UPPER HUDSON RIVER WATERSHED REVITALIZATION PLAN

MARCH 2020

NEW YORK STATE OF OPPORTUNITY. Department of State

Preparation of the Upper Hudson River Watershed Management Plan was funded through a New York State Department of State Title 11 Environmental Protection Fund (EPF) Local Waterfront Revitalization Program (LWRP) grant to the Town of Horicon

ACKNOWLEDGMENTS

New York State Department of State
Local Waterfront Revitalization Program Grant

Awarded to Town of Horicon, Warren County
Matt Simpson, Supervisor

On behalf of the Lake Champlain Lake George
Regional Planning Board

With a special thanks for
Upper Hudson River Watershed Coalition

This plan was prepared with funding provided by the
NYS Department of State under Title 11 of the
Environmental Protection Fund

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EXECUTIVE SUMMARY




The Hudson River is one of the most culturally, economically, and ecologically important waterbodies in New York State. Over time, human activity – including industrialization, urbanization, and modification has placed significant pressure on the natural resources of the region. This plan takes stock of that pressure and identifies goals and projects that will improve the water quality within the Upper Hudson River Watershed.

The Hudson River begins as a small mountain lake on the side of New York's highest peak, Mount Marcy, and travels 315 miles to the New York Harbor. Approximately halfway along its course, at the Troy Dam, the river becomes an estuary – it is at this point where the scope of this plan ends. The Upper Hudson River Watershed is a part of the larger Upper Hudson River Basin which stretches across about 7.5 million acres. This plan focuses on the seven counties, 97 municipalities, more than 7,000 miles of fresh water rivers and 229 significant ponds, lakes and reservoirs to evaluate the present conditions of the watershed, set a vision and goals for the future of the watershed, and identify **190 projects, totaling more than $300,000,000** in water quality improvements to aide in achieving those goals for the watershed.

Preparation of this plan was led by the Upper Hudson River Watershed Coalition (UHRWC) together with an advisory committee of local officials and water quality professionals and the Town of Horicon, which served as the grantee for this project. The UHRWC is comprised of representatives from the Soil and Water Conservation Districts (SWCDs) of the seven counties in the watershed: Essex, Fulton, Hamilton, Saratoga, Rensselaer, Warren, and Washington, along with one representative from each of the represented regional planning boards: the Lake Champlain – Lake George Regional Planning Board (LCLGRPB) and the Capital District Regional Planning Commission (CDRPC). The UHRWC was formed in 2014 with a mission to "Provide a coordinated effort to improve water quality and other natural resources within the New York Upper Hudson River Watershed counties through project planning and implementation." The members of UHRWC initiated this watershed management plan and served on the advisory committee. Members of the UHRWC contributed to the development of this plan based on their individualized expertise.

Preparation of the Upper Hudson River Watershed Revitalization Plan was funded through a New York State Department of State Title 11 Environmental Protection Fund (EPF) Local Waterfront Revitalization Program (LWRP) grant to the Town of Horicon and represents a regional approach to watershed planning that involves representatives from a wide geographical area.

The Upper Hudson River Watershed Coalition together with an advisory committee and community input worked together to develop a vision and goals for this plan.

VISION:

The Upper Hudson River Watershed is an incredible place to live, work, play, and visit with clean and healthy natural and water resources that are abundant and support diverse ecological, economic and recreational opportunities. Watershed communities are resilient and thriving with active seasonal and year-round residents who support healthy agricultural and forestry product industries that are sustainable and employ practices to protect water quality.

GOALS

Based on this vision, the following goals were identified to guide this document:

- Identify threats to water quality resources that potentially adversely impact the natural and economic vitality of the region,
- Promote positive and effective planning for implementation of water quality improvement projects,
- Assist private agricultural practices and promote the creation of Agricultural Environmental Management (AEM) plans and implementation of best management practices,
- Protect and upgrade municipal infrastructure while sensibly reducing impacts of regular municipal maintenance efforts on water resources,
- Work with private forest landowners to promote land management plans and best management practices,
- Increase preventative measures, detection, management, and outreach and education for aquatic and terrestrial invasive species,
- Identify demographic information for outreach programs, and
- Establish a proactive partnership between local, county, state, and federal partners.

Spanning seven counties, the Upper Hudson River Watershed is a large and diverse basin that stretches from the pristine headwaters at Lake Tear of the Cloud, to the cities of Glens Falls, Saratoga Springs, and Mechanicville and everything in between yielding a variety of water quality issues. Through the planning process, six priority issues that affect water quality in the Upper Hudson River Watershed emerged: stormwater, agriculture, erosion, invasive species, water and wastewater and aquatic organism passage. Each of the project recommendations identified in Chapter 4 of this plan center around one of the six priority issues.

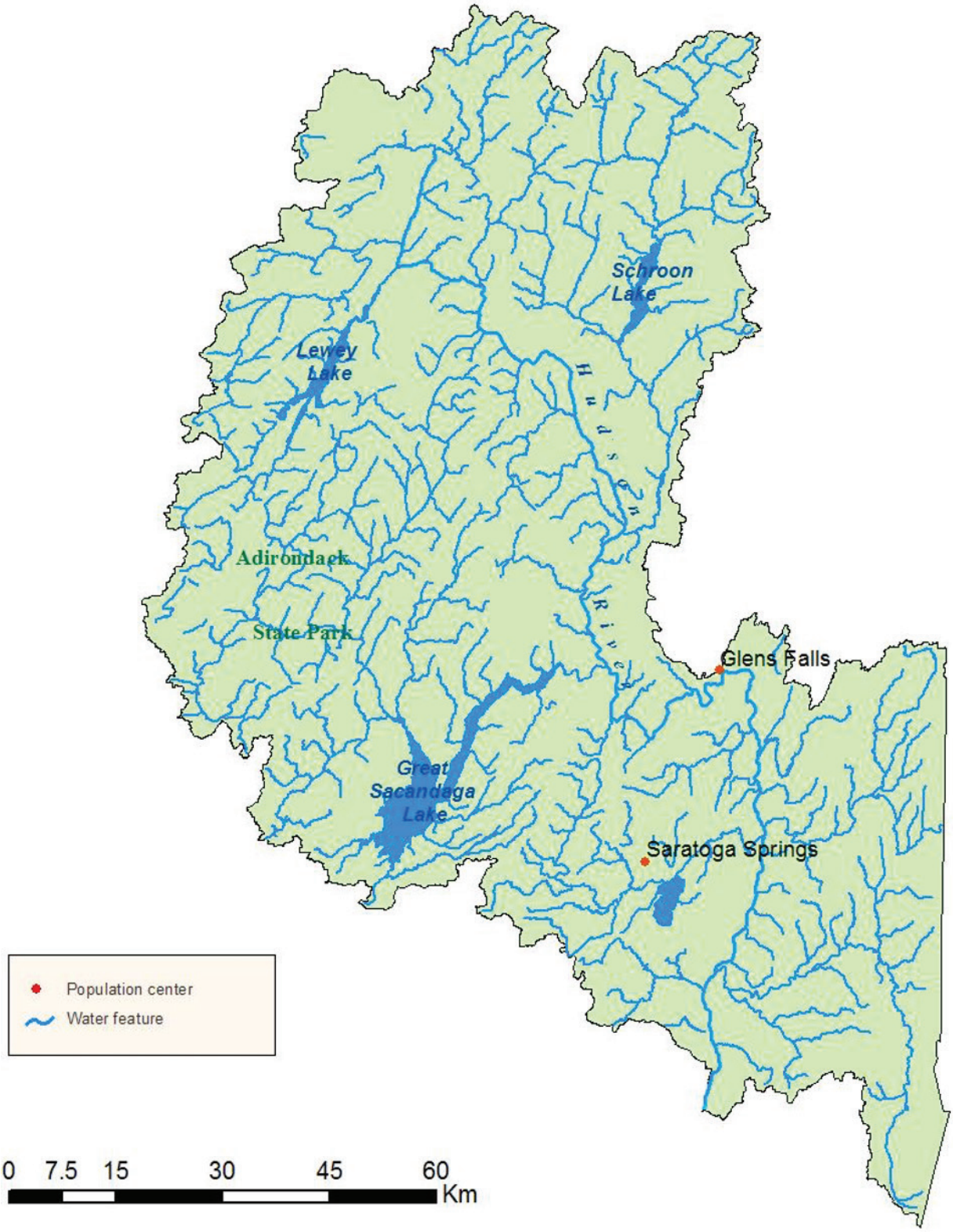


Figure 1: Upper Hudson River Watershed. Source: NYSDEC

ACRONYMS

The following is a complete list of acronyms used in this document:

ACOE	United States Army Corps of Engineers
AEM	Agricultural Environmental Management
APIPP	Adirondack Park Invasive Plant Program
BMPs	Best Management Practices
CAFO	Concentrated Animal Feeding Operation
CapMo	Capital Mohawk PRISM
CDBG	Community Development Block Grants
CDRPC	Capital District Regional Planning Commission
CNMP	Comprehensive Nutrient Management Plan
CSO	Combined Sewer Overflow
DPW	Department of Public Works
DWSP2	Drinking Water Source Protection Program
EPF	Environmental Protection Fund
FEMA	Federal Emergency Management Agency
FPIG	Farmland Protection Implementation Grant
HWA	Hemlock Wooly Adelgid
LCLGRPB	Lake Champlain Lake George Regional Planning Board
LWRP	Local Waterfront Revitalization Program
MGD	Million Gallons per Day
MS4	Municipal Separate Storm Sewer System
NAACC	North Atlantic Aquatic Connectivity Collaborative
NBRC	Northern Borders Regional Commission
NYSDAM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSDOT	New York State Department of Transportation
NYSEFC	New York State Environmental Facilities Corporation
NYSOPRHP	New York State Office of Parks, Recreation and Historical Places
PCB	Polychlorinated Biphenyls
PFOA	Perfluorooctanoic Acid
PRISM	Partnership for Regional Invasive Species Management
SPDES	State Pollutant Discharge Elimination System
SWCD	Soil and Water Conservation District
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TU	Trout Unlimited
USDA	United States Department of Agriculture
USEDA	United States Economic Development Administration
USEPA	United States Environmental Protection Agency
USFWS	Unite States Fish and Wildlife Service
WCF	Washington County Fair
WCSD #2	Washington County Sewer District #2
WI/PWL	Waterbody Inventory/Priority Waterbody List
WIIA	Water Infrastructure Improvement Act
WQIP	Water Quality Improvement Program

01. INTRODUCTION

The Upper Hudson River Watershed Revitalization Plan evaluates the relationship between land use and land cover, the movement and storage of water and impacts on water quality. This plan assesses the present state of the watershed of the Hudson River from its headwaters high on Mount Marcy in the Adirondacks to its impoundment at the Federal Dam in Troy. Based on this assessment, recommendations and priority projects have been identified to improve water quality and protect the watershed for the future. Preparation of this plan was led by the Upper Hudson River Watershed Coalition with members of an Advisory Committee in collaboration with the watershed's elected officials.

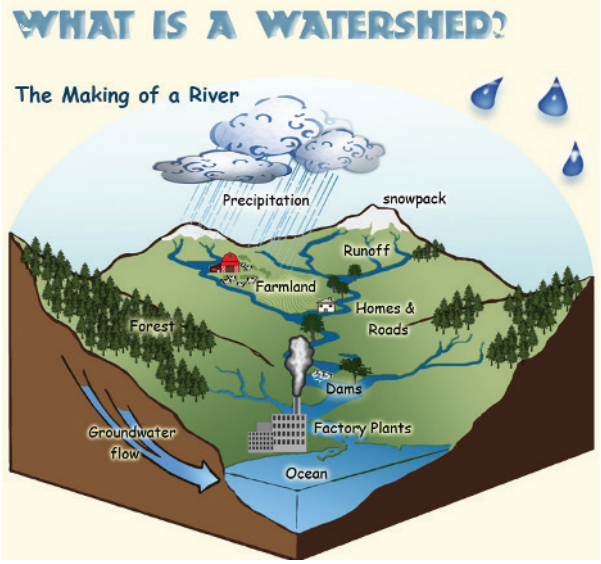


Figure 2. Watershed Diagram.
Source: Center for Watershed Protection

A watershed is the land area, delineation by high topographic points such as hills or slopes, of land within which water collects and drains to a common stream or river and eventually to a larger body of water (Figure 2). Water in a watershed flows downhill unaware of municipal boundaries, therefore planning at the watershed level provides an appropriate scale to manage water resources as it can better capture all contributing factors to water quality. Water travels over farm fields, forests, suburban lawns, and city streets and may also seep into the soil and travel as groundwater. As water flows through a watershed it will pick up pollutants, contaminants and litter that is on the ground or in the soils eventually depositing them into a nearby waterbody. This flow of water can also allow for these same pollutants to settle out based on topographic changes and differing habitat types. In healthy watersheds, floodplains and wetlands can help ease flooding issues and provide opportunities to clean surface and groundwater if given the opportunity. Planning at the watershed level allows a complete evaluation of upland uses that may impact a waterbody beyond political boundaries.

Each watershed may also be divided into smaller delineations known as sub-watershed or sub-basins. The Upper Hudson River Watershed has 24 sub-basins, defined by the U.S. Geologic Survey (USGS) 10-digit hydrological unit code. The watershed's 24 sub-basins outline geographic areas that collect waters that eventually drain into the Upper Hudson River.

1.1 WATERSHED DESCRIPTION

The Hudson River, in total, is 315 miles beginning at Lake Tear of the Clouds on New York State's highest peak and flowing southward eventually draining into the Atlantic Ocean and New York Harbor. The Federal Dam at Troy creates the divide between the Upper and Lower Hudson Rivers. Below the dam, the river is an estuary with brackish water while above the dam there is approximately 162 miles of fresh water flowing from the Adirondack Mountains. This watershed revitalization plan focuses on the upper reaches of the Hudson River and its watershed.

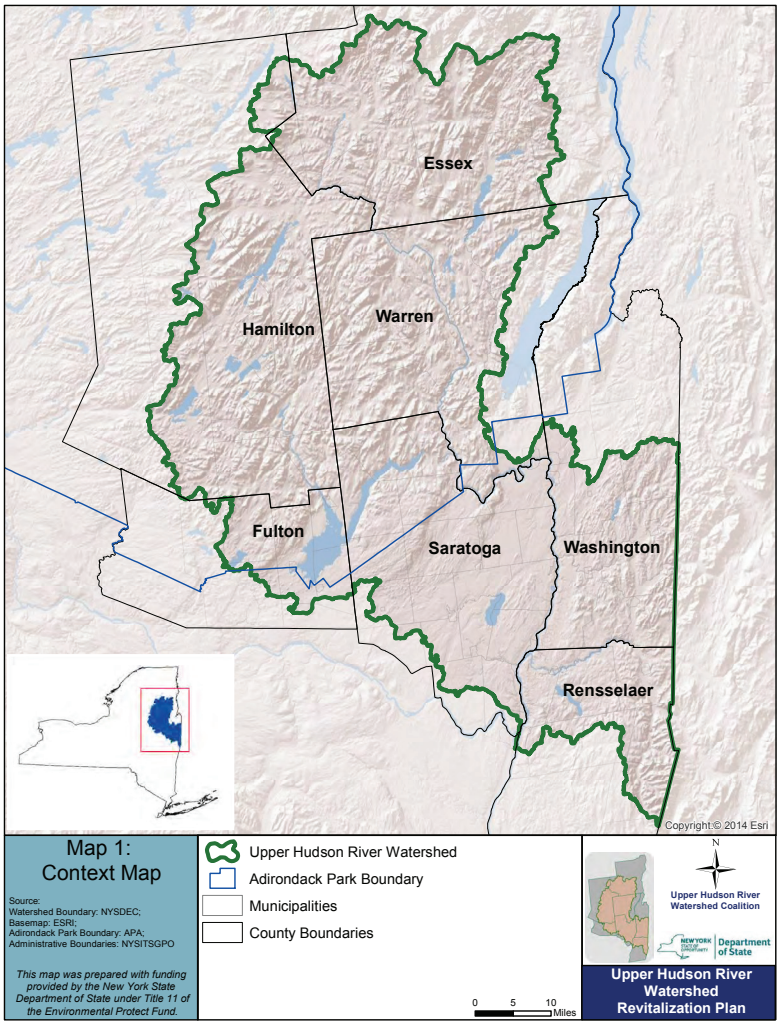
The basin is quite diverse, draining the sparsely populated rugged mountains and woodlands of the central and southeastern Adirondacks and the more densely populated Capital District along the Adirondack Northway Corridor between Albany and Saratoga. The watershed spans portions of New York State, Massachusetts and Vermont. Approximately 90% of the 4,620 square mile watershed falls within New York State and includes most of Saratoga, Washington and Warren Counties, large parts of Essex and Hamilton Counties, and smaller sections of Fulton and Rensselaer Counties. 7,140 miles of freshwater rivers and streams and 229 significant lakes, ponds and reservoirs fall within the watershed boundary in New York State.

4,070 SQUARE MILES IN NEW YORK STATE

7 COUNTIES

7,140 MILES OF FRESHWATER RIVERS

229 SIGNIFICANT LAKES, PONDS AND RESERVOIRS



1.2 MUNICIPALITIES AND POPULATION

According to the 2010 US Census, approximately 293,480 people reside in the Upper Hudson River Watershed, primarily located in the lower half of the drainage area along the Hudson River and Adirondack Northway Corridor. The largest population centers located entirely or partially in the watershed are the cities of Troy, Saratoga Springs and Glens Falls, and the surrounding suburban towns of Clifton Park, Halfmoon, Wilton and Queensbury. Outside these urban and suburban centers, the watershed contains significant rural agricultural areas, particularly in Rensselaer and Washington Counties on the eastern side of the river and in eastern Saratoga County on the western shore of the Hudson River. Within the Adirondack Park, quintessential small hamlet areas within large town boundaries form many of the population centers of Essex and Hamilton Counties.

1.3 HISTORY

The Hudson River plays a significant role in the history of the United States and is a defining natural feature of eastern New York State. Prior to the arrival of European settlers, indigenous peoples inhabited the area around the Hudson River and utilized the watershed for hunting and fishing. In 1598, Henry Hudson sailed his ship as far north as Troy in search of the Northwest Passage. This journey introduced Europeans to a New World and was the impetus for Dutch colonization along the Hudson River and the establishment of the colony of New Netherland, which was located in what are now parts of New York, New Jersey, Connecticut, Pennsylvania and Delaware. Over two centuries later in 1825, the Erie Canal opened and created shipping routes between the Port of New York and cities on the Great Lakes and further. This trade route established the Hudson River as an important trade and transportation corridor.

1.4 PUBLIC PARTICIPATION

Watershed planning is an ongoing and flexible process that is a result of collaboration between all who live in and use the watershed. This process cannot be achieved without broad public participation. As such, all Upper Hudson River Watershed Coalition meetings are open to the public and held monthly at the Warren County Soil and Water Conservation District office in Warrensburg, New York.

Additionally, several community outreach events were conducted to receive public feedback and develop resource priorities for the plan. To engage with participants from around the watershed, public outreach events were held at various locations throughout the study area. A charrette was held on February 22, 2018 at the Crandall Public Library in Glens Falls, New York. During the charrette, a survey was distributed to all attendees, and a summary of survey responses can be found in Appendix A of this plan.

At the conclusion of the planning process, a public meeting was held, and the plan was distributed to stakeholder to receive feedback on the final draft of the plan.

1.5 VISION AND GOALS

The Upper Hudson Watershed Advisory Committee, which consists of representatives from state and federal agencies, county planning departments, municipalities, lake and river associations, and other non-profits, worked together to establish a vision and goals for the future of the watershed based upon their unique knowledge of the challenges and needs of the watershed, the inventory and analysis conducted for this plan, and input received during public meetings.

VISION:

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02. WATERSHED CHARACTERISTICS

2.1 INTRODUCTION

New York State has 17 major watersheds, the Upper Hudson River Watershed is in the eastern portion of the state and also drains small portions of southwestern Vermont and western Massachusetts. The Upper Hudson River Watershed makes up one-third of the Hudson River Basin, which also includes the areas drained by the Mohawk River.

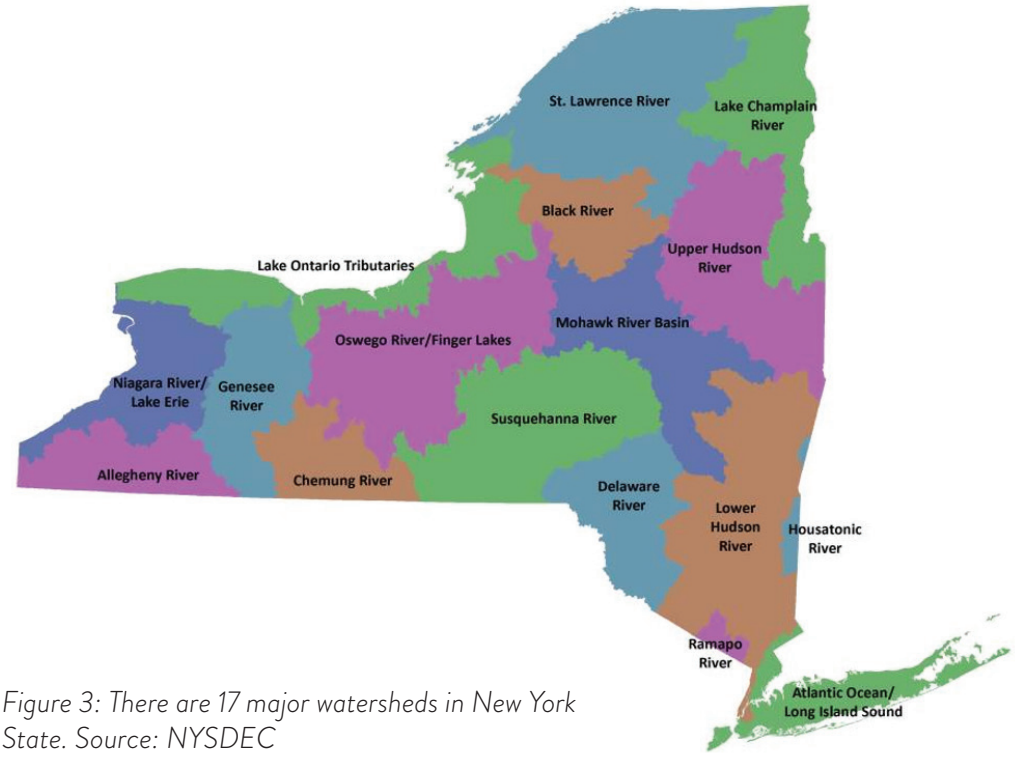


Figure 3: There are 17 major watersheds in New York State. Source: NYSDEC

The watershed of the Upper Hudson River encompasses 4,620 square miles, 4,070 of which lie in New York State in seven upstate counties including most of Saratoga, Warren and Washington Counties, large parts of Essex and Hamilton Counties, and smaller sections of Fulton and Rensselaer Counties. The watershed contains approximately 7,140 miles of freshwater rivers and streams like the Sacandaga River, Schroon River, Fish Creek, Hoosic River, and the Batten Kill. The watershed also contains 229 significant lakes, ponds and reservoirs including the Great Sacandaga Lake, Indian Lake, Schroon Lake and Saratoga Lake (**Map 1. Context Map**).

2.2 WATERSHED AND SUBWATERSHED BOUNDARIES

From its origin point on New York State's highest peak, the river is known as Feldspar Brook then the Opalescent River, becoming the Hudson River where it meets Calamity Brook below Sanford Lake. From here, the Hudson River flows south meeting the Indian River and forming the boundary between Hamilton and Essex Counties. Flowing into Warren County, the Hudson takes in the Schroon River eventually forming the boundary between Warren and Saratoga Counties and taking in the Sacandaga River from the Great Sacandaga Lake. Leaving the Adirondack Park, the river deepens and widens as it approaches the "Big Boom" where the Adirondack Northway crosses near Glens Falls. The river then forms the boundary of Washington and Saratoga Counties and just south of Fort Edward, the river reaches its confluence with the Champlain Canal, a historical water bound transportation route between New York City and eastern Canada via the Hudson River, Lake Champlain, and the Saint Lawrence Seaway. Continuing southward, the river takes in water from the

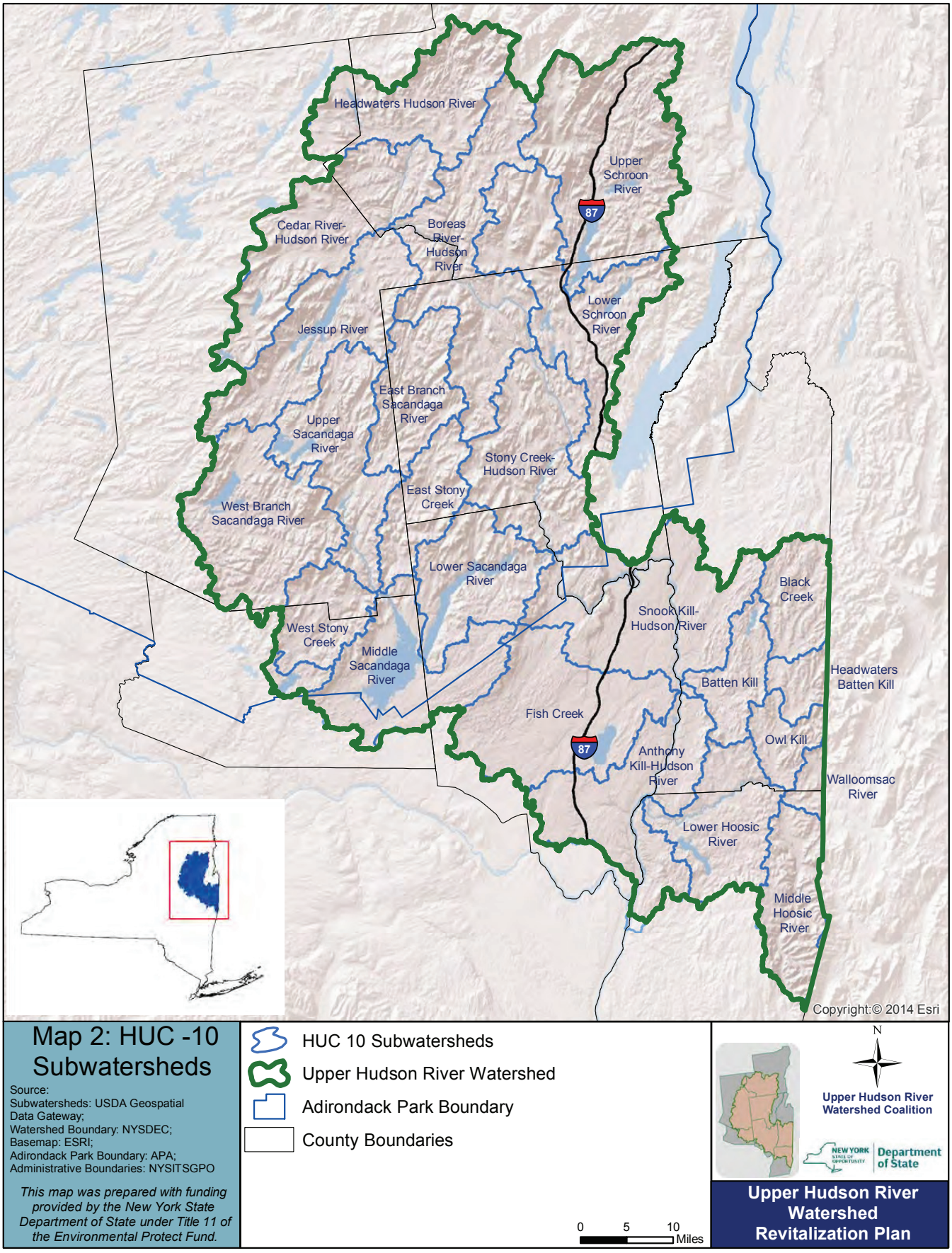
Batten Kill River and Fish Creek near Schuylerville and forms the boundary between Saratoga and Rensselaer Counties. The Hudson River then flows into New York's Capital District taking in water from the Hoosic River and joining with the Mohawk River, the largest tributary of the Hudson River, in Waterford. South of Waterford, the Hudson River reaches the Federal Dam in Troy, signifying the end of the Upper Hudson River.

In the United States, there is a hierarchy of hydrological unit codes (HUCs) which divide the country into regions, subregions, basins, subbasins, watersheds and subwatersheds. The number of HUC digits increases as the areas they represent get smaller. For the purpose of waterbody assessments, the NYSDEC uses HUC-10 subwatersheds to organize waterbodies in the Waterbody Inventory/Priority Waterbody List (WI/PWL). There are 24 HUC-10 subwatersheds located within the Upper Hudson River Watershed and each priority project identified in Chapter 5 of this plan is associated with a HUC-10 subwatershed (**Map 2. HUC-10 Subwatershed Map**).

Photo 1: The Hudson River begins high on New York State's highest peak, Mount Marcy, in the Adirondack High Peaks.
Photo Courtesy of Allison Gaddy.

Table 1: HUC-10 Subwatersheds of the Upper Hudson River Watershed
Source: NYSDEC WI/PWL

HUDSON/HOOSIC SUB-BASIN			
0202000301	Black Creek Watershed	0202000307	Walloomsac River Watershed
0202000302	Headwaters Batten Kill Watershed	0202000308	Middle Hoosic River Watershed
0202000303	Batten Kill Watershed	0202000309	Owl Kill Watershed
0202000304	Fish Creek Watershed	0202000310	Lower Hoosic River Watershed
0202000305	Snook Kill – Hudson River Watershed	0202000311	Anthony Kill – Hudson River Watershed
SACANDAGA SUB-BASIN			
0202000201	East Branch Sacandaga River Watershed	0202000205	East Stony Creek Watershed
0202000202	West Branch Sacandaga River Watershed	0202000206	Middle Sacandaga River Watershed
0202000203	Upper Sacandaga River Watershed	0202000207	Lower Sacandaga River Watershed
0202000204	West Stony Creek Watershed		
UPPER HUDSON SUB-BASIN			
0202000101	Headwaters Hudson River Watershed	0202000105	Upper Schroon River Watershed
0202000102	Jessup River Watershed	0202000106	Lower Schroon River Watershed
0202000103	Cedar River – Hudson River Watershed	0202000107	Stony Creek – Hudson River Watershed
0202000104	Boreas River – Hudson River Watershed		



Map 2: HUC -10 Subwatersheds

Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

- HUC 10 Subwatersheds
- Upper Hudson River Watershed
- Adirondack Park Boundary
- County Boundaries

0 5 10 Miles

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Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY Department of State

Upper Hudson River Watershed Revitalization Plan

2.3 SUBWATERSHED ASSESSMENTS

Priority water quality issues throughout the watershed include stormwater, agricultural operations, erosion, water and wastewater, invasive species and aquatic organism passage. Most of these resource concerns stem from nonpoint source pollution while others, like aquatic organism passage, are caused by the disconnection of proper hydrologic connectivity in rivers and streams due to barriers or improper road crossings. While the impacts and causes of stormwater, agriculture and erosion are often interrelated, this document categorizes each issue into one of the six priorities in order to identify and recommend the best management practices to mitigate the impacts.

Stormwater runoff from both developed and undeveloped lands can have impacts on waterbodies by carrying sediment and other pollutants. The Middle Sacandaga, Anthony Kill, Upper Schroon River and Fish Creek HUC-10 subwatersheds are impacted or impaired by urban runoff. Many more, as listed below, are affected by agriculture and erosion, impacts which are often influenced by stormwater runoff.

Agriculture is a major land use activity throughout much of the watershed and approximately 8% of land in the watershed is in agricultural use. Agricultural uses have the potential to impact water quality by way of nutrient loading through runoff and sedimentation. The Middle Hoosic River, Lower Hoosic River, Anthony Kill and Fish Creek HUC-10 subwatersheds are affected by pollutants from agricultural uses.

Photo 2: Goodnow Flow located in the Boreas River - Hudson River HUC-10 Subwatershed. Photo Courtesy of Essex County SWCD.

Erosion is caused by natural and human-made sources, but no matter the case, erosion can lead to sedimentation in nearby waterways that can impact water flow and increase nutrients in the waterway which reduces dissolved oxygen and decreases water quality. The Middle and Lower Hoosic River, Upper Schroon River and Anthony Kill HUC-10 subwatersheds are impaired by contaminated sediment while the Anthony Kill, Lower Sacandaga River, Snook Kill and Upper Schroon River are impacted by streambank and/or road bank erosion, both of which can preclude fish consumption, aquatic life, water supply, aesthetics and recreation.

Invasive species are a threat to the biodiversity of waterbodies and land areas. Throughout the Upper Hudson River Watershed, the spread of invasive species threatens water quality and clarity, degrades habitat for native species and, in some cases, precludes human activities such as swimming and fishing. Ballston Lake, within the Anthony Kill subwatersheds, has been identified as having minor impacts from aquatic invasive species which can affect water supply and recreational opportunities in the lake.

Failing or inadequate water and wastewater systems can have a negative impact on water quality. When not operating efficiently, wastewater treatment facilities cause nutrient loading in nearby waterbodies which can affect recreational uses, aesthetics and aquatic life. The Middle Saranac and the Anthony Kill subwatersheds are

impacted or impaired by failing on-site septic systems while the Anthony Kill and Fish Creek are impacted or impaired by inadequate municipal facilities.

Other impacts throughout the Upper Hudson River Watershed stem from the disconnection of proper hydrologic connectivity in rivers and streams due to barriers or improper road crossings. While these barriers inhibit fish migration and spawning habits, they can also impact flooding throughout the watershed. The Jessup River, Middle Hoosic River, Lower Hoosic River, Anthony Kill, Lower Sacandaga and Fish Creek are all impacted or impaired by habitat and/or hydrological modifications.

The NYSDEC tests waterbodies for impacts or impairments and lists the results in the Waterbody Inventory/ Priority Waterbody List (WI/PWL). Generalized impacts and impairments are outlined below and more thoroughly listed in **Table 2**. The purpose of the water-quality testing is to evaluate the extent to which a given waterbody can support its designated use classification. The results of this water quality monitoring are compiled in the WI/PWL which provides a summary of general water quality conditions, tracks the degree to which a waterbody supports its designated uses and monitors progress in water quality. The WI/PWL is updated on a five-year rotating schedule and utilizes chemistry sampling and macroinvertebrate identification information to identify water quality issues and their sources. Based on the information collected, the waterbody is assigned a rating that is define in The New York State Consolidated Assessment and Listing Methodology: Section 305(b) Assessment Methodology document as:

Impaired Waters	Waterbodies with well documented water quality problems that require restoration measures in order for uses to be supported. These waters are candidates for inclusion on the NYS Section 305(b) List of Impaired/TMDL Waters. Impaired Waters have Precluded or Impaired Uses, where the confidence in that assessment is Known.
Waters with Minor Impacts	Waterbodies where lesser water quality impacts are apparent, but where uses are still considered to be supported. Protection strategies rather than restoration strategies may be more appropriate for these waters. Generally, these waterbodies have been assessed have uses that are Stressed – either Known or Suspected. Waters with uses that are Suspected of being Impaired are also considered to have Minor Impacts until the suspected impairment can be confirmed.
Waters with Impacts that Need Verification	Waterbodies that are thought to have water quality impact or impairment, but for which there is insufficient documentation to justify additional management actions. Such waterbodies require additional monitoring to determine whether uses are, in fact, impacted or impaired. This includes waterbodies that are identified as Stressed or Impaired, but where that evaluation remained Unconfirmed.
Waters with no Known Impact	Waterbodies where monitoring data and information indicated that there are no use restrictions or other water quality impacts to uses. Uses in these waterbodies are evaluated as being Fully Supported. This category also includes waters with Threatened uses that have not fully been documented, identified as Suspected. This category is appropriate to use when some, but not all, waterbody uses have been assessed.
Unassessed Waters	Waterbodies where adequate water quality information is not available to evaluate the support of any designated uses

Table 2. List of Waterbodies, Impacted Uses, Types of Pollutants and Sources within the Upper Hudson River Watershed
Source: NYSDEC WI/PWL

HUC-10 Subwatershed	Waterbody	Municipality	Uses Impacted	Types of Pollutant	Source of Pollutant	Classification
Upper Schroon River	Alder, Crane Ponds	Schroon	Fish Consumption	Metals	Atmospheric Deposition	Impaired
Boreas River - Hudson River	Minor Lake tribs to Upper Hudson	Lake tribs above Newcomb	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
Upper Schroon River	Schroon River, Upper, and tribs	North Hudson	Recreation, Fish Consumption	Silt/Sediment	Streambank Erosion,Urban/ storm runoff, Road bank Erosion, Deicing Activities	Minor Impacts
Boreas River - Hudson River	Stony Pond	Minerva	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
West Stony Creek	Chase Lake/ Mud Lake	Northville	Fish Consumption	Metals	Atmospheric Deposition	Impaired
West Stony Creek	Holmes Lake	Gloversville	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
Middle Sacandaga River	Kennyetto Creek, Lower and minor tribs	Broadalbin	Aquatic Life/ Recreation	Nutrients, Pathogens	Failing on-site septic systems, Urban runoff	Minor Impacts
Jessup River	Indian River and minor tribs	Indian Lake	Aquatic Life, Habitat/ Hydrology	Water level/Flow	Hydrologic modification/ Habitat Modifications	Minor Impacts
Jessup River	Kings Flow	Indian Lake	Fish Consumption	Metals	Atmospheric Deposition	Impaired
Cedar River – Hudson River	Lake Durant	Indian Lake	Fish Consumption	Metals	Atmospheric Deposition	Impaired
Cedar River – Hudson River	Minor lake tribs to Cedar River	Indian Lake	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
Jessup River	Minor lake tribs to Indian River/ Lake	Indian Lake	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
West Branch Sacandaga	Minor lakes in Up. W. Br. Sacandaga Watershed	Arietta	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
Cedar River – Hudson River	Rock Pond	Long Lake	Fish Consumption	Metals	Atmospheric Deposition	Impaired
Headwaters Hudson River	Round Pond	Long Lake	Fish Consumption	Metals	Atmospheric Deposition	Impaired
Headwaters Hudson River	Round Pond	Long Lake	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
Upper Sacandaga River	Sacandaga Lake	Lake Pleasant	Fish Consumption, Water Supply	Metals, Acid/ Base (pH)	Atmospheric Deposition, Other Source	Impaired

Table 2. List of Waterbodies, Impacted Uses, Types of Pollutants and Sources within the Upper Hudson River Watershed
Source: NYSDEC WI/PWL

HUC-10 Subwatershed	Waterbody	Municipality	Uses Impacted	Types of Pollutant	Source of Pollutant	Classification
West Branch Sacandaga	Sand Lake	Arietta	Fish Consumption, Aquatic Life	Metals, Acid/ Base (pH)	Atmospheric Deposition	Impaired
West Branch Sacandaga	Silver Lake	Benson	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired
West Branch Sacandaga	Spy Lake	Arietta	Fish Consumption	Metals	Atmospheric Deposition	Impaired
Middle Hoosic River	Hoosic River, upper and tribs	Streams/tribs above Hoosic Falls	Fish Consumption, Aquatic Life	PCBs, Nutrients	Contaminated Sediment, Agriculture	Impaired
Middle Hoosic River	Hoosic River, upper and tribs	Rt 7 to Hoosic Falls	Fish Consumption, Aquatic Life	PCBs, Nutrients	Contaminated Sediment, Agriculture	Impaired
Middle Hoosic River	Hoosic River, middle, main stem	Hoosic Falls to Walloomsac River	Fish Consumption, Aquatic Life, Recreation	PCBs, Priority Organics (PFOAs), Nutrients, Water Level/Flow	Contaminated Sediment, Agriculture, Hydrologic Modification	Impaired
Middle Hoosic River	Hoosic River, middle, main stem	Walloomsac River to Johnsonville Dam	Fish Consumption, Aquatic Life	PCBs, Nutrients, Silt/ Sediment, Water Level/Flow	Contaminated Sediment, Agriculture, Hydrologic Modification	Impaired
Lower Hoosic River	Hoosic River, lower, main stem	Johsonville Dam to Mouth	Fish Consumption, Aquatic Life	PCBs, Nutrients, Silt/ Sediment, Water Level/Flow	Contaminated Sediment, Agriculture, Hydrologic Modification	Impaired
Lower Hoosic River	Schaghticoke Reservoir	Schaghticoke	Fish Consumption	PCBs	Contaminated Sediment	Impaired
Lower Hoosic River	Tomhannock Reservoir	Schaghticoke	Water Supply	Pathogens, Nutrients, Silt/ Sediment	Agriculture	Threatened (Possible)
Anthony Kill – Hudson River	Anthony Kill and minor tribs	City of Mechanicville	Recreation	Pathogens, Floatables	Combined Sewer Overflow, Urban Runoff	Minor Impacts
Anthony Kill – Hudson River	Ballston Lake	Town of Ballston	Water supply, Public bathing, Recreation	Algal/weed growth, nutrients (phosphorus), Harmful Algal Blooms, Aquatic Invasive Species, silt/sediment, water level/flow, pathogens	Failing on-site septic systems, streambank erosion, agriculture, hydrologic modification, urban runoff	Minor impacts
Snook Kill	Bullhead Pond	Town of Day	Aquatic Life	Acid/Base (pH)	Atmospheric Deposition	Impaired

Table 2. List of Waterbodies, Impacted Uses, Types of Pollutants and Sources within the Upper Hudson River Watershed
Source: NYSDEC WI/PWL

HUC-10 Subwatershed	Waterbody	Municipality	Uses Impacted	Types of Pollutant	Source of Pollutant	Classification
Anthony Kill – Hudson River	Dwaas Kill and tribs	Town of Clifton Park	Aquatic Life, Recreation	Nutrients (Phosphorus), silt/sediment, pathogens	Construction, urban runoff, failing on-site septic systems	Impaired
Lower Sacandaga River	Great Sacandaga Lake	Towns of Day and Hadley	Fish consumption, aquatic life, recreation, habitat/ hydrology, aesthetics	Water level/flow, metals	Hydrologic modification, habitat modification, atmospheric deposition, streambank erosion	Impaired
Lower Sacandaga River	Lower Sacandaga River	Town of Hadley	Aquatic life, habitat/ hydrology	Water level/flow	Habitat modification, hydrological modification	Minor impacts
Fish Creek	Saratoga Lake	Towns of Ballston, Saratoga, Malta, Stillwater	Recreation, habitat/ hydrology	Algal/weed growth, problem species, nutrients (phosphorus)	Habitat modification, urban runoff, agriculture	Minor Impacts
Anthony Kill – Hudson River	Schuyler Creek and tribs	Town of Stillwater	Aquatic life, recreations	Nutrients (phosphorus), D.O/oxygen demand, pathogens	Private/ commercial/ industrial urban runoff	Impaired
Snook Kill	Snook Kill, lower and minor tribs	Hamlet of Gansevoort	Aquatic life	Silt/sediment, thermal changes, nutrients, pathogens	Agriculture, construction, streambank erosion	Minor Impacts
Lower Sacandaga River	Stewarts Bridge Reservoir	Town of Hadley	Aquatic life, habitat hydrology	Water level/flow	Hydrologic modification, habitat modification	Minor impacts
Fish Creek	Tribs to Lake Lonely	City of Saratoga Springs	Aquatic life, recreation, aesthetics	D.O./oxygen demand, nutrients (phosphorus), pathogens, aesthetics, ammonia, metals	Municipal, storm sewers, urban runoff, landfill/ land disposal	Impaired
Anthony Kill – Hudson River	Upper Hudson, main stem	Corinth to Spier Falls Dam	Fish Consumption	Metals	Atmospheric deposition	Impaired
Anthony Kill – Hudson River	Upper Hudson, main stem	Spier Falls Dam to Sherman Isle Dam	Fish consumption, public bathing	Metals, pathogens	Atmospheric deposition, municipal	Impaired
Anthony Kill – Hudson River	Upper Hudson, main stem	Sherman Isle Dam to Glens Falls	Fish consumption, public bathing	PCBs, pathogens	Contaminated sediment, municipal	Impaired

Table 2. List of Waterbodies, Impacted Uses, Types of Pollutants and Sources within the Upper Hudson River Watershed
Source: NYSDEC WI/PWL

HUC-10 Subwatershed	Waterbody	Municipality	Uses Impacted	Types of Pollutant	Source of Pollutant	Classification
Anthony Kill – Hudson River	Upper Hudson, main stem	Glens Falls to Schuylerville	Fish consumption	PCBs, pathogens	Contaminated sediment, municipal	Impaired
Anthony Kill – Hudson River	Upper Hudson, main stem	Schuylerville to Riverside	Fish consumption, public bathing	PCBs, pathogens	Contaminated sediment, municipal	Impaired
Anthony Kill – Hudson River	Upper Hudson, main stem	Riverside to Mechanicville	Fish consumption, public bathing	PCBs, pathogens	Contaminated sediment, municipal	Impaired
Anthony Kill – Hudson River	Upper Hudson, main stem	Mechanicville to Troy Dam	Fish consumption, water supply, public bathing	PCBs, pathogens	Contaminated sediment, municipal, industrial discharge	Impaired
Lower Schroon River	Brant Lake	Town of Horicon	Water supply	Other pollutants	Other sources	Threatened (possible)
Upper Schroon River	Schroon Lake	Towns of Chester and Horicon	Fish consumption, Recreation	Metals (mercury), Silt/Sediment	Atmospheric Deposition, Urban/Storm Runoff, Streambank Erosion, Road Bank Erosion, De-Icing Activities	Impaired
Headwaters Batten Kill	Batten Kill, upper and minor tribs	Streams/tibs above East Greenwich	Habitat/ hydrology, fish consumption	Metals, other pollutants	Atmospheric deposition, habitat modification	Impaired
Batten Kill	Batten Kill, middle and minor tribs	East Greenwich to Greenwich	Habitat/ hydrology	Other pollutants	Habitat modification	Impaired
Batten Kill	Cossayuna Lake	Town of Argyle	Recreation, habitat/ hydrology, Aquatic Life	Algal/weed growth, nutrients (phosphorus), problem species, silt/sediment, pathogens	Habitat modification, failing on-site septic systems, agriculture, construction	Impaired

2.4 HISTORICAL CONTEXT

The Hudson River plays a significant role in the history of the United States and is a defining natural feature of eastern New York State. Indigenous people inhabited the Hudson River Valley long before European explorers traveled up the river in 1598. From this point on, the area was settled, and cities were established on the river's shores. The Hudson River, as it became known, was used for travel, trade and sustenance. Later, in 1825, when the Erie Canal open trade routes to the Great Lakes and beyond, the Hudson River became firmly established as an important trade and transportation corridor.

In the 1700s and 1800s, when industry depended on waterpower, there were many factories located along the Upper Hudson River where the fast-flowing water provided the power to operate machinery and a convenient means of waste disposal. There are five prominent waterfalls along the Upper Hudson River that served as power sources for major industries during the Industrial Revolution and beyond, including Bakers Falls, Glens Falls, Spier Falls, Paler Falls and Curtis Falls. These waterfalls and the industries that grew around them all played important roles in the formation of the communities that surround the Upper Hudson River. The legacy of industrialization is still seen today from the celebrated history and remnants of factories and sawmills to the PCB laden sediment found in many areas along the river.

The Upper Hudson River also played a vital role in the logging industry of the Adirondacks. Timber cut throughout the watershed was sent down the Hudson River to the mills at Glens Falls where it was cut and sent to Albany and Troy. From there it was shipped west on the Erie Canal or continued down the Hudson to New York City. The practice of rafting logs down the Hudson River revolutionized the logging industry of the Adirondacks because it allowed the distribution of lumber to a much wider market and led New York State to become a major exporter of structural lumber. Logging in the Upper Hudson River Watershed peaked in 1872 and records from the Hudson River Boom Association show that in that year over 2 million individual logs totaling over 213 million board feet of lumber were sent downstream to the mills in Glen Falls. The practice of rafting logs down the Hudson River ceased in 1950 when it was determined that hauling pulpwood by truck was a more efficient and less costly method of transporting lumber.

While there continues to be some industrial uses and logging throughout the watershed today, the economic drivers of the area have shifted to tourism which has been the number one source of income for the area since the 1920s. Most of the tourism is based around the recreational opportunities and pristine natural resources that the area has to offer which is why there are many groups, including municipalities working to improve water quality and maintain the natural beauty throughout the Upper Hudson River Watershed.

2.5 MUNICIPALITIES AND POPULATION CENTERS

This watershed revitalization plan has thus far used subwatershed boundaries to provide characterizations of the Upper Hudson River Watershed, it also is important to also recognize the role individual municipalities play in the character and the health of the watershed through their land use policies and development patterns. There are 97 municipalities within the watershed including 73 towns, 20 villages and four cities:

City of Glens Falls
City of Mechanicville
City of Saratoga Springs
City of Troy

Town of Argyle
Town of Arietta
Town of Ballston
Town of Benson
Town of Berlin
Town of Bleecker
Town of Bolton
Town of Broadalbin
Town of Brunswick
Town of Cambridge
Town of Caroga
Town of Charlton
Town of Chester
Town of Clifton Park
Town of Corinth
Town of Crown Point
Town of Day
Town of Easton
Town of Edinburg
Town of Elizabethtown
Town of Fort Edward
Town of Galway
Town of Grafton
Town of Greenfield
Town of Greenwich
Town of Hadley
Town of Hague
Town of Halfmoon
Town of Hoosick
Town of Hartford
Town of Hebron
Town of Hope
Town of Horicon
Town of Hartford
Town of Indian Lake
Town of Jackson
Town of Johnsburg
Town of Johnstown
Town of Keene
Town of Kingsbury
Town of Lake George
Town of Lake Luzerne
Town of Lake Pleasant
Town of Long Lake
Town of Malta
Town of Mayfield
Town of Milton
Town of Minerva
Town of Moreau
Town of Moriah
Town of Newcomb
Town of Northampton
Town of North Elba
Town of North Hudson
Town of Northumberland
Town of Perth
Town of Petersburgh
Town of Pittstown
Town of Providence
Town of Queensbury
Town of Salem
Town of Saratoga
Town of Schaghticoke
Town of Schroon
Town of Stillwater
Town of Stony Creek
Town of Thurman
Town of Ticonderoga
Town of Warrensburg
Town of Waterford
Town of Wells
Town of White Creek
Town of Wilton
Village of Argyle
Village of Ballston Spa
Village of Broadalbin
Village of Cambridge
Village of Corinth
Village of Fort Edward
Village of Galway
Village of Greenwich
Village of Hoosick Falls
Village of Hudson Falls
Village of Mayfield
Village of Northville
Village of Round Lake
Village of South Glens Falls
Village of Schaghticoke
Village of Schuylerville
Village of Speculator
Village of Stillwater
Village of Valley Falls
Village of Victory

According to the 2010 US Census, nearly 300,000 people reside in the Upper Hudson River Watershed, the majority of whom are clustered in the lower half of the drainage area along the Adirondack Northway/ Interstate-87 Corridor between Albany and Saratoga Springs.

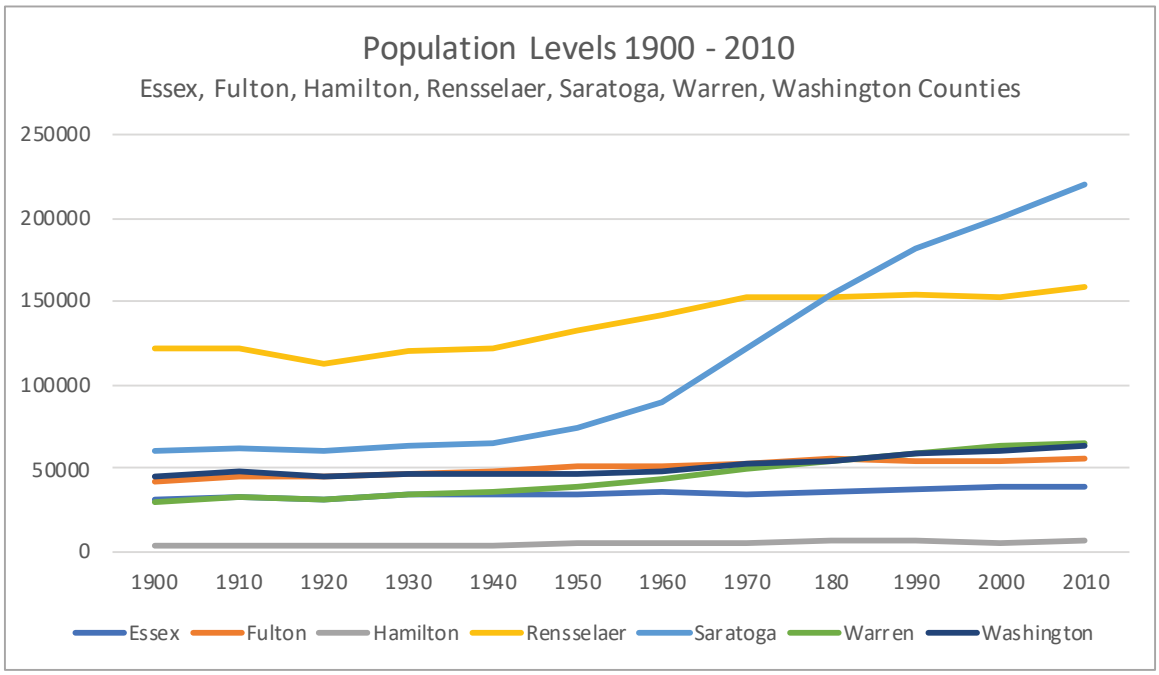


Figure 4: Watershed Population by County 1900 - 2010.
Source: US Census Bureau

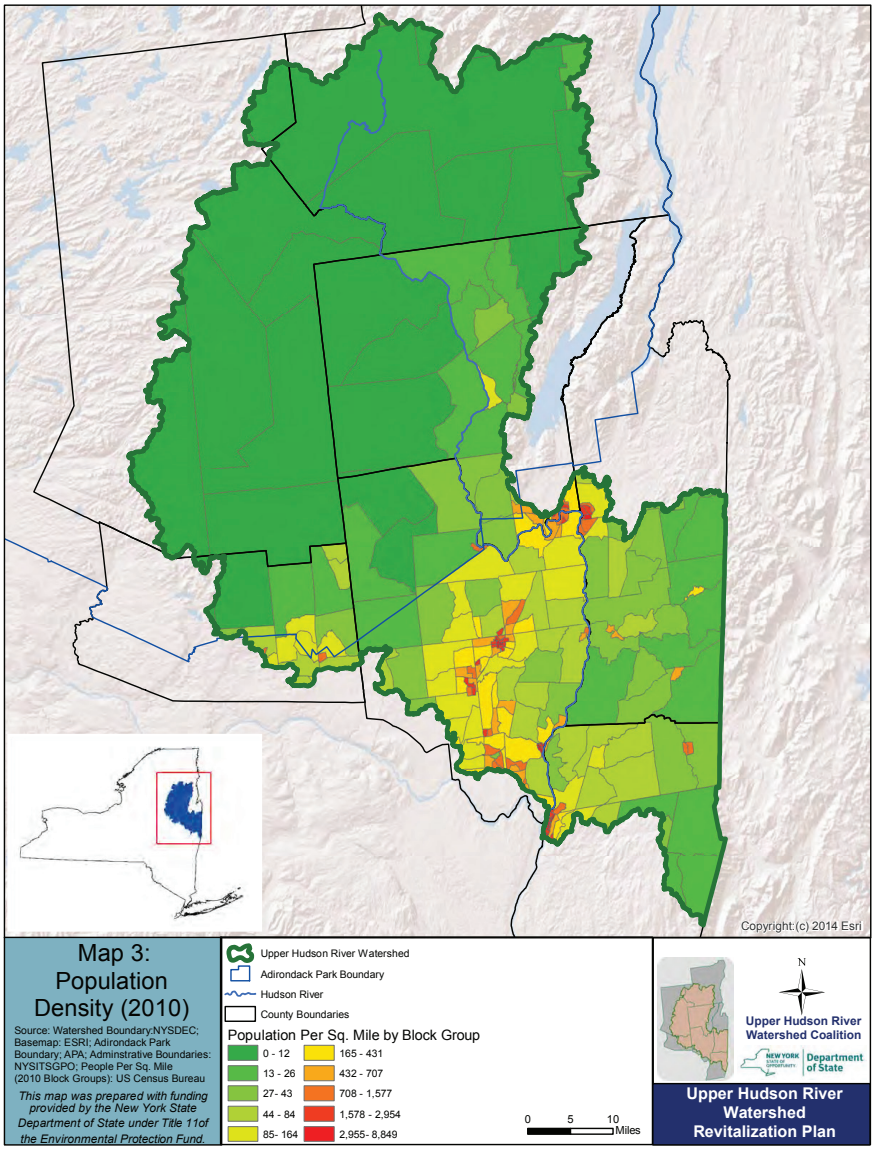
Table 3: Population Distribution by Watershed County
Source: US Census Bureau 2010

Essex	12,076	3%
Fulton	26,761	7%
Hamilton	4,503	1%
Rensselaer	52,816	14%
Saratoga	194,418	51%
Warren	48,388	13%
Washington	43,308	11%
Total	**382,270**	**100%**

The largest population centers located entirely or partially in the watershed are the cities of Troy, Saratoga Springs and Glens Falls, and the surrounding suburban towns of Clifton Park, Halfmoon and Queensbury. Population densities are greatest in the southern portion of the watershed in southern Warren, Rensselaer, and Saratoga Counties.

While many upstate New York counties are expecting population losses after the 2020 United States Census is complete, Saratoga County does not, in fact the county has been one of the fastest growing in Upstate New York for the past decade with an expected population growth of over 7% by the 2020 Census (CDRPC Community Growth Profiles). Based on the percentage change from 2010 to 2017, the county contains nine of the 25 fastest growing municipalities in Upstate New York.

On the subwatershed level, the Snook Kill – Hudson River, Anthony Kill-Hudson River and Fish Creek HUC-10 Subwatershed, located in Saratoga and Rensselaer Counties, have the highest population densities within the watershed. This is important to note because population density is a better indicator of potential environmental stressors than population alone. High densities typically indicate a more concentrated built environment and higher levels of impervious surfaces and infrastructure, all of which can alter the natural movement of water through the environment and contribute to non-point source pollution (**Map 3. Population Density**).



Outside these urban and suburban centers, the basin also has significant rural agricultural areas, particularly in Rensselaer and Washington Counties on the eastern side of the Hudson River and eastern Saratoga County on the western shore of the river. Additionally, in the northern reaches of the watershed, there is 2.5 million acres forest preserve land intertwined with 3.5 million acres of privately-owned land that comprises the Adirondack State Park.

2.6 LAND USE AND LAND COVER

Human populations significantly alter the natural landscape. Through urbanization and development, agricultural operations or habitat modification, human activity changes the natural functions of a watershed and must be evaluated and accounted for when planning for the future health of the watershed.

Land use and land cover can significantly impact water quality, particularly in terms of stormwater runoff and erosion. In forested or grassy areas, rainwater can infiltrate into the soil, where it may be used by vegetation or percolate into the groundwater, protecting the area from sediment and nutrient pollution, and mitigating flooding. Alternatively, when rainwater falls upon paved or otherwise impervious surfaces, it quickly runs off into storm drains or other nearby waterbodies. Increasing impervious surfaces limits rainfall from infiltrating the soil thereby increasing the volume and velocity of runoff during precipitation and snowmelt events. These changes can lead to increased flood conditions, streambank instability and erosion and increased pollutant loadings.

Each land use effects water quality in different and interconnected ways. Land use data illustrates how people use the land and is derived from land use codes assigned by each county's assessor's office. Areas with a high level of agricultural use have a greater potential for non-point source pollution due to high levels of nutrients from fertilizers and pollutants from farm uses while areas with a high number of commercial or residential uses are more likely to generate non-point source pollution with a higher concentration of contaminants from roadways, lawn fertilizer nutrients and debris. Parcels are assigned a numerical identifier based on the current use of the land and categorized as either: agricultural, commercial, community services, industrial, recreation and development, public services, residential, unknown, vacant land, or wild, forested, conservation lands and public parks. Each land use type has varying effects on nearby water resources. Land use in the Upper Hudson River Watershed falls into one of the following eight categories:

Table 4: Land Use Classifications. Source: National Land Cover Dataset.	
Agriculture	Property used for the production of crops or livestock. Includes dairy farms, orchards, poultry farms, field crops, nurseries, fish and game preserves.
Residential	Property used for human habitation. Includes single-family, two-family and multi-family residences, mobile home parks and seasonal residences.
Vacant Land	Property that is not in use, is in temporary use or lacks permanent improvement. Includes vacant industrial, residential, commercial, rural or public utility lands.
Commercial	Property used for the sale of goods and/or services. Includes hotels, restaurants, bars, auto service centers, storage facilities, gas stations, retail shopping, banks and junkyards.
Recreation and Entertainment	Property used for groups for recreation, amusement or entertainment. Includes fairgrounds, amusement parks, social clubs, campgrounds, stadiums, gyms, golf courses, ski resorts, beaches and marinas.
Community Services	Property used for the well-being of the community. Includes libraries, schools, colleges, hospitals, civic buildings, museums and cemeteries.
Public Services	Property used to provide services to the general public. Includes water treatment, telecommunications, roads, railroads, airports, bridges, landfills, wastewater treatment, utilities and transmission.
Wild, Forested, Conservation Lands and Public Parks	Reforested lands, preserves, and private hunting and fishing clubs. Includes forest lands, state owned land, wetlands, conservation easements and special taxing districts for environmental purposes.

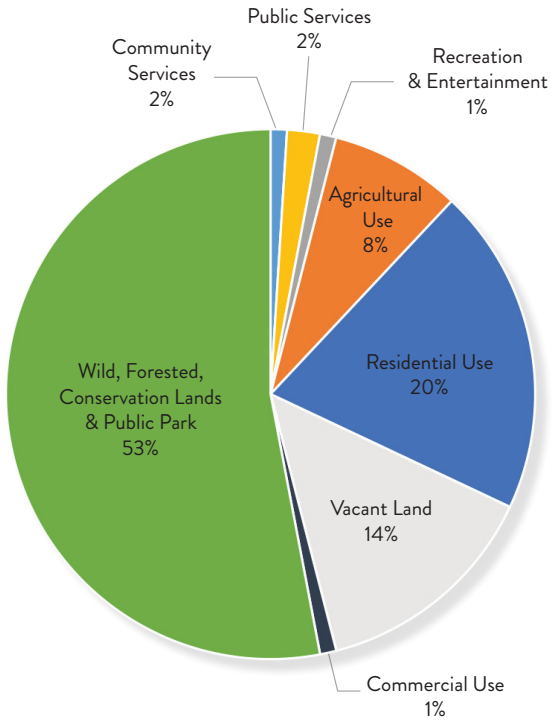


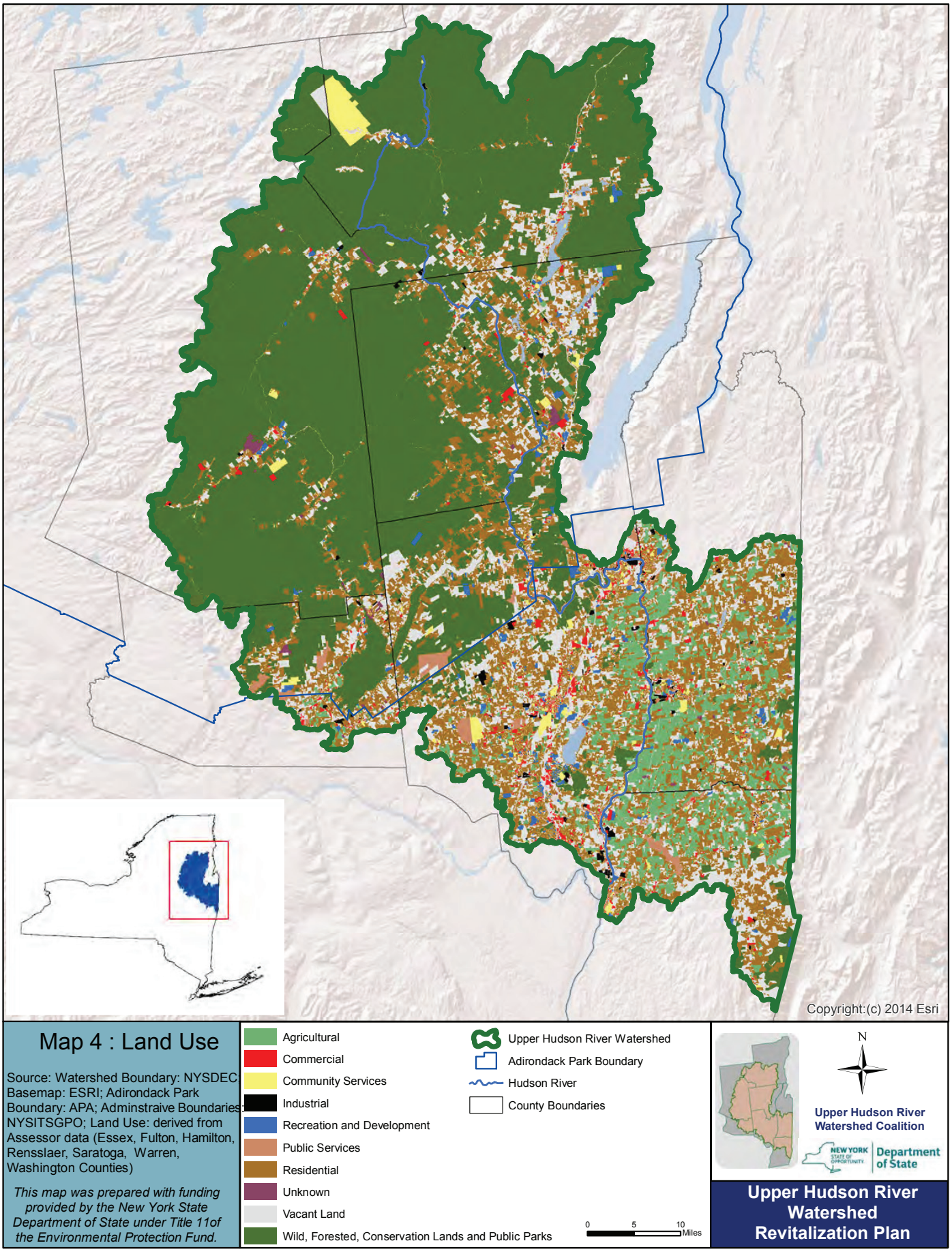
Figure 5: Land use within the Upper Hudson River Watershed by Percentage.
Source: County Assessor's Office.

The predominant land use in the Upper Hudson River Watershed is *Wild, Forested, Conservation Lands and Public Parks* which comprises 53% of the area of the watershed. This land use is primarily found in the northern portions of the watershed where the Adirondack State Forest Preserve is located. Residential land use, the second most prominent land use type found in the watershed, comprises 20% of the land area and is mostly located in the southern and eastern portions of the watershed (**Map 4. Land Use Map**).

While land use classification identifies how people are using that land, land cover indicates the physical land type of the land such as forest or open water. The top land cover classifications in the watershed are forest; grouping deciduous, evergreen and mixed together yields 73% forest cover. Agricultural lands (pasture/hay and cultivated crops) make up 9% of the watershed. Most of the developed land within the watershed is classified as Developed, Open Space characterized by areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover.

Table 5: Watershed Land Cover/Land Use Breakdown
Source: County Assessor's Office

Land Cover Classification	Acres	Percentage
Open Water	102,524.00	4%
Developed, Open Space	77,297.70	3%
Developed, Low Intensity	31,811.00	1%
Developed, Medium Intensity	11,014.60	0%
Developed, High Intensity	3,357.65	0%
Barren Rock (Rock/Sand/Clay)	4,565.00	0%
Deciduous Forest	1,058,010.00	41%
Evergreen Forest	550,895.00	21%
Mixed Forest	286,474.00	11%
Shrub/Scrub	42,352.50	2%
Grassland/Herbaceous	5,331.59	0%
Pasture/Hay	155,232.00	6%
Cultivated Crops	68,643.30	3%
Woody Wetlands	160,154.00	6%
Emergent Herbaceous Wetlands	16,539.20	1%
Totals	2,574,195.54	100%


Copyright:(c) 2014 Esri
Map 4 : Land Use
Source: Watershed Boundary: NYSDEC Basemap: ESRI; Adirondack Park Boundary: APA; Adminstraive Boundaries: NYSITSGPO; Land Use: derived from Assessor data (Essex, Fulton, Hamilton, Rensslaer, Saratoga, Warren, Washington Counties)
This map was prepared with funding provided by the New York State Department of State under Title 11of the Environmental Protection Fund.
Agricultural
Commercial
Community Services
Industrial
Recreation and Development
Public Services
Residential
Unknown
Vacant Land
Wild, Forested, Conservation Lands and Public Parks
Upper Hudson River Watershed
Adirondack Park Boundary
Hudson River
County Boundaries
0 5 10 Miles
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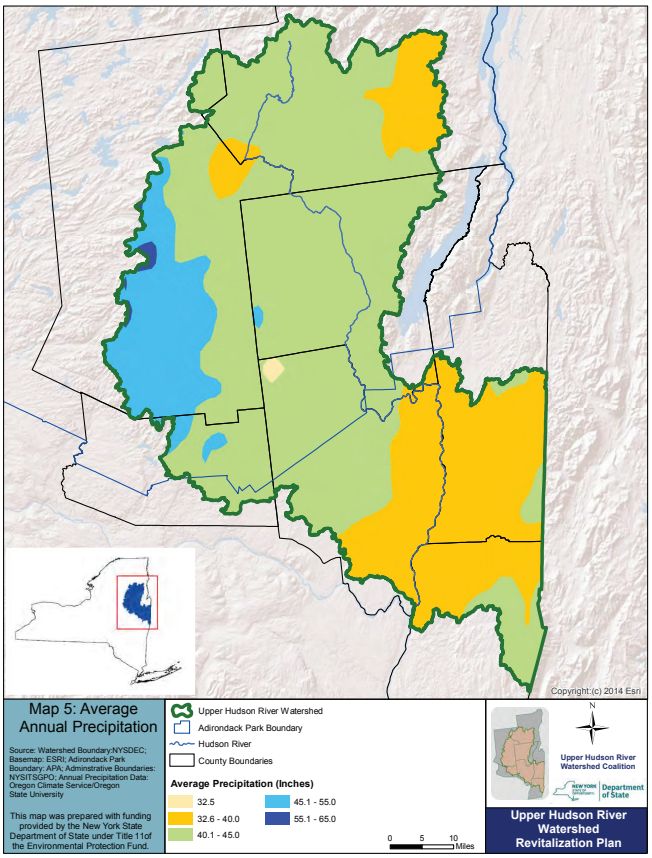
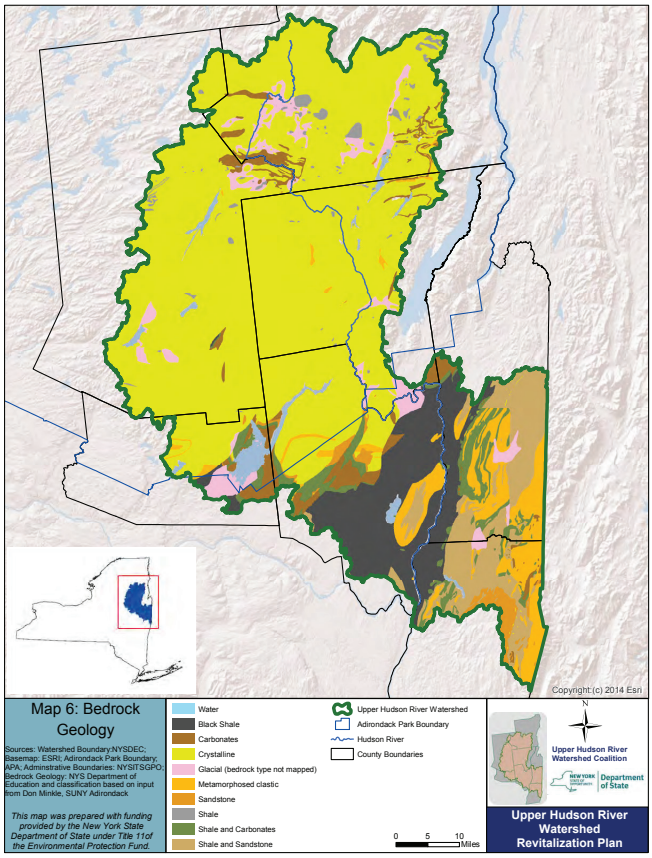
Upper Hudson River Watershed Coalition
NEW YORK STATE OF OPPORTUNITY. Department of State
Upper Hudson River Watershed Revitalization Plan

2.7 ENVIRONMENTAL SETTING

The average annual precipitation in the watershed ranges between 40.1 and 45.0 inches with isolated areas in the western portion of the watershed receiving more than 45 inches per year. Much of the area is subject to flooding from heavy rain events. The most recent, the Halloween Storm of 2019 (October 31-November 1, 2019), yielded record winds and rainfalls. Parts of Hamilton and Essex Counties received nearly 4 inches of rain overnight. Following the storm, a State of Emergency was declared in Warren, Essex and Hamilton Counties and the United States Federal Emergency Management Agency (FEMA) toured the area to assess the damages to infrastructure (**Map 5. Average Annual Precipitation**).



The northern portion of the watershed is primarily comprised of Crystalline bedrock with minor areas of Glacial and Carbonates, while the southern portion of Saratoga County is made up of Black Shale. Washington and Rensselaer Counties have a more diverse bedrock that is a mix of Shale and Carbonates, Shale and Sandstone, Black Shale, and Sandstone (**Map 6. Bedrock Geology**).

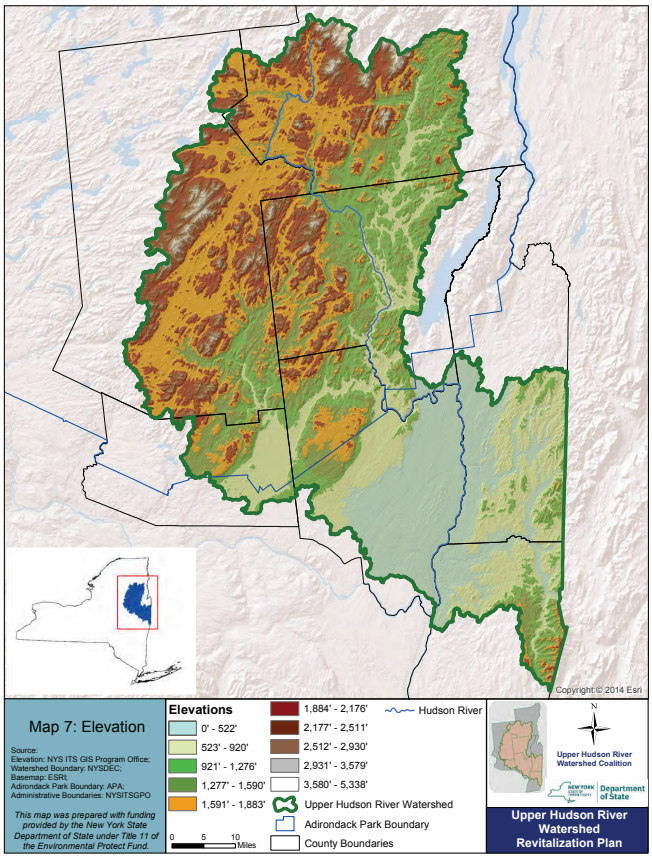


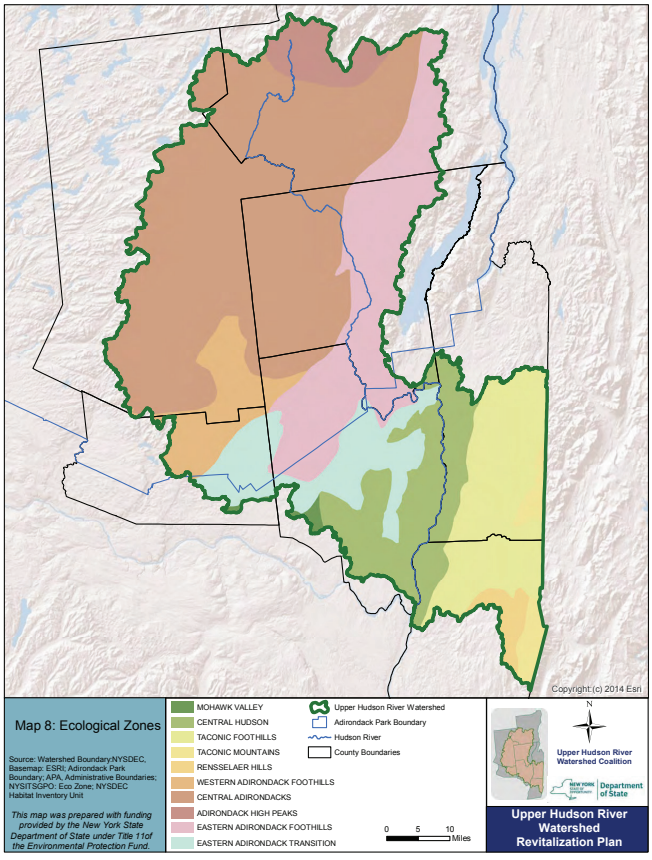
The topography of the watershed is very diverse ranging from the High Peaks of the Adirondack Mountains which soar more than 4,000 feet above sea level, and the Hudson Valley lowlands which range from 0 – 522 feet above sea level (**Map 7. Elevation**).

There are eight distinct ecological zones within the Upper Hudson River Watershed. Ecological zones denote areas of similarity in ecosystems and in the type, quality and quantity of environmental resources. The most prominent zones in the Upper Hudson River Watershed are the Western Adirondack Foothills, the Eastern Adirondack Foothills, Central Hudson and Taconic Foothills.

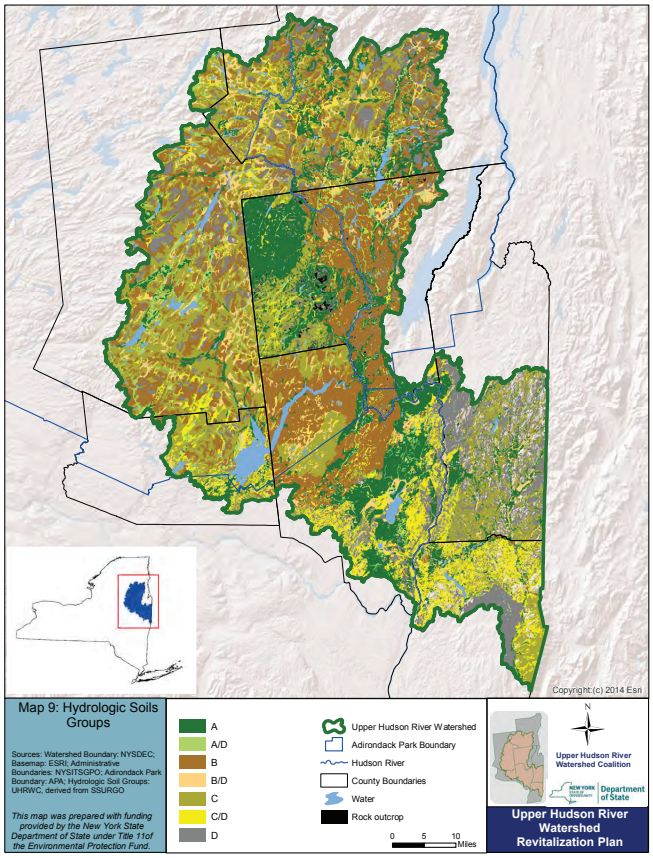
- The Western Adirondack Foothills zone comprises much of Hamilton, Essex and Warren Counties. This region is characterized by thick deposits of glacial till that has impacted the stream drainage. Here, the water table is high, and wetlands are abundant.
- The Eastern Adirondack Foothills zone lies on the eastern edge of the watershed and is underlain by limestone and anorthosite, both of which have a high acid neutralizing capacity. Rainfall amounts are lower here than in other portions of the Adirondacks.
- The Central Hudson ecological zone stretches along the Hudson River from Glens Falls in Warren County to Troy in Rensselaer County and is underlain by mostly Ordovician shales and siltstones. This area has lower elevations and a more moderate climate than the rest of the watershed.
- The Taconic Foothills ecological zone lies on the eastern shores of the Hudson River in Washington and Rensselaer Counties. This zone is the transition between the valley and the surrounding highlands and is underlain by the same metamorphosed rock found in the Taconic Mountains. The land here was historically used for agricultural purposes, but now land uses are varied and include woodland, pasture, cropland and rural residential development (**Map 8. Ecological Zones**).

The formation of soils is a result of five main factors: parent material, time, climate, relief/slope and





organisms. The hydrologic soil groups found in the Upper Hudson River Watershed are varied and range from A soils, which exhibit high filtration, to D soils which are characterized by very slow infiltration. A and B type soils are found primarily in the northern and western reaches of the watershed while the soils of the southern and eastern portions are much more mixed and range from A to D soil types (**Map 9. Hydrologic Soils Groups Map**).



2.8 POLLUTION SOURCES

Water quality in much of the Upper Hudson River Watershed is good to excellent. Over 80 percent of assessed rivers and streams have been found to support designated uses. However, the watershed does experience significant water quality impacts that are the result of past industrial activities and from sources outside the boundaries of the watershed. These impacts include PCB and PFOA contamination of sediments in the Upper Hudson River, acid rain, and atmospheric deposition of mercury. These impairments impact aquatic life and restrict fishing and fish consumption in many waters within the watershed, including nearly half of its lake acres. In addition to the legacy of industrial pollution that most Hudson River communities contend with, this plan addresses the other sources of pollution impacting the watershed, including municipal wastewater treatment plants, stormwater outfalls (MS4s), combined sewer overflows, and runoff from developed and agricultural areas.

Pollutants that impact our waterways are categorized by their origin: point and non-point source, as well as type: toxic, sediment, nutrient and bacterial.

Toxic	Chemicals that poison and kill organisms. Examples include pesticides and herbicides, gasoline, oil and other automotive contaminants, household cleaning products, battery acid, and industrial chemicals and byproducts.
Sediment	Soil, sand, silt, clay and minerals that have eroded from the land and washed into the water.
Nutrient	Elevated levels of substances such as nitrogen and phosphorus, often referred to as nutrient loading. Sources include sewage treatment facilities, faulty septic systems, industrial discharges, and agricultural and lawn care fertilizers.
Bacterial	Elevated levels of harmful bacteria which can be lethal to animals and humans if consumed. Sources include CSOs, sanitary sewer overflows, faulty septic systems, and animal waste.

Point Sources

Point source pollutants are inputs from a direct source such as discharges from wastewater treatment plants, operational wastes from industries and combined sewer outfalls. Point source pollutants enter the environment at an identifiable location making them easier to monitor and regulate than their non-point source counterparts.

Municipal Wastewater Treatment Plants. Wastewater treatment facilities in the United States process approximately 34 billion gallons of wastewater every day. Wastewater contains nitrogen and phosphorus from human waste, food and some soaps and detergents. Once the water is treated to an acceptable level, it is typically

released into a local waterbody, where it can act as a source of nitrogen and phosphorus pollution. Enhanced treatment systems enable some wastewater plants to produce discharges that contain less nitrogen than plants that use conventional treatment methods. Upgrades to wastewater treatment facilities are costly to municipalities and can increase user fees, but they have been proven to significantly reduce point source pollution into our waterbodies.

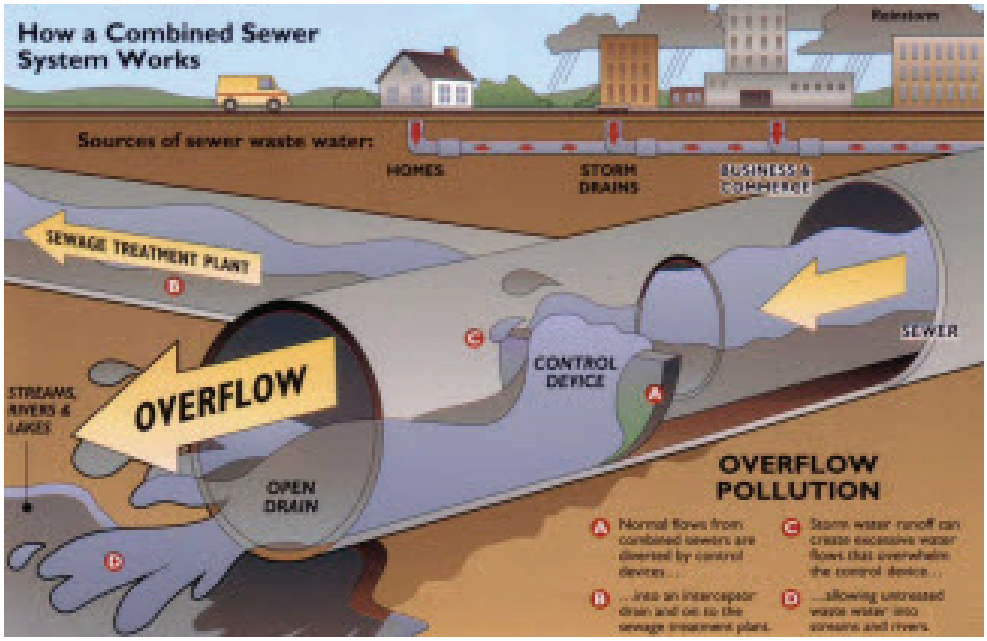
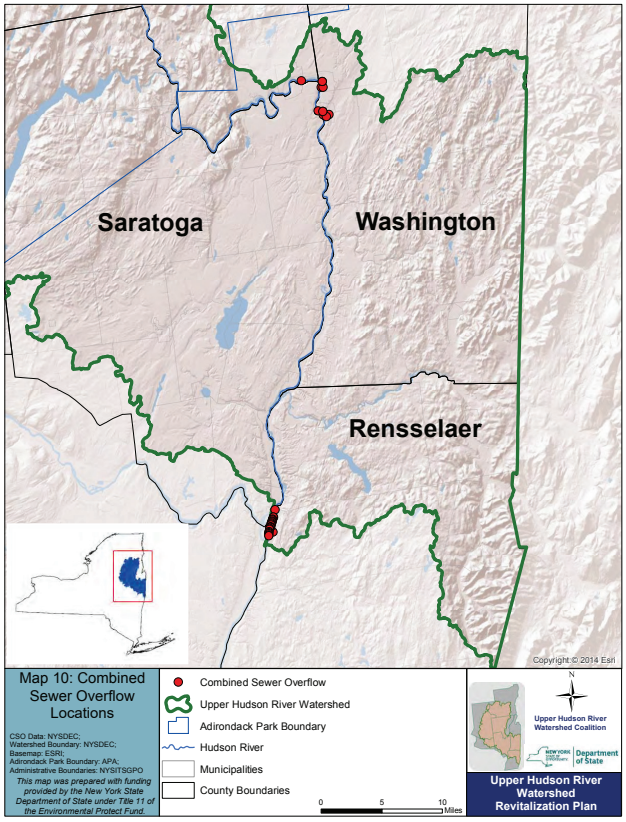


Figure 6: Combined Sewer Overflow. Source: NYSDEC

Combined Sewer Overflows. Combined sewers are present throughout New York State, primarily in older downtown urban areas. A combined sewer is a sewer system that collects stormwater runoff, domestic sewage, and industrial wastewater in the same pipe and transports it to the wastewater treatment facility. During periods of dry weather, combined sewers transport all collected wastewater to a sewage treatment facility where it is treated before being discharged. During periods of heavy rain or snowmelt, the system is designed to over flow in order to stay within the capacity of the treatment facility. When this overflow happens, it is known as a combined sewer overflow (CSO). Discharges from CSO outfalls may cause impacts to the health of human and animals, a decrease in water quality, limitations on swimming and fishing, algae growth and negative aesthetic impacts.

Each combined sewer is required to have coverage under a municipal wastewater treatment plant's State Pollutant Discharge Elimination System (SPDES) permit, which is issued by the NYSDEC. As part of this permit, municipalities must create a long-term control plan which includes options to reduce the frequency and volume of CSO discharges. These options include installing separated sewer lines, installing overflow storage tanks or retention basins to use during a storm event, expanding wastewater treatment capacity, screening and disinfecting overflow, and using green infrastructure to reduce stormwater flows. CSOs in the Upper Hudson River Watershed are located in the southern portion in the Cities of Troy, Waterford and Glens Falls, and Washington County Sewer District #2. Each of these communities have a long-term control plan that aims to reduce CSO occurrences into the Hudson River (**Map 10. Combined Sewer Overflow Location Map**).

Residential on-site septic systems. When properly designed, constructed and maintained, individual household septic systems perform very well. If one of these steps fails, however, the system breaks down and problems arise. Without proper maintenance, the tank will get too full causing a failure in the system that can result in several water quality issues. A failure of a residential septic system near a waterbody can result in bacterial and nutrient pollution issues that can lead to algal blooms and public health concerns.



Non-Point Source

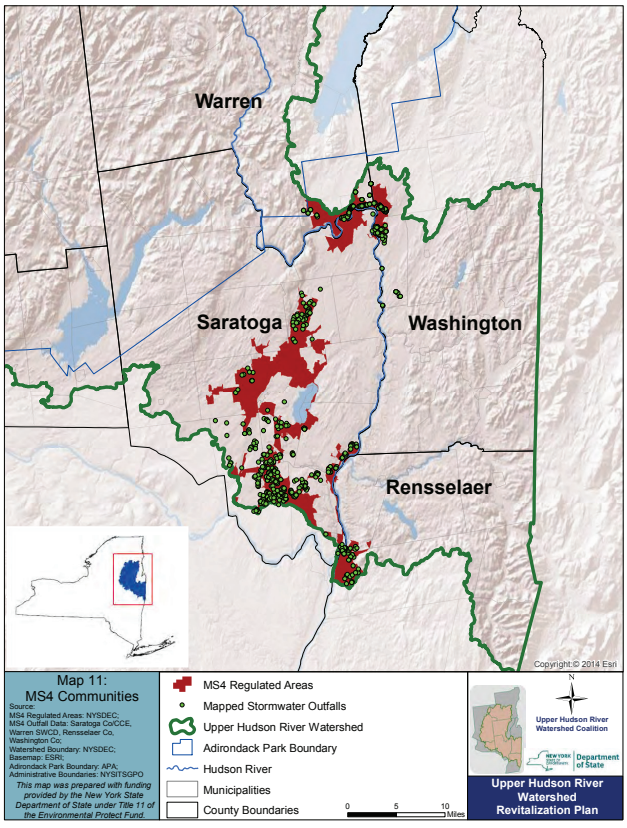
Non-point source pollutants include runoff from rainwater and snow melt that moves over parking lots, construction sites, lawns, streets and agricultural lands and can pick up a wide array of contaminants which can significantly impact water quality. Common pollutants found in runoff include:

- Sediments from construction, forestry operations and agricultural lands,
- Bacteria and microorganism from failing on-site septic systems and pet wastes,
- Nutrients and pesticides from residential yards, agricultural areas and golf courses,
- Deicing salt, oil, grease and metals from roads, parking lots and driveways,
- Litter from streets and sidewalks.

Non-point source pollution is more difficult to evaluate and regulate because it originates from a much broader area and may travel long distances through a watershed.

Runoff from Developed Areas. Runoff from urban areas is a leading source of water quality impairments in our waterbodies. In developed areas, natural surfaces have been replaced with impervious surfaces like streets, parking lots, buildings and homes which prevent rain and snowmelt from being absorbed into the ground. Instead, most developed areas depend on storm drains to carry large amounts of runoff from impervious surfaces to nearby waterways. This runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizer with it.

There are 31 communities within the watershed whose stormwater discharges are regulated under the NYSDEC Municipal Separated Storm Sewer Systems (MS4). As such, these communities must develop, implement and maintain an ongoing program to eliminate or reduce the discharge of pollutants from their system to the maximum extent practicable. These communities are subject to MS4 regulations because they are defined by the United State Census Bureau as "urbanized areas" based on population density and are required to become part of the MS4 program (**Map 11. MS4 Communities Map**).



Runoff from Agricultural Areas. Depending on design and management of farmland and practices, working farms can have significant impacts on water quality.

Agricultural runoff can carry pesticides, fertilizers and animal wastes into nearby waterways leading to nutrient loading, increased pathogens and chemical contaminations. Farming practices can also increase erosion of soils and sedimentation of waterways when mismanaged. Employing best management practices on agricultural lands has been shown to reduce sedimentation by 20 to 90 percent by controlling the volume and flow rate of runoff water, keeping the soil in place, and reducing soil transport.

Road Maintenance. Runoff from highways and roads may also have a significant impact on the water quality in nearby waterbodies. Numerous studies have shown the long-term effect road salt has on our ecosystem and waterbodies. According to the Cary Institute, most road salt makes its way to nearby ditches, culverts and streams, causing salinity spikes in affected waterbodies. Some of the salt that is applied to our roadways enters the soil and groundwater and can be retained by the local ecosystems for decades. Studies show that salt accumulates in roadside soils, groundwater, and the sediments of lakes and wetlands. Elevated levels of salt in streams can impair the health, reproduction and behavior of many organisms. Additionally, salt accumulation at the bottom of a lake can inhibit spring turnover and creates an inhospitable environmental for native plants and animals while potentially creating a suitable environmental for non-native invasive species.[1]

2.9 REGULATORY REVIEW AND ASSESSMENT

In New York State, municipalities have authority to regulate local land uses that can be used to address an array of environmental issues. There are many regulatory actions that can be enacted at the municipal level that may have a positive impact on the local water quality including comprehensive plans, zoning ordinances, subdivision and site plan review and stormwater and erosion control regulations, each of which can be used separately or in combination to protect local water resources.

With the assistance of county and local officials and information derived from New York State Land Use Tools: A 2008 Survey of Land Use Planning and Regulations in NYS, an assessment of local laws was conducted. The goal of this assessment is to identify areas where watershed municipalities may improve, develop or implement new land use ordinances that can be utilized to improve and protect water quality throughout the Upper Hudson River Watershed.

It is important to note here that towns that lie within the boundaries of the Adirondack Park are subject to Adirondack Park Agency (APA) review for land use. Municipalities may adopt their own zoning/land use codes or utilized the APA's Adirondack Park Land Use and Development Plan (APLUDP). This process is discussed in more detail later in Section 2.9.2. For the purpose of this review, any municipality within the Adirondack Park is considered to have zoning regulations.

[1]Kelly, V.R., Findlay, S.E.G., Weathers, K.C. 2019. Road Salt: The Problem, The Solution, and How To Get There. Cary Institute of Ecosystems Studies.

Table 6. Essex County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
Town of Crown Point	✓	×	×	×	×	×	✓
Town of Elizabethtown	✓	✓	✓	×	×	×	✓
Town of Keene	✓	✓	×	✓	×	×	✓
Town of Minerva	✓	✓	×	✓	×	×	✓
Town of Moriah	✓	×	✓	×	×	×	✓
Town of Newcomb	✓	✓	✓	✓	×	×	✓
Town of North Elba	✓	✓	✓	✓	×	×	✓
Town of North Hudson	✓	✓	✓	×	×	×	✓
Town of Schroon	✓	✓	✓	×	×	×	✓
Town of Ticonderoga	✓	✓	✓	✓	✓	✓	✓

Table 7. Fulton County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
Town of Bleecker	×	×	×	×	×	×	×
Town of Broadalbin	×	✓	✓	×	×	×	×
Town of Caroga	✓	✓	✓	✓	×	×	×
Town of Johnstown	✓	✓	✓	✓	×	×	×
Town of Mayfield	✓	✓	✓	✓	×	×	×
Town of Northampton	✓	✓	✓	×	×	×	×
Town of Perth	✓	✓	✓	✓	×	×	×
Village of Broadalbin	✓	×	×	×	×	×	×
Village of Mayfield	✓	×	×	×	×	×	×
Village of Northville	✓	✓	✓	✓	×	×	×

Table 8. Hamilton County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
Town of Arietta	✓	✓	✓	✓	×	×	×
Town of Benson	✓	×	×	×	×	×	×
Town of Hope	✓	×	×	×	×	×	×
Town of Indian Lake	✓	✓	✓	×	×	×	×
Town of Lake Pleasant	✓	✓	✓	✓	×	×	×
Town of Long Lake	✓	✓	×	×	×	×	×
Town of Wells	✓	×	×	×	×	×	×
Village of Speculator	✓	✓	✓	✓	×	×	×

Table 9. Rensselaer County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
City of Troy	✓	×	✓	✓	✓	✓	×
Town of Berlin	✓	✓	×	✓	×	×	✓
Town of Brunswick	✓	✓	✓	✓	✓	✓	✓
Town of Grafton	×	✓	✓	✓	×	×	✓
Town of Hoosick	×	✓	✓	✓	×	×	✓
Town of Petersburgh	×	×	✓	×	×	×	✓
Town of Pittstown	✓	✓	✓	✓	×	×	✓
Town of Schaghticoke	✓	✓	✓	✓	✓	✓	✓
Village of Hoosick Falls	✓	×	×	×	×	×	×
Village of Schaghticoke	×	×	×	×	×	×	×
Village of Valley Falls	×	×	×	×	×	×	×

Table 10. Saratoga County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
City of Mechanicville	✓	✓	✓	✓	✓	✓	×
City Saratoga Springs	✓	✓	✓	✓	✓	✓	×
Town of Ballston	✓	✓	✓	✓	✓	✓	✓
Town of Charlton	✓	✓	✓	✓	✓	✓	✓
Town of Clifton Park	✓	✓	✓	✓	✓	✓	✓
Town of Corinth	✓	✓	✓	✓	✓	×	✓
Town of Day	✓	✓	✓	✓	✓	×	×
Town of Edinburg	✓	✓		✓	✓	×	✓
Town of Galway	✓	✓	✓	✓	✓	×	✓
Town of Greenfield	✓	✓	✓	✓	✓	✓	✓
Town of Hadley	×	✓	✓	✓	✓	×	✓
Town of Halfmoon	✓	✓	✓	✓	✓	✓	×
Town of Malta	✓	✓	✓	✓	✓	✓	✓
Town of Milton	✓	✓	✓	✓	✓	✓	✓
Town of Moreau	✓	✓	✓	✓	✓	✓	×
Town of Northumberland	✓	✓	✓	✓	✓	×	✓
Town of Providence	×	✓	✓	✓	✓	×	✓
Town of Saratoga	✓	✓	✓	✓	✓	×	✓
Town of Stillwater	✓	✓	✓	✓	✓	✓	✓
Town of Waterford	✓	✓	✓	✓	✓	✓	×
Town of Wilton	✓	✓	✓	✓	✓	✓	✓
Village of Ballston Spa	✓	✓	✓	✓	✓	✓	×
Village of Corinth	✓	✓	✓	✓	×	×	×
Village of Galway	✓	✓	✓	✓	×	×	×
Village of Round Lake	✓	✓	✓	✓	✓	✓	×
Village of South Glens Falls	✓	✓	✓	✓	✓	✓	×
Village of Schuylerville	×	✓	×	✓	×	×	✓
Village of Stillwater	✓	✓	✓	✓	✓	✓	×
Village of Victory	✓	✓	×	×	×	×	×

Table 11. Warren County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
City of Glens Falls	✓	✓	✓	✓	✓	✓	×
Town of Bolton	✓	✓	✓	✓	✓	×	×
Town of Chester	✓	✓	✓	✓	×	×	×
Town of Hague	✓	✓	✓	✓	✓	×	×
Town of Horicon	✓	✓	✓	✓	×	×	×
Town of Johnsburg	✓	✓	✓	✓	×	×	×
Town of Lake George	✓	✓	✓	✓	✓	✓	×
Town of Lake Luzerne	✓	✓	✓	✓	×	×	×
Town of Queensbury	✓	✓	✓	✓	✓	✓	×
Town of Stony Creek	✓	×	✓	×	×	×	×
Town of Thurman	✓	×	✓	×	×	×	✓
Town of Warrensburg	✓	✓	✓	✓	×	×	×

Table 12: Washington County Municipal Code Review

Municipality	Zoning	Comprehensive Plan	Subdivision Regulations	Site Plan Review	Stormwater and Erosion Control Regulations	MS4 Community	Right - to - Farm Law
Town of Argyle	×	×	✓	×	×	×	✓
Town of Cambridge	×	×	✓	×	×	×	✓
Town of Easton	×	✓	✓	×	×	×	✓
Town of Fort Edward	✓	✓	✓	×	✓	✓	✓
Town of Greenwich	✓	✓	✓	✓	×	×	✓
Town of Hartford	×	×	✓	✓	×	×	×
Town of Hebron	×	×	✓	✓	×	×	✓
Town of Jackson	×	×	✓	✓	×	×	✓
Town of Kingsbury	✓	✓	✓	✓	✓	✓	✓
Town of Salem	✓	✓	✓	✓	×	×	✓
Town of White Creek	×	✓	✓	✓	×	×	✓
Village of Argyle	✓	×	✓	×	×	×	✓
Village of Cambridge	✓	✓	✓	✓	×	×	×
Village of Fort Edward	✓	✓	✓	✓	✓	✓	×
Village of Greenwich	✓	✓	✓	×	×	×	×
Village of Hudson Falls	✓	✓	✓	✓	✓	✓	×

Table 13: Overview All Watershed Municipalities

	% Watershed Municipalities with Code	% Watershed Municipalities without Code
Zoning	82%	18%
Comprehensive Plan	78%	22%
Subdivision Review	83%	17%
Site Plan Review	71%	29%
Stormwater & Erosion Control	39%	61%
MS4 Community	29%	71%
Right to Farm Law	44%	56%

75 of the 97 watershed municipalities have developed Comprehensive Plans

Comprehensive Plan. A comprehensive plan is a document intended to guide the future actions of a community. The plan presents a vision for the future, with long range goals and objectives for the community, and establishes the official land use policy for the community.

Based on results of the code review, approximately 78% of municipalities within the watershed have an adopted comprehensive plan. However, many of the comprehensive plans reviewed for this assessment are over 10 years old. It is recommended that comprehensive plans be updated every 5 to 10 years to maintain relevancy. Additionally, comprehensive plans are only as effective as the tools by which they are implemented, so while they may lay out a community's vision to protect water quality or natural resources, zoning ordinances and other regulations must also be updated to align with the plan's recommendations.

79 of the 97 watershed municipalities have Zoning Regulations

Zoning Regulations. These regulations are some important mechanisms through which municipalities implement their comprehensive plans and ensure that development occurs in a way that is compatible with the community's vision. Zoning regulates the use, density, siting and form of development throughout a community and can control how development impacts water quality.

Zoning regulations do not by default protect water quality. In order to achieve that, zoning regulations must take into account existing natural features and sensitive areas. Including stream buffers, steep slope regulations, maximum impervious coverage limitations, and landscaping requirements, among other things in a zoning ordinance can greatly impact local water quality.

Local governments within the Adirondack Park may develop its own local land use programs which, if approved by the APA may transfer some permitting authority from the APA to the local government's jurisdiction. In order to be approved by the APA, the local zoning ordinance mush be as restrictive or more so that the APA's guidelines. The following towns within the Upper Hudson River Watershed and the Adirondack Park have their own locally approved land use programs (zoning):

- **Essex County:** Newcomb
- **Fulton County:** Caroga
- **Hamilton County:** Arietta, Indian Lake
- **Saratoga County:** Day, Edinburg
- **Warren County:** Bolton, Chester, Johnsburg, Lake George, Hague, Horicon, Queensbury

Based on the code review conducted for this plan, 82% of municipalities have either locally adopted zoning regulations or fall under the authority of the APA and the APLUDP.

80 of the 97 watershed municipalities have subdivision regulation while 68 have site plan review

Subdivision Regulations. Subdivision regulations dictate the way that land is divided into smaller parcels and can ensure that parcels are of adequate size and shape with adequate infrastructure and open space. These ordinances can control the density of new development, where it can occur, the layout and extension of new infrastructure and the protection of open land and sensitive features. 83% of municipalities in the watershed have some level of subdivision regulations.

Site Plan Review. Site Plan Review is an essential component of zoning regulation and can be used to dictate building placement on a site, parking and vehicular access, stormwater design, landscaping and the protection of natural features on the site. Lack of site plan review limits the ability of the reviewing body to modify development on a site-specific basis and in ways that will protect water quality.

Approximately 71% of watershed communities have some level of site plan review. The extent to which site plan review can impact water quality depends on the process and authority of the reviewing body. It is important for site plan review ordinances to be clearly written to provide guidance on reviewing criteria and how to apply said criteria.

Stormwater Management and Erosion Control Ordinances. Water quality is impacted by soil erosion through increased turbidity and sedimentation, which reduces channel flow and depth affecting aquatic organism passage and habitat health. Construction activities that result in land clearance or disturbance can contribute to erosion and sedimentation. Many municipalities have enacted regulations on development in areas adjacent to water bodies with steep slopes or on highly erodible soils where the potential for erosion is greater.

The purpose of Stormwater Management and Erosion Control ordinances is to ensure that the increase in runoff as a result of an increase in impervious surfaces associated with development is mitigated to the greatest extent possible and does not impact surrounding land uses or water quality. The National Pollutant Discharge Elimination System (NPDES) Stormwater Phase II Program requires designated municipalities

to obtain an MS4 permit and follow an MS4 program to ensure that the stormwater that is conveyed in the municipal system does not contain pollutants. The MS4 program includes conveyances or systems of conveyance that is owned by a state, municipality or other public entity that discharges to waters of the United States, designed or used to collect or convey stormwater, not a combined sewer, and not part of a sewage treatment plant. In the U.S., regulated MS4 areas represent 4% of the country's land area and more than 80% of the population. There are 31 MS4 municipalities wholly or partially within the Upper Hudson River Watershed. They include:

- **Rensselaer County:** City of Troy, Town of Brunswick, Town of Schaghticoke, Rensselaer County
- **Saratoga County:** Cities of Mechanicville and Saratoga Springs, Towns of Ballston, Charlton, Clifton Park, Greenfield, Halfmoon, Malta, Moreau, Stillwater, Waterford, and Wilton, Villages of Ballston Spa, Round Lake, South Glens Falls, Stillwater, and Waterford, and Saratoga County.
- **Warren County:** City of Glens Falls, Town of Queensbury, and Warren County.
- **Washington County:** Towns of Fort Edward and Kingsbury, Villages of Fort Edward and Hudson Falls, and Washington County.

MS4s that are located within the boundaries of a Census Bureau defined "urbanized area" are regulated under the Environmental Protection Agency's (EPA) Phase II Stormwater Rule. In New York State, authority of this rule has been given to the state. These communities must implement a six-point program to manage stormwater being passed through their system and, as that system expands due to development, ensure that modern engineering standards for stormwater are also applied. The program's six main points are: public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff, post-construction controls, and good housekeeping and pollution prevention. Additionally, the program requires MS4 municipalities to develop a stormwater management program that will reduce the amount of pollutants carried by stormwater during storm events to waterbodies to the "maximum extent practicable." The goal of the program is to improve water quality and recreational use of waterways.

37 of the 97 watershed municipalities have stormwater and erosion control regulations

By virtue of being an MS4 community, 33% of the municipalities within the Upper Hudson River Watershed are required to develop comprehensive stormwater management programs under the MS4 program. Many others include them in the site plan review process and the Lake George Park Commission (LGPC) is authorized to regulate stormwater management for any portion of a municipality which is within the Lake George Park. In

the case where a municipality lies partially within the Lake George Park, that municipality is encouraged but not required to apply the regulations to areas outside the park. In total, 39% of watershed communities have stormwater and erosion control regulations.

Right to Farm Laws. Local Right to Farm Laws represent support for farming practices by a community and are meant to support agriculture and minimize or resolve land use disputes and nuisance complaints related to agricultural practices. The most populated counties in the watershed also contain most of the watershed's agricultural land. This intersection of growth and development with agricultural operations can sometimes lead to community priority conflicts. Right to Farm Laws and agricultural districts help protect and legitimize farmland as part of community character and important contributing landscapes. 44% of the municipalities within the watershed have adopted a Right to Farm Law.

Gap Assessment of Local Laws and Recommendations. Based on this review, municipalities within the Upper Hudson River Watershed do not adequately address stormwater management and erosion control related to development. While 31 municipalities within the watershed participate in the MS4 program, the rest may benefit from adopting an "MS4 Lite" program (**Regional Priority Project R-07**) based on the measured outlined by the MS4 program:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-Construction Runoff Control
6. Pollution Prevention and Good Housekeeping

While most municipalities have an adopted comprehensive plan, many were found to be over 10 years old. Most plans are written to provide direction for future activities over a 10 to 20-year period, however, plans should receive a considered review and possible update every 5 to 10 years in order to maintain relevance and reassess the community's goals and needs.

RECOMMENDED ACTIONS

Many municipalities within the Upper Hudson River Watershed currently have comprehensive plans, zoning ordinances, and site plan review and subdivision review processes. 40% of watershed municipalities fall within the jurisdiction of the APA's APLUDP and of those municipalities, 13 have adopted their own locally approved land use programs. While the APA's regulatory tools provide significant protection for the natural environment, municipalities that have not done so should consider adopting their own locally approved zoning ordinances to incorporate more specific community needs into their code.

The largest gap found in the existing municipal codes was in stormwater management and erosion control ordinances with only 39% of watershed municipalities having adopted this type of code. Since stormwater and erosion have been identified as priority issues within the Upper Hudson River Watershed and sedimentation resulting from stormwater and erosion is a major source of pollutants and impairments in waterways around the watershed, it should be a priority for watershed communities to adopt ordinances and implement land use policies that seek to mitigate stormwater runoff and reduce sediment and erosion.

MODEL REGULATIONS AND RESOURCES

On-Site Wastewater:

Septic Inspection Upon Property Transfer Law – Town of Queensbury. The intent of this law is to better protect waterbodies from exposure to excess nutrients and pollutants. This law requires that prior to the sale of any property within the town's Waterfront Residential (WR) Zone that utilizes an on-site wastewater treatment system it must undergo an inspection by the town's Building and Codes Enforcement Officer. See Model Law in Appendix B.

Steep Slopes:

Steep Slopes Protection Ordinance – Town of Cortlandt. This ordinance regulates activities that create any disturbance of steep slopes and the cutting of any tree greater than four inches located on a steep slope. In granting or denying a permit, the board must consider alterations to trees and the slope and ensure that any disturbance will conform to certain standards including assurance of maximum structural safety and slope stability, use of the natural terrain, and replanting of vegetation. This is often incorporated into a municipality's site plan review. See Model Law in Appendix B.

Riparian Buffers:

Riparian buffers are strips of vegetation planted next to streams or other waterbodies which can help protect water quality and stream habitat by providing an area for stormwater runoff to penetrate into the ground instead of emptying directly into the stream. Additional benefits of buffers include streambank stabilization, erosion and sediment control, filtration of nutrients and other pollutants, mitigates impacts from flooding, provides habitat for wildlife and pollinators and shade for streams. Riparian buffer requirements can also be integrated into a community's site plan review process. See the USEPA Aquatic Buffer Model Ordinance in Appendix B.

Roadside Maintenance:

Rural Roads Active Management Program – Champlain Watershed Improvement Coalition of New York (CWICNY). The manual developed by CWICNY and the LCLGRPB provides best management practices for county and municipal highway departments to implement in roadside maintenance to prevent soil erosion and sedimentation. The full guide can be found here: https://www.cwicny.org/files/RRAM_Manual.pdf

Chloride Reduction Model Ordinance Language – Minnesota Pollution Control Agency. This document serves as a guide for municipal officials seeking direction in regulating the use of deicers to protect water quality, animals, human health and infrastructure. See Model Law in Appendix B.

Stormwater Management:

Model Local Law to Prohibit Illicit Discharges, Activities and Connections to Separate Storm Sewer Systems. This model local law is intended to be a tool for communities that are currently or may soon be responsible for meeting NPDES regulations. The goal of this law is to help municipalities meet federal and state guidelines for prohibiting illicit discharges to municipal separate storm sewer systems. See Model Law in Appendix B.

Model Stormwater Management Ordinance – Lake George Park Commission. The purpose of this ordinance is to protect and safeguard the general health, safety and welfare of the public residing in or visiting a municipality by preserving and protecting the quality of the ground and surface waters. The objectives of this ordinance are to prevent any increase in stormwater runoff from any development in order to reduce flooding, siltation,

and streambank erosion; to prevent any increase in pollution caused by stormwater runoff from development; and to prevent any increase in total annual volume of surface water runoff. The complete Model Stormwater Management Ordinance can be found here: https://lgpc.ny.gov/model-stormwater-management-ordinance

New York State Department of State – Model Local Laws to Increase Resilience. A guidebook for municipalities outlining a variety of land use tools to increase resiliency including zoning district designations, wetland and watercourse protection measures, management of floodplain development and stormwater control measures. The complete guide can be found here: https://www.dos.ny.gov/opd/programs/resilience/Model_Local_Laws_to_Increase_Resilience.pdf

Lawn and Fertilizer Reduction Regulations:

Fertilizers can be a significant source of phosphorus and nitrogen from areas of residential development. Landscaping ordinances can reduce or restrict the use of fertilizers in sensitive areas.

Town of Lake George Fertilizer Regulations – Prohibits the use of lawn fertilizer containing phosphorus or any other compound containing phosphorus. See Model Law in Appendix B.

Town of Exeter, New Hampshire Zoning Ordinance – Incorporates fertilizer prohibition zones in specified zoning districts. Full zoning ordinance found here: http://exeternh.gov/planning/zoning-ordinance-2016

Open Space and Farmland Conservation:

In New York State, non-profit land trusts, soil and water conservation districts and governmental entities can hold conservation easements. Conservation easements are among the most effect tools available for the conservation of private lands. While most conservation easements exist in perpetuity, some municipalities have chosen term easements, which put a temporary (15-25 year) easement on the land.

Town of Clifton Park Local Conservation Easement Enabling Ordinance (Term Easement). In 1996, the town adopted the Conservation Easement Law which allows property owners of more than 15 acres to enter a 15 to 25 yearlong commitment to not develop their land in exchange for a reduction in property tax assessment for the length of the easement. See Model Law in Appendix B.

03. PRIORITY ISSUES AND WATER QUALITY CONCERNS

Using information gathered through public meetings and charrettes as well as their individual expertise and knowledge, members of the Watershed Advisory Committee developed six priority categories from which priority watershed projects were identified. The categories are, in no order of prioritization: Stormwater, Agriculture, Erosion, Invasive Species, Water and Wastewater and Aquatic Organism Passage. Each of the action projects identified in Chapter 4 fall into one of these categories.

3.1 STORMWATER

Stormwater runoff is water from rain or snowmelt that does not soak into the ground and instead travels over the landscape, eventually discharging into the nearest surface water either directly or through a stormwater conveyance system like a sewer pipe. As the water travels over the landscape, it picks up pollutants such as oil, gas, litter, sediment, animal waste, fertilizers and road salt and deposits them into surface waters. This pollutant loading has a negative impact on receiving waters and can cause a host of impairments including increased algal growth, bacterial loading that may be harmful to human and animal health, and aesthetic detractions. Additional adverse impacts on stormwater runoff include contaminated drinking water, decreased biodiversity, flooding, soil erosion, decreased water quality, sedimentation, pollution, and bacteria transport. The issue of polluted stormwater runoff is exacerbated by the continual development of undeveloped lands. Undeveloped land, those with natural grass cover and plants, promote the infiltration and evaporation of stormwater runoff, therefore lessoning runoff. Developed lands, which are covered with impervious surfaces such as roads, driveways, sidewalks and buildings, eliminate the ability for stormwater to infiltrate into the ground, therefore promoting polluted runoff into nearby surface waters (Figure 9).

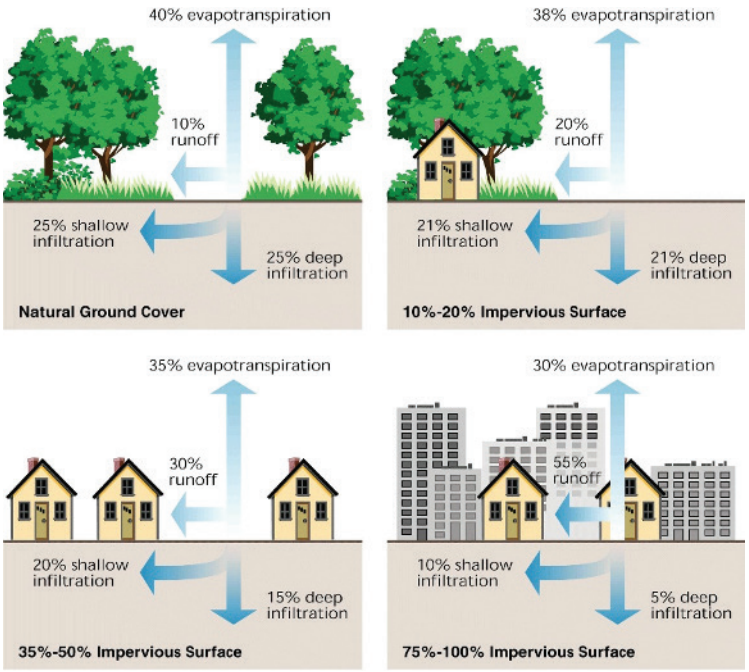


Figure 7: Development increases the volume and rate of runoff from a site and reduces groundwater recharge and evapotranspiration. Source: Federal Stream Corridor Restoration Handbook (1998)

While runoff from urbanized and nonurbanized areas can both impact water quality, the USEPA ranks urban runoff and storm sewer discharges together as the second most prevalent source of water quality impairments in the nation's estuaries, and the fourth most prevalent source of impairment in lakes. In New York State, stormwater accounts for the majority of pollutants identified from non-point sources in our waterbodies; as much as 63% or more (NYSDEC WI/PWL). Unchecked stormwater runoff can not only impact surface waters by contaminating drinking water, decreasing biodiversity and transporting bacteria, but it can also cause flooding, which hosts its own

problems from destruction of property to increased pollutant loading in floodwaters. Therefore, in terms of the impact that human activity and development can have, controlling the quantity and quality of stormwater is a critical objective of stormwater management.

MS4 Communities

MS4 Communities are designated every ten years based on population and density counts as a result of the US Census. Any area that has at least 50,000 people and has an overall population density of at least 1,000 people per square mile becomes a designated MS4 urbanized area. Based on this criteria, 31 communities have been designated as small MS4 communities within the Upper Hudson River watershed. These communities all have a New York State issued permit that requires the municipality to reduce the amount of pollution within and exiting the municipal stormwater system. This is done through the implementation of the six Minimum Control Measures as previously discussed. Specific work required under the permit includes:

- Holding community meetings and outreach events to educate the public on how their actions contribute to stormwater pollution and provide them with the knowledge to change their behavior for the benefit of reducing stormwater pollution,
- Providing a hotline that the public can call to report pollution-causing activities within the community,
- Mapping their complete separate stormwater system to understand where stormwater is entering and exiting the system,
- Adopting an Illicit Discharge Detection and Elimination local law and a Construction and Post-Construction Site local law,
- Creating and implementing an Illicit Discharge Detection and Elimination Program that outlines protocols for identifying and finding illicit activities that have caused stormwater pollution and eliminating the sources of the pollutants,
- Creating and implementing a construction site inspection program to ensure that construction site operators have the proper stormwater management practices in place and that those practices are maintained and functioning properly,
- Creating and implementing a post-construction stormwater control program for inspection of post-construction practices on an annual basis and ensuring the owners are properly maintaining the practices, and
- Implementing best management practices for municipal operations including street sweeping, proper road salt use and storage, use of containment areas, proper materials and waste management, reduction in stormwater pollution from vehicle and building maintenance activities, proper fluids and spill management, installation of best management practices for stormwater controls on municipal properties and annual assessments all activities.

MS4 Communities are required to report their activities to the NYSDEC each year and are subject to audits by the NYSDEC to ensure their activities are in conformance with the permit and the municipality's Stormwater Management Program Plan, which is a document that outlines how the municipality is going to implement their permit.

Non-MS4 Communities

Even though 67% of the municipalities within the watershed are not designated MS4 communities there is still the potential for stormwater pollution from construction activities, municipal maintenance activities and every day residential activities in these communities. All non-MS4 communities could benefit from some form of stormwater management, whether it be improved education and outreach to residents, mapping of the flow of stormwater into nearby surface waters, improvement of municipal facilities and operations, or creation and enforcement of regulations.

Regulations

There are several ways in which stormwater pollution can be mitigated, both through planning and implementation. Planning efforts such as local zoning, Special and Overlay Districts, and Stormwater, Site Plan and Subdivision Review local laws can have a positive impact on reducing the amount of pollution that is released from construction sites in more urbanized areas. Statewide, any construction site with greater than 1 acre of disturbance is required to obtain a SPDES General Permit for Stormwater Discharges from Construction Activities, regardless of whether the site is within an MS4 community or not. It is very important that all construction site operators, whether big or small, follow the permitting requirements to ensure their activities are not actively contributing to stormwater pollution.

Implementation

One of the most effective means of controlling stormwater is through the installation of gray and green infrastructure practices. Gray infrastructure practices, such as hydrodynamic separators, infiltration basins, and drywells collect stormwater runoff and allow sediment and floatables to settle out of the water before it is discharged into a waterbody through a series of pipes. These subsurface stormwater management practices have been used successfully for decades to improve stormwater management in highly urbanized areas.

In the past 10 years, a new series of stormwater management practices have emerged known as green infrastructure. Green infrastructure stormwater practices are designed to mimic nature, meaning they consist of plants and other natural materials to collect stormwater and promote its infiltration into the ground rather than cleaning it and conveying it into the nearest surface water. These practices not only filter out sediment and floatables like gray infrastructure practices do, but they also address nutrient and bacterial loading. The plants that are placed within bioretention basins and rain gardens uptake the nutrients in the stormwater and use them for growth. Bacteria are incorporated into the soil where their natural processes help break down other pollutants, including oil and gas. The downside of green infrastructure practices, especially in urbanized areas, is the space that is needed for their implementation, as wells as the maintenance required to keep green infrastructure operating to its full potential. When installed and maintained properly, green infrastructure practices help reduce stormwater volume and improve water quality. They can also provide urban habitat for birds, butterflies and small mammals while increasing the aesthetic beauty of a neighborhood.

BEST PRACTICES: STORMWATER MITIGATION PROJECT UTILIZING GREEN INFRASTRUCTURE

CITY OF GLENS FALLS, WEBSTER AVENUE

Photo 3: Porous sidewalk project under construction, City of Glens Falls. Photo courtesy of Nick Rowell.

Photo 4: Completed porous sidewalk project, City of Glens Falls. Photo courtesy of Nick Rowell

Permeable pavement is a green infrastructure technique specifically designed to allow stormwater to infiltrate through the pavement to an underground storage system or infiltrate into the ground and recharge the water table. The benefits of permeable pavement include:

- Volume reduction of stormwater runoff
- Improved water quality
- Reduced risk of hydroplaning for vehicles
- Reduced need for road salt applications

The Project: To address stormwater issues and flooding concerns within the City, the Glens Falls Water and Sewer Department in cooperation with the Warren County SWCD, completed a green infrastructure pilot project which included the installation of 460 linear feet of precast porous concrete sidewalk on Webster Avenue.

The porous sidewalk captures stormwater runoff and reduces the amount of de-icing materials needed in the winter because as the snow melts, rather than pooling on the surface and refreezing as it might on a conventional sidewalk, the new material allows water to permeate the sidewalk.

Following the first winter with the new material, the project is a success and residents have reported decreased water pooling during rain events and no need for salt or de-icing material on the new sidewalk.

PRIORITY STORMWATER PROJECTS:

S-01 – Saratoga County: Purchase of trailer mounted vacuum unit. This unit to be utilized by municipalities throughout Saratoga County, is intended to benefit smaller municipalities that are anticipated to be designated an MS4 community following the 2020 Census. Many of these smaller municipalities do not have funding to purchase this equipment on their own. Through this recommended project, the Saratoga County SWCD will purchase and maintain the equipment and will contract with municipalities to perform the MS4 tasks. $275,000.

S-04 – Hamilton County: Purchase oil water separators for all municipal and county DPW garages. This equipment will be used at the DPW garages to treat water that has been contaminated with oil so that the oil can be disposed of properly. $25,000 each.

S-03 – Town of Schroon, Essex County: Dock Street engineering assessment and feasibility study. Dock Street is an area of heavy stormwater runoff into Schroon Lake. Engineering and feasibility studies should be conducted to evaluate the best methods for stormwater mitigation at this site.

S-04 – City of Glens Falls, Warren County: Design and implementation of separated storm sewer upgrades. The City of Glens Falls currently operates a combined system for stormwater and sewer which often leads to an overflow during heavy rain events and snow melts. A move toward a separated system would reduce CSO occurrences and lead to direct water quality improvements. $10,000,000.

S-05 – Village of Hudson Falls, Washington County: Boulevard separated sewer design and construction. The WCSD #2 operates a system for stormwater and sewer which often leads to an overflow during heavy rain events and snow melts. A move toward a separated system would reduce CSO occurrences and lead to direct water quality improvements. $700,000.

S-06 – Town of Greenwich, Washington County: Stormwater improvements at the Washington County Fairgrounds. The Washington County Fairgrounds lack adequate stormwater infiltration provisions which results in extreme flooding at the site during heavy rain events. $200,000

S-07 – City of Troy, Rensselaer County: Cross Street Trunk Sewer Rehabilitation Project. The Cross Street trunk sewer receives I&I through failures in the sewer pipe which may lead to CSO events when the wastewater treatment facility gets overloaded. Rehabilitation of this sewer will reduce CSO events and lead to a direct improvement in water quality. $640,000

Total Costs: $11,870,000+

3.2 AGRICULTURE

Photo 5: The southern portions of the Upper Hudson River Watershed contain highly productive agricultural areas. Photo Courtesy of Corrina Aldrich.

Agriculture is a multi-million-dollar industry in the Upper Hudson River Watershed with agricultural operations ranging from hobby farms to large Concentrated Animal Feeding Operations (CAFOs). The northern and western portions of the watershed lie mostly within the Adirondack Park Forest Preserve where agricultural operations are present, but on a much smaller scale than the southern and eastern portions of the watershed. The topography and soil types are much more conducive to farming in the southern and eastern portions; Saratoga, Washington and Rensselaer Counties lending this area to a higher density of farmland and larger farm operations than in the northern and eastern portions of the watershed.

Depending on the agricultural management techniques employed, agricultural uses can have adverse or beneficial impacts on the watershed and its environment. Agricultural activities have a large impact on water quality due to field and cropland erosion, nutrient loss through leaching and surface runoff, and improper animal waste management and disposal.

While the negative impacts of agricultural lands are well documented, the environmental benefits are more discrete. When managed properly, agriculture can help improve water and soil quality, protect wildlife habitat and biodiversity, and reduce the emission of greenhouse gasses. Best management practices such as conservation tillage have been shown to improve surface water quality by reducing the runoff of soil particles and keeping nitrate, phosphorus and herbicides on the fields and out of nearby waterbodies.

Possible sources of pollution from farming range from nutrients and pathogens from manure sources to silt and sediment from field erosion. Excessive nutrients can runoff into surface waters or soak into the ground and possibly contaminate groundwater. When applied to crops, nutrients (from fertilizer or animal manure) have the potential to run off into surface waters during a storm or snowmelt event. The water quality impacts of agricultural operations are evidenced by the number of waterbodies listed on the PWL that have agriculture identified as a source of pollution. The three most heavily farmed counties in the watershed; Saratoga, Washington and Rensselaer, have a total of 10 waterbodies listed on the PWL with agriculture identified as a pollution source. The Tomahannock Reservoir is one such waterbody listed for pathogens, nutrients and silt/sediment from agricultural sources and that reservoir is used as a drinking water source for the City of Troy and numerous other Rensselaer County municipalities.

Tomhannock Reservoir (1102-0006) **Threat(Poss)**

Waterbody Location Information Revised: 04/20/2007

Water Index No:	H-264- 4-P1095			**Drain Basin:**	Upper Hudson River
Hydro Unit Code:	02020003/230	**Str Class:**	A		Upper Hudson-Hoosic
Waterbody Type:	Lake(R)			**Reg/County:**	4/Rensselaer Co. (42)
Waterbody Size:	1721.5 Acres			**Quad Map:**	TOMHANNOCK (J-26-3)
Seg Description:	entire reservoir				

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	**Severity**	**Problem Documentation**
Water Supply	Threatened	Possible

Type of Pollutant(s)

Known:	- - -
Suspected:	- - -
Possible:	PATHOGENS, Nutrients, Silt/Sediment

Source(s) of Pollutant(s)

Known:	- - -
Suspected:	- - -
Possible:	AGRICULTURE

Figure 8. Tamhannock Reservoir Evaluation. Source: NYSDEC WI/PWL

To mitigate this threat to the quality of the Tomhannock reservoir, the Rensselaer County SWCD has assisted farmers in the area with implementing agricultural best management practices to address the pollutants of concern. These practices are implemented with the financial help of the New York State Department of Agriculture and Markets (NYSDAM) through cost sharing programs like the Agricultural Nonpoint Source Abatement and Control Program. This program was created in 1994 to assist New York State farmers in preventing and controlling water pollution from agricultural activities by providing technical assistance and financial incentives. This is one of many programs offered to address sources of pollution that may occur on farms within New York State that are provided through the NYSDAM and can be accessed through all SWCDs in the watershed.

Agriculture Environmental Management (AEM). The primary goal of AEM is to protect and enhance the environment while maintaining the viability of agriculture in New York State. Farmers have long been regarded as stewards of the land because a farm's livelihood directly depends on the health and vitality of the soil and water resources. AEM is designed to help farmers further protect those and other important natural resources. By participating in AEM, farmers can document their environmental stewardship and contribute to a positive image of agriculture in their communities. If a potential environmental concern is identified through the AEM assessment process, farmers can then take steps to plan for and then implement an appropriate course of action through the AEM approach. The AEM assessment, planning and implementation process helps to target limited local, state and federal technical and financial resources to farms with the greatest potential for impacting the environment. The farmer is always the ultimate decision-maker in cooperation with members of local AEM teams and qualified private consultants which help to ensure that farm business objectives are met while also achieving local, state and federal environmental and water quality goals.

Regulations. Farms in New York State are regulated by both the state and federal government and are divided into two main categories: Concentrated Animal Feeding Operations (CAFOs) and Non-CAFOs. A CAFO is an animal feeding operation that meets certain animal size thresholds and that also confines animals for 45 days or more in any 12-month period in an area that does not produce vegetation. New York State has more than 500

Photo 6: Farming is an important industry in the Upper Hudson River Watershed. Photo Courtesy of Corrina Aldrich.

CAFOs, the majority of which are dairy farms with 300 or more cows and associated livestock operations.

CAFO farms are more heavily regulated due to their size and the fact that with increased size comes an increase in the severity of any impact associated with farm activities. In the Upper Hudson River Watershed, most CAFOs are dairy and horse farms. These CAFO farms are required to develop a Certified Nutrient Management Plan (CNMP) that accounts for all nutrients that are utilized by the farm, including fertilizers and manure. That plan must be followed as part of the permit that allows the farm to operate in New York State. CNMPs create a plan for addressing the potential adverse impacts on water quality and public health that may be associated with a farming operation.

Farmland Conservation. The most viable and active farmland in the watershed is located within the Capital District Region of the state. This location can be a strategic advantage for farmers wishing to access population centers and markets for their products. However, the growing population of Saratoga County is driving land value up and, in some cases, making it more profitable for farmers to sell their land for development than to continue farming it. Farmers in Washington and Rensselaer Counties also experience this development pressure. The competition between development and farming also makes it more difficult for farmers to acquire new land in the region.

As a result of decades of sustained farmland loss in New York State and the increased development pressure in the area, not-for-profit land trusts have formed to preserve farmland using mechanisms like conservation easements and purchase of development rights. The New York State Department of Agriculture and Markets provides funding for farmland conservation easements through their Farmland Protection Implementation Program (FPIG).

There are two non-profit land trusts working within the watershed on farmland protection through the FPIG program, Saratoga PLAN in Saratoga County and the Agricultural Stewardship Association (ASA) in Washington and Rensselaer Counties. In Saratoga County, PLAN has a total of 24 conservation easements on farmland amounting to 2,760 acres that has been obtained through donation or the purchase of development rights with funds from the FPIG program, an additional 613 acres in process through the FPIG program, and 75 acres with funding from Saratoga County's Farmland and Open Space Protection grant program. ASA has helped to conserve 22,328 acres on 133 farms.

In addition to non-profit land trusts, municipalities also can conserve farmland through conservation easements. In Saratoga County the Towns of Clifton Park and Saratoga, as well as the City of Saratoga Springs have each undergone this process, with mostly local funding. The Town of Clifton Park has conserved approximately 1,600 acres of farmland and a combination of town, county and FPIG funding. The City of Saratoga Springs used local funding to place a conservation easement on the Pitney Meadows Community Farm in 2016, permanently preserving 166 acres of farmland within the watershed.

Once the land is protected through a conservation easement, the property can continue to be utilized for farming and any other associated use outlined in the easement and any future development of the land is restricted. While no long term monitoring has been conducted in the watershed to evaluate the water quality benefits of farmland

conservation within the Upper Hudson River Watershed, it can be assumed that when faced with the alternative of residential development and increased impervious surfaces, the environmental benefits that are provided by preserving open farmland has an overall positive benefit to the watershed.

Agricultural Districts and Right-to-Farm Law. State certified agricultural districts can work in conjunction with other planning initiatives to shape and preserve communities. The Agricultural District law is a valuable planning tool to conserve, protect, and encourage the development and improvement of the agricultural economy; protect agricultural lands as valued natural and ecological resources; and preserve open space. Agricultural districts are meant to create economic and regulatory incentives which encourage farmers to continue farming. Additionally, municipalities have the option to adopt a Right-to-Farm law which protects farmers against nuisance lawsuits related to reasonable agricultural practices including noise, odors, visual clutter and dangerous structures. Local governments can enact either ordinances as a mechanism to preserve and protect farmland within their communities (Map 12. Right to Farm Laws Map).

Approximately 15% of land area within the watershed is within an agricultural district. Saratoga, Washington and Rensselaer Counties are the most agrarian and most of the active farmland is located within designated agricultural districts. Saratoga County has two New York State certified agricultural districts knowns as District #1 and District #2. District #1 is located primarily in the eastern portion of the county, directly along the Hudson River, where there is an abundance of soils classified as Prime Farmland. District #1 contains the towns of Moreau, Northumberland, Saratoga, Stillwater and Wilton. Saratoga County Agricultural District #2 in the southwestern portion of the county in the towns of Galway, Charlton, Ballston and Clifton Park.

The portion of Washington County that lies within the Upper Hudson River Watershed is mostly contained in one of the county's five agricultural districts where soils are mostly classified as Soils of Statewide Importance. The same goes for Rensselaer County, where most of the land within the watershed is located within one of the county's six agricultural districts. Additionally, Essex County has agricultural districts throughout the county (Map 13. Agricultural District Map).

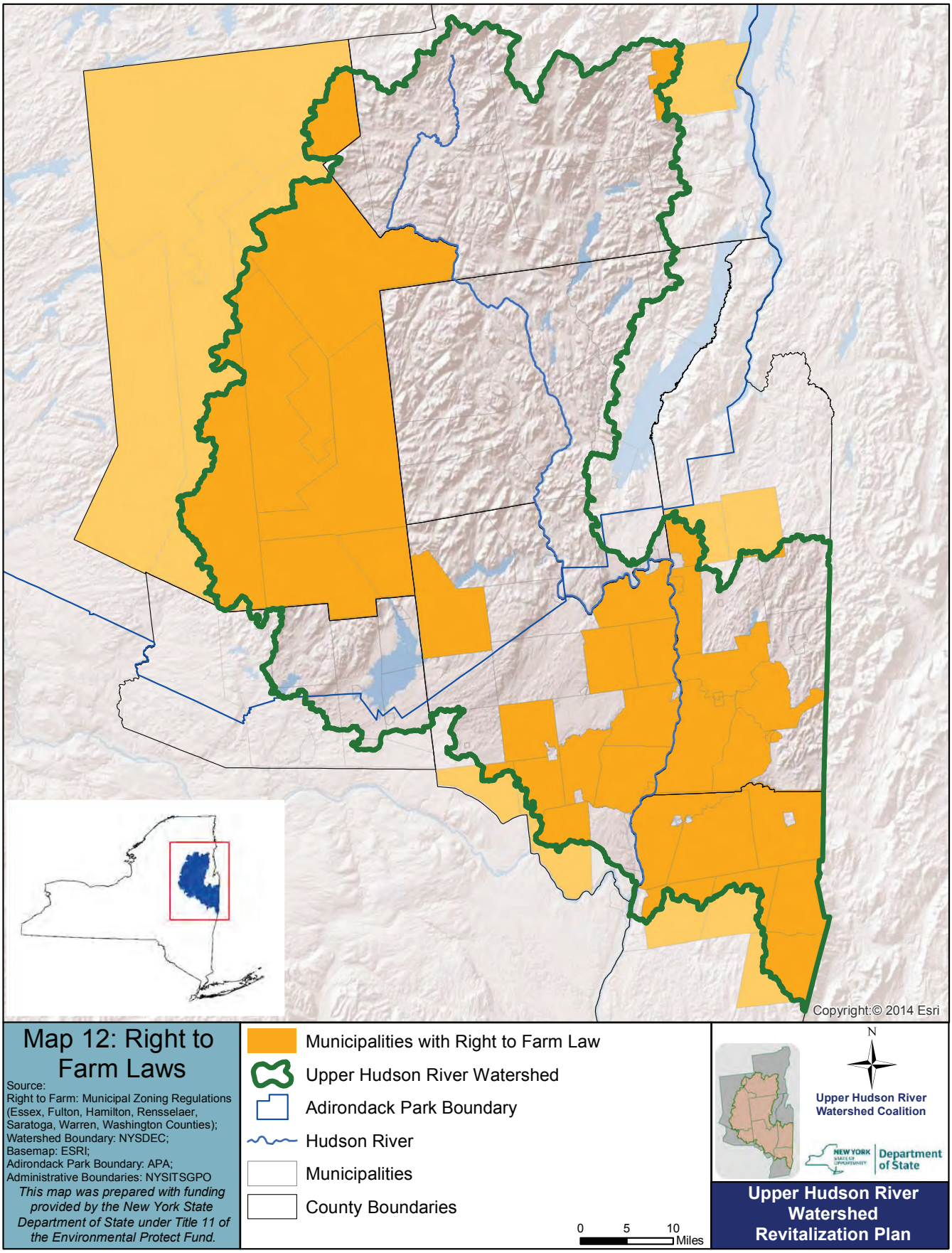
PRIORITY AGRICULTURAL PROJECTS:

A-01 – Saratoga County: Design and construct at least six manure storage facilities on equine farms throughout the county. Equine is a major industry in Saratoga County and many horse farms have little to no manure storage. There is a need in the county for at least six storage facilities to allow for proper and safe storage of manure. $420,000

A-02 – Washington County: Implement countywide cover crop initiative. Creation and implementation of a cover crop program to promote soil health and prevent erosion on farmland in the county. $250,000.

A-03 – Rensselaer County: Update CNMPs on targeted farms throughout the county. CNMPs provide an opportunity for producers to take a closer look at their operational needs and environmental impacts. It is important to update these as those needs and impacts change. $5,000 - $10,000 each.

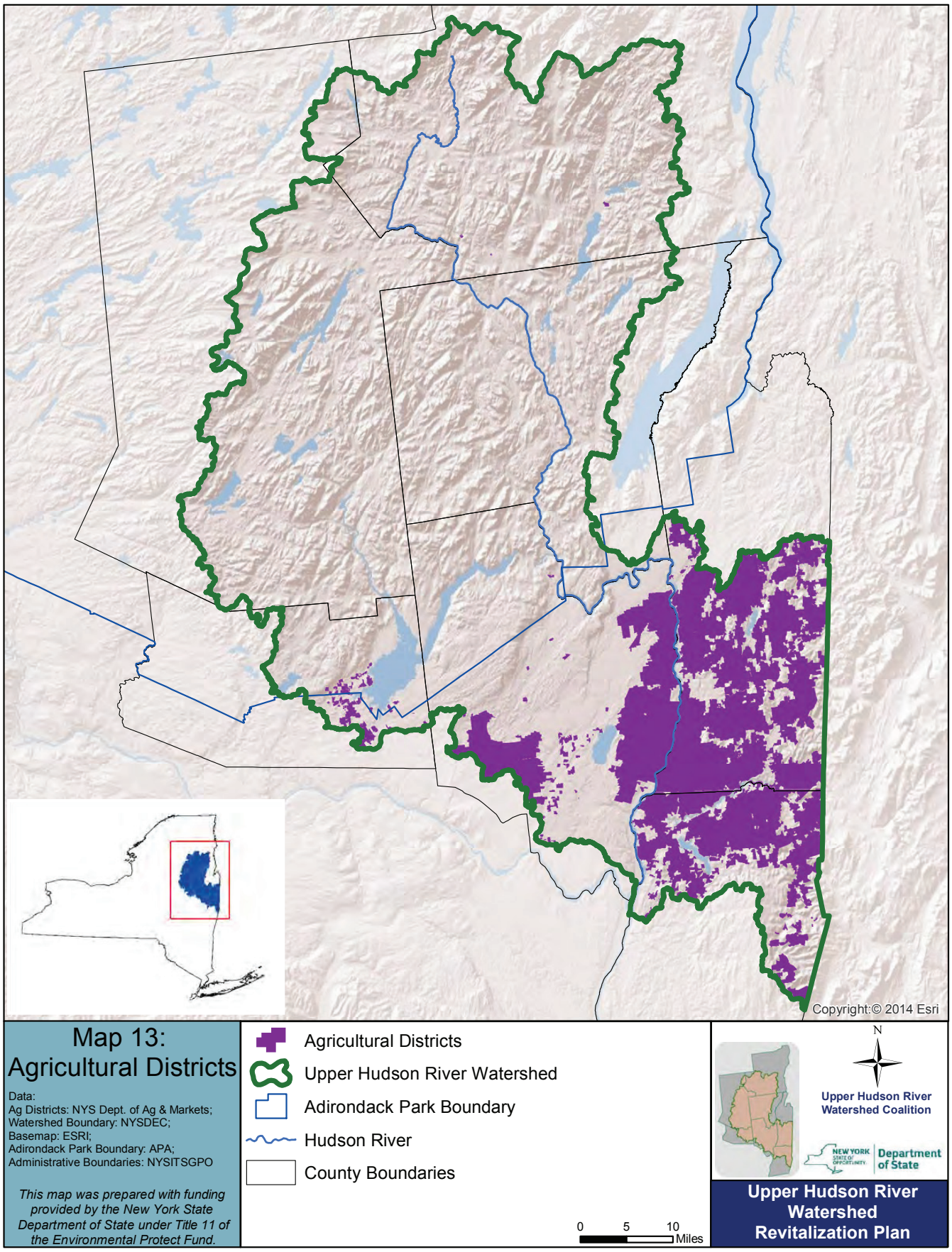
Total Costs: $675,000+



Map 12: Right to Farm Laws

Source:
Right to Farm: Municipal Zoning Regulations (Essex, Fulton, Hamilton, Rensselaer, Saratoga, Warren, Washington Counties);
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.



Map 13: Agricultural Districts

Data:
Ag Districts: NYS Dept. of Ag & Markets;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

3.3 EROSION

Erosion is the geologic process by which earthen materials are worn away and transported by natural means. While erosion is a natural process, human activity can exacerbate it. The alteration of the vegetation of an area is perhaps the biggest human factor contributing to erosion. Trees and plants hold soil in place and when they are cut down or plowed over the soil becomes more vulnerable to being washed or blown away. Some of the natural factors impacting erosion in a landscape include climate, topography, vegetation and tectonic activity.

The steep mountain slopes and the rocky, nutrient deficient soils typical of the Adirondack Mountain region, the sandy soils of Warren County and the clays and loams of Saratoga County all contribute to the high erosion potential found throughout the watershed.

Sedimentation. Sedimentation occurs when eroded materials are deposited into a waterbody. This process has numerous negative impacts on the health and function of a waterbody. In unnatural quantities sediment itself is a pollutant; in fact many waterbodies in the Upper Hudson River Watershed, particularly those in the lower reaches of the watershed, are impaired by sedimentation. Sediment can also contribute to nutrient loading in waterbodies when nutrients that are adhered to soil particles make their way into waterbodies. An increase in nutrients in a lake or stream can cause excess plant and algal growth, which reduces dissolved oxygen content in the water and degrades water quality.

Sedimentation reduces river flow, threatens vital habitats and spawning areas for native species, while at the same time creating ideal habitats for non-native invasive species, and reduces the overall water quality throughout the length of a river. Sedimentation can also preclude human use of waterbodies by creating navigational and recreational hazards and impacting surface drinking water supplies by settling around intake pipes and increasing nutrient loads to source water.

Erosion Potential. Erosion potential of an area is determined using the K factor, which is a way to quantify soils susceptibility to erosion. A soil's susceptibility to erosion is based on several factors, including texture, organic matter content, structure and saturated hydraulic conductivity. Soils such as clays have a low K factor because the soil particles adhere tightly to each other and resist detachment. Soils such as silts have high K factors because they are easily detached from one another, making them highly erodible. K factors range from 0.02 for the least erodible soils to 0.64 for the most erodible soils (United States Department of Agriculture, 2019).

Map 14. Erosion Potential shows the K factors for the area within the Upper Hudson River Watershed. Much of Hamilton and Essex Counties have unknown K factors, mainly because this information is collected by the Agricultural Research Service, and areas without high agricultural production have not been surveyed. The K factor of the southern portions of the watershed is quite high, indicating a high level of erodibility.

Erosion in the Upper Hudson River Watershed

Erosion within the Upper Hudson River Watershed comes from three main sources: streambanks, roadsides and forestry practices. Streambank erosion happens due to both natural processes, such as storms and flooding as well as human influence, such as the construction of bridges, over tillage on agricultural land, or development along a waterbody. Poorly maintained roadside ditches that are devoid of vegetation are often filled in with debris are the main causes of roadside erosion. Forestry practices contribute to erosion through the lack of proper stream crossing or improper harvesting techniques that promote erosion and reduce forest health.

Photo 7: Streambank erosion at Cave Banks on the Sacandaga River in Hamilton County – Project Recommendation E-08. Photo courtesy of Hamilton County SWCD.

The Adirondack Chapter of Trout Unlimited performs stream bank assessments in the Upper Hudson River Watershed. A full assessment of a chronically eroding portion of the Upper Schroon River in the Town of North Hudson was completed in 2017 and has resulted in the need for hundreds of thousands of dollars for remediation efforts. To see the summary of that study, see **Appendix C**.

Streambank Erosion. Streambank erosion is particularly abundant in the Upper Hudson River watershed because of the mountainous nature of the northern watershed and the urbanized nature of the southern watershed. While streambank erosion is a natural process, there are many direct human actions such as land use changes, channel modification, and removal of vegetation as well as natural disturbances like more frequent and intense storms that can lead to accelerated erosion along streambanks. Remediation of streambanks back to their natural state is imperative for the health of rivers and steam and the aquatic life that depend on it.

Stream Erosion Remediation. There are many steps to take to remediate the damage caused by streambank erosion. The most important step is to identify the cause of the erosion of that streambank. Often, it is the result of a change in the watershed upstream of the eroding site, including installation or replacement of a bridge, filling in of a floodplain or straightening of a natural meander. It is important to address the eroding site as it is transporting sediment downstream, but it is also important to address the major upstream cause and any additional downstream effects so that the erosion doesn't become a chronic issue.

The methods in which to stabilize a streambank are site specific and depend heavily on the cause of streambank degradation. The use of natural channel design, where the riparian area and habitat functions of the eroded sites are restored, is highly encouraged by both state and federal agencies. Numerous Best Management Practices manuals on natural channel design exist, including the Rosgen Geomorphic Channel Design Guide. The principles of the Rosgen geomorphic channel design approach include restoring the dimension, pattern, and profile of a disrupted channel by emulating a

natural, stable river or stream. Restoring rivers and streams involves making sure they are physically stable and securing their biological function.[2]

Riparian Buffers. A major cause of streambank erosion and sedimentation in a watershed is a lack of adequate riparian buffers. When functioning properly, riparian buffers improve water quality by acting as a filter for surface and ground waters, stabilize banks to reduce erosion and sedimentation, provide storage during seasonal fluctuations and flood events, reduce the velocity of flood waters and support wildlife habitat and migration corridors.

Without riparian buffers the integrity of streambanks and shorelines is compromised, and they are less able to withstand erosive forces. Practices of developing and mowing all the way to the water's edge lead to the loss of important riparian buffers. In other cases, riparian loss is replaced by riprap to reduce further erosion. While riprap may reduce erosion issues, the shoreline does not receive the benefits of a vegetative buffer.

Roadside Erosion. Roadside erosion occurs when water traveling through unvegetated roadside ditches erodes the ditch and carries it away, depositing it at the end of the ditch line. This can have a profound effect on a receiving waterbody through sedimentation. It is also important to note that roadside ditches act as conduits of pollutants, so even if the ditch itself is not eroding, it can still carry sediment from a disturbance into a waterbody.

There are approximately 6,500 miles of roadways within the Upper Hudson River Watershed, many of which have a roadside ditch on one or both sides which accepts the water that is conveyed off the road surface and directs it away from the roadway. This water is conveyed directly into the woods, or, in most cases, directly into the nearest wetland or surface water.

Roadside Erosion and Inventory. Utilizing a grant provided by the NYSDEC, the members of the Upper Hudson River Watershed Coalition completed the Upper Hudson River Watershed Roadside Erosion Assessment in 2016 (**Map 15. Roadside Erosion Inventory**). A variety of data was collected on roadside erosion sites on state, county and local roads and sites were ranked from high priority to low priority for remediation based on five factors; Direct Connection to a Surface Water, Percent Vegetation Present, Level of Erodibility, Bank Slope and Site Area. Roadside erosion sites that were labeled high priority for remediation have a direct connection to a waterbody, have a low percentage of vegetation present, are actively slumping, have a high slope and are large in size. In total, the Upper Hudson River Watershed Roadside Erosion Assessment identifies 787 sites totaling $1,926,300 in funding needs for remediation, shown in **Table 12** below:

Photo 8: Heavy rain events and runoff can lead to severe roadside erosion. Photo Courtesy of Warren County SWCD.

[2] United States Department of Agriculture. Rosgen Geomorphic Channel Design. *Part 654 Stream Restoration Handbook: Ch 11.* August 2007, directives.sc.egov.usda.gov/17771.wba.

Table 14: Upper Hudson River Roadside Erosion Assessment Results
Source: Upper Hudson River Watershed Roadside Erosion Assessment (2016)

County	High Priority Sites	Medium Priority Sites	Low Priority Sites	Total Number of Sites	Total Cost
Essex	43	57	50	150	$548,700
Fulton	14	60	56	130	$248,200
Hamilton	0	17	18	35	$87,250
Rensselaer	1	8	56	65	$113,700
Saratoga	13	38	61	112	$318,750
Warren	45	125	86	256	$518,000
Washington	3	13	23	39	$91,700
Total	109	317	351	787	$1,926,300

Photo 9: Hydroseeding prevents roadside erosion in Hamilton County.
Photo Courtesy of Hamilton County SWCD

Roadside Erosion Remediation. There are several methods that can be used to remediate roadside erosion sites. The easiest and most cost-effective way is hydroseeding. Hydroseeding provides a vegetative covering that is spread directly after ditching work is completed. To promote faster establishment of vegetation, fertilizer and mulch are included within the hydroseeding slurry to help grass grow quickly and hold the soil particles in place. Additional methods for roadside erosion remediation include installation of sediment basins, rolled erosion products, bank toe stabilization and check dam installation.

Forestry. Proper management techniques in the region's significant forest resources are integral in protecting fragile soils from erosion and improper logging and forest cultivation. Insufficient best management practices during timber harvesting can result in the erosion of logging roads and erosion at streambank crossings, soil compaction from equipment usage, and vegetation loss near bodies of water that can reduce infiltration, increase runoff and enhance erosion potential.

The Upper Hudson River Watershed is flush with various types of forests, from hardwood and boreal forest in the Adirondack Park, to the mixed forests of Rensselaer County (**Map 16. Land Classification Map**). Much of the forestland in the

watershed is state-owned land and part of the "Forever Wild" Adirondack Park, as designated by the New York State Constitution. Other state jurisdiction lands include NYSDEC easements and lands owned and operated by the NYS Office of Parks, Recreation and Historic Preservation (NYSOPRHP), which includes Saratoga Spa State Park (**Map 17. New York State Lands Map**). Forests that are not owned by the state are privately owned, either by large paper companies, smaller forestry operators or private citizens. While not all forest land in the watershed is logged, improper logging in areas that are already prone to erosion can have a negative impact on the surrounding waterbodies.

Erosion Control Grants and Programs

The NYSDEC provides grant funding for erosion control and restoration projects through the Water Quality Improvement Program (WQIP) funding. To date, the Upper Hudson River Watershed Coalition has received over $500,000 for streambank and roadside erosion projects throughout the watershed.

Impacts of Forestry Operations. When done with care and consideration, the harvesting of trees has minimal impact on surrounding lands. It's when those performing harvesting efforts are not mindful of the surrounding environment that major sources of erosion and sedimentation can be created. Logging roads, both active and abandoned, are a major source of sedimentation. The creation of a road disturbs and loosens soil. While active, the roads are continuously driven over and worn down by large tires and heavy trucks. When abandoned, roads are not seeded or replanted, and most will remain devoid of vegetation due to the compacted soils and continue to be a source of sedimentation. Additionally, some logging roads are built against the contours of the land and ultimately become eroding drainage courses.

Stream crossings create the largest impact on water resources in an active logging site. Continuously driving through a stream to reach a desired woodlot destroys the riparian area, breaks down the banks, makes them more vulnerable to erosion, and disturbs aquatic habitat.

Although the clearcutting is not practiced as abundantly as in the past, the heavy harvesting of a specific area of a forest can have many negative impacts. Trees and underbrush absorb rainwater, and their loss can create a larger quantity of water entering a nearby stream. An increase in flow from the forest can cause streambank erosion and overwhelm the natural hydrology of a stream, further degrading habitat. Without shade provided by the forest, snowpack melts and runs off more quickly without the chance of being absorbed into the soil. It also reduces the amount of shade above the streams which can increase water temperature and harm fish populations.

Forestry Best Management Practices. There are numerous forestry Best Management Practices (BMPs) that can be implemented by logging practices of all sizes to minimize their negative impacts on the environment. These include the mindful placement and use of skidder bridges, which are temporary bridges that are placed over a stream so that the harvesting equipment is not driven directly through the stream. Additional BMPs include short term erosion control such as hydroseeding, silt fence, rolled erosion products, water bars to control runoff flow direction, and seeding and replanting of trees and underbrush. It is also important that logging is not done directly to the edge of a stream or waterbody to maintain the

Photo 10: Voluntary Best Management Practices for Water Quality, Source NYSDEC

natural buffer between the forest and the water. This natural buffer helps absorb nutrients that are leached from the forest floor and stop sediment from entering the waterbody. Lastly, selective cutting and a good forestry management plan can help minimize the impact of logging practices while providing the best product.

In 2018 the Watershed Agricultural Council, NYSDEC, SUNY College of Environmental Science and Forestry and the Empire State Forest Productions Association released a New York State Forestry Voluntary Best Management Practices for Water Quality Protection BMP Field Guide. This guide outlines steps that large and small forestry operations can take to ensure a minimal effect on the surrounding environment when harvesting trees. The full guide can be found here: www.dec.ny.gov/docs/lands_forests_pdf/forestrybmp.pdf

PRIORITY AGRICULTURAL PROJECTS:

E-01 – Village of Hoosick Falls, Rensselaer County: Riverbank erosion controls along the Hoosic River. Installation of rock armor or rock vane in six locations along the Hoosic River to prevent riverbank erosion and sedimentation into the river. $108,000.

E-02 – Town of Edinburgh, Saratoga County: Repairs to Military Turnpike Bridge. Bridge is heavily scoured. $400,000.

E-03 – Town of Argyle, Washington County: Install erosion and sediment control practices and pave Gordon Road. $250,000.

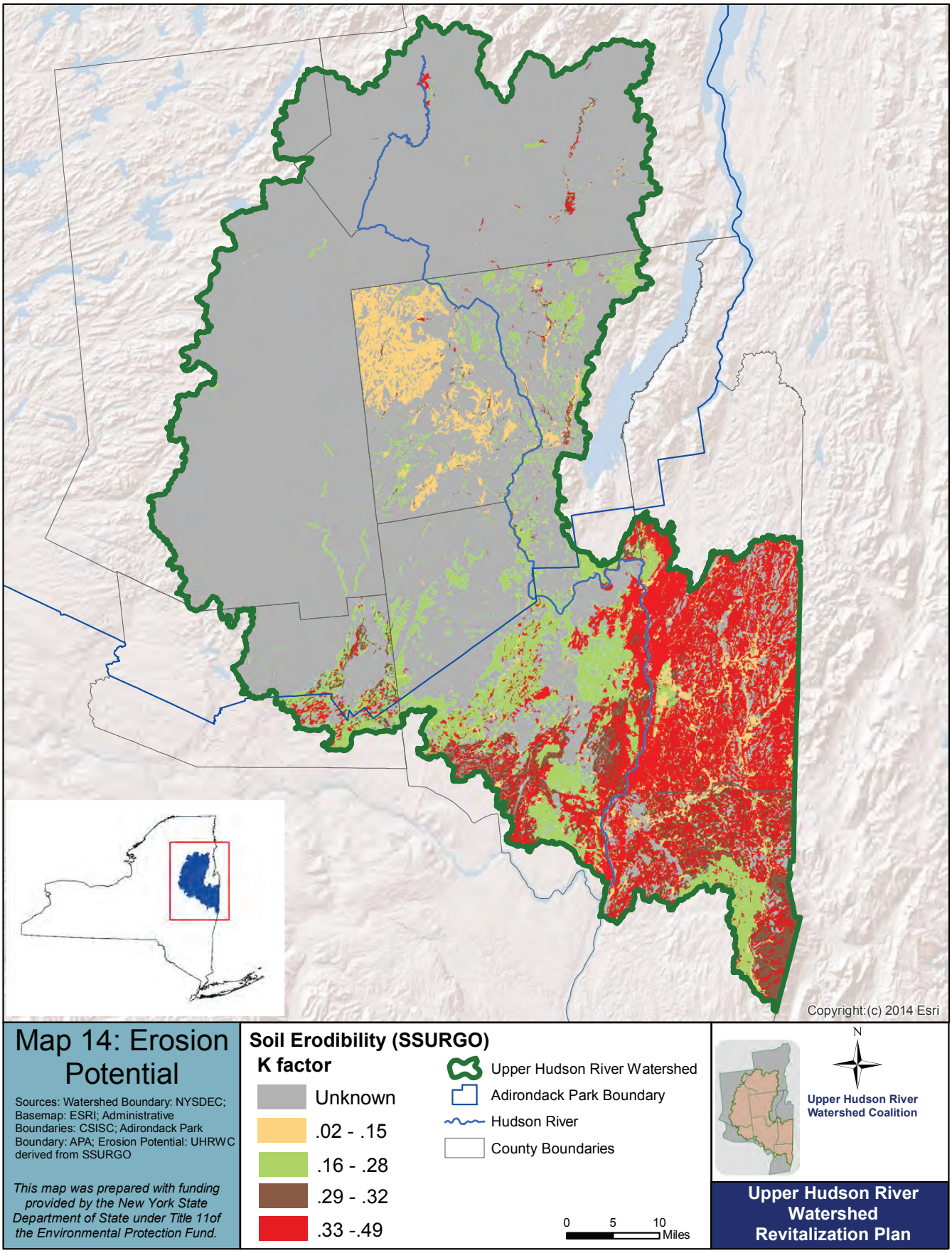
E-04 – Fulton County: Implement countywide erosion control project identified in the Upper Hudson River Watershed Roadside Erosion Assessment. $175,000.

E-05 – Town of Wells, Hamilton County: Restore Elbow Creek. Implement practices to create a less erosive stream in order to protect brook trout habitats, roads, and private homes. $1,000,000.

E-06 – Town of Johnsburg, Warren County: Ski Bowl Stormwater Mitigation Project. Implement improvements to the Ski Bowl to reduce erosion caused by stormwater runoff in the area. $200,000

E-07 – Town of Schroon, Essex County – Replace temporary bridge over Pyramid Brook. Replace temporary bridge with an appropriately sized culvert and install best management practices to prevent future erosion at this site. $125,000.

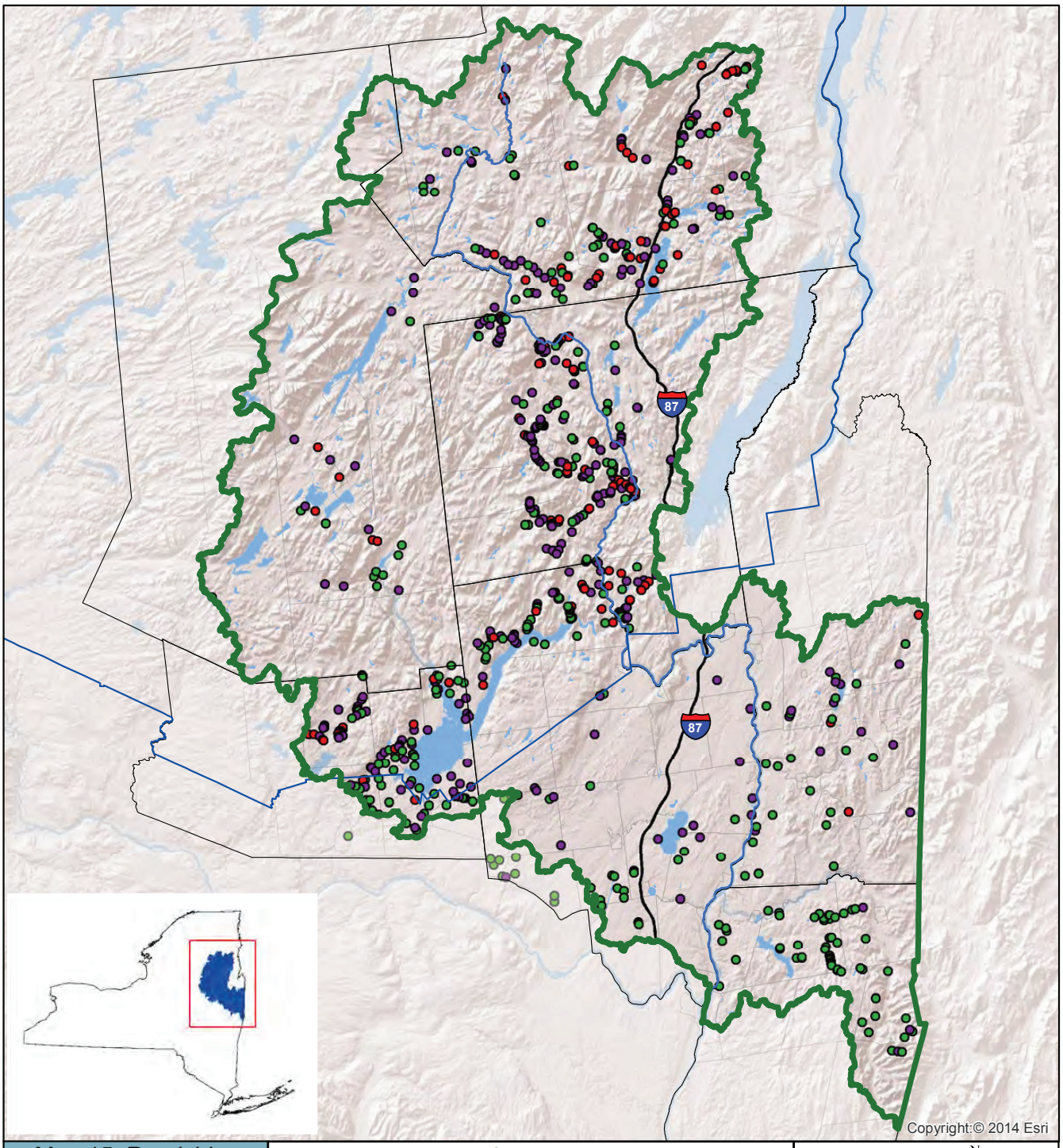
Total Costs: $2,258,000



Map 14: Erosion Potential

Sources: Watershed Boundary: NYSDEC; Basemap: ESRI; Administrative Boundaries: CSISC; Adirondack Park Boundary: APA; Erosion Potential: UHRWC derived from SSURGO

This map was prepared with funding provided by the New York State Department of State under Title 11of the Environmental Protection Fund.



Map 15: Roadside Erosion Inventory

Source:Roadside Data: NYSDEC WQIP Round 11 Grant, 7 Soil & Water Conservation Districts, LC-LGRPB, Upper Hudson Watershed Coalition; Watershed Boundary: NYSDEC; Basemap: ESRI; Adirondack Park Boundary: APA; Administrative Boundaries: NYSITSGPO; Hydrology: NYSDEC

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

Roadside Erosion Ranking

- High
- Medium
- Low

- Upper Hudson River Watershed
- Adirondack Park Boundary
- Hudson River
- Municipalities
- County Boundaries

0 5 10 Miles

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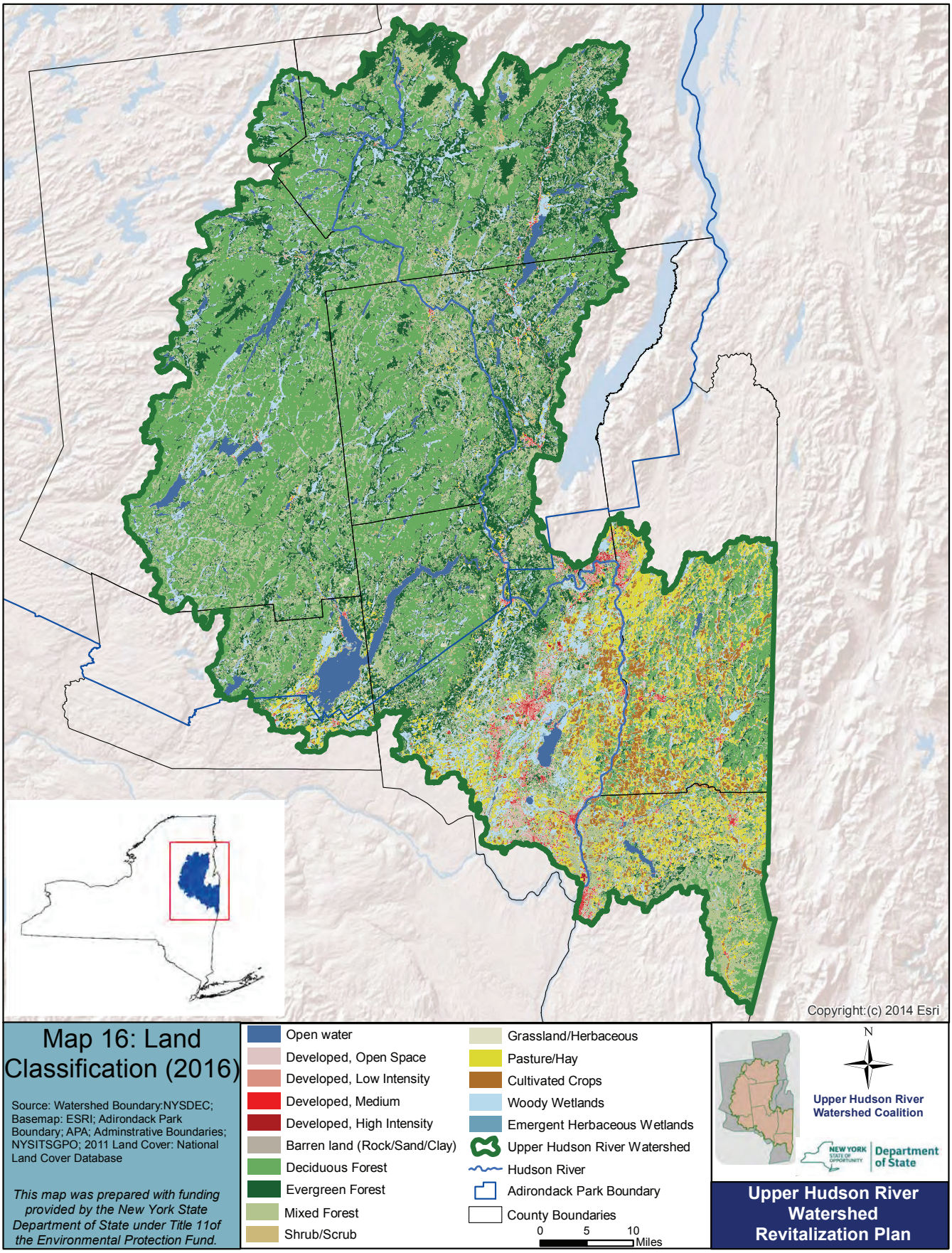
Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY. Department of State

Upper Hudson River Watershed Revitalization Plan


Copyright:(c) 2014 Esri
Map 16: Land Classification (2016)
Source: Watershed Boundary:NYSDEC; Basemap: ESRI; Adirondack Park Boundary; APA; Adminstrative Boundaries; NYSITSGPO; 2011 Land Cover: National Land Cover Database
This map was prepared with funding provided by the New York State Department of State under Title 11of the Environmental Protection Fund.
Open water
Developed, Open Space
Developed, Low Intensity
Developed, Medium
Developed, High Intensity
Barren land (Rock/Sand/Clay)
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Scrub
Grassland/Herbaceous
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetlands
Upper Hudson River Watershed
Hudson River
Adirondack Park Boundary
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Upper Hudson River Watershed Coalition
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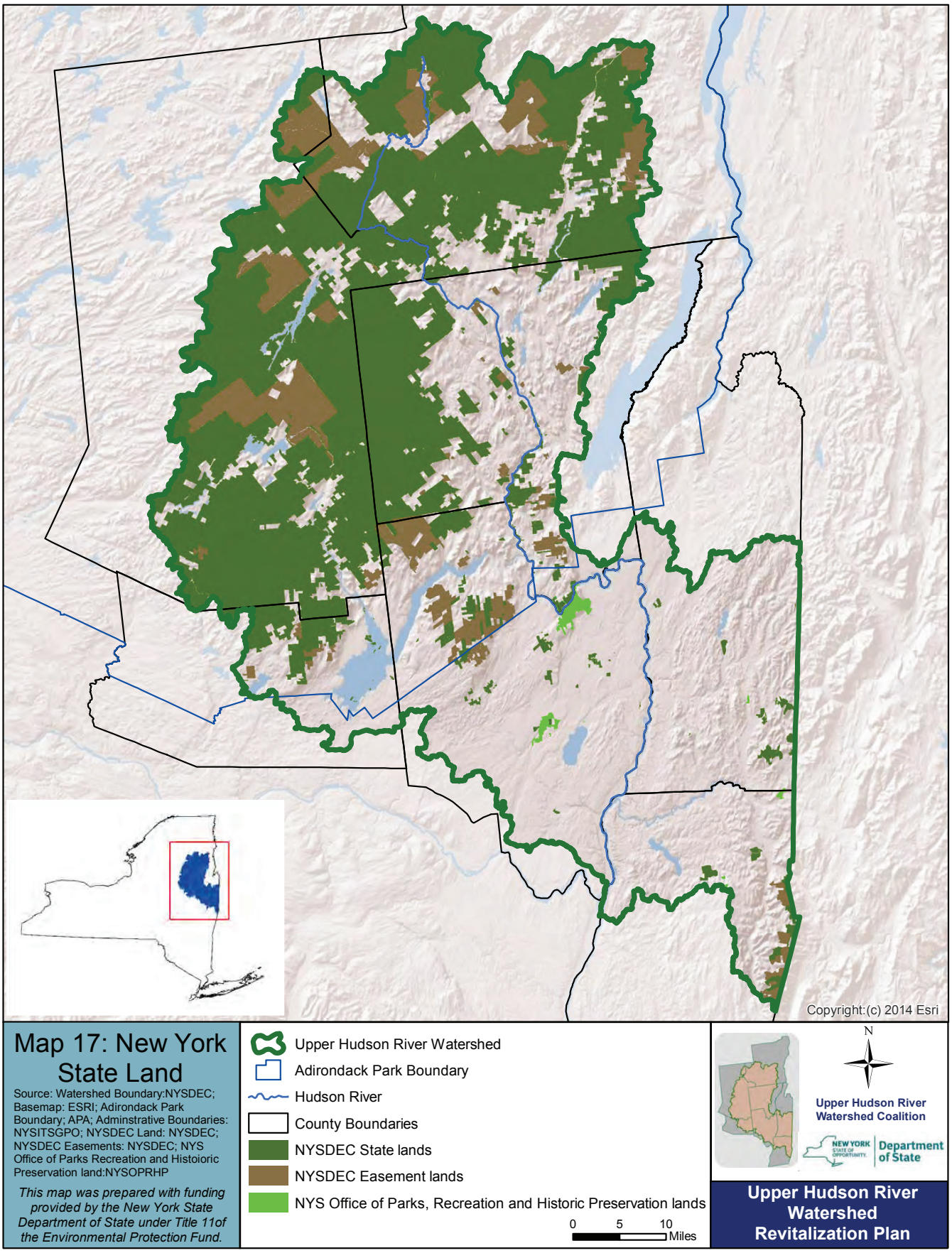


Map 17: New York State Land

Source: Watershed Boundary:NYSDEC; Basemap: ESRI; Adirondack Park Boundary; APA; Adminstrative Boundaries: NYSITSGPO; NYSDEC Land: NYSDEC; NYSDEC Easements: NYSDEC; NYS Office of Parks Recreation and Histoioric Preservation land:NYSOPRHP

This map was prepared with funding provided by the New York State Department of State under Title 11of the Environmental Protection Fund.

3.4 INVASIVE SPECIES

Non-native invasive species are species that are introduced beyond the borders of their historic range, reproduce rapidly, and displace native species. Most invasive species within the watershed come from Europe or Asia, and without the ecological checks and balances found on their native environment, can cause economic, ecological and/or societal harm to the Upper Hudson River Watershed.

Invasive species affect the Upper Hudson River Watershed by inhibiting recreation, degrading fisheries, impacting forestry and agricultural resources, carrying disease, contaminating drinking water, decreasing property values, degrading wildlife habitat, displacing native species, altering food webs and reducing biodiversity. Invasive species are considered one of the greatest threats to global biodiversity, second only to habitat loss [3]. At a regional level, invasive species present numerous challenges to both nature and people.

With no natural population controls, such as predators, parasites or pathogens, invasive plants and animals can proliferate quickly. Many invasive species have a competitive advantage or adaptation which allows them to out compete their native counterparts. For example, some invasive plants emerge earlier in the spring or survive longer into the fall, allowing them to monopolize space and resources. Others release toxins, in a process called allelopathy, to suppress the growth of nearby plants and reduce competition.

The diversity and magnitude of impacts posed by invasive plants and animals will vary by species, type of habitat invaded, scale of infestation, and associated stressors, among others. Rapidly identifying and addressing invasive species is critical to increase opportunities for successful management and to minimize impacts on the ecology and vitality of the watershed. As an invasive population increases in size, it demands greater resources for management and inflicts greater impacts. Expansive populations are unlikely to be eliminated even with sustained treatment efforts. Some species, once established, have no known control methods.

New York State is divided into eight PRISM (Partnership for Regional Invasive Species Management) areas. Each PRISM is funded by the NYSDEC and hosted by varying organizations. Each PRISM operates independently of each other, but cooperatively on prevention, education, and management of invasive species. The Upper Hudson River Watershed is encompassed by two PRISMs, the Adirondack Park Invasive Plant Program (APIPP), and the Capital/Mohawk PRISM. Within the Upper Hudson River Watershed, the Capital/Mohawk PRISM covers Rensselaer County, and portions of Washington, Saratoga, and Warren Counties. APIPP covers portions of Washington, Saratoga, and Warren Counties as well as all of all of Essex and Hamilton Counties. It is the role of the PRISMs to identify, control, and prevent invasive species, and to educate

Table 15: PRISM Tier Definitions

Tier 1: Threat Species	Early Detection/Prevention – Highest level of early detection. Should assign to appropriate Tier if detected.	1a – inside buffer, not in PRISM 1b – Outside PRISM and buffer, but close 1c – Far outside PRISM and buffer, but introduction pathways exist.
Tier 2: Emerging Species	Eradication – Highest level of early detection response efforts. High impact species with low enough abundance and suitable treatment method available to make eradication feasible within the PRISM. Need to determine extent.	
Tier 3: Established Species	Containment – Target strategic management to slow the spread, as likely too widespread for eradication, but many surrounding regions could be at risk if left unattended. Possible eradication candidate only if adequate resources and effective control methods are available.	
Tier 4: Watch Species	Local Control – Eradication from PRISM not feasible; focus on localized management over time to contain, exclude, or suppress to protect high-priority resources like rare species or recreation assets.	

[3] Park, K., 2004. Assessment and management of invasive alien predators. Ecology and Society 9(2): 12. [online] URL: http://www.ecologyandsociety.org/vol9/iss2/art12.

the public to increase awareness and understanding of invasive species (**Map 18. Invasive Species Occurrence Map**).

PRISMs utilize a classification system that categorizes known invasive species into tiers based on the extent of the species within the PRISM area and the PRISM buffer area. The buffer area is chosen by each individual PRISM, but it generally represents 100 miles outside of the PRISM's boundary.

Photo 11. Eurasian watermilfoil is the watershed's most widely spread AIS. Photo courtesy of the UPHWR Coalition.

Aquatic Invasive Species. Aquatic Invasive Species (AIS) can cause significant negative impacts on the native ecosystem and local economy. Many aquatic invasive plants create thick mats which shade out the native plants and can lead to reduced levels of dissolved oxygen beneath. The aquatic invasive animals often outcompete their native equivalents and have cascading impacts on the food web. AIS decrease shoreline property value and are costly to manage.

The watershed's most widely spread aquatic invasive plant is Eurasian watermilfoil (*Myriophyllum spicatum*). It is a submerged plant that grows vertically through the water column until it reaches the surface and then grows laterally, forming a dense mat. These dense mats interfere with water recreation such as boating, fishing, and swimming, and crowd out valuable native plants. In the two years following its introduction in Lake George, the number of native plant species significantly decreased.[4] Eurasian watermilfoil infestations can also have large negative impacts on shoreline property values. A study in Vermont found a decrease in property values of up to 16% for lakes with very dense beds of Eurasian watermilfoil[5].

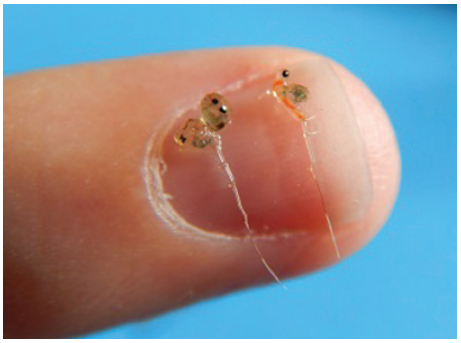


Photo 12: The spiny waterflea is of great concern within the watershed. Photo courtesy of the NYSDEC

The continued spread of an aquatic invasive animal, spiny waterflea (*Bythotrephes longinamus*), within the watershed is of great concern. Spiny waterfleas are predatory zooplankton, less than a half inch in length with long, sharp, barbed tails. They feed on other native zooplankton that control algae and that young fish rely on for food. This can lead to less food that has lower nutritional value for popular sport fish such as lake trout and salmon. The spiny waterflea can pose a nuisance to anglers who constantly have to remove them from fishing lines and the clogged eyelets of their fishing rods. This ability to attach to fishing line and boating equipment is what allows spiny waterflea to hitch a ride to new waterbodies. The species can also be easily transported in the standing water of boats and bait buckets. Even out of water, spiny waterflea and the small eggs located on its back can survive for hours. They have been found in ten counties in New York State, the majority of which are in the Upper Hudson River Watershed. Spread prevention is key for this species

[4] Madsen, J.D., Sutherland, J.W., Bloomfield, J.A., Eichler, L.W. and Boylen, C.W. 1991. The decline of native vegetation under dense Eurasian watermilfoil canopies. Journal of Aquatic Plant Management. 29: 94-99.

[5] Zhang, C., Boyle, K.J., "The effect of an aquatic invasive species (Eurasian watermilfoil) on lakefront property values." Ecol. Econ. (2010) doi: 10.1016/j/ecolecon.201002.011.

Photo 13: Hydrilla is an aquatic invasive plant of special concern. Photo courtesy of the Lake George Association.

since there are no known management methods once it is established in a waterbody.

Hydrilla, shown in **Photo 13** is of special concern to waterbodies within the Upper Hudson River Watershed due to its aggressive growth. This plant can spread into shallow water areas and form thick mats that block out light for native plants, and the decreased dissolved oxygen levels can lead to fish kills and harmful algal blooms. This aquatic invasive plant is categorized as a Tier 1a AIS by both the CapMo PRISM and APIPP.

Photo 14: The Hamilton County Soil and Water Conservation District's boat is decontaminated with a hot water pressure wash by an Adirondack Watershed Institute Steward to prevent invasive species spread. Photo Courtesy of Hamilton County SWCD.

NEW YORK STATE BOAT STEWARD PROGRAM:

Boat stewards are volunteers or paid members of your community who help protect New York State's Waters. Boat stewards provide an important opportunity to educate the public about the dangers of invasive species and how to prevent their spread. The stewards also perform visual inspections of boats at public boat launches to further prevent spreading. In 2019, there were 211 active boat steward locations across New York State (NYSDEC).

Early identification and strategic management of new infestations of AIS is critical to minimize their negative impacts on the lakes and rivers of the Upper Hudson River Watershed. The following species have been identified as priorities within their respective geographies:

Table 16: Identified Tier Species within the Upper Hudson River Watershed. Source: Capital Mohawk PRISM and Adirondack Park Invasive Plant Program

Capital Mohawk PRISM – Priority Aquatic Invasive Plant Species	
Tier 1a	Waterwheel, fanwort, hydrilla, parrot feather, starry stonewort
Tier 1b	None
Tier 1c	Alligatorweed
Tier 2	Brazilian elodea, yellow floating heart
Tier 3	European frogbit, variable-leaf milfoil
Tier 4	Eurasian watermilfoil, curly-leaf pondweed, water chestnut
Tier 5	Didymo, water hyacinth, European water fern, water lettuce
Adirondack Park Invasive Plant Program – Priority Aquatic Invasive Plant Species	
Tier 1a	Hydrilla
Tier 1b	Water soldier, swamp crop
Tier 1c	None
Tier 2	Water chestnut, fanwort
Tier 3	European frogbit
Tier 4	Eurasian watermilfoil, variable-leaf milfoil, curly-leaf pondweed
Tier 5	Yellow floating hear, brittle naiad, starry stonewort
Capital Mohawk PRISM – Priority Aquatic Invasive Animal Species	
Tier 1a	Northern snakehead, bloody red shrimp, oriental weatherfish, round goby
Tier 1b	Asian carp, tench
Tier 1c	None
Tier 2	Spiny waterflea, Chinese mystery snail, mute swan
Tier 3	Mud bithynia
Tier 4	Goldfish, Asian clam, quagga mussel, zebra mussel, rusty crayfish, rudd, Chinese mitten crab, red-eared slider
Tier 5	Alewife
Adirondack Park Invasive Plant Program – Priority Aquatic Invasive Animal Species	
Tier 1a	Fishhook waterflea, bloody red shrimp, oriental weatherfish, western mosquitofish
Tier 1b	Norther snakehead, silver carp
Tier 1c	None
Tier 2	Asian clam, quagga mussel, round goby, rusty crayfish, common carp, goldfish, faucet snail, New Zealand mudsnail
Tier 3	Zebra mussel, spiny waterflea
Tier 4	Chinese mystery snail
Tier 5	Alewife, tench

Photo 15: Giant hogweed, Photo Courtesy of adkinvasives.com.

Terrestrial Invasive Plant Species. Terrestrial invasive plants pose a myriad of negative impacts within the Upper Hudson River Watershed's environment, economy and public health and safety. Many terrestrial invasive plant species require or thrive in disturbed or dynamic habitats.

Giant hogweed, pictured in Photo 15, is an example of a terrestrial invasive plant and is classified by CapMo PRISM as a tier 5 invasive and as a tier 2 invasive by APIPP. This plant is a large herbaceous species that can grow over 15 feet in height. The plant was originally introduced to the United States from Europe as an ornamental species, however, due to its prolific seed produce, giant hogweed quickly escaped cultivation and spread across the United States. In additional to crowding out native plants and decreasing biodiversity, giant hogweed can directly impact human health. The plant's sap is phytotoxic and can cause severe burns to exposed skin causing scaring. There is additional risk of blindness from exposure to this plant if sap gets into the eye.

Timely identification and strategic management are critical to minimize the impacts of terrestrial invasive plants to the environment, ecosystem services, and people within the Upper Hudson River Watershed. The following species have been identified as priorities within their respective geographies:

Table 17: Priority Terrestrial Invasive Plant Species. Source: Capital Mohawk PRISM and Adirondack Park Invasive Plant Program

Capital Mohawk PRISM – Priority Terrestrial Invasive Plant Species	
Tier 1a	Hardy kiwi, silver vine, porcelain berry; Japanese angelica tree; scotch broom; Chinese yam; amur honeysuckle; amur cork tree; kudzu; gray florists willow; sticky sage; bog bulrush
Tier 1b	Incised fumewort; wavyleaf basket grass
Tier 1c	None
Tier 2	Sycamore maple; small carp grass; Hairy Joint Grass; Japanese Virgin's Bower; Sweet Autumn; Five-leaf Aralia; Verna, Lesser celandine, Fig Buttercup, Japanese Hops, Garden Loosestrife, Yellow Garden Loosestrife, Chinese Silver Grass, Eulalia, Maiden Grass, Mile-A-Minute weed or Mile-A-Minute vine, Wineberry, Japanese Wineberry, Rusty Willow, Cup-plant, Indian Cup-plant.
Tier 3	Leafy Spurge, Wolf's Mile, Giant Hogweed
Tier 4	Norway Maple, Tree of heaven, Garlic Mustard, Wile Chervil, Mugwort, Japanese Barberry, Narrowleaf Bittercress, Asian Bittersweet, Spotted Knapweed, Canada Thistle, Creeping Thistle, Black Swallowort, Cut-leaf Teasel, Autumn Olive, Burning Bush, Cypress Spurge, Glossy Buckthorn, Water Flag Iris, Border Privet, Japanese Honeysuckle, Showy pink honeysuckle, Purple Loosestrife, Japanese Stiltgrass
Tier 5	China Fleece Vine, Silver Lace, Carline Thistle, Giant Knotweed, Johnsongrass
Adirondack Park Invasive Plant Program – Priority Terrestrial Invasive Plant Species	
Tier 1a	Japanese angelica tree, Japanese stiltgrass, Lesser celandine, Mile-A-Minute, Porcelain berry, Slender falsebrome, Tree of Heaven, Wineberry
Tier 2	Black swallowwort, palel swallowwort, Norway maple, scotch broom, giant hogweed
Tier 3	cup plant, burning bush, multiflora rose, autumn olive, yellow iris
Tier 4	Garlic mustard, purple loosestrife, common reed grass, Japanese knotweed, glossy buckthorn, bush honeysuckles, Oriental bittersweet, Japanese barberry, reed canary grass
Tier 5	Hybrid cattail, Black locust, Common barberry, Garden loosestrife, Gray florists willow, Mugwort, Privet, Wile chervil, Baby's breath

Photo 16. The Eurasian boar is an invasive animal species that can cause significant impacts to both nature and people. The animals are aggressive foragers that outcompete native wildlife and consume the eggs or offspring of many native birds and reptiles. Their extensive rooting activity damages lawns, landscapes, and is an economic burden to landowners, particularly in agricultural settings. In St. Lawrence County, a small population of Eurasian boar caused over $100,000 in damage to a single farm due to crop loss and property damage. By destroying vegetation and exposing soil, Eurasian boar feeding activity can increase rates of erosion and sedimentation. Eurasian boar. Photo Courtesy of adkinvasive.com.

Terrestrial Invasive Animal Species. Invasive animal species, while not widely distributed or abundant in the watershed, still pose a significant threat to water resources, the economy, and people. For most invasive animal species prevention is imperative. Many invasive animals have no known control method, while the remainder have few control techniques that are only effective at a local scale. Total eradication of an established invasive animal species is often impossible. Efforts related to terrestrial invasive animals in the Upper Hudson Watershed should focus on prevention to delay the arrival of damaging species. Early detection surveys should be completed in high risk areas to identify new invasions as rapidly as possible. The success of terrestrial invasive animal management is strongly driven by how quickly an infestation is detected.

The impacts of terrestrial invasive animals are wide ranging and vary by species and the type of ecosystem invaded. Invasive animals can impact water quality, agricultural production, property values, recreation and landscape aesthetics, etc. For example, the hemlock woolly adelgid (HWA), a non-native forest pest, can have devastating effects on eastern hemlock trees. This small insect can cause mortality at a landscape scale, alter forest composition, eliminate wildlife habitat, and reduce the ecosystem services provided by hemlocks, a foundation species. Perhaps most notably, HWA can eliminate significant populations of riparian hemlocks in headwater ecosystems. As trees die, the canopy opens, allowing more sunlight to reach the stream. Water temperatures could increase to a point that cold-water species such as the native brook trout can no longer survive.

Most of the terrestrial invasive animals outlined in this plan are still in relatively low abundance within the watershed. This emphasizes the need for focused prevention and early detection efforts to minimize and prevent significant impacts. The following species have been identified as priorities within their respective geographies:

Table 18: Priority Terrestrial Invasive Species. Source: Capital Mohawk PRISM and Adirondack Park Invasive Plant Program

Capital Mohawk PRISM – Priority Invasive Animal Species	
Tier 1a	Asian long-horned beetle, Southern pine beetle, European fire ant
Tier 1b	Spotted lanternfly, Nutria, Eurasian boar, Asian gypsy moth
Tier 2	None
Tier 3	Crazy snake worm, Hemlock woolly adelgid (HWA)
Tier 4	Emerald ash borer, Spotted winged drosophila, Elongated hemlock scale, Brown marmorated stink bug, European gypsy moth, Viburnum leaf beetle, European woodwasp
Tier 5	Balsam woolly adelgid
Adirondack Park Invasive Plant Program – Priority Invasive Animal Species	
Tier 1a	Emerald ash borer, Eurasian boar
Tier 1b	Asian longhorned beetle
Tier 1c	Asian gypsy moth, Spotted lanternfly
Tier 2	Hemlock woolly adelgid
Tier 3	None
Tier 4	Balsam woolly adelgid, Sirex woodwasp, European gypsy moth, Beech scale
Tier 5	Brown marmorated stink bug, Spotted wing drosophila, Asian earthworms, Mute swan, Elongate hemlock scale

PRIORITY INVASIVE SPECIES PROJECTS

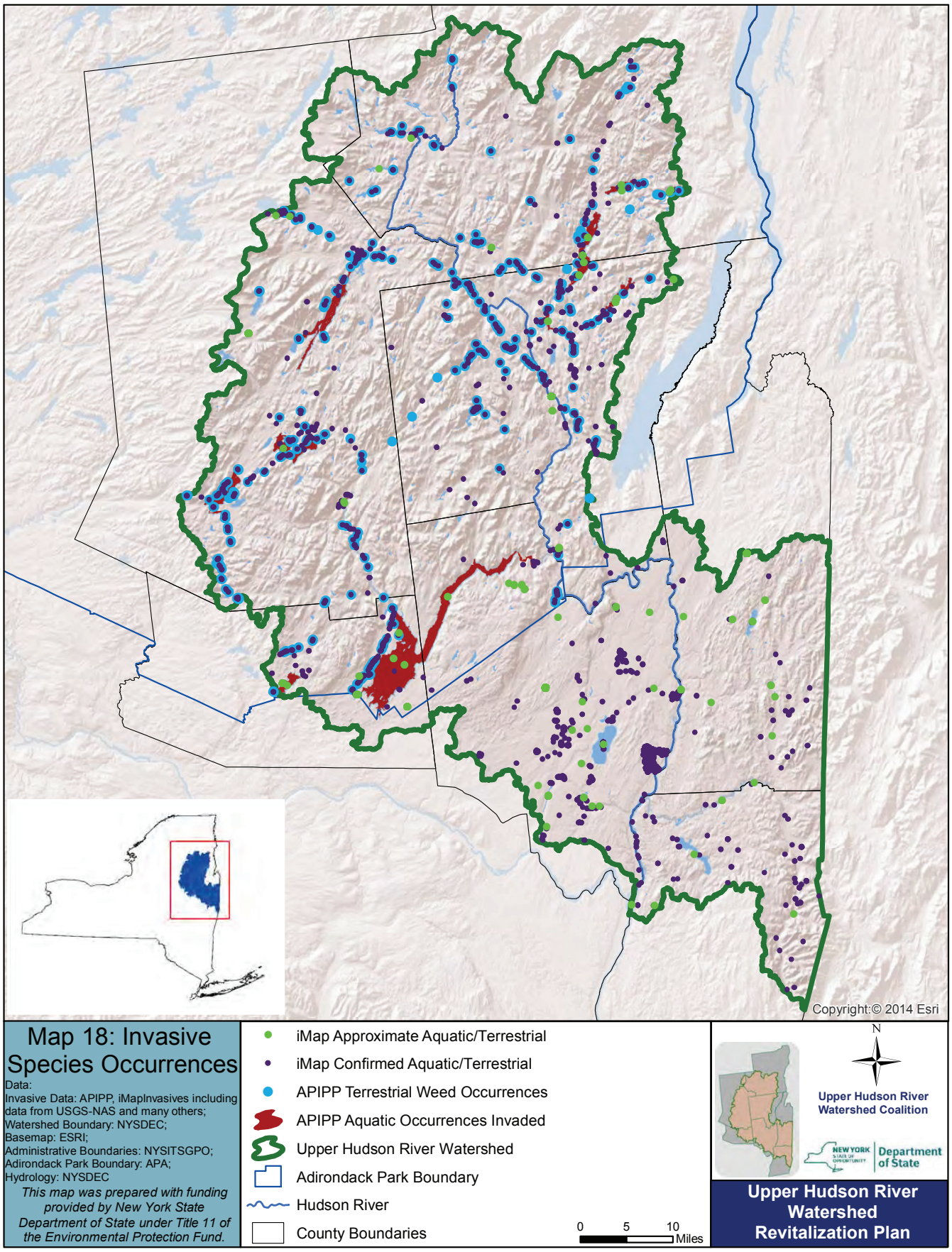
I-01 – Rensselaer County, terrestrial Invasive Species Management Program – Create and implement a management program for terrestrial invasive species on agricultural grazing lands. $50,000.

I-02 – Town of Malta, Saratoga County, invasive species monitoring, harvesting, and transporting equipment – Purchase barge to assist in aquatic invasive species management on Saratoga Lake. $30,000.

I-03 – Towns of Horicon, Chester and Luzerne, Warren County, invasive species management on Brant Lake, Schroon Lake and Lake Luzerne – program funding for Eurasian watermilfoil harvesting. $250,000.

I-04 – Hamilton County, countywide terrestrial invasive species management – contract with a certified pesticide applicator to treat terrestrial invasive species that impact water resources on public and private lands in the county. $500,000.

Total Costs: $830,000


Copyright:© 2014 Esri
Map 18: Invasive Species Occurrences
Data:
Invasive Data: APIPP, iMapInvasives including data from USGS-NAS and many others;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Administrative Boundaries: NYSITSGPO;
Adirondack Park Boundary: APA;
Hydrology: NYSDEC
This map was prepared with funding provided by New York State Department of State under Title 11 of the Environmental Protection Fund.
iMap Approximate Aquatic/Terrestrial
iMap Confirmed Aquatic/Terrestrial
APIPP Terrestrial Weed Occurrences
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Hudson River
County Boundaries
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3.5 WATER AND WASTEWATER

Source water is surface or groundwater that is taken from its natural environment for use by humans. Uses range from drinking water and recreation to industrial processing.

Water withdrawals in the Upper Hudson River Watershed come from both surface and groundwater sources. Any entity that has the capacity to withdraw more than 100,000 gallons a day or more, whether it's for public or private consumption, is required to obtain a Water Withdrawal permit from the NYSDEC. Agricultural facilities are also required to obtain a Water Withdrawal permit if they withdraw at least 100,000 gallons per day for 30 consecutive days (NYSDEC, Water Withdrawal Permits and Reporting).

There are 111 permitted water withdrawals within the Upper Hudson River Watershed, the majority of which are in the southern, more populous part of the watershed (**Map 19. Water Withdrawals Map**). Of those, the majority are for public water supplies, agriculture and recreational uses (golf courses and snowmaking). Other uses include industrial processing, commercial processing, institutional uses, mine dewatering, and power. See Table 10 for the full list of water withdrawal permits.

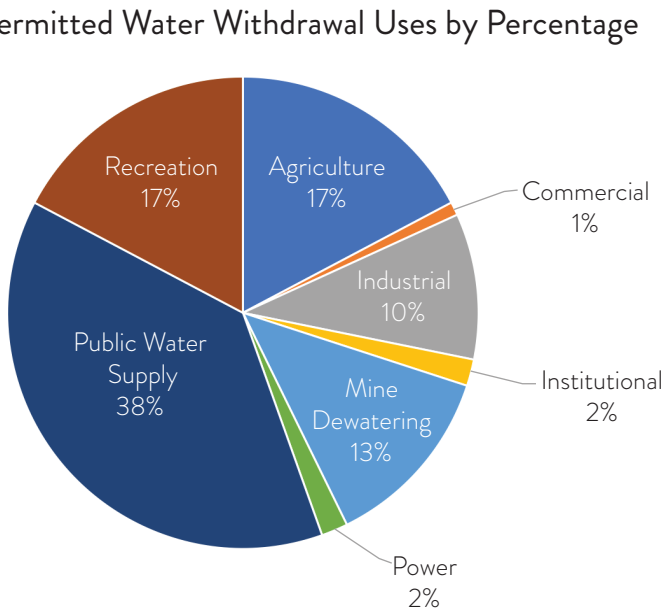


Figure 9. Permitted water withdrawal uses in the Upper Hudson River Watershed.

Of the 111 permitted water withdrawals in the watershed, 50 utilize groundwater sources, 44 utilize surface water sources and 17 utilize a combination of both. Most surface water withdrawals are used for industrial and mine dewatering, as well as recreational uses. Most groundwater withdrawals are used for public water supplies and agriculture. A combination of both is utilized for agriculture and industry.

How water is used within each county varies based on the population and prominent industries. Most permitted water withdrawals in Washington County are used for agricultural purposes. The more populated areas of the watershed have the highest percentage of water withdrawals used for recreation, particularly golf courses and snowmaking. Essex, Fulton and Hamilton County have the lowest number of permitted withdrawals and most are for public water supplies. Within Rensselaer County, the highest percentage of permitted facilities are industrial and mining operations (**Table 19**).

Table 19: Number and types of water withdrawal permits per county in the Upper Hudson River Watershed

County	# of water withdrawal permits	% public water supply	% recreational	% industrial	% Commercial	% Institutional	% Mine Dewatering	% Agriculture	% Power	% ground water sources	% surface water sources	% Combination
Essex	3	100								67	33	
Fulton	6	67			16			16		83		17
Hamilton	5	60	20				20			60	40	
Rensselaer	11	18		28			36	9	9	36	46	18
Saratoga	46	41	26	7		4	13	7	2	39	43	18
Warren	14	50	22	7		7	14			64	22	14
Washington	26	15	12	15			4	54		35	50	15

The average daily withdrawal of all combined facilities in the watershed is 103 million gallons per day (MGD). Of all the facilities, 18% are operating with an average daily water withdrawal that is within 25% of their maximum daily water withdrawal. Although this is a very generalized statement and each water user and their use, capacity and future needs are very specific to their communities, the point to be made is that the surface and groundwater resources that are available within the Upper Hudson River Watershed are imperative to the longevity of the communities and their residents, and therefore protection efforts should be put in place to ensure the quality of the water far into the future. Water consumption also needs to be considered during future development.

Public Drinking Water Supplies. There is a total of 55 public drinking water supplies throughout the watershed. Of those supplies, 41 utilize groundwater, 13 use surface water and one uses a combination of both. Each water plant provides a different level of treatment based on the source water and potential contaminants that are within it. As shown in Table 10, more treatment is necessary if a surface water is used than if groundwater is used. Additionally, in order to utilize a surface water as a drinking water source, the surface waterbody must be classified as such by the NYSDEC.

The NYSDEC has classified all the waterbodies within the state based on a scale determined by the best use for the waterbody. If a waterbody is classified as AA or A, then it is suitable as a drinking water supply. Within the entirety of the Upper Hudson River watershed, 77 waterbodies are classified as AA or A, most of which are located within the rural portions of the watershed. Additionally, they are not in areas where there are existing public water supplies or where a public water supply is feasible or needed. Of the surface drinking water sources in the watershed, most are reservoirs, which were built specifically as water supplies for the more populated areas.

Saratoga County has the largest number of users followed by Rensselaer County. Although Saratoga County has the largest number of public water supplies, the single largest public water supply within the watershed is the Tomhanock Reservoir, located within the Town of Pittstown in Rensselaer County.

The Tomhanock Reservoir provides drinking water to over 80,000 people, including the City of Troy, which sells water to the City of Rensselaer and the Towns of East Greenbush, North Greenbush and Poestenkill. The interesting aspect to note is that although the Tomhanock Reservoir is located within the Upper Hudson River watershed, the municipalities that it serves are not. However, when discussing the topic of source water protection, the Tomhanock Reservoir is an important and much used surface water and is high of the list for protection efforts.

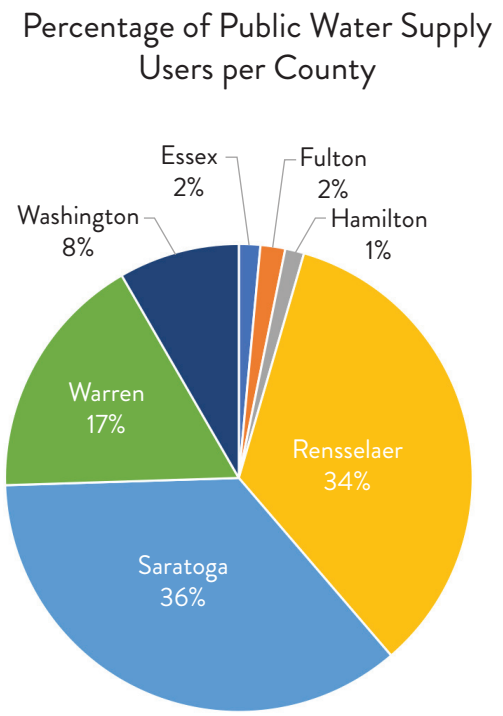


Figure 10: Number of public water supply users per county. Information derived from the US EPA Safe Drinking Water Information System Federal Reporting Services DWMAPS.

Also located within Rensselaer County is the Village of Hoosick Falls Water Supply. This water supply made headlines in 2014 when it was discovered that the municipal water supply was contaminated with Perfluorooctanoic Acid (PFOA). This discovery, added to other stories of municipal water contamination such as that in Flint, Michigan, began a nationwide dialogue on drinking water source protection and prompted the NYSDEC to take action to protect all the drinking water sources in the state through the Drinking Water Source Protection Program, which is discussed later in this chapter.

Private Drinking Water Supplies. Businesses and homes that do not have access to a public water system use private wells (**Map 20 - Water Wells Location Map**). Private wells are also used to feed community systems that are too small to require a water withdrawal permit. Schools, campgrounds, summer camps, mobile home parks, cottages and condominiums, restaurants and clubs, and hotels and resorts are facilities that may use a community private well system. There are thousands of private wells throughout the Upper Hudson River Watershed, and the quality of the drinking water and safety of the water from the wells are the sole responsibility of the owner. While most private well users do not regularly test their water, if there is the potential for contaminants from nearby sources, the user should take measures to evaluate their water supply.

Threats to Source Water. Threats to drinking water supplies can be seen throughout the watershed. Any pollutant entering a lake, reservoir, or that is absorbed by the earth is threatening the quality of the source water, resulting in additional processing of the water at the drinking water plant. Common sources of drinking water contamination are identified in **Table 11**, many of which cannot be removed from drinking water without additional treatment above and beyond what a typical water plant can provide. Therefore, it is imperative to stop pollutants before they enter a drinking water source. Methods such as reducing the use of hormones and antibiotics in livestock and planting buffers along waterways will keep contaminates from reaching water sources; the increased interception of stormwater in an urbanized area with a combined sewer system can reduce the occurrence of combined sewer overflows, where raw sewage is released into the nearest waterbody to keep the wastewater treatment plant from overflowing; purchasing land around surface waters and groundwater source wells to ensure no development can encroach on the natural watershed; improving municipal de-icing procedures and building salt storage sheds to protect the surrounding area from salt pile leaching; and disposing of personal products and un-used pharmaceuticals appropriately.

Table 20: Types of drinking water contaminants and sources.
Source: US Environmental Protection Agency

Contaminant	Source
Microbial (bacteria, viruses)	Various
Lead	Pipe corrosion
Nitrates/Nitrites	Fertilizer, livestock, human sewage
Arsenic	Agriculture and industry
Sodium	Road salt
Atrazine/glyphosate	Agricultural pesticides/herbicides
1,4 Dioxane	Solvents/paint strippers
PFOA/PFOS	Water repellant products/firefighter foam
Pharmaceuticals	Humans/domestic animals/livestock waste/manufacturing
Personal Care Products	Human use/manufacturing

Source Water Protection. Taking measures to protect water sources that provide water to public drinking water supplies is vital to ensuring human health. Protecting source water can reduce risks by preventing exposures to contaminated water. Drinking water utilities that meet the definition of a public water system are responsible for meeting the requirements of the USEPA and state drinking water programs under the Safe Drinking Water Act (SDWA). Protecting drinking water at its source helps reduce treatment costs and may avoid the need for additional complex treatment. In addition to protecting human health, other benefits of source water protection include protecting water quality for wildlife and recreational use and protecting the availability and quantity of water supplies.

Sources in the watershed that have had Health Based Violations in the past, including the City of Glens Falls (Warren County), Schuylerville-Victory JWC (Saratoga County), Hoosick Falls (V) Public Water Supply and Berlin Water District #2 (Rensselaer County), and Northville Village Water Works and Northhampton Town Water District (Fulton County), are areas where emphasis on source water protection should occur.

NEW YORK STATE GRANTS AND PROGRAMS TO ASSIST MUNICIPALITIES AND ORGANIZATIONS WITH SOURCE WATER PROTECTION INITIATIVES:

Drinking Water Source Protection Program (DWSP2). In 2019, the NYSDEC and NYS Department of Health rolled out the new Drinking Water Source Protection Program, which aims at assisting communities in identifying threats to their drinking water sources and producing a plan to improve and protect drinking water sources. Currently, the NYSDEC is focusing on surface water drinking sources, but the program has been created in such a manner that it can be used for groundwater sources as well.

Currently, the NYSDEC is funding this program through the Regional Planning Commissions in New York State. For the Upper Hudson River Watershed this includes the Lake Champlain – Lake George Regional Planning Board and the Capital Region District Planning Commission.

NYSDEC WQIP Land Acquisition for Source Water Protection Grant. Since 2018, the NYSDEC has had, as part of the NYSDEC's annual Water Quality Improvement Program (WQIP) grant round, a Land Acquisition for Source Water Protection category. This funding is for the purchase of land or creation of conservation easements for watershed land surrounding a source water. The impetus of this grant program is to eliminate the possibility for development around a source water, therefore reducing the potential for pollutants from a myriad of sources to impact the water.

Wastewater. Across New York State, there are over 600 wastewater treatment facilities that serve more than 15 million people and range in size from the 1.3 billion gallons a day treated at New York City's facility to a small village facility that treats 100,000 gallons a day. Throughout the 1970s and 1980s, considerable efforts and funding were exerted to improve the state's wastewater treatment facilities and associated infrastructure. Since that initial effort, funding for maintaining and upgrading these facilities has been greatly reduced and many plants throughout the state and the Upper Hudson River Watershed are reaching the end of their design lifespan.

There is a total of 20 municipal wastewater treatment plants within the Upper Hudson River Watershed that combined, serve over 140,000 of the population within the watershed (Table 18). To ensure that these systems function properly in the future, each municipality should create and maintain an Asset Management Plan for all of the system's critical infrastructure. This will not only ensure that all parts of the system are functioning properly, but it will help the municipality plan for the financial needs of maintaining the system well into the future.

Table 21: Wastewater Treatment Facilities. Source: NYSDEC Division of Water, 2004

Subwatershed	Municipality	Receiving Waterbody	Stream Class	Population Served
Upper Schroon River	Schroon, Town	Schroon Lake	AA(T)	2,950
Lower Schroon River	Newcomb, Town	Wine Brook	C(T)	250
Middle Sacandaga River	Broadalbin, Village	Kennyetto Creek	C	1,400
Middle Sacandaga River	Northampton, Town	Sacandaga Reservoir	B	Unknown
Middle Sacandaga River	Mayfield, Village	Mayfield Lake	B	Unknown
Cedar River – Hudson River	Indian Lake, Town	Cedar River	B(T)	520
Upper Sacandaga River	Lake Pleasant, Town	Northup Creek	C	4,000
Middle Hoosic River	Hoosick, Town	Hoosic River	C(T)	3,800
Anthony-Kill – Hudson River	Troy, City	Hudson River	C	Unknown
Snook Kill – Hudson River	Corinth, Village	Hudson River	C	3700
Lower Sacandaga River	Hadley, Town	Groundwater	GA	300
Anthony Kill – Hudson River	Mechanicville, City	Hudson River	C	Unknown
Fish Creek	Halfmoon, Town	Hudson River	C	80,000
Fish Creek	Schuylerville, Village	Fish Creek	C	2,000
Fish Creek	Stillwater, Town	Hudson River	B	1,800
Anthony Kill – Hudson River	Waterford, Town	Hudson River	C	8,000
Snook Kill – Hudson River	Glens Falls, City	Hudson River/Feeder Canal	C	15,000
Lower Schroon River	Warrensburg, Town	Schroon River	C(T)	Unknown
Batten Kill	Greenwich, Village	Batten Kill River	B(T)	900
Snook Kill – Hudson River	Fort Edward, Village	Hudson River	C	15,000

The greatest water quality concern that stems from municipal wastewater treatment systems are CSOs. The number one way to reduce the occurrence of CSOs is to separate stormwater and wastewater conveyance systems. However, this is a long and costly process. The more preferred method to reduce CSO's is the reduction of the amount of stormwater entering into the system. This can be achieved through the implementation of green infrastructure projects, as previously discussed in the Stormwater Chapter. By capturing and infiltrating stormwater before it reaches the combined system, the total volume of water within the system is reduced, reducing the chance of an overflow.

Private Septic Systems. Homes that are outside of the municipal sewer district utilize private septic systems, which when maintained properly, achieve the same goals as waste water treatment facilities but at a much smaller scale. Private septic systems are sized based on the number of bedrooms within the dwelling and should be maintained by the homeowners to ensure proper function. For residential systems, the NYS Department of Health provides mandatory water treatment standards through Appendix 75-A regulations. Anyone installing a new septic system or upgrading an existing system is required to follow these regulations.

Because many of the private wastewater systems, both residential and commercial, are located directly on waterbodies, ensuring properly functioning systems is critical. Improperly functioning systems can leach nutrients and bacteria, which can not only have an adverse effect on water quality but can make humans and animal sick. Improperly functioning septic systems have been identified by the NYSDEC as one of the leading causes of water quality decline in surface waters in New York State, and they have been specifically identified as a source of pollution in Kenyetto Creek, Ballston Lake, Dwaas Kill and Cossayuna Lake.

Photo 17: Homeowners Septic Maintenance Guide. Source: LCLGRPB.

PRIORITY WATER & WASTEWATER PROJECTS

W-01 - City of Glens Falls, Warren County, wastewater treatment plant upgrades – engineering and implementation of upgrades to city wastewater treatment facility. $6,700,000.

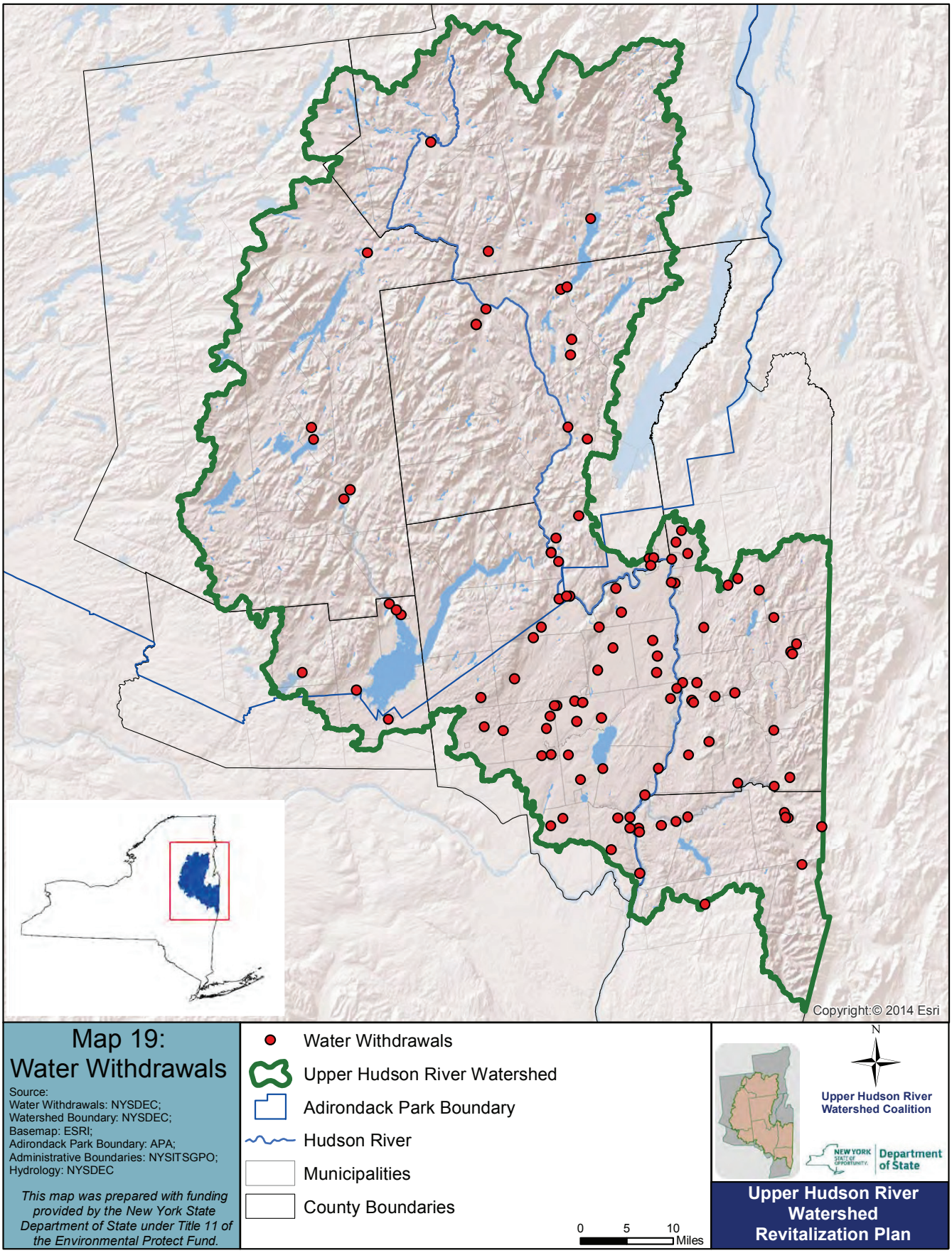
W-02 - Town of Salem, Washington County, wastewater system upgrades – engineering and implementation of a public wastewater sewer system within the former village area. $10,000,000.

W-03 – Town of Ballston, Saratoga County, installation of public wastewater system – installation of public wastewater system for residences around Ballston Lake to reduce nutrient loading into the lake. $25,000,000.

W-04 – Village of Speculator, Hamilton County, wastewater treatment plant upgrades – engineering and implementation of upgrades to village wastewater treatment facility. $2,500,000.

W-05 – Villages of Northville and Mayfield, Fulton County, wastewater system upgrades – planning, engineering and implementation of a decentralized wastewater system to eliminate individual septic systems in priority areas of the villages. $25,000,000.

Total Costs: $69,200,000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Map 19:
Water Withdrawals
Source:
Water Withdrawals: NYSDEC;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO;
Hydrology: NYSDEC
This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.
Water Withdrawals
Upper Hudson River Watershed
Adirondack Park Boundary
Hudson River
Municipalities
County Boundaries
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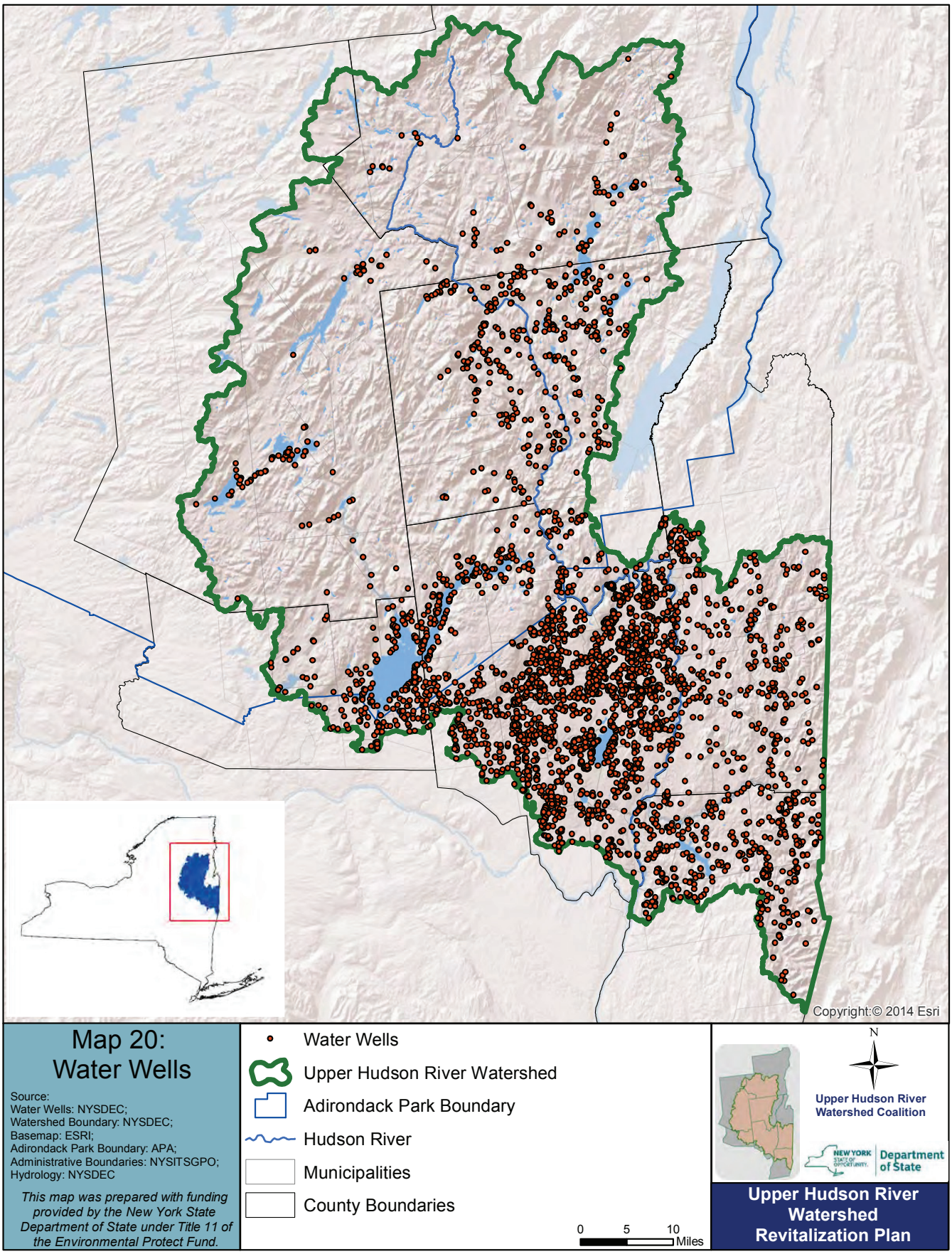
NEW YORK STATE OF OPPORTUNITY. Department of State
Upper Hudson River Watershed Revitalization Plan



Map 20: Water Wells

Source:
Water Wells: NYSDEC;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO;
Hydrology: NYSDEC

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

- Water Wells
- Upper Hudson River Watershed
- Adirondack Park Boundary
- Hudson River
- Municipalities
- County Boundaries

0 5 10 Miles

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Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY. Department of State

Upper Hudson River Watershed Revitalization Plan

3.6 AQUATIC ORGANISM PASSAGE

The Upper Hudson River Watershed contains 7,140 miles of freshwater rivers and streams and 229 significant lakes, ponds and reservoirs which sustain natural communities by nourishing vegetation and providing food sources, shelter and spawning areas for fish and wildlife. This nourishment is dependent upon the continuity and connectivity of the stream corridor, which is often fragmented by development and transportation needs. Many stream crossings such as culverts and bridges act as barriers to fish and other wildlife. The design and condition of culverts and bridges determines whether a stream can function naturally and whether animals can move freely throughout the stream corridor.

Many aquatic animals migrate within and between waterbodies during their lifetime. Human activities, on-water development, transportation corridors, and a variety of other practices often result in challenges to passage in estuaries, rivers and streams. Maintaining and restoring this passage is often a first step in restoring watershed condition, which benefits fish and other aquatic and riparian species by connecting fragmented habitats and protecting infrastructure investments.

Photo 18: Perched culvert on MacDonald's Creek, Saratoga County. Perched culverts do not allow fish migration/passage through a stream. Photo Courtesy of Saratoga County SWCD.

Improperly placed or sized culverts have created significant migration barriers for fish and aquatic organisms throughout the Upper Hudson River Watershed. This, coupled with habitat modification, has decreased the natural hydrologic connectivity of the watershed and segregated aquatic populations. Unless properly designed and constructed, road-stream crossings can hinder or obstruct the upstream movement of fish and other aquatic and riparian-dependent organisms. They may also be inadequate to pass high flows, flood waters and debris.

The continuity of streams, as well as their connection to riparian and upland areas, is necessary for the health of all species within a stream ecosystem. Invertebrates, fish, amphibians, reptiles and mammals depend on the ability to move throughout the stream ecosystem on a regular basis to seek out shelter, escape danger, and find food. When movement is restricted it can have devastating effects on these animals.

Animals rely on the ability to move around a stream ecosystem for the following reasons:

Access to coldwater habitats: During the summer, species such as brook trout travel to and congregate in cold water sections of streams and tributaries. If fish are prevented from reaching these areas, they can become susceptible to heat stress and mortality. Additionally, if migration is restricted, they may become overcrowded and vulnerable to disease and predators.

Access to feeding areas: Different habitats provide various feeding opportunities throughout a single day or over a season, and species regularly travel to take advantage of these resources. Restricting access to prime feeding areas can affect a variety of species.

Access to breeding, spawning and nursery areas: Some species need to travel to reach spawning areas in streams. Barriers and restrictions can prevent adult fish from traveling to spawning areas, and offspring from dispersing into juvenile and eventually adult habitat.

Natural Dispersal: Natural dispersal is important, especially when streams are damaged by major events such as pollution, flooding, or severe drought. Dispersal is a critical aspect in returning a stream to a healthy, productive environment. When animals are impeded from traveling in and along stream corridors, they may be subjected to increased predation and mortality, reducing their ability to repopulate an area.

Other: Healthy streams help nourish nearby vegetation and wildlife by supplying food, shade and protection. Poor crossing design and installation can result in degradation of these areas and adversely affect native plants and animals by reducing the stream's flow. This can lead to sedimentation of important habitat and an increase the thermal temperature of the stream.

Culverts. Culverts are assessed using the protocol established by the North Atlantic Aquatic Connectivity Collaborative (NAACC) which is a unified procedure for assessing aquatic passability at road-stream crossings. In the Upper Hudson River Watershed, a total of 675 culverts have been assessed for aquatic organism passage. Of those, 141 culverts were found to be a minor barrier to passage, 125 culverts were found to be a moderate barrier to passage, 50 a significant barrier and 108 a severe barrier (NAACC Data Center).

Malfunctioning and inappropriately sized culverts can also lead to flooding, erosion, sedimentation and eventually complete wash-out. The projects and recommendations in Chapter 4 identify numerous culverts in need of repair or replacement throughout the watershed.

Photo 19: Undersized culverts on Mayfield Creek, Town of Mayfield, Fulton County.

Dams. Dams can significantly alter the ecosystem of a waterway and serve as barriers for fish and other aquatic organisms, often blocking their ability to swim up and down stream interfering with vital life-cycle stages and impacting entire ecological communities. Dams can also trap sediment, decrease water speed, reduce dissolved oxygen, increase nitrogen levels, and alter the riparian area. Due to their impacts on the ecosystem that can lead to eutrophication and cause stress of fish populations and riparian habitats, older nonfunctioning dams should be investigated for possible removal and restoration of waterway hydrology and habitat.

Many lakes and streams in the Upper Hudson River Watershed rely on dams to maintain adequate water level for recreational purposes, others are utilized for hydroelectric purposes, municipal water supplies and the creation of farm ponds. Others, like the Conklingville Dam on the Great Sacandaga Reservoir were installed to control flooding in downriver municipalities. While there is a growing push throughout New York State to remove unnecessary dams in order to restore fish habitat, many within the Upper Hudson River Watershed are necessary, but in need of costly repairs or replacement. In these cases, where dams are necessary, measures should be taken to mitigate their impacts, such as installing fish ladders to aid in fish migration and passage.

Dams within New York State are assigned a hazard code which denotes the downstream hazard potential in the case of a dam failure. While the majority of dams within the watershed have an A rating, meaning they carry a

low hazard potential, there are 18 dams with a hazard code rating of C indicating a high hazard potential. The high hazard dams within the watershed are listed below:

Table 22: Dams within the Upper Hudson River Watershed with a C Hazard Code Rating

HUC-10 Subwatershed	Dam Name
Jessup River	Lake Adirondack Dam
Jessup River	Indian Lake Stone Dam
Upper Schroon River	Rainbow Lake Dam
Upper Sacandaga River	Lake Algonquin Dam
Middle Sacandaga River	Jackson Summit Reservoir Dam
Lower Schroon River	Loon Lake Dam
Boreas River – Hudson River	Garnet Lake Dam
Hudson River Direct	Sherman Island Dam
Hudson River Direct	Feeder Dam at Glens Falls
Hudson River Direct	South Glens Falls Dam
Hudson River Direct	Spier Falls Dam
Hudson River Direct	Lock C-3 Dam at Mechanicville
Anthony Kill – Hudson River	Mechanicville Reservoir Dam
Middle Sacandaga River	Conklingville Dam
Middle Sacandaga River	Stewart's Bridge Dam
Lower Hoosic River	Johnsonville Dam
Lower Hoosic River	Tomhannock Reservoir Dam
Batten Kill	Clarks Mills Dam

Photo 20: Lake Algonquin Dam is a Class C hazard rating dam in need of structural maintenance and repairs (Priority Project #P-06), Photo Courtesy of Caitlin Steward, Hamilton County SWCD

Resource managers within the watershed have identified specific dams that need upgrades to ensure their proper functioning. Each project is listed below with its corresponding project recommendation number. See Chapter 4 for the complete list of Recommended Projects.

Table 23: Dams identified for improvements in the Upper Hudson River Watershed. Source: Upper Hudson River Watershed Coalition

Watershed	Municipality	Name	Hazard Code	Type	Purpose	Date of Update	Condition Rating
Upper Sacandaga River	Wells, Town	Lake Algonquin Dam (P-06)	C	Concrete Gravity	Hydroelectric, Recreation	2017	Not Rated
Jessup River	Indian Lake, Town	Lake Abanakee Dam (P-15)	A	Earth, Concrete Gravity	Recreation	2017	Not Rated
Jessup River	Indian Lake, Town	Lake Adirondack Dam (P-17)	C	Earth	Recreation	2017	Unsound, needs analysis
Lower Schroon River	Chester, Town	Loon Lake Dam (P-02)	C	Masonry	Recreation	2018	Not Rated
Boreas River – Hudson River	Johnsburg, Town	Garnet Lake Dam (P-13)	C	Earth	Fire Protection/ Stock, Recreation	2019	Unsound - Fair
Batten Kill	Greenwich, Town	Middle Cossayuna Damn (P-03)	A	Concrete Gravity	Fire Protection/ Stock	2009	Not Rated

AQUATIC ORGANISM PASSAGE PRIORITY PROJECTS

P-01 – Saratoga County, culvert repair or replacements – repair or replace 20 culverts throughout the county. $1,700,000.

P-02 – Town of Chester, Warren County, Loon Lake Dam replacement – funding for engineering and replacement of dam on Loon Lake. $600,000.

P-03 – Town of Greenwich, Washington County, County Route 49 replacement - funding for engineering and replacement of dam on County Route 49. $500,000 - $1,000,000.

P-04 – Towns of Mayfield, Northampton & Johnstown, Fulton County, AOP constraint remediation – projects to remediate aquatic passage constraints at five priority sites. $566,490.

P-05 – Town of Pittstown, Rensselaer County, wetland mitigation and reestablishment – mitigation and reestablishment of approximately 6,500 LF of stream channel in Deep Kill. $75,000.

P-06 – Town of Wells, Hamilton County, dam repairs – structural maintenance and repairs to Lake Algonquin hydrodam. $500,000.

P-07 – Town of Schroon, Essex County, culvert replacement – replacement of temporary culvert on Emerson Road. $75,000.

Total Costs: $4,016,490+

04. RECOMMENDATIONS AND IMPLEMENTATION

The purpose of the Upper Hudson River Watershed Revitalization Plan is to identify ways to improve the overall conditions of the watershed based on six priority issues: stormwater, agriculture, erosion, invasive species, water and wastewater and aquatic organism passage. Representatives throughout the watershed provided priority projects based on the six priority issues identified in this Plan. The Advisory Committee met to prioritize the projects by issue, first within their respective counties and then at the watershed level. This Plan identifies a total of 190 projects, totaling more than $300,000,000 in funding needs that lead to water quality improvements throughout the Upper Hudson River Watershed.

Each identified project aims to achieve one of the eight overarching goals of this Plan. Measures taken to achieve these goals will not only improve the environmental health and vitality of the watershed but will also improve the economic health and vitality of the communities within the watershed that rely on natural resources for their way of life. As set forth previously in this document, the goals of the Plan are to:

- Identify threats to water quality resources that potentially adversely impact the natural and economic vitality of the region,
- Promote positive and effective planning for implementation of water quality improvement projects,
- Assist private agricultural practices and promote the creation of management plans and implementation of best management practices,
- Protect and upgrade municipal infrastructure while sensibly reducing impacts of regular municipal maintenance efforts on water resources,
- Work with private forest landowners to promote land management plans and best management practices,
- Increase preventative measures, detection, management, and outreach and education for aquatic and terrestrial invasive species,
- Identify demographic information for outreach programs, and
- Establish a proactive partnership between local, county, state, and federal partners.

4.1 IMPLEMENTATION

Each project is assigned an implementation timeframe of short term (1-2 years), medium term (3-5 years) or long term (6 or more years). Implementation of priority and short-term projects should begin first, followed by medium-term and long-term projects, as appropriate. In addition to time frame, each project lists potential funding sources and parties who will be involved in the project's implementation.

Projects are listed in the following chart and are organized by priority issue. Priority projects are listed first, followed by short-term, medium-term and long-term projects listed in no order of priority.

4.2 RECOMMENDATIONS

Throughout the planning process, projects were collected from Soil and Water Conservation District staff, municipal officials and employees and lake associations. In total, 190 projects were identified with over $300,000,000 in water quality improvement funding needs. The full list of projects is shown in the project charts in Section 4.4 of this chapter.

4.3 PRIORITY PROJECT MAPS

Once all of the recommended projects for this Plan were collected and compiled, the Advisory Committee met to identify priority projects. Each priority issue has its own priority projects that were decided on based on the Advisory Committee's personal and professional knowledge of their service areas. Project time frame, projected costs and potential funding opportunities were also taken into account for prioritization.

Priority projects were mapped by the HUC-10 subwatershed where they are located (**Maps 21 - 26**). These maps provide a visualization of the subwatersheds in which the priority issues are most prevalent and should be prioritized for funding.

Stormwater: Three of the seven priority stormwater projects are located within the Snook Kill – Hudson River HUC-10 subwatershed and two are within the Anthony Kill – Hudson River HUC-10 subwatershed, indicating that stormwater issues are more prevalent in the southern reach of the Upper Hudson River Watershed (**Map 21**).

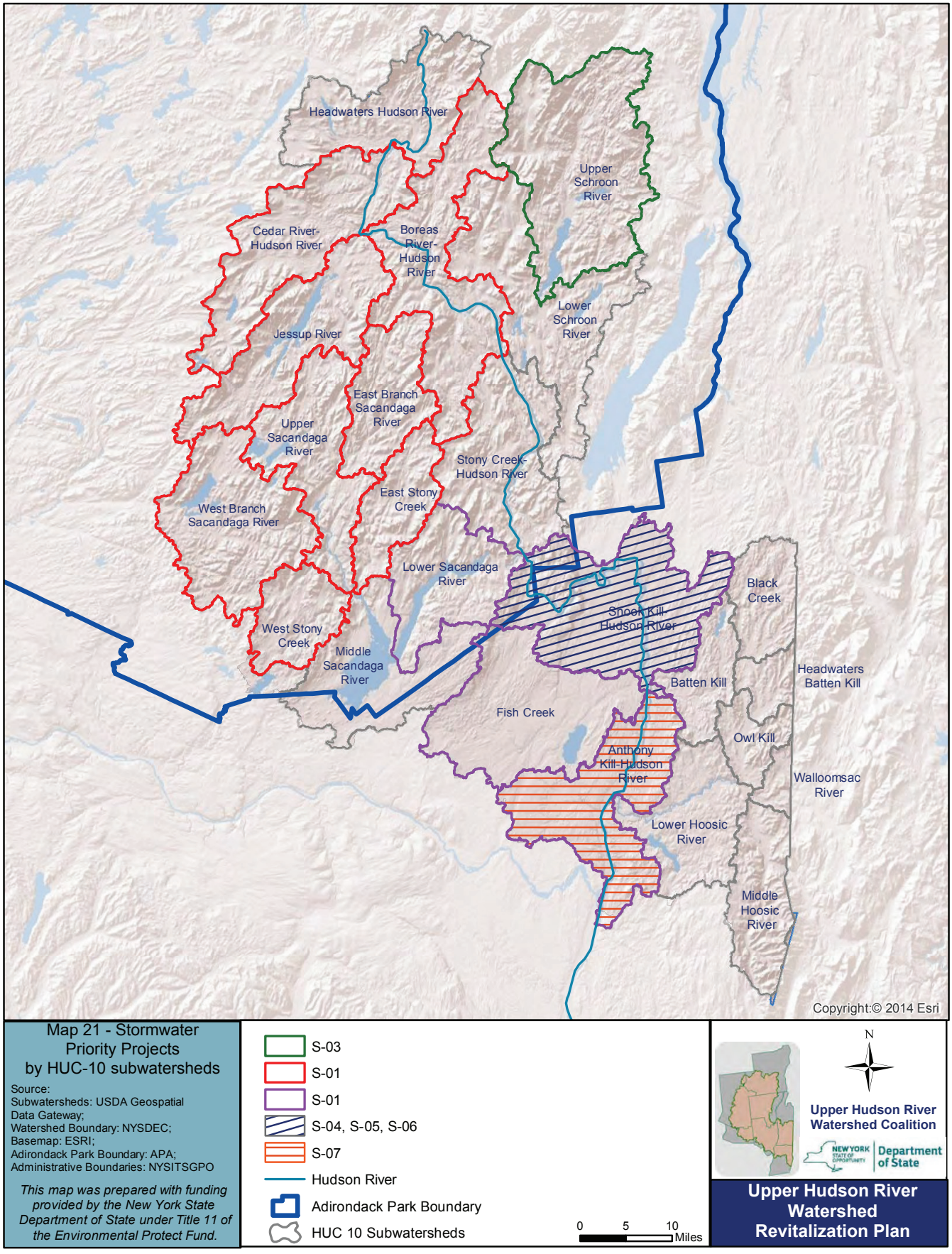
Agriculture: Of the 17 total Agriculture projects that were identified for this Plan, three are considered priority. All three are clustered in the southern portion of the Upper Hudson Watershed with project overlap in the Snook Kill – Hudson River and Anthony Kill – Hudson River HUC-10 subwatersheds and the Walloomsac River HUC-10 subwatershed (**Map 22**).

Erosion: The issue of erosion is prevalent throughout the Upper Hudson River Watershed and priority issues are distributed from the most southern subwatershed to the most northern subwatershed. Of the seven priority erosion projects identified, three are located in the Middle Sacandaga River HUC-10 subwatershed. While erosion is an issue throughout the entire watershed, the Middle Sacandaga River HUC-10 subwatershed should be focused on for project implementation (**Map 23**).

Invasive Species: Invasive species are an increasing issue throughout the Upper Hudson River Watershed and priority projects are distributed evenly throughout the HUC-10 subwatersheds (**Map 24**).

Water and Wastewater: Water and Wastewater projects have high project costs and can be directly tied to water quality impairments. Priority projects are located in HUC-10 subwatersheds throughout the Upper Hudson River Watershed (**Map 25**).

Aquatic Organism Passage: Aquatic organism passage is an issue throughout the Upper Hudson River Watershed with many of the barriers to passage tied to infrastructure such as culverts and dams. Seven priority projects are identified in this Plan, with two located in the Anthony Kill – Hudson River HUC-10 subwatershed (**Map 26**).


Headwaters Hudson River
Upper Schroon River
Cedar River-Hudson River
Boreas River-Hudson River
Lower Schroon River
Jessup River
East Branch Sacandaga River
Upper Sacandaga River
Stony Creek-Hudson River
East Stony Creek
West Branch Sacandaga River
Lower Sacandaga River
Black Creek
Snook Kill-Hudson River
West Stony Creek
Middle Sacandaga River
Headwaters Batten Kill
Batten Kill
Fish Creek
Owl Kill
Anthony Kill-Hudson River
Walloomsac River
Lower Hoosic River
Middle Hoosic River
Copyright:© 2014 Esri
Map 21 - Stormwater Priority Projects by HUC-10 subwatersheds
Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO
This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.
S-03
S-01
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S-07
Hudson River
Adirondack Park Boundary
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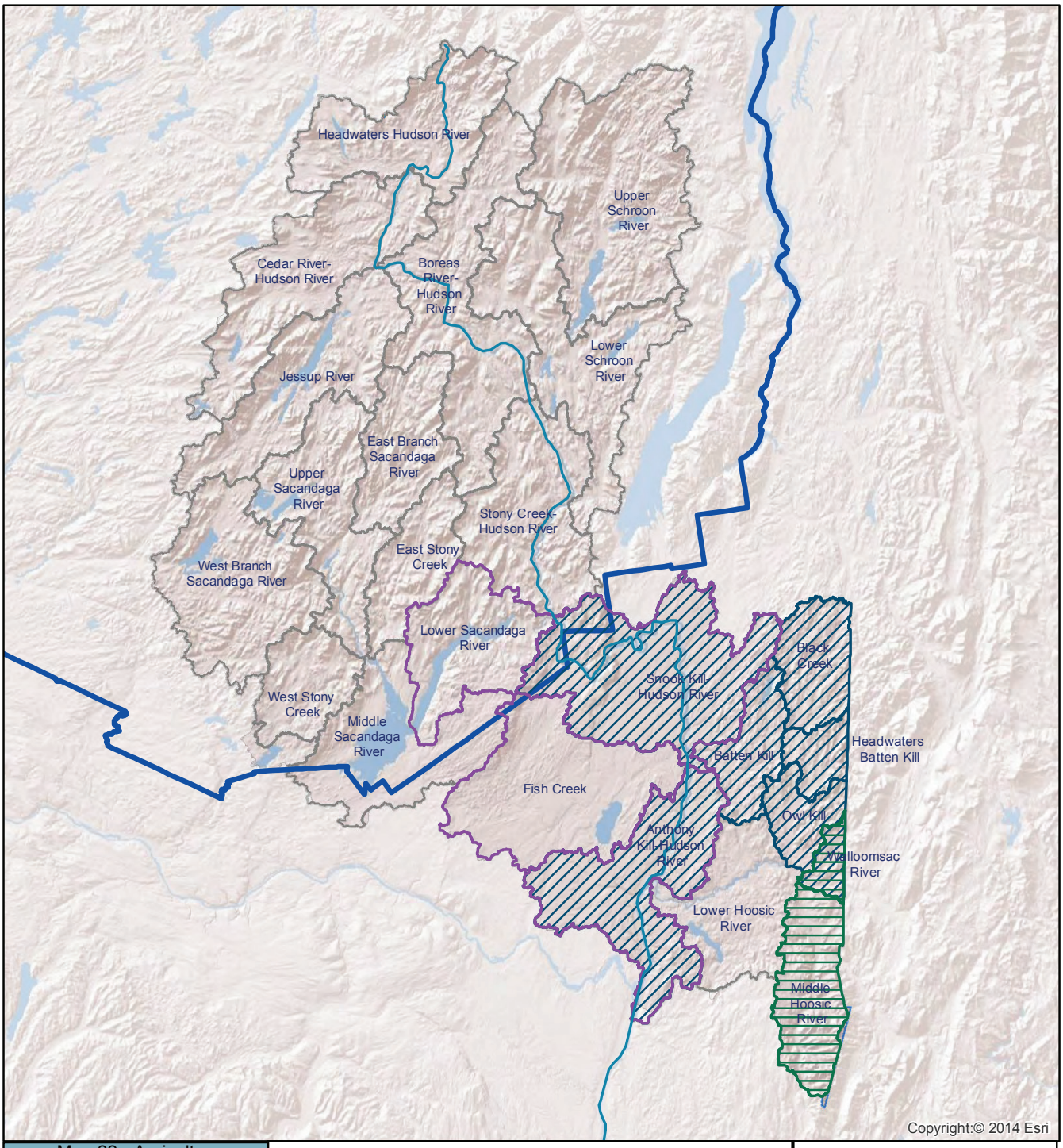
Upper Hudson River Watershed Revitalization Plan



Map 22 - Agriculture Priority Projects by HUC-10 Subwatersheds

Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

- A-01
- A-02
- A-03
- Hudson River
- Adirondack Park Boundary
- HUC 10 Subwatersheds

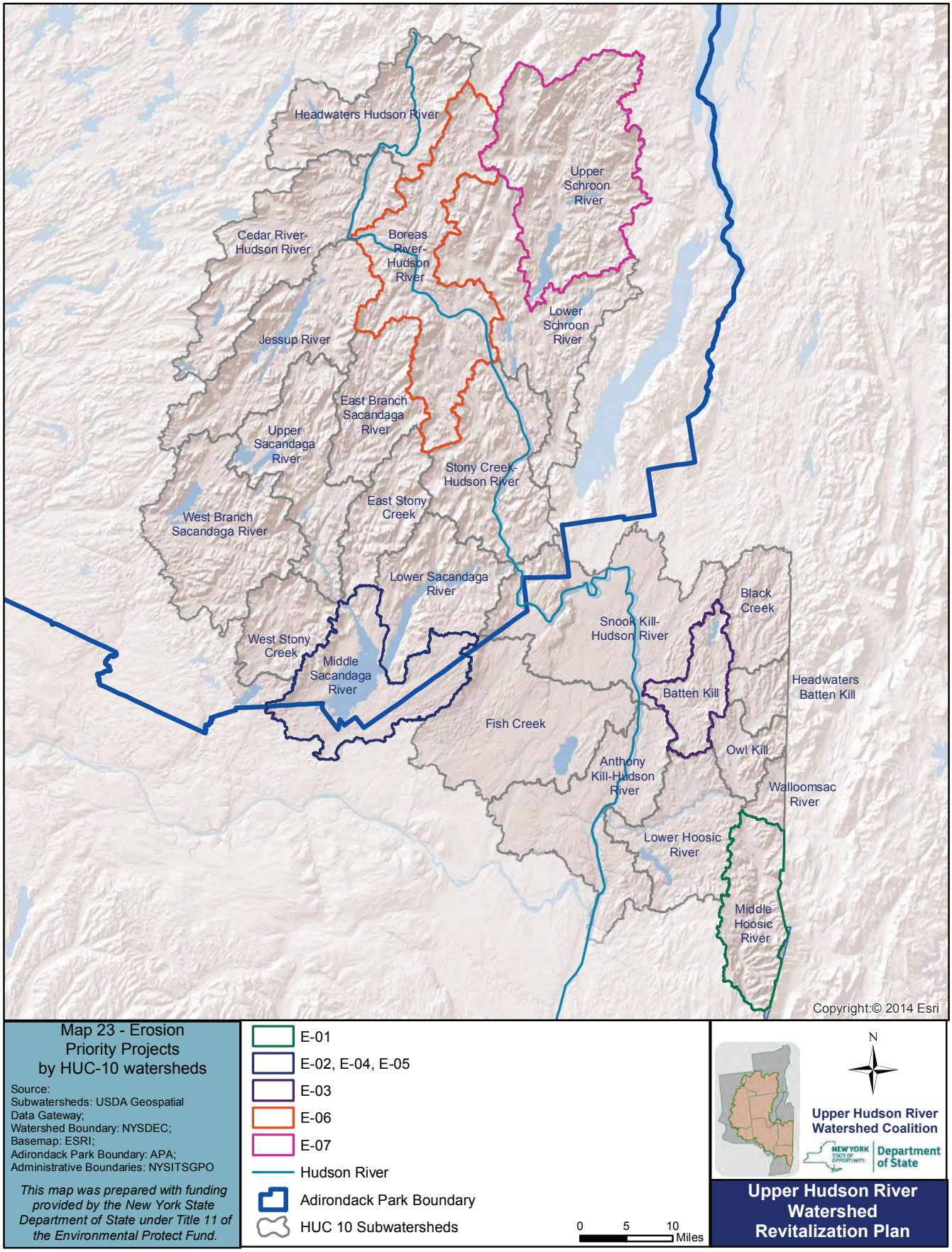
0 5 10 Miles

N

Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY. Department of State

Upper Hudson River Watershed Revitalization Plan



Map 23 - Erosion Priority Projects by HUC-10 watersheds

Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

- E-01
- E-02, E-04, E-05
- E-03
- E-06
- E-07
- Hudson River
- Adirondack Park Boundary
- HUC 10 Subwatersheds

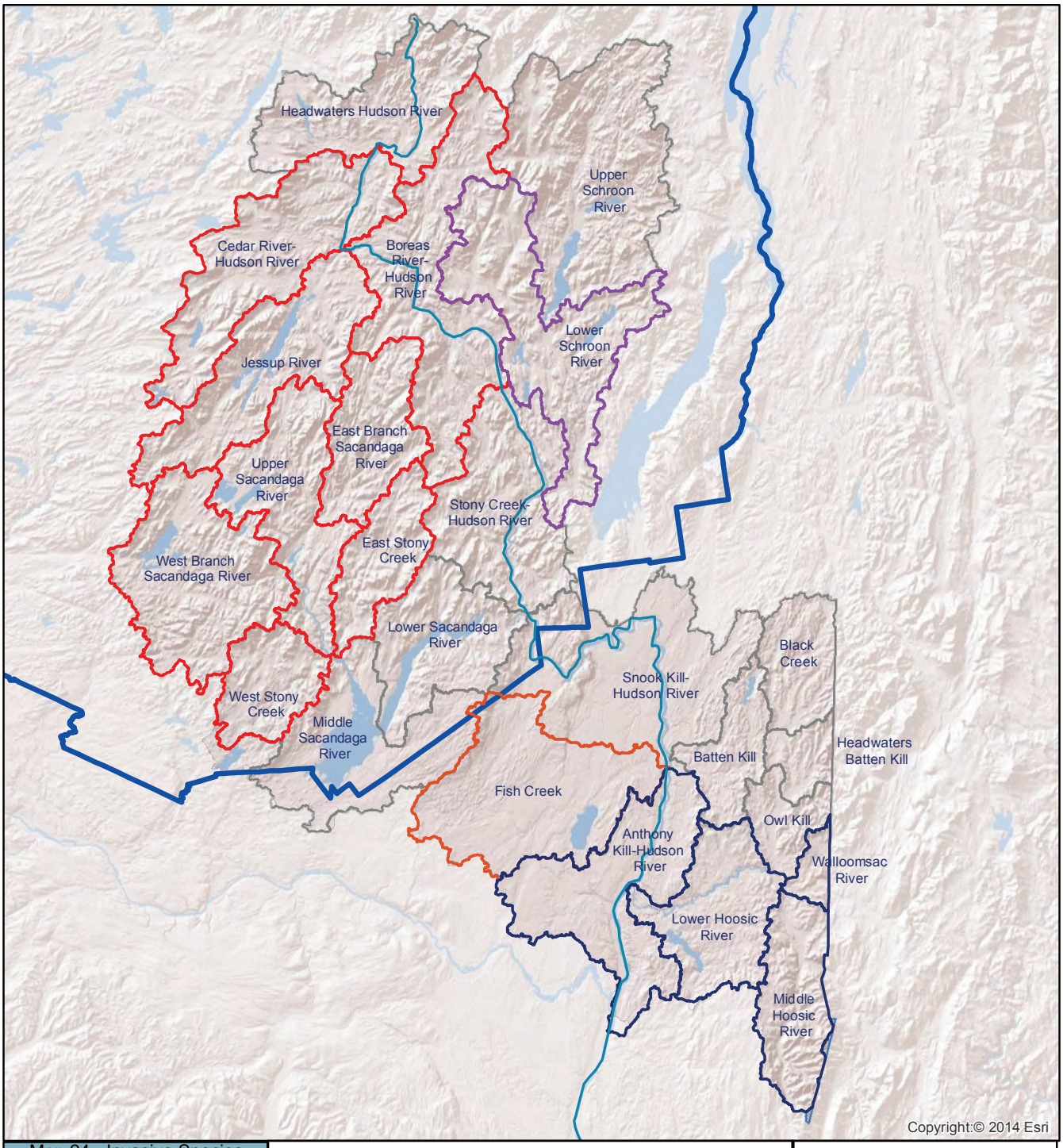
0 5 10 Miles

N

Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY. Department of State

Upper Hudson River Watershed Revitalization Plan



Map 24 - Invasive Species Priority Projects by HUC-10 Subwatersheds

Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

I-01
I-02
I-03
I-04
Hudson River
Adirondack Park Boundary
HUC 10 Subwatersheds

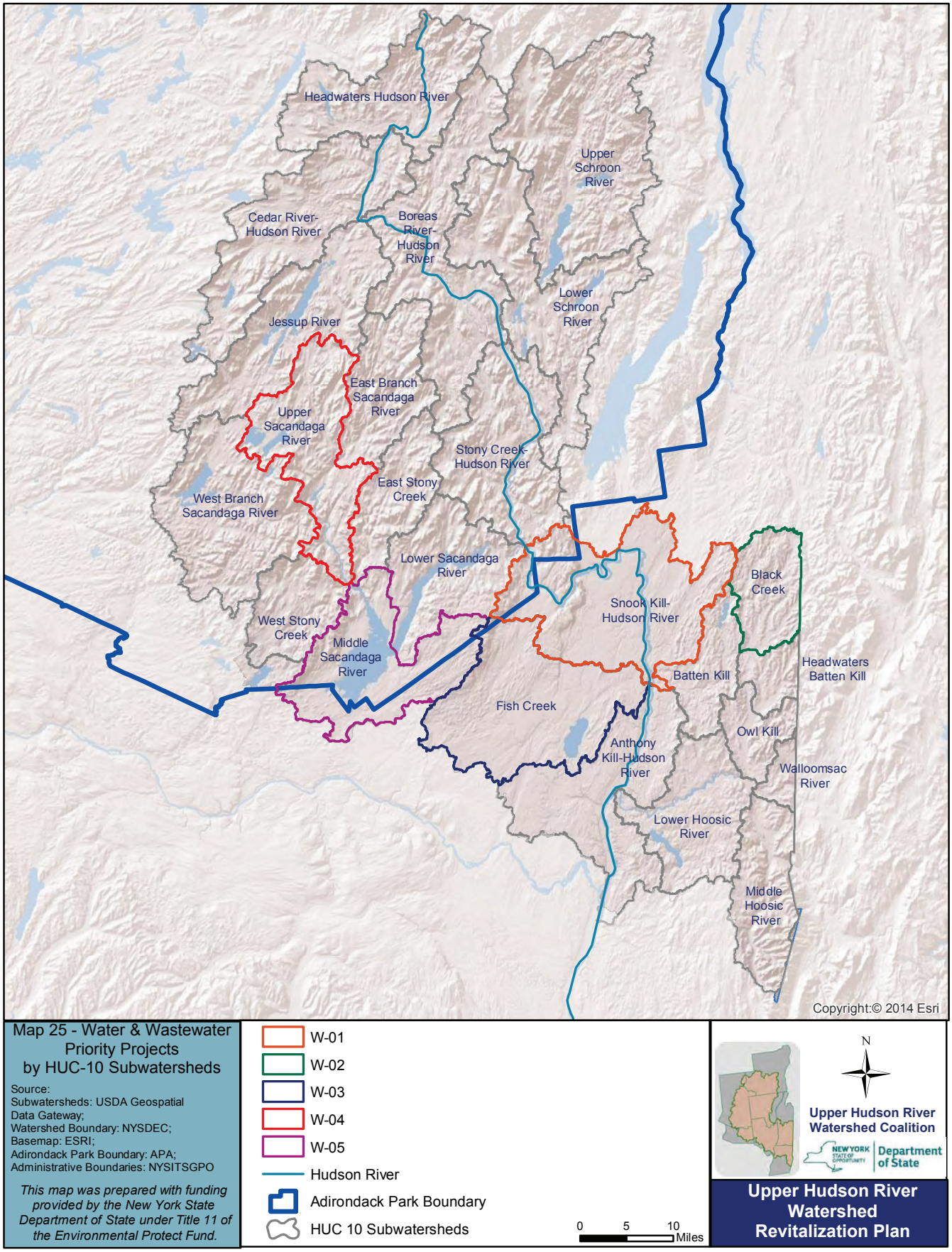
0 5 10 Miles

N

Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY. Department of State

Upper Hudson River Watershed Revitalization Plan



Map 25 - Water & Wastewater Priority Projects by HUC-10 Subwatersheds

Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

- W-01
- W-02
- W-03
- W-04
- W-05
- Hudson River
- Adirondack Park Boundary
- HUC 10 Subwatersheds

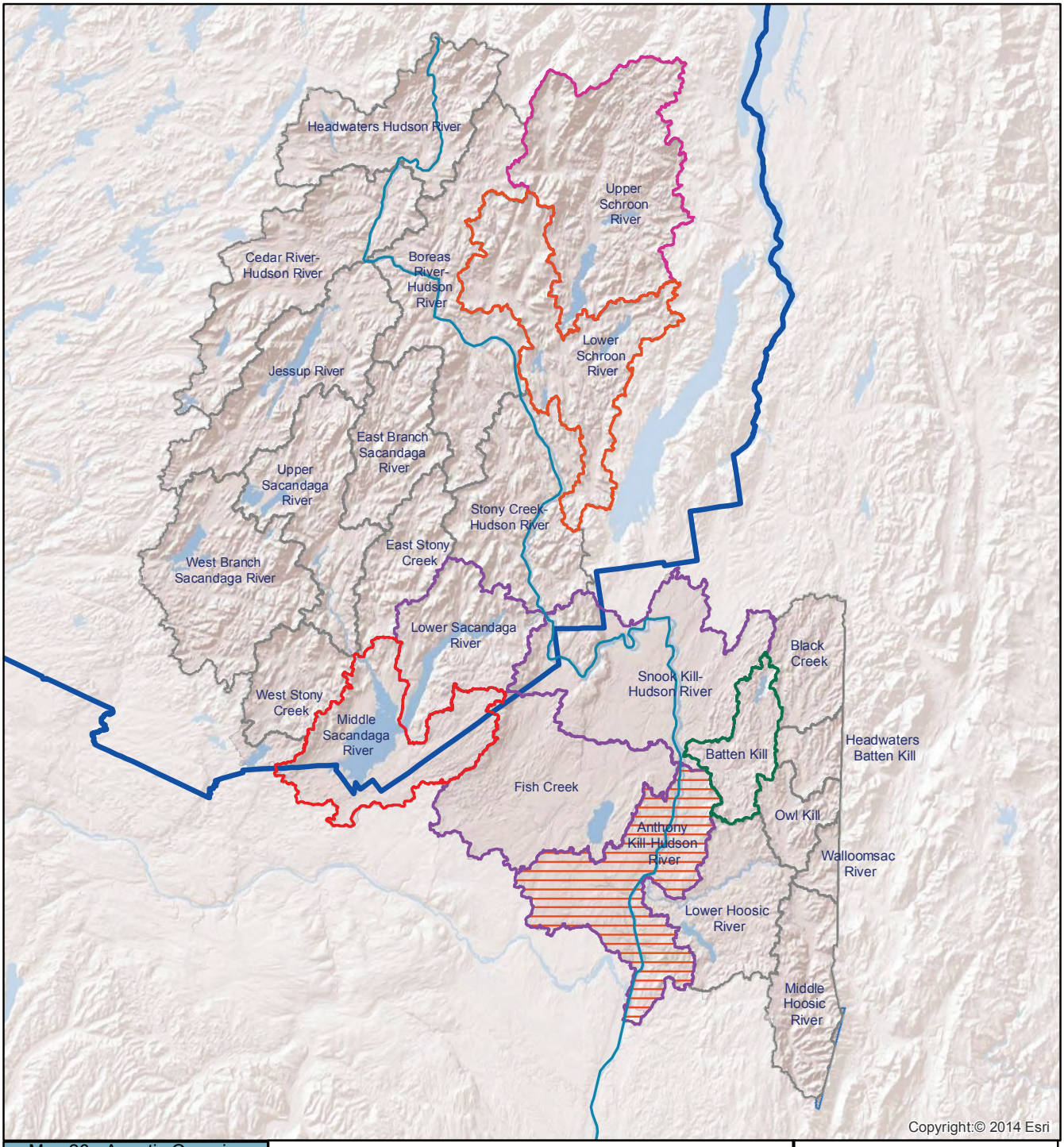
0 5 10 Miles

N

Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY Department of State

Upper Hudson River Watershed Revitalization Plan



Map 26 - Aquatic Organism Passage Priority Projects by HUC-10 Subwatersheds

Source:
Subwatersheds: USDA Geospatial Data Gateway;
Watershed Boundary: NYSDEC;
Basemap: ESRI;
Adirondack Park Boundary: APA;
Administrative Boundaries: NYSITSGPO

This map was prepared with funding provided by the New York State Department of State under Title 11 of the Environmental Protect Fund.

- P-01
- P-02
- P-03
- P-04, P-06
- P-05
- P-07
- Hudson River
- Adirondack Park Boundary
- HUC 10 Subwatersheds

0 5 10 Miles

N

Upper Hudson River Watershed Coalition

NEW YORK STATE OF OPPORTUNITY. Department of State

Upper Hudson River Watershed Revitalization Plan

4.4 RECOMMENDED PROJECTS

STORMWATER			
PRIORITY ID# S-01			
Municipality	Saratoga County	Directly on a surface water?	No
Latitude/Longitude:	Countywide	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	$275,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, municipalities
Project Description:	Purchase of trailer mounted vacuum unit to be shared by municipalities throughout the county that will be used by MS4 communities.		
PRIORITY ID# S-02			
Municipality	Various, Hamilton County	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	$25,000 each
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	municipalities, county, SWCD
Project Description:	Purchase oil water separator for municipal and county DPW garages.		
PRIORITY ID# S-03			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.5005, -73.4536	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$30,000
Potential Funding Source:	NYSDEC, NYSEFC, NYSDOS	Involved Parties in Implementation:	Town, LCLGRPB, consultant
Project Description:	Perform engineering assessment and feasibility study for stormwater reduction on Dock Street.		
PRIORITY ID# S-04			
Municipality	City of Glens Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Hudson River/ Feeder Canal
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$10,000,000
Potential Funding Source:	NYSDEC, NYSEFC, NYSDOS, NBRC	Involved Parties in Implementation:	City, SWCD
Project Description:	Design and implementation of separated storm sewer upgrades.		

STORMWATER

PRIORITY ID# S-05

Municipality	Village of Hudson Falls	Directly on a surface water?	No
Latitude/Longitude:	43.1742, -73.3421	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$700,000
Potential Funding Source:	NYSDEC, NYSDOS, NBRC, NYSEFC	Involved Parties in Implementation:	WCSD #2, Village
Project Description:	Boulevard storm outfall separated sewer design and construction.		

PRIORITY ID# S-06

Municipality	Town of Easton	Directly on a surface water?	No
Latitude/Longitude:	43.0939, -73.5455	Name of surface water:	N/A
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, WCF	Involved Parties in Implementation:	WCF, SWCD, LCLGRPB
Project Description:	Implementation of stormwater infiltration improvements on Washington County Fairgrounds.		

PRIORITY ID# S-07

Municipality	City of Troy	Directly on a surface water?	No
Latitude/Longitude:	42.7080, -73.6755	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$640,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC, NBRC	Involved Parties in Implementation:	City, Albany Pool Communities, CDRPC
Project Description:	Implementation of Cross Street Trunk Sewer Rehabilitation Phase II to reduce I & I into the city sewers.		

ID# S-08

Municipality	Town of Arietta	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	West Branch Sacandaga River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC	Involved Parties in Implementation:	SWCD, Town, County
Project Description:	Improvements to Powley Road for flood prevention.		

STORMWATER			
ID# S-09			
Municipality	Village of Speculator	Directly on a surface water?	Yes
Latitude/Longitude:	43.2945, -74.2132	Name of surface water:	Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC, NBRC	Involved Parties in Implementation:	Village, SWCD, LGLCRPB
Project Description:	Pavilion parking lot Green Infrastructure study and implementation.		
ID# S-10			
Municipality	Town of Indian Lake	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	County, Town
Project Description:	Conduct road salt study.		
ID# S-11			
Municipality	Town of North Hudson	Directly on a surface water?	Yes
Latitude/Longitude:	43.9562,-73.7610	Name of surface water:	Hudson River Branch and tributaries
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, DPW, SWCD
Project Description:	Install engineered control measures to mitigate degradation and erosion on Blue Ridge Road during flood and storm events.		
ID# S-12			
Municipality	North Hudson	Directly on a surface water?	Yes
Latitude/Longitude:	43.9960,-73.8319	Name of surface water:	Clear Pond
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, DPW, SWCD
Project Description:	Improvements to Elk Lake Road and existing culverts, including best management practices and bank stabilization.		

STORMWATER			
ID# S-13			
Municipality	Town of North Hudson	Directly on a surface water?	Yes
Latitude/Longitude:	43.9515,-73.7107	Name of surface water:	Johnson Pond Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$300,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD, Consultant
Project Description:	Implement engineered control measures to mitigate flooding and safety concerns.		
ID# S-14			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.8606,-73.7304	Name of surface water:	Alder Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon
Time Frame:	Long Term	Projected Cost:	$1,000,000
Potential Funding Source:	NYSDEC, NYSDOS, ACOE	Involved Parties in Implementation:	SWCDs, Town, ACOE
Project Description:	Road improvements to mitigate flooding, including culvert right-sizing.		
ID# S-15			
Municipality	Town of Malta	Directly on a surface water?	No
Latitude/Longitude:	Townwide	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Medium Term	Projected Cost:	$260,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town
Project Description:	Purchase streetsweeper for stormwater maintenance.		
ID# S-16			
Municipality	Town of Malta	Directly on a surface water?	No
Latitude/Longitude:	Townwide	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short Term	Projected Cost:	$350,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town
Project Description:	Purchase vacuum truck for stormwater maintenance.		

STORMWATER

ID# S-17			
Municipality	City of Glens Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Hudson River/ Glens Falls Feeder Canal
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Long Term	Projected Cost:	$400,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	City, SWCD
Project Description:	Install precast porous concrete sidewalks in locations around the City to reduce stormwater runoff and salt usage.		

ID# S-18			
Municipality	City of Glens Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Hudson River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Long Term	Projected Cost:	$10,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	City, SWCD
Project Description:	Installation of green infrastructure elements on grassed medians at 5 locations throughout the City to collect and treat stormwater from roads and reduce the amount of stormwater reaching the sewer system.		

ID# S-19			
Municipality	City of Glens Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Glens Falls Feeder Canal
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	City, SWCD
Project Description:	Planning and engineering for green infrastructure feasibility studies at 4 locations throughout the City.		

ID# S-20			
Municipality	City of Glens Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Hudson River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$40,000
Potential Funding Source:	NYSDEC, NYDOS	Involved Parties in Implementation:	City, SWCD
Project Description:	Purchase stormwater SUV and B.I.R.D for cleaning sediment and debris from porous sidewalks, green infrastructure project forebays and municipal storm sewer system.		

STORMWATER			
ID# S-21			
Municipality	City of Glens Falls	Directly on a surface water?	No
Latitude/Longitude:	43.3177, -73.6363	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	City, SWCD
Project Description:	Installation of 5-7 stormwater tree boxes along Dix Avenue for nutrient uptake and stormwater runoff mitigation.		
ID# S-22			
Municipality	Town of Warrensburg	Directly on a surface water?	No
Latitude/Longitude:	43.4934, -73.7710	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Medium Term	Projected Cost:	$375,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	Town, SWCD
Project Description:	Implementation of 2018 Warrensburg Town Hall Green Infrastructure Feasibility Study.		
ID# S-23			
Municipality	Town of Warrensburg	Directly on a surface water?	Yes
Latitude/Longitude:	43.4934, -73.7710	Name of surface water:	Schroon River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Long Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	Town, SWCD
Project Description:	Installation of precast porous concrete sidewalks (2,600' x 5').		
ID# S-24			
Municipality	Town of Horicon	Directly on a surface water?	Yes
Latitude/Longitude:	43.6756, -73.7496	Name of surface water:	Brant Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Long Term	Projected Cost:	$360,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	Town, SWCD
Project Description:	Engineering and installation of green infrastructure elements at Horicon town offices to mitigate stormwater runoff.		

STORMWATER			
ID# S-25			
Municipality	Town of Horicon	Directly on a surface water?	Yes
Latitude/Longitude:	43.6528, -73.7419	Name of surface water:	Crystal Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Installation of Burnt Hill stormwater runoff and erosion control project.		
ID# S-26			
Municipality	Town of Thurman	Directly on a surface water?	Yes
Latitude/Longitude:	43.4928, -73.8458	Name of surface water:	Number Nine Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Stony Creek - Hudson River
Time Frame:	Medium Term	Projected Cost:	$1,000,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Engineer and install a stormwater separator and salt storage at town highway garage.		
ID# S-27			
Municipality	Town of Stony Creek	Directly on a surface water?	Yes
Latitude/Longitude:	43.4219, -73.9296	Name of surface water:	Stony Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Stony Creek - Hudson River
Time Frame:	Medium Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Install a stormwater separator at town highway garage.		
ID# S-28			
Municipality	Town of Warrensburg	Directly on a surface water?	No
Latitude/Longitude:	43.5038, -73.7856	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Stony Creek - Hudson River
Time Frame:	Medium Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Warren County DPW
Project Description:	Engineer and install a covered wash bay and covered fueling station at County DPW garage.		

STORMWATER			
ID# S-29			
Municipality	Town of Chester	Directly on a surface water?	Yes
Latitude/Longitude:	43.6408, -73.8517	Name of surface water:	Friends Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Warren County DPW, SWCD
Project Description:	Installation of Friends Lake Road roadside erosion and stormwater runoff project including two drywells, a catch basin, rock forebays, bioretention and vegetated swale.		
ID#S-30			
Municipality	Town of Lake Luzerne	Directly on a surface water?	Yes
Latitude/Longitude:	43.2026, -73.4945	Name of surface water:	Stewart Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Stony Creek - Hudson River
Time Frame:	Long Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	Town, SWCD
Project Description:	Engineering and installation of green infrastructure stormwater retrofits and covered salt barn and mixing area at the town highway garage and transfer station.		
ID# S-31			
Municipality	Village of Hudson Falls	Directly on a surface water?	No
Latitude/Longitude:	43.1742, -73.3421	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$700,000
Potential Funding Source:	WIIA, NBRC, NYSDEC	Involved Parties in Implementation:	WCSD #2, Village
Project Description:	Boulevard storm outfall separated sewer design and construction.		
ID# S-32			
Municipality	Village of Greenwich	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Battenkill
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$3,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC	Involved Parties in Implementation:	Village
Project Description:	Implementation of Main Street streetscape improvements for improved stormwater management and retention.		

STORMWATER

ID# S-33

Municipality	Town of Argyle	Directly on a surface water?	Yes
Latitude/Longitude:	43.2033, -73.4178	Name of surface water:	Cossayuna Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Medium Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDEC, SWCD, lake association
Project Description:	Design and implement stormwater management and green infrastructure practices at DEC boat launch.		

ID# S-34

Municipality	City of Troy	Directly on a surface water?	No
Latitude/Longitude:	42.7146, -73.6970	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$4,750,000
Potential Funding Source:	NYSDEC, NYSEFC, NBRC	Involved Parties in Implementation:	City, County Sewer District, Albany Pool Communities, NYSDEC, NYSEFC, CDRPC
Project Description:	Van Buren Street Stream Separation Project to divert stream from combine sewer and reduce CSO frequency and volumes into the Hudson River.		

ID# S-35

Municipality	City of Troy	Directly on a surface water?	No
Latitude/Longitude:	42.4235, -73.4154	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$2,170,000
Potential Funding Source:	NYSDEC, NYSEFC, NBRC	Involved Parties in Implementation:	City, County Sewer District, Albany Pool Communities, NYSDEC, NYSEFC, CDRPC
Project Description:	Polk Street Stream Separation project to divert a stream from a combined sewer and reduce frequency and volume of CSOs to the Hudson River.		

ID# S-36

Municipality	Town of Horicon	Directly on a surface water?	Yes
Latitude/Longitude:	43.4541, -73.4544	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$7,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Engineering assessment of East Shore Drive and its drainage network for road stabilization and runoff reduction.		

STORMWATER			
ID# S-37			
Municipality	Town of Horicon	Directly on a surface water?	Yes
Latitude/Longitude:	43.4541, -73.4544	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Medium Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, DPW
Project Description:	Implement recommendations from East Shore Drive Assessment.		
ID# S-38			
Municipality	Town of Horicon	Directly on a surface water?	Yes
Latitude/Longitude:	43.4546, -73.4532	Name of surface water:	Schroon Lake and Mill Brook
Jurisdiction:	Private	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$10,000
Potential Funding Source:	NYSDEC	Involved Parties in Implementation:	Adirondack Lodges, Lake Associations, SWCD
Project Description:	Perform water quality testing and assessment stormwater management practices at Adirondack Lodges.		
ID# S-39			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Medium Term	Projected Cost:	$150,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Implement recommendations for Dock Street feasibility study.		
ID# S-40			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Complete stormwater reduction project on eastern portion of Fairfield Avenue.		

STORMWATER			
ID# S-41			
Municipality	Town of Schroon	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Long Term	Projected Cost:	$150,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDOT
Project Description:	Retrofit approximately 20 drop inlets between Charlie Hill Road and Rogers Brook with stormwater treatment and infiltration systems.		
ID# S-42			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Long Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Perform hamlet-wide infrastructure assessment for stormwater management.		
ID# S-43			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.5259, -73.4227	Name of surface water:	Paradox Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD, Consultant
Project Description:	Perform a stormwater assessment for Paradox Lake watershed and implement recommendations from that assessment.		
ID# S-44			
Municipality	Town of Schroon	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	LCLGRPB, Town, Consultant
Project Description:	Complete a green infrastructure plan and assessment for the Town of Schroon.		

STORMWATER			
ID# S-45			
Municipality	Town/Village of Stillwater	Directly on a surface water?	No
Latitude/Longitude:	Town wide	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short term	Projected Cost:	$365,690
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town
Project Description:	Purchase of vacuum truck for removal of debris from catch basins and stormwater collection pits throughout the Town and Village of Stillwater.		
ID# S-46			
Municipality	Town of Charlton	Directly on a surface water?	No
Latitude/Longitude:	Town wide	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short Term	Projected Cost:	$300,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town
Project Description:	Purchase of street sweeper and catch basin cleaner.		
ID# S-47			
Municipality	Town of Saratoga	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short Term	Projected Cost:	$10,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town
Project Description:	Improvements to culverts and ditching along Fitch Road.		
ID# S-48			
Municipality	Town of Northumberland	Directly on a surface water?	No
Latitude/Longitude:	43.1795, -73.5910	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$25,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Improvements to Purinton Road to reduce and repair erosion.		

STORMWATER			
ID# S-49			
Municipality	Town of Northumberland	Directly on a surface water?	No
Latitude/Longitude:	43.1967, -73.5878	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill
Time Frame:	Medium Term	Projected Cost:	$28,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Improve stormwater drainage on Wells Lane through new culverts, ditching and hydroseeding.		
REGIONAL			
ID# S-50			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDEC, LCLGRPB, Municipalities
Project Description:	Creation and implementation of MS4 Lite Program.		
ID# S-51			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Municipalities, Counties, LCLGRPB, consultant
Project Description:	Creation of an impervious surface layer utilizing LiDAR data to use in modeling and project planning.		
ID# S-52			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$5,000,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Municipalities, Consultants
Project Description:	Secure funding for non-MS4 Municipalities to create and adopt stormwater regulations.		
ID# S-53			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	Unknown
Potential Funding Source:	USGS	Involved Parties in Implementation:	USGS
Project Description:	Continued funding for all stream gauges within the Upper Hudson River Watershed.		

STORMWATER			
ID# S-54			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$10,000,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSDOT, NYSEFC	Involved Parties in Implementation:	Municipalities
Project Description:	Secure funding for municipalities to create Operations and Maintenance Plans for their stormwater systems.		
ID# S-55			
Municipality	Southern Washington County	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Batten Kill Watershed
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Short Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, USEPA	Involved Parties in Implementation:	USFWS, NYSDEC, SWCD, Trout Unlimited, Battenkill Alliance, Battenkill Conservancy, Bennington County SWCD, UHRWC, LCLGRPB
Project Description:	Create and implement a 9 Element Watershed Management Plan for the entirety of the Battenkill Watershed, including the Vermont portion.		
ID# S-56			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	Various
Potential Funding Source:	NYSDEC, USEPA	Involved Parties in Implementation:	Municipalities
Project Description:	Funding for small Phase II MS4 communities for operations, project implementation, and planning efforts for improved stormwater management.		

AGRICULTURE

PRIORITY ID# A-01			
Municipality	Various, Saratoga County	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Various
Time Frame:	Long Term	Projected Cost:	$420,000
Potential Funding Source:	NYSDAM, NRCS	Involved Parties in Implementation:	landowners, SWCD
Project Description:	Design and construct at least 6 manure storage facilities on equine farms throughout the county.		
PRIORITY ID# A-02			
Municipality	Washington County, Countywide	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Tributaries to Hudson River
Jurisdiction:	Private	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$250,000
Potential Funding Source:	NYSDAM, NRCS	Involved Parties in Implementation:	SWCD, landowners, operators
Project Description:	Initiate county-wide cover crop initiative for soil health and erosion prevention along Hudson River.		
PRIORITY ID# A-03			
Municipality	Rensselaer County	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Walloomsac River/ Middle Hoosic River
Time Frame:	Medium Term	Projected Cost:	$5,000 - $10,000 each
Potential Funding Source:	NYSDAM, NRCS	Involved Parties in Implementation:	landowner, SWCD
Project Description:	Update CNMPs on targeted farms throughout the county.		
ID# A-04			
Municipality	Town of Easton	Directly on a surface water?	Yes
Latitude/Longitude:	-	Name of surface water:	Fly Creek
Jurisdiction:	Private	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDAM, NRCS, USFWS, TU, SWCD	Involved Parties in Implementation:	USFWS, TU, SWCD
Project Description:	Culvert update, establish vegetative buffer and animal exclusion.		

AGRICULTURE

ID# A-05			
Municipality	Town of Easton	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Lower Hoosic River
Time Frame:	Short Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDAM, NRCS	Involved Parties in Implementation:	SWCD, landowner
Project Description:	Installation of silage leachate collection and treatment system for feed storage area.		

ID# A-06			
Municipality	Town of Jackson	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$1,250,000
Potential Funding Source:	NYSDAM, NRCS	Involved Parties in Implementation:	SWCD, landowner, operator
Project Description:	Installation of all agricultural best management practices association with the CNMP: silage leachate collection and treatment, milkhouse waste collection and manure storage and transfer system.		

ID# A-07			
Municipality	Town of Easton	Directly on a surface water?	Yes
Latitude/Longitude:	-	Name of surface water:	Hoosic River
Jurisdiction:	Private	Project Subwatershed HUC 10:	Lower Hoosic River
Time Frame:	Medium Term	Projected Cost:	$1,000,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	SWCD, landowner, Operator
Project Description:	Installation of off-farm satellite manure storages to improve nutrient management capabilities of farm operation.		

ID# A-08			
Municipality	Town of Salem	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$3,000,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD, NYSDAM
Project Description:	Installation of satellite manure storages on three farms as mandated by CAFO regulations and directed by CNMPs.		

AGRICULTURE

ID# A-09			
Municipality	Town of Hebron	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Black Creek
Time Frame:	Medium Term	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD, NYSDAM
Project Description:	Installation of manure storages as outlined by CNMPs on three farms.		

ID# A-10			
Municipality	Town of Fort Edward	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Hudson River Direct
Time Frame:	Medium	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD, NYSDAM
Project Description:	Installation of manure storages on 3 farms as outlined by CNMPs.		

ID# A-11			
Municipality	Town of Cambridge	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Hoosic River
Time Frame:	Medium	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD, NYSDAM
Project Description:	Installation of manure storages on 2 farms as outlined by CNMPs.		

ID# A-12			
Municipality	Town of Jackson	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD, NYSDAM
Project Description:	Installation of manure storages on 2 farms as outlined by CNMPs.		

AGRICULTURE

ID# A-13			
Municipality	Village of Hoosick Falls	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Walloomsac River/ Middle Hoosic River
Time Frame:	Medium Term	Projected Cost:	$200,000 - $350,00 each
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD, NYSDAM
Project Description:	Construct Manure Storage Facilities on targeted farms.		
ID# A-14			
Municipality	Various, Saratoga County	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Various
Time Frame:	Long Term	Projected Cost:	$750,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD
Project Description:	Installation of manure storage cover and flares at at least 5 sites throughout the county.		
ID# A-15			
Municipality	Various, Saratoga County	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Snook Kill, Anthony Kill, Fish Creek
Time Frame:	Long Term	Projected Cost:	$48,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	landowner, SWCD
Project Description:	Grade stabilization projects on at least 4 farms throughout the county.		
ID# A-16			
Municipality	Town of Northumberland	Directly on a surface water?	No
Latitude/Longitude:	-	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Snook Kill
Time Frame:	Medium Term	Projected Cost:	$210,000
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	Landowner, SWCD
Project Description:	Implementation of manure transfer and management plan as outlined by the CNMP.		

AGRICULTURE			
ID# A-17			
Municipality	Countywide, Saratoga County	Directly on a surface water?	No
Latitude/Longitude:	Countywide	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$45,000
Potential Funding Source:	NYSDEC, NYSDOS, CRF	Involved Parties in Implementation:	landowner, SWCD
Project Description:	Expand county's interseeder rental program.		
REGIONAL			
ID# A-18			
Jurisdiction:	Private	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDAM	Involved Parties in Implementation:	SWCDs, LCLGRPB, NRCS
Project Description:	Creation of an annual funding source for planning for environmental improvement projects on agricultural lands.		

EROSION

PRIORITY ID# E-01			
Municipality	Village of Hoosick Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Hoosic River
Jurisdiction:	Private	Project Subwatershed HUC 10:	Middle Hoosic River
Time Frame:	Medium Term	Projected Cost:	$108,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, ACOE
Project Description:	Rock armor or rock vane in 6 locations along Hoosic River to prevent riverbank erosion.		

PRIORITY ID# E-02			
Municipality	Town of Edinburgh	Directly on a surface water?	Yes
Latitude/Longitude:	57.4204, -47.9332	Name of surface water:	Sacandaga Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Short Term	Projected Cost:	$400,000
Potential Funding Source:	NYSDOT, NYSDOS, FEMA, ACOE	Involved Parties in Implementation:	town, county, SWCD, ACOE
Project Description:	Repairs to Military Turnpike bridge that was heavily scoured by October 2019 rain events.		

PRIORITY ID# E-03			
Municipality	Town of Argyle	Directly on a surface water?	Yes
Latitude/Longitude:	43.2180, -73.4032	Name of surface water:	unnamed trib to Cossayuna Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Medium Term	Projected Cost:	$250,000
Potential Funding Source:	NYSDEC, NYSDOT, NYSDOS	Involved Parties in Implementation:	town, county, SWCD
Project Description:	Install erosion and sediment control practices and pave Gordon Road.		

PRIORITY ID# E-04			
Municipality	Various, Fulton County	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Caroga Creek, Skinner Creek, Kennyetto Creek, Mayfield Creek, Great Sacandaga Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Long Term	Projected Cost:	$175,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation	Town/County Highway Depts, SWCD
Project Description:	Implement Fulton County erosion control projects identified in the Upper Hudson River Watershed Roadside Erosion Assessment.		

EROSION

PRIORITY ID# E-05			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.4103, -74.2866	Name of surface water:	Elbow Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$1,000,000
Potential Funding Source:	NYSDEC, NYSDOS, ACOE	Involved Parties in Implementation:	Town Highway Department, County DPW, landowners, SWCD, TU, ACOE
Project Description:	Restore Elbow Creek to a less erosive stream to protect brook trout habitat, roads, and private homes. Impacted by October 2019 heavy rain event.		

PRIORITY ID# E-06			
Municipality	Town of Johnsburg	Directly on a surface water?	Yes
Latitude/Longitude:	43.6978,-73.9858	Name of surface water:	North Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Medium Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC, ORDA	Involved Parties in Implementation:	Town, ORDA
Project Description:	Ski Bowl stormwater mitigation project.		

PRIORITY ID# E-07			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.8811, -73.6435	Name of surface water:	Pyramid Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$125,000
Potential Funding Source:	NYSDEC, NYSDOS, FEMA	Involved Parties in Implementation:	Town, County, SWCD
Project Description:	Replace temporary bridge at site with an appropriately sized culvert and install best management practices to prevent future erosion at this site. Site was impacted by October 2019 rain event.		

ID# E-08			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Sacandaga River
Jurisdiction:	Private	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD
Project Description:	Riverbank stabilization project at Cave Banks.		

EROSION

ID# E-09			
Municipality	Town of Arietta	Directly on a surface water?	Yes
Latitude/Longitude:	43.2753, -74.3140	Name of surface water:	Cold Stream
Jurisdiction:	Private	Project Subwatershed HUC 10:	West Branch Sacandaga River
Time Frame:	Short Term	Projected Cost:	$25,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD
Project Description:	Approximately 300 feet of streambank stabilization on Cold Stream.		
ID# E-10			
Municipality	Town of Wells	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, County, Town
Project Description:	Gilmantown Road bank stabilization project.		
ID# E-11			
Municipality	Town of Hope	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD
Project Description:	Sacandaga River bank stabilization project.		
ID# E-12			
Municipality	Village of Speculator	Directly on a surface water?	Yes
Latitude/Longitude:	43.2942, -74.2137	Name of surface water:	Lake Pleasant/ Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, Village Garden Club, Town
Project Description:	Osborne Point Park shoreline stabilization project.		

EROSION

ID# E-13			
Municipality	Town of Lake Pleasant	Directly on a surface water?	Yes
Latitude/Longitude:	43.4670, -74.3135	Name of surface water:	Jessup River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River
Time Frame:	Short Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, DPW
Project Description:	Improvements to canoe launch.		
ID# E-14			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.8423, -73.7928	Name of surface water:	Rogers Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD
Project Description:	Rock vanes and erosion control measures along Rogers Brook near Hoffman Ridge Road		
ID# E-15			
Municipality	Town of Minerva	Directly on a surface water?	Yes
Latitude/Longitude:	43.4735, -73.5852	Name of surface water:	Minerva Lake/ Jones Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$15,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD
Project Description:	Road and drainage improvements to control runoff and sediment migration.		
ID# E-16			
Municipality	Town of North Hudson	Directly on a surface water?	Yes
Latitude/Longitude:	44.0033, -73.4114	Name of surface water:	Schroon River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD
Project Description:	Slope stabilization above Duntley Road.		

EROSION

ID# E-17			
Municipality	Town of North Hudson	Directly on a surface water?	Yes
Latitude/Longitude:	44.1028, -73.7035	Name of surface water:	West Mill Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$25,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD
Project Description:	Bank stabilization on West Mill Brook along Pepper Hollow Road.		

ID# E-18			
Municipality	Town of Minerva	Directly on a surface water?	Yes
Latitude/Longitude:	43.4743, -73.5920	Name of surface water:	Jones Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCDs, Town, DPW
Project Description:	Replacement and right-sizing of culvert on Jones Brook.		

ID# E-19			
Municipality	Town of Horicon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Crystal Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Medium Term	Projected Cost:	$60,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Crystal Lake shoreline stabilization.		

ID# E-20			
Municipality	Town of Queensbury	Directly on a surface water?	Yes
Latitude/Longitude:	43.3201, -73.7485	Name of surface water:	Hudson River
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Snook - Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	City of Glens Falls, Town, SWCD
Project Description:	Clendon Road solid waste removal from the City of Glens Falls watershed water supply property with implementation of vegetation management and erosion and sediment control best management practices.		

EROSION

ID# E-21			
Municipality	Town of Thurman	Directly on a surface water?	Yes
Latitude/Longitude:	43.4928, -73.8458	Name of surface water:	Number Nine Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Stony Creek - Hudson River
Time Frame:	Short Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Stabilization project at town sports fields.		

ID# E-22			
Municipality	Town of Chester	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Trout Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$25,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD, USFWS
Project Description:	Trout Brook stabilization project around Town wells on Gambles Beach Road.		

ID# E-23			
Municipality	Town of Jackson	Directly on a surface water?	Yes
Latitude/Longitude:	43.0709, -73.3414	Name of surface water:	Battenkill River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Headwaters Battenkill
Time Frame:	Medium Term	Projected Cost:	$3,000,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDEC, SWCD, TU, Battenkill Alliance, USFWS
Project Description:	Channel restoration project on the Battenkill River.		

ID# E-24			
Municipality	Town of Cambridge	Directly on a surface water?	Yes
Latitude/Longitude:	42.9584, -73.4372	Name of surface water:	Whipple Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Hoosic River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD
Project Description:	Perform a stream health assessment to identify areas that are contributing to excess sediment loading and other issues impacting the health of Whipple Brook.		

EROSION

ID# E-25			
Municipality	Town of Easton	Directly on a surface water?	Yes
Latitude/Longitude:	42.9585, -73.5687	Name of surface water:	Unnamed trib
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$750,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD, Trout Unlimited
Project Description:	Replacement of a stream crossing so that the inlet is significantly larger with an altered shape.		
ID# E-26			
Municipality	Town of Easton	Directly on a surface water?	Yes
Latitude/Longitude:	43.9585, -73.5687	Name of surface water:	Unnamed trib
Jurisdiction:	Public	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Medium Term	Projected Cost:	$250,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, SWCD, Trout Unlimited
Project Description:	Replacement of an intermittent stream crossing to increase the inlet size and alter the shape.		
ID# E-27			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Trout Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD, Lake Associations
Project Description:	Assess Trout Brook to determine source of sedimentation and produce action plan. Implement recommendations from the action plan.		
ID# E-28			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.4857, -73.4857	Name of surface water:	Schroon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$5,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	DPW, SWCD, Town Highway Dept.
Project Description:	Stabilize ditches on Adirondack Road through rock lining, installation of sediment basins and vegetative measures.		

EROSION

ID# E-29			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Schroon River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Long Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS, ACOE	Involved Parties in Implementation:	Towns, TU, SWCDs, USFWS, ACOE
Project Description:	Implement Upper Schroon River streambank restoration project.		
ID# E-30			
Municipality	Town of North Hudson	Directly on a surface water?	Yes
Latitude/Longitude:	43.5730, -73.5730	Name of surface water:	Schroon River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Medium Term	Projected Cost:	$30,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Implement Beach Street Project.		
ID# E-31			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Lake Algonquin
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga
Time Frame:	Short Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, Lake Association, SWCD
Project Description:	Create and implement shoreline management plan for Lake Algonquin.		
ID# E-32			
Municipality	Town of Chester	Directly on a surface water?	Yes
Latitude/Longitude:	43.6794, -73.8590	Name of surface water:	Loon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$12,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, LLPDA, SWCD
Project Description:	Conduct a watershed assessment for Loon Lake.		

EROSION

ID# E-33			
Municipality	Town of Argyle	Directly on a surface water?	Yes
Latitude/Longitude:	43.2033, -73.4178	Name of surface water:	Cossayuna Lake and tributaries
Jurisdiction:	Public	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Short Term	Projected Cost:	$10,000
Potential Funding Source:	NYSDEC, NYSDOS, SWCD	Involved Parties in Implementation:	SWCD, NYSDEC, CLIA, consultant
Project Description:	Replication of a 1988 stream study to benchmark nutrient reduction goals and evaluate future remediation needs.		
ID# E-34			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.8396, -73.7128	Name of surface water:	trib of Wilson Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Alder Creek
Time Frame:	Short Term	Projected Cost:	$8,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Replace culvert on Adirondack Road with larger size, improve/stabilize culvert area and ditches downhill.		
ID# E-35			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.8025,-73.8322	Name of surface water:	Ephemoral trib of Alder Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Alder Brook - Trout Brook
Time Frame:	Short Term	Projected Cost:	$2,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Replace culvert on Hollow Road.		
ID# E-36			
Municipality	Town of Minerva	Directly on a surface water?	No
Latitude/Longitude:	43.8194, -74.0628	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Long Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDOS, NYSDEC	Involved Parties in Implementation:	Town, SWCD
Project Description:	Stabilize banks and improve drainage on North Woods Club Road.		

EROSION

ID# E-37			
Municipality	Town of Minerva	Directly on a surface water?	No
Latitude/Longitude:	43.7708, -74.0114	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Long Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Stabilize banks on 14th Road.		

ID# E-38			
Municipality	Town of Minerva	Directly on a surface water?	Yes
Latitude/Longitude:	43.7895, -74.0188	Name of surface water:	Deer Creek
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Short Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Stabilize streambanks adjacent to Deer Creek Bridge on Ridge Road.		

ID# E-39			
Municipality	Town of Minerva	Directly on a surface water?	Yes
Latitude/Longitude:	74.8129, -74.0395	Name of surface water:	Bullhead Pond Brook
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Medium Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Stabilize streambanks adjacent to road.		

ID# E-40			
Municipality	Town of Arietta	Directly on a surface water?	Yes
Latitude/Longitude:	43.4226, -74.5483	Name of surface water:	Warner Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	West Branch Sacandaga River
Time Frame:	Short Term	Projected Cost:	$40,000
Potential Funding Source:	USDA, NYSDOS, NYSDEC	Involved Parties in Implementation:	County DPW, SWCD
Project Description:	Replace washed-out culvert on Warner Brook, impacted by October 2019 rain events.		

EROSION

ID# E-41			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.4519, -74.3153	Name of surface water:	Dunning Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	East Stony Creek
Time Frame:	Medium Term	Projected Cost:	$60,000
Potential Funding Source:	NYSDEC, NYSDOS, USDA	Involved Parties in Implementation:	County DPW, SWCD
Project Description:	Replace scoured bridge abutments damaged during October 2019 rain event, to allow appropriate flow and passage for Dunning Brook.		
ID# E-42			
Municipality	Town of Hope	Directly on a surface water?	Yes
Latitude/Longitude:	43.3340, -74.1858	Name of surface water:	East Stony Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$40,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSDOT	Involved Parties in Implementation:	Town, SWCD
Project Description:	Hope Falls Road bank stabilization project.		
ID# E-43			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.3903, -74.2894	Name of surface water:	Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Short Term	Projected Cost:	$60,000
Potential Funding Source:	NYSDEC, NYSDOS, USDA	Involved Parties in Implementation:	Town, SWCD
Project Description:	Streambank stabilization to approximately 150 feet on the Sacandaga River scoured by heavy rains in October 2019.		
ID# E-44			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.4233, -74.3000	Name of surface water:	Elbow Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$60,000
Potential Funding Source:	NYSDEC, NYSDOS, USDA	Involved Parties in Implementation:	County DPW, SWCD
Project Description:	Replace bridge abutments on Elbow Creek that were scoured by heavy rains during October 2019 rain event.		

EROSION

ID# E-45			
Municipality	Town of Hope	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$150,000
Potential Funding Source:	NYSDEC, NYSDOS, USDA	Involved Parties in Implementation:	Town, DPW, SWCD
Project Description:	Stabilization of Sacandaga River in multiple new sites resulting from a heavy rain event in October 2019.		

ID# E-46			
Municipality	Town of Saratoga	Directly on a surface water?	Yes
Latitude/Longitude:	43.0210, -73.3532	Name of surface water:	Hudson River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$45,000
Potential Funding Source:	NYSDEC, NYSDOS, Saratoga County	Involved Parties in Implementation:	Town, County
Project Description:	Installation of erosion control methods in boat launch parking lot.		

ID# E-47			
Municipality	Town of Northumberland	Directly on a surface water?	No
Latitude/Longitude:	43.1577, -73.5840	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$5,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Ditching, hydroseeding and stormwater maintenance to reduce erosion and sedimentation on Harris Road.		

ID# E-48			
Municipality	Town of Salem	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Camden Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS, TU	Involved Parties in Implementation:	Town, SWCD
Project Description:	Channel restoration and buffer establishment in various spots along Camden Creek.		

EROSION

REGIONAL

ID# E-49			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$1,700,000
Potential Funding Source:	NYSDOS, NYSDEC	Involved Parties in Implementation:	Municipalities, SWCDs, LCLGRPB
Project Description:	Implementation of the Upper Hudson River Watershed Roadside Erosion Assessment.		

ID# E-50			
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	$500,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	LCLGRPB, SWCDs
Project Description:	Completion of a watershed-wide streambank assessment to identify and rank areas of erosion for remediation.		

INVASIVE SPECIES

PRIORITY ID# I-01			
Municipality	Various - Rensselear County	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, USDA	Involved Parties in Implementation:	landowner, SWCD
Project Description:	Create and implement a terrestrial invasive species management program on agricultural grazing lands.		

PRIORITY ID# I-02			
Municipality	Town of Malta	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Saratoga Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short Term	Projected Cost:	$30,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SLIPD, Town
Project Description:	Purchase of barge for invasive species monitoring, harvesting, and transporting.		

PRIORITY ID# I-03			
Municipality	Towns of Horicon, Chester, Luzerne	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Brant Lake, Schroon Lake, Lake Luzerne
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Long Term	Projected Cost:	$250,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	lake associations, SWCD
Project Description:	Program funding for Eurasian Watermilfoil harvesting on Brant Lake, Schroon Lake, Loon Lake, and Lake Luzerne.		

PRIORITY ID# I-04			
Municipality	Hamilton County - Various	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Long Term	Projected Cost:	$500,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	lake associations, SWCDs, APIPP
Project Description:	Contract with certified pesticide applicators to treat terrestrial invasive plants that impact water resources on public and private lands throughout Hamilton County.		

INVASIVE SPECIES

ID# I-05			
Municipality	Towns of Arietta, Indian Lake, Lake Pleasant, Wells	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Various
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River, Upper Sacandaga
Time Frame:	Short Term	Projected Cost:	$5,000 each
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Lake Associations, Town, SWCD, AWI, LCLGRPB
Project Description:	Management, inventory and educational outreach for spiny waterflea and other AIS.		
ID# I-06			
Municipality	Towns of Indian Lake/ Lake Pleasant	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Indian Lake/ Lake Lewey
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River
Time Frame:	Medium Term	Projected Cost:	$25,000 annually
Potential Funding Source:	NYSDEC, NYSDOS, AWI	Involved Parties in Implementation:	Town, AWI, Lake Associations
Project Description:	Continued funding for boat wash station stewards at boat launches.		
ID# I-07			
Municipality	Town of Indian Lake	Directly on a surface water?	Yes
Latitude/Longitude:	43.5020, -74.2303	Name of surface water:	Lake Durant
Jurisdiction:	Public	Project Subwatershed HUC 10:	Hudson-Cedar River
Time Frame:	Short Term	Projected Cost:	$60,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDEC, Town
Project Description:	Boat wash station at NYS campsite on Lake Durant.		
ID# I-08			
Municipality	Village of Speculator	Directly on a surface water?	Yes
Latitude/Longitude:	43.2858, -74.2140	Name of surface water:	Lake Pleasant
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$40,000 annually
Potential Funding Source:	NYSDEC, AWI	Involved Parties in Implementation:	LPSA, Town, Village, AWI
Project Description:	Funding for boat stewards at public boat launches.		

INVASIVE SPECIES			
ID# I-09			
Municipality	Town of Newcomb	Directly on a surface water?	Yes
Latitude/Longitude:	43.9710, -73.1461	Name of surface water:	Harris Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Hudson, Upper, and minor tribs
Time Frame:	Medium Term	Projected Cost:	$60,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDEC, Town, SWCDs
Project Description:	Installation of boat wash facility at Harris Lake.		
ID# I-10			
Municipality	Town of Malta	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Saratoga Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SLIPD, Town
Project Description:	Purchase of portable boat wash station.		
ID# I-11			
Municipality	Town of Malta	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Saratoga Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Short Term	Projected Cost:	$150,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SLIPD, Town
Project Description:	Purchase of aquatic plant harvester.		
ID# I-12			
Municipality	Town of Chester	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Loon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Short Term	Projected Cost:	$20,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Lake Association, Town, SWCD
Project Description:	Eurasian milfoil harvesting and control.		

INVASIVE SPECIES

ID# I-13			
Municipality	Warren County	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Various
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Multiple
Time Frame:	Long Term	Projected Cost:	$10,000/year
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	County, Municipalities, SWCD, Lake Associations
Project Description:	Create and implement a county-wide Japanese knotweed reduction program.		

ID# I-14			
Municipality	Town of Argyle	Directly on a surface water?	Yes
Latitude/Longitude:	43.2033, -73.4178	Name of surface water:	Cossayuna Lake and tributaries
Jurisdiction:	Public	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	CLIA, NYSDEC, SWCD
Project Description:	Installation of solar boat washing and inspection station at DEC boat launch.		

ID# I-15			
Municipality	Town of Jackson	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Lake Lauderdale, Hedges Lake, and Dead Lake
Jurisdiction:	Private	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Medium Term	Projected Cost:	$150,000
Potential Funding Source:	NYSDEC, NYSDOS, USFWS	Involved Parties in Implementation:	Landowners, Lake Associations, Trout Unlimited, SWCD
Project Description:	HABs and invasive species identification planning and management.		

INVASIVE SPECIES			
ID# I-16			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Paradox Lake, Schroon Lake, Schroon River, Eagle Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Medium Term	Projected Cost:	$10,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Lake Associations, SWCDs, APIPP, consultant
Project Description:	Conduct watershed-wide invasive species survey.		
ID# I-17			
Municipality	Warren County	Directly on a surface water?	Yes
Latitude/Longitude:	Countywide	Name of surface water:	Warren County water-bodies
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Long Term	Projected Cost:	$100,000/annually
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	County, SWCD, UHRWC
Project Description:	Create and hire a County-wide Lake Manager position.		
REGIONAL			
ID# I-18			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Short Term	Projected Cost:	$150,000 annually
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	NYSDEC, SWCDs, lake associations
Project Description:	Secure annual funding for boat wash stations throughout the watershed. Expand Adirondack pilot program into surrounding counties.		

WATER AND WASTEWATER

PRIORITY ID# W-01			
Municipality	City of Glens Falls	Directly on a surface water?	Yes
Latitude/Longitude:	43.1815, -73.3720	Name of surface water:	Hudson River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$6,700,000
Potential Funding Source:	NYSDEC, CDBG, NBRC, NYSEFC, USEDA	Involved Parties in Implementation:	City
Project Description:	City wastewater treatment plant upgrades.		
PRIORITY ID# W-02			
Municipality	Town of Salem	Directly on a surface water?	No
Latitude/Longitude:	43.1724, -73.3276	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Black Creek
Time Frame:	Medium Term	Projected Cost:	$10,000,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC, NBRC, USEDA	Involved Parties in Implementation:	Town, NYSDEC, NYSDOH, LCLGRPB
Project Description:	Installation of public sewer system within the former village area.		
PRIORITY ID# W-03			
Municipality	Town of Ballston	Directly on a surface water?	Yes
Latitude/Longitude:	42.5520, -73.5154	Name of surface water:	Ballston Lake
Jurisdiction:	Public/ Private	Project Subwatershed HUC 10:	Fish Creek
Time Frame:	Medium Term	Projected Cost:	$25,000,000
Potential Funding Source:	NYSDEC, NYSEFC, NBRC	Involved Parties in Implementation:	Town, lake association
Project Description:	Installation of public wastewater system for homes surrounding Ballston Lake to reduce nutrient loading into the lake.		
PRIORITY ID# W-04			
Municipality	Village of Speculator	Directly on a surface water?	Yes
Latitude/Longitude:	43.2945, -74.2118	Name of surface water:	Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$2,500,000
Potential Funding Source:	NBRC, NYSDEC, NYSEFC	Involved Parties in Implementation:	Village, NYS
Project Description:	Wastewater treatment plant upgrades.		

WATER AND WASTEWATER

PRIORITY ID# W-05			
Municipality	Villages of Northville and Mayfield	Directly on a surface water?	Yes
Latitude/Longitude:	43.1427, -74.1023	Name of surface water:	Great Sacandaga Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Long Term	Projected Cost:	$25,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC, NBRC	Involved Parties in Implementation:	Village
Project Description:	Planning, engineering and installation of a decentralized wastewater system to eliminate individual septic systems in priority areas.		
ID# W-06			
Municipality	Village of Broadalbin, Towns of Mayfield and Johnstown	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Long Term	Projected Cost:	$25,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC, NBRC	Involved Parties in Implementation:	Village, Towns, SWCD, NYSDEC, NYSDOS
Project Description:	Sewer extension and upgrades as identified in the NYS Route 30 Sewer Feasibility Study.		
ID# W-07			
Municipality	Villages of Northville and Mayfield, Towns of Northhampton, Mayfield and Johnstown	Directly on a surface water?	No
Latitude/Longitude:	Various	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Long Term	Projected Cost:	$30,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC, NBRC	Involved Parties in Implementation:	Villages, Towns, SWCD, NYSDEC, NYSDOS
Project Description:	Sewer extension and upgrades as identified in the NYS Route 30 Sewer Feasibility Study.		
ID# W-08			
Municipality	Town of Johnsburg	Directly on a surface water?	Yes
Latitude/Longitude:	43.6978, -73.9858	Name of surface water:	Hudson River
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Medium Term	Projected Cost:	$4,000,000
Potential Funding Source:	NYSEFC, NBRC, USEDA, NYSDEC, NYSDOH, NYSDOS	Involved Parties in Implementation:	Town, County, NYSDEC, NYSDOH
Project Description:	Upgrades to Hamlet of North Creek water district.		

WATER AND WASTEWATER

ID# W-09			
Municipality	Town of Johnsburg	Directly on a surface water?	Yes
Latitude/Longitude:	43.4147, -73.5928	Name of surface water:	Upper Hudson River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Boreas River - Hudson River
Time Frame:	Short Term	Projected Cost:	$9,000,000
Potential Funding Source:	NYSDEC, NYSEFC, USDA, USEDA, NBRC, NYESDA	Involved Parties in Implementation:	Town, NYSDEC NYSEFC, LCLGRPB
Project Description:	Hamlet of North Creek decentralized wastewater system.		
ID# W-10			
Municipality	Village of Cambridge	Directly on a surface water?	No
Latitude/Longitude:	43.0281, -73.3856	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Owl Kill
Time Frame:	Medium Term	Projected Cost:	$10,000,000
Potential Funding Source:	NYSDEC, NYSDOS, NBRC, NYSEFC	Involved Parties in Implementation:	Village, NYSDEC, NYSDOH, LCLGRPB
Project Description:	Village Water System Upgrade.		
ID# W-11			
Municipality	Village of Fort Edward	Directly on a surface water?	No
Latitude/Longitude:	43.1610, -73.3533	Name of surface water:	N/A
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Medium Term	Projected Cost:	$7,000,000
Potential Funding Source:	NYSDEC, NYSEFC, NBRC, USEDA	Involved Parties in Implementation:	WCSD #2, Village, County, Irving Tissue
Project Description:	FA 1A sewer upgrade project.		
ID# W-12			
Municipality	Village of Hudson Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Feeder Canal
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$700,000
Potential Funding Source:	CDBG, NYSDOS	Involved Parties in Implementation:	WCSD #2, Village
Project Description:	Feeder Street sewer rehabilitation project.		

WATER AND WASTEWATER

ID# W-13			
Municipality	Village of Hudson Falls	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Hudson River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$500,000
Potential Funding Source:	WCSD #2, DASNY, CDBG, NYSDOS, NYSDEC	Involved Parties in Implementation:	WCSD #2, Village
Project Description:	River Street sewer upgrades.		
ID# W-14			
Municipality	Village of Cambridge	Directly on a surface water?	No
Latitude/Longitude:	43.0226, -73.2358	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$11,000,000
Potential Funding Source:	NYSDEC, NYSEFC, USDA, USEDA, NBRC, NYSDOS	Involved Parties in Implementation:	Town, NYSDEC, NYSEFC, LCLGRPB
Project Description:	Decentralized wastewater system to replace undersized septic systems.		
ID# W-15			
Municipality	Town of Greenwich	Directly on a surface water?	No
Latitude/Longitude:	43.0548, -73.3238	Name of surface water:	N/A
Jurisdiction:	Private	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Short Term	Projected Cost:	$1,000,000
Potential Funding Source:	NBRC, NYSDEC, USEDA, USDA, NYSDOS	Involved Parties in Implementation:	WCF, Inc.
Project Description:	Washington County Fairgrounds wastewater system upgrades.		
ID# W-16			
Municipality	Village of Greenwich	Directly on a surface water?	No
Latitude/Longitude:	43.0519, -73.2948	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Short Term	Projected Cost:	$3,000,000
Potential Funding Source:	NYSDEC, NBRC, NYSEFC, USDA	Involved Parties in Implementation:	Village
Project Description:	Sanitary sewer collection, conveyance, pump station and treatment system improvements.		

WATER AND WASTEWATER

ID# W-17			
Municipality	Village of Greenwich	Directly on a surface water?	Yes
Latitude/Longitude:	43.0526, -73.2956	Name of surface water:	Battenkill
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Short Term	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDEC, NYSEFC, NBRC, USDA	Involved Parties in Implementation:	Village
Project Description:	Replacement of subsurface wastewater infrastructure.		

ID# W-18			
Municipality	Town of Greenwich	Directly on a surface water?	Yes
Latitude/Longitude:	43.0925, -73.4757	Name of surface water:	Battenkill River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$200,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, Town, NYSDEC
Project Description:	Design, engineering, and implementation of stormwater and septic upgrades for Greenwich Park.		

ID# W-19			
Municipality	Town of Argyle	Directly on a surface water?	Yes
Latitude/Longitude:	43.2033, -73.4178	Name of surface water:	Cossayuna Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$100,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, Upper Hudson River Watershed Coalition, CLIA, NYSDEC
Project Description:	Septic system evaluation and improvement demonstration project at the Cossayuna Lake Improvement Association (CLIA).		

ID# W-20			
Municipality	Town of Indian Lake	Directly on a surface water?	No
Latitude/Longitude:	43.7835, -74.2856	Name of surface water:	N/A
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River, Cedar River-Hudson River
Time Frame:	Long Term	Projected Cost:	$,0100,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC, NBRC	Involved Parties in Implementation:	Town, NYSDEC, NYSDOH
Project Description:	Town sewer plant upgrades to update infrastructure and reduce I&I.		

WATER AND WASTEWATER			
ID# W-21			
Municipality	Town of Lake Pleasant	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Lake Pleasant
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$25,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC	Involved Parties in Implementation:	Town, Village of Speculator
Project Description:	Installation of new waste water lines around Lake Pleasant.		
ID# W-22			
Municipality	Town of Arietta	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Piseco Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	West Branch Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$25,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC	Involved Parties in Implementation:	Town
Project Description:	Installation of new waste water lines around Piseco Lake.		
ID# W-23			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	Public	Name of surface water:	Lake Algonquin
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$25,000,000
Potential Funding Source:	NYSDOS, NYSDEC, NYSEFC	Involved Parties in Implementation:	Town
Project Description:	Installation of new waste water lines around Lake Algonquin.		
REGIONAL			
ID# W-24			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$400,000 each
Potential Funding Source:	NYSDEC, NYSDOS, NYSEFC	Involved Parties in Implementation:	Municipalities, NYSDEC, NYSEFC
Project Description:	Create wastewater system asset management plans for all wastewater collection systems in the watershed.		

WATER AND WASTEWATER			
ID# W-25			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$400,000
Potential Funding Source:	NYSDEC, NYSEFC, NBRC, USEDA	Involved Parties in Implementation:	LCLGRPB, Municipalities, SWCDs
Project Description:	Creation of watershed-wide comprehensive infrastructure needs assessment including wastewater treatment plants and areas in need of decentralized systems.		
ID# W-26			
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	All
Time Frame:	Short Term	Projected Cost:	Unknown
Potential Funding Source:	NYSDEC	Involved Parties in Implementation:	NYSDEC
Project Description:	Update to the NYS DEC Priority Waterbodies List to include new data on water quality degradation in the Upper Hudson River Watershed.		

AQUATIC ORGANISM PASSAGE

PRIORITY ID# P-01

Municipality	Various - Saratoga County	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Various
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$1,700,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	County DPW, Town, SWCD
Project Description:	Repair or replace 20 culverts throughout Saratoga County.		

PRIORITY ID# P-02

Municipality	Town of Chester	Directly on a surface water?	Yes
Latitude/Longitude:	43.6619, -73.8382	Name of surface water:	Loon Lake
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Schroon River
Time Frame:	Long Term	Projected Cost:	$600,000
Potential Funding Source:	NYSDEC, NYSDOS, ACOE, TU, TNC	Involved Parties in Implementation:	Town, LLPDA, TNC, TU
Project Description:	Funding for engineering and replacement of Loon Lake Dam.		

PRIORITY ID# P-03

Municipality	Town of Greenwich	Directly on a surface water?	Yes
Latitude/Longitude:	43.1830,-73.4261	Name of surface water:	Whittaker Brook-Cossayuna Fireman's Pond
Jurisdiction:	Public	Project Subwatershed HUC 10:	Batten Kill
Time Frame:	Short Term	Projected Cost:	$500,000 - $1,000,000
Potential Funding Source:	NYSDEC, USFWS, TU, TNC	Involved Parties in Implementation:	NYSDEC, LCLGRPB, SWCD, USFWS, County DPW
Project Description:	Funding for engineering and replacement of dam on County Route 49.		

PRIORITY ID# P-04

Municipality	Towns of Mayfield, Northampton & Johnstown	Directly on a surface water?	Yes
Latitude/Longitude:	Various	Name of surface water:	Various
Jurisdiction:	Public	Project Subwatershed HUC 10:	Middle Sacandaga River
Time Frame:	Medium Term	Projected Cost:	$566,490
Potential Funding Source:	NYSDOS, NYSDEC	Involved Parties in Implementation:	SWCD
Project Description:	Remediate aquatic passage constraints at 5 priority sites.		

AQUATIC ORGANISM PASSAGE

PRIORITY ID# P-05			
Municipality	Town of Pittstown	Directly on a surface water?	Yes
Latitude/Longitude:	73.3553, -42.4833	Name of surface water:	Deep Kill
Jurisdiction:	Private	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD
Project Description:	Wetland mitigation and reestablishment of approximately 6,500 LF of stream channel in two places in Deep Kill to improve waterway continuity for fish.		

PRIORITY ID# P-06			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.2410, -74.1706	Name of surface water:	Sacandaga River
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$500,000
Potential Funding Source:	NBRC, NYSDEC, ACOE, TU, TNC	Involved Parties in Implementation:	Town, SWCD, lake association, TU, TNC
Project Description:	Lake Algonquin Hydrodam structural maintenance and repairs.		

PRIORITY ID# P-07			
Municipality	Town of Schroon	Directly on a surface water?	Yes
Latitude/Longitude:	43.8366, -73.7743	Name of surface water:	Rogers Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Schroon River
Time Frame:	Short Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Replace temporary culvert on Emerson Road.		

ID# P-08			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.4040, -74.2525	Name of surface water:	Mill Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS, NOAA, TU, TNC	Involved Parties in Implementation:	SWCD, DPW
Project Description:	Culvert replacement with the installation of a bottomless arch.		

AQUATIC ORGANISM PASSAGE

ID# P-09			
Municipality	Town of Indian Lake	Directly on a surface water?	Yes
Latitude/Longitude:	43.7603, -74.2298	Name of surface water:	Beaver Meadow Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River
Time Frame:	Short Term	Projected Cost:	$75,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	SWCD, Town, County
Project Description:	Installation of bottomless arch.		
ID# P-10			
Municipality	Town of Greenwich	Directly on a surface water?	Yes
Latitude/Longitude:	43.1382, -73.4717	Name of surface water:	Hartshorn Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Short Term	Projected Cost:	$500,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, County, NYSDOT, SWCD
Project Description:	Bridge replacement project with maintenance of minor barrier for aquatic vegetation.		
ID# P-11			
Municipality	Town of Easton	Directly on a surface water?	Yes
Latitude/Longitude:	43.0148, -73.5912	Name of surface water:	Unnamed trib to Schuyler Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$250,000
Potential Funding Source:	NYSDEC, TU, TNC	Involved Parties in Implementation:	Town, County, SWCD, TU, TNC
Project Description:	Repair or replace a collapsing open bottom arch culvert crossing.		
ID# P-12			
Municipality	Town of Pittstown	Directly on a surface water?	Yes
Latitude/Longitude:	42.8727, -73.5226	Name of surface water:	Otter Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	Lower Hoosic River
Time Frame:	Short Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Culvert replacement.		

AQUATIC ORGANISM PASSAGE

ID# P-13			
Municipality	Towns of Johnsburg & Thurman	Directly on a surface water?	Yes
Latitude/Longitude:	43.5385, -74.0131	Name of surface water:	Garnet Lake
Jurisdiction:	Public/Private	Project Subwatershed HUC 10:	Boreas River-Hudson River
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Towns
Project Description:	Engineering funds for Garnet Lake dam.		
ID# P-14			
Municipality	Town of Easton	Directly on a surface water?	Yes
Latitude/Longitude:	43.0418,-73.4915	Name of surface water:	Fly Creek
Jurisdiction:	Private	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$50,000
Potential Funding Source:	NYSDEC, NYSDOS, USFWS, TU	Involved Parties in Implementation:	NYSDEC, USFWS, TU, SWCD
Project Description:	Dam removal.		
ID# P-15			
Municipality	Town of Indian Lake	Directly on a surface water?	Yes
Latitude/Longitude:	43.7976, -74.2300	Name of surface water:	Lake Abanakee
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River
Time Frame:	Long Term	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDEC, NYSDOS, USFWS, ACOE, TU	Involved Parties in Implementation:	Town, SWCD, TU, lake association
Project Description:	Engineering and Repairs to Lake Abanakee Dam.		
ID# P-16			
Municipality	Town of Wells	Directly on a surface water?	Yes
Latitude/Longitude:	43.3666, -74.4075	Name of surface water:	Dugway Creek
Jurisdiction:	Public	Project Subwatershed HUC 10:	West Stony Creek
Time Frame:	Short Term	Projected Cost:	$40,000
Potential Funding Source:	NYSDEC, NYSDOS, USDA	Involved Parties in Implementation:	Town, DPW, SWCD
Project Description:	Replace washed out culvert on Dugway Creek.		

AQUATIC ORGANISM PASSAGE

ID# P-17			
Municipality	Town of Indian Lake	Directly on a surface water?	Yes
Latitude/Longitude:	43.7812, -74.2551	Name of surface water:	Lake Adirondack
Jurisdiction:	Public	Project Subwatershed HUC 10:	Jessup River
Time Frame:	Long Term	Projected Cost:	$2,000,000
Potential Funding Source:	NYSDEC, NYSDOS, USFWS, ACOE, TU	Involved Parties in Implementation:	Town, SWCD, TU, lake association
Project Description:	Engineering and repairs to Lake Adirondack Dam.		
ID# P-18			
Municipality	Town of Lake Pleasant	Directly on a surface water?	Yes
Latitude/Longitude:	43.4657, -74.3816	Name of surface water:	Sucker Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Upper Sacandaga River
Time Frame:	Short Term	Projected Cost:	$40,000
Potential Funding Source:	NYSDEC, NYSDOS, USDA	Involved Parties in Implementation:	County DPW, Town, SWCD
Project Description:	Replace washed-out culvert on Sucker Brook.		
ID# P-19			
Municipality	Town of Northumberland	Directly on a surface water?	Yes
Latitude/Longitude:	43.1840, -73.6367	Name of surface water:	Cole Brook Trib
Jurisdiction:	Public	Project Subwatershed HUC 10:	Snook Kill - Hudson River
Time Frame:	Short Term	Projected Cost:	$1,065,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Update and replace three crossings that are undersized on Cole Brook Tributary.		
ID# P-20			
Municipality	Town of Northumberland	Directly on a surface water?	Yes
Latitude/Longitude:	43.1297, -73.6043	Name of surface water:	Anthony Kill
Jurisdiction:	Public	Project Subwatershed HUC 10:	Anthony Kill
Time Frame:	Short Term	Projected Cost:	$105,000
Potential Funding Source:	NYSDEC, NYSDOS	Involved Parties in Implementation:	Town, SWCD
Project Description:	Grange Hall Road culvert replacement.		

AQUATIC ORGANISM PASSAGE			
ID# P-21			
Municipality	Town of Jackson	Directly on a surface water?	Yes
Latitude/Longitude:	43.0910, -73.2752	Name of surface water:	Murray Hollow Brook
Jurisdiction:	Public	Project Subwatershed HUC 10:	Battenkill
Time Frame:	Medium Term	Projected Cost:	$300,000
Potential Funding Source:	NYSDEC, NYSDOS, NYSDOT	Involved Parties in Implementation:	Town, SWCD, County DPW, private contractor
Project Description:	Replacement of 3 small bridge/large culvert structures on Murray Hollow Brook that are aging and lack suitable passage for aquatic organisms and contribute to sediment loading to the Battenkill River.		
REGIONAL			
ID# P-22			
Jurisdiction:	Public	Project Subwatershed HUC 10:	Various
Time Frame:	Medium Term	Projected Cost:	$250,000 annually
Potential Funding Source:	NYSDOS, NYSDEC	Involved Parties in Implementation:	NYSDEC, SWCDs, Municipalities
Project Description:	Secure annual funding for regional culvert replacement program.		

05. FUNDING, TRACKING AND MONITORING

5.1 FUNDING

Each project lists potential funding sources based on the type of project, most funding sources are at the State level, but there are federal funding sources available as well.

STATE FUNDING OPPORTUNITIES:

New York State Department of Environmental Conservation (NYSDEC):

- Water Quality Improvement Program (WQIP): A competitive program administered by the NYSDEC that funds projects that directly address documented water quality impairments or protect a drinking water source.
- Invasive Species Grant Program: Supports projects that target both aquatic and terrestrial invasive species.

New York State Department of State (NYSDOS):

- Local Waterfront Revitalization Program (LWRP), implementation: Funding for implementation of projects identified in an LWRP is available through this program with funding from the NYS Environmental Protection Fund (EPF).

New York State Environmental Facilities Corporation (NYSEFC):

- Water Infrastructure Improvement Act (WIIA): authorizes the NYS Environmental Facilities Corporation to provide grants and to assist municipalities in funding water quality infrastructure. Funding is available through this program for both drinking water and sewage treatment works (clean water) projects.
- Green Innovation Grant Program: Provides funding for projects that improve water quality and incorporate green stormwater infrastructure.
- Engineering Planning Grant Program: Offers grants to municipalities to help pay for the initial planning of eligible Clean Water State Revolving Fund water quality projects.

New York State Department of Transportation (NYSDOT):

- BridgeNY: Funding available to local governments to rehabilitate and replace bridges and culverts throughout New York State. Projects are evaluated based on the resiliency of the structure, the significance of the bridge in terms of public travel, and the current bridge or culvert condition.
- Transportation Alternatives Program: Provides funding for roadway improvements and culvert and bridge replacements, as well as pedestrian and bicycle paths.

New York State Department of Agriculture and Markets (NYSDAM):

- Agricultural Nonpoint Source Abatement Control Program: Funding for implementation of agricultural Best Management Practices (BMPs) that protect natural resources while maintaining the economic viability of New York State's diverse agricultural community.

- Farmland Protection Implementation Grants Program (FPIG): Provides financial assistance to counties, municipalities, soil and water conservation districts and land trusts to enable them to implement farmland protection activities consistent with local agricultural and farmland protection plans. Most frequently used to fund purchase of development rights on individual farms, this program can also be used for other implementation activities such as amendments to local laws affecting agriculture, option agreements, and covering the transaction costs of donated agricultural conservation easements.

- Source Water Buffer Program: Funding is available for the purchase of conservation easements on agricultural lands that support, expand or enhance water quality protection of active drinking water sources including but not limited to aquifers, watersheds, reservoirs, lakes, rivers and streams.

New York State Homes and Community Renewal:

- Community Development Block Grants (CDBG): Funding for drinking water, clean water and stormwater, and public works. Green Infrastructure components may be a part of larger public infrastructure projects funded through this program.

FEDERAL FUNDING OPPORTUNITIES:

Northern Borders Regional Commission (NBRC):

- State Economic & Infrastructure Development Investment Program: Funding for infrastructure projects that revitalize and modernize essential infrastructure in NBRC communities.

United States Economic Development Administration (USEDA):

- Public Works Program: The EDA Public Works program invests in communities to revitalize, expand, and upgrade their physical infrastructure in order to attract new industry; encourage business expansion; diversify local economies; and generate job growth. This program invests in technology-based infrastructure as well as traditional public works projects such as water and sewer improvements, industrial parks, and brownfield redevelopment.

Federal Emergency Management Agency (FEMA):

- Disaster Relief Fund: May provide funding for infrastructure damaged by severe weather events.

United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS):

- Environmental Quality Incentives Programs: Provides technical assistance and funding for the installation of agricultural BMPs, including riparian buffers, wetland restoration, wildlife habitat protection, and other environmental improvement for agriculture.

5.2 IMPLEMENTATION, TRACKING AND MONITORING

Ongoing Implementation. Implementation of the Upper Hudson River Watershed Management Plan is an ongoing process and will continue for many years. Recommended projects will be completed, and new project will be added, as such, the plan should be updated every 5 to 10 years based on the progress of implementations and changing priorities within the watershed. The Upper Hudson River Watershed Coalition and project partners will continue to apply for funding to implement projects identified in this plan.

Tracking and Monitoring Implementation. Tracking and documenting the success and progress of water-quality improvements resulting from the implementation of this plan is imperative to understanding the connection between the recommended actions and water quality and water health. The projects recommended in

Chapter 4 include time frames to monitor and track their implementation over time. Short-term projects should be undertaken within one to three years, medium-term in three to six years, and long-term project are those which will take over six years to fully implement. The project charts in Chapter 4 also identify the parties to be involved in implementation, they include municipalities, counties, SWCDs, LCLGRPB, sewer districts, and other organizations. It is important that each of the identified parties work together throughout to implement, track and monitor the progress of this Plan's recommended projects.

Upper Hudson River Watershed Coalition members will compile reports on implementation of projects on an annual basis. The project chart will be updated yearly, at which point completed project will be indicated as such, implementation time frames will be adjusted as needed and new projects will be added to the list.

The NYSDEC Waterbody Inventory/Priority Waterbody List is updated every five years, as water quality throughout the Upper Hudson River Watershed improves, those improvements will be reflected within this list.

The Upper Hudson River Watershed Coalition plans to build upon the work done in this plan to create a Nine Element Plan for the Watershed. Nine Element plans use adaptive management, have strong implementation actions, are effective plans for restoration and make projects in the watershed available for federal and state funding. The Nine Element plan will identify, quantify and monitor the main pollution sources within the watershed and identify the best management practices that will help achieve pollution reduction goals.

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APPENDIX A. SURVEY RESULTS

Throughout the creation of this plan, two community outreach charrettes were held in which the public was surveyed in order to gain an understanding of their water quality and natural resource concerns. Information garnered from the charrettes informed the direction of the Upper Hudson Watershed Revitalization Plan.

Community Outreach Charrette #1: The first community outreach charrette was held on Thursday February 22, 2018 from 9:30-10:30 am at the Crandall Public Library in Glens Falls, New York. A total of twelve participants completed a survey created by the Advisory Committee.

The following questions were asked of participants in the form of a paper survey:

1. What municipality do you live in?

2. Are you a year-round or seasonal resident?

3. How long have you been living in and/or visiting this area?

4. What waterbodies in the Upper Hudson River Watershed do you utilize?

5. Do you perceive the watershed's lakes and streams as an asset to your community?

Definitely Somewhat A little Not at all

6. What do you use these waterbodies for? (Circle all that apply)

Aesthetic Enjoyment Canoeing/Kayaking/Paddling Drinking Water Motor Boating/Sailing Fishing Ice Fishing Swimming

Wildlife Viewing Other (please explain)

7. How often do you use a waterbody in the watershed?

Daily At least once a week At least once a month At least once a year Never

8. How would you describe the water quality of the waterbody(ies) you use?

Excellent Good Fair Poor

9. What would you say is the biggest concern facing surface waters in the watershed? Please rank choices from 1 – 13 (1 being the biggest concern and 13 being the smallest).

Stormwater Runoff

Flooding

Agricultural Runoff

Roadside Erosion

Shoreline Erosion

Forestry Operations

Aquatic Invasive Species

Terrestrial Invasive Species

Municipal Wastewater Infrastructure/CSOs

Private Septic Systems

Source Water Protection

Failing Culverts

Dams

10. How much do you think these concerns contribute to water quality impairments?

A great deal Somewhat A little Not at all

11. What pollutants do you think are the biggest threat to water quality in the watershed?

(Rank 1 - 10, 1 being the biggest threat and 10 being the smallest)

Garbage and floatables (trash and litter)

Heavy metals from atmospheric deposition (lead, mercury)

Oil, gas and grease (from leaking vehicles and car maintenance facilities)

Pesticides/herbicides (used for agriculture and lawn care)

Pharmaceuticals and Personal Care Projects (prescription pills and soaps)

Phosphorus and nitrogen (from excess fertilizer use in agriculture and lawn care)

Road salt and sand (used for winter road maintenance)

Sediment (sand, gravel, clay from construction sites and erosion)

Toxic chemicals (from industrial operations)

Viruses and bacteria (from municipal/septic system wastewater discharges)

12. Are you involved in or familiar with any invasive species management efforts?

Yes No

13. Do you think it's important to preserve agriculture/open space within the watershed?

Yes No

14. What estimated % of land use makes up your community? Which of all the categories listed do you think contribute the most to the impairment of water quality of local waterbodies?

(Rank 1 – 5, 1 being the highest and 5 being the lowest)

	% Land Use	**Impairment Ranking**
Agricultural	_____	_____
Commercial	_____	_____
Industrial	_____	_____
Residential	_____	_____
Municipal Operations	_____	_____

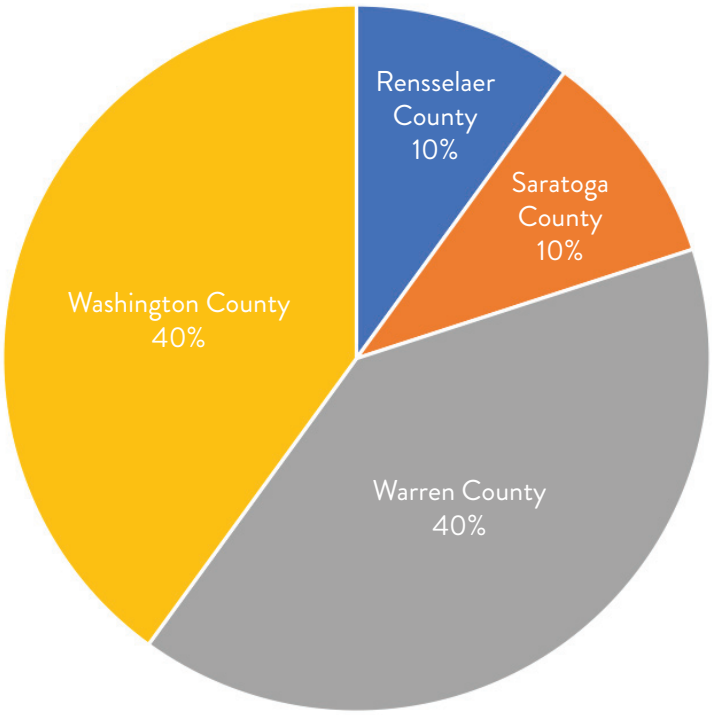
15. What waterbody uses do you think are most impaired in the watershed? (Rank 1-6, 1 being most impaired and 6 being least impaired)

Aesthetic Enjoyment	_____
Aquatic Life	_____
Drinking Supply	_____
Fishing	_____
Habitat/Hydrology	_____
Recreation	_____

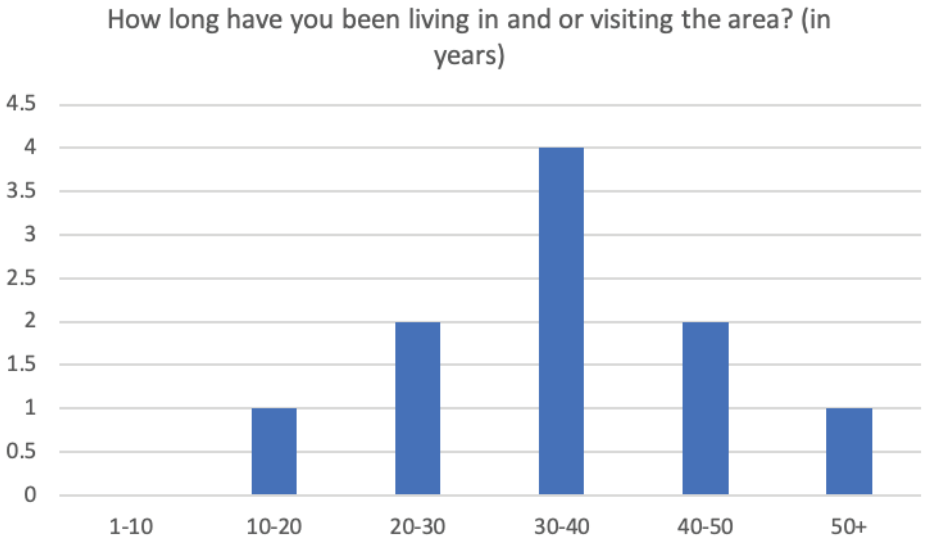
Do you have any specific comments on or projects in your community that you would like to add?

Results: The results of the survey are as follows:

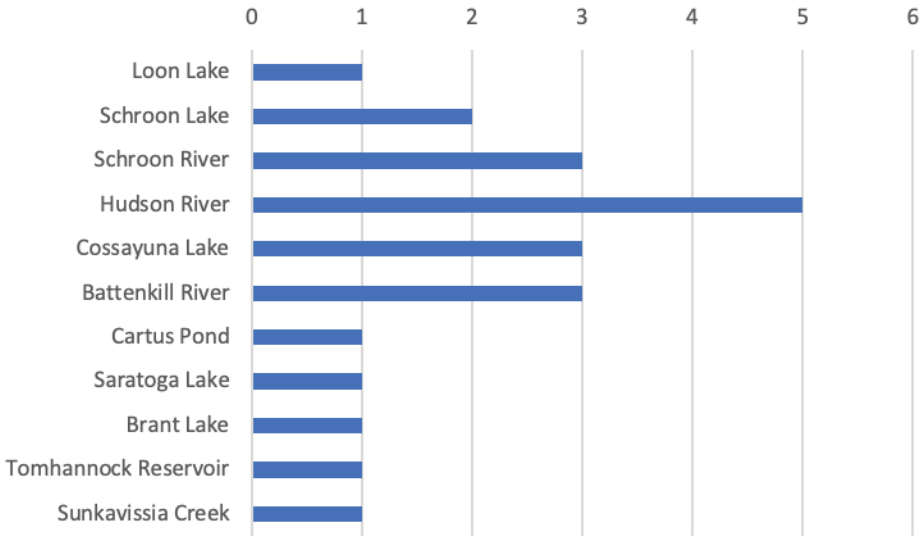
Most of the respondents live in Washington and Warren Counties, with the remainder from Saratoga and Rensselaer Counties.



100% of respondents are year-round residents, and the majority have lived in the watershed for 30 to 40 years.

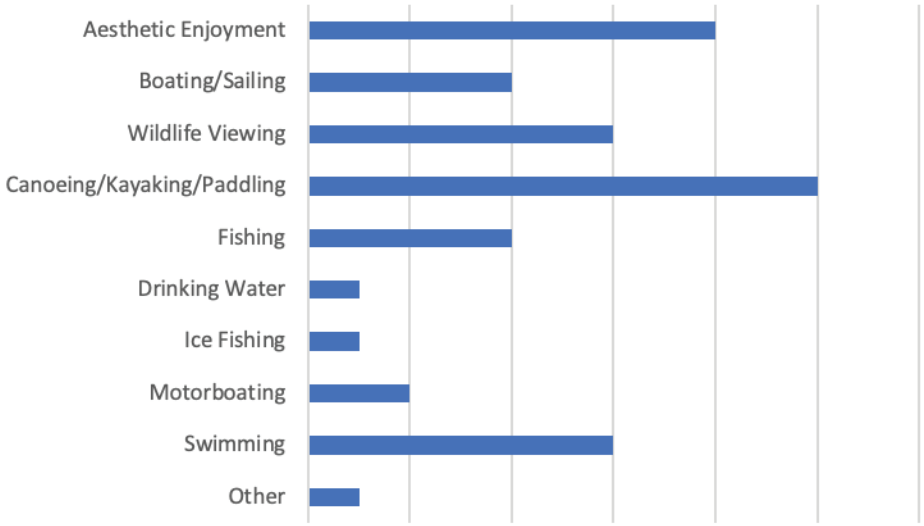


Respondents visit a variety of waterbodies in the watershed, the most frequent being the Hudson River.

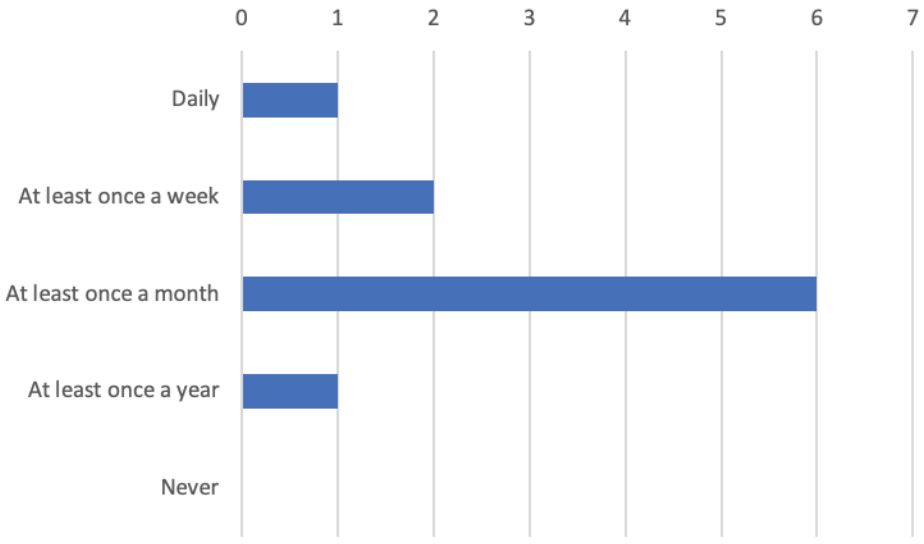


100% of respondents answered 'definitely' to the question Do you perceive the watershed's lakes and streams as an asset to your community?

Respondents most widely use the waterbodies in the watershed for canoeing, kayaking, or paddling followed by aesthetic enjoyment, swimming and wildlife viewing.



Most respondents indicated that they use a waterbody in the watershed at least once a month, with no respondents answering 'never'. Most respondents describe the quality of the waterbodies they use as 'good'.



When asked to rank 13 water quality issues on a scale from 1-13 with 1 being the biggest concern and 13 being the smallest, stormwater runoff, agricultural runoff, roadside erosion and aquatic invasive species were the top four concerns among respondents. Dams are considered the smallest concern among respondents. Municipal wastewater infrastructure and combined sewer overflows received responses ranging from 1 to 13, this is indicative of the diversity of the watershed as this is more of an issue in the southern end of the watershed.

Survey participants were asked to rank the land uses they felt contributed the most to the impairment of water quality in local waterbodies. Residential uses ranked first followed by agriculture, municipal operations, industrial uses and lastly commercial uses.

Drinking supply is perceived to be the most impaired use in the watershed, followed by habitat/hydrology, aquatic life, fishing, recreation and aesthetic enjoyment.

APPENDIX B. MODEL LAWS AND ORDINANCES

The following Appendix lists model laws and ordinances, referenced in Section 2.9 of this Plan, that Upper Watershed Communities should reference when seeking to implement policies into their local regulations that will improve and protect water quality within the Upper Hudson River Watershed.

1. Town of Queensbury, New York – Septic Inspection Upon Property Transfer
2. Town of Cortlandt, New York – Steep Slopes Protection Ordinance
3. United States Environmental Protection Agency – Aquatic Buffer Model Ordinance
4. New York State – Model Law to Prohibit Illicit Discharges
5. Town of Lake George, New York – Fertilizer Regulations
6. Town of Clifton Park – Conservation Easement Law

LOCAL LAW NO.: __ OF 2018

A LOCAL LAW ENACTING CHAPTER 137 ENTITLED "SEPTIC INSPECTION UPON PROPERTY TRANSFER" TO THE QUEENSBURY TOWN CODE

BE IT ENACTED BY THE TOWN BOARD OF THE TOWN OF QUEENSBURY AS FOLLOWS:

SECTION 1. Queensbury Town Code Chapter 137, "Septic Inspection Upon Property Transfer" is hereby enacted as follows:

§ 137-1 Title. This Chapter shall be known as "Septic Inspection Upon Property Transfer."

§ 137-2 Statutory Authority. Enactment of Chapter 137 of the Queensbury Town Code is pursuant to Article 16 of the Town Law and Article 3 of the Public Health Law.

§ 137-3 Findings and Intent. The intent of this Chapter is to better protect waterbodies from exposure to excess nutrients and pollutants. The Town of Queensbury finds that the occurrence of such nutrients and pollutants is increased by the presence of inadequately functioning septic systems proximate to waterbodies. In addition, such septic systems are more likely to be a threat to public health with particularly acute impacts upon the general public through impairing and contaminating precious ecological resources of the Town of Queensbury and rendering drinking water unsafe. In determining the geographic scope of this Chapter, the Town further finds that it is desirable and efficient to rely upon the zoning district boundaries of the Town of Queensbury Waterfront Residential (WR) zone as properties within this zoning district are proximate to waterbodies within the Town. As to waterbodies not surrounded or adjacent to such zoning district, such properties are zoned in such a manner that has adequately

protected and will continue to protect such waterbodies and additional regulation is not currently needed in such areas at this time

§ 137-4 Compliance Required.

A. Applicability.

This Local Law shall apply to conveyances of real property located wholly or partially in the Waterfront Residential Zone, as defined in the Town Code, occurring on January 1, 2019 and thereafter.

B. Property Transfer Inspections.

1. Prior to any conveyance of real property in the Town of Queensbury Waterfront Residential (WR) Zone where the property utilizes an On-site Wastewater Treatment System (OWTS), the OWTS must be inspected by the Town of Queensbury Building and Codes Enforcement Office (herein referred to as the Building and Codes Enforcement Office). The inspection shall include a septic tank pump out by a NYSDEC registered septic hauler and all seepage pits and septic drainfield distribution boxes (D-box) accepting effluent from a septic tank must be uncovered and opened by the property owner or their agent prior to inspection. The property transfer inspection and pump out shall be arranged by the property owner as early in the conveyance of real property process as possible in order to obtain an accurate and timely assessment of the OWTS. The property owner must make arrangements with the Building and Codes Enforcement Office to schedule the inspection no less than forty eight (48) hours advance notice and shall coordinate with the septic hauler to be on-site simultaneously. The cost of the inspection, as set forth in the Town's Fee Schedule Ordinance, shall be paid to the Town of Queensbury prior the inspection.

2. No such conveyance shall take place subject to this Chapter until and unless 1) the owner/seller has obtained from the Building and Codes Enforcement Office a letter of acknowledgement demonstrating satisfactory compliance with this Section; 2) the owner/seller has obtained a variance/waiver from the Town Board in accordance with this Chapter; or 3) the

conveyance is exempt from the property transfer inspection requirements and the owner/seller complies with all applicable provisions for exemption set forth in this Chapter.

3. As used herein, the term "conveyance of real property" shall mean the transfer of the title of real estate, in the form of a deed or other legal instrument, whether or not recorded in the Office of the Warren County Clerk. It shall be violation of this law not to have the property inspected prior to the conveyance of real property.

4. Upon satisfactory inspection in accordance with the protocol set forth in paragraph 5 below, the Building and Codes Enforcement Office will issue to the property owner a letter of acknowledgment confirming that the OWTS is functioning properly.

5. The OWTS inspection shall utilize the New York On-site Wastewater Treatment Training Network (OTN) materials, including the *OTN System Inspection Request Form*, *Findings Worksheet* and *Site Report (Inspection Findings)* all of which shall be available in the Building and Codes Enforcement Office. The following minimum standards shall apply to each inspection:

a. All septic tanks must be within two hundred fifty (250) gallons of the minimum volume requirement;

b. All holding tanks shall be equipped with a float switch and high level alarm located in a conspicuous place to indicate when pump out is necessary. A copy of pump out records shall be submitted during the inspection prior to conveyance of real property;

c. For an aerobic treatment system or enhanced treatment unit (ETU), the new owner must send a signed copy of an updated service contract to the Town within thirty (30) days after the conveyance of real property;

d. If the on-site wastewater treatment system is determined to be failing or inadequate, a written Notice of Violation will be issued. An approved compliance agreement to correct the violation must be obtained prior to conveyance of real property.

C. Exemption from Property Transfer Inspection. The following conveyances of real property shall be exempt from the provisions of this law in the following situations and pursuant to the terms identified below:

1. The property to be sold or transferred will not be inhabited, and the new owner plans to demolish the existing structure. In order to qualify for the exemption, a notarized affidavit must be submitted to the Building and Codes Enforcement Office stating that a) the dwelling will not be inhabited and that it will be demolished with no immediate plans to rebuild or b) the dwelling will not be inhabited, it will be demolished and rebuilt in which case the Affidavit shall be accompanied by a site plan including adequate detail to demonstrate a lawful OWTS together with a check payable to the Town of Queensbury in the amount of Two Thousand Dollars ($2,000). Such funds will be held in a non-interest bearing escrow account and will be released in the former case, upon issuance of a Demolition permit and, in the latter case, upon issuance of a Certificate of Occupancy from the Building and Codes Enforcement Office.

2. An OWTS inspection was not able to be completed prior to the conveyance of real property due to inclement weather. In order to qualify for the exemption, a notarized affidavit from the new property owner to complete the requisite OWTS inspection within six (6) months of the date of the conveyance of real property, or June 1, whichever comes first, must be filed with the Building and Codes Enforcement Office. A check payable to the Town of Queensbury in the amount of Two Thousand Dollars ($2,000) will be held in a non-interest bearing escrow account and shall be released upon the completion of a satisfactory OWTS inspection from the Building and Codes Enforcement Office.

3. During the OWTS inspection, a failure of the septic system was determined. Due to winter and frozen conditions, the repair to an existing OWTS could not occur or a new OWTS could not be installed before the conveyance of real property. In order to qualify for the exemption, a notarized affidavit from the new property owner to complete the installation or repair of the septic system within six (6) months from the date of the conveyance of real property, or June 1, whichever comes first, must be filed with the Building and Codes Enforcement Office. A check payable to the Town of Queensbury in the amount of Two Thousand Dollars ($2,000) will be held in a non-interest bearing escrow account and shall be

released upon the completion of the repair or installation of a new septic system and a satisfactory OWTS inspection from the Building and Codes Enforcement Office.

4. There is record of the property's OWTS having passed Town inspection within the last three (3) years.

5. Failure to complete the inspection, obtain the permit or complete all repairs/installations identified in the preceding paragraphs of this section within the time provided or any subsequent deadline established by the Building and Codes Enforcement Office will result in forfeiture of the moneys held in escrow and the Town may use such funds toward abating the conditions caused by each such violation of this Chapter.

D. Failure of OWTS. Failure of an existing OWTS occurs when the standards for lawful OWTS as set forth in Chapter 136 and this Chapter are not met. While not exhaustive, some examples of a failing system include the following:

1. Lack of a pre-treatment vessel (i.e. septic tank, aerobic treatment unit, ETU, etc.) prior to effluent discharge to any subsurface treatment (soil treatment area or absorption field);

2. There is a discharge of effluent directly or indirectly to the ground's surface, with surface breakouts, ponding or saturated soils over the soil treatment area;

3. Direct pipe surface discharge of grey water (into a dry well, over an embankment, into a roadside ditch or stream/tributary, etc.);

4. A dye test results in the presence of dye on the ground surface or adjacent / downstream waterbody;

5. There is a backup of sewage into the home, building, septic tank or facility as a result of a septic tank overload or malfunction, or a clogged soil treatment area;

6. The septic tank requires pumping more than four times per year and/or sewage is observed flowing back into the septic tank from the secondary treatment area during pump out;

7. Presence of a metal septic tank that is undersized and/or corroded;

8. A cesspool, defined as a covered hole or pit used to receive untreated sewage from a house or building constructed as a primary source of wastewater disposal.

9. A holding tank that discharges effluent to surrounding sub-surface areas.

10. No septic tank, seepage pit, enhanced treatment unit or soil treatment area (STA) shall be permitted to discharge to any natural outlet or adjoining property.

E. Access to Parcel for Inspection. On properties for which an OWTS inspection has been requested by the owner or owner's agent pursuant to this Chapter, the Building and Codes Enforcement Office shall be permitted by the property owner to make a physical inspection of the lands and premises in order to determine compliance with this Chapter.

§ 137-5 Review.

Appeals from determinations of the Building and Codes Enforcement Office and/or requests for variance/waivers from the provisions of this Section must be sought from the Town of Queensbury Town Board as the Local Board of Health within 60 days.

A. Forms for such Appeals and/or requests for variance and waivers will be made available to the public in the Building and Codes Enforcement Office. Such forms must be properly filled out and must be submitted to the Building and Codes Enforcement Office with payment of the applicable fee as established by the Town Board.

B. In evaluating appeals from determinations of the Building and Codes Enforcement Office, the Town Board may consider whatever information it deems relevant, including any evidence or information submitted by the Applicant and any information obtained from the Building and Codes Enforcement Office and/or Town Engineer. In the event additional information is needed, the Town Board may direct a subsequent inspection of the OWTS at issue, in which case the Applicant will not be required to make any additional inspection payments.

C. In regard to any request for variance or waivers, such Applications will be governed by the procedure set forth in Town Code Section 136-44.1(c)(1)-(3). The Town Board should take into consideration all matters it deems relevant, including the age of the OWTS,

whether it appears to be functioning, its proximity to any waterbody, its age, the circumstances concerning the request for variance or waiver and the hardship to the property owner in the event no variance or waiver is granted.

D. The above remedies shall be exhausted prior to any judicial review.

§ 137-6 Notice of Violation and Penalties

A. If a property owner fails to complete an inspection required by this local law, or to allow access to the property for the required inspection, or if the property owner fails to comply with any other provision of this law, a Notice of Violation may be issued by the Building and Codes Enforcement Office mandating the compliance with the inspection requirements.

B. In the event the property owner in its capacity as grantor was issued a Notice of Violation and such violation continues for a period of six (6) months, the current property owner (or grantee) too shall be deemed to be in violation of this local law and may be subject to enforcement proceedings.

C. An offense against any provision of this local law shall constitute a violation, punishable by a fine not exceeding Nine Hundred and Fifty Dollars ($950), or imprisonment for a term not exceeding 15 days, or both. Each week such violation continues after notification to the person in violation shall constitute a separate violation.

SECTION 2. Severability

If any clause, sentence, paragraph, subdivision, section, or part of this Local Law or the application thereof to any person, individual, corporation, firm, partnership, entity, or circumstance shall be adjudged by any court of competent jurisdiction to be invalid or unconstitutional, such order or judgment shall not affect, impair or invalidate the remainder thereof, but shall be confined in its operation to the clause, sentence, paragraph, subdivision, section, or part of this Local Law, or in its application to the person, individual, corporation, firm, partnership, entity, or circumstance directly involved in the controversy in which such order or judgment shall be rendered.

SECTION 3. Effective Date

This Local Law shall take effect immediately upon filing with the New York State Secretary of State.

Chapter 259

STEEP SLOPES

GENERAL REFERENCES

Building construction — See Ch. 131.

Excavations and topsoil removal — See Ch. 157.

Flood damage prevention — See Ch. 175.

Recreational areas — See Ch. 228.

Sewers — See Ch. 241.

Subdivision of land — See Ch. 265.

Diversion of watercourses — See Ch. 301.

Zoning — See Ch. 307.

§ 259-1. Legislative intent.

The way in which presently undeveloped acreage in the Town is developed is of critical importance to the public interest. The standards for lot count contained in Chapter 307, Zoning, which exclude environmentally sensitive lands from the acreage upon which lot count is based, are designed to provide for flexibility in the siting of buildings and other facilities so that the disturbance or alteration of steep slope areas and other environmentally sensitive lands can be avoided. Nonetheless, the Town recognizes that disturbance or alteration of steep slope areas may be necessary in some cases involving only moderately steep slopes (grades of between 15% and 30%), and in exceptional cases involving grades of 30% or greater in which compelling circumstances have been clearly demonstrated, including that no other reasonable use of the site, lot or parcel is possible without disturbance to the steep slope area. The purpose of this chapter is to establish regulations which prevent improper disturbance or alteration of steep slopes. The intent is not to restrict general development in the Town, but to guide land use proposals into areas where they best preserve and enhance these natural resources and preserve and protect the visual and environmental character of the land.

§ 259-2. Findings.

A. Steep slopes and adjacent watercourses and wetlands have been or are in jeopardy of being damaged or destroyed by unregulated filling, excavating, building, clearing and other such acts which are inconsistent with the natural condition or acceptable uses of steep slopes. Steep slopes in the Town of Cortlandt are environmentally sensitive land forms and valuable natural resources which are of benefit to the entire Town and the surrounding region. The environmental sensitivity of steep slopes often results from such features as rock outcrop, shallow soils over bedrock, bedrock fractures, groundwater seeps, watercourses and other wetlands found on or immediately adjacent to steep slopes.

B. Protection of steep slopes is a matter of concern to the entire Town. The establishment of regulatory and conservational practices in this critical area is needed to protect the public health, safety and general welfare. Experience has demonstrated that effective protection of steep slopes requires preservation wherever possible. Experience has further demonstrated that where steep slopes have to be disturbed, careful review and regulation, including stringent mitigating measures, is required.

C. The Town's experience with past development has shown that the improperly managed disturbance of steep slopes can aggravate erosion and sedimentation beyond rates experienced in natural geomorphological processes. Erosion and sedimentation often include the loss of topsoil, a valuable natural resource, and can result in the disturbance of habitats, degradation of the quality of surface water, the silting of wetlands, alteration of drainage patterns, obstruction of drainage structures and intensification of flooding.

D. The Town's experience with past development has shown that the inadequately controlled disturbance of certain steep slopes can lead to the failure of slopes and the mass movement of earth; rock- and landslides; damage to natural environment, man-made structures and personal safety; and the degradation of aesthetics.

E. Steep slopes, including vegetation and rock cliffs, are an important environmental feature that contribute to the character and desirability of the Town of Cortlandt and help contribute to and maintain the value of residential property in the Town. Overdevelopment or improperly managed disturbance are detrimental to the character and desirability of the Town and can result in public and private expenditures for corrective measures; negative effects on property values; and unnecessary and unwarranted increases in the costs of providing and maintaining public services and facilities, such as streets, water, sewers, emergency services, sanitation services, parks, and recreation.

F. Regulation of development on steep slopes is consistent with the legitimate interests of landowners to make reasonable use of their land. Regulation can prohibit the degradation of steep slopes and allow reasonable use of private property by encouraging flexible design of development so as to avoid disturbance of steep slopes. Regulation can also permit environmentally sound disturbance of steep slopes conducted in accordance with acceptable management and engineering practices to permit reasonable use of private property.

G. Regulation of development on steep slopes will not preclude the Town from continuing to meet its social, economic and other essential responsibilities, particularly its responsibility to provide affordable housing. In order to ensure the availability of affordable housing, the Town has adopted many provisions in Chapter 307, Zoning, and Chapter 265, Subdivision of Land, which enable the development of a variety of housing types to meet the needs of Town residents for

affordable housing. These provisions allow the renting of rooms within homes and the development of accessory apartments, two-family and multifamily dwellings, boardinghouses and housing for senior citizens. The Town's 2002 Master Plan recommends additional measures to promote affordable housing, such as the development of new villages or hamlets and senior citizen complexes in which affordable housing would be required. Several moderately priced townhouse developments have been approved pursuant to § 281 of the New York State Town Law. Further, the Town's commitment to promoting affordable housing in suitable areas is demonstrated by the Town's endorsement of and cooperation with state and county funding agencies in the approval of below-market housing.

H. These regulations are enacted with the intent of providing a reasonable balance between the rights of the individual property owner to the fair use of his property and the rights of present and future generations. Therefore, this chapter recognizes the rights of owners of property exhibiting steep slopes to use their property for reasonable purposes consistent with other regulations and controls, provided that such use, in the judgment of the appropriate agencies or officials of the Town of Cortlandt, does not result in a significant loss or degradation of steep slopes or loss of the visual and open space benefits which steep slopes have been found to provide.

I. It is declared to be the intent of the Town of Cortlandt to preserve steep slopes to the greatest extent practicable and to regulate their use within the Town to protect the public interest by ensuring the maximization of benefit found to be provided by the preservation of steep slopes and by ensuring the minimization of detrimental effects through the practice of properly managed disturbance of steep slopes as set forth in § 259-4.

§ 259-3. Definitions.

As used in this chapter, the following terms shall have the meanings indicated:

CUSTOMARY LANDSCAPING — Land maintenance involving tree trimming and pruning, the removal of dead and diseased vegetation, lawn and garden care and the planting of decorative trees, shrubs and plants.

DISTURBANCE — Excavation or fill or any combination thereof and shall include the conditions resulting from any excavation or fill.

EXCAVATION — Any act by which earth, sand, gravel, rock or any other similar material is cut into, dug, quarried, uncovered, removed, displaced or spread.

FILL — Any act by which earth, sand, gravel, rock or any other material is deposited, placed, replaced, dumped, transported or moved by person or persons to a new location.

STEEP SLOPES — Ground areas with a slope greater than 15% with a minimum area of 500 square feet which possesses one dimension of a minimum of 10 feet. Measurements shall be made along a horizontal plane.

§ 259-4. Exempt and regulated activities.

A. Exempt activities. Any customary landscaping not involving regrading is allowed without the need for obtaining a permit, provided that any such activities conform to all other applicable laws and regulations of the Town of Cortlandt.

B. Regulated activities. It shall be unlawful to create any disturbance or to cut any tree with a diameter greater than four inches when measured from 1 1/2 feet from ground level, on any steep slope, as defined by this section, other than an exempt activity, as defined herein, without a specific written permit as required by this section. It shall additionally be unlawful to create any steep slope, other than as part of an exempt activity, without such permit. Such prohibitions apply to all sites, lots, or parcels of land, or any portion of any such site, lot, or parcel, located in the Town, without exception.

§ 259-5. Approval authority.

The approval authority with respect to applications hereunder shall be as follows:

A. The Zoning Board of Appeals shall be the approval authority with respect to any application which requires the issuance of any other permit or approval by it pursuant to the local laws and ordinances of the Town of Cortlandt.

B. The Planning Board shall be the approval authority with respect to any application which requires the issuance of any other permit or approval by it pursuant to the local laws and ordinances of the Town of Cortlandt, including any application which also requires the issuance of any permit or approval by the Zoning Board of Appeals.

C. The Town Board shall be the approval authority with respect to any application which requires the issuance of any other permit or approval by it pursuant to the local laws and ordinances of the Town of Cortlandt, including any application which also requires the issuance of any permit or approval by the Zoning Board of Appeals or the Planning Board.

D. The Director of Technical Services or the Deputy Director of Code Enforcement shall be the approval authority with respect to all other regulated activities.

§ 259-6. Standards for approval.

In denying, granting or granting with modifications any application for a permit as required by this section, the approval authority shall consider,

and make specific findings addressing, the consistency of the proposed activity with the findings set forth in § 259-2 of this chapter and each of the following standards:

A. Disturbance or alterations of trees and forests and topographical disturbances or alterations on steep slopes shall be in conformance with all provisions of this steep slopes ordinance as well as with all other applicable ordinances and regulations of the Town of Cortlandt, including, by way of example only, the requirements of Chapter 175 regarding flood damage control, Chapter 283 regarding trees, and Chapter 301 regarding diversion of watercourses.

B. Activities within wetlands shall be in conformance with Chapter 179, Freshwater Wetlands, Water Bodies and Watercourses, and, whether within or outside of wetlands, will not adversely affect any wetlands, water bodies, or watercourses.

C. The proposed activity will not result in creep, sudden slope failure, or additional erosion.

D. The proposed activity will not adversely affect existing or proposed wells or sewage disposal systems.

E. The proposed activity will not adversely affect any endangered or threatened species of flora or fauna.

F. The proposed activity is in accordance with the principles and recommendations of the most recent Master Plan of the Town.

G. The proposed activity constitutes the minimum disturbance necessary to allow the property owner a reasonable use of the property.

H. Disturbance or alteration of areas with steep slopes shall additionally be in conformance with the following provisions:

(1) The planning, design and development of buildings shall provide the maximum in structural safety, slope stability and human enjoyment while adapting the affected site to, and taking advantage of, the best use of the natural terrain and aesthetic character.

(2) The terracing of building sites, including the mounding of septic tile fields, shall be kept to an absolute minimum.

(3) Roads and driveways shall follow the natural topography to the greatest extent possible in order to minimize the potential for erosion and shall be consistent with all other applicable ordinances and regulations of the Town of Cortlandt and current engineering practices.

(4) Replanting shall consist of indigenous vegetation and shall replicate the original vegetation on the site as much as possible.

(5) The natural elevations and vegetative cover of ridgelines shall be disturbed only if the crest of a ridge and the tree line at the ridge remain uninterrupted. This may be accomplished either by positioning buildings and areas of disturbance below a ridgeline or by positioning buildings and areas of disturbance at a ridgeline so that the elevation of the roofline of the building is no greater than the elevation of the natural tree line. However, under no circumstances shall more than 100 feet along the ridgeline, to a width of 100 feet generally centered on the ridgeline, be disturbed.

(6) Any regrading shall blend in with the natural contours and undulations of the land.

(7) Cuts and fills shall be rounded off to eliminate sharp angles at the top, bottom and sides of regraded slopes. Visible construction cuts and permanent scarring should be minimized.

(8) The angle of cut and fill slopes shall not exceed a slope of one vertical to two horizontal except where retaining walls, structural stabilization or other methods acceptable to the Director of Technical Services are used.

(9) Tops and bottoms of cut and fill slopes shall be set back from structures a distance that will ensure the safety of the structure in the event of the collapse of the cut or fill slopes. Generally, such distance shall be considered to be six feet plus 1/2 the height of the cut or fill. Nevertheless, a structure built on a slope or at the toe of a slope is permitted if it is properly designed to retain the slope and withstand the forces exerted on it by the retained slope.

(10) Disturbance of rock outcrops shall be by means of explosive only if labor and machines are not effective and only if rock blasting is conducted in accordance with all applicable laws and regulations of the Town of Cortlandt, County of Westchester, and the State of New York.

(11) Disturbance of steep slopes shall be undertaken in workable units in which the disturbance can be completed and stabilized in one construction season so that areas are not left bare and exposed during the winter and spring thaw periods (December 15 through April 15).

(12) Disturbance of existing vegetative ground cover shall not take place more than 15 days prior to grading and construction.

(13) Temporary soil stabilization, including, if appropriate, temporary stabilization measures such as netting or mulching to secure soil during the grow-in period, must be applied to an area of disturbance within two days of establishing the final grade, and permanent stabilization must be applied within 15 days of establishing the final grade.

(14) Soil stabilization must be applied within two days of disturbance if the final grade is not expected to be established within 60 days.

(15) Measures for the control of erosion and sedimentation shall be undertaken consistent with the Westchester County Soil and Water Conservation District's Best Management Practices Manual for Erosion and Sediment Control and New York State Guidelines for Urban Erosion and Sediment Control, as amended, or their equivalents satisfactory to the approval authority.

(16) All proposed disturbance of steep slopes shall be undertaken with consideration of the soils limitations characteristics contained in the Identification Legend, Westchester County Soils Survey, 1989, as prepared by the Westchester County Soil and Water Conservation District, in terms of recognition of limitation of soils on steep slopes for development and application of all mitigating measures and as deemed necessary by the approval authority.

(17) Topsoil shall be stripped from all areas of disturbance, stockpiled and stabilized in a manner to minimize erosion and sedimentation and replaced elsewhere on the site at the time of final grading. Stockpiling shall not be permitted on slopes of greater than 10%.

(18) No organic material or rock with a size that will not allow appropriate compaction or cover by topsoil shall be used as fill material. Fill material shall be no less granular than the soil upon which it is placed and shall drain readily.

(19) Compaction of fill materials in fill areas shall be such to ensure support of proposed structures and stabilization for intended uses.

I. Burden of proof.

(1) The presumption in all cases shall be that no disturbance or alteration of any steep slope shall be approved by the approval authority. The applicant shall in all cases have the burden of proof of demonstrating, by clear and convincing evidence, that the proposed activity is fully consistent with each of the findings sat forth in § 259-2 and that each of the standards for approval set forth in Subsections A through G above has been fully and completely met.

(2) With respect to applications involving proposed disturbance or alteration of any steep slope with a grade of 30% or greater, the applicant shall have the additional burden of demonstrating, again by clear and convincing evidence, that the applicant's circumstances are compelling and exceptional, including, at a minimum, demonstrating by clear and convincing evidence that no reasonable use of the site, lot, or parcel is possible without disturbance to a steep slope area having a grade of 30% or greater.

§ 259-7. Permit procedures.

A. Application for permit. An application for a permit to disturb or alter a steep slope shall be filed with the approval authority and shall contain the following information and such other information as required by it except when waived by it as not pertinent or necessary for the proposed disturbance:

(1) The name and post office address of the owner and applicant.

(2) The street address and Tax Map designation of property covered by the application.

(3) A statement of authority from the owner for any agent making application.

(4) A listing of property owners adjacent to, across streets or rights-of-way from and downstream within 500 feet of the property and any additional property owners deemed appropriate by the approval authority.

(5) A statement of the proposed work and purpose thereof.

(6) Copies, in such reasonable number as determined by the approval authority, of plans for the proposed regulated activities drawn to a scale of not less than one inch equals 50 feet (unless otherwise specified by the approval authority). Such plans shall be sealed and show the following:

(a) The location of the proposed construction or area of disturbance and its relationship to property lines, easements, buildings, roads, walls, sewage disposal systems, wells and wetlands within 100 feet of the proposed construction or area of disturbance for adjacent properties at the same elevation and within 500 feet for properties significantly lower.

(b) The estimated material quantities of excavation/fill.

(c) The location and size of areas of soils by soils types in the area of proposed disturbance and to a distance of 100 feet.

(d) The existing and proposed contours [National Geodetic Vertical Datum (NGVD)] at two-foot intervals in the area of proposed disturbance and to a distance of 100 feet beyond.

(e) Cross sections of steep slope areas.

(f) Retaining walls or like constructions, with details of construction.

(g) The erosion and sedimentation control plan.

(h) Other details, including specific reports by qualified professionals on soils, geology and hydrology, and borings and/or test pits, as may be determined to be necessary by the approval authority.

(i) A list of all applicable county, state or federal permits which are required for such work or improvements.

(j) An application fee in the amount set forth in a fee schedule established by the Town Board.

B. Referral. The approval authority shall refer any application submitted to it pursuant to this chapter to the Conservation Advisory Council for review and report. The Conservation Advisory Council shall report back to the approval authority within 30 days of the date of referral or within such greater period as may be specified by the approval authority (at the time of referral). Failure to comply with the specified time period shall be interpreted by the approval authority as indicating no objection to the application.

C. Notice. Upon receipt of a completed application under this chapter, the approval authority shall cause notice of receipt of the same to be sent to adjoining property owners and those across the street or right-of-way adjoining the involved property. Such property owners shall have 20 days from said day of notice to submit written comment to the approval authority with regard to said application. The approval authority may waive this notice procedure if it has received responses from the adjoining property owners prior to action by it. In cases where the approval authority is the Director of Technical Services or the Deputy Director of Code Enforcement, the approval authority shall additionally cause such notice to be posted at one or more locations along the street or streets abutting the property.

D. Public hearing. A public hearing shall be held by the approval authority on the application made hereunder at such times, under such circumstances and upon such notice as may be required for the granting of the other permit or approval required of such approval authority pursuant to the local laws and ordinances of the Town of Cortlandt.

E. Action by the approval authority. In approving any application, the approval authority may shall impose such conditions or limitations as it determines necessary to ensure compliance with the intent, purposes and standards of this chapter.

(1) On applications for which no public hearing is required, a determination shall be made to approve, approve with modifications or disapprove the application within 60 days of receipt of a completed application therefor.

(2) On applications for which a public hearing is required, a determination shall be made to approve, approve with modifications or disapprove the issuance of such permit simultaneously with the determination by the approval authority of the other permit or approval for which application was made.

F. Appeal. Any party aggrieved by a decision of the Director of Technical Services or the Deputy Director of Code Enforcement to approve, approve with conditions or disapprove an application may appeal the decision to the Zoning Board of Appeals.

§ 259-8. Duration of permit.

A. Activities specified by the permit shall be undertaken pursuant to any conditions of the permit and shall be completed according to any schedule set forth in the permit.

B. A permit shall expire on completion of the activities specified and shall be valid for a period of two years from the date of approval or for the period of any other permit issued by the approval authority.

C. A permit may be renewed by the approval authority for a period of up two years.

D. The approval authority may revoke or suspend a permit if it finds that the applicant has not complied with any of the conditions or limitations set forth in the permit.

§ 259-9. Security.

In granting a permit, the approval authority shall require a security in an amount and with surety and conditions satisfactory to it securing to the Town of Cortlandt compliance with the conditions and limitations set forth in the permit.

§ 259-10. Inspection and monitoring.

A. The Environmental Monitor of the Town of Cortlandt shall inspect on behalf of the approval authority, activities undertaken pursuant to a permit so as to ensure satisfactory completion. If upon inspection it is found that any of the activities have not been undertaken in accordance with the permit the applicant shall be responsible for completing those activities according to the permit (in addition to being subject to the sanctions set forth in § 259-11A through D. Failure of the Environmental Monitor to carry out such inspections shall not in any way relieve the applicant or its surety of its responsibilities.

B. The approval authority may require that the applicant submit for review and approval by the Environmental Monitor of the Town of Cortlandt a detailed monitoring program, including but not necessarily limited to written status reports at specified intervals documenting activities undertaken pursuant to a permit. Where such a monitoring program has been required, the applicant shall notify the approval authority and the Environmental Monitor upon reaching stages of the activity as may be required in the permit. No activity requiring inspection shall be approved absent such notification.

C. The approval authority may require that the activities undertaken pursuant to a permit be supervised by an appropriate licensed professional.

§ 259-11. Penalties for offenses.

A. Any person who violates, disobeys or disregards any provision of this chapter shall be liable to the people of the Town of Cortlandt for a civil penalty not to exceed $3,000 for every such violation. Each week's continuation of a condition violating this chapter shall be deemed a separate violation.

B. In addition to the above civil fine, any person who violates any provision of this chapter shall be guilty of a violation pursuant to the Penal Law, punishable by a fine of not less than $500 nor more than $1,000. For a second and each subsequent offense, the violator shall be guilty of a misdemeanor, punishable by a fine of not less than $1,000 nor more than $2,000 or a term of imprisonment up to 15 days, or both. Each offense shall be a separate and distinct offense, and, in the case of a continuing offense, each day's continuance thereof shall be deemed a separate and distinct offense.

C. In addition to the above civil and criminal penalties, the Town Board and Deputy Director of Code Enforcement, with the advice and consent of the Town Attorney, shall have the right to seek equitable relief to restrain and/or remedy any violation of any provisions of this chapter.

D. The Deputy Director of Code Enforcement shall have the power to direct a violator to cease violation of this chapter and, with the consultation of the approval authority, satisfactorily restore the affected area within a specified period of time. The exercise of such power may be with or without the imposition of a fine.

Aquatic Buffer Model Ordinance

☞ *This ordinance focuses primarily on stream buffers. Communities creating coastal buffers may wish to incorporate additional features. For an example of a coastal buffer ordinance, see the Rhode Island ordinance.*

Section I. Background

Buffers adjacent to stream systems and coastal areas provide numerous environmental protection and resource management benefits that can include the following:

1) Restoring and maintaining the chemical, physical, and biological integrity of the water resources
2) Removing pollutants delivered from urban stormwater
3) Reducing erosion and sediment entering the stream
4) Stabilizing stream banks
5) Providing infiltration of stormwater runoff
6) Maintaining base flow of streams
7) Contributing the organic matter that is a source of food and energy for the aquatic ecosystem
8) Providing tree canopy to shade streams and promote desirable aquatic organisms

☞ *This benefit applies primarily to forested buffer systems. In some communities, such as prairie settings, the native vegetation may not be forest. See the example ordinance from Omaha, Nebraska, for an example.*

9) Providing riparian wildlife habitat
10) Furnishing scenic value and recreational opportunity

It is the desire of the _____(*Natural Resources or Planning Agency*) to protect and maintain the native vegetation in riparian and wetland areas by implementing specifications for the establishment, protection, and maintenance of vegetation along all stream systems and/or coastal zones within our jurisdictional authority.

Section II. Intent

The purpose of this ordinance is to establish minimal acceptable requirements for the design of buffers to protect the streams, wetlands, and floodplains of _____ (*jurisdiction*); to protect the water quality of watercourses, reservoirs, lakes, and other significant water resources within _____(*jurisdiction*); to protect _____'s (Jurisdiction's) riparian and aquatic ecosystems; and to provide for the environmentally sound use of _____'s (*jurisdiction's*) land resources.

Section III. Definitions

Active Channel	The area of the stream channel that is subject to frequent flows (approximately once per one and a half years) and that includes the portion of the channel below the floodplain.
Best Management Practices (BMPs)	Conservation practices or management measures that control soil loss and reduce water quality degradation caused by nutrients, animal wastes, toxics, sediment, and runoff.

Buffer	A vegetated area, including trees, shrubs, and herbaceous vegetation, that exists or is established to protect a stream system, lake, reservoir, or coastal estuarine area. Alteration of this natural area is strictly limited.
Development	1) The improvement of property for any purpose involving building 2) Subdivision or the division of a tract or parcel of land into two or more parcels 3) The combination of any two or more lots, tracts, or parcels of property for any purpose 4) The preparation of land for any of the above purposes
Nontidal Wetlands	Those areas not influenced by tidal fluctuations that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

☞ *The definition of "nontidal wetland" here is adapted from the definition of "wetland" used by the USEPA and the US Army Corps of Engineers.*

Nonpoint Source Pollution	Pollution that is generated by various land use activities rather than from an identifiable or discrete source and is conveyed to waterways through natural processes, such as rainfall, stormwater runoff, or groundwater seepage rather than direct discharges.
One Hundred-Year Floodplain	The area of land adjacent to a stream that is subject to inundation during a storm event that has a recurrence interval of 100 years.
Pollution	Any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to 1) Public health, safety, or welfare 2) Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses 3) Livestock, wild animals, or birds 4) Fish or other aquatic life
Stream Channel	Part of a watercourse either naturally or artificially created that contains an intermittent or perennial base flow of groundwater origin. Base flows of groundwater origin can be distinguished by any of the following physical indicators: 1) Hydrophytic vegetation, hydric soil, or other hydrologic indicators in the area(s) where groundwater enters the stream channel in the vicinity of the stream headwaters, channel bed, or channel banks 2) Flowing water not directly related to a storm event 3) Historical records of a local high groundwater table, such as well and stream gauge records.
Stream Order	A classification system for streams based on stream hierarchy. The smaller the stream, the lower its numerical classification. For example, a first-order stream

does not have tributaries and normally originates from springs and/or seeps. (See Figure 1.)

Stream System — A stream channel together with one or both of the following:
1) 100-year floodplain
2) Hydrologically related nontidal wetland

Streams — Perennial and intermittent watercourses identified through site inspection and US Geological Survey (USGS) maps. Perennial streams are those which are depicted on a USGS map with a solid blue line. Intermittent streams are those which are depicted on a USGS map with a dotted blue line.

☞ *Defining the term "stream" is perhaps the most contentious issue in the definition of stream buffers. This term determines the origin and the length of the stream buffer. Although some jurisdictions restrict the buffer to perennial or "blue line" streams, others include both perennial and intermittent streams in the stream buffer program. Some communities do not rely on USGS maps and instead prepare local maps of all stream systems that require a buffer.*

Water Pollution Hazard — A land use or activity that causes a relatively high risk of potential water pollution.

Section IV. Applications

A) This ordinance shall apply to all proposed development except for that development which meets waiver or variance criteria as outlined in Section IX of this regulation.

B) This ordinance shall apply to all timber harvesting activities, except those timber harvesting operations which are implementing a forest management plan that has been deemed to be in compliance with the regulations of the buffer ordinance and has received approval from _____(*state forestry agency*).

C) This ordinance shall apply to surface mining operations except that the design standards shall not apply to active surface mining operations that are operating in compliance with an approved _____(*state or federal agency*) surface mining permit.

D) The ordinance shall not apply to agricultural operations that are covered by an approved Natural Resources Conservation Service (NRCS) conservation plan that includes the application of BMPs.

☞ *Communities should carefully consider whether exempt agricultural operations from the buffer ordinance because buffer regulations may take land out of production and impose a financial burden on family farms. Many communities exempt agricultural operations if they have an approved NRCS conservation plan. In some regions, agricultural buffers may be funded through the Conservation Reserve Program (CRP). For further information, consult the Conservation Technology Information Center (CTIC) at www.ctic.perdue.edu.*

☞ *Livestock operations near and around streams may be regulated by communities. Livestock can significantly degrade the stream system and accelerate streambank erosion. The King County Livestock Management Ordinance is one example of a local livestock ordinance. For more information, contact the King County Department of Development and Environmental Services at (206) 296-6602.*

E) Except as provided in Section IX, this ordinance shall apply to all parcels of land, structures, and activities that are causing or contributing to

1) Pollution, including nonpoint source pollution, of the waters of the jurisdiction adopting this ordinance
2) Erosion or sedimentation of stream channels
3) Degradation of aquatic or riparian habitat

Section V. Plan Requirements

A) In accordance with Section IV of this ordinance, a plan approved by the appropriate agency is required for all development, forest harvesting operations, surface mining operations, and agricultural operations.
B) The plan shall set forth an informative, conceptual, and schematic representation of the proposed activity by means of maps, graphs, charts, or other written or drawn documents so as to enable the agency an opportunity to make a reasonably informed decision regarding the proposed activity.
C) The plan shall contain the following information:

☞ *The ordinance can identify the scale of maps to be included with the analyses in items 2) through 7). A 1"=50' to 1"=100' scale will generally provide sufficient detail.*

1) A location or vicinity map
2) Field-delineated and surveyed streams, springs, seeps, bodies of water, and wetlands (include a minimum of 200 feet into adjacent properties)
3) Field delineated and surveyed forest buffers
4) Limits of the ultimate 100-year floodplain

☞ *The limits of the ultimate floodplain (i.e., the floodplain under "built-out" conditions) might not be available in all locations.*

5) Hydric soils mapped in accordance with the NRCS soil survey of the site area
6) Steep slopes greater than 15 percent for areas adjacent to and within 200 feet of streams, wetlands, or other waterbodies

☞ *The ordinance may also explicitly define how slopes are measured. For example, the buffer may be divided into sections of a specific width (e.g., 25 feet) and the slope for each segment reported. Alternatively, slopes can be reported in segments divided by breaks in slope.*

7) A narrative of the species and distribution of existing vegetation within the buffer

D) The buffer plan shall be submitted in conjunction with the required grading plan for any development,and the forest buffer should be clearly delineated on the final grading plan.
E) Permanent boundary markers, in the form of signage approved by _____(*natural resources or planning agency*), shall be installed prior to final approval of the required clearing and grading plan. Signs shall be placed at the edge of the middle zone (See Section VI.I).

Section VI. Design Standards for Forest Buffers

A) A forest buffer for a stream system shall consist of a forested strip of land extending along both sides of a stream and its adjacent wetlands, floodplains, or slopes. The forest buffer width shall be adjusted to include contiguous sensitive areas, such as steep slopes or erodible soils, where development or disturbance may adversely affect water quality, streams, wetlands, or other waterbodies.

B) The forest buffer shall begin at the edge of the stream bank of the active channel.
C) The required width for all forest buffers (i.e., the base width) shall be a minimum of 100 feet, with the requirement to expand the buffer depending on
   1) Stream order
   2) Percent slope
   3) 100-year floodplain
   4) Wetlands or critical areas

☞ *The width of the stream buffer varies from 20 feet to 200 feet in ordinances throughout the United States (Heraty, 1993). The width chosen by a jurisdiction will depend on the sensitivity and characteristics of the resource being protected and the political realities in the community.*

B) In third-order and higher streams, 25 feet shall be added to the base width of the forest buffer.
C) The forest buffer width shall be modified if steep slopes are within close proximity to the stream and drain into the stream system. In those cases, the forest buffer width may be adjusted.

☞ *Several methods may be used to adjust buffer width for steep slopes. Two examples ifollow:*

Method A

Percent	Width of Buffer
15%-17%	add 10 feet
18%-20%	add 30 feet
21%-23%	add 50 feet
24%-25%	add 60 feet

Method B

Percent Slope	Type of Stream Use	
	Water Contact Recreational Use	Sensitive Stream Habitat
0% to 14%	no change	add 50 feet
15% to 25%	add 25 feet	add 75 feet
Greater than 25%	add 50 feet	add 100 feet

D) Forest buffers shall be extended to encompass the entire 100-year floodplain and a zone with a minimum width of 25 feet beyond the edge of the floodplain.
E) When wetland or critical areas extend beyond the edge of the required buffer width, the buffer shall be adjusted so that the buffer consists of the extent of the wetland plus a 25-foot zone extending beyond the wetland edge.

H) Water Pollution Hazards
The following land uses and/or activities are designated as potential water pollution hazards

and must be set back from any stream or waterbody by the distance indicated below:

1) Storage of hazardous substances—(150 feet)
2) Aboveground or underground petroleum storage facilities—(150 feet)
3) Drainfields from onsite sewage disposal and treatment systems (i.e., septic systems)—(100 feet)
4) Raised septic systems—(250 feet)
5) Solid waste landfills or junkyards—(300 feet)
6) Confined animal feedlot operations—(250 feet)
7) Subsurface discharges from a wastewater treatment plant—(100 feet)
8) Land application of biosolids—(100 feet)

☞ *For surface water supplies, the setbacks should be doubled.*

☞ *A community should carefully consider which activities or land uses should be designated as potential water pollution hazards. The list of potential hazards shown above is not exhaustive, and others may need to be added depending on the major pollutants of concern and the uses of water.*

l) The forest buffer shall be composed of three distinct zones, with each zone having its own set of allowable uses and vegetative targets as specified in this ordinance. (See Figure 2.)

☞ *Although a three-zone buffer system is highly recommended, the widths and specific uses allowed in each zone may vary between jurisdictions.*

l) Zone 1, Streamside Zone
   a) Protects the physical and ecological integrity of the stream ecosystem.
   b) Begins at the edge of the stream bank of the active channel and extends a minimum of 25 feet from the top of the bank.
   c) Allowable uses within this zone are highly restricted to
      i) Flood control structures
      ii) Utility right of ways
      iii) Footpaths
      iv) Road crossings, where permitted
   d) Target for the streamside zone is undisturbed native vegetation.

☞ *This ordinance assumes that the native vegetation in the stream corridor is forest. In some regions of the United States, other vegetation such as prairie may be native. See the Omaha, Nebraska, buffer ordinance for an example of a stream buffer ordinance that protects nonforested systems.*

2) Zone 2, Middle Zone
   a) Protects key components of the stream and provides distance between upland development and the streamside zone.
   b) Begins at the outer edge of the streamside zone and extends a minimum of 50 feet plus any additional buffer width as specified in this section.
   c) Allowable uses within the middle zone are restricted to
      i) Biking or hiking paths
      ii) Stormwater management facilities, with the approval of _____ *(local agency responsible for stormwater*).

iii) Recreational uses as approved by _____ (*planning agency*).
iv) Limited tree clearing with approval from _____ (*forestry agency or planning agency*).

d) Targets mature native vegetation adapted to the region.

3) Zone 3, Outer Zone
   a) Prevents encroachment into the forest buffer and filters runoff from residential and commercial development.
   b) Begins at the outward edge of the middle zone and provide a minimum width of 25 feet between Zone 2 and the nearest permanent structure.
   c) Restricts septic systems, permanent structures, or impervious cover, with the exception of paths.
   d) Encourages the planting of native vegetation to increase the total width of the buffer.

Section VII. <u>Buffer Management and Maintenance</u>

A) The forest buffer, including wetlands and floodplains, shall be managed to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of these resources. The following practices and activities are restricted within Zones 1 and 2 of the forest buffer, except with approval by _____ _____ (*forestry, planning or natural resources agency*)
   1) Clearing of existing vegetation
   2) Soil disturbance by grading, stripping, or other practices
   3) Filling or dumping
   4) Drainage by ditching, underdrains, or other systems
   5) Use, storage, or application of pesticides, except for spot spraying of noxious weeds or non-native species consistent with recommendations of _____(*forestry agency*)
   6) Housing, grazing, or other maintenance of livestock
   7) Storage or operation of motorized vehicles, except for maintenance and emergency use approved by _____(*forestry, planning, or natural resources agency*)

B) The following structures, practices, and activities are permitted in the forest buffer, with specific design or maintenance features, subject to the review of _____ (*forestry, planning, or natural resources agency)*:
   1) Roads, bridges, paths, and utilities:
      a) An analysis needs to be conducted to ensure that no economically feasible alternative is available.
      b) The right-of-way should be the minimum width needed to allow for maintenance access and installation.
      c) The angle of the crossing shall be perpendicular to the stream or buffer to minimize clearing requirements
      d) The minimum number of road crossings should be used within each subdivision, and no more than one fairway crossing is allowed for every 1,000 feet of buffer.
   2) Stormwater management:
      e) An analysis needs to be conducted to ensure that no economically feasible alternative is available and that the project either is necessary for flood control or significantly improves the water quality or habitat in the stream.
      f) In new developments, onsite and nonstructural alternatives will be preferred over larger facilities within the stream buffer.

g) When constructing stormwater management facilities (i.e., BMPs), the area cleared will be limited to the area required for construction and adequate maintenance access as outlined in the most recent edition of _____ (*refer to stormwater manual*).

☞ *Rather than placing specific stormwater BMP design criteria in an ordinance, it is often preferable to reference a manual. With this approach, specific design information can be changed over time without going through the formal process needed to change ordinance language.*

☞ *The* Maryland Stormwater Design Manual *is one example of an up-to-date stormwater design manual. For more information, go to www.mde.state.md.us. Under topics, choose "Stormwater Design Manual."*

h) Material dredged or otherwise removed from a BMP shall be stored outside the buffer.

3) Stream restoration projects, facilities, and activities approved by _____ (*forestry, planning, or natural resources agency*) are permitted within the forest buffer.
4) Water quality monitoring and stream gauging are permitted within the forest buffer, as approved by _____(*forestry, planning or natural resources agency*):.
5) Individual trees within the forest buffer that are in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream may be removed.
6) Other timber cutting techniques approved by the agency may be undertaken within the forest buffer under the advice and guidance of _____ (*state or federal forestry agency*) if necessary to preserve the forest from extensive pest infestation, disease infestation, or threat from fire.

C) All plans prepared for recording and all right-of-way plans shall clearly
1) Show the extent of any forest buffer on the subject property
2) Label the forest buffer
3) Provide a note to reference any forest buffer stating: “There shall be no clearing, grading, construction or disturbance of vegetation except as permitted by the agency.”
4) Provide a note to reference any protective covenants governing all forest buffer areas stating: “Any forest buffer shown hereon is subject to protective covenants that may be found in the land records and that restrict disturbance and use of these areas.”

D) All forest buffer areas shall be maintained through a declaration of protective covenant, which is required to be submitted for approval by _____ (*planning board or agency*). The covenant shall be recorded in the land records and shall run with the land and continue in perpetuity.

☞ *This protective covenant can be kept either by the local government agency responsible for management of environmental resources or by an approved nonprofit organization. An example conservation easement is included later in this section.*

E) All lease agreements must contain a notation regarding the presence and location of protective covenants for forest buffer areas and shall contain information on the management and maintenance requirements for the new property owner.
F) An offer of dedication of a forest buffer area to the agency shall not be interpreted to mean that this automatically conveys to the general public the right of access to this area.
G) _____ (*responsible individual or group*) shall inspect the buffer annually and immediately following severe storms for evidence of sediment deposition, erosion, or concentrated flow channels and corrective actions taken to ensure the integrity and functions

of the forest buffer.

A local ordinance will need to designate the individual or group responsible for buffer maintenance. Often, the responsible party will be identified in protective covenants associated with the property.

H) Forest buffer areas may be allowed to grow into their vegetative target state naturally, but methods to enhance the successional process such as active reforestation may be used when deemed necessary by _____ (*natural resources or forestry agency*) to ensure the preservation and propagation of the buffer area. Forest buffer areas may also be enhanced through reforestation or other growth techniques as a form of mitigation for achieving buffer preservation requirements.

Explicit forestry management criteria are often included in a forestry or natural resources conservation ordinance. An example forest conservation ordinance from Frederick County, Maryland is included in the miscellaneous ordinances section of this site.

Section VIII. Enforcement Procedures

A) _____ (*director of responsible agency)* or his/her designee is authorized and empowered to enforce the requirements of this ordinance in accordance with the procedures of this section.

B) If, upon inspection or investigation, the director or his/her designee is of the opinion that any person has violated any provision of this ordinance, he/she shall with reasonable promptness issue a correction notice to the person. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance that has been violated. In addition, the notice shall set a reasonable time for the abatement and correction of the violation.

C) If it is determined that the violation or violations continue after the time fixed for abatement and correction has expired, the director shall issue a citation by certified mail to the person who is in violation. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance that has been violated and what penalty, if any, is proposed to be assessed. The person charged has 30 days within which to contest the citation or proposed assessment of penalty and to file a request for a hearing with the director or his/her designee. At the conclusion of this hearing, the director or his/her designee will issue a final order, subject to appeal to the appropriate authority. If, within 30 days from the receipt of the citation issued by the director, the person fails to contest the citation or proposed assessment of penalty, the citation or proposed assessment of penalty shall be deemed the final order of the director.

B) Any person who violates any provision of this ordinance may be liable for any cost or expenses incurred as a result thereof by the agency.

C) Penalties that may be assessed for those deemed to be in violation may include the following:

1) A civil penalty not to exceed $1,000.00 for each violation. Every day that such violation(s) continue will be considered a separate offense.
2) A criminal penalty in the form of a fine of not more than $1,000.00 for each violation, imprisonment for not more than 90 days, or both. Every day that such violation(s) continue will be considered a separate offense.
3) Anyone who knowingly makes any false statements in any application, record, or plan required by this ordinance shall upon conviction be punished by a fine of not more than $1,000.00 for each violation, imprisonment for not more than 30 days, or both.

☞ *Specific penalties will vary between communities, and should reflect realistically enforceable penalties given the political realities of a jurisdictin.*

F) In addition to any other sanctions listed in this ordinance, a person who fails to comply with the provisions of this buffer ordinance shall be liable to the agency in a civil action for damages in an amount equal to twice the cost of restoring the buffer. Damages that are recovered in accordance with this action shall be used for the restoration of buffer systems or for the administration of programs for the protection and restoration of water quality, streams, wetlands, and floodplains.

Section IX. **Waivers/Variances**

A) This ordinance shall apply to all proposed development except for activities that were completed prior to the effective date of this ordinance and had received the following:
   1) A valid, unexpired permit in accordance with development regulations
   2) A current, executed public works agreement
   3) A valid, unexpired building permit
   4) A waiver in accordance with current development regulations.

B) The director of the agency may grant a variance for the following:
   1) Those projects or activities for which it can be demonstrated that strict compliance with the ordinance would result in a practical difficulty or financial hardship
   2) Those projects or activities serving a public need where no feasible alternative is available
   3) The repair and maintenance of public improvements where avoidance and minimization of adverse impacts to nontidal wetlands and associated aquatic ecosystems have been addressed
   4) Those developments which have had buffers applied in conformance with previously issued requirements

C) Waivers for development may also be granted in two additional forms, if deemed appropriate by the director:
   1) The buffer width made be reduced at some points as long as the average width of the buffer meets the minimum requirement. This averaging of the buffer may be used to allow for the presence of an existing structure or to recover a lost lot, as long as the streamside zone (Zone I) is not disturbed by the reduction and no new structures are built within the 100-year floodplain.
   2) _____ (*planning agency*) may offer credit for additional density elsewhere on the site in compensation for the loss of developable land due to the requirements of this ordinance. This compensation may increase the total number of dwelling units on the site up to the amount permitted under the base zoning.

D) The applicant shall submit a written request for a variance to the director of the agency. The application shall include specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. The agency may require an alternative analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.

E) In granting a request for a variance, the director of the agency may require site design, landscape planting, fencing, signs, and water quality best management practices to reduce adverse impacts on water quality, streams, wetlands, and floodplains.

Section X. Conflict With Other Regulations

Where the standards and management requirements of this buffer ordinance are in conflict with other laws, regulations, and policies regarding streams, steep slopes, erodible soils, wetlands, floodplains, timber harvesting, land disturbance activities, or other environmental protective measures, the more restrictive shall apply.

Figure 1: Stream Order (Source: Schueler, 1995)

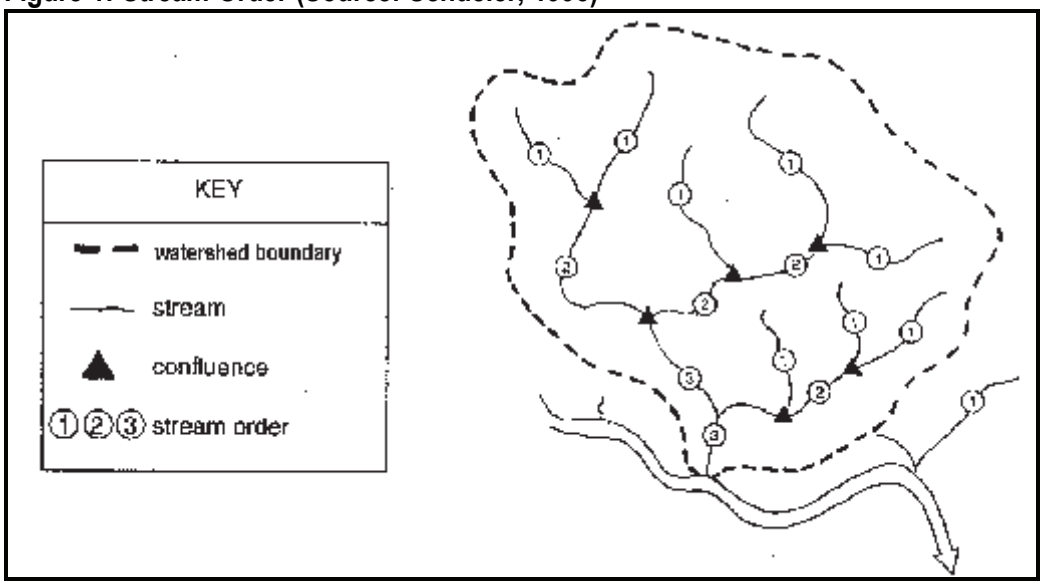
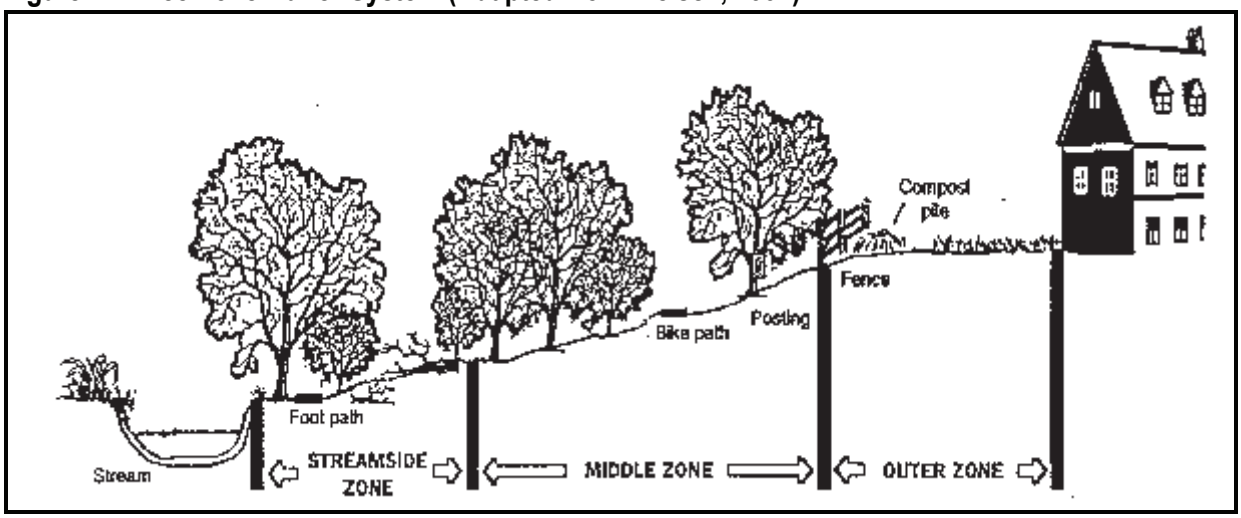


Figure 2: Three Zone Buffer System (Adapted from Welsch, 1991)



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Model Local Law to Prohibit Illicit Discharges, Activities and Connections to Separate Storm Sewer System

Introduction

This model local law is intended to be a tool for communities that are currently or may soon be responsible for meeting the Phase II stormwater management requirements of the National Pollutant Discharge Elimination System (NPDES) regulations, administered by New York State through the State Pollutant Discharge Elimination System (SPDES) regulations. The goal of providing this model law is to assist communities in adopting provisions of local law to meet the new federal and state guidelines for prohibiting illicit discharges to municipal separate storm sewer systems. In designing a model illicit discharge law for a New York State audience, we include suggestions for standard language and concepts that we believe a good illicit discharge law should contain. This local law should not be construed as an exhaustive listing of all the language needed for a local law, but represents a good base that communities can build upon and customize to be consistent with the local conditions and staff resources available in their municipality.

Throughout the local law, there are sections in which you must insert the name of your municipality and the agency that you have given regulatory power over stormwater management issues. These sections are denoted by **bold text** placed in brackets. By using this document and customizing these sections, you can create a viable local law with minimal editing.

Italicized text with this symbol ↳ should be interpreted as comments, instructions, information or optional language to assist the local law writer. The text next to the arrow should be deleted and the optional sections converted to non-italicized text or deleted as appropriate in your final local law. Sections 2.5, 2.9, 7, 8.2, and 9.2 are optional for municipalities that are regulating failing individual sewage treatment systems because stormwater discharge from the MS4 meets one of the Special Conditions in Section 2.18 or for municipalities that choose to include these standards for certain water resource protection objectives.

Model Local Law
to
Prohibit Illicit Discharges, Activities and Connections to Separate Storm Sewer System

SECTION 1. PURPOSE/INTENT.

The purpose of this law is to provide for the health, safety, and general welfare of the citizens of the **((City/Town/Village) of _____)** through the regulation of non-stormwater discharges to the municipal separate storm sewer system (MS4) to the maximum extent practicable as required by federal and state law. This law establishes methods for controlling the introduction of pollutants into the MS4 in order to comply with requirements of the SPDES General Permit for Municipal Separate Storm Sewer Systems. The objectives of this law are:

1.1 To meet the requirements of the SPDES General Permit for Stormwater Discharges from MS4s, Permit no. GP-02-02 or as amended or revised;

1.2 To regulate the contribution of pollutants to the MS4 since such systems are not designed to accept, process or discharge non-stormwater wastes;

1.3 To prohibit Illicit Connections, Activities and Discharges to the MS4;

1.4 To establish legal authority to carry out all inspection, surveillance and monitoring procedures necessary to ensure compliance with this law; and

1.5 To promote public awareness of the hazards involved in the improper discharge of trash, yard waste, lawn chemicals, pet waste, wastewater, grease, oil, petroleum products, cleaning products, paint products, hazardous waste, sediment and other pollutants into the MS4.

SECTION 2. DEFINITIONS.

Whenever used in this law, unless a different meaning is stated in a definition applicable to only a portion of this law, the following terms will have meanings set forth below:

2.1 Best Management Practices (BMPs). Schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

2.2 Clean Water Act. The Federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and

any subsequent amendments thereto.

2.3 Construction Activity. Activities requiring authorization under the SPDES permit for stormwater discharges from construction activity, GP-02-01, as amended or revised. These activities include construction projects resulting in land disturbance of one or more acres. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

2.4 Department. The New York State Department of Environmental Conservation.

5 *The following section in italics is optional for those municipalities that are regulating failing individual sewage treatment systems to address Special Conditions or water resource objectives:*

2.5 Design professional. New York State licensed professional engineer or licensed architect.

2.6 Hazardous Materials. Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

2.7 Illicit Connections. Any drain or conveyance, whether on the surface or subsurface, which allows an illegal discharge to enter the MS4, including but not limited to:
1. Any conveyances which allow any non-stormwater discharge including treated or untreated sewage, process wastewater, and wash water to enter the MS4 and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency; or
2. Any drain or conveyance connected from a commercial or industrial land use to the MS4 which has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

2.8 Illicit Discharge. Any direct or indirect non-stormwater discharge to the MS4, except as exempted in Section 6 of this law.

5 *The following section in italics is optional for those municipalities that are regulating failing individual sewage treatment systems to address Special Conditions or water resource objectives:*

2.9 Individual Sewage Treatment System. A facility serving one or more parcels of land or residential households, or a private, commercial or institutional facility, that treats sewage or other liquid wastes for discharge into the groundwaters of New York State, except where a permit for such a facility is required under the applicable provisions of Article 17 of the Environmental Conservation Law.

2.10 Industrial Activity. Activities requiring the SPDES permit for discharges from industrial activities except construction, GP-98-03, as amended or revised.

2.11 MS4. Municipal Separate Storm Sewer System.

2.12 Municipal Separate Storm Sewer System. A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

1. Owned or operated by the **((City/Town/Village) of _____)**;
2. Designed or used for collecting or conveying stormwater;
3. Which is not a combined sewer; and
4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40CFR 122.2

2.13 Municipality. The **((City/Town/Village) of _____)**

2.14 Non-Stormwater Discharge. Any discharge to the MS4 that is not composed entirely of stormwater.

2.15 Person. Any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

2.16 Pollutant. Dredged spoil, filter backwash, solid waste, incinerator residue, treated or untreated sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards.

2.17 Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

2.18 Special Conditions.
1. Discharge Compliance with Water Quality Standards. The condition that applies where a municipality has been notified that the discharge of stormwater authorized under their MS4 permit may have caused or has the reasonable potential to cause or contribute to the violation of an applicable water quality standard. Under this condition the municipality must take all necessary actions to ensure future discharges do not cause or contribute to a violation of water quality standards.

2. 303(d) Listed Waters. The condition in the municipality's MS4 permit that applies where the MS4 discharges to a 303(d) listed water. Under this condition the stormwater management program must ensure no increase of the listed pollutant of concern to the 303(d) listed water.

3. Total Maximum Daily Load (TMDL) Strategy. The condition in the municipality's MS4 permit where a TMDL including requirements for control of stormwater discharges has been approved by EPA for a waterbody or watershed into which the MS4 discharges. If the discharge from the MS4 did not meet the TMDL stormwater allocations prior to September

10, 2003, the municipality was required to modify its stormwater management program to ensure that reduction of the pollutant of concern specified in the TMDL is achieved.

4. The condition in the municipality's MS4 permit that applies if a TMDL is approved in the future by EPA for any waterbody or watershed into which an MS4 discharges. Under this condition the municipality must review the applicable TMDL to see if it includes requirements for control of stormwater discharges. If an MS4 is not meeting the TMDL stormwater allocations, the municipality must, within six (6) months of the TMDL's approval, modify its stormwater management program to ensure that reduction of the pollutant of concern specified in the TMDL is achieved.

2.19 State Pollutant Discharge Elimination System (SPDES) Stormwater Discharge Permit. A permit issued by the Department that authorizes the discharge of pollutants to waters of the state.

2.20 Stormwater. Rainwater, surface runoff, snowmelt and drainage.

2.21 Stormwater Management Officer (SMO). An employee, the municipal engineer or other public official(s) designated by the **((City/Town/Village) of _____)** to enforce this local law. The SMO may also be designated by the municipality to accept and review stormwater pollution prevention plans, forward the plans to the applicable municipal board and inspect stormwater management practices.

2.22 303(d) List. A list of all surface waters in the state for which beneficial uses of the water (drinking, recreation, aquatic habitat, and industrial use) are impaired by pollutants, prepared periodically by the Department as required by Section 303(d) of the Clean Water Act. 303(d) listed waters are estuaries, lakes and streams that fall short of state surface water quality standards and are not expected to improve within the next two years.

2.23 TMDL. Total Maximum Daily Load.

2.24 Total Maximum Daily Load. The maximum amount of a pollutant to be allowed to be released into a waterbody so as not to impair uses of the water, allocated among the sources of that pollutant.

2.25 Wastewater. Water that is not stormwater, is contaminated with pollutants and is or will be discarded.

SECTION 3. APPLICABILITY.

This law shall apply to all water entering the MS4 generated on any developed and undeveloped lands unless explicitly exempted by an authorized enforcement agency.

SECTION 4. RESPONSIBILITY FOR ADMINISTRATION.

The Stormwater Management Officer(s) (SMO(s)) shall administer, implement, and enforce the provisions of this law. Such powers granted or duties imposed upon the authorized enforcement

official may be delegated in writing by the SMO as may be authorized by the municipality.

SECTION 5. SEVERABILITY.

The provisions of this law are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this law or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this law.

SECTION 6. DISCHARGE PROHIBITIONS.

6.1 Prohibition of Illegal Discharges.
No person shall discharge or cause to be discharged into the MS4 any materials other than stormwater except as provided in Section 6.1.1. The commencement, conduct or continuance of any illegal discharge to the MS4 is prohibited except as described as follows:

6.1.1 The following discharges are exempt from discharge prohibitions established by this local law, unless the Department or the municipality has determined them to be substantial contributors of pollutants: water line flushing or other potable water sources, landscape irrigation or lawn watering, existing diverted stream flows, rising ground water, uncontaminated ground water infiltration to storm drains, uncontaminated pumped ground water, foundation or footing drains, crawl space or basement sump pumps, air conditioning condensate, irrigation water, springs, water from individual residential car washing, natural riparian habitat or wetland flows, dechlorinated swimming pool discharges, residential street wash water, water from fire fighting activities, and any other water source not containing pollutants. Such exempt discharges shall be made in accordance with an appropriate plan for reducing pollutants.

5 *These discharge exemptions are allowed by the Federal regulations and the Department; however, municipalities may choose to delete certain exemptions if it is important to control that discharge to protect local water resources.*

6.1.2 Discharges approved in writing by the SMO to protect life or property from imminent harm or damage, provided that, such approval shall not be construed to constitute compliance with other applicable laws and requirements, and further provided that such discharges may be permitted for a specified time period and under such conditions as the SMO may deem appropriate to protect such life and property while reasonably maintaining the purpose and intent of this local law.

6.1.3 Dye testing in compliance with applicable state and local laws is an allowable discharge, but requires a verbal notification to the SMO prior to the time of the test.
6.1.4 The prohibition shall not apply to any discharge permitted under an SPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Department, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the MS4.

6.2 Prohibition of Illicit Connections.

6.2.1 The construction, use, maintenance or continued existence of illicit connections to the MS4 is prohibited.

6.2.2 This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

6.2.3 A person is considered to be in violation of this local law if the person connects a line conveying sewage to the municipality's MS4, or allows such a connection to continue.

5 *The following section in italics is optional for those municipalities that are regulating failing individual sewage treatment systems to address Special Conditions or water resource objectives:*

SECTION 7. PROHIBITION AGAINST FAILING INDIVIDUAL SEWAGE TREATMENT SYSTEMS

No persons shall operate a failing individual sewage treatment system in areas tributary to the municipality's MS4. A failing individual sewage treatment system is one which has one or more of the following conditions:

7.1 The backup of sewage into a structure.
7.2 Discharges of treated or untreated sewage onto the ground surface.
7.3 A connection or connections to a separate stormwater sewer system.
7.4 Liquid level in the septic tank above the outlet invert.
7.5 Structural failure of any component of the individual sewage treatment system that could lead to any of the other failure conditions as noted in this section.
7.6 Contamination of off-site groundwater.

SECTION 8. PROHIBITION AGAINST ACTIVITIES CONTAMINATING STORMWATER

8.1 Activities that are subject to the requirements of this section are those types of activities that:

8.1.1 Cause or contribute to a violation of the municipality's MS4 SPDES permit.
8.1.2 Cause or contribute to the municipality being subject to the Special Conditions as defined in Section 2 (Definitions) of this local law.

5 *The following section in italics is optional for those municipalities that are regulating failing individual sewage treatment systems to address Special Conditions or water resource objectives:*

8.2 Such activities include failing individual sewage treatment systems as defined in Section 7, improper management of pet waste or any other activity that causes or contributes to violations of the municipality's MS4 SPDES permit authorization.

8.3 Upon notification to a person that he or she is engaged in activities that cause or contribute to violations of the municipality's MS4 SPDES permit authorization, that person shall take all reasonable actions to correct such activities such that he or she no longer causes or contributes to violations of the municipality's MS4 SPDES permit authorization.

SECTION 9. REQUIREMENT TO PREVENT, CONTROL, AND REDUCE STORMWATER POLLUTANTS BY THE USE OF BEST MANAGEMENT PRACTICES.

9.1 Best Management Practices
Where the SMO has identified illicit discharges as defined in Section 2 or activities contaminating stormwater as defined in Section 8 the municipality may require implementation of Best Management Practices (BMPs) to control those illicit discharges and activities.

9.1.1 The owner or operator of a commercial or industrial establishment shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the MS4 through the use of structural and non-structural BMPs.

9.1.2 Any person responsible for a property or premise, which is, or may be, the source of an illicit discharge as defined in Section 2 or an activity contaminating stormwater as defined in Section 8, may be required to implement, at said person's expense, additional structural and non-structural BMPs to reduce or eliminate the source of pollutant(s) to the MS4.

9.1.3 Compliance with all terms and conditions of a valid SPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section.

5 *The following section in italics is optional for those municipalities that are regulating failing individual sewage treatment systems to address Special Conditions or water resource objectives:*

9.2 Individual Sewage Treatment Systems - Response to Special Conditions Requiring No Increase of Pollutants or Requiring a Reduction of Pollutants

Where individual sewage treatment systems are contributing to the municipality's being subject to the Special Conditions as defined in Section 2 of this local law, the owner or operator of such individual sewage treatment systems shall be required to:

9.2.1 Maintain and operate individual sewage treatment systems as follows:

1. *Inspect the septic tank annually to determine scum and sludge accumulation. Septic tanks must be pumped out whenever the bottom of the scum layer is within three inches of the bottom of the outlet baffle or sanitary tee or the top of the sludge is within ten inches of the bottom of the outlet baffle or sanitary tee.*
2. *Avoid the use of septic tank additives.*
3. *Avoid the disposal of excessive quantities of detergents, kitchen wastes, laundry wastes, and household chemicals; and*

4. *Avoid the disposal of cigarette butts, disposable diapers, sanitary napkins, trash and other such items*

5 Most tanks should be pumped out every two to three years. However, pumping may be more or less frequent depending on use. Inspection of the tank for cracks, leaks and blockages should be done by the septage hauler at the time of pumping of the tank contents.

9.2.2 Repair or replace individual sewage treatment systems as follows:

1. *In accordance with 10NYCRR Appendix 75A to the maximum extent practicable.*
2. *A design professional licensed to practice in New York State shall prepare design plans for any type of absorption field that involves:*
   1. Relocating or extending an absorption area to a location not previously approved for such.
   2. Installation of a new subsurface treatment system at the same location.
   3. Use of alternate system or innovative system design or technology.
3. *A written certificate of compliance shall be submitted by the design professional to the municipality at the completion of construction of the repair or replacement system.*

SECTION 10. SUSPENSION OF ACCESS TO MS4. Illicit Discharges in Emergency Situations.

10.1 The SMO may, without prior notice, suspend MS4 discharge access to a person when such suspension is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger to the environment, to the health or welfare of persons, or to the MS4. The SMO shall notify the person of such suspension within a reasonable time thereafter in writing of the reasons for the suspension. If the violator fails to comply with a suspension order issued in an emergency, the SMO may take such steps as deemed necessary to prevent or minimize damage to the MS4 or to minimize danger to persons.

10.2 Suspension due to the detection of illicit discharge. Any person discharging to the municipality's MS4 in violation of this law may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. The SMO will notify a violator in writing of the proposed termination of its MS4 access and the reasons therefor. The violator may petition the SMO for a reconsideration and hearing. Access may be granted by the SMO if he/she finds that the illicit discharge has ceased and the discharger has taken steps to prevent its recurrence. Access may be denied if the SMO determines in writing that the illicit discharge has not ceased or is likely to recur. A person commits an offense if the person reinstates MS4 access to premises terminated pursuant to this Section, without the prior approval of the SMO.

SECTION 11. INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES.

Any person subject to an industrial or construction activity SPDES stormwater discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the municipality prior to the allowing of discharges to the MS4.

SECTION 12. ACCESS AND MONITORING OF DISCHARGES.

12.1 Applicability. This section applies to all facilities that the SMO must inspect to enforce any provision of this Law, or whenever the authorized enforcement agency has cause to believe that there exists, or potentially exists, in or upon any premises any condition which constitutes a violation of this Law.

12.2 Access to Facilities.

12.2.1 The SMO shall be permitted to enter and inspect facilities subject to regulation under this law as often as may be necessary to determine compliance with this Law. If a discharger has security measures in force which require proper identification and clearance before entry into its premises, the discharger shall make the necessary arrangements to allow access to the SMO.

12.2.2 Facility operators shall allow the SMO ready access to all parts of the premises for the purposes of inspection, sampling, examination and copying of records as may be required to implement this law.

12.2.3 The municipality shall have the right to set up on any facility subject to this law such devices as are necessary in the opinion of the SMO to conduct monitoring and/or sampling of the facility's stormwater discharge.

12.2.4 The municipality has the right to require the facilities subject to this law to install monitoring equipment as is reasonably necessary to determine compliance with this law. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the discharger at its own expense. All devices used to measure stormwater flow and quality shall be calibrated to ensure their accuracy.

12.2.5 Unreasonable delays in allowing the municipality access to a facility subject to this law is a violation of this law. A person who is the operator of a facility subject to this law commits an offense if the person denies the municipality reasonable access to the facility for the purpose of conducting any activity authorized or required by this law.

12.2.6 If the SMO has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this law, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this law or any order issued hereunder, then the SMO may seek issuance of a search warrant from any court of competent jurisdiction.

SECTION 13. NOTIFICATION OF SPILLS.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into the MS4, said person shall take all necessary steps to ensure the discovery,

containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the municipality in person or by telephone or facsimile no later than the next business day. Notifications in person or by telephone shall be confirmed by written notice addressed and mailed to the municipality within three business days of the telephone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 14. ENFORCEMENT.

14.1 Notice of Violation.

When the municipality's SMO finds that a person has violated a prohibition or failed to meet a requirement of this law, he/she may order compliance by written notice of violation to the responsible person. Such notice may require without limitation:

14.1.1 The elimination of illicit connections or discharges;

14.1.2 That violating discharges, practices, or operations shall cease and desist;

14.1.3 The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;

14.1.4 The performance of monitoring, analyses, and reporting;

14.1.5 Payment of a fine; and

14.1.6 The implementation of source control or treatment BMPs. If abatement of a violation and/or restoration of affected property is required, the notice shall set forth a deadline within which such remediation or restoration must be completed. Said notice shall further advise that, should the violator fail to remediate or restore within the established deadline, the work will be done by a designated governmental agency or a contractor and the expense thereof shall be charged to the violator.

14.2 Penalties

In addition to or as an alternative to any penalty provided herein or by law, any person who violates the provisions of this local law shall be guilty of a violation punishable by a fine not exceeding three hundred fifty dollars ($350) or imprisonment for a period not to exceed six months, or both for conviction of a first offense; for conviction of a second offense both of which were committed within a period of five years, punishable by a fine not less than three hundred fifty dollars nor more than seven hundred dollars ($700) or imprisonment for a period not to exceed six months, or both; and upon conviction for a third or subsequent offense all of which were committed within a period of five years, punishable by a fine not less than seven hundred dollars nor more than one thousand dollars ($1000) or imprisonment for a period not to exceed six months, or both. However, for the purposes of conferring jurisdiction upon

courts and judicial officers generally, violations of this local law shall be deemed misdemeanors and for such purpose only all provisions of law relating to misdemeanors shall apply to such violations. Each week's continued violation shall constitute a separate additional violation.

SECTION 15. APPEAL OF NOTICE OF VIOLATION.

Any person receiving a Notice of Violation may appeal the determination of the SMO to the **(City Council/Town Board/Village Board of Trustees)** within 15 days of its issuance, which shall hear the appeal within 30 days after the filing of the appeal, and within five days of making its decision, file its decision in the office of the municipal clerk and mail a copy of its decision by certified mail to the discharger.

SECTION 16. CORRECTIVE MEASURES AFTER APPEAL.

16.1 If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, or, in the event of an appeal, within 5 business days of the decision of the municipal authority upholding the decision of the SMO, then the SMO shall request the owner's permission for access to the subject private property to take any and all measures reasonably necessary to abate the violation and/or restore the property.

16.2 If refused access to the subject private property, the SMO may seek a warrant in a court of competent jurisdiction to be authorized to enter upon the property to determine whether a violation has occurred. Upon determination that a violation has occurred, the SMO may seek a court order to take any and all measures reasonably necessary to abate the violation and/or restore the property. The cost of implementing and maintaining such measures shall be the sole responsibility of the discharger.

SECTION 17. INJUNCTIVE RELIEF.

It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this law. If a person has violated or continues to violate the provisions of this law, the SMO may petition for a preliminary or permanent injunction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation.

SECTION 18. ALTERNATIVE REMEDIES.

18.1 Where a person has violated a provision of this Law, he/she may be eligible for alternative remedies in lieu of a civil penalty, upon recommendation of the Municipal Attorney and concurrence of the Municipal Code Enforcement Officer, where:

18.1.1 The violation was unintentional
18.1.2 The violator has no history of pervious violations of this Law.
18.1.3 Environmental damage was minimal.
18.1.4 Violator acted quickly to remedy violation.
18.1.5 Violator cooperated in investigation and resolution.

18.2 Alternative remedies may consist of one or more of the following:

18.2.1 Attendance at compliance workshops
18.2.2 Storm drain stenciling or storm drain marking
18.2.3 River, stream or creek cleanup activities

SECTION 19. VIOLATIONS DEEMED A PUBLIC NUISANCE.

In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this law is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense, and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

SECTION 20. REMEDIES NOT EXCLUSIVE.

The remedies listed in this law are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the authorized enforcement agency to seek cumulative remedies.

SECTION 21. ADOPTION OF LAW.

This law shall be in full force and effect __ days after its final passage and adoption. All prior laws and parts of law in conflict with this law are hereby repealed.

PASSED AND ADOPTED this ____day of _____, 20__, by the following vote:

Chapter 78

FERTILIZER

§ 78-1. Prohibited acts.

No person shall at any time apply any lawn fertilizer within the Town of Lake George that is labeled as containing any phosphorus or other compound containing phosphorus.

§ 78-2. Regulation on use and application.

A. No person shall apply lawn fertilizer between December 1 and April 1.

B. No person shall apply lawn fertilizer to any impervious surface, including parking lots, roadways, and sidewalks.

C. No person shall apply lawn fertilizer to any turf or lawn area on any real property within 50 feet of any surface water, except that this restriction shall not apply where a continuous natural vegetative buffer, at least 10 feet wide separates a turf or lawn area and surface water. **[Amended 4-23-2014 by Res. No. 99-2014]**

§ 78-3. Exceptions.

The prohibitions against the use of lawn fertilizer shall not apply to:

A. Newly established turf or lawn areas during their first growing season.

B. Turf or lawn areas for which soil tests confirm the need for additional phosphorus application. The lawn fertilizer application shall not contain an amount of phosphorus exceeding the amount and rate of application recommended in the soil test evaluation.

C. Agricultural uses, vegetable and flower gardens or application to trees or shrubs.

§ 78-4. Penalties for offenses.

For any first violation of the provisions of this chapter or any rule or regulation adopted pursuant to this chapter, a civil penalty not exceeding $50 shall be imposed. For any second and successive violations, a civil penalty not exceeding $150 shall be imposed for each single violation. No civil penalty shall be imposed as provided for herein unless the alleged violator has received notice of the charge against him or her and has had an opportunity to be heard.

Local Law No. 1 of 2004, a local law amending Chapter 125,
Conservation Easement of the Town Code, as adopted by Local Law No. 12 of 1996

Chapter 125, CONSERVATION EASEMENT
[HISTORY: Adopted by the Town Board of the Town of Clifton Park 12-16-1996 by L.L. No. 12-1996. Amendments noted where applicable.]
GENERAL REFERENCES
Environmental Conservation Commission -- See Ch. 13.
Farming -- See Ch. 102.
Freshwater wetlands and stream protection -- See Ch. 124.
Land development -- See Ch. 141.
Parks and preserves -- See Ch. 152.
Subdivision of land -- See Ch. 179.
Zoning -- See Ch. 208.
Planned development districts -- See Ch. A217.

§ 125-1. Title.
This chapter shall hereinafter be known and cited as the "Conservation Easement Law of the Town of Clifton Park."

§ 125-2. Purpose.
It is the purpose of this chapter to provide for the acquisition of interests or rights in real property for the preservation of historic buildings and landmarks and open space and areas which shall constitute a public purpose for which public funds may be expended or advanced after due notice and a public hearing, by which the Town of Clifton Park may acquire, by purchase, gift, grant, bequest, devise, lease or otherwise, the fee or any lesser interest, development right, easement, covenant or other contractual right necessary to acquire open space or open area or historic buildings or landmarks as the same are defined in § 125-5 herein.

§ 125-3. Legislative authority.
In accordance with § 247 of the General Municipal Law of the State of New York, the Town Board of the Town of Clifton Park has the authority to acquire such interests or rights in land. Pursuant to the above authority, the Town Board has prepared and adopted this chapter setting forth standards to be followed in the acquisition of such interest.

§ 125-4. Jurisdiction.
This chapter shall apply to the entire area of the Town of Clifton Park.

§ 125-5. Definitions.
For the purpose of this chapter, the terms used herein are defined as follows:
FARM or FARMING -- As defined in §§ 208-7 and 208-8 of the Town Code.
HISTORIC BUILDINGS OR LANDMARKS -- As described in Article XIII of Chapter 208 of the Town Code.
LOT -- As defined in § 208-7 of the Town Code.

OPEN SPACE or OPEN AREA -- Any space or area characterized by natural scenic beauty or whose existing openness, natural condition or present state of use, if retained, would enhance the present or potential value of abutting or surrounding urban development or would maintain or enhance the conservation of natural or scenic resources. For the purposes of this section, natural resources shall include but not be limited to agricultural lands defined as open lands actually used in bona fide agricultural production.

§ 125-6. Procedure for granting easement.

A. Proposal by owner. Any owner or owners of land which constitutes an historic building or landmark for an historic conservation easement or a minimum of 15 acres per lot, or a minimum of 7.5 acres each for any two adjoining lots for a conservation easement may submit a proposal to the Town Clerk, who shall refer such application to the Town Board. The Town Board shall refer such application to the Historic Preservation Commission or to the Environmental Specialist, as appropriate, and the Planning Board for review and comments within 45 days if deemed necessary and/or appropriate. Such proposal shall be submitted on a conservation easement application form available in the Town Clerk's office. It must include a copy of a full size tax map showing the property, if the entire parcel is being encumbered, or a copy of a survey map and metes and bounds description of the proposed area if it is part of a parcel.

B. Review by Historic Preservation Commission or Environmental Specialist in conjunction with the Planning Board. Upon receipt of such proposal, the Historic Preservation Commission or Environmental Specialist and Planning Board shall investigate the area to determine if the proposal would be of benefit to the people of the Town of Clifton Park. If the Historic Preservation Commission or Environmental Specialist and Planning Board, if such a referral has been made by the Town Board, determines that it is in the public interest to accept such a proposal, each shall recommend to the Town Board that it hold a public hearing for the purpose of determining whether or not the town should accept such proposal.

C. Public hearing by Town Board. The Town Board shall, within 45 days of receipt of such advisory opinion, hold a public hearing concerning such proposal at a place within the Town of Clifton Park. At least 10 days' notice of the time and place of such hearing shall be published in a paper of general circulation in such town, by the Town Clerk. A written notice of such proposal shall be mailed by the applicant to all adjacent property owners and to any municipality whose boundaries are within 500 feet of the boundaries of said proposed area and to the school district in which it is located. Receipts of mailing shall be submitted to the Town Clerk's office prior to the date of the public hearing.

D. Determination. The Town Board, after receiving the reports of the Historic Preservation Commission or Environmental Specialist and the Clifton Park Planning Board and after such public hearing, may adopt the proposal or any modification thereof it deems appropriate or may reject it in its entirety.

E. Recording agreement. If such proposal is adopted by the Town Board, it shall be executed by the owner or owners in written form and in a form suitable for recording in the Town Clerk's office.

F. Cancellation. Said agreement may not be canceled by either party. However, the owner or owners thereof may petition the Town Board for cancellation upon good cause shown, and such cancellation may be granted only upon payment of the penalties provided in § 125-8 herein.

G. The owner shall pay to the town a fee of $15 which shall be deemed a reasonable sum to cover the costs of administration, no part of which shall be returnable to the applicant.

§ 125-7. Valuation for taxation.

After acquisition of any such interest pursuant to this chapter, the valuation placed upon such area for purposes of real estate taxation shall take into account and be limited by the limitation on the future use of the land.

§ 125-8. Penalty for violation or cancellation.

In the following paragraph "substantial" will be defined as a 100% increase in the density of the parcel which will trigger a review and final determination by the combined efforts of the Town Assessor, Director of Planning and Environmental Specialist. The determination of substantial as it relates to historic structures will be referred to the Historic Preservation Commission, as it has expertise in this area and will review the project to make a determination on the penalty.

If there is a substantial violation of the terms and conditions of the easement agreement or if said agreement is canceled by the Town Board upon petition, the then owner or owners of said property must pay to the Town of Clifton Park the following amounts:

A. All taxes granted abatement under and pursuant to the Historic Preservation Commission or Environmental Specialist easement agreement, said taxes to include the state, county, town, school districts and all special improvement districts and other taxing units to which the property is subject. Said back taxes shall be limited as follows: Any easement broken before its 11th year will be subject to a five-year maximum rollback; an easement broken between its 11th and 15th year will be subject to a four-year maximum rollback; an easement broken in its 16th year or later will be subject to a three-year maximum rollback.

B. The penalty assessed on the basis of the previous year's tax abatement multiplied by a factor equal to the term of the easement divided by the current year of the easement. This factor shall not exceed five.

C. Property covered by a conservation easement that is destroyed by fire or natural disaster will not be penalized unless the future use of the land or buildings is changed.

§ 125-9. Types of Easements.

In applying for the easement, the applicant should state the type of easement proposed. The following types of easements may be proposed:

a Conservation easement: the applicant agrees that land under easement will not be developed, built upon or otherwise changed during the term of the easement.

b Conservation easement (farming purposes): the same as Subsection a, except that farm structures as described in §§ 208-7 and 208-8 of the Town Code which are used as part of an active agricultural operation, are permitted, and are granted the same percentage(%) of easement value remaining taxable on the land. The land and buildings under easement shall be principally and actively used for farming purposes for the term of the easement, but approved farming easement applicants can also apply for other tax saving programs without penalty. The conservation easement will be applied first, and can not be shifted from one program to another.

c Conservation easement (historic preservation): the applicant shall preserve the Historic Building or Landmark as described in Article XIII of Chapter 208 of the Town Code.

Land covered by a conservation easement may be sold at any time, but the terms and conditions of the easement shall run with the land and continue until its expiration.

§ 125-10. Duration.

Easements proposed must be subject to a minimum term of 15 years. There is no maximum term.

§ 125-11. Valuation percentages.

The assessor is legally required to take into account and be limited by the limitation on the future use of the land resulting from the easement. The following table of tax assessment is presently in use.

Percent of Pre-Easement Value Remaining Taxable

Years	Conservation	Farming Purposes	Historic Preservation
15	20	15	15
16	19	14	14
17	18	13	13
18	17	12	12
19	16	11	11
20	15	10	10
21	14	10	10
22	13	10	10
23	12	10	10
24	11	10	10
25±	10	10	10

§ 125-12. Exceptions.

Other than for historic preservation easements, it will be required that a parcel which include a principal dwelling exclude a one acre, (43,560 square feet) area with a maximum of three acres (130,680 square feet) encompassing the dwellings and designate that area as an exception to the easement.

§ 125-13. Cancellation.

The easement may be canceled by applying to the Town Board. At the time of such cancellation or if the terms of the easement have been violated by the landowner, the town will assess rollback taxes and a penalty as outlined in § 125-8 of this chapter. The penalty shall be assessed against all the land under easement, except in the case of the death of a sole owner in which case the penalty will be assessed only against that portion which is to be developed or changed in use within one year of the date of death. Thereafter, the penalty and back taxes will be levied upon the land under easement.

TOWN OF CLIFTON PARK – CONSERVATION EASEMENT
PENALTY MULTIPLIER
(Applied to the previous year's tax reduction)

Easement Term	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
15	5.0	5.0	5.0	3.8	3.0	2.5	2.1	1.9	1.7	1.5	1.4	1.3	1.2	1.1	1.0
14	5.0	5.0	4.7	3.5	2.8	2.3	2.0	1.8	1.6	1.4	1.3	1.2	1.1	1.0	
13	5.0	5.0	4.3	3.3	2.6	2.2	1.9	1.6	1.4	1.3	1.2	1.1	1.0		
12	5.0	5.0	4.0	3.0	2.4	2.0	1.7	1.5	1.3	1.2	1.1	1.0			
11	5.0	5.0	3.7	2.6	2.2	1.8	1.6	1.4	1.2	1.1	1.0				
10	5.0	5.0	3.3	2.5	2.0	1.7	1.4	1.3	1.1	1.0					
9	5.0	4.5	3.0	2.3	1.8	1.5	1.3	1.1	1.0						
8	5.0	4.0	2.7	2.0	1.6	1.3	1.1	1.0							
7	5.0	3.5	2.3	1.8	1.4	1.2	1.0								
6	5.0	3.0	2.0	1.5	1.2	1.0									
5	5.0	2.5	1.7	1.3	1.0										

Current Year Of Easement

CONSERVATION EASEMENT

125 Attachment 1

Policy Statement

Clifton Park continues to grow. Each year, more and more people are buying land and building homes in the town as the area continues to expand. Pressures to find buildable land will necessarily move sights westward.

People want to live in Clifton Park for many reasons. The town is a wonderful place to live. It is convenient to job centers. it has an excellent school system and well-managed, active recreation programs; but, most of all, Clifton Park is exceptionally scenic, with lots of historic landmarks, wooded hills and rolling fields.

Many of Clifton Park's first suburban residents came here to escape the crowded urban environment of the city, but the city has followed. In a few cases, not much thought was given to the need to preserve some of Clifton Park's original character - the very historic and environmental quality that attracts people to the town.

Open space and historic conservation is more than aesthetics. There are other needs for open space in Clifton Park. Open space areas can help to meet basic human needs for places to relax or play, to meet with friends and neighbors, to enclose neighborhoods so they can be easily identified as social communities, to link homes with shopping centers so they can be safely reached by walking or cycling.

Rural areas with valuable mineral, agricultural and forest lands need to be set aside for sand, gravel, food and timber production, especially when the future supplies of these goods from other areas are becoming more and more uncertain.

Finally, many open lands in Clifton Park play important parts in the ecological system; they absorb floodwaters, prevent soil erosion, provide habitat for wildlife, help cleanse the air of pollutants and moderate the climate by providing shade and windbreaks. They help to reduce dust and noise pollution and provide visual relief from the often cluttered urban landscape. These wetlands must be protected.

Our commitment is to the citizens of Clifton Park, those who live here now and those who will live here in future years. On your behalf, we are dedicated to keeping Clifton Park as a community of people who have a close relationship with the land. Open land is a part of our lives, and we are all part of the Clifton Park environment. What we do with our lands and landmarks will shape our future and our children's future.

We are committed to Clifton Park's future as a community with coexisting suburban, rural and agricultural areas which welcomes development interests consistent with the preservation of these characteristics.

CLIFTON PARK CODE

We are also concerned with our lands which represent valuable areas of regulated resource. We want to maintain farming and forest production as a viable way of life. We believe suburban and rural interests can coexist in harmony but that Clifton Park's future growth should be related to the existing characteristics.

Our neighborhoods and communities should be separated as distinct areas instead of mindless extensions of suburban sprawl.

Parks and recreation areas should be closely related to neighborhoods and communities; places people can walk or cycle to, rather than drive.

Commercial and employment centers should be screened from, but linked to, residential areas.

Development should minimize disturbance to the land; neighborhoods with trees, streams and soils left intact.

It is this Board's intention and desire to preserve open space and historic landmarks whether they are isolated or adjacent to residential or commercial development.

125 Attachment 1:2 07 - 15 - 2004

APPENDIX C. TROUT UNLIMITED STUDY – UPPER SCHROON RIVER

2017 Schroon River Channel & Bank Level 4 Validation Study Summary

I. Findings along the reference reach: *no visible or measurable changes over the entire reach including monumented cross sections:*

- 4+62 Glide with bank pins and scour chains
- 4+79.4 mid riffle with bank and scour chains
- 5+96 mid run with bank and scour chains
- 6+54 mid pool with bank and scour chains

II. Findings along the Impacted Reach: substantial bank and or bed changes downstream of the Rt. 9 bridge, particularly along segments identified as unstable in the 2016 studies. This includes replicate cross sectional surveys at:

- ***15+37.4 Riffle crest*** above the large bend with double pool: no bank alteration, bed degradation of 1' along the left half of the channel and aggradation of 1.3' along the right half of the channel
- ***17+53 Glide*** below double pool: 4.4' of lateral migration along right bank, .2-.9' of bed degradation across the channel with accompanying increase in bankfull cross sectional area (48 square feet), width (4.4') and mean depth (43')
- ***24+23.8 riffle*****:** no significant change in cross sectional width, area, depth, W/D ratio, no change in bed elevation (locally stable)

III. Additional observations of the impacted reach:

1. Significant readily seen morphologic alterations continue to evolve downstream of the Rt. 9 bridge between stations 6+ 28 to 9+ 58, (not measured by replicate surveys).
2. Stations 6+28 to 8+71 continue to display significant left bank erosion. In 2017, a monumented cross section was done at the midpoint of the proposed toe-wood bench (station 7+25) for design purposes. It will be re-surveyed in 2018.
3. Between stations 800 to 958, bed instability with shifting features (displacement of riffle crests & pool infilling) was visible – reflecting excess deposition from local recruitment.
4. At station 27+30 (mid2016 study pool), bank ***erosion along a >40' segment by conservative estimates exceeded 2016 level 3 prediction by a factor of 3 (124 cu yd vs 40 cu yd), initiating mass wasting of a 30' sand bank.*** This also reduces pool depth by infilling, contributing to an evolving mid channel log jam and setting a stage for a meander cutoff. with slope regeneration upstream and down. In view of this, the site will be reevaluated early in 2018 and -- if restoration is still feasible, obtain new cross sections and local profile for a draft restoration design.

V. Conclusions:

1. The Reference Reach continues to be stable (vertically and laterally) while conveying its bedload and maintaining higher order stream functions (physiochemical and biologic).
2. The Impacted Reach downstream of Rt. 9 continues to be unstable, unable to effectively transport its bedload, and continues to exert negative impacts on physiochemical and biologic stream functions. 2016 predictions of bank erosion, bed instability and poor sediment transport were confirmed between stations 6+81 (the start of bank erosion below Rt 9) and station 18+00 (the end of second unstable actively eroding high sandy bank). A previously small but highly vulnerable eroding sandy bank has become a very significant sediment source certain to worsen --encroaching upon a nearby residence and adding to excess fine bedload supply in an already transport limited system. Intervening stream segments show evidence of ongoing channel adjustments – none are convincingly recovering.
3. Rapidly evolving local instability at station 27+20 associated with a developing meander cutoff threatens to propagate instability between riffle crests at 24+23 to 32+23 warrants prompt evaluation & consideration of corrective measures.
4. The overall conclusion of multilevel impairment in stream functions due to local factors increasing bank sourced recruitment of fines is strongly supported. It is clear that the high sediment supply overwhelms transport, sorting & storage processes. These in turn lead to multiple degrading alterations in geomorphology, physio-chemistry and biologic capacity. The restoration of these lost functions to recover high biologic, recreational and aesthetic values l requires both elimination of excess sediment sources and restoring appropriate balance between transport energy and supply where it has been disturbed.

V. Project Design:

1) Given the 1.08' water surface slope difference between top of riffle at 6+48 above 1st major eroding bank of glacial till and top of riffle at 17+53 below the second major erosional bend, the design profile will divide this 1' slope differential between two new 80 – 100' riffles:
    a. 1st riffle will start at the top of the riffle below the proposed ***Phase 1*** Toe Wood/ pool.
    b. 2nd riffle will start near station 13+00 but will require a new meander geometry layout for ***Phase 2***
2) ***Phase 1*** Between stations 6+28 to 8+71, the channel will be shifted 15'to the right (northeastward). A cross section at station 7+25 obtained in 2017 is included with an overlay of a (typical) pool design cross section showing balanced cut & fill, the .5 bkfl TW bench and a 24' bankfull floodplain bench on river right.
3) ***Phase 1*** Between stations 8+71 on down to roughly sta 12+00, the stream can be managed with a series of root wad vanes spaced along the existing side bar.
4) ***Phase 2*** will require a large rightward 90-100're-meander of the channel between stations 12+00 and 15+30 combined with a leftward shift between stations 15+30 and roughly station 1900 to regain lost sinuosity, and restore a stable radius of curvature while shifting the channel 35' away from the high 500' long actively sloughing glacial till bank .

a. The outside bend of each of the roughly 250' long new meander bends will require toe wood.

b. Infill of the existing channel to bankfull elevation between stations 13+00 & 15+30 will use materials from the newly excavated meander.

c. Considerable fill will be required between sta 15+00 – 17+00 along the newly formed R bank where the design channel will cross the back of the existing point bar. This segment of toe wood will need to be constructed robustly with an adequate flood plain.

5) Grade control for each riffle and for the riffle at the end of the large re-meander will be required. At present, Convergent Rock Structures with tightly abutting boulder footers are recommended by USF&W Service with random boulder clusters downstream to preserve design riffle slope. Boulder clusters may also be considered above the 1st proposed toe wood bench to reduce the higher energy from constricted flows under the bridge.

Trout Unlimited, Adirondack Chapter

APPENDIX D. PUBLIC WATER SUPPLY

Public water supplies, users, sources, treatment processes and objectives per county. Information derived from the US EPA Safe Drinking Water Information System Federal Reporting Services DWMAPS.

Public Water Supply/ HUC-10 Subwatershed	Number of Users	Source	Treatment Processes	Treatment Plant Objectives	Health based violations
ESSEX COUNTY					
Schroon Lake Water District Upper Schroon River Watershed	2,750	Groundwater	Hypochlorination, Post Inhibitor, Orthophosphate	Disinfection Corrosion Control	No
Minerva Water District Stony Creek – Hudson River/ East Stony Creek	800	Groundwater	Hypochlorination, Pre	Disinfection	No
Winebrook Hill Water District (Newcomb) East Branch Sacandaga/ East Stony Creek	250	Groundwater	Hypochlorination, Pre	Disinfection	No
FULTON COUNTY					
Broadalbin, Village Middle Sacandaga River	1,397	Groundwater	Gaseous Chlorination, Post Sequestration	Disinfection Iron Removal	No
Northville, Village Water Works Middle Sacandaga River	1,180	Groundwater	Hypochlorination, Post Inhibitor, Orthophosphate pH adjustment	Disinfection Corrosion Control	Yes
Northampton, Town Water District Middle Sacandaga River	1,000	Groundwater	Hypochlorination, Post Inhibitor, Orthophosphate pH adjustment	Disinfection Corrosion Control	Yes
Mayfield, Village Water Works Middle Sacandaga River	817	Groundwater	Hypochlorination, Post	Disinfection	No
HAMILTON COUNTY					
Speculator, Village Upper Sacandaga River	2,008	Groundwater	Hypochlorination, Pre Inhibitor, Orthophosphate	Disinfection Corrosion control	No
Indian Lake Water District Jessup River/ Cedar River-Hudson River	900	Groundwater	Filtration, Greensand Hypochlorination, Post Hypochlorination, Pre Permanganate Ultraviolet Radiation pH Adjustment	Iron Removal Disinfection	No
Wells Water District Upper Sacandaga River	450	Groundwater	Hypochlorination, Post Hypochlorination, Pre	Disinfection	No

Public Water Supply/ HUC-10 Subwatershed	Number of Users	Source	Treatment Processes	Treatment Plant Objectives	Health based violations
RENSSELAER COUNTY					
Troy City Public Water Supply* Lower Hoosic River	49,170	Surface	Algae Control Coagulation Filtration, Rapid Sand Flocculation Fluoridation Gaseous Chlorination, Pre Rapid Mix Sedimentation Sludge Treatment pH Adjustment	Taste/Odor Control Particulate Removal Iron Removal Disinfection Corrosion Control	No
East Greenbush General Water District* Lower Hoosic River	12,630	Surface	Gaseous Chlorination, Pre	Disinfection	No
North Greenbush Consolidated District* Lower Hoosic River	9,786	Surface	Hypochlorination, Post	Disinfection	No
Rensselaer City Public Water Supply* Lower Hoosic River	9,300	Surface	Gaseous Chlorination, Post	Disinfection	No
Hoosick Falls (V) Public Water System Walloomsac River	4,925	Groundwater	Activated Carbon, Granular Hypochlorination, Post Sequestration Innovative	Organics Removal Disinfection Iron Removal Particulate Removal	Yes
Schaghticoke (V) Public Water System Anthony Kill – Hudson River	949	Groundwater	Hypochlorination, Post	Disinfection	No
Petersburgh Water District Middle Hoosic River	240	Groundwater	Activated Carbon, Granular Hypochlorination, Post Hypochlorination, Pre	Organics Removal Disinfection	No
Berlin Water District #2 Middle Hoosic River	700	Groundwater	Activated Carbon, Granular Filtration, Cartridge Hypochlorination, Pre	Organics Removal Particulate Removal Disinfection	Yes
SARATOGA COUNTY					
Saratoga Springs, City Fish Creek	26,525	Surface/ Groundwater	Algae Control Coagulation Filtration, Rapid Sand Flocculation Fluoridation Gaseous Chlorination, Pre Hypochlorination, Post Hypochlorination, Pre Sedimentation Sequestration Ultraviolet Radiation Innovative	Taste/Odor Control Particulate Removal Disinfection Iron Removal	No

Public Water Supply/ HUC-10 Subwatershed	Number of Users	Source	Treatment Processes	Treatment Plant Objectives	Health based violations
Wilton Water & Sewer Authority Fish Creek	8,557	Surface	Filtration, Cartridge Hypochlorination, Post Hypochlorination, Pre	Particulate Removal Disinfection	No
Burnt Hills-Ballston Lake Water District Fish Creek	7,716	Surface	Active Carbon, Granular Hypochlorination, Post	Disinfection by-products control Disinfection	No
Saratoga Water Services Fish Creek	7,000	Groundwater	Hypochlorination, Pre	Disinfection	No
Ballston Spa, Village Fish Creek	5,409	Groundwater	Fluoridation Gaseous Chlorination, Pre Sequestration	Disinfection Iron Removal	No
Mechanicville, City Anthony Kill – Hudson River	5,200	Surface	Activated Carbon, Powdered Coagulation Filtration, Rapid Sand Flocculation Gaseous Chlorination, Pre Hypochlorination, Post Permanganate Sedimentation Innovative	Taste/Odor Control Particulate Removal Disinfection Iron Removal	No
Corinth, Village Snook Kill – Hudson River	4,000	Groundwater	Filtration, Cartridge Hypochlorination, Post	Particulate Removal Disinfection	No
Saratoga Springs City (Geyser Crest) Fish Creek	4,000	Groundwater	Fluoridation Hypochlorination, Pre Innovation	Disinfection	No
South Glens Falls Village Snook Kill – Hudson River	3,700	Groundwater	Aeration, Packed Tower Filtration, Cartridge Gaseous Chlorination, Post Gaseous Chlorination, Pre Hypochlorination, Pre Inhibitor, Orthophosphate Reducing Agent, Sodium Bisulfate	Taste/Odor Control Particulate Removal Disinfection Corrosion Control De-chlorination	No
Heritage Springs Water Works Fish Creek	3,130	Groundwater	Filtration, Greensand Hypochlorination, Pre Innovation	Iron Removal Disinfection	No
Schuylerville-Victory JWC Fish Creek	2,200	Groundwater	Filtration, Cartridge Filtration, Greensand Hypochlorination, Post Hypochlorination, Pre Reverse Osmosis Sequestration	Particulate Removal Manganese Removal Iron Removal Disinfection Organics Removal Inorganics Removal	Yes
Stillwater Town Fish Creek	2,000	Surface	Inhibitor, Orthophosphate Chlorination	Corrosion Control Disinfection	No

Public Water Supply/ HUC-10 Subwatershed	Number of Users	Source	Treatment Processes	Treatment Plant Objectives	Health based violations
Stillwater Village Fish Creek	1,572	Surface	Activate Carbon, Granular Aeration, Cascade Filtration, Greensand Hypochlorination, Post Hypochlorination, Pre Inhibitor, Orthophosphate Permanganate Rapid Mix pH Adjustment, Post Innovative	Organics Removal Iron Removal Disinfection Corrosion Control Particulate Removal	No
Saratoga County Water Authority Snook Kill	1,500	Surface	Activated Carbon, Granular Coagulation Filtration, Ultrafiltration Hypochlorination, Post Inhibitor, Orthophosphate pH Adjustment	Disinfection by-products Control Particulate Removal Disinfection Corrosion Control	No
Hadley Water District #2 Stony Creek – Hudson River/ Lower Sacandaga River	997	Groundwater	Hypochlorination, Pre Inhibitor, Orthophosphate pH Adjustment	Disinfection Corrosion Control	No
Hadley South Water District #1 Stony Creek – Hudson River/ Lower Sacandaga River	800	Groundwater	Hypochlorination, Pre	Disinfection	No
Round Lake Village Anthony Kill – Hudson River	650	Groundwater	Hypochlorination, Post	Disinfection	No
WARREN COUNTY					
Queensbury Water District** Snook Kill – Hudson River	21,200	Surface	Activated Carbon, Powdered Coagulation Filtration, Rapid Sand Flocculation Hypochlorination, Post Hypochlorination, Pre Rapid Mix Sedimentation pH Adjustment, Post pH Adjustment, Pre Innovative	Organics Removal Particulate Removal Disinfection Corrosion Control	No
City of Glens Falls Snook Kill – Hudson River	14,000	Surface	Coagulation Filtration, Rapid Sand Hypochlorination, Post Hypochlorination, Pre Inhibitor, Orthophosphate Permanganate Innovative	Particulate removal Disinfection Corrosion Control Taste/Odor Control	Yes
Warrensburg Water District Lower Schroon River	4,100	Groundwater	Hypochlorination, Pre Inhibitor, Orthophosphate Sequestration pH adjustment Innovation	Disinfection Corrosion Control Inorganics removal	No

Public Water Supply/ HUC-10 Subwatershed	Number of Users	Source	Treatment Processes	Treatment Plant Objectives	Health based violations
Lake Luzerne Water District Stony Creek – Hudson River	2,500	Groundwater	Hypochlorination, Post Innovative	Disinfection	No
North Creek Water District Boreas River – Hudson River	1,100	Groundwater	Hypochlorination, Post Inhibitor, Orthophosphate	Disinfection Corrosion Control	No
Chestertown Water District Lower Schroon River	750	Groundwater	Hypochlorination, Pre Inhibitor, Orthophosphate Innovative	Disinfection Corrosion Control	No
Pottersville Water District Lower Schroon River	300	Groundwater	Hypochlorination, Pre Inhibitor, Orthophosphate pH Adjustment Innovative	Disinfection Corrosion Control	No
WASHINGTON COUNTY					
Fort Edward, Village Snook Kill – Hudson River	3,380	Surface	Aeration, Packed Town Filtration, Rapid Sand Hypochlorination, Post Hypochlorination, Pre pH Adjustment, Post	Organics Removal Particulate Removal Disinfection Corrosion Control	No
Cambridge Water Works Batten Kill	2,475	Groundwater	Hypochlorination, Pre Inhibitor, Orthophosphate	Disinfection Corrosion control	No
Greenwich, Village Batten Kill	1,777	Groundwater	Filtration, Cartridge Hypochlorination, Post Innovative	Particulate Removal Disinfection	No
Salem, Village Batten Kill	915	Groundwater	Hypochlorination, Pre Sequestration	Disinfection Inorganics Removal	No
Argyle, Village Battenkill	495	Groundwater	Hypochlorination, Pre	Disinfection	No

* The Cities of Troy and Rensselaer and Towns of East Greenbush, North Greenbush, and Poestenkill all receive their drinking water from the Tomhanock Reservoir, which is located within the Upper Hudson River Watershed. Therefore, for the purpose of this plan, they are included in source water use and protection.

** The Queensbury Water District provides water to the Village of Hudson Falls and Towns of Fort Edward, Kingsbury and Moreau.

Note: There are several water districts not accounted for in the table. This is because many districts in Washington and Rensselaer Counties purchase water from other districts, making their source water the same.