

CHAPTER SIX: PUTTING YOUR PLAN INTO ACTION

Now that you have formalized a plan and strategy to protect and restore your watershed, it is time to implement your vision. Your success will depend on how you organize your community and manage the implementation of the various projects that will fulfill your vision. In this chapter, we will work through the following steps:

- Ensuring success - organizing for implementation
- Moving forward with capital improvement projects
- Strengthening municipal controls on development
- Strengthening local watershed practices
- Continuing public outreach and education
- Measuring success - tracking implementation and monitoring performance
- Making revisions and updates

Ensuring success - organizing for implementation

Completing a plan for your watershed often generates a feeling of closure for the community and on the part of those involved in the planning work. But if your plan is going to protect and

restore your watershed it must be used. One way to help ensure success is to establish the right organization to implement the plan.

Early in the development of a watershed plan most communities establish some sort of coordinating and oversight committee, often known as the watershed advisory committee. If you established a committee to guide you through the planning process, you should think about using this committee to oversee implementation of the plan. The committee structure is already in place, partnerships will have already been developed, and everyone is aware of what needs to be done to make the watershed vision a reality. If you don't have a committee, then now is the time to ask if one would be helpful. Advice on how to establish an oversight committee can be found in Chapter 2.

If you have a committee in place, this is a good time to re-evaluate who is on the committee. Do you still have the key stakeholders involved? Are there other individuals or groups that should be involved now that you are focused on implementation? You may want to broaden the membership and consider creating sub-committees focused on particular topics or projects. Remember, it is important to recruit the "movers and shakers" for the committee - the people who others listen to, and who have the experience, personal connections, and resources to make things happen.

The committee will be responsible for overall management and coordination of the watershed plan and implementation of its policies and projects. The committee's tasks will likely include:

- advising the local government on implementation, priorities, work assignments, timetables, and budgetary requirements of the watershed plan
- seeking funding from State, federal, or other sources to finance projects to implement the watershed plan
- coordinating with other committees, such as the Planning Board, Zoning Board and Conservation Advisory Commission, and other nonprofit organizations and community groups to implement the watershed plan
- ongoing monitoring of the watershed plan and its procedures by developing measurable performance indicators to review the plan's overall success

In some communities the development of the plan may have been handled by an existing board, such as the Planning Board or a Conservation Advisory Commission, or by assigning the responsibility for coordinating the implementation of the plan to existing staff, such as in the Planning Department, Community Development or Natural Resources Department. Now is the time to see if this arrangement still



Carmans River, Brookhaven



Saltmarsh, Orient

works. Do you have the staff and expertise to implement your projects? If you need more help, consider identifying or hiring a watershed coordinator or a consultant to advance your projects.

A watershed coordinator can help a community by providing direction and organization for the implementation of watershed projects. This full or part-time position focuses on achieving the watershed vision. This person will be responsible for managing, directing, and coordinating all aspects of the implementation of a plan and its projects, making sure that all aspects of a project - from planning, grant writing and administration, design, permits, environmental review and construction - are completed in an appropriate and timely fashion. A watershed coordinator can oversee all contractors and consultants, and also makes sure that all stakeholders and partners are kept up to date and involved in the project.

The watershed coordinator should be able to:

- coordinate with agencies, partners and volunteers
- convene and provide support for meetings of the intermunicipal organization, including the preparation of agendas and provision of supporting material to members
- help establish and provide support for sub-committees

- manage and track implementation of plan recommendations
- assist in securing resources (e.g., technical resources, supplies and equipment) and funding (e.g., identify cost-sharing opportunities) for implementation
- administer stewardship and ongoing public education efforts
- monitor trends in the watershed
- oversee revisions and updates to the watershed plan

Moving forward with capital improvement projects

Project planning

Each project identified in your plan will likely require additional planning, feasibility analysis, engineering, design and consultation before it can be implemented or constructed. Because you have already done some initial planning as to how and when your projects should be implemented, you might be tempted to rush into action. However, before you act, you need to formulate a carefully considered game plan for each project. Take the time to discuss and plan your approach with your partners. This will not only avoid costly mistakes, but it will strengthen consensus and support for your project.

When you are planning and designing your project:

- Consider the tasks to be performed, the people involved, and their responsibilities.
- Determine whether permits are needed for your project. Permits may be needed for projects that involve wetland restoration or creation, forest conservation, stream crossings, streambank stabilization, etc. When working in or near waterbodies and wetlands, arrange a pre-application field meeting with appropriate regulatory staff (e.g., NYS DEC Regional Office, USACOE) to get input on permitting requirements and other issues that may need to be incorporated into the final design.
- Make sure your final construction documents are complete - the final designs should include everything needed to initiate the project, including plans certified by a licensed professional engineer, specifications, and cost estimates.
- Find out whether easements are needed for access and maintenance - all necessary easements and maintenance agreements should be secured prior to breaking ground.
- Consider vegetation plans - most projects use some form of vegetation to stabilize the site and provide important restoration functions. Carefully specify how the site will

be prepared, establish limits of disturbance, decide what species and planting methods will be used, and outline how vegetation will be maintained and managed during the first few critical years after establishment.

- Keep in mind the time frame for the project - expect surprises during design and construction. The design, permitting, and review process can often take longer than expected, equipment can fail, or the weather may not cooperate. Always plan extra time and plan for these contingencies in your project schedule and budget.

Each type of project has its own unique considerations relating to design, permitting and construction. Table 6.1 summarizes common design and construction considerations associated with various types of restoration practices.

Depending on who is involved in your project, a series of facilitated workshops may be the best approach to starting a project. Bring together key stakeholders, diverse interest groups, resource experts, and others who are involved in your project. See if there are others you want to include - it is important to continue to look for ways to expand your partnerships. Remember, it might take several sessions to reach consensus on how to implement a project, and you will continually need to reevaluate it as the project advances.

When preparing to implement a project, it is a good idea to develop a brief project summary explaining how the proposed project will be implemented and how it relates to the established vision. By doing this repeatedly as projects are planned, you can anchor the vision statement in the minds of various stakeholders and help the community at large understand how each individual project is part of accomplishing the overall long-term vision for your watershed.

Project financing

One of the challenges of implementing and updating watershed plans is funding. Your implementation strategy and planning for project implementation will have outlined how to fund project implementation. Communities use many different creative funding strategies to finance projects and it is important to look to a variety of funding sources to implement your plan. Funding sources may include grants from state, federal and local agencies, foundations, legislative appropriations, fee-for-service



Hydroseeding road bank

Table 6.1 Common Design and Construction Considerations for Different Restoration Practices

Design and Construction Consideration	Restoration Practice						
	Stormwater Retrofits	Stream Repair	Riparian Reforestation	Discharge Prevention	Watershed Forestry	Source Control	Municipal Operations
Geotechnical analysis	●	◎		◎			
Structural analysis	●	◎					
404 Wetland permit application	◎	●	◎				
401 Water quality certification	◎	●					
Waterway construction permit	◎	●	◎		◎		
Construction drawings	●	●	◎		◎		
Sequence of construction	●	●	◎		◎		
Standard specifications	●	●	◎	◎	◎		
Onsite construction supervision	●	●	◎		◎		
Cut/fill estimates	●	◎					
Construction/installation windows	●	●	●		●		
Erosion and sediment control plan	●	●	◎	◎	◎		
Maintenance schedule and agreement	●	◎	◎		◎		◎
Access/maintenance easements	●	●	◎	◎	◎		
Planting plans	●	●	●		●		
Floodplain modeling	◎	◎	◎				
Sediment transport modeling		◎					
Hydrologic modeling	●	◎	◎				
Hydraulic modeling	●	◎	◎				
Dam safety analysis	◎						
Project tracking form	●	●	●	●	●	◎	◎
Cost estimates	●	●	●	●	●	●	●
Bid documents	●	●	●	◎	●	◎	◎

Source: Schueler, Kitchell, 2004 ● survey normally required for the practice ◎ survey may be required in some project situations

contracts, special events, and corporate giving. Depending on the size and scope of the project, some projects will have one designated funding source, while others will have multiple sources of support. Some projects may be fully funded at the outset, while others will be phased with only initial funding available and will require ongoing fundraising and grant writing to ensure completion. Increasingly, many communities will be called upon to develop partnerships which leverage and combine an array of public and private sector sources of funding.

Communities often rely heavily on grant assistance to complete watershed plans and projects. There are many grant programs available from federal and state government, nonprofit groups and charitable foundations that are targeted for watershed improvements. By using their own capital funds, staff costs, in-kind services and the value of community volunteers as a match for public and private grants, communities are able to leverage funding to achieve their vision for the watershed. Keep in mind that showing early success through demonstration projects will work in your favor, as it can show your ability to complete projects in a timely manner and use funding in an appropriate manner.

Grant awards are highly competitive. Your success in receiving funding will depend on your ability to convince reviewers that your project has merit, represents a well thought-out approach to protecting or restoring water quality,

and shows that you are capable of seeing the project through to completion on time and within budget.

Once you have found a grant program that might help you, identify the requirements for the grant and ensure that you are eligible or can partner with someone who is. The key to successful completion of a grant application is to be as organized as possible, and to think the project through in advance to the greatest extent possible.

When applying for grants:

- Make sure you can meet any match requirement. In most cases, the grant match will be a cash contribution, perhaps derived from municipal revenues or a private donation. Sometimes it is in the form of donated land, buildings, goods, services, or facilities rental.
- Be as organized as possible and use the guidance provided in the application to fill out the relevant forms.
- Make sure you answer all the questions, provide all the supporting information that is required, and that your budget information and schedules are realistic.



Greenport, Long Island



Tuscarora Bay, Wilson

A Watershed Organization that Passes Down the Funding

The Finger Lakes/Lake Ontario Watershed Protection Alliance (FOLLOWPA) implements a program called the Special Projects Fund, which provides small grants for projects that advance the goals of watershed management. Projects must be sponsored by a member county and collaborative projects are encouraged. FOLLOWPA funds have supported stream bank stabilization, habitat protection, invasive species management, water quality monitoring, and education and outreach projects throughout the watersheds of New York's Lake Ontario basin. For example the FOLLOWPA Special Projects program awarded \$10,000 for research focused on controlling Eurasian waterchestnut populations in the Seneca Oswego Oneida River System. (www.followpa.org)



Aquatic plant harvesting

- Graphic materials such as engineering/technical drawings, plans, maps, and photographs can help the grant reviewer understand your project, and letters of support from community groups, government agencies, and nonprofits show widespread support for your project. Double check the application instructions to make sure these materials are required and how they should be submitted.
- As you pull your application together, make sure you have all the required forms, certifications, and signatures, and make sure you follow the submission requirements.

Remember, being successful in obtaining grant assistance requires that you target the grant programs that are right for your project. No matter what the grant program, you should always make sure you are clear as to why your project is worth doing, what is involved in successfully implementing it, and what end result and benefit can be expected.

Finding out about grants and funding assistance

Opportunities for grant assistance from public and nonprofit agencies are generally distributed by direct mail or announced in press releases, newsletters, or websites. Make sure you are on these mailing lists and collect information on grant programs. Keep a calendar with grant schedules on it so that you are aware of your opportunities and deadlines. You should also talk to others who have received grants and

discuss your ideas with those who award the grants. They will probably know of additional sources of funding.

Federal grants are usually announced in the Federal Register, and state grants in the State Register and the Contract Reporter. You may want to look at the online Catalog of Federal Domestic Assistance (www.cfda.gov) gives you access to a database of all federal programs available to state and local governments; domestic public, quasi-public, and private profit and nonprofit organizations and institutions; specialized groups; and individuals. You can search this database to find grant and funding opportunities that match the requirements of your project. Another excellent source of information on all aspects of grants is the Foundation Center (www.foundationcenter.org). Its mission is to promote public understanding of philanthropy and to help grant-makers and grant-seekers succeed. The Center is a valuable resource for a wide range of information on grantsmanship and provides training on the grant-seeking process. Additional funding opportunities are provided through a number of private foundations that can be found by accessing the Environmental Grantmakers Association website (www.ega.org).

New York State offers a number of funding opportunities for local watershed organizations and municipalities. One of the first grant sources you should examine is the New York State Environmental Protection Fund. This is the State's first permanent fund dedicated to addressing a broad range of environmental needs.

The Division of Coastal Resources provides grants to municipalities through the Environmental Protection Fund's Local Waterfront Revitalization Program (www.nyswaterfronts.com/grantopps.asp). The Division can fund planning, design, feasibility studies, and construction projects that advance preparation or implementation of Local Waterfront Revitalization Programs. Any municipality located on the State's coastal waters or on a designated inland waterway is eligible, although some restrictions apply. Program details and priorities are reviewed annually. Eligible activities include preparation or implementation of watershed management plans.

The Department of Environmental Conservation administers a number of funding programs, including the Environmental Restoration Program, the Hudson River Estuary Grants Program, the Invasive Species Eradication Grant Program, the Great Lakes Protection Fund, and the Habitat/Access Funding Program. More information about environmental grants can be found on the NYS DEC website: www.dec.ny.gov

The Department of Agriculture and Markets also administers a number of funding programs that assist communities with agricultural nonpoint source abatement and control. The Agricultural Nonpoint Source Abatement and Control Program supports the Agricultural Environmental Management (AEM) Program by providing funding to conduct planning activities or implement agricultural best management practices (BMPs). Funds may be used for preventive or remedial initiatives, or both. More information about the Agricultural Nonpoint Source Abatement and Control Program can be found at: www.agmkt.state.ny.us

Federal funding is available through the EPA Watershed Initiative Program and other EPA grants programs, described on the EPA Region 2 website: www.epa.gov/Region2/grants. The USDA Natural Resources Conservation Service administers several funding programs, including the Environmental Quality Incentives Program (EQIP), to help farmers implement conservation measures; the Conservation Reserve Enhancement Program (CREP) to install conservation buffers; the Wetlands Reserve Program (WRP) to preserve, protect, and restore valuable wetlands; and the New York Farmland Protection Program, which helps purchase land rights in order to keep land in farm production. To find more information about USDA NRCS programs visit: www.nrcs.usda.gov/programs/. The NOAA Sea Grant Program, hosted by the State University of New York and Cornell University, provides grants



Lake Champlain



Braddocks Bay wetland, Lake Ontario



Invasive species



Southold vineyard

for environmental research projects as well as symposiums, meetings, and workshops. Additional information can be found at: www.seagrant.sunysb.edu.

Demonstrating early success with highly visible projects

While long-term solutions are important, it is also beneficial to implement short-term projects to “get the ball rolling.” Low cost and highly visible projects that require minor design and permitting work up front can often be used as demonstration projects. Examples include stream buffer plantings, trash cleanups, rain gardens, or installing small stormwater retrofits. Implementing these projects can:

- Build confidence for watershed planning
- Generate public support for the watershed plan and future restoration efforts
- Provide an opportunity for local volunteer participation
- Give local engineers, contractors, and others practice in project implementation
- Show early success to funders, elected officials, and others to generate future support
- Serve as pilot projects to test construction and maintenance procedures
- Improve conditions at the project site

Constructing improvements

While the way you approach each project will vary with project types - different regulations will apply and simple projects might not need to go through every step - it helps to be organized and take the implementation of a project one step at a time. Below is a typical approach you might follow on many construction projects - be they simple drainage improvements, streambank stabilization projects, or wetland restoration. Implementation of the project might be completed by municipal staff, but more often a community will hire a consulting engineer to design and manage the improvements.

Conducting a site reconnaissance

It is crucial that project participants have at least a preliminary analysis of the conditions of the site as early as possible in the project. You will likely have gathered some of this information as part of your watershed planning, but now you should make sure you update this information and complete any additional investigations needed to advance your project. The initial analysis will generally take the form of a written and illustrated report that includes the following components:

- site survey showing extent of project boundary
- identification of ownership/grant/lease status of any lands to be incorporated into the design

- soils and, as appropriate, core samplings to determine site stability
- topography and hydrology
- natural resources, including location of mature trees
- condition of manmade structures or facilities on or adjacent to the site
- above and below ground infrastructure
- environmental conditions
- access to local transportation network
- view corridors
- historic and archeological resources
- indication of any critical conditions requiring immediate stabilization or repair and including a cost estimate for the recommended work

It is especially important to understand the potential impact of the current ownership and zoning and other regulations on the proposed project. You should try to identify potential obstacles that might occur down the road.

- Who owns the project site? If it is not already in public ownership, will the current owner help facilitate or hinder the proposed project? Is it for sale or lease? If so, what are the

asking price and terms? Would the owner consider being a partner in the project? What are the current property taxes? Are back taxes owed on the property? Are there any encumbrances (mortgages, liens, easements)?

- Is the existing zoning of the site conducive for the proposed project? If not, what is involved in securing zoning and site plan approval? Will the community support the proposed project and help facilitate any regulatory approvals? Is the site a known or potential brownfield? If so, what investigations have been completed and what is known of the potential contaminants? What permits will be needed?

At this stage, the scope of work specifically does not include the preparation of plans and specifications or construction documents.

Land assembly techniques - acquiring key parcels

No matter whether a project is being implemented by the public or private sector, a common challenge to the implementation of a watershed plan is the fact that areas targeted for protection, improvements, or restoration often consist of separate parcels of privately owned property. It is often a challenge to accommodate the individual schedules and interests of the various owners and organizations to assemble the key parcels of land. In overcoming this challenge, communities have tried a number of successful approaches including:



Wetland restoration, St. Lawrence County



Streambank cleanup volunteers, LaGrange



Employing and Promoting Good Practices in Westchester County

Westchester County has implemented a number of watershed friendly programs over the last several years in an effort to meet water quality requirements and improve public awareness of water quality issues. A 2002 policy halted the use of pesticides on county lands in Westchester, and a public education campaign called the Grassroots Healthy Lawn Program encourages reducing pesticide use on private lands. In addition, storm drain stencils and markers were installed throughout the county to identify catch basins and notify people that they drain to important water resources, including drinking water supplies. An additional public education campaign called the Go Native Program promotes the use of native plants in private landscaping rather than non-native plants that require more water and nutrients. (www.westchestergov.com/SectionIndex/envdetail.asp)

- community visioning sessions which build shared agreement about how and where protection, improvements or restoration should occur - convincing property owners to sell, transfer or donate property
- acquisition of land through simple contractual negotiations for land purchase by the municipality or a nonprofit entity
- development of conservation and/or maintenance easements through federal, state, or local programs, or a nonprofit entity
- purchasing available parcels or working with local and state government agencies to negotiate a land swap, or similar deal, trading one parcel for another to accommodate needs and goals of buyer and seller
- tax and mortgage foreclosures
- eminent domain where municipal entities and certain development authorities may condemn property for a compelling public purpose or to address a health and safety threat

Conceptual or schematic design

After you have fully understood what you have to work with it is time to discuss design alternatives. Schematic designs establish the concepts and design characteristics of a project and are prepared based on the pre-design consultations and an analysis of project requirements. Preliminary cost estimates

should be prepared which can help determine the scope, cost and schedule needed for each project. Zoning and planning requirements and related permitting processes should be checked. Options may be presented and alternatives evaluated. Coordination with permitting and funding agencies is essential at this stage to ensure that your project is acceptable. It is important to document the federal, state and local permit and environmental review requirements for your project and how the requirements will be satisfied by the design. Early in the project development process, prepare a timeline incorporating as many permit approval schedules as possible. Revise it periodically as the timeline progresses. Remember that construction of a project cannot commence until the SEQRA process is complete and all required permits have been issued.

Detailed design

Design development follows as conceptual plans and schematic drawings are worked up in more detail to evaluate alternative approaches and reflect programmatic needs, technical aspects, site requirements, and materials. Site plans, elevations, landscaping plans, and plans for related infrastructure improvements are developed. Key dimensions and materials will be established. Best management practices should be identified to avoid or reduce water quality impairments from upland runoff or in-water activities. It is essential that coordination with permitting and funding agencies continues throughout this stage of design development.

Working/Contract documents

This is the most work-intensive phase of project design and involves preparation of detailed working drawings and specifications to describe the project for contractors who may bid on the construction of the project. These drawings will also be used to obtain permits, which will be needed before the project can progress to the next step.

The drawings typically include all types of construction details, such as:

- site and drainage plans
- elevations and cross-sections
- structural details
- stormwater/water infrastructure details
- landscaping

A written specification is also prepared which may include conditions of contract. Documentation is sometimes split into two stages, with minimum drawings for consent purposes followed by supplementary drawings providing the added detail required for pricing and construction.

Bidding phase

Next you will secure competitive bids to hire a contractor to build your project. If you hired one, your consultant team will assist in selecting

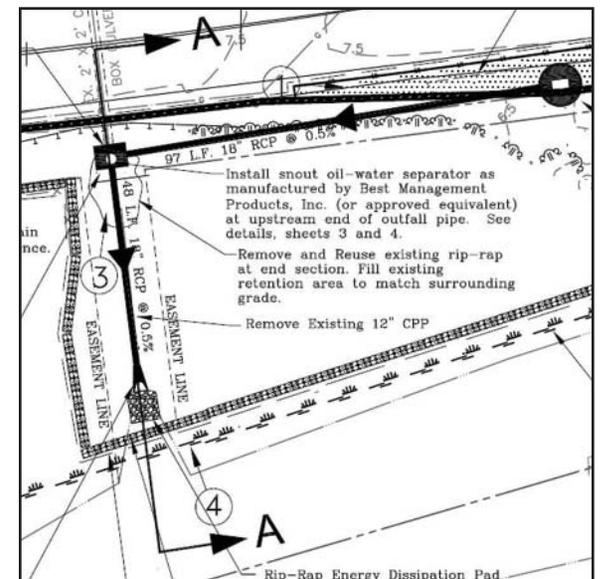
building contractors, obtaining competitive pricing, and formalizing a contract. This process is typically specified by local procurement and contracting requirements and, if grant funding has been made available, by requirements established by the funding agency.

Make sure that you advertise widely the availability of the bid package. The bid must clearly outline the scope of work; an explanation of the preferred format for bid submissions, including required forms; a process for proposing alternates; logistical information about the bidding process such as how, when, and where bids should be submitted; the type of contract that will ultimately be used; and insurance and permit requirements. Notification regarding the availability of bid packages is usually sent out to contractors the community has worked with before. Solicitation of bids is also advertised in local newspapers as well as publications such as the NYS Contract Reporter. Make sure that you follow your procurement policy as you select your contractor.

A helpful step in the bidding process may be to include a “site showing” or “site walk.” This allows potential contractors to visit the project site to get an understanding of site conditions. This is also a good time for them to ask questions about the project.



Stormwater treatment system



Stormwater conceptual design



Buffer restoration, Sheldrake River



Stormwater treatment

Construction phase

Before you begin construction it is essential that all related environmental reviews, permits, and other approvals are in place.

The consultant team can help oversee construction, administer the contract, and carry out various functions such as:

- project initiation
- scheduling
- regular site visits and meetings
- clarifying details with the builder
- monitoring construction progress and adherence to documents
- processing variations and change orders to the contract
- certifying progress claims
- final inspections and preparation of a punch list
- checking final accounts
- closing the project

For larger projects, a construction manager may be necessary. In this case, the general contractor will become involved earlier in the process, enabling them to be more involved in the design phase of the project. Using

knowledge from a capable construction manager in the design phase can reduce costs, save time later in construction, and reduce the potential for change orders.

It is important that everyone involved in the project understands their roles and responsibilities. Municipal staff also need to monitor the performance of consultants and contractors on an ongoing basis and maintain all records associated with the disbursement of municipal revenue and compliance with all grants and permits.

Ongoing management and maintenance

Completed projects need ongoing management and maintenance. For example, wetland restoration projects will need close attention to make sure the plantings survive. Implementation planning must address how a project will be managed and maintained. These responsibilities are best incorporated into a formal plan that assigns responsibilities, schedule and a budget - and this plan should be developed at an early stage in the design of your project.

Strengthening municipal controls on development

As part of developing an understanding of your watershed, outlined in Chapter 3, you will have conducted a municipal assessment of local controls that focus on addressing water quality impairments and threats. In doing this, you will have generated a list of regulatory and

programmatic recommendations to improve water quality, maintain conservation areas, and control development. Since the primary responsibility for regulating land use and development in New York State rests with local municipalities, they play a major role in addressing water quality and quantity. By strengthening local controls, municipalities can achieve water quality improvement and restoration, while promoting appropriate development in the watershed. This can be done through revisions to comprehensive plans, zoning, site plan review, subdivision regulations, and other local laws designed to protect sensitive resources.

There are a variety of tools and techniques that you can use to fill regulatory or programmatic gaps identified during municipal assessments. The following examples are specific tools communities can use to address watershed management issues to protect and enhance water quality and quantity.

Comprehensive Plans

A comprehensive plan is used by a community to establish a vision for its future growth and development and to develop policies, goals, and recommendations for implementing that vision. A successful comprehensive plan recognizes the importance of water resources and is used to highlight the need to protect water quality, quantity, and natural resources, including stream corridors and wetlands. The plan should include data and maps of the watershed and water resources to help identify areas where growth should be focused and where development should be limited. The comprehensive plan should also incorporate watershed plan recommendations and

implementation strategies. New York's enabling statutes for zoning require that zoning law be adopted in accordance with a comprehensive plan. Therefore, the comprehensive plan should be thought of as a blueprint on which zoning and other land use regulations are based.

Zoning

Zoning is an important tool used to regulate the use, density, siting, and form of development on individual parcels of land. Effective zoning is used to implement a municipality's comprehensive plan and will be used to direct growth and development to appropriate areas and away from sensitive areas, such as stream corridors and wetlands. Some specific zoning techniques include:

- **Special use permits-** allows a municipality to require special review and conditions for proposed uses that could have adverse impacts. For example, special use permit criteria can require development proposals to provide buffer areas and best management practices for control of nonpoint source pollution adjacent to stream corridors or wetlands. They can also require that a percentage of land be left as open or green space.
- **Overlay Zoning-** allows a community to apply additional review requirements and standards for the protection of designated resources that may cross several zoning districts. The standards for the overlay district can be structured to address riparian buffer protection, floodplain management,

Development of the Tompkins County Comprehensive Plan

The Tompkins County Comprehensive Plan was developed over a three year period from 2001 to 2004. During this time, County planners worked with municipalities and integrated goals and projects from many existing planning documents throughout the county. Many of the objectives listed in the natural resources section of the comprehensive plan mimic the watershed plan in promoting stream buffers, water quality monitoring, and inspections and maintenance of onsite wastewater treatment systems. Referencing the watershed plan within the comprehensive plan creates consistency between the two and provides formal County adoption and support for these action items. The Tompkins County Comprehensive Plan was formally adopted on December 21, 2004 by the Tompkins County Legislature. (www.cayugawatershed.org)



The Tompkins County Comprehensive Plan incorporates objectives outlined in the Cayuga Lake Watershed Restoration and Protection Plan.



Site plan review meeting



Site plan concept design

stormwater management, habitat protection, or the amount of impervious cover.

- Incentive Zoning- allows developers to exceed the dimensional, density, or other limitations of zoning regulations in return for providing certain benefits or amenities to the municipality. Incentive zoning can be an effective way to direct development away from sensitive areas.
- Performance Zoning- regulates development based on the permissible effects or impacts of a proposed use. Under performance standard zoning, proposed uses whose impacts would exceed specified standards are prohibited unless the impacts can be mitigated. Performance zoning is often used to prevent negative environmental impacts, such as stormwater runoff, scenic and visual quality impacts, and defined impacts on municipal character.
- Planned Unit Developments (PUDs)- allows for more flexible development practices than traditional zoning. A planned unit development can provide a mix of residential densities or a mix of residential and non-residential uses. Development within the PUD is typically clustered so open space and sensitive resources are preserved.

Subdivision Review

Subdivision regulations control the process by which land is divided into smaller tracts of land.

The review process can also be used to ensure practices are in place to protect water quality and quantity, such as individual wastewater treatment systems and stormwater management systems. Subdivision review is also important to ensure that future development adequately protects riparian areas and wetlands from physical disturbances, hydrological modifications, and pollutant loading.

Cluster subdivisions can be used to allow more flexibility in the design of residential subdivisions and concentrate development on the most appropriate portion of a site. Cluster subdivisions can also be used to preserve important resources, such as open space, scenic views, and agricultural lands, as well as to protect streams, riparian areas, wetlands, steep slopes, ground water, and wildlife habitats.

Site Plan Review

Site plan review is a land use technique used to regulate the arrangement, layout, and design of a proposed use on a parcel of land. Site plan review allows communities to address a wide range of issues by incorporating standards for stormwater management, traffic flow, parking, landscaping and buffering, and any other elements specified in the local site plan law or ordinance. This technique can be used to ensure that designs for new developments avoid sensitive areas and incorporate standards for water quality protections, including building location, road design, stormwater management, and wastewater treatment.

Official Maps

Under the statutes, the governing body of a municipality may establish an official map of its area, showing the streets, highways, parks, and drainage systems established by law. This official map may also be used by a municipality to develop logical, efficient, and economical street and drainage systems and protect the future rights-of-way needed to implement these systems. Future requirements for facilities and the land may be added to the official map to graphically show preserved land which may not be used for other purposes without the consent of the municipality.

State Environmental Quality Review Act

The State Environmental Quality Review Act (SEQR) provides a procedural framework for incorporating social, economic, and environmental factors into the community planning and decision-making processes. SEQR applies to all discretionary actions by a municipality, either through direct actions or through funding or approval of projects. The intent of SEQR is to evaluate the potential environmental impacts of a proposed project and to take those impacts into account when deciding to undertake, approve, or fund it. SEQR can be used to ensure that water quality and quantity considerations are addressed when reviewing development proposals.

Often, a community will want to address a specific issue or resource within the municipality or the watershed. Below are a few common watershed issues that can be addressed by incorporating standards within zoning, subdivision, and site

plan review controls. These issues may also be addressed using stand-alone regulations or ordinances.

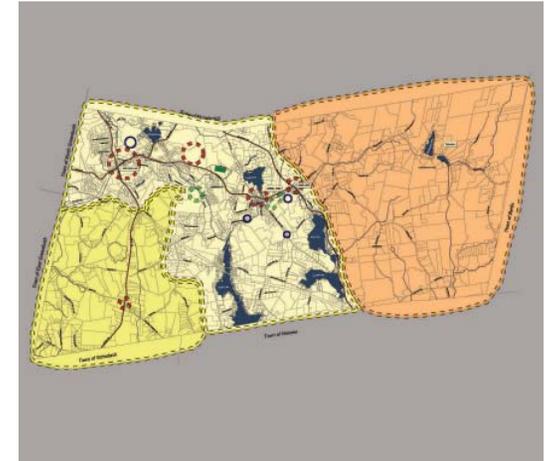
Erosion and Sediment Control and Stormwater Management

Activities involving the clearing of land can create erosion, which leads to the sedimentation of waterways. Communities can manage construction sites and post-construction stormwater runoff to protect water quality and natural resources by adopting an erosion and sediment control/stormwater management law. These tools can be used to ensure that post construction runoff does not exceed pre-development conditions and water quality treatment is incorporated.

Incorporating Low Impact Development (LID) and Green Infrastructure are two other techniques to manage stormwater at its source. LID uses a variety of small cost-effective landscape features located onsite, including bioretention areas, rain gardens, permeable pavement, and vegetated swales to minimize stormwater runoff. Green infrastructure is an interconnected network of open spaces and natural areas, such as greenways, wetlands, and parks which serve to naturally manage stormwater, reduce flooding, and improve water quality while providing wildlife habitat and opportunities for recreation.

Onsite Wastewater Treatment Systems

Improperly functioning septic systems are a major source of nonpoint source pollution. Onsite



Land use map



Improper use of control measures



Hardened streambanks effect water quality



Public meeting, Clifton

wastewater treatment systems are regulated by State and county health laws, but municipalities can offer an additional level of regulation through local land use regulations and the issuance of building permits and certificates of occupancy. Local laws can include additional standards for design, inspection and maintenance. Education and outreach for homeowners and training for local officials such as planning boards, building inspectors, and code enforcement officers are critical for maintaining properly functioning onsite wastewater treatment systems. The New York On-site Wastewater Treatment Training Network (OTN) provides training and technical assistance on the siting, design, inspection and maintenance of on-site wastewater treatment systems.

Wetlands and Watercourse Protection

Wetlands provide a number of important values and functions, including water quality protection, flood control, open space, wildlife habitats, and opportunities for recreation, tourism and education. Naturally vegetated stream corridors also provide water quality benefits by stabilizing erodible soils, promoting infiltration, trapping sediment, and providing shade to protect habitats from thermal impacts.

Local regulation of wetlands and watercourses is an important tool for protecting the integrity and functioning of watershed ecosystems in a comprehensive and consistent manner that also supports local planning objectives. Local wetland and stream corridor regulations should define and map the resource to be protected, establish buffer requirements, and establish standards

for protection, including standards for regulating physical disturbance, discharge of stormwater, and changes in hydrology.

Aquifer Protection

Both the quantity and quality of groundwater can be affected by changes in land use. Increased impervious surface associated with development reduces the amount of water reaching aquifers. Groundwater quality can also be impacted by pollutants that can leach into aquifers from land use activities at the surface. These pollutants can include petroleum products from parking lots and service stations, road salt from highways, and fertilizers and pesticides from agricultural uses. Communities can protect groundwater resources through local zoning or through stand-alone local laws. One technique for protecting groundwater resources involves the use of an overlay district to implement specific regulations for activities in aquifer recharge areas. The overlay district can be used to prohibit uses that may contaminate groundwater, impose performance standards for pollutant generating activities such as wastewater treatment, or to require site plan review to ensure that site designs contain adequate measures to protect groundwater.

Floodplain Management

Floodplain regulations are land use controls that govern the amount, type, and location of development within defined floodprone areas. Floodplain management not only improves public safety, but can lead to less development on sensitive areas near waterbodies and can protect and improve

water quality. The National Flood Insurance Program enables property owners in participating communities to purchase flood insurance in exchange for State and community floodplain management regulations that reduce future flood damages. In order to participate in the National Flood Insurance Program municipalities are required to adopt and enforce ordinances restricting development in the 100-year floodplain. Local floodplain regulations can include a more accurate hazard area, the identification of a larger hazard area (such as a 500-year floodplain), and limitations of certain types of construction within flood hazard areas.

Open Space Protection

Open space can be publicly or privately owned and can include recreational sites, parks, greenways, trail networks, cemeteries, forests and woodlands, wetland and stream corridors, agricultural land, and historic properties. Open space can serve important water quality, quantity, and natural resource goals by limiting development on sensitive areas. A good way for a municipality to assess the importance of its open space resources is to develop an Open Space Plan or to include an assessment of open space resources as part of its comprehensive plan. This plan/assessment should categorize open space resources, examine their use and function within the community, set priorities for their protection, and consider the best options for the use and protection of open spaces.

Agriculture

Well-managed farmland can help protect water

quality and enhance community character while providing significant support to the local economy. Unfortunately, improperly planned or implemented agricultural activities can have significant impacts on water quality. Runoff from farms can contribute to increased levels of nutrients that can cause algae growth and oxygen depletion in nearby waterbodies. Sediment from eroding fields can also choke public drainage ditches and streams. Municipalities can encourage farms to participate in a number of voluntary programs through the Department of Agriculture and Markets. Two such programs include the Agriculture Environmental Management (AEM) Program, which helps farms manage environmental impacts through cost-effective and science-based comprehensive farm plans and the Conservation Reserve Enhancement Program, which focuses on maintaining natural vegetation along streambanks to control erosion and trap pesticides and fertilizers.

Forest Management

As with any land disturbance, timber harvesting can increase erosion and sedimentation. These impacts are typically associated with logging roads and wetland and stream crossings. Municipalities can regulate timber harvesting in a number of ways including local laws regulating erosion and sediment control, wetland or stream disturbances, or through a comprehensive timber harvesting law. Education and outreach to property owners and loggers and voluntary compliance with best management practices is also extremely important for avoiding impacts associated with timber harvesting. County Soil and Water Conservation



North Creek rail stop, North Creek



Farmland protection improves water quality

Table 6.2 Techniques for Filling Regulatory and Programmatic Gaps

Watershed Tool	Techniques
Land Use Planning	<ul style="list-style-type: none"> • Require site plan proposals to include watershed/subwatershed name. Encourage plan reviewers to consult watershed plans during plan review process • Incorporate watershed plan into comprehensive plan • Adopt overlay districts or watershed-based zoning to protect sensitive areas • Establish resource protection ordinances for resources including wetlands, forests, and other sensitive resources • Adapt model local laws from neighboring communities or those provided by county or state agencies to fit your community
Land Conservation	<ul style="list-style-type: none"> • Allocate tax funds for land conservation • Authorize local governments or local land trusts to hold conservation easements • Establish a transfer of development rights (TDR) program that transfers development potential from environmentally sensitive areas, called sending zones, to specific areas designated for growth, called receiving zones
Aquatic Buffers	<ul style="list-style-type: none"> • Adopt a local buffer law that includes a minimum 100 ft width, explicit vegetative standards, excluded uses, maintenance criteria, etc. • Require final property surveys/plats to include riparian buffer demarcation • Develop and implement an invasive species management plan in public open space • Encourage riparian buffers to be set aside as conservation areas in new developments
Better Site Design	<ul style="list-style-type: none"> • Complete a codes analysis to identify regulatory barriers to implementing open space design • Conduct a site planning roundtable to reach consensus among developers, residents, conservationists, and local staff on recommended code changes • Provide incentives for conservation design, such as stormwater credits or expedited review for sites utilizing conservation design

Erosion and Sediment Control	<ul style="list-style-type: none"> • Hire a part-time Erosion and Sediment Control (ESC) Stormwater Inspector • Provide training/certification program for inspectors and contractors on ESC practice installation and maintenance • Adapt more stringent design standards for ESC practices and provide incentives to minimize the amount of clearing at development sites • Establish a “hotline” for reporting failing ESC practices
Stormwater Management	<ul style="list-style-type: none"> • Enhance stormwater criteria • Allocate a portion of capital budget for implementation of priority stormwater retrofits • Educate homeowner associations and private businesses on proper practice maintenance • Establish a stormwater district to collect fees for infrastructure maintenance and program support
Non-stormwater Discharges	<ul style="list-style-type: none"> • Develop an illicit discharge detection and elimination program and citizen “hotline” for reporting problems • Require point of sale inspections of septic systems and sewer connections • Encourage cost-sharing partnerships between municipalities for maintaining sewer infrastructure • Require certification of septic system inspectors and mandatory inspections in sensitive watersheds • Provide incentives of funding for septic system upgrades and the use of alternative septic systems that provide greater pollutant reduction



Susquehanna River

Case Study: Shinnecock Bay, Long Island

Estuaries throughout Long Island have long supported a vibrant shellfishing industry, but significant changes in land use and development in recent decades have increased inputs of bacteria, nutrients, and sediments, decimating eelgrass beds and shellfish populations. As a result of the Town of Southampton's targeted watershed planning and implementation efforts, Shinnecock Bay, located on the south fork of Long Island, is experiencing improvements in coastal water quality and habitat and a related resurgence of bay scallops and other shellfish.

Recognizing the importance of wetlands in protecting water quality and habitat, the Town of Southampton adopted a Wetlands Protection Law in 1993. The primary goal of the law is to restore wetland and buffer areas as mitigation for proposed new development or expansion. The wetland ordinance requires a permit for projects that include filling, digging, dredging, or other activities associated with new construction, installation of fences, vegetation pruning, demolition, and environmental testing within wetlands and specified wetland buffer zones.

Southampton has made significant strides in mitigating stormwater runoff by identifying key problem areas and implementing best management practices to remove sediment and other pollutants from storm water. This includes an effort to "peel back" roadways that end at the shore by creating naturalized buffers of beach grass and shoreline vegetation at road ends. In an effort to improve the ecological functions of degraded wetlands, the Town has restored the natural hydrology of several marshes by removing dredged materials and replanting those areas with native wetland vegetation.

The Town has also been successful in acquiring lands to preserve sensitive coastal and wetland areas. The Town of Southampton enacted a Community Preservation Fund which places a two percent tax on all land transfers within the Town. Revenue generated from the tax is used to purchase sensitive lands that provide critical ecosystem functions.



Salt marsh pool restoration

Districts and Cornell Cooperative Extensions can play an important role in the education and outreach process.

Strengthening local watershed practices

It is important that the people responsible for the implementation of the recommendations in your watershed plan are aware of preferred watershed practices and understand how and why those practices protect or restore water quality. One way to advance the implementation of effective practices is through the preparation of written guidelines for capital improvement projects and maintenance and operation of existing municipal facilities and public roadways. Developing a schedule for inspection of catch basins and other stormwater infrastructure with an eye on identifying how often sediment needs to be removed from catch basins can go a long way toward preventing pollution of local waters. Holding regular meetings to discuss the progress on capital improvement projects and identifying opportunities to improve maintenance is a good way to keep these issues on the front burner.

Two examples of approaches to assessing local practices - *Protecting Water Resources through Local Controls and Practices: An Assessment Manual for New York Municipalities* (Genesee Finger Lakes Regional Planning Council, 2006)(www.gflrpc.org) and *Strengthening Local and State Development Controls and Practices*

to Protect Lake George Water Quality, (Albany Law School, 2006)(www.lakegeorge2000.org) - present a series of recommendations for improving practices to protect water quality. These include recommendations related to:

- sewer/water infrastructure
- on-site wastewater treatment systems
- flood plain management
- environmentally sensitive areas, including wetlands, riparian areas, and lakeshore areas
- erosion and sediment control
- stormwater management and drainage
- road and bridge maintenance
- junkyards
- waste storage
- mining and drilling
- agriculture
- forest management
- boating and marinas

Providing training to local staff and other interested parties on watershed protection practices through workshops, consultations,



Greenport Harbor, Long Island



Eighteenmile Creek, Niagara County



Watershed education workshop



Installing stormwater treatment

certifications, and guidebooks is a good way to promote the practices recommended in your plan. Training can be targeted to:

- *Highway department staff* - road de-icing practices, pollution prevention practices at municipal yards, street sweeping, catch basin cleaning, fleet operations, and public open space management
- *Engineers, landscape architects and developers* - site planning, stormwater design, on-site wastewater systems, construction and maintenance practices, installation and maintenance of erosion control practices, utilizing native plant species, buffer management, and low impact lawn care practices for protecting water quality
- *Contractors* - installation of erosion and sediment control practices, benefits of porous pavement, installation and maintenance of stormwater improvements
- *Municipal staff* - developing stormwater programs and conducting watershed assessments
- *Civic associations and watershed groups* - landscape practices for protecting water quality, building and maintaining rain gardens, stream and other aquatic assessments, and volunteer monitoring

- *Site inspectors and enforcement officers* - proper installation and maintenance of erosion and sediment controls, stormwater practices, certification for inspection and enforcement officers
- *Business associations* - pollution prevention measures unique to their business type (e.g., the use of best management practices at marinas)

In New York, there are a number of training opportunities available for local governments and staff:

- The Stormwater Management Program Series, provided by SUNY College of Environmental Science and Forestry and the NYS Department of Environmental Conservation (www.esf.edu/outreach/stormwater)
- Septic system management training through the On-Site Wastewater Treatment Training Network (OTN) supported by SUNY College at Delhi and the NYS Department of Environmental Conservation (www.delhi.edu/corporateservices/otn_wastewater_programs.asp)
- The Cornell LEAPE (Locally-led Education and Action for Protecting the Environment), an educational program for local governments based on the protection of water resources (www.css.cornell.edu/leape/index.html)

- NYS DOS Division of Local Government Services links to watershed related training including stormwater management, management of onsite wastewater treatment systems, highway official training for maintenance associated with local roads (www.dos.state.ny.us/lgss/addtraining.htm)
- The Land Use Law Center at Pace University's School of Law, training opportunities that focus on land development, local land use decisions, strategic planning, and stakeholder development (<http://law.pace.edu/landuse/index.html>)

Continuing public outreach and education

Throughout the planning process you should have been reaching out to the public for their input, concerns, and comments. The information that the public can contribute to the planning process is irreplaceable, as is the information that you can give back to them as to how to improve water quality. Continued public outreach can help keep the community informed of water quality project implementation and advances in any regulatory and programmatic recommendations.

Public education programs can be used to keep the community involved and educate community members about how their actions are related to and affect their water resources. Programs

can provide residents with specific messages depending on the activity or pollutant of concern. For example, if excess nutrients are a concern in your waterbody, you may want to devise an education program about the responsible use of lawn fertilizer, disposal of pet waste, and maintenance of on-site wastewater treatment systems. Keep in mind that education programs should focus on the specific impairments, problems or threats identified during your field assessments, and, wherever possible, tie them into an existing municipal education program. Before developing a watershed education program, you should consider some key questions:

- Who is the target audience?
- How familiar is your target audience with the water quality issues in the watershed?
- What educational messages do you want to promote?
- What outreach methods are most effective in getting the message out?

Outreach to the community can be conducted in a variety of ways. Messages sent through television, radio, and local newspapers are far more influential in reaching residents than any other technique, with up to 30% recall rates by the watershed population. These methods can sometimes be expensive. To potentially reduce costs, consider pooling resources together with

neighboring watersheds in order to develop a regional media campaign. This may allow you to hire outreach professionals to create and deliver an effective message. You may also be able to use a variety of media to reach out to a wider audience.

Another way to reach out to the community is to incorporate watershed management into the science curriculum of local schools. This helps to connect students to their water resources, provides an educational component for protection and restoration projects, and generates a source of potential volunteers for activities such as streambank clean-ups, tree planting, or monitoring.



Oswego, Lake Ontario

Case Study: Wappinger Creek

Wappinger Creek is one of five major tributaries to the lower Hudson River Estuary and drains a watershed of over 180 square miles. Past disturbances to the creek such as dredging, road and railroad crossings, and low density residential development, have caused a decline in water quality and habitat diversity. In addition, the invasive exotic waterchestnut has become especially problematic in slow-moving sections of the creek.

In response to these issues, the Wappinger Creek Watershed Intermunicipal Council was formed to improve and preserve the natural beauty and integrity of Wappinger Creek. The Council provides a forum for nonprofit organizations, concerned citizens, and municipal governments to discuss existing conditions, research and management needs, and to identify implementation opportunities within the watershed.

Steep slopes along the creek's natural buffer are threatened by erosion. In an effort to address these erosion issues, the intermunicipal council developed a framework for restoring the streambank and provided an avenue for a coordinated volunteer effort to put the restoration plan into action. With technical assistance from the Dutchess County Environmental Management Council (EMC), the two groups developed site-specific

restoration designs and settled on a two-phase program to rebuild, strengthen, and re-vegetate the streambank.

Phase I involved re-establishing the creek's natural elevation and stabilizing its streambank. Biodegradable mats were used to hold the bank in place, and grasses and willow fascines were planted to further stabilize the bank. A variety of partners made the restoration project a reality: Trout Unlimited; a local quarry that provided the rip rap used for stabilization; the Natural Resource Conservation Service, which provided conservation grass mixes; the Town of LaGrange Highway Department, an important source of equipment and manpower; Vassar College, which provided land for a willow nursery; local boy scouts, who were hands-on volunteers; and local landowners who provided easements that facilitated restoration. Phase II of the project will include additional vegetative planting along the streambank to provide long-term stability and provide shade and cover for wildlife.



Wappinger Creek lies within the Lower Hudson Watershed



Wappinger Creek

Measuring success - tracking implementation and monitoring performance

Measuring success and evaluating improvements is key to continued water quality improvement. To document success, you will need to show how water quality has improved as a result of your efforts. In particular, funding agencies, regulators, and other partners will have a keen interest in measuring whether restoration and water quality improvement projects were successful in order to make future funding decisions.

Success can be measured in many different ways including tracking the number of projects completed, such as the number of rain gardens installed, total acreage conserved, or measuring changes in water quality and habitats, such as the reduction of turbidity or improved aquatic insect communities. Trend monitoring is often the best way to determine if conditions are improving and watershed goals are being met.

Creating a monitoring plan will help organize your monitoring effort and help you track your progress. A monitoring plan includes:

- *Project monitoring* - Project monitoring best illustrates the benefits of individual restoration or water quality improvement efforts. Monitoring can include simple visual observation or it can involve complex

modeling. Physical inspections can also be performed at individual projects to assess how conditions have changed over time. For example, monitoring a reforestation project might focus on determining tree survival or the effects of invasive species, whereas stormwater retrofit monitoring might focus on determining if anticipated pollutant load reductions are being achieved. Monitoring also allows you to make adjustments to a project in order to increase your chances of success.

- *Fixed monitoring stations* - Fixed monitoring stations are effective in determining whether conditions are changing in a subwatershed or watershed and can be established to measure long-term trends. Look to see if fixed stations, such as US Geological Survey stream gauging stations or monitoring stations for the NYS DEC Rotating Intensive Basin Study (RIBS), exist in your area. If monitoring stations are not in place, consider partnering with local colleges or universities to establish one or more local stations. Keep in mind that data from fixed monitoring stations can often be influenced by local factors such as outfalls or other point source pollution discharges. Make sure that stations are strategically placed and are representative of the overall conditions of the watershed. To collect consistent data, sampling should be performed during the same time of day, during the same seasons, and, where applicable, under the same flow conditions.

Monitoring Progress by Monitoring Fish Habitat

Guidelines for Monitoring Fish Habitat in Wadeable Streams of the Catskill Mountain Region, NY, published by the US Geological Survey in 2003, grew out of the need to monitor the success of stream channel stabilization projects in Catskill Mountain streams. Stream channel erosion was causing sedimentation and degrading water quality in the downstream reservoirs that are the drinking water supply for New York City. By monitoring stream habitats, managers are able to evaluate how well stabilization projects reduce sedimentation and other impacts. The US Geological Survey, Greene County Soil and Water Conservation District, and the NYC Department of Environmental Protection worked together to develop, test, and publish an assessment methodology that monitors fish habitat suitability of a stream for one year prior to restoration and three years following restoration. The monitoring guidance document serves as a mechanism to evaluate the success of the restoration project and includes the methodology, a field equipment list, and monitoring forms. (<http://ny.water.usgs.gov/pubs/of/of02484>)



East Hampton, Long Island



North Tonawanda, Erie Canal

- *Illicit discharge monitoring* - Illicit discharge detection and elimination are critical elements of watershed restoration and planning. Illicit discharges such as connections between sanitary and storm sewers are often a significant source of pollution in a watershed. Monitoring individual outfalls and identifying connections can help you identify significant sources of pollution to your waterbody. Observations of illicit discharges need to be reported to the MS4 permittee and/or DEC.
- *Project tracking* - Managing the implementation of a large number of projects within a subwatershed can be complex and time consuming. It is a good idea to create a master project spreadsheet and where possible link it to a GIS system. This system can then track the status of individual projects through final design, permitting, construction, inspection, maintenance, and performance monitoring. For non-structural efforts, tracking systems might include recording the number of outfalls inventoried, the number of untreated discharges mitigated, the number of hotline calls, or the number of dedicated volunteers. By tracking projects, you can assess implementation progress over time which, in turn, helps explain future changes in water resource quality. Project tracking can also improve the delivery of future projects and can help you create reports that document implementation progress for key funders. Ideally, a designated person should manage implementation

tracking. This person will need to determine what information to track, update project information in spreadsheet/GIS format, and periodically report on the status of implementation. A tracking system should account for all practices undertaken in the watershed plan regardless of their type or size and should include enough information so that you can:

- determine actual project costs
- track individual project status
- access design and permit information
- establish inspection, maintenance, and monitoring schedules
- report progress on individual projects and, overall, on how well you are implementing your watershed plan
- provide information to show progress toward meeting federal/state stormwater implementation or water quality goals
- remind everyone how much has actually been accomplished

You should be using the monitoring and tracking information to report on your progress to partners and other interested agencies or individuals. Progress reports should:

- summarize the number, types, and descriptions of projects
- summarize information gathered during monitoring
- include budget updates
- describe grant awards
- highlight key partner involvement
- reference any additional studies or information on the watershed

Reporting on an annual basis will allow you to reassess progress and identify areas of the plan that may need corrections or adjustments based on monitoring data or lessons learned.

Progress reports can either be distributed at annual public watershed meetings or at internal municipal meetings that include local municipal officials. An annual meeting serves as a simple approach to update partners and the public on the status of the watershed plan and obtain feedback on what could be done better in the future. An annual meeting is also a great way to show project success to past and future funders.

Making revisions and updates

Changes are constantly occurring throughout the watershed - whether it is increased streambank erosion or changes in land use. As changes occur in your watershed, your plan should also change and adapt to address those issues. Updating your plan to reflect changes in the makeup of councils, community goals, or the regulatory environment will keep your plan relevant and fresh. It is also important to revise your plan to address changes in technologies and new opportunities for water quality improvement.

As you implement the recommendations in your watershed plan you should continue to conduct periodic aquatic and upland assessments to update inventories and to have an up-to-date assessment of existing conditions. It will also be important to evaluate how you are meeting your watershed goals. As goals are met, you should create a new set of goals to keep your plan relevant to current conditions.

Updating the Watershed Management Plan

The 2005-2009 Strategic Update of the Canandaigua Lake Watershed Plan includes a description of projects that have been implemented since completion of the original plan in 1999. Some of these successes include streambank restoration on Naples Creek, obtaining grant funding for a sewer extension project in Ontario County, a wetland creation project in the Town of Canandaigua, and obtaining funding for a major dredging project along Sucker Brook to clean up contaminated sediments. The updated plan looks ahead to future projects in research, education, restoration/protection and regulation. (www.canandaigualake.org)

