



Black River Watershed *Black River Watershed* Management Plan *Management Plan*

Executive Summary
April 2010



This watershed management plan was prepared for the New York State Department of State Division of Coastal Resources with funds provided under Title 11 of the Environmental Protection Fund, Local Waterfront Revitalization Program.

Black River Watershed Management Plan



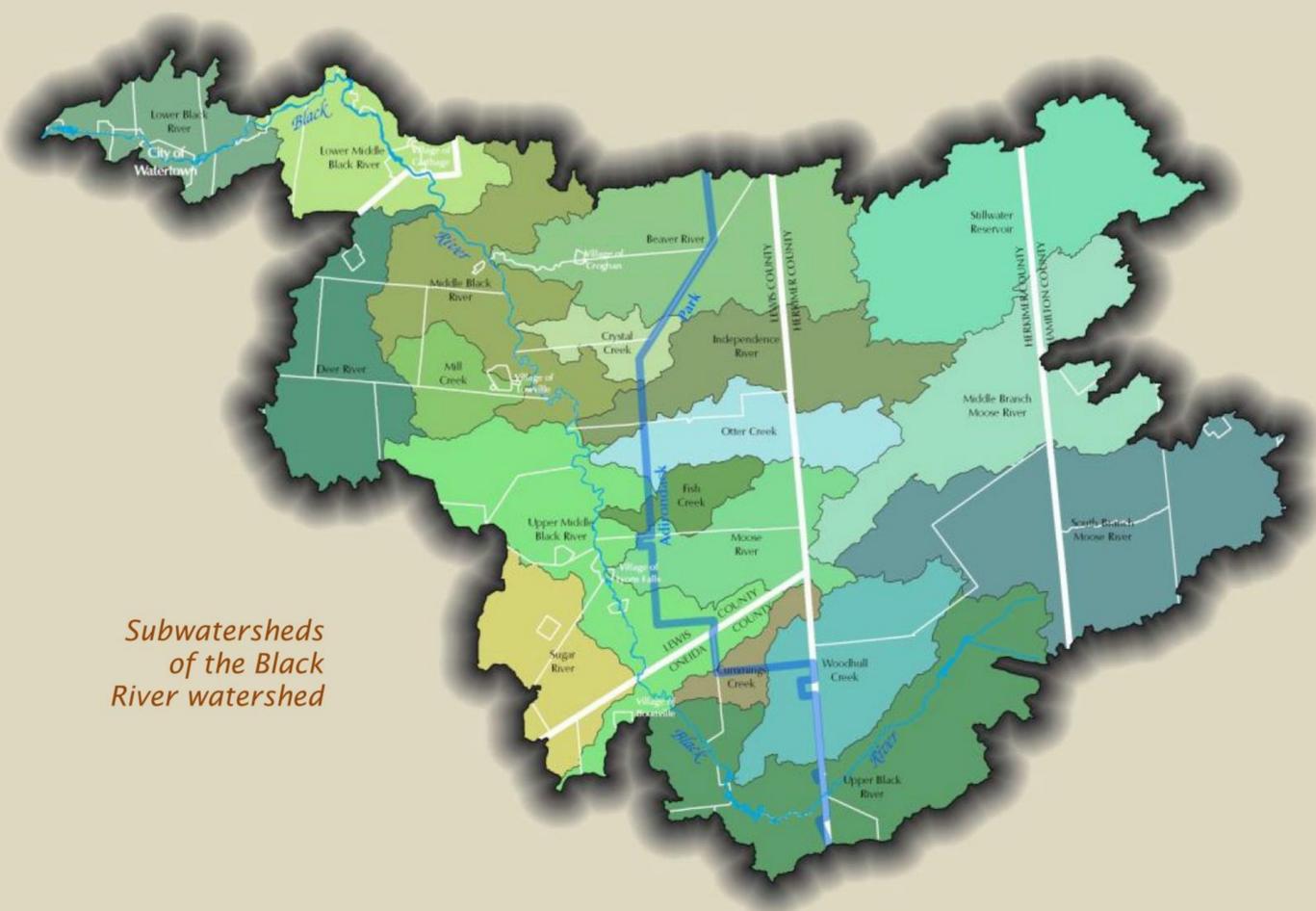
WHY PREPARE A WATERSHED MANAGEMENT PLAN?

The purpose of the Black River Watershed Management Plan is to examine the existing physical and regulatory conditions of the natural and built environments within the Black River watershed, identify those factors negatively impacting water quality, and recommend strategies that focus on the protection and improvement of water quality in the watershed.

Preparation of the Black River Watershed Management Plan began in 2007 and was coordinated by the Lewis County Soil & Water Conservation District and overseen by a Project Advisory Committee, which included numerous agencies and stakeholders from each of the Black River counties. Additionally, a variety of forums and outreach mechanisms were used to engage interested persons in the development and preparation of the Black River Watershed Management Plan. Funding was provided from two Environmental Protection Fund Local Waterfront Revitalization Program grants to the Town of Greig and matching funds from the Black River Advisory Committee Fund and NYS Senator Griffo. A National Fish & Wildlife Foundation grant was also secured by the Tug Hill Commission.

THE BLACK RIVER WATERSHED

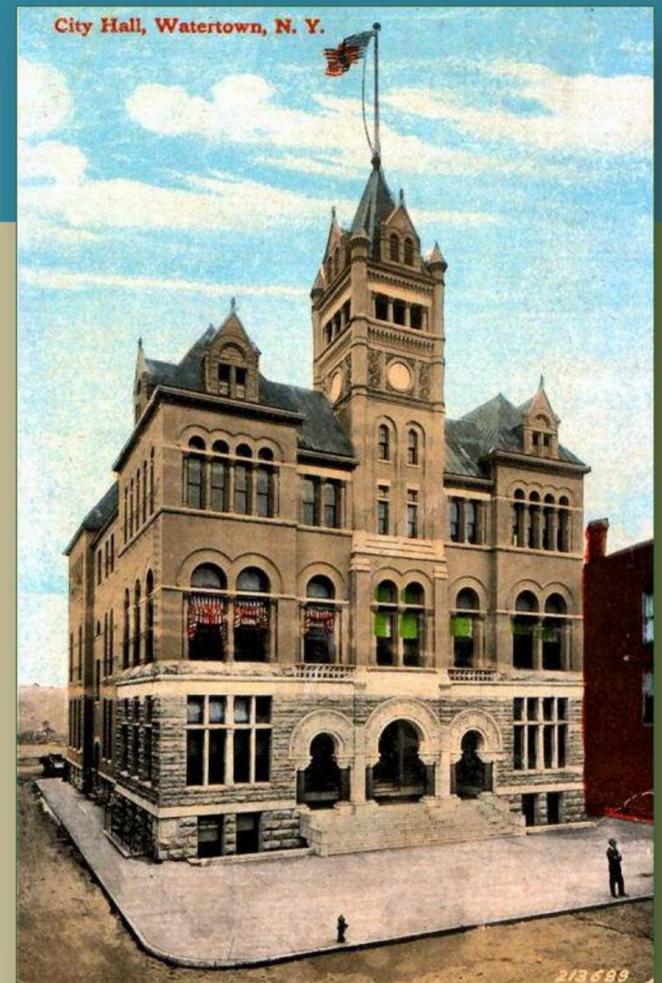
The Black River drains approximately 1.2 million acres of the western slopes of the Adirondack Mountains and the eastern edge of the Tug Hill Plateau before emptying into Lake Ontario near Watertown. The Adirondack portion of the watershed is drained, for the most part, by two large watercourses – the Beaver River and the Moose River – and several smaller tributaries such as the Independence River, Otter Creek, and Woodhull Creek. The Tug Hill region of the Black River watershed, however, is characterized predominantly by numerous small tributaries flowing over steep slopes. As a whole, there are approximately 4,000 miles of rivers and streams within the watershed, as well as more than 500 lakes and ponds covering approximately 35,000 acres within 19 distinct subwatersheds. This heavily forested region exhibits a variety of ecological conditions related to differences in climate, topography, dominant vegetation, land cover, soil, geology, and hydrology.



Communities in the Watershed

Traversed by this 1.2 million acre watershed are portions of five counties – Hamilton County, Herkimer County, Jefferson County, Lewis County, and Oneida County – and their associated municipalities. In all, one city, 37 towns, and 18 villages are wholly or partially located within the Black River watershed

In addition to the 61 units of government within the watershed, the study area also falls within the purview of four regional planning bodies – the Adirondack Park Agency, the Black River RC&D, the Herkimer-Oneida Counties Comprehensive Planning Program (also known as the Regional Planning Board), and the Tug Hill Commission. These organizations have undertaken a wide range of local municipal projects and larger regional-based initiatives in the watershed, including Main Street plans, Black River Scenic Byway, Blueway Trail Plan, infrastructure improvements, invasive species monitoring and eradication, recreation planning, and education and outreach.



Characteristics of the Black River Watershed

HISTORY

Today, a majority of the Black River watershed's population is concentrated within the Black River valley and along the mouth of the Black River, where it drains into Lake Ontario. In the earliest days of settlement within the region, development occurred along the river valley as this was the primary transportation corridor along the Black River Canal system, connecting the river and the communities along it with the Erie Canal to the south and Watertown to the north. In addition to commerce and transport, the Black River also provided a fertile floodplain with prime agricultural lands.

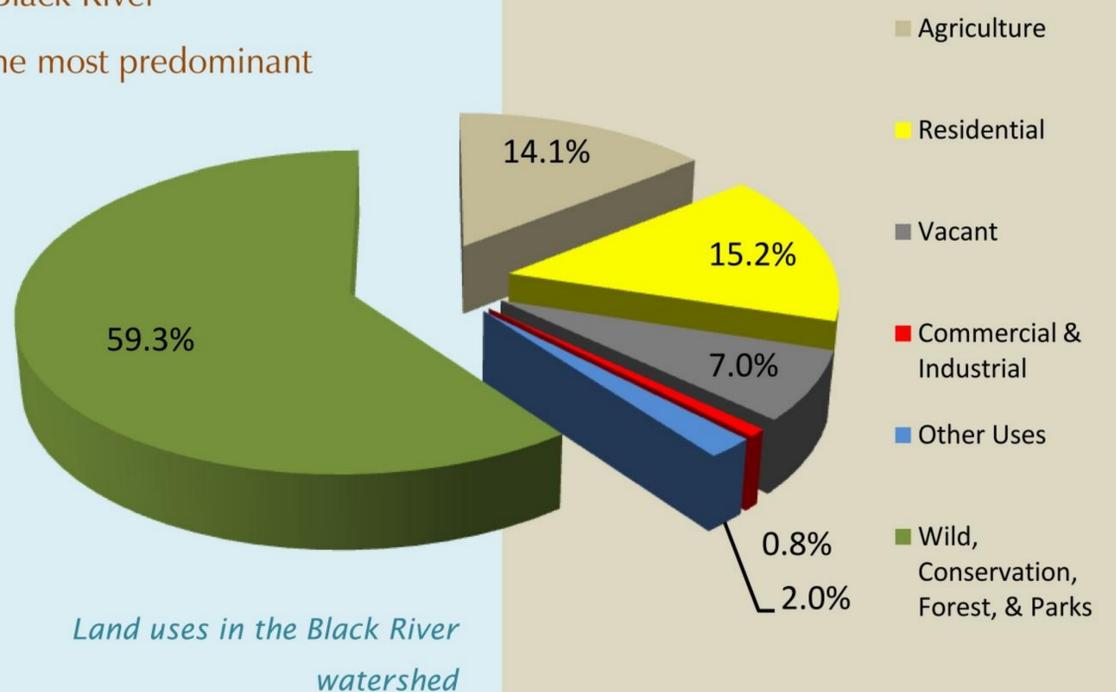
POPULATION

Long-term population trends in the watershed point towards an ongoing depopulation of the region, with the total population of the five watershed counties expected to decrease by almost seven percent from 2000 to 2020. Although Jefferson County is expected to gain in total population from 2000 to 2020, it is projected that the County will actually begin to depopulate beginning in 2015 and continuing into 2020. The sparsely populated Hamilton County, located entirely within the Adirondack Park, is expected to lose almost 15 percent of its population from 2000 to 2020.



LAND USE

Land use refers, in general terms, to how the land is used and is primarily defined at the parcel level. More than 53,000 parcels comprise the Black River watershed, with the average parcel size close to 23 acres. The most predominant uses, in terms of total acreage, are those parcels classified as Wild, Conservation, Forest, & Parks, covering 722,347 acres of the watershed. Residential uses are the second most predominant use, encompassing 185,490 acres. Agricultural lands make up the third largest category of uses, with more than 172,000 acres located within the Black River watershed.



Land uses in the Black River watershed

Watershed Quick Facts:

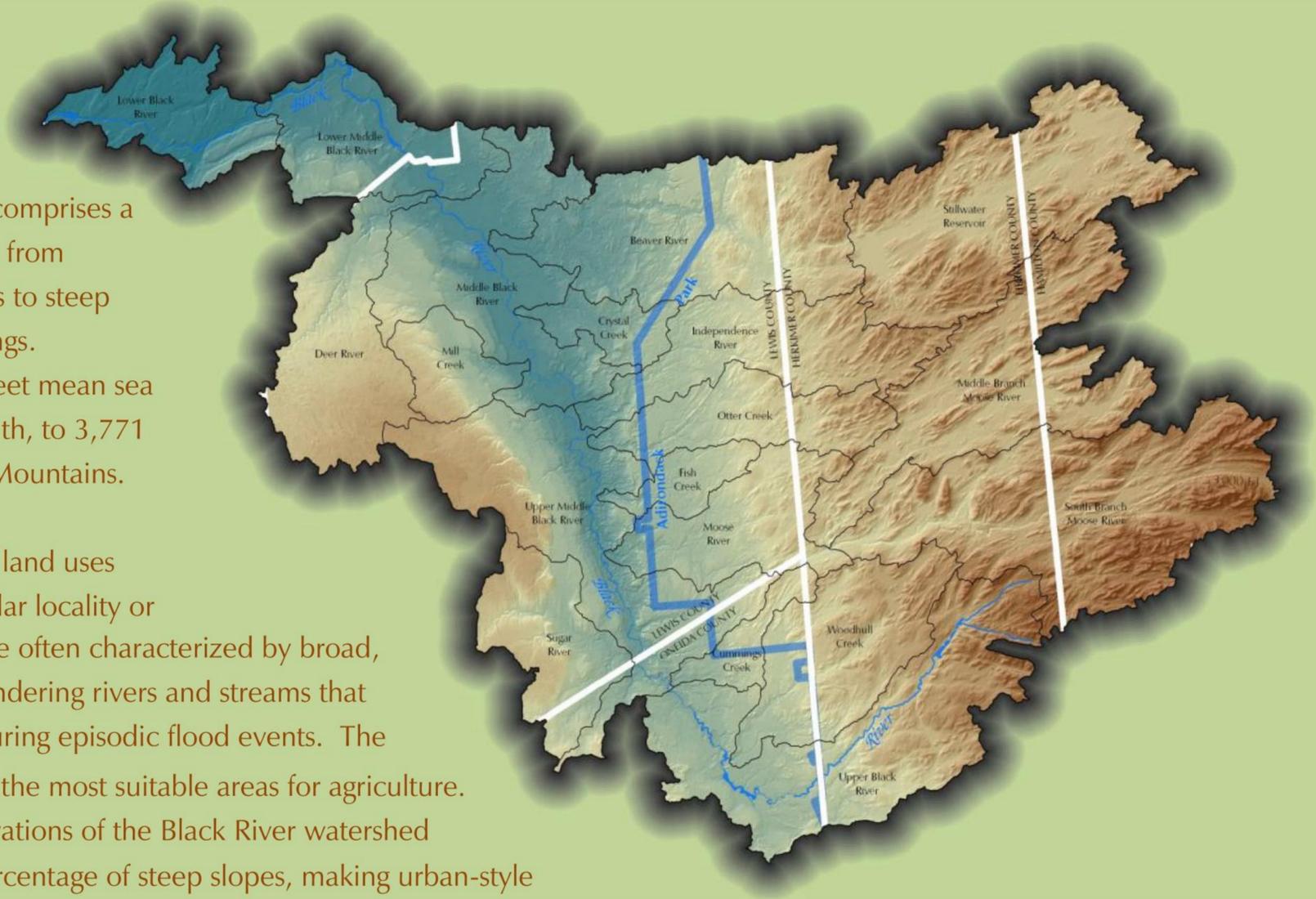
- Lands owned by the NYSDEC account for almost 40 percent of the watershed
- The watershed receives, on average, more than 48 inches of precipitation each year, with some areas receiving as much as 56 inches
- More than 30 protected species are known to reside within the watershed

- Also completed as part of this watershed initiative were a groundwater assessment and a socioeconomic characterization and assessment, both of which can be found at www.tughill.org

TOPOGRAPHY

The Black River watershed comprises a wide range of topographies, from generally flat and rolling hills to steep slopes and rocky outcroppings. Elevations range from 246 feet mean sea level (msl) at the river's mouth, to 3,771 feet msl in the Adirondack Mountains.

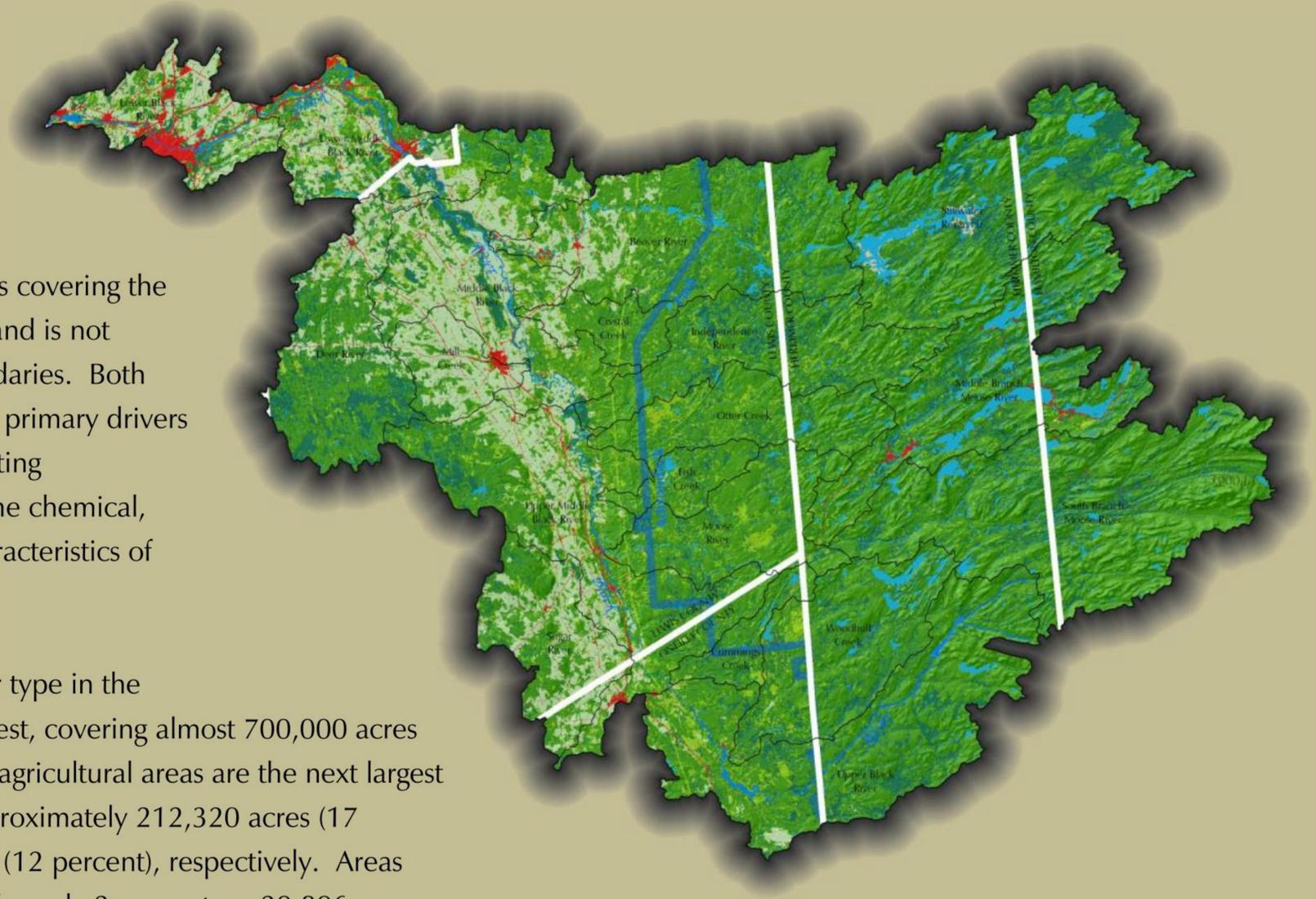
Topography can impact the land uses that are specific to a particular locality or region. Lower elevations are often characterized by broad, flat plains traversed by meandering rivers and streams that deposit highly fertile soils during episodic flood events. The result is that these are often the most suitable areas for agriculture. Additionally, the higher elevations of the Black River watershed comprise a considerable percentage of steep slopes, making urban-style development much more difficult than at the lower elevations. The result of these factors is that the subwatersheds located at lower elevations are much more intensively developed than those at the higher elevations, which has serious implications for water quality.



LAND COVER

Land cover considers what is covering the ground in a particular area and is not constrained by parcel boundaries. Both land use and land cover are primary drivers affecting water quality, exerting considerable influence on the chemical, physical, and biological characteristics of waterbodies.

The single largest land cover type in the Black River watershed is forest, covering almost 700,000 acres (57 percent). Wetland and agricultural areas are the next largest cover types, comprising approximately 212,320 acres (17 percent) and 142,335 acres (12 percent), respectively. Areas classified as urban account for only 2 percent, or 20,806 acres, of land in the Black River watershed.



Water Quality in the Watershed



While most of the basin is characterized by waters of good to excellent quality, the Black River watershed still has problems with water quality. Based on the New York State Priority Waterbodies List for 2006 (PWL), more than 2,500 miles (67.3 percent) of streams within the Black River watershed have been assessed for impairments. Of these more than 2,500 miles, approximately 10 percent are considered impaired (well documented water quality problems), while an additional 20 percent are listed as having minor impacts (less severe water quality impacts).

According to the PWL, the most prevalent of the water quality problems stem from atmospheric deposition and acid precipitation (i.e., acid rain), accounting for more than 90 percent of lake impairments and nearly 30 percent of stream impairments within the watershed. The most frequently cited sources of water quality impairments elsewhere in the basin by the PWL include agriculture and failing septic systems. Nonpoint source

pollution (e.g., pollution in runoff) from agricultural operations primarily consists of sediments, nutrients, and pesticides. Point source (e.g., single identifiable localized source of pollution) pollution from agricultural operations primarily comes from animal waste emanating from confined animal feeding operations (CAFOs).

Additional water quality problems listed in the PWL include inadequate or nonexistent municipal wastewater treatment facilities, municipal stormwater sewer systems, combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), and silviculture (i.e., tree farms). In the past, soil erosion from various forestry operations has also contributed to water quality impairment.

Wetlands purify and slow the flow of water off the land, controlling flood water and pollutants

“Let us have a splendid legacy for our children. . . let us turn to them and say 'this you inherit and guard it well, for it is far more precious than money . . . and once it is destroyed, nature's beauty cannot be repurchased at any price.”

— Ansel Adams



Why Stewardship is Important

First, what is *Stewardship*?

Stewardship, as it relates to watershed management and water quality, is a principle that advocates for the cooperative planning and management of natural resources by individuals, communities, organizations, agencies, and other interested parties to improve water quality and ensure the long-term sustainability of the watershed.



Why is watershed stewardship important?

Not only does stewardship protect and preserve the multiple environmental functions provided by the watershed's natural resources, it also preserves the beauty of the watershed, from its lowland valleys to its forested highlands. As watershed stewardship is cooperative by its very nature, it ensures a comprehensive approach that identifies and integrates goals from its various participants (improving water quality, sustainable working forests). By preserving and protecting your watershed resources, we ensure they can be enjoyed by future generations.

How do I become a watershed steward?

Whether you reside in the watershed or just visit, use your land for timber production, pursue active recreation, participate in the construction industry, manage a resource agency, are a municipal official, or farm in the watershed, you are all stewards of the Black River watershed. Without you, ensuring its long-term sustainability will not be possible. The following pages provide the various roles and stewardship activities that members in each of these groups can undertake to become active watershed stewards and make apposite contribution to watershed health



Municipal Officials – Your Decisions Matter



*Farm tour in Lewis County with
NYS Senator Joseph Griffo and
other local officials*

As the New York State Constitution provides for home rule, the primary authority for guiding community planning and development is vested in cities, towns and villages.

This provides local municipalities with the power to define how their community grows, or doesn't grow.

Watershed management is more complicated as political boundaries do not coincide with watershed boundaries. This increases the complexity of implementing recommendations and strategies to improve water quality. The central role of local government leadership in watershed protection cannot be overstated. Without the necessary leadership, water quality in the Black River watershed may decline.

To improve water quality in the watershed, municipal officials should implement the following recommendations:

Sign on to a Memorandum of Understanding and Provide Representation on an Intermunicipal Coordinating Organization

The Intermunicipal Coordinating Organization (ICO) would consist of representatives (preferably elected officials) from each of the municipalities located within the Black River watershed, as well as members from the County Soil & Water Conservation Districts. The purpose would be to maintain and enhance the high water quality through education, research, restoration and, if necessary, regulation. The ICO would be responsible for directing limited resources to the most high priority projects and would also work to identify funding sources and opportunities. The ICO could also act as an informational clearinghouse for watershed information.

Coordinate and cooperate with other municipal officials, regional planning organizations, and relevant agencies to implement water quality recommendations

Efforts designed to improve water quality in the basin will require the cooperation between its many stakeholders. Improving basin water quality will not be possible without such collaboration. Much of this coordination will occur through the framework of the WAC as it implements the watershed management plan recommendations.

PRIMARY RECOMMENDATIONS

- Sign on to a Memorandum of Understanding and Provide Representation on an Intermunicipal Coordinating Organization
- Coordinate and cooperate with other municipal officials, regional planning organizations, and other agencies to implement water quality recommendations
- Incorporate effective water quality practices into your local regulatory structure
- Identify approaches for watershed management to ensure that no one community is bearing the burden for improving water quality in the watershed
- Adopt improved maintenance practices for County and Town highway departments



Incorporate effective water quality practices into your local regulatory structure

The following practices should be considered for inclusion in local regulatory frameworks if not already in place:

- Impervious surface regulations/limits
- Low Impact Development (LID) stormwater and erosion control practices
- Streamside buffer regulations to preserve stream and lake corridors
- Encourage cluster development
- Framework for identifying important natural resources and setting protection priorities



Almost 75 percent of streams in the Moose River subwatershed are bordered by naturally-vegetated buffers

Identify approaches for implementation to ensure that no one community is bearing the burden for improving water quality in the watershed

Unfortunately, due to the very nature of watersheds, downstream communities often bear the largest burden in terms of negative water quality impacts and the costs associated with remediating these impacts (e.g., increasing treatment capacity at wastewater treatment plants). Conversely, upstream communities often bear the largest burden when it comes to watershed restoration and protection, with forest lands being protected and removed from the tax rolls or by limiting the amount and type of new development. To ensure that the burden of improving water quality is spread equally throughout the watershed, municipal officials should work together to identify approaches that allow each community to contribute what it can (e.g., in-kind services, cost-sharing, intermunicipal agreements).



Adopt improved maintenance practices for County and Town highway departments



Rock-lined ditches and check-dams are a cost-effective technique for reducing runoff from roads and ditches

Roads permeate all aspects of our daily lives and play a crucial role in our local, regional, and national economies. Roads, however, can also have substantial impacts on water quality and the functioning of natural waters. Unpaved roads can be a significant source of suspended sediment in many rural watersheds, accounting for 25 percent or more of the sediment load. Paved roads often increase both the amount of water and the amount of road pollutants (e.g., de-icing products) delivered to waterbodies. Watershed municipalities should implement the roadway, ditch, and stormwater conveyance facility Best Management Practices (BMPs) currently used in the Northeastern U.S., such as check dams, hydro-seeding bare soils, or splash/plunge pools. The International Stormwater BMP Database (www.bmpdatabase.org) features more than 300 BMP studies and performance analysis results.

Agencies & Organizations – Your Role in the Watershed



Michele Watkins Beaver River High School students participating in electrofishing on the Black River in Naumburg

Collaboration and strong partnerships between agencies, organizations, and citizens is fundamental to the successful creation and implementation of any watershed planning process. Within New York State, as well as each of the individual counties and municipalities in the Black River watershed, there are a number of agencies and organizations whose programs address water quality, environmental education, habitat protection, and restoration activities (e.g., NYSDEC, County Soil and Water Conservation Districts, the Tug Hill Commission).

Bringing together these various agencies and organizations with their individual resources and knowledge provides the opportunity to combine technical and financial capacities from a variety of sources. This type of collaboration often results in the identification of new and innovative ways to address watershed problems. These agency and organizations should use their technical, financial, and regulatory resources to help improve water quality in the Black River watershed.

Work directly with landowner, farmers, and communities to implement water quality BMPs

Many organizations and agencies are already working directly with landowners to plan for the control and prevention of erosion, the removal of invasive species, and implementation of a variety of projects designed to improve water quality. Given this familiarity with the local communities, as well as with implementing water quality projects, these agencies and organizations should continue to direct their technical, financial, and regulatory resources to assisting watershed landowners.

Provide technical expertise to communities and the ICO

Many watershed communities do not have the resources or capacity to identify the proper conservation practices, implement those practices, or adequately review practices proposed as part of a new development. Agencies and organizations should work with watershed communities, municipal officials, and planning and zoning boards to provide training, technical expertise and planning assistance to ensure that conservation practices are properly implemented in the Black River watershed.

PRIMARY RECOMMENDATIONS

- Work directly with landowners, farmers, and communities to implement water quality Best Management Practices (BMPs)
- Provide technical expertise and training to local communities and the Intermunicipal Coordinating Organization (ICO)
- Build on existing educational programs, and implement new programs to increase the awareness of water quality issues in the watershed
- Promote the networking of watershed stakeholders
- Continue to monitor and eradicate local populations of invasive species



Build on existing educational programs, and implement new programs to increase the awareness of water quality issues in the watershed

An important component to building partnerships throughout the Black River watershed is that of watershed education. By educating stakeholders on the general function of watersheds, as well as to the specific issues facing the Black River watershed, you can build support for the various initiatives designed to improve water quality in the basin. Watershed education can also provide decision-makers with the tools necessary to modify existing regulations, policies, and procedures that are detrimental to water quality and to develop new regulations, policies, and procedures that will be beneficial to the long-term health of the watershed.



*Jefferson County Soil and Water Conservation District
2009 Envirothon winners*

Promote the networking of watershed stakeholders

To improve communication and coordination between watershed stakeholders, build relationships, and heighten water quality awareness in the basin, the various agencies and organizations should actively promote the networking of stakeholders. This can be accomplished by providing an avenue for participants to input, share and compare information gathered on the watershed (and their individual subwatersheds) to increase environmental knowledge, stewardship, and community service in the basin. Some suggestions include holding monthly or bi-monthly stakeholder meetings throughout the watershed, or an internet-based forum where stakeholders can meet to discuss issues and ideas.

Continue to monitor and eradicate local populations of invasive species

Invasive species can affect human health and wildlife health (e.g., West Nile virus), displace native species (through competition, predation, interbreeding, disease transmission or habitat destruction), modify food chains (e.g., zebra mussels), change nutrient biogeochemistry and contaminant pathways, and increase streambank erosion. There are several agencies and organizations in the watershed that currently address invasive species (e.g., Lewis County Soil & Water Conservation District, Partnerships for Regional Invasive Species Management, The Nature Conservancy, etc) – these agencies need to continue to monitor and eradicate local populations of invasive species, as well as educate local residents, to help insure the long-term sustainability of the watershed.

Watershed Residents – How You Can Make a Difference

Everyone lives in a watershed. Watersheds are where we work and where we play. Everything we do on the land impacts the quality of water on which we rely for drinking, irrigation, and industry. From the disposal of household and yard wastes to the maintenance of healthy, native streamside buffers, as residents of the Black River watershed, you play a major role in improving and maintain water quality in the basin. There are several key actions that residents of the Black River watershed can take to improve water quality in the basin.

Get involved in your community and watershed

Community involvement is a vital component in developing and implementing a successful watershed management plan. Public meetings, hearings, and workshops are excellent opportunities for residents to learn about what is occurring in their watershed, ask questions, and express concerns about water quality. By becoming involved in local land use decisions, you can encourage local officials to consider how these activities affect the watershed. As a watershed resident, you are also encouraged to get involved by volunteering with local organizations and agencies that participate in watershed projects. Each individual has a different set of skills and interests, so there are a variety of ways that you can volunteer your time – participating in streamside clean-up activities, monitoring water quality in local streams, or educating children about watersheds and water quality.

Properly maintain on-site septic systems

Of the 56 municipalities in the Black River watershed, only 16 provide their residents with municipal wastewater treatment – the remaining watershed residents use private, on-site treatment systems. While on-site treatment can be a cost-effective solution, it requires regular inspection and maintenance to ensure it functions properly and does not fail. Failing to maintain these systems can result in untreated wastewater being introduced into streams. This negatively affects water quality by increasing the amount of pollutants, which leads to water that is unattractive and unsuitable for use. Watershed residents using on-site septic systems should ensure that these facilities are properly maintained.



PRIMARY RECOMMENDATIONS

- Get involved in your community and watershed
- Properly maintain on-site septic systems
- Minimize household impacts to water quality
- Maintain healthy, native streamside buffers

“To live by a large river
is to be kept in the
heart of things.”

— John Haines

Minimize household impacts to water quality

There are a multitude of small changes that households can make that, collectively, can have a large impact on water quality. First, households should make sure that pesticides and chemicals, automotive wastes, grass clippings and yard waste, pet and animal manure, and winter salt and de-icers are stored in areas not accessible by stormwater and are disposed of properly when no longer needed (not down a drain or into streams, septic, or stormwater collection systems). Additionally, using alternatives such as “green” household products, or reusing and recycling hazardous fluids and other products can reduce the amount of waste produced in the first place. Watershed residents can also reduce their effective imperviousness by installing rain barrels or rain gardens on their property, which will reduce the amount of overland runoff and the pollutants it carries.



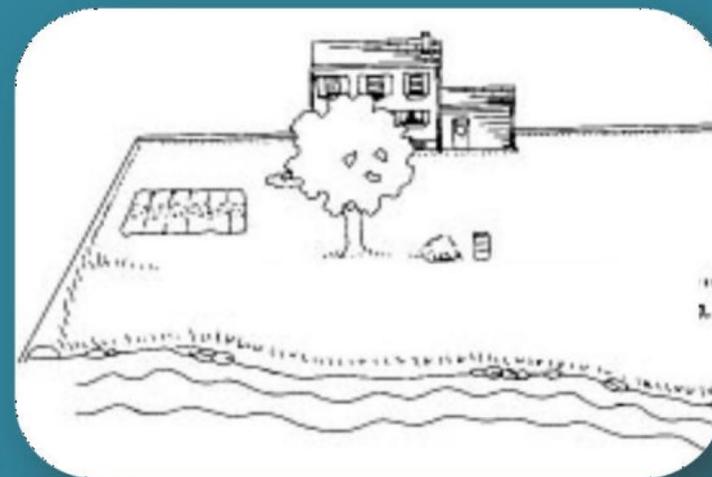
Rain barrels collect and store water from your roof that would otherwise be lost to runoff and diverted to storm drains or streams

Maintain healthy, native streamside buffers

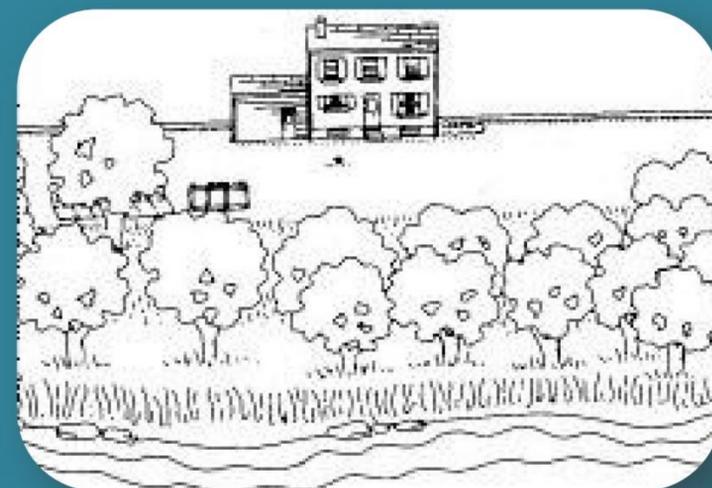
Streamside buffers play an important role in terms of water quality and other ecosystem services. By trapping soil and sediments, these areas can reduce the amount of soil and nutrients moving from upslope areas into streams, thus improving water quality, reducing streambank erosion, and decreasing the loss of in-stream habitat through siltation. Streamside buffers are also important in the lifecycle of many native plants and animals by providing food, cover, corridors for movement, and refuge during time of drought or fire.

For those residents whose property abuts a stream, lake, or other waterbody, buffers should either be expanded, or created where they are currently lacking, to a minimum of 50 feet by planting native trees and shrubs. By leaving openings in your landscape design, you can still have access to the stream for enjoyment and recreation. Other ways in which residents can maintain healthy, native streamside buffers include:

- Create a “no-mow” zone, allowing the buffer strip to grow freely
- Gather grass clippings in a designated area in the corner of your yard as far from the streambank as possible,
- Remove large debris from the stream channel that are causing erosion, and
- Remove invasive and non-native plants.



Mowing up to the bank increases runoff into the stream and negatively impacts water quality



A buffer strip of native trees and shrubs between your yard and the stream can improve water quality and reduce streambank erosion

Farmers – Good Stewards of the Land



In addition to playing an important role in the region's economy, agricultural lands within the Black River watershed also provide highly valued open space and scenic vistas and contribute to the support of a number of species of wildlife. With more than 172,000 acres of land under agricultural production, most of which occurs in the Black River valley, agricultural land uses can also be a significant contributor to nutrient and sediment loadings in streams. According to the 2006 Black River Basin Waterbody Inventory and Priority Waterbodies List, the following agricultural practices have negatively impacted water quality in 25 percent of all watershed waterbodies:

- Nutrient and silt/sediment inputs from agricultural runoff;
- Livestock access to streams, resulting in damage to riparian vegetation, bank erosion, and nutrient inputs;
- Improper manure application;
- Lack of silage leachate control;
- Inputs from manure or milkhouse wastewater treatment facilities;
- Intensive cropping near streams with inadequate riparian buffers;
- Fertilizer and pesticide application without approved pesticide/nutrient management plans.

Combined animal feeding operations (CAFOs) have also been identified as a source of water quality impacts in the watershed due to their presence in the Black River valley. To reduce the impact of farming activities on water quality, watershed farmers should implement the following voluntary recommendations where appropriate:

Participate in the Agricultural Environmental Management (AEM) program

Enroll in the AEM program as an initial review tool from which additional needs can be determined. The AEM program is an essential watershed management program that has been very effective at reducing nutrient inputs to waterbodies. This voluntary incentive-based program helps farmers operate environmentally sound and economically viable businesses by assessing environmental concerns associated with their farming operations, documenting current stewardship, developing management plans, and implementing environmentally sound practices to address identified concerns.

PRIMARY RECOMMENDATIONS

- Participate in the Agricultural Environmental Management (AEM) program
- Maintain healthy, native streamside buffers
- Minimize nutrient-laden runoff from agriculture
- Reduce livestock impacts to streams, rivers, lake, and other waterbodies



“Riparian buffers have been shown to be effective in controlling non-point source pollution by removing nutrients, especially nitrogen, and sediments.”

— U.S. Department of Agriculture

Maintain healthy, native streamside buffers

Streamside buffers play an important role in terms of water quality, particularly on agricultural lands. By trapping soil and sediments, these areas can reduce the amount of soil and nutrients moving from upslope areas into streams, resulting in improved water quality, reductions in streambank erosion and minimizing the loss of valuable agricultural land. Depending on the width, streambank buffers have been shown to remove up to 90 percent of the nutrient loads from adjoining croplands and pastures.



Farmers should try to maintain as much natural vegetation near streams as possible

Minimize nutrient-laden runoff from agriculture

In addition to streamside buffers, there are several other Best Management Practices (BMPs) designed to reduce runoff and nutrient and sediment loads from agriculture.

These can include, but are not limited to:

- Develop nutrient management plans
- Implement no-till crop production
- Install vegetative filter strips
- Use cover crops during off-season
- Implement contour farming
- Use terracing on cultivated steep slopes

Farmers should work with their county Soil & Water Conservation District to identify the most suitable BMPs for their land.



An example of no-till crop production

Reduce livestock impacts to streams, rivers, lake, and other waterbodies

Allowing livestock access to streams often results in the deposition of manure and urine directly into or near surface waters. This can accelerate erosion and sedimentation, change stream flow, and destroy aquatic habitats. Additionally, grazing in riparian areas can reduce their capacity to filter nutrients and stabilize stream banks. Reducing livestock access to streams involves two separate activities – off-stream watering tanks and controlled stream crossings and exclusionary fencing. More information is available from the county Soil & Water Conservation Districts.



Recreational Users – Enjoy the Watershed Responsibly

Given the beauty of the natural environment in the Black River watershed, combined with the relatively undeveloped, rural character of the region, it should come as no surprise that outdoor recreation opportunities add to the watershed's quality of life and plays an important role in the region's economy.

While more traditional pastimes are still popular in the watershed (e.g., boating, fishing, hunting, and hiking), the region's expansive network of trails has made ATV and snowmobile use increasingly popular. To ensure that recreation in the Black River watershed occurs in a responsible manner, recommendations have been arranged by user groups.



Use the water wisely

Recreational opportunities are one of the primary reasons people choose to live in the Black River watershed, including water-based activities such as boating and fishing. The following best management practices will help minimize potential impacts from water-based recreation:

- Inspect boats and trailers to avoid the transportation of invasive species to and from other waterbodies;
- Conduct fueling and maintenance of motorized watercraft on the trailer;
- Site fuel storage tanks should be as far from the waterfront as possible;
- Reduce your wake to prevent shoreline damage and erosion; and
- Fish responsibly – follow take limits and do not deposit fish entrails or parts into waterbodies or onto shorelines.



“Leave No Trace” Camping and Hiking

Leave No Trace (LNT) is an internationally recognized program developed to assist outdoor enthusiasts in reducing the environmental impacts of their activities (www.lnt.org). The goal of the program is to educate people about the nature of their recreational impacts, as well as to provide practices and techniques that can minimize those impacts. Campers and hikers should incorporate the following recommendations into their activities to reduce their impact on water quality:



- Be aware of the regulations and any special concerns for the area,
- Avoid times of peak use and visit in small groups,
- Travel and camping should be on established trails and campsites, rock, gravel, dry grasses or snow,
- Camp sites, dishwashing, and latrines should be at least 200 feet from the nearest waterbody
- When you leave, pack out what you packed in, including all trash, leftover food, and litter, and
- Be considerate of other visitors and respect their desire for a quality experience.

“ . . . perhaps our grandsons, having never seen a wild river, will never miss the chance to set a canoe in singing waters . . . glad I shall never be young without wild country to be young in.”

— Aldo Leopold (*A Sand County Almanac*)

Best management practices for off-road vehicles

Snowmobiling is one of the largest generators of tourism dollars in the Black River watershed, with traffic in recent years increasing significantly. ATV use is also widely popular in the watershed, although much of the ridership is locally generated and does not draw as many out-of-state tourists. Both have considerable implications on water quality, as off-road vehicles have a disproportionate impact on the environment compared to many traditional forms of recreation. To reduce their environmental impacts, the following best management practices should be used by off-road vehicle users:



- Travel responsibly on roads, trails, and permitted areas. Always stay on existing roads and trails and do not make new trails.
- Avoid sensitive areas like meadows, lakeshores, steep slopes, gullies, wetlands, and streams unless on a designated route.
- Do your part to leave the area better than you found it. Pack out what you pack in.
- Avoid “spooking” livestock and wildlife and keep your distance, particularly during winter months and breeding seasons.
- Minimize harmful emissions and prevent unnecessary noise by keeping your engine in tune and minimizing the revving of engines.



Building in the Watershed

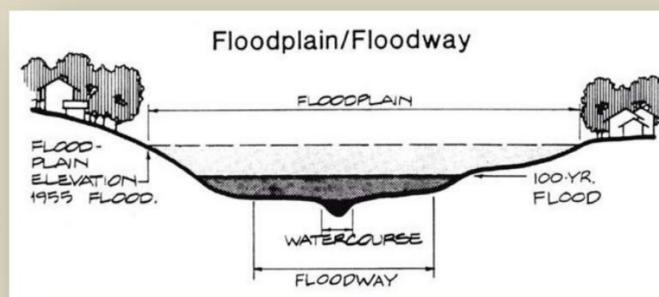


The Tryon Farms (IN) cluster subdivision preserves approximately 130 acres as rolling pasture, meadows, woods and ponds

As precipitation falls over naturally vegetated areas, most of it infiltrates slowly into the ground, with only a small percentage flowing overland as runoff. The infiltrating water is cleansed as it moves through the soil, while runoff is slowed by vegetation resulting in the settling of particles and sediment. These natural processes remove pollutants and sediments from the water before it makes its way to nearby waterbodies. Development often results in a significant change to these natural conditions, resulting in increased rates and volumes of runoff and erosion. This increased runoff takes up pollutants from roads, parking areas, roofs, lawns, and other developed surfaces and deposits them into downstream waterbodies, significantly decreasing water quality. To reduce the negative impacts from construction activities, the following recommendations should be incorporated into new construction within the watershed:

Stay out of floodplains

Floodplains are low-lying areas adjacent to streams that are most subject to recurring inundation. In terms of water quality and watershed management, floodplains provide a number of communal benefits and can be far more effective than many man-made structures in reducing downstream flood peaks. When floodplains are developed, flood elevations are increased resulting in serious consequences for existing development and water quality. As such, new development should be minimized within existing floodplain areas. Additionally, as many of the flood maps for the watershed are outdated, local governments should work with FEMA to update their flood maps.

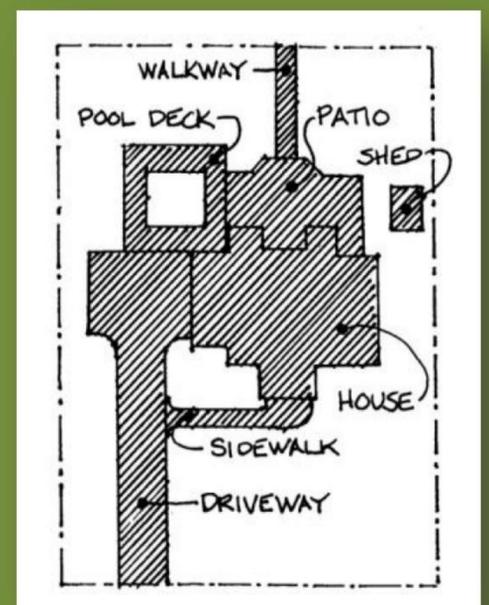


Minimize the amount of newly created impervious surfaces

Impervious surfaces, by their very name, are surfaces covered by an impenetrable material (e.g., asphalt, concrete) and are predominately characterized by artificial structures such as parking lots, sidewalks, and roofs. Increases in impervious surfaces are a direct result of increased development, which can be directly correlated to reduced water quality. New construction in the watershed should implement measures such as rain gardens, rain barrels, and other Low Impact Development (LID) practices to reduce the amount of newly created impervious surfaces in the Black River watershed.

PRIMARY RECOMMENDATIONS

- Stay out of floodplains
- Minimize the amount of newly created impervious surfaces
- Incorporate effective stormwater and erosion control practices
- Maintain healthy, native streamside buffers
- Implement Smart Growth/Low Impact Development approach



All of these features are considered impervious surfaces and result in increased runoff volumes

Incorporate effective stormwater and erosion control practices

The stormwater pollution issue has two primary components – the increased volume and rate of runoff from impervious surfaces, and the concentration of pollutants in that runoff. Both are directly related to development in urban and urbanizing areas. The effective management of stormwater runoff offers many benefits, including improved water quality, reduced flooding/improved flood control, and the protection of wetlands and other aquatic ecosystems. New construction in the Black River watershed should enact the appropriate set of BMPs to reduce the impacts to water quality that can result from increased stormwater flows and erosion. Stormwater BMPs are generally broken out into structural (e.g., bioswales) and non-structural (e.g., minimizing soil compaction) strategies. See the *New York Standards and Specifications for Erosion and Sediment Controls* for additional information (www.dec.ny.gov/chemical/29066.html).



WRONG! An example of an ineffective erosion control practice – silt fencing should be buried to a depth of about 8 inches

“A hundred years after we are gone and forgotten, those who never heard of us will be living with the results of our actions.”

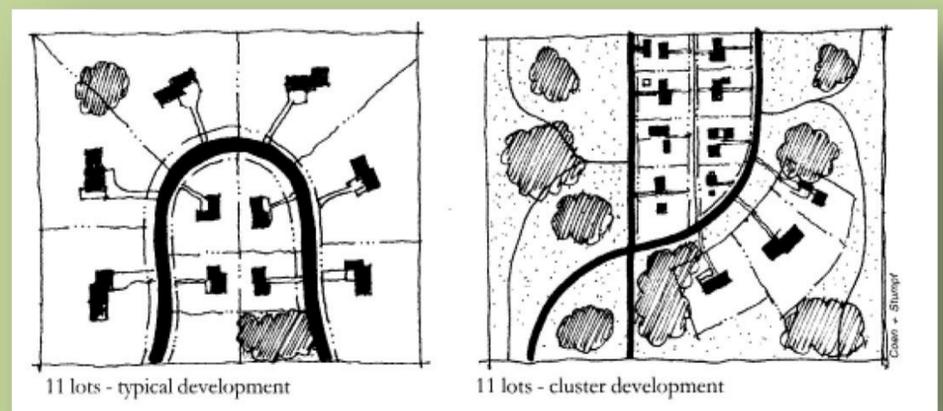
— Oliver Wendell Holmes

Maintain healthy, native streamside buffers

Streamside buffers play an important role in terms of water quality and other ecosystem services. By trapping soil and sediments, these areas can reduce the amount of soil and nutrients moving from upslope areas into streams, thus improving water quality, reducing streambank erosion, and decreasing the loss of in-stream habitat through siltation. Streamside buffers are also important in the lifecycle of many native plants and animals by providing food, cover, corridors for movement, and refuge during time of drought or fire. Ideal buffer conditions are rarely encountered in urban watersheds; however, it is in these areas where buffers are exceedingly important due to the large amount of impervious surfaces associated with urbanization. New development in the Black River watershed should strive to preserve at least 50 feet of streamside buffers during the construction process.

Implement Smart Growth/Low Impact Development approach

By focusing development in already built-up areas or where adequate infrastructure exists, Smart Growth preserves open space and prime agricultural lands that might otherwise be lost to development. The purpose of Low Impact Development (LID) is to work with nature to manage stormwater as close to its source as possible. By preserving/restoring natural landscape features and minimizing a site's effective imperviousness, LID creates a functional and appealing site drainage that treats stormwater as a resource rather than a waste product. As such, LID results in reduced runoff and erosion, thus helping to improve water quality.



The cluster development (right) is used by both the Smart Growth and Low Impact Development approaches and results in the same number of lots and an increase in the amount of open space

Forest Owners – Using Your Lands to Improve Water Quality



The Black River watershed comprises a substantial forestry base that spans from the Tug Hill Plateau in the west to the Adirondack Mountains in the east. The region's abundant timber resources have seen increases in both annual growth and annual harvest. Lands devoted to the forestry industry are generally owned and managed by logging firms, sawmills, paper mills, wood products processors, the wood energy industry, and individual property owners.

In terms of water quality, forests produce some of the highest quality water in the nation. Deep-rooted trees and their complex root systems stabilize the soil, decrease erosion, and absorb nutrients, particularly along streams. Trees also reduce runoff through the interception of rainfall and enhancement of the evaporative process and recharge aquifers by allowing more precipitation to infiltrate the soil. Additionally, drinking water treatment costs are minimized when watershed forest cover is greater than 70 percent.



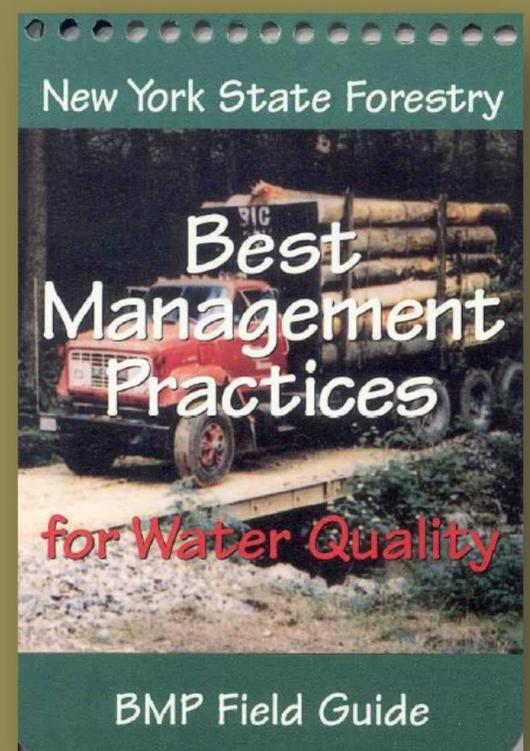
The recommendations provided below are meant to provide for the long-term sustainability of the Black River watershed's forestlands both in terms of water quality and timber harvesting.

Use best management practices to protect water quality during timber harvesting

One of the most important aspects of an environmentally-sustainable timber harvest is protecting water quality. While timber harvesting is not a significant contributor to water quality problems in the watershed, skid trails, haul roads, and landings are all potential sources of sedimentation, erosion, and siltation. Incorporating simple, low-cost best management practices (BMPs) into your timber harvest allows for these lands to be managed for multiple uses and will assist in keeping water clean. BMPs also help to maintain forest productivity, which is essential for sustainable forest management. Examples of forestry BMPs include constructing new landings at least 200 feet from water bodies and wetlands or minimizing the number of road/stream crossings.

PRIMARY RECOMMENDATIONS

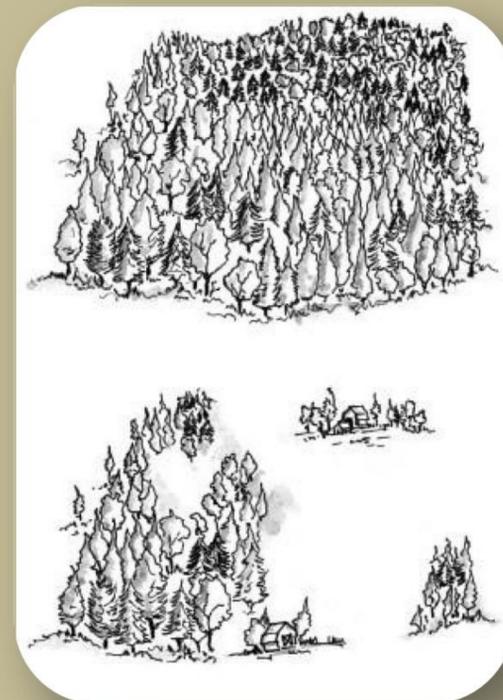
- Use best management practices to protect water quality during timber harvesting
- Encourage landowners to conserve lands that allow for managed forest easements.
- Minimize forest fragmentation



The NYS Forestry BMP Field guide is a practical tool for timber harvesters, forest managers and landowners in helping to protect water quality

Encourage landowners to conserve lands that allow for managed forest easements

Of the more than 700,000 acres of Wild, Conservation, Forest, & Park lands in the Black River watershed, more than 400,000 acres are classified as *Forever Wild* and “shall be forever kept as wild forest lands”. For those forest lands not classified as *Forever Wild*, the goal should be to maintain them as working forests. Responsibly managed working forests encompass treed lands that provide many benefits to communities, including a sustainable supply of wood products, jobs for rural communities, wildlife habitat, as well as clean air and water. To encourage the conservation of lands that allow for managed forest easements, landowners should participate in the NYS Conservation Easement Tax Credit program, which provides landowners a 25 percent property tax refund annually up to \$5,000 with no impact to local property tax revenues. For more information on this program, contact the NYSDEC Division of Lands and Forests.



An example of an unfragmented (top) and fragmented (bottom) forest

“The best friend on Earth of man is the tree. When we use the tree respectfully and economically, we have one of the greatest resources of the Earth.”

— Frank Lloyd Wright

Minimize forest fragmentation

Forest fragmentation is the splitting of large tracts of forest into ever smaller patches. In addition to the impacts that overall forest loss has on water quality, fragmented forests often lack the natural pit-and-mound topography of older, core forest patches, which is important for trapping precipitation and promoting groundwater recharge. Fragmentation also impacts water quality by altering stream conditions, increasing the prevalence of invasive species, and by replacing native woodland plants with residential lawns, parking lots, or, as is the case with timber harvesting, logging roads and compacted soils. Forest fragmentation can also have serious implications for a region’s biodiversity, particularly on those plant and animal species that originally occupied large contiguous areas of forest habitat. To reduce forest fragmentation during timber harvest:

- Do not remove trees within 200 feet of a stream,
- Minimize new road construction or road widening when harvesting,
- Sufficiently space canopy openings to prevent fragmentation, and
- Do not “open up” more than 10 percent of the total forest area during any one harvest.



Species such as the spotted salamander and American martin require large tracts of unbroken forests – these species are negatively impacted by forest fragmentation

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