical and Operational Guidance Series (TOGS) 1.1.1, Albany, NY. 	<p>Collect samples during each of the four seasons of the year throughout the Rochester Embayment and its watershed. The following sites should be considered:</p> <ul style="list-style-type: none"> • Genesee River at Turning Point above any area of dredging • Braddocks Bay/Salmon Creek outside any area of dredging • Irondequoit Bay outside any area of dredging • Open lake site(s) <p>Analyze the samples for PCBs, dioxins/furans, mirex and mercury. If concentrations of these contaminants in 90% or more of the samples are below concentrations known to degrade fish and wildlife populations, there will be no further monitoring for this delisting criterion.</p> <p>Note: As new information becomes available on other contaminants affecting fish and wildlife, additional contaminants may be monitored.</p>

Use Impairment #3: Degradation of Fish and Wildlife Populations

Delisting Criteria	Monitoring Methods
<p>2. Water column macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC indices (Bode et al, 1996), <u>and</u></p>	<p>Conduct multiplate sampling during 3 seasons of the year for one year within the Rochester Embayment and its watershed. The following sites should be considered:</p> <ul style="list-style-type: none"> • Genesee River at Turning Point above any area of dredging • Braddocks Bay/Salmon Creek outside any area of dredging • Irondequoit Bay outside any area of dredging • Open lake site(s) <p>Determine if water column macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC community indices.</p>
<p>3. Mink are present and are reproducing*, <u>or</u> levels of PCBs, dioxins/furans, mirex and mercury measured in the tissue of resident prey are below those known to be associated with mink reproductive failure.</p> <p>*Note: It is not currently feasible to evaluate mink reproduction, but it may become feasible in the future.</p>	<p>Utilize a winter track study to determine if mink are present. Establish and monitor levels of PCBs, dioxins/furans, mirex and mercury in tissues of resident mink prey.</p> <p>Note: As new information becomes available on other contaminants affecting mink, additional contaminants may be monitored.</p>

Use Impairment #5: Bird or Animal Deformities or Reproductive Problems

Assumptions

1. For this use impairment, the area of interest is the lower Genesee River and the Rochester Embayment, associated wetlands, and nearshore areas. Contaminant input comes from the entire watershed.
2. LaMPs and other RAPs will address contaminant input from outside the Rochester Embayment watershed. The Binational Toxics Strategy will address air-borne contaminant input from outside the Great Lakes Basin.
3. The high level of PCBs in fish in the Area of Concern is thought to be the main reason for the absence of mink. Habitat factors are also likely to contribute to the impairment. Physical and biological habitat factors have been evaluated by the Habitat Oversight Committee and are addressed in delisting criteria for Use Impairment #14.

Use Impairment #5: Bird or Animal Deformities or Reproductive Problems	
Delisting Criteria	Monitoring Methods
<p>Periodic or continuous monitoring will be conducted until it is confirmed that a use impairment no longer exists. At such time, no further monitoring is necessary for <i>delisting</i>. Additional studies may be performed in the future, but the purpose and details of those studies would be determined by a different group or groups.</p>	
<p>1. Representative samples of water do not exceed NYSDEC ambient water quality standards for the protection of aquatic life and/or for protection of wildlife*, <u>and</u></p> <p>* NYSDEC, Division of Water (June 1998). <i>Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limits</i>, Technical and Operational Guidance Series (TOGS) 1.1.1, Albany, NY.</p>	<p>Collect water samples during each of the four seasons of the year for one year within the Rochester Embayment and its watershed. The following sites should be considered:</p> <ul style="list-style-type: none"> • Genesee River at Turning Point above any area of dredging • Braddocks Bay/Salmon Creek outside any area of dredging • Irondequoit Bay outside any area of dredging • Open lake site(s) <p>Analyze the samples for PCBs, dioxins/furans, mirex and mercury. If concentrations of these contaminants in 90% or more of the samples are below concentrations known to cause bird or animal deformities or reproduction problems, there will be no further monitoring for this delisting criterion.</p> <p>Note: As new information becomes available on other contaminants affecting fish and wildlife, additional animal species and contaminants may be monitored.</p>

Use Impairment #5: Bird or Animal Deformities or Reproductive Problems

Delisting Criteria	Monitoring Methods
<p>2. Mink are present and are reproducing*, <u>or</u> levels of PCBs, dioxin/furans, mirex and mercury measured in the tissue of resident prey are below those known to be associated with mink reproductive failure.</p> <p>*Note: It is not currently feasible to evaluate mink reproduction, but it may become feasible in the future.</p>	<p>Utilize a winter track study to determine if mink are present. Establish and monitor levels of PCBs, dioxin/furans, mirex and mercury in tissues of resident mink prey.</p> <p>Note: As new information becomes available on other contaminants affecting mink, additional contaminants may be monitored.</p>

Use Impairment #6: Degradation of Benthos

Assumptions

1. For this use impairment, the area of interest is the lower Genesee River. As of January 2000, it is unknown whether or not the benthos of the Rochester Embayment is degraded. Contaminant input comes from the entire watershed.
2. Degradation is due to contaminants.

Use Impairment #6: Degradation of Benthos	
Delisting Criteria	Monitoring Methods
<p>Periodic or continuous monitoring will be conducted until it is confirmed that a use impairment no longer exists. At such time, no further monitoring is necessary for <i>delisting</i>. Additional studies may be performed in the future, but the purpose and details of those studies would be determined by a different group or groups.</p>	
<p>1. Benthic macroinvertebrate communities are “non-impacted” or “slightly impacted” according to NYSDEC indices (Bode et al., 1996).</p> <p style="text-align: center;"><u>or</u></p>	<p>Collect benthic macroinvertebrates during spring, summer and fall seasons for one year within the Rochester Embayment and its watershed. The following sites should be considered:</p> <ul style="list-style-type: none"> • Genesee River at Turning Point above any area of dredging • Braddocks Bay/Salmon Creek outside any area of dredging • Irondequoit Bay outside any area of dredging • Open lake site(s) <p>Analyze samples for community structure indices for Ponar samples from soft sediments (Appendix IV, Bode et al., 1996).</p>
<p>2. In the absence of conclusive community structure data, the toxicity of sediment-associated contaminants is not statistically higher than controls.</p>	<p>Perform acute and chronic sediment toxicity tests according to ASTM/EPA standard methods on samples collected as described under Use Impairment #6, Delisting Criterion #1, Monitoring Methods.</p>

Use Impairment #7: Restrictions on Dredging Activities

Use Impairment #7: Restrictions on Dredging Activities	
Delisting Criteria	Monitoring Methods
1. A formal long-term agreement between Monroe County and the U.S. Army Corps of Engineers (COE) is in place to prohibit overflow dredging in the Rochester harbor (the NYSDEC may also be included in the agreement); and	Formal monitoring of the dredging process would be conducted by Monroe County Environmental Health Laboratory staff during beach monitoring activities.
2. The quality of the material to be dredged meets the standards for open-lake disposal.	<i>Great Lakes Dredge Material Testing and Evaluation Manual</i> (U.S. EPA, U.S. Army Corps of Engineers)

Dredging Background

Dredging is performed every two years to maintain the navigational channel of the Rochester harbor for commercial and recreational vessels. There are four dredging methods:

- Hopper dredge with overflow
- Hopper dredge without overflow
- Pipeline dredge
- Bucket, grapple or clamshell dredge

The hopper, pipeline and clamshell methods have been used at Rochester harbor.

With the overflow method, the hoppers are filled to capacity and then filling continues with an overflow until the density of the load reaches a level that has been predetermined to give maximum operational efficiency. The overflow returns the less dense material to the River, causing considerable local turbidity.

Since the 1960s there has been concern about impact of overflow dredging on the water quality of the Genesee River and Ontario Beach. Problems associated with overflow are:

1. The concentrations of most pollutants in Genesee River sediment vary inversely with particle size. These pollutants include coliform bacteria, pathogenic bacteria, heavy metals, organic compounds, and nutrients.
2. The overflow from a hopper dredge is essentially a mud/water mixture decanted from the hoppers. The mixture contains floating debris, oils, organic solids, and fine-grained inorganic sediment. This material does not settle quickly back to the bottom and it markedly degrades water quality.
3. The frequency of combined sewer overflows has decreased significantly since the 1960s, but was once a major concern. Fecal coliform and pathogens from the City's combined sewer overflow settle during periods of moderate to

Use Impairment #7 (continued)

low flow, resulting in a substantial concentration of these organisms in the sediments. A decanting of the fine particles from the hoppers during overflow washes large numbers of fecal coliform and pathogenic bacteria back into the River.

During the 1970s the involved parties (Monroe County, NYSDEC, and the U.S. Army Corps of Engineers) generally agreed that overflow dredging caused the only serious water quality problems associated with dredging. In 1977 dredging was performed without overflow and the dredged material was discharged to an open lake disposal area. This method required only a moderate increase in time and almost totally eliminated negative water quality impacts.

In 1982 there was a lapse from the informal agreement on the part of the dredging contractor, and a serious degradation of water quality resulted from overflow dredging in the River harbor. Therefore, in 1983 Monroe County again expressed a major concern about overflow dredging and at a meeting the involved parties recommitted to the restriction on overflow dredging.

In 1986 a hopper dredge was used with overflow in order to perform water quality testing to provide a basis for restricting overflow dredging in the future. The data indicated that elevated fecal coliform levels could result from the resuspension of dredge overflow. The data also indicated that overflow dredging was not advantageous for increasing solids content within the hopper bins and, therefore, did not improve operational efficiency.

Sediment is tested every five years for suitability for open-lake disposal. The report on testing results is submitted to the NYSDEC and U.S. EPA. Testing was last performed in 1999 and the quality of Rochester harbor sediment was shown to be similar to that of the open lake.

As of 2000, there is no formal written agreement restricting overflow dredging, only letters and verbal agreements. However, no overflow dredging is allowed in any permit application, including those of marinas in the area. (Overflow dredging is not widely used in the Great Lakes anymore.) NYSDEC, the Army Corps of Engineers, and dredging contractors have pre-dredging meetings to ensure a common understanding.

Use Impairment #8: Eutrophication or Undesirable Algae

Assumptions

1. Eutrophication is defined as the normal slow aging process by which a lake evolves into a bog or marsh and ultimately assumes a completely terrestrial state and disappears. Although it occurs naturally, eutrophication can accelerate when human activity adds nutrients, such as phosphate detergents and inorganic fertilizers, to the water. These nutrients stimulate the growth of algae, which will eventually die, settle to the bottom and decompose. Decomposition of the plant material uses up oxygen and can make water intolerable for fish and other aquatic creatures.
2. The near-nearshore area is defined as areas of the embayment with a depth of 1 meter. The nearshore area is defined as areas of the embayment with a depth of eleven (Russell Station) to twelve meters (Old Van Lare Outfall).
3. All surface waters have the potential for eutrophication problems.
4. The similarity of near-nearshore data from outside and inside the Rochester Embayment suggests that the eutrophication problem may be lake-wide and not exclusive to the Rochester Embayment.

Use Impairment #8: Eutrophication or Undesirable Algae	
Delisting Criteria	Monitoring Methods
Periodic or continuous monitoring will be conducted until it is confirmed that a use impairment no longer exists. At such time, no further monitoring is necessary for delisting. Additional studies may be performed in the future, but the purpose and details of those studies would be determined by a different group or groups.	
1. Total Phosphorus concentrations for near (11-12 m) and near-nearshore (1 m) are less than or equal to 15 ppb and 20 ppb respectively; and	Monitor total phosphorus concentrations from May through October in near* and near-nearshore** areas.
2. Chlorophyll a concentrations for the near (11-12 m) and near-nearshore (1 m) are less than or equal to 3.8 ppb and 5 ppb respectively; and	Monitor chlorophyll <u>a</u> concentrations from May through October in near* and near-nearshore** areas.
3. Secchi disk measurements in the nearshore (12 m) are greater than or equal to 4 meters.	Measure secchi disk depths in nearshore^ areas from May through October.

* Russell Station and Old Van Lare Outfall

** Webster Beach, Forest Lawn, Grandview and Rigney Bluff

^ Old Van Lare Outfall

Use Impairment #8 (continued)

Comments

1. The causes of eutrophication in the near-nearshore areas have not been definitely determined. However, one potential cause is the recycling of nutrients by zebra mussels, which produce increased filamentous algae. Other possible causes include physical disturbances, warmer water temperatures, prevailing northwesterly winds, lake levels and natural and manmade traps such as sand bars and breakwalls.
2. As of 2000 there does not appear to be a significant eutrophication problem in the nearshore area of the Rochester Embayment.
3. One goal is for a trend of reduction of nutrients as measured within the Genesee River and Embayment streams that will continue indefinitely.

Use Impairment #9: Drinking Water Taste and Odor Problems

Assumptions

1. In the Rochester Embayment a drinking water taste and odor problem is defined as a musty/earthy taste and odor due to natural lake processes, and not due to drinking water treatment.
2. All surface waters have the potential for occasional taste and odor problems. In a complex ecosystem such as the Great Lakes, the impairment may always exist to some extent.
3. "Lake Ontario water purveyors most commonly receive consumer complaints regarding "earthy" or "musty" taste and odors...Most Lake Ontario water purveyors report taste and odor problems during the warmer months when water temperatures exceed 60°F." (New York State Department of Environmental Conservation, June 1994. *Lakewide Impacts of Critical Pollutants on United States Boundary Waters of Lake Ontario*) The problem is more prevalent at shallower nearshore water intakes.
4. MIB and geosmin, possible causes of taste and odor problems, are produced by algae in life processes and are "natural" in a complex lake system.
5. The causes of taste and odor problems have not been definitely determined. Probable contributing factors are:
 - Benthic algae/zebra mussels/actinomycetes
 - Reduced nutrient loading that allows for increased water clarity and light penetration.
6. In the Rochester Embayment, the problem is not occurring as a result of water quality degradation in the watershed.
7. In the Rochester Embayment taste and odor is an aesthetic problem, and is not a human health concern.

Use Impairment #9: Drinking Water Taste and Odor Problems	
Delisting Criteria	Monitoring Method
1. Current scientific literature indicates that drinking water taste and odor is a Great Lakes-wide problem; <u>and</u>	Members of the Drinking Water Oversight Committee review scientific literature on an ongoing basis and meet, as needed, to determine if the Rochester Embayment watershed may be contributing to any cause of drinking water taste and odor that has been established.
2. The scientific literature establishes cause(s) for taste and odor problems; <u>and</u>	
3. The Rochester Embayment watershed does not contribute significantly to the taste and odor problem as determined using the findings of Delisting Criteria #2.	

Use Impairment #10: Beach Closings

Assumptions

1. “No beach closings” is not a realistic goal due to occasional unfavorable weather conditions, the proximity of Ontario Beach to the mouth of the Genesee River, and poor water circulation due to the physical barrier of the pier.
2. It is assumed that the beach will be closed an average of 20% of the time due to river flow and rainfall events, based on data from the last five-years (1997-2001). During high Genesee River flows and when the current of the Lake is reversed (~33% of the time), the poor water clarity, typical of the Genesee River, reduces the clarity of the bathing water, which in turn reduces ultra-violet light penetration that kills harmful bacteria. Rainfall washes bacteria off local land surfaces.
3. Beach closings are based on the Ontario Beach operating model.

Use Impairment #10: Beach Closings	
Delisting Criteria	Monitoring Method
1. Ontario Beach is open at least 80% of the swimming season (16 days closed in a maximum 80-day season), measured as a five-year rolling average; and 2. The Ontario Beach operating model is at least 80% accurate, measured as a 5-year rolling average.	Data collected and summarized annually in the Ontario Beach Report

Ontario Beach Operating Model Background

Individuals charged with protecting the health of the public use indicators as a means of deciding whether a hazard to bathers exists. Indicators of risk take two forms, predictive and confirmative. Sampling and analysis of the bacteriological quality of a swimming area is a confirmative indicator; presence of indicator organisms above a certain level confirms that there was a risk at the time that the sample was collected. However,

there is a time delay between collection of the sample and completion of analysis because the bacterial cultures are incubated for 24 hours, which renders bacteriological analysis unsuitable for determining the safety of a beach for swimming in advance of any given day. Predictive indicators are used as a means of deciding whether a hazard to bathers is likely to exist. Predictive indicators are environmental conditions, or

Use Impairment #10 (continued)

combinations of conditions, that monitoring of confirmative indicators has shown to have a high likelihood of being accompanied by bacteriological conditions that pose a risk to bathers. The Operating Model in use at Ontario Beach is a predictive tool used to determine beach status on a daily basis. Predictive indicators include Genesee River flow, local rainfall, water clarity, algae, and the previous day's bacteria levels. The monitoring program serves to gather the predictive information used in the Operating Model, and as the source of confirmative data used in calibrating the Operating Model for future use.

Predictive models are not expected to be 100% accurate. A 75% accuracy rate would be considered "very good" for a model of this type. The primary factors that affect water quality at the beach are included in the Operating Model. There are other secondary factors that are not included in the model because clear relationships are not known. Examples of possible secondary factors include: waste from seagulls and localized

sandbars. Sandbars can result in poor water circulation within sections of the Beach, which impacts the accumulation of algae, as well as bacteria levels. Sandbars change from season to season and within a single season.

It should also be noted that the accurate rating of the Ontario Beach Operating Model is currently based on criteria in the NYS Sanitary Code for both the single sample and cumulative (30 day geometric mean) bacteriological standards for Fecal Coliform density. Currently, the United States Environmental Protection Agency is promoting the conversion of state standards to criteria based on both single sample and cumulative bacteriological standards for a combination of *Eserichia Coli* and *Enterococcus* densities. Preliminary analysis of data collected for these indicators at Ontario Beach indicates that the confirmative accuracy of the model may improve using these indicators, and delisting criteria may be modified at a later date to reflect a change in the standards.

Use Impairment #11: Degradation of Aesthetics

Assumptions:

1. Generalized litter is assumed to come from debris washed into the Genesee River with stormwater runoff or combined sewer overflows, blown into the location, and/or left by users of the river banks. It is assumed that the types of litter deposited by combined sewer overflows and people fishing can be characterized.

Use Impairment #11: Degradation of Aesthetics	
Delisting Criteria	Monitoring Method
1. There is virtually no persistent decomposing algae (algae does not persist more than 10% of summer days) along the Lake Ontario shoreline that is not part of a lakewide problem, for 5 consecutive years; <u>and</u>	Health Department monitoring documentation that algae problem is a lakewide problem.
2. There is no odor due to chemical seeps at the Lower Fall; <u>and</u>	Conduct Initial Survey according to process described in RAP Action 9.8.2 of Stage II RAP. Subsequent frequency to be determined based on initial survey findings
3. There are no alewife die-offs for a 5-year period or dead alewives along the Lake Ontario shoreline are part of a lakewide problem to which the Rochester Embayment watershed does not contribute; <u>and</u>	One-time Literature search by student intern to confirm that alewife die-offs were a lakewide problem.
4. There are no reports of discarded salmonids along the shoreline of the lower Genesee River, due to fishing practices, for 5 consecutive years; <u>and</u>	Annual Tracking of complaints lodged with the City of Rochester, NYSDEC, MCDOH, and MC Fishery Advisory Board. Tracking will be done by Health Department staff as part of the Water Quality Management Agency Annual Report writing process.
5. There is virtually no litter caused by combined sewer overflows or left by fishermen or other recreational users in the lower Genesee River or adjacent shoreline; <u>and</u>	Observational and photographic survey at identified locations at regular time intervals and monitoring of complaints to private or public agencies. Observations could be conducted by WQMAC, members of Fishery Advisory Board, A Community Water Watch Team, or City Environmental Stewardship Committee or Annual Coastal Clean-up.

Use Impairment #11: Degradation of Aesthetics

Delisting Criteria	Monitoring Method
6. Suspended sediment concentrations in the Genesee River remain less than 30 mg/l for at least 80% of a year, and exceed 200 mg/l for no more than 5 events with a combined duration of not greater than 20 days, as determined by a 5-year average (habitat delisting criterion on suspended sediment)	Evaluate Health Department data at the Charlotte Pump Station. Use water years (Oct. 1-Sep 30) for averaging.

Use Impairment #12: Added Costs to Agriculture and Industry

Assumptions

1. The presence of zebra mussels is the primary reason for significant costs to agriculture or industry for the use of water in the Rochester Embayment.
2. Zebra mussels, an exotic species, are present throughout the Great Lakes and their tributaries.
3. These delisting criteria apply only to process water.

Use Impairment #12: Added Costs to Agriculture and Industry	
Delisting Criteria	Monitoring Method
1. Current scientific literature indicates that zebra mussel is a Great Lakes-wide problem; <u>and</u>	Members of the Drinking Water Oversight Committee review scientific literature on an ongoing basis and meet, as needed, to determine if the Rochester Embayment watershed may be contributing to the zebra mussel problem.
2. The Rochester Embayment watershed does not contribute to the presence of zebra mussel in the Rochester Embayment.	

Use Impairment #13: Degradation of Phytoplankton and Zooplankton Populations

Assumption

The use impairment was based on impairment to zooplankton in the Genesee River. No use impairment was identified for phytoplankton in the River or for zooplankton/phytoplankton in the Rochester Embayment.

Use Impairment #13: Degradation of Phytoplankton and Zooplankton Populations	
Delisting Criterion	Monitoring Method
Ninety percent of ambient water samples (collected monthly for one year), compared to a control, cause no chronic toxicity to <i>Ceriodaphnia dubia</i> .	<p>Perform chronic toxicity testing* monthly for one year on <i>Ceriodaphnia dubia</i> exposed to samples of ambient water from the Boxart Street sampling site, as part of NYSDEC Rotating Intensive Basin Studies (RIBS). Repeat testing every 5 years on RIBS rotation until use impairment is delisted.</p> <p>* USEPA. 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving water to freshwater organisms, Third edition. EPA/600/4-91/002. U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Cincinnati, OH. 341 pp.</p>

Use Impairment #14: Loss of Fish and Wildlife Habitat

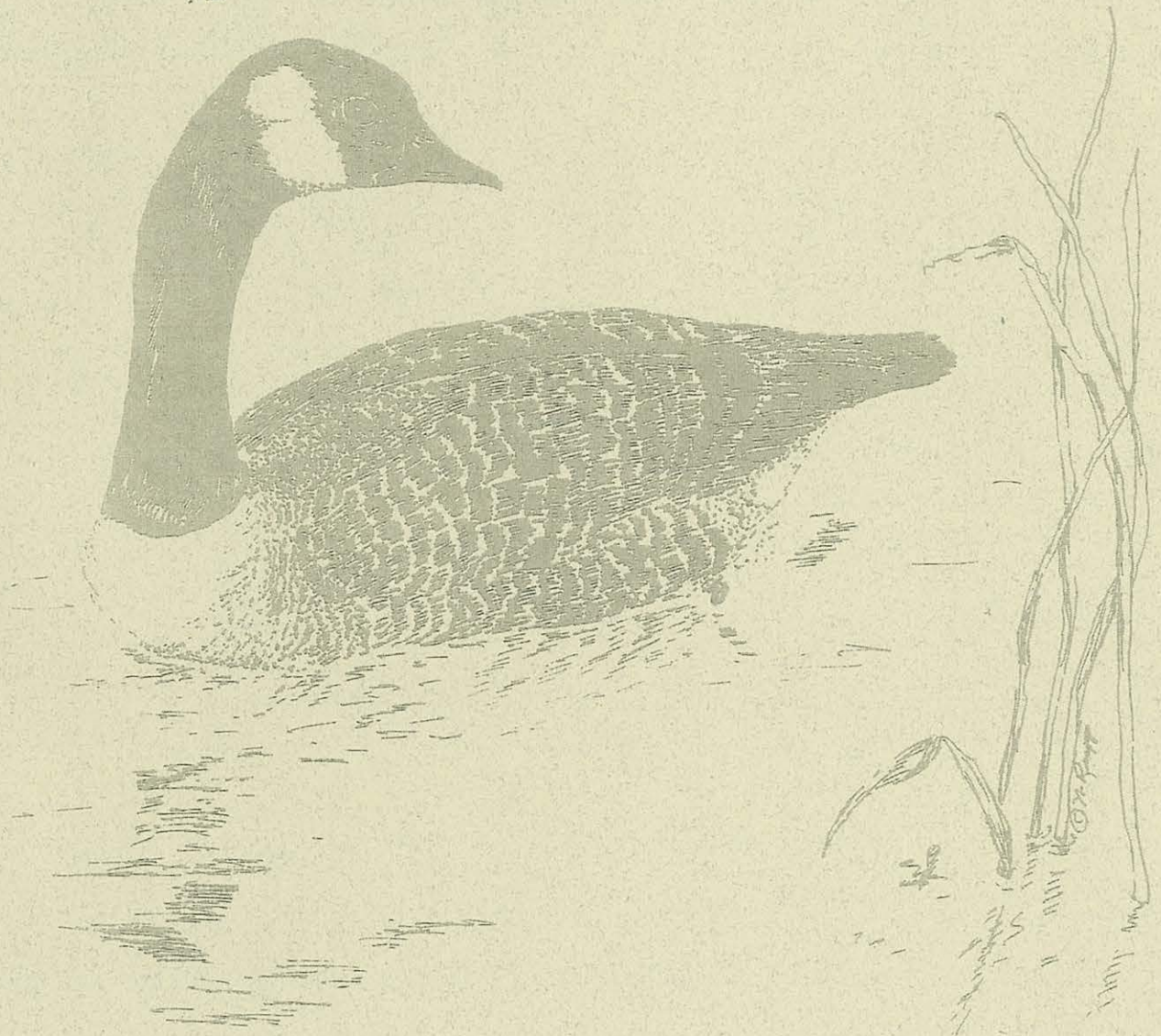
Assumptions:

1. The study area for this use impairment is limited to the Rochester Embayment, the lower Genesee River from the Lower Falls to Lake Ontario, and the contributing area north of the historical Lake Iroquois shoreline (approximately Ridge Road).
2. Toxic chemical indicators for delisting this use impairment have been determined by the Toxics Oversight Committee.
3. Except for agricultural areas, most loss of wetlands in the study area is permanent.
4. In areas where structures have been built in the stream buffer, it may not be feasible to restore natural vegetation.
5. Experts do not consider mink to be a good indicator of habitat quality, but there is no better terrestrial indicator.

Use Impairment #14: Loss of Fish and Wildlife Habitat	
Delisting Criteria	Monitoring Methods
1. There is no net loss of acreage and quality of federal or state-designated wetlands, using 1996 as the baseline year for comparisons; <u>and</u>	1. Use EMC inventory method to evaluate diversity of vegetation (every 3 years is recommended) in 6 representative wetlands, including the degree of intrusion by exotic/invasive species. Incorporate information about additional wetlands if it becomes available. 2. Evaluate acreage of wetlands, as shown by aerial photos (every 3 years is recommended).
2. There is no net loss of the 50-foot-wide buffer strip of trees and shrubs on both sides of NYSDEC classified streams and the Genesee River up to the Lower Falls (using 1999 as the baseline year for comparisons); <u>and</u>	Evaluate some streambanks where there is concern plus some streambanks chosen randomly (every 3 years is recommended). Use aerial photos for the evaluation or, if a town has streambank regulations, contact the town for data. Conservation Boards and Highway Departments are possible sources of data.

Use Impairment #14: Loss of Fish and Wildlife Habitat	
Delisting Criteria	Monitoring Methods
3. Suspended sediment concentrations remain less than 30 mg/l for at least 80% of a year, and exceed 200 mg/l for no more than 5 events with a combined duration of not greater than 20 days, as determined by a 5-year average; <u>and</u>	Evaluate Environmental Laboratory data at the Charlotte Pump Station. Use water years (Oct. 1-Sep 30) for averaging.
4. Hexagenia, or another appropriate indicator, is present in the Embayment and in suitable habitats in the Genesee River up to the Lower Falls; Members of the stonefly, mayfly and caddisfly families are present in streams; <u>and</u>	1. Use Makarewicz (SUNY Brockport) data for Lake Ontario portion of Embayment. 2. Use U.S. Fish & Wildlife or Environmental Laboratory data for the River. 3. Use Community Water Watch data for streams
5. Amphibian diversity and abundance in the study area (including the Genesee River up to the Lower Falls if monitoring can be performed safely) are comparable to expected standards for the type of habitat; <u>and</u>	Use Marsh Monitoring Program (MMP) methods and data. Compare the number of species in study area wetlands with the number expected to be found in healthy wetlands. Number expected could be a non-AOC average determined by the MMP.
6. Lake sturgeon of different life stages inhabit the Genesee River up to the Lower Falls and the Embayment, <u>or</u> physical and biological habitat are suitable for sturgeon; <u>and</u>	Assess and monitor habitat conditions, presence or absence of sturgeon and movements of transplanted sturgeon on a 3-5 year basis. Use data from U.S. Fish and Wildlife project.
7. Mink inhabit and reproduce within areas contiguous to the Genesee River and streams within the defined area, <u>or</u> physical and biological habitat are suitable for mink.	1. NYSDEC would fine-tune mink trapping data for our purpose. 2. Perform winter tracking study in conjunction with NYSDEC. 3. Use CWW reporting.

Chapter 6: Lakewide vs. Local Impairments Issue Statement



**Chapter 6. Lakewide vs. Local Impairments Issue Statement
(Adopted by the Monroe County Water Quality Management
Advisory Committee)***

The remedial measures of the Rochester Embayment RAP address the sources and causes of Use Impairments in the Area of Concern (AOC) that have been identified as originating in the watershed or the AOC itself, and contributing to impairments in the AOC. The Water Quality Management Advisory Committee (WQMAC) is supportive of delisting those Use Impairments for which the Rochester Embayment watershed is not a significant contributor of pollutants, and therefore no remedial actions can be proposed. The Committee recommends the status of the 14 Use Impairments (as developed by the International Joint Commission) be revisited every 10 years (starting in 2010) or more frequently as new information or technology becomes available. Use Impairments may be delisted or additional Use Impairments may need to be added or re-listed.

The WQMAC recognizes that there are lakewide impairments that do not originate from pollutants (or other causes of impairments) within the Rochester Embayment watershed. The WQMAC will continue to work with local, state, federal, and international agencies on programs, such as the Lake Ontario Lakewide Management Plan, that address these lakewide Use Impairments. For example, the WQMAC will defer to the four parties (NYSDEC, EPA, Environment Canada, and Ontario Ministry of Environment) regarding lakewide Use Impairments with the understanding that they will keep the WQMAC informed of ongoing progress, or lack thereof, toward remediation.

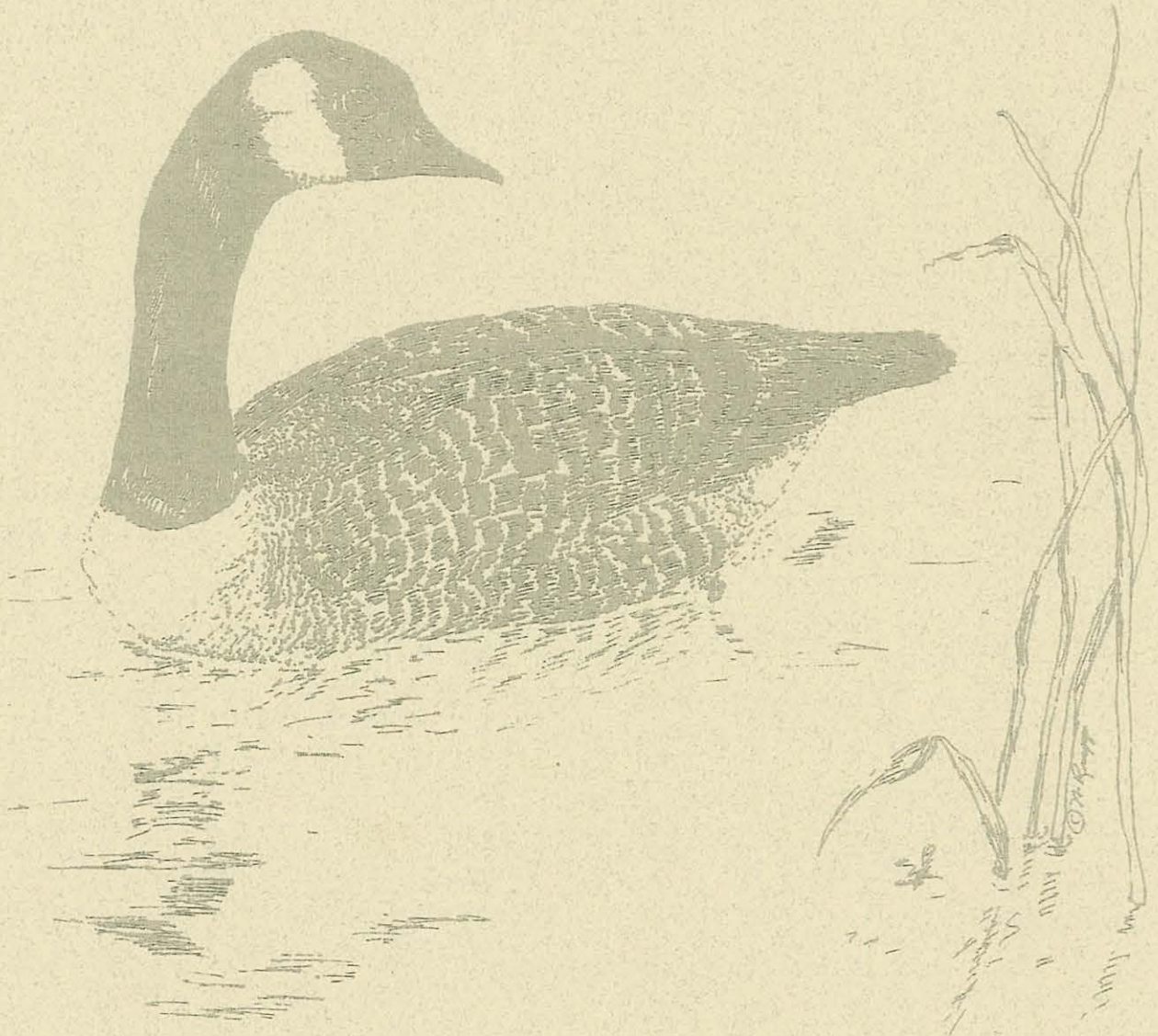
*WQMAC merged with the Monroe County Water Quality Coordinating Committee in 2002.

WQMAC Lakewide vs. Local Impairments Issue Statement (2000)				
Use Impairments	Local Use Impairments	Lakewide Use Impairments	Local actions can be taken to address local pollutants	Local actions will have minimal impact on pollutants causing the UI
Restrictions on fish and wildlife consumption	X	X*		x
Tainting of fish and wildlife flavor				
Degradation of wildlife pop. (mink)	X	X*		x
Fish tumors or other deformities				
Bird/animal deformities or other reproductive problems (mink)	X	X*		x
Degradation of benthos	X		x	
Restrictions on dredging activities	X		x	
Eutrophication or undesirable algae	X	X	x	
Drinking water taste and odor problems	X	X		x
Beach closings	X		x	
Degradation of aesthetics	X		x	
Added cost to agr. or industry (zebra mussels)	X	X		x
Degradation of phytoplankton and zooplankton pop.	X		x	
Loss of fish and wildlife habitat	X	X*	x	

* Indicates that the Use Impairment is addressed in the Lake Ontario Lakewide Management Plan.

Shaded areas indicate lakewide use impairments for which local action will have minimal or no impact.

Chapter 7: Water Quality Education 1998-2002



Chapter 7. Water Quality Education (1998-2002)

Many water quality educational activities are ongoing. Some have resulted from RAP proposals. Others are independent of RAP activities. Most of the educational activities are conducted by one or more of the following agencies:

- Monroe County Department of Health
- Monroe County Department of Environmental Services
- Monroe County Soil and Water Conservation District
- Cornell Cooperative Extension of Monroe County
- Water Education Collaborative

There are many other organizations that also do water quality public outreach.

Programs that have been initiated or sponsored:

- The Water Education Collaborative (located at the Rochester Museum and Science Center) plans, coordinates, funds, and implements water quality educational activities throughout the Genesee Region watersheds.
- Community Water Watch Program. Numerous training sessions have been held. Currently (2002) there are 39 stream teams active. The Volunteer Coordinator position was established to build the program. The program is also being expanded to incorporate wetlands.
- The Great Lawns/Great Lakes Program. Developed to help homeowners care for their lawns without degrading water quality.
- Annual New York Stormwater Management Conference and Exhibition (with several Soil & Water Conservation Districts). Brings engineers, planners and municipal representatives together for one day of training on stormwater regulations, best management practices and implementation techniques.
- Workshops for local municipal officials and citizens to educate about wetland resources and regulations and the use of stormwater wetlands to treat stormwater runoff.
- One-day wetland seminar and field trip as part of the NYS Association of Environmental Management Councils/NYS Association of Conservation Commissions annual conference (1999).
- Storm drain stenciling projects.
- Intensive educational campaign in the Northrup Creek/Long Pond watershed on the federal Department of Agriculture's Wetland Reserve Program. Potentially eligible landowners were identified and contacted (1999).
- Work with a local school district to plan a hands-on wetlands education project for middle school students (2000).
- Water Quality Knowledge and Opinion Survey. Phone survey of over 500 Monroe County residents; completed in April 2000.
- Conservation Field Days. An annual workshop for 1300 sixth-grade students held in a park. Students are exposed to water quality, recycling, composting, stormwater management, agricultural conservation and more.
- Envirothon - Instruct the aquatics topic for the competition annually. Host a series of mini-workshops throughout the winter to help prepare participants for the spring review session and competition.
- Highway Stormwater Management Training (with the Monroe County Department of Transportation, 1999).

- Environmental health education program to assist the residents of the Village of Brockport who were impacted by the proximity of inactive hazardous waste sites (2000-2002).
- One-day Algae Workshop that examined the factors contributing to algae growth in Lake Ontario and potential solutions to address the problem (2002).

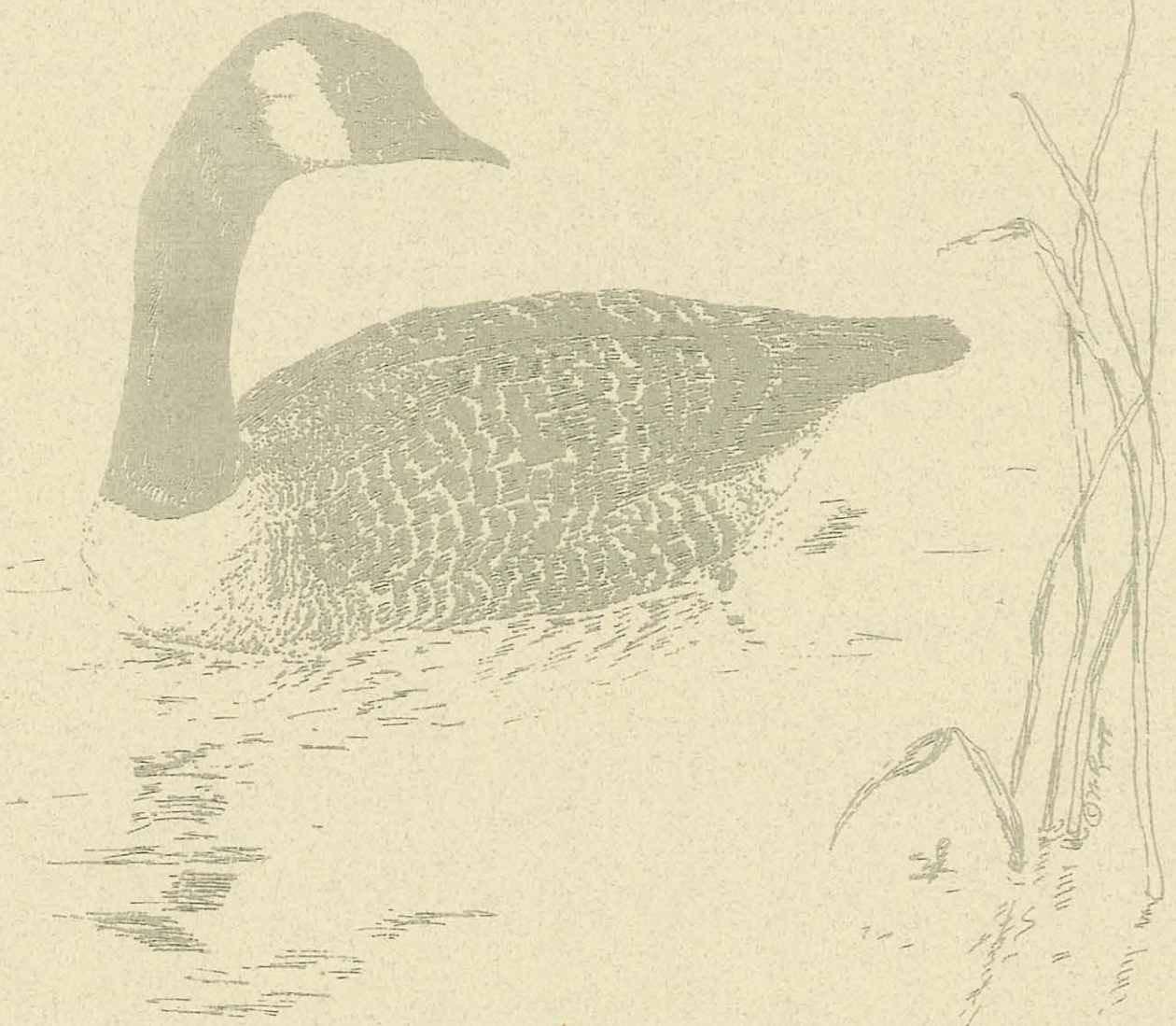
Participation at exhibits and educational programs:

- Seneca Park Zoo “Our Fragile World” annual event. Educates approximately 7,000 visitors.
- Rochester Museum and Science Center’s annual Science and Technology Week.
- Science Exploration Days (annual)
- Preserving Earth Through Education (annually with elementary schools)
- Festival on the Oatka.
- Rochester Area Community Foundation all-day program *Caring for Creeks* (1998, 2000).
- Annual Science Educator’s Conference. Provide material to 20 area teachers.
- Sierra Club Environmental Forum (annual)
- Earth Day events (annual)
- Annual Coastal Clean Up event

Publications include:

- Biannual newsletter *Watershed*. Currently each issue is mailed to approximately 2,700 people and it is distributed at environmental fairs and exhibits.
- Community Water Watch Volunteer Manual
- Community Wetland Watch Volunteer Manual
- *Community Water Watch Update* newsletter published four times per year and distributed to approximately 250 people.
- Hospital manual *Reducing Mercury Use in Health Care: Promoting a Healthier Environment* (on the web at www.epa.gov/glnpo/bnsdocs/merchealth)
- Dental booklet *Prevent Mercury Pollution: Use Best Management Practices for Amalgam Handling and Recycling* (Appendix M of the hospital manual noted above)
- Brochure *Wetlands for Citizens and Land Use Decision Makers*. Distributed through community events and at public buildings.
- Brochure *Great Lawns/Great Lakes*
- *Water Quality Opinion Survey 2000: Public Attitudes and Knowledge Regarding Water Quality in Monroe County, New York*.
- Irondequoit Creek Watershed Collaborative *Recommendations for Comprehensive Stormwater Management*
- *North Chili Tributary of Black Creek Watershed Plan*
- Draft *Northrup Creek/Long Pond Wetland Conservation Plan*
- *Auto Recyclers Guide to a Cleaner Environment: Best Management Practices*
- Two water quality videos have also been produced: *Our Water Resources* and *Water Quality and You*.
- Brochure *Home Auto Mechanics* (pollution prevention).
- Brochure *Living Next to Stormwater Wetlands*.

Chapter 8: Follow-up to the NYSDEC Trackdown of Chemical Contaminants to Lake Ontario



**Chapter 8. Follow-Up to the NYSDEC
Trackdown of Chemical Contaminants to Lake Ontario**

From October 1993 to November 1994, the New York State Department of Environmental Conservation (NYSDEC) sampled surface water and wastewater along major tributaries of Lake Ontario and sites within their basins. The results of the sampling and analysis were reported in the NYSDEC document *Trackdown of Chemical Contaminants to Lake Ontario from New York State Tributaries* (April 1996). A summary of results pertinent to the Rochester Embayment watershed was included in the *Stage II Rochester Embayment Remedial Action Plan*, Section 3-15.

The 1996 document included recommendations for further work at some of the sites. These recommendations were followed by field work performed in 1995 and 1996. The results were reported in the NYSDEC document *Follow-Up Contaminant Trackdown Investigations of Niagara River and Lake Ontario Basin 1995-1996* (May 1997). Results pertinent to the Rochester Embayment watershed are summarized below.

PCBs

PISCES (passive in-situ chemical extraction samplers) samples were collected from influents and effluents of three Monroe County wastewater treatment plants, Frank E. Van Lare (FEV), Gates-Chili-Ogden (GCO, closed in 1998), and Northwest Quadrant (NWQ). PISCES were also placed in and recovered from five major sewer trunks entering the Van Lare plant. Samples were collected during the period October 30, 1996 – November 13, 1996. Results are shown below. *Numbers were obtained by interpreting a graph, and they should be considered to be approximate.*

Mean PISCES-Derived PCB Concentrations from Monroe County Wastewaters

<u>Location</u>	<u>ng/L PCBs</u>
Hastings St. pump station	330
Norton & Hollenbeck	29
Cliff St. pump station	22
Irondequoit pump station	13
Dix Road	9
FEV influent	120
FEV effluent	~2
NWQ influent	10
NWQ effluent	<2
GCO influent	30
GCO effluent	<2

The three wastewater treatment plants achieved a 99% PCB removal rate. The Hastings St. pump station samples, which had the greatest PCB concentration, were strongly dominated by a

mixture like Aroclor 1248. Aroclor 1248 was typically used in vacuum pumps, hydraulic fluid, plasticizer in synthetic resins, adhesives, and heat transfer fluids.

Follow-up investigations in the drainage area of the Hastings St. pump station are recommended if the Van Lare effluent PCB concentration needs to be reduced.

Mercury

Mercury grab samples were taken on November 13 – November 14, 1996 at the influent and effluent sides of the three treatment plants and from nine other sites reflecting a variety of potential sources.

- FEV influent and effluent
- NWQ influent and effluent
- GCO influent and effluent
- Tap water from Hemlock Lake, sampled at Monroe County Pure Waters, Rochester Operations Center
- Monroe County Environmental Laboratory, 740 East Henrietta Road
- Aid to Hospitals, a commercial laundry
- Olin’s sanitary lateral on south side of Buffalo Road near the railroad tracks
- Bennington Road, sanitary main downstream from Pfeiffer Glass and Genesee Mirror
- Sanitary sewer of Rochester General Hospital
- RG&E Russell Station batch discharge tank, includes coal pile runoff
- Eastman Dental Center
- Strong Memorial Hospital (*This sanitary sewer site includes flow from the Eastman Dental Center.*)

Sampling results are shown below.

<u>Location</u>	<u>ng/L Mercury</u>
FEV influent	191
FEV effluent	15.2
NWQ influent	226
NWQ effluent	10.7
GCO influent	54.4
GCO effluent	3.19
Tap water	0
Environmental Laboratory	1,150
Aid to Hospitals	282
Olin	46.9
Bennington Rd.	50.3
Rochester General Hospital	88.7
RG&E Russell Station	4.15
Eastman Dental	1,920
Strong Memorial + Eastman Dental	17,000

The three wastewater treatment plants had a mean mercury removal efficiency of 94%. The 1996 sampling data showed a much greater mercury concentration at Strong Memorial Hospital than at the Eastman Dental Center. During the 1994 sampling, the relative abundance from the two was reversed and the concentrations were lower. Results from Rochester General Hospital suggest that hospital wastewater there is not necessarily highly contaminated with mercury. High mercury concentrations were also found in wastewater below a public health lab where mercury reagents had been used and below a commercial laundry using caustic soda (which may be manufactured using the mercury-cell process).

Follow-up sampling for mercury should be conducted if Van Lare effluent concentrations require reduction and after suitable methods for sample compositing have been adopted.

An aggressive mercury pollution prevention program has been initiated at both Strong Memorial Hospital and Eastman Dental Center since 1996.

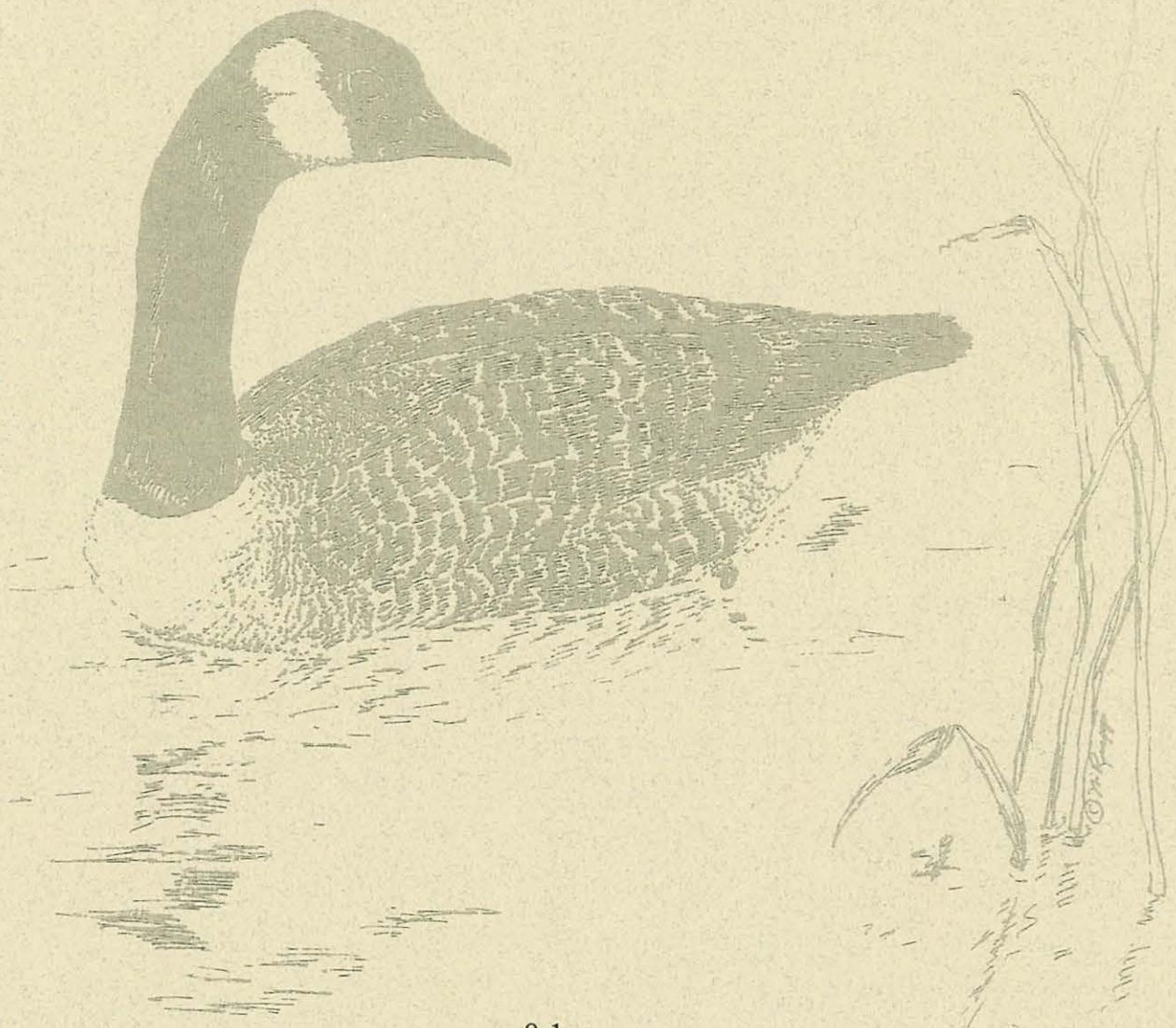
Notes

1. NYSDEC sampling detected PCBs in stream sediment and surface soils along Tributary #3 of Brockport Creek in the Town of Clarkson and Village of Brockport. The sampling was part of an investigation of two inactive hazardous waste disposal sites. The investigation began in 1999 and is continuing.

2. In 1996, Slater Creek was one of 14 Lake Ontario tributaries and two Niagara River tributaries to be sampled for young-of-year (y-o-y) fish by the NYSDEC. Analysis of fish composites showed that Slater Creek had the highest (wet weight and lipid adjusted) total chlordane value. These fish also ranked within the top three sites for elevated dieldrin and total PCBs. Slater Creek placed 6th for total DDT in y-o-y fish and was one of two streams with a trace of mirex in young fish.

Follow-up sediment and water sampling was conducted in 1998 and 1999 at various points along the Creek in an attempt to identify the location of any sources of these contaminants. Follow-up sampling showed PCB concentrations in sediment and water to be low with no evidence of significant ongoing inputs of PCBs to the Creek. Dieldrin was found to be slightly elevated in water and sediment samples. Dieldrin may have been used historically in orchards located in the headwaters of Slater Creek. A more complete analysis of follow-up sampling results should be completed this year (2002) and will include consideration of any additional monitoring needs.

Chapter 9: Examples of Remedial Measures in Rochester Embayment Watershed Rural Counties



Chapter 9. Examples of Remedial Measures in Rochester Embayment Watershed Rural Counties (As reported in *Watershed* Newsletter)

Farmers in the Genesee River Watershed Work to Protect Water Quality (*Watershed*, Summer '98)

Many of us, when we think of efforts to improve water quality, think of programs that seek to minimize the discharge of pollutants from factories or wastewater treatment plants. However, local research indicates that nonpoint source pollution, such as stormwater runoff from parking lots, streets, and farms, is the primary cause of many of our remaining water quality problems. In Wyoming County, in the Genesee River Watershed, major efforts are underway to address the impact of agricultural activities on water quality.

Wyoming County is well known as one of the most intensive dairy farming areas in the northeastern United States. There are approximately 86,000 dairy cattle in the County, slightly more than twice the human population. The value of the agricultural products produced in Wyoming County is greater than any other county in upstate New York. However, in recent years, dairy farming has come under close scrutiny from the public because of potential pollution of water resources by animal wastes and pesticides.

In 1997, the Wyoming County Local Work Group was established in order to submit an application for funding under the United States Department of Agriculture's Environmental Quality Incentives Program (EQIP). Through this program, farmers can receive technical assistance and grants to implement agricultural practices that protect water quality. The Work Group consisted of representatives from both agricultural and environmental interests. As a first step in the process, the Group analyzed the natural resources and agricultural practices and trends in the County. Based on this analysis, the Group selected the Upper Genesee River watershed as its top priority for funding.

At the state level, a technical committee reviewed and prioritized the 135 applications for funding. Funds were awarded to the 24 highest priority watersheds. Wyoming County was awarded \$450,000, the highest allocation of any county in New York State.

Following a sign-up period for qualified farmers in the Upper Genesee River Watershed, the applications were ranked and selected for funding using criteria such as the severity of pollution, proximity to water supplies, size of livestock operation, availability of other funding sources, and the environmental benefit relative to cost.

After the selection process was complete, contracts were established with 14 Wyoming County farms to construct manure storage facilities, manage barnyard runoff, and install erosion control practices. Without the assistance provided by EQIP, the cost of many of these projects would be prohibitive. For example, manure storage facilities can cost between \$50,000 and \$200,000 to construct.

In future years, this process will be repeated to identify priority watersheds. If funding is received, criteria will be established to select and fund agricultural practices that protect water quality.

Conesus Lake Watershed Inspection Program Underway in Livingston County (*Watershed, Summer '99*)

Conesus Lake is a highly valued community resource in Livingston County. The Lake is the source of drinking water for approximately 20,000 people and is also a major recreational resource. Thousands of residents and visitors use the Lake for boating, fishing, and swimming.

Unfortunately, in recent years Conesus Lake has experienced a marked increase in weed growth and algae blooms. Monitoring of the tributaries that discharge into the Lake indicates that elevated levels of nutrients are contributing to the weed growth and algae blooms. In response to community support for protecting water quality in Conesus Lake, Livingston County completed new watershed rules and regulations for the Conesus Lake watershed. The regulations have been submitted to the New York State Department of Health for approval.

In August of 1998, the Livingston County Health Department hired a watershed inspector for Conesus Lake. Richard Davin, the new inspector, is charged with enforcing the new watershed rules and regulations once they have received approval. In the first few months of the program, Richard has investigated a number of construction sites, farms, and other sites that may have been contributing pollutants to Conesus Lake. These potential problems were reported by residents or identified by the inspector as he traveled the 41,000-acre watershed. In most cases, potential problems could be solved through education.

In addition, Richard is engaged in a number of educational outreach, monitoring, and planning activities. For example, he is conducting educational programs in the school districts located in the watershed and helped develop a farmer education program that will focus on their role in protecting water quality. Richard also makes presentations to civic organizations in order to enlist their support.

Richard collects water samples in order to monitor the health of the Lake and identify trends. The existing monitoring program is being expanded to include a study of seasonal water courses that drain to the Lake and may be sources of pollutants.

Lastly, Richard will be assisting the Livingston County Planning Department in the development of the Conesus Lake Management Plan, which is soon to get underway. The Plan will prioritize actions that need to be taken to protect water quality in Conesus Lake.

Conesus Lake is a unique resource that contributes greatly to the quality of life in Livingston County. The Watershed Inspection Program will help the municipalities, suppliers of drinking water, and residents work together to conserve this valuable resource.

Joining Programs and Funding Pays Off in the Upper Genesee River Basin (*Watershed, Summer '00*)

Resource Concerns in the Upper Basin

Soil: Cropland and streambank erosion, sediment pollution.

Water: Pathogens, nutrients, pesticides, flooding. Turbidity at water intake, aquifer protection.

Air: Odor from agricultural wastes and pesticide drift.

Plant: Loss of riparian vegetation due to grazing of streams. Control of noxious weeds.

Animal: Management of human and animal wastes, protection of fisheries and wildlife habitat.

The name "Upper Genesee River Basin" connotes different areas depending on where in the River Basin one lives. For the purposes of Allegany County's watershed programs, it involves the 139,000 acres located south of Wellsville, New York. The area includes southern Allegany County, the southwest corner of Steuben County, and a portion of Potter County, Pennsylvania.

Agriculture is a primary nonpoint source of pollution. A joint project to address agricultural impacts was initiated between:

- The Headwaters Resource Conservation and Development (RC&D) Area in Potter County, Pennsylvania, and
- The Seneca Trail RC&D Area in Allegany County, New York.

The staff persons with the two RC&D Areas recognized the value of the Genesee River as an important fisheries habitat. They applied for U.S. Environmental Protection Agency (EPA) Critical Habitat Protection dollars to demonstrate the implementation and effectiveness of Best Management Practices (BMPs) for agriculture. Eight farms in the two states were assisted via the cost sharing of measures that reduced nutrient loading, bacterial contamination, biological oxygen demand, sediment pollution, and loss of riparian vegetation. The initial demonstration of BMPs got the attention of other farmers in the area.

The Allegany County Water Resources Council and USDA Environmental Quality Incentives Programs (EQIP) Local Agricultural Work Group named the Genesee River above Wellsville as the #1 priority watershed for State and Federal funding efforts in Allegany County. Due to the prioritization and the River segment's designation as A(T) waters (suitable for drinking water and trout habitat), the New York State Environmental Protection Fund (EPF) and EQIP helped to fund projects on 10 farms in the Allegany County portion of the watershed. Projects included establishment of 7 heavy use protection areas, 6 barnyard water management systems, 2 short-duration grazing systems, 2 milk waste filter strips, a pasture management system, manure storage unit, alternative water supply, and diversion, as well as stabilization of two access roads.

It became evident that there was growing interest and more need for implementation of projects on farms in the watershed. The EPF and EQIP are funding a second phase of the projects. BMPs on an additional 18 farms in the Allegany County portion of the watershed are being installed. (*By Fred Sinclair, Manager of the Allegany County Soil and Water Conservation District*)

Rural Counties Launch New Water Quality Activities *(Watershed, Winter '00/'01)*

The rural counties of the Rochester Embayment watershed (Allegany, Genesee, Livingston, Ontario and Wyoming) developed a list of remedial actions separate from Monroe County's list. The following examples are two of many water quality activities ongoing in the rural counties.

Oatka Creek Watershed Committee.

Interest in protecting the water quality of Oatka Creek began as a grassroots effort and a presentation at the Rochester Area Community Foundation 1998 Caring for Creeks symposium. The presentation led to the formation of a committee of volunteers representing a variety of interests such as streamside neighbors, farmers, conservationists, scientists, and government and public health officials.

The Committee's mission is to preserve the existing pristine character of the Creek for future generations through the development, promotion, and implementation of an Oatka Creek Watershed Management Plan. The Committee has accomplished a lot in two years:

- Completion of the State of the Basin Report by Tim Tatakis, Assistant Biology Professor at Monroe Community College.
- Completion of a soil and water trace metals study by University of Rochester graduate student Carolyn Dowling. The research revealed relatively little negative impact on the Creek from human sources.
- A streambank stabilization project in Oatka Creek Park, Monroe County.
- Ongoing water quality monitoring.
- Initiation of partnerships with municipalities in the watershed.
- A Finger Lakes-Lake Ontario Watershed Protection Alliance award of \$11,000 to hire an outreach coordinator.

The Oatka Creek watershed encompasses parts of four counties, 15 towns, and four villages (see map). The Creek is well known for trout fishing, and the New York State Department of Environmental Conservation named Oatka Creek a "Blue Ribbon Trout Creek."

The Management Plan will recommend actions needed to preserve the ecological integrity of the Creek and its watershed. To involve as many stakeholders as possible in the planning process, the Committee is making presentations to watershed municipalities, distributing a brochure, and creating a newsletter and web site.

Ontario County Model Septic System Ordinance.

Improperly functioning septic systems have consistently been cited as one of the most significant sources of nonpoint source pollution of surface and groundwater in Ontario County. Since the County does not have a health department that oversees septic systems, local town and village boards are responsible for issues of public health.

Almost three years ago code enforcement officers, watershed inspectors, the Ontario County Soil and Water Conservation District, Cornell Cooperative Extension, and the Ontario County Planning Department formed a working group to address this concern. Two key problems were identified: (1) A lack of an adequate uniform septic system inspection standard, and (2) A lack of homeowner knowledge of proper septic system maintenance and operation.

To address these issues, a model local law was drafted that establishes uniform inspection standards. To date, almost all towns have adopted the model local law or have it under active consideration. An education and outreach effort will be launched aimed at the real estate and mortgage lending institutions since septic system inspections are generally required as a condition of purchase. *(By Maria Rudzinski, Ontario County Planning Department)*

Conesus Lake Watershed Management Plan: A Vision for the Future (Watershed, Winter '01/'02)

Long considered the "jewel" of Livingston County, Conesus Lake is the western-most Finger Lake in Upstate New York. It is located south of Rochester along Interstate 390. The Lake serves as the public water supply for the Village of Avon and Village of Geneseo public water systems, providing drinking water to more than 20 percent of the total population of Livingston County.

During the past half-century, however, conditions on the Lake have been gradually deteriorating. Increasing development pressure, the issuance of health advisories to residents, and more stringent federal and state standards for public drinking water supplies have made it crucial that a comprehensive watershed management approach to conserving and protecting Conesus Lake be developed. To that end, the Town of Livonia, on behalf of Livingston County, received an Intermunicipal Water-body Management Planning Grant for the development of a Conesus Lake Watershed Management Plan. The grant was provided by the New York State Department of State, Division of Coastal Resources. The Project Agreement between the Town and the Department of State was approved in April 1999.

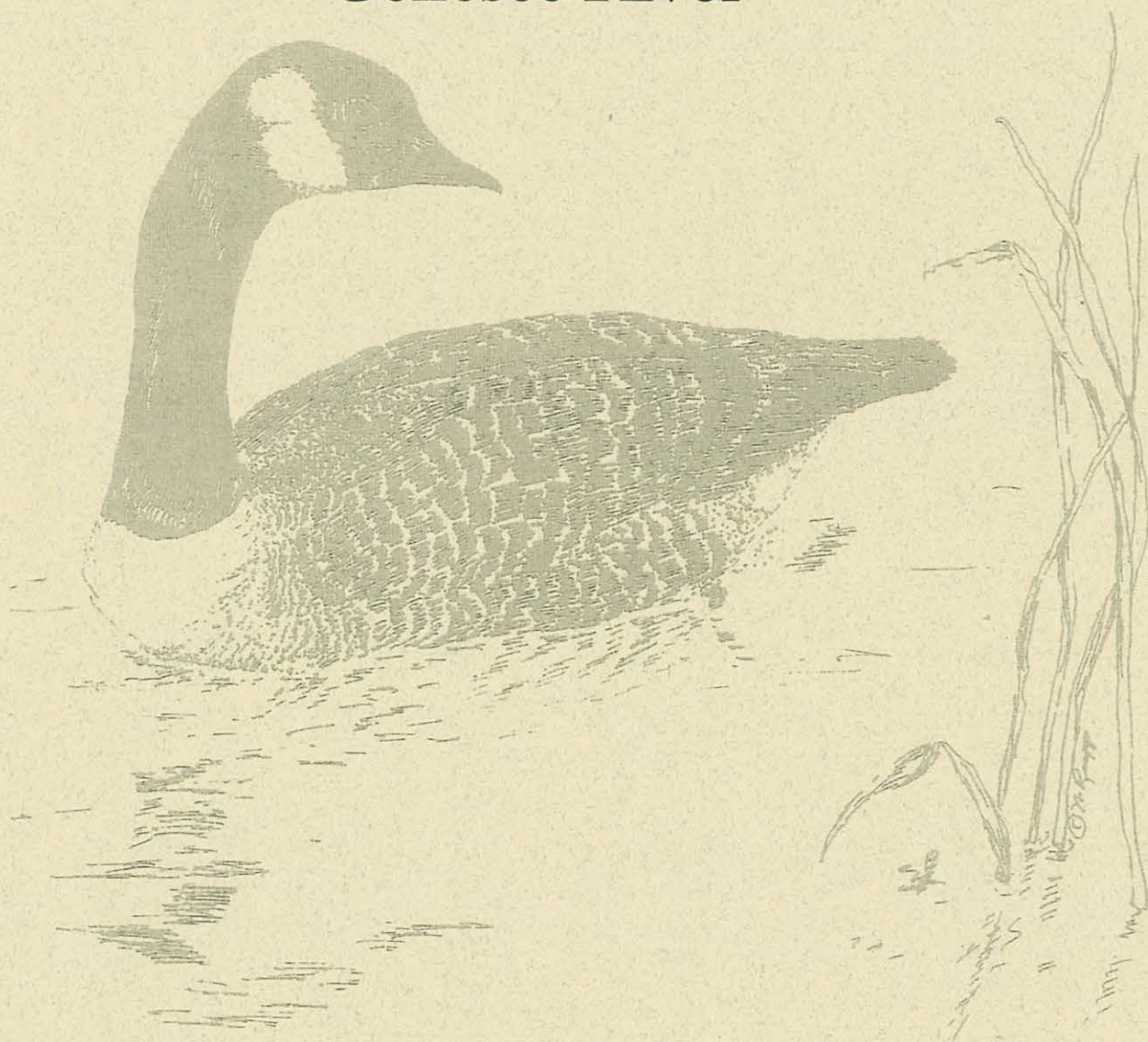
The Conesus Lake Watershed Management Plan Project is focusing local, county, regional and state resources on the protection of Conesus Lake. The first phase of the Project included the development of the *State of Conesus Lake: Watershed Characterization Report*. The Report compiles and documents current water quality and ecological conditions of the Lake and its watershed. The Report also identifies specific areas of concern and related issues, such as sedimentation and nutrient enrichment. A draft version of the Characterization Report is available for viewing at the Conesus Lake page of the Livingston County Web site (www.co.livingston.state.ny.us/Conesus.htm).

Phase II of the Project is currently underway, and it involves the development of the Conesus Lake Watershed Management Plan. The Plan will address the issues and concerns identified in Phase I of the Project and will offer potential solutions. Four work groups have been formed recently to examine the issues of the watershed in more detail and to recommend solutions for the Plan. The work groups include: Lake Management Issues (aquatic weeds, algae, fish and

wildlife), Sanitary Sewer/Septic System and Stormwater Management Issues (sewer system expansion, septic system failure, riparian buffers), Recreational Use Issues (personal water craft regulation, waste disposal facilities), and Road Maintenance Issues (construction, maintenance, and salting).

Some of the problems in the watershed are obvious, and watershed residents have called for action in tandem with the development of the Watershed Management Plan. For example, the Watershed Characterization Report identified erosion as a serious problem that contributes sediment and nutrients to the Lake. To address this issue, a Model Erosion and Sediment Control Law was developed and endorsed by the Conesus Lake Watershed Management Plan Policy Committee. The model law was forwarded to the municipalities in the watershed for their consideration. *(By Heather Hogarty, Livingston County Planning Department)*

Chapter 10: Chemical Spill into the Genesee River



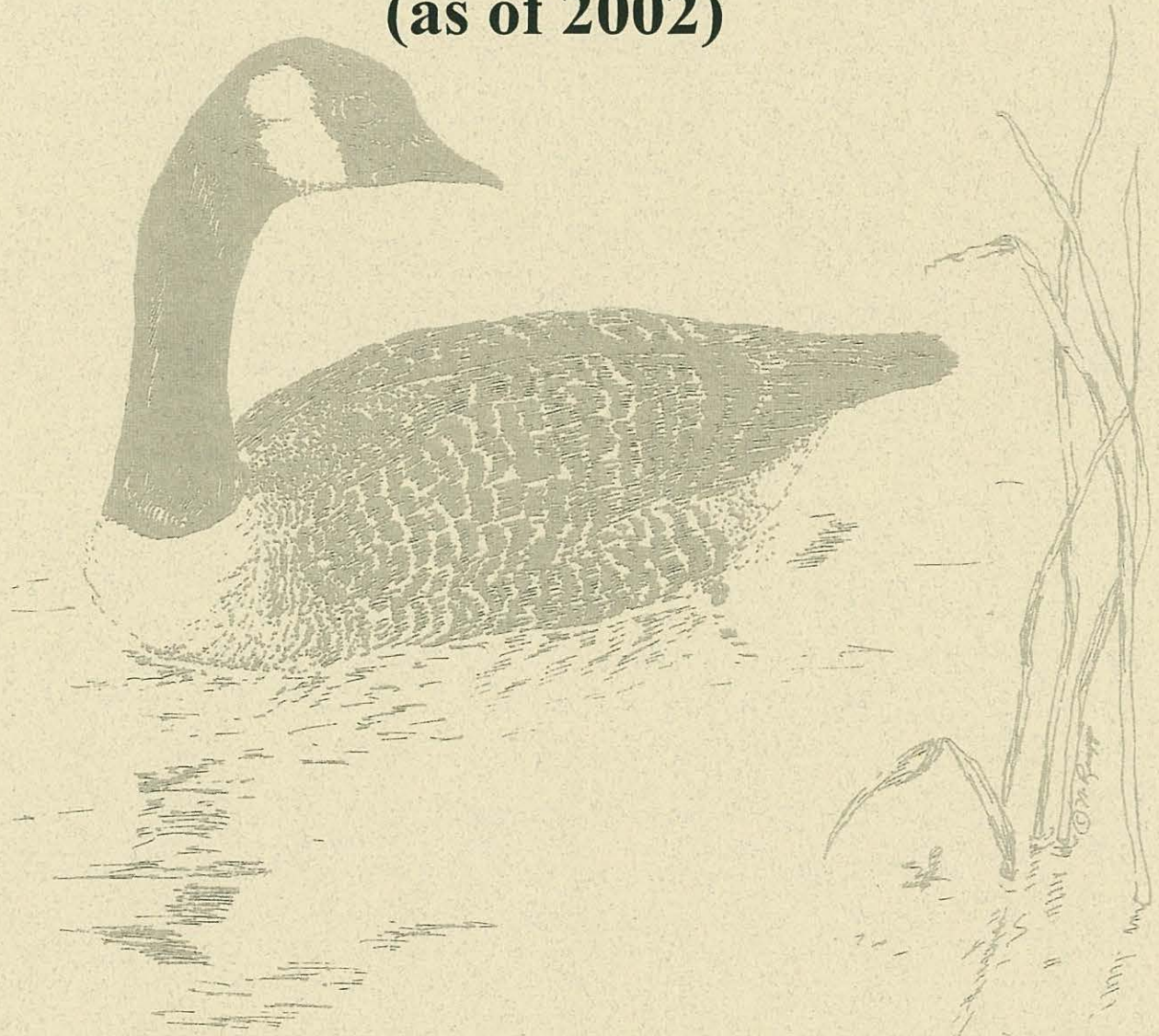
Chapter 10. Chemical Spill into the Genesee River

In December 2001 a CSX freight train carrying coal and two hazardous chemicals (acetone and methylene chloride) sped out of control from Kodak Park and ultimately crashed along River Street, north of the Stutson Street Bridge, near the mouth of the Genesee River. Approximately 16,000 gallons of acetone and 16,000 gallons of methylene chloride were released to the river and riverbank. The contaminants in the river sediments below the spill range widely, but are as high as 14,000,000 ppb methylene chloride and 370,000 ppb acetone at one sampling site. NYSDEC is overseeing the clean up of the site by CSX and their contractors. The cleanup is expected to be completed in 2002.

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Chapter 11: New Monroe County Water Quality Committee Structure (as of 2002)



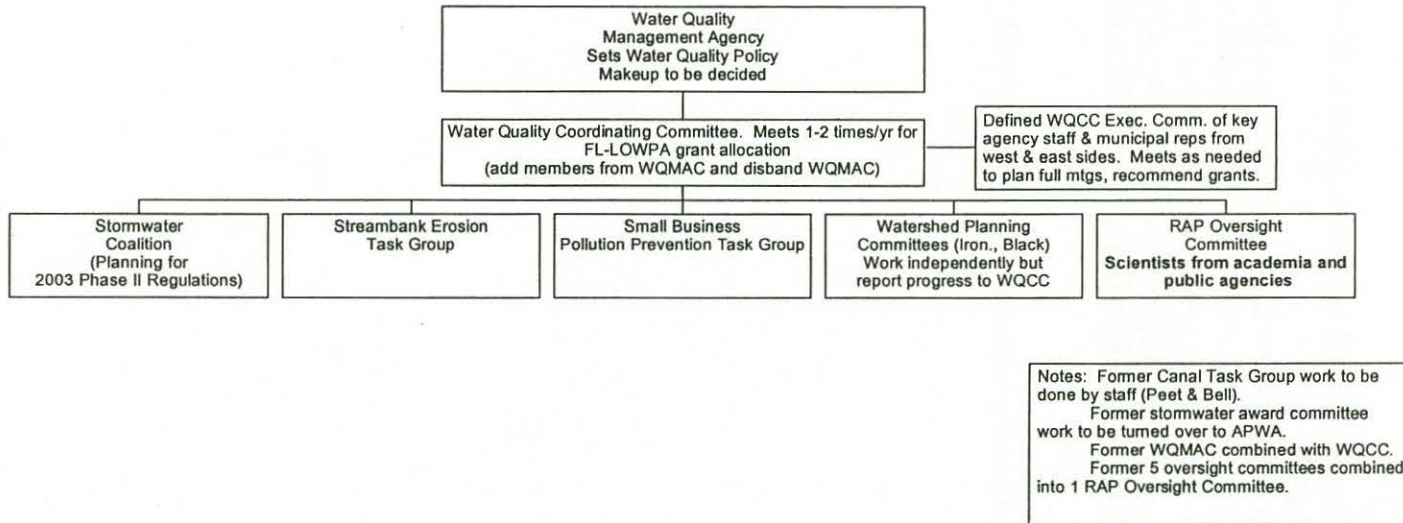
Chapter 11. New Monroe County Water Quality Committee Structure (as of 2002)

The former Monroe County Water Quality Management Advisory Committee (WQMAC) has completed its major tasks of reviewing and approving the Rochester Embayment Remedial Action Plan and approving use impairment delisting criteria and monitoring methods. Therefore, some changes have been made to Monroe County's water quality committee structure. Two major changes are:

- Members of the former WQMAC have been added to the Monroe County Water Quality Coordinating Committee.
- It has been recommended that the five Use Impairment Oversight Committees who developed the delisting criteria and monitoring methods and reported to the WQMAC be combined. The combined "RAP Oversight Committee" would review monitoring data to determine when a use impairment can be delisted. As of October 2002, no staff support has been allocated for a RAP Oversight Committee, making the start-up of the group's work indefinite.

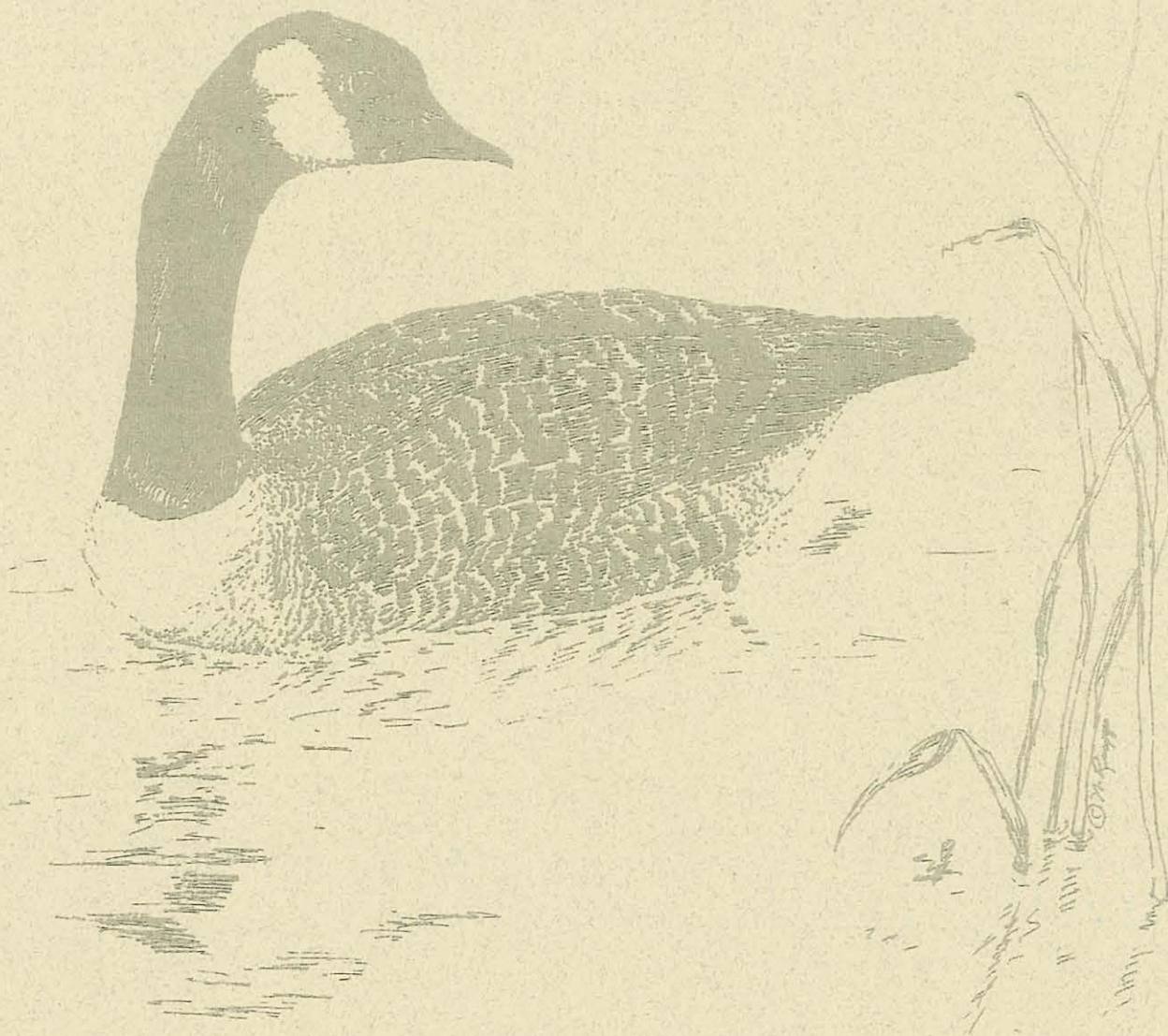
See the new committee structure organization chart on the next page.

2002 Water Quality Committee Restructure



Final, October 2002

Chapter 12: Lake Ontario Algae Cause and Solution Workshop



Chapter 12. Lake Ontario Algae Cause and Solution Workshop, May 30, 2002 (As reported in *Watershed* Newsletter, Summer '02)

The Monroe County Department of Health (MCDOH), in collaboration with NY Sea Grant, the NY Great Lakes Research Consortium, and the Water Education Collaborative, held a workshop on May 30, 2002, to examine the factors contributing to algae growth in Lake Ontario and potential solutions to address this problem.

Rotting algae along the Lake Ontario shoreline has been a fluctuating problem for residents and local governments in Monroe and other Lake Ontario shoreline counties for decades. Many of the factors contributing to increased algae growth and accumulation have been identified. However, the relative importance of each of the factors has not been agreed upon or shared among interested groups. This workshop was the first time that those attempting to address the algae problem, those studying the contributing factors, and affected residents gathered to share information and ideas on managing the algae problem.

Speakers from area universities, Environment Canada, and NY Sea Grant presented information on the basic biology of algae, the known factors affecting its growth, how the problem has changed over the years, and current research findings. Charlie Knauf of the MCDOH explained Monroe County's experiences in monitoring and cleaning up algae and the U.S. Army Corps of Engineers presented their work plan for evaluating methods of removing algae that collects along the western side of the pier at Ontario Beach Park in Monroe County. Several of the 95 participants traveled from Canada and shared their experiences with management of algae on the north shore of the Lake.

Other speakers including Dr. Joe Makarewicz (SUNY Brockport) and Murray Charlton (Environment Canada) focused on nutrients such as phosphorus and nitrogen and their role in promoting algae growth. Dr. Makarewicz explained that while phosphorus has been considered the nutrient most affecting algae growth, a current theory that needs further research is related to the possibility that zebra mussels have upset the normal relationship between phosphorus and nitrogen, and that nitrogen may now be playing a more important role. Mr. Charlton stated that while several billions of dollars have been spent to reduce phosphorus inputs to the lake such as wastewater treatment plants, there has not been as much emphasis on reductions of nitrogen entering waters. In addition, Mr. Charlton pointed to fertilizer usage in the Great Lakes basin that shows Monroe, Orleans, and Wayne Counties as some of the Counties with the highest rates of fertilizer usage.

Other factors that affect algae growth were also identified by the speakers. Dr. Makarewicz noted that wind-driven upwellings can bring nutrient-laden water up from the bottom of the lake. Mr. Charlton also noted that there is a "thermal bar" effect around the perimeter of Lake Ontario, particularly in the Spring. The thermal bar is a warm ring of water around the lake that also sets the stage for algae growth. It was also learned that that genetic finger printing of algae is being conducted in Canada, which could lead to a better understanding of where algae that washes up on shore actually grew.

Dr. Tony Vodacek (Rochester Institute of Technology) presented his findings on a study of the lake bottom using hyperspectral imaging technology. The study involved flying over Lake Ontario and capturing images of the lake bottom. His initial findings show a relationship between algae growth and the hard-bottomed areas of the lake. He expects to complete his work this year.

After hearing all the presentations, small discussion groups met to brainstorm potential solutions to the algae problem. The four groups reported their results back to the full group of participants and many of the ideas expressed indicated the need for further research before attempting to address the problem. One interesting outcome was the realization that *Cladophora* found on the south shore of Lake Ontario has changed in consistency from a matted mass to a pea soup-like substance. This has not been the case, however, in Canada where the algae remains a problem, but presents itself as matted clumps that are more manageable.

While the workshop did not produce any concrete solutions, it did succeed in providing the opportunity for many working to understand and manage the algae problem to share valuable information and identify areas of needed research. Proceedings from the workshop are being prepared by New York Sea Grant staff and expect to be complete in the next few months. As part of that process, a research agenda will be developed and actions taken to seek funds to help answer remaining questions. *(By Karen Paris Tuori and Margy Peet, Monroe County Health Department)*

