

Tioga

Conceptual Plan



**NY RISING
COMMUNITY RECONSTRUCTION PROGRAM**

October 31, 2013

This document was developed by the Tioga Planning Committee as part of the NY Rising Community Reconstruction (NYRCR) Program within the Governor's Office of Storm Recovery. The NYRCR Program is supported by NYS Homes and Community Renewal, NYS Department of State, and NYS Department of Transportation. Assistance was provided by the following consulting firms: Parsons Transportation Group of New York, Inc.; Elan.3 Consulting; and M.J. Engineering and Land Surveying, PC.

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Tioga

CONCEPTUAL PLAN

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FOREWORD

The New York Rising Community Reconstruction (NYRCR) program was established by Governor Andrew M. Cuomo to provide additional rebuilding and revitalization assistance to communities damaged by Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. This program empowers communities to prepare locally-driven recovery plans to identify innovative reconstruction projects and other needed actions to allow each community not only to survive, but also to thrive in an era when natural risks will become increasingly common.

The NYRCR program is managed by the Governor's Office of Storm Recovery in conjunction with New York State Homes and Community Renewal and the Department of State. The NYRCR program consists of both planning and implementation phases, to assist communities in making informed recovery decisions.

The development of this conceptual plan is the result of innumerable hours of effort from volunteer planning committee members, members of the public, municipal employees, elected officials, state employees, and planning consultants. Across the state, over 102 communities are working together to build back better and stronger.

This conceptual plan is a snapshot of the current thoughts of the community and planning committee. The plans will evolve as communities analyze the risk to their assets, their needs and opportunities, the potential costs and benefits of projects and actions, and their priorities. As projects are more fully defined, the potential impact on neighboring municipalities or the region as a whole may lead to further modifications.

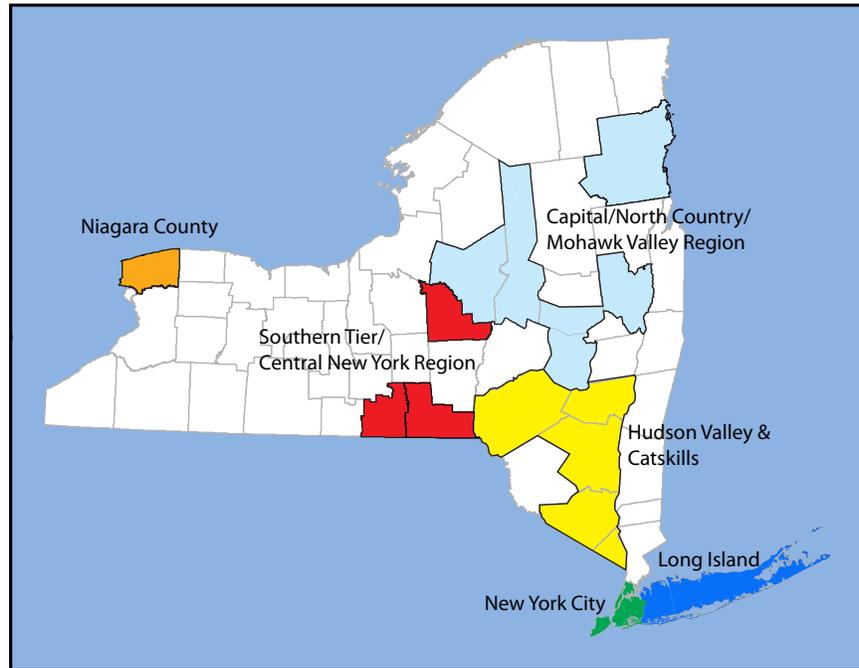
In the months ahead, communities will develop ways to implement additional strategies for economic revitalization, human services, housing, infrastructure, natural and cultural resources, and the community's capacity to implement changes.

Implementation of the proposed projects and actions found in this conceptual plan is subject to applicable federal, state, and local laws and regulations. Inclusion of a project or action in this conceptual plan does not guarantee that a particular project or action will be eligible for Community Development Block Grant – Disaster Recovery (CDBG-DR) funding. Proposed projects or actions may be eligible for other state or federal funding, or could be accomplished with municipal, nonprofit or private investment.

Each NYRCR Community will continue to engage the public as they develop a final plan for community reconstruction. Events will be held to receive feedback on the conceptual plan, to provide an understanding of risk to assets, and to gather additional ideas for strategies, projects and actions.

October 31, 2013

NEW YORK RISING COMMUNITIES



Find out more at:

StormRecovery.ny.gov/Community-Reconstruction-Program

TABLE OF CONTENTS

1. OVERVIEW

1.1 PURPOSE	1-1
1.2 PROCESS	1-1
1.3. GEOGRAPHIC SCOPE	1-4
1.4 COMMUNITY OVERVIEW	1-4
1.4.1 Tioga County.....	1-4
1.4.2 Town of Tioga.....	1-4
1.4.3 Town and Village of Owego	1-7
1.4.4 Town and Village of Nichols.....	1-9
1.5 VISION.....	1-10
1.6 SUMMARY OF STORM DAMAGE.....	1-10
1.4.1 Town of Tioga.....	1-10
1.4.2 Town and Village of Nichols.....	1-11
1.4.3 Town and Village of Owego	1-11
1.7 RELEVANT EXISTING PLANS AND STUDIES.....	1-12
1.8 CRITICAL ISSUES.....	1-14

2. ASSESSMENT OF RISK AND NEEDS

2.1 DESCRIPTION OF ASSETS.....	2-1
2.1.1 Description of Assets	2-1
2.1.2 Assessment of Risk to Assets.....	2-2
2.2. ASSESSMENT OF NEEDS AND OPPORTUNITIES	2-5
2.2.1 Community Planning and Capacity Building.....	2-5
2.2.2 Economic Development	2-6
2.2.3 Health and Social Services	2-6
2.2.4 Housing.....	2-7
2.2.5 Infrastructure	2-7
2.2.6 Natural and Cultural Resources.....	2-7

3. RECONSTRUCTION STRATEGIES AND IMPLEMENTATION ACTIONS

3.1 INTRODUCTION	3-1
3.1.1 Strategies	3-1
3.1.2 Management Measures	3-2
3.2 TIOGA COMMUNITY RECONSTRUCTION STRATEGIES	3-2
3.3 IMPLEMENTATION ACTIONS.....	3-3
3.4 RELATIONSHIP TO REGIONAL PLANS	3-6
3.5 COMMUNITY ENGAGEMENT	3-7

LIST OF FIGURES

1.1 Geographic Area.....	1-5
2.1 Assets and Risk.....	2-3

LIST OF TABLES

2.1 Quantity of Assets Potentially at Risk	2-1
3.1 Tioga Reconstruction Strategies and Implementation Actions.....	3-4

1 Overview

1.1 PURPOSE

The New York Rising Community Reconstruction (NYRCR) program – launched earlier this year by Governor Cuomo and funded by the federal recovery dollars – is designed to empower communities that suffered significant damage in recent storms to create and implement locally-oriented strategies to rebuild and better prepare for future extreme weather.

Representing 102 communities across the state, NYRCR program steering committees are comprised of community leaders, experts, and officials who incorporate their community’s unique needs into their redevelopment strategies. Communities have eight months to prepare and submit their plans. The communities will be eligible to share in more than \$500 million of funding made available through the federal supplemental appropriation the Governor worked with Congress to obtain earlier this year. The State will also award at least \$250 million of the State’s FEMA-funded Hazard Mitigation Grant Program (HMGP) to New York Rising Communities to implement eligible projects contained in their recovery plans.

1.2 PROCESS

The “Tioga Community” comprises five riverine municipalities located in Tioga County: the Town and Village of Nichols, the Town and Village of Owego, and the Town of Tioga. When Superstorm Sandy struck on October 29, 2012, the Town of Nichols, Village of Owego, and Town of Tioga were already preparing Long Term Community Recovery (LTCR) plans in response to flooding caused by Hurricane Irene and Tropical Storm Lee in 2011. In 2013, the Village of Nichols began preparing an LTCR plan for Kirby Park, which also was affected by flooding in 2011. Under the NYRCR Program, these four municipalities



Governor Andrew Cuomo speaking at the NY Rising Storm Recovery Conference.



The NY Rising Community Reconstruction Program offers professional planning support and project implementation funding to targeted communities.

will expand the scope of their LTCR plans and combine them with community reconstruction planning for the Town of Owego to cover the planning process and required elements of the NYRCR Plan. The Tioga Community is committed to working collectively with other Southern Tier communities to develop a regional NYRCR Plan that addresses their shared needs.

The process highlights the following areas of interest a NYRCR Plan must address:

- Economic development;
- Health and social services;
- Housing;
- Infrastructure systems;
- Natural and cultural systems;
- Socially vulnerable populations; and
- Other assets of community importance.

Tasks that the Tioga Community will complete to prepare its NYRCR Plan include:

- **Vulnerable Populations.** Evaluate those who are often underserved and displaced in storm recovery. Vulnerable populations include people with disabilities, low and very low-income people, the elderly, young children, the homeless, and people at risk of becoming homeless. The NYRCR Plan will enable planners to target outreach to these people and work with their advocates to develop a plan that is responsive to their needs.
- **Review Final Risk Assessment Maps.** The NYRCR planning process includes detailed examination of floodplain mapping, past mapping by the U.S. Army Corps of Engineers, and inundation maps available in the Tioga County All Hazard Mitigation Plan. A map consistent with State guidance must be prepared.
- **Geographic Scope.** The geographic boundary will be consistent with the LTCR plans and expanded to include the Town of Tioga. Many site-specific projects are located in the 100-year floodplain.

- **Public Engagement Strategy and Approach to Community Meetings.** The planning team will work with the NYRCR Steering Committee Co-chairs and NYSDOS to establish the approach and schedule for public meetings. Public meetings will be advertised in advance and the State’s NY Rising website will be used to post meeting announcements and public documents. A number of the tasks involving public engagement have been completed, including the review of assets and risk and the development of the vision statement.
- **Vision Statement.** Prepare a vision statement that addresses key issues, including capitalizing on assets, rebuilding in a resilient manner, and reducing future risk.
- **Community Asset Inventory.** Digital data sets provided by the State and Tioga County will be used to identify assets that are located within high risk areas (100-year floodplain) and moderate risk areas (500-year floodplains). Each asset’s information and attributes will be recorded in the asset inventory spreadsheet prepared by the New York State Department of State (NYSDOS).
- **Risk Assessment Framework.** The risk assessment will build on existing data to determine each asset’s risk score based on three factors: hazard, vulnerability, and exposure using the riverine risk assessment spreadsheet tool prepared by the NYSDOS. A map will be prepared to illustrate the location of assets in high and moderate risk areas.
- **Needs and Opportunities Assessment.** The needs and opportunities assessment will be based on existing data. The assessment will be focused on six FEMA recovery support functions: community planning and capacity building, economic development, health and social services, housing, infrastructure, and natural and cultural resources.
- **Identification of Reconstruction Strategies.** The strategies, projects, programs, and actions will integrate and, if necessary expand the goals and actions outlined in the LTCR plans and classifies them according to the six FEMA recovery support functions.
- **Regional Planning Strategy.** A strategy will be developed to coordinate the efforts emerging from the proposed Southern Tier Regional Resiliency Summit. It will address the shared needs of the Susquehanna River communities and be integrated into the NYRCR Plan.
- **Implementation Schedule and Matrix.** A summary of implementation steps, schedule, and relative priorities will be prepared.

1.3. GEOGRAPHIC SCOPE

The NYRCR Plan’s geographic study area includes the boundaries of the five jurisdictions that comprise the Tioga Community (see Figure 1.1). Some of the property within this geographic scope was not affected by flooding from Hurricane Irene and Tropical Storm Lee; however, these areas may be used for redevelopment and relocation of facilities out of high or moderately hazardous zones. Participating communities in the program are the Town of Tioga, the Town and Village of Owego, and the Town and Village of Nichols.

1.4 COMMUNITY OVERVIEW

1.4.1 Tioga County

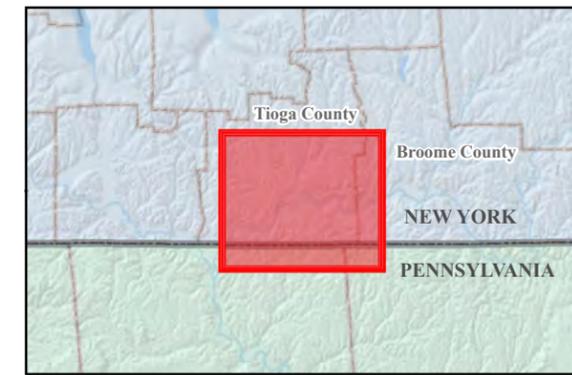
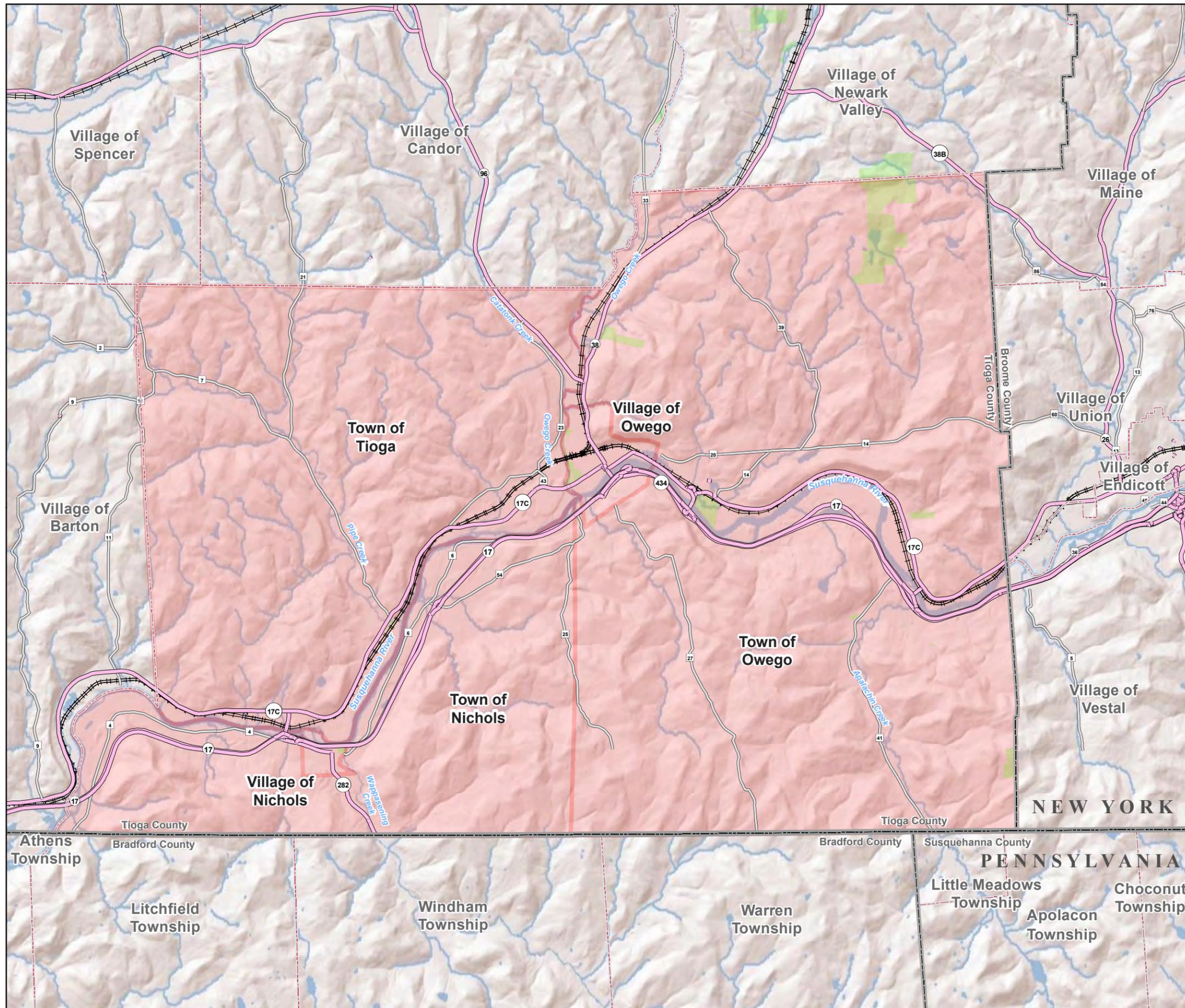
Tioga County, located in the Southern Tier region of New York State, measures 523 square miles and is located approximately 30 miles west of the City of Binghamton. Tioga County is within a three- to four-hour drive to major metropolitan areas such as New York City, Buffalo, and Philadelphia.

Tioga County is composed of nine towns and six villages. According to the 2010 U.S. Census, it has more than 51,125 residents. The County is served by a network of interstate, state, and local highways, including Interstates 88 and 81 and State Routes 17C, 34, 38, 79, 96, 186, 282, and 434. The local economy is based on a wide variety of industries, including tourism, retail, manufacturing, and education. The majority of the county’s residents live in the Town of Owego.

1.4.2 Town of Tioga

The Town of Tioga is approximately 58 square miles, sharing its entire southern border with the Susquehanna River. The Tioga Town Center is located approximately 0.3 miles west of the north bank of the Susquehanna River in its historic upper floodplain. The section of the Susquehanna River between Smithboro and Tioga Town Center has a series of floodplains with varied elevations that step down to river level. Tioga Town Center is a hamlet of approximately 0.25 square miles. Major roads include Route 17C, Halsey Valley Road, 5th Avenue, and Allyn Road. Major drainage features include the Susquehanna River to the south and east, Owego Creek, and Pipe Creek to the east. The Tioga Central School is an important educational and community resource. A double rail line located south of Route 17C runs along the floodplain of the Susquehanna River. Tioga Town Center is surrounded to the west, north, and east by the forested and agricultural landscape of the Town of Tioga.

The Town of Tioga, Town Center of Tioga, and watershed ecosystems in the Southern Tier region were inundated by Hurricane Irene and Tropical Storm Lee in 2011. These storms caused rivers and streams to overflow their banks and wetlands to reach storage capacity throughout the watershed, resulting in fractured transportation networks, flooded homes and schools, and decimated village and town centers. These storms significantly altered the shape and function



Key Map

Legend

NYRCR Plan Study Area

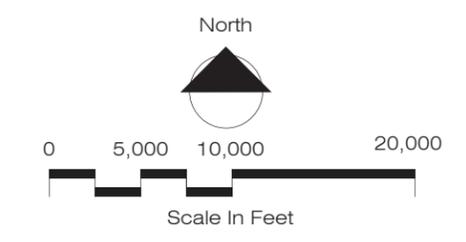


Figure 1.1
Geographic Area

of riparian ecosystems. Many areas within the Town were cut off from emergency services. The flooding was so severe that FEMA expanded existing floodplain boundaries.

Generally, most of the creeks and streams in the Town are eroded and lack vegetation along their banks. These factors contribute to excessive sediment flow downstream, even during normal high water events. This sediment often collects at chokepoints in the stream such as culverts, bridge abutments, or center pier crossings. Debris can reduce or obstruct the channel's ability to convey storm water, causing streams to overflow their banks and flood adjacent areas.

The flow, direction, and watershed of the Susquehanna River are important considerations when assessing flood risk. The Susquehanna River flows northeast to southwest along the Town of Tioga's boundary and lacks significant changes in flow direction. The Susquehanna River turns slightly away from Tioga Town Center in a southeasterly direction. This flow has allowed a floodplain to emerge as sediment in the river was deposited in the slow moving waters near the Town Center.

Pipe Creek is located at the northern edge of the Town. It has a watershed of 46.4 square miles and approximately 68 percent of its watershed is covered by forest. Pipe Creek historically tops its banks during heavy rains, causing flooding and damaging parts of the Town's infrastructure, including flooding of the Town's middle school.

Smithboro Creek is located on the western side of the Town. It has a watershed of 1.14 square miles and drains from the north to south of the village of Smithboro. It flows under Route 17C and meets the Susquehanna River at the southwestern side of the Town boundary. Smithboro Creek historically tops its banks during large localized rain events. This creek is highly prone to flash flooding and has caused large volumes of eroded material to flow down stream and clog culverts.

Owego Creek is located on the eastern boundary of the Town. It has a watershed of 341 square miles and drains from the north to the south, meeting the Susquehanna River at the southwestern corner of the Town boundary. Owego Creek historically tops its banks during large floods. When the Susquehanna River rises and backs water up into the creek's mouth it floods in the direction of Owego. Owego Creek's tributaries also back up creating localized flooding within Tioga.

1.4.3 Town and Village of Owego

The Town of Owego is located in the southeast corner of Tioga County. The eastern town line is the border of Broome County and the southern town line is the border of Pennsylvania (Bradford and Susquehanna counties). Land coverage within the Town includes developed, agricultural land, grassy open space, forested areas, and open water areas. The Susquehanna River flows

across the town, dividing it into two parts. Owego Creek flows into the Susquehanna at Owego village and marks the west town line. The Town has a total area of 105.8 square miles and a 2010 population of 19,883 persons.

The Village of Owego is located on the north bank of the Susquehanna River by Owego Creek and the west town line. The northern portion of the Village is situated on a former floodplain created by an outside outer bend of the Susquehanna River. The western boundary of the Village is formed by Owego Creek, which flows from north to south, terminating in the Susquehanna River on the southwestern edge of the Village. Huntington Creek creates the northernmost boundary, which flows in an east to west direction, connecting to Owego Creek at the northwestern corner of the Village boundary.

The Village of Owego is 2.7 square miles in total area, with a high point elevation of approximately 850 feet near the northern village boundary. The topography of the village area slopes to the south southeast toward the Susquehanna River, with a low point of approximately 786 feet.

The Village of Owego is characterized by tree-lined streets, historic 19th century architecture, scenic views of the Susquehanna River, and a quaint downtown filled with shops, restaurants, and art galleries. By virtue of its cultural amenities, festivals, and scenic waterfront parks and walkway, the Village of Owego was named the “Coolest Small Town in America” by Budget Travel Magazine in 2009.

The Susquehanna River flows from east to west, bending in a southerly direction at the Village of Owego. The outer bend of the river has faster flowing water that produces incisive force on the outer bank. This faster flowing water makes the Village more susceptible to flooding during storms that cause the river to overflow its banks. Although the velocity of flood waters at the outer bend of the Susquehanna River is generally much lower than the flow from the tributaries, the effects can be more severe due to the greater volume of water.

Huntington Creek is located on the northern edge of the Village. It has a watershed of 1.95 square miles and approximately 77 percent of its watershed is covered by forest. This creek historically tops its banks during large rain events, flooding and damaging parts of the Village’s infrastructure. Asphalt paving, undersized culverts, and other impervious surfaces are the probable causes of its flooding. The Village has worked with the Tioga County Soil and Water Conservation District to reduce the effects of flooding and implementation of some mitigation measures is currently underway.

Owego Creek flows along the western boundary of the Village. It has a watershed of 341 square miles and drains from the north to the south, meeting the Susquehanna River at the south-

western corner of the Village boundary. When the Susquehanna River elevation rises, Owego Creek can flood the fairgrounds, residential communities such as “The Flats,” and adjacent roads.

1.4.4 Town and Village of Nichols

The Town of Nichols is located on the southern border of Tioga County and the state, half-way between Binghamton and Elmira. It is approximately 33 square miles in area. The Town shares its entire northern border with the Susquehanna River and its southern border with the State of Pennsylvania. Nichols Town Center is located on the southern bank of the Susquehanna River on its historic floodplain. It is separated from the river by a narrow strip of river bank that abuts the Southern Tier Expressway (Route 17/I-86).

The Village of Nichols is approximately 0.25 square miles and comprises the intersection of several important roads, including the Southern Tier Expressway, Main Street (Route 282), East River Road, West River Road, and State Route 17. An extension of Interstate 86 is also planned to pass through the Village. Significant water features include the Susquehanna River to the north, Wappasening Creek to the east, and Sackett Creek to the west. The Village is surrounded to the west, south, and east by the forested and agriculture land.

Hurricane Irene and Tropical Storm Lee caused the Susquehanna River and its tributaries to overflow. The dike surrounding the Village of Nichols protected businesses and homes from the full force of the flooding, although most basements flooded due to high ground water levels. Many areas within the town were cut off from emergency services. The flooding was so severe that FEMA updated and expanded its flood mapping for the area.

Over the past decade, this region has seen two 100-year floods and one 500-year flood. Each storm and subsequent flood affected the watershed in similar ways. The storms altered the streams, creeks, and river within the watershed by eroding their banks and creating unstable riparian areas. The sediment and debris that eroded from the upslope areas of the watershed moved down stream and settled in areas of the water body already impounded by culverts or debris, or located in “slack water” areas of the river or stream. This erosion and deposition/sedimentation effect reduced the volume of water the channel can allow to pass within its banks.

Wappasening Creek is located at the eastern edge of the town center. It has a watershed of 71.8 square miles and approximately 66 percent of its watershed is covered by forest. The creek historically tops its banks during large rain events causing flooding and damage to parts of the town’s infrastructure. The dikes constructed by the Corps of Engineers help protect the Village, but their design also isolates it from surrounding areas. Undersized culverts that become clogged with debris are thought to be the cause of massive erosion and flooding. Like the Village of Owego, the Village of Nichols has worked with the Tioga County Soil and Water Conservation District to implement mitigation measures designed to reduce flooding.

1.5 VISION

Building on the successful community engagement strategy, the public input, and the NYRCR Steering Committee's feedback, the Tioga Community prepared a vision statement to guide implementation of the NYRCR Plan. The vision stresses the collaboration that has occurred and will continue to occur as the community rebuilds in ways that are stronger, smarter, and safer. The vision statement also stresses the need to restore, redevelop, and revitalize across the full spectrum of recovery support functions.

Tioga NYRCR Plan Vision Statement
Through our collaborative efforts, the Tioga Community is capitalizing on opportunities to rebuild stronger, smarter, and safer. We are a warm and resilient group of riverine communities that works together to restore, redevelop and revitalize our economy, quality of life, housing, infrastructure and natural resources that make up our cultural fabric.

1.6 SUMMARY OF STORM DAMAGE

On September 7, 2011, Tropical Storm Lee stalled over the Southern Tier and dropped over 11 inches of rain on Tioga County during a 24-hour period. Torrential rains, coupled with saturated soil and a swollen Susquehanna River from Hurricane Irene, led to record high water levels. Reports show that floodwaters in Tioga Center associated with Tropical Storm Lee measured 4 feet higher than those reported during the flood of 2006.

1.6.1 Town of Tioga

Rising waters of the Susquehanna River caused severe flash flooding and destroyed homes, businesses, and infrastructure. Many roads in the Town of Tioga were closed, including Halsey Valley Road, Route 96, Glenmary Drive, and Allyn Road, and sections of Route 17C.

Extreme rains associated with Tropical Storm Lee also caused Pipe Creek to top its bank. High water velocity, coupled with sediment and debris in Pipe Creek, caused an estimated \$1.6 million in culvert damage. The Tioga Central School District's bus garage located in Tioga Center sustained approximately \$300,000 in damage and the Town's Ransom Park required \$100,000 in repairs.

On September 10, 2011, the Tioga County Emergency Management Office requested the assistance of the Disaster Assistance Response Team (DART) to inspect 3,750 homes in Tioga County. Of those homes requiring inspection, 400 were located in the Town of Tioga. The residential areas hardest hit were located along Dubois and Halsey Valley roads. FEMA estimated the damage to residential structures in the Town of Tioga to be \$1.5 million. In 2012, the Town requested FEMA's buyout assistance for 14 homes.

Flood waters not only caused damage to residential property, but to agricultural lands as well. Stream bank erosion resulting from Tropical Storm Lee reduced the number of productive

agricultural acreage, negatively affecting farming operations in the community.

1.6.2 Town and Village of Nichols

Rising waters of both the Susquehanna River and Wappasening Creek caused severe flash flooding, and damaged homes, businesses, and infrastructure in the Town of Nichols. Many of the roads were closed, cutting off the town, including Route 17/I-86, Route 282, River Road, East and West River roads, South Main Street, Moore Hill, Briggs Hill, Decker Hill, and Sulpher Springs Road. Residential areas hardest hit were located along the banks of the Susquehanna River (River Road) and Wappasening Creek. Most of the households that suffered flood damage reported needing to replace all of the items located on the ground floor of their homes, including heating systems and water tanks. One hundred homes in the Town of Nichols were inspected by DART in September 2011. In 2012, the Town requested buyout assistance from FEMA for eight homes.



Evidence of the severe flash flooding on Wappesening Creek near Nichols.

Since the storm caused a loss of power for one week, many residents were forced to leave their homes and take shelter in the Nichols Elementary School. Motorists were stranded and forced to seek shelter at the school. Volunteers in the Nichols community provided these people with beds, blankets, and food. The shelter needs a generator in the event of future emergencies.

1.6.3 Town and Village of Owego

The rising waters caused severe flash flooding, destroying homes, businesses, and infrastructure in the Village of Owego. Reports estimate



Flooding in Owego the day after Tropical Storm Lee, with 95 percent of the village under water.

that 90 percent of the buildings were flooded because of the storm. DART's inspection of Tioga County included 3,000 homes located in the Village of Owego. Residents living in the low-lying neighborhoods of Turtle Town and the Flats were hit hardest by the flooding. The elementary school was also destroyed.

During and immediately after the storm, travel along Route 17 was severely affected. The Village became an island since there was no way for the floodwater to be pumped out. Downtown Owego and the Flats neighborhood were isolated, and passenger and emergency response vehicles could not maneuver between the two locations. Major road closures included Dutchtown Road, Gary Hunt Road, Route 17C, Main Street, Taylor Road, Bodle Hill Road, Route 86, Marshland Road, Hilton Road, Long Creek Road, Pennsylvania Avenue, Sulpher Springs Road, and Valley Road. For three days, high water flowed through the area. Flood waters were contaminated with raw sewage and fuel oil leaking out from damaged sewer treatment plants and fuel storage tanks upstream.

Today, the Village of Owego is still recovering from the devastation because of Tropical Storm Lee. In 2012, it was recommended that buyout or acquisition of 34 severely damaged homes begin. Additional structures may be added to the list through 2015.

1.7 RELEVANT EXISTING PLANS AND STUDIES

To gain a better understanding of the existing conditions in the Tioga Community, the project team conducted an inventory and analysis of the existing land use tools, local and regional planning studies, and natural resources. This analysis, combined with input from stakeholders, the Steering Committee, and the public, helped shape flood mitigation and recovery strategies in a manner that meets the Tioga Community's long-term vision for its recovery.

- Creighton Manning Access Management Study 434/17C.
- Flood Damage Prevention Local Law 2-2012.
- Market Feasibility Analysis, Route 434 Property, Tioga County.
- Nichols Agriculture and Farmland Protection Plan. 2011.
- Owego Brownfield Opportunity Area (BOA) Pre-Nomination Study.
- Owego Village Recovery Plan Stakeholder Committee Meeting Minutes.
- The Greater Nichols 2020 Plan. January 2006.

- Tioga County After Action Report/Improvement Plan – Tropical Storm Lee Flood Response. 2012.
- Tioga County Emergency Management Plan. 2012.
- Tioga County Hazard Mitigation Plan, Section 9.9: Village of Nichols and Section 9.15: Town of Tioga. 2012.
- Town of Nichols Code.
- Town of Nichols Long Term Community Recovery Strategy.
- Town of Nichols Zoning Amendment – Create I-2 District and I-2-B-A-R District.
- Town of Nichols Zoning Ordinance.
- Town of Owego Comprehensive Plan. 1997.
- Town of Owego Flood Damage Prevention ordinance.
- Town of Owego well head protection ordinance.
- Town of Tioga Code.
- Town of Tioga Long Term Community Recovery Strategy.
- Town of Tioga Ransom Park Master Plan.
- U.S. Department of Commerce National Oceanic and Atmospheric Administration: Remnants of Tropical Storm Lee and the Susquehanna River Basin Flooding of September 6-10, 2011.
- Upper Susquehanna River Basin, NY: Flood Risk Management and Watershed Assessment. 2010.
- Village of Nichols Code.
- Village of Owego Code.
- Village of Owego Comprehensive Plan. 2003.

- Village of Owego Flood Damage Prevention ordinance.
- Village of Owego Long Term Community Recovery Strategy.

1.8 CRITICAL ISSUES

The Tioga Community has a number of issues directly related to the region’s water bodies that can limit the Community’s future social and economic success. Some of these issues are long-standing environmental concerns. Generally, these issues cannot be resolved through “quick fixes.” The following is a list of critical issues that must be addressed to resolve flooding issues:

- **Regionalism.** The Susquehanna River affects all riverine communities in Tioga County, as well as neighboring communities in New York and Pennsylvania. When discussing flood mitigation efforts, regional thinking will be required for mitigation efforts to be effective.
- **Flood Recovery Assistance Programs.** Community leaders expressed frustration that it has been two years since the 2011 flood and FEMA buyouts have still not been completed.
- **Economic Recovery.** Business districts within the Village and Town of Owego and the Village and Town of Nichols were directly affected during recent flood events. Business owners expressed concern that economic recovery has become more difficult with subsequent floods, property damage, and loss. Because so many small businesses have not been able to recover from the negative effects of Tropical Storm Lee, residents identified the need to create diversified economies, linked to regional assets such as Binghamton University and Lockheed-Martin.
- **Infrastructure.** Lack of infrastructure (water, sewer, and broadband) along Route 434 is hindering efforts by the Village and Town of Owego and the Village and Town of Nichols to redevelop sites located outside the floodplain, including the proposed E=MT3 mixed-use office park. Impervious surfaces such as asphalt paving, and undersized culverts are also thought to be the cause of the flooding in the Village of Owego.

A dike installed along Wappasening Creek helps protect Village of Nichols, but its design also isolates the village from surrounding areas. If the dike is not recertified, residents are concerned that the cost of flood insurance will rise disproportionately to the value of their home (rate hikes are already occurring). Undersized culverts that become clogged with debris, poor stormwater management, road side ditch

connections, and the overall degradation of the stream corridor are thought to be the causes of the massive erosion and flooding from Wappaensing Creek.

Many critical government facilities in the Tioga Community are located in the floodplain. As a result, town and village halls, waste water treatment plants, schools, and public works barns were under water during the 2006 and 2011 floods and municipalities were not able to deliver basic government services. The U.S. Post Office in the Town of Tioga was under 8 feet of water because of flooding due to Tropical Storm Lee. The post office was closed and two years after the flood, Tioga Center residents must still travel to neighboring communities for mail service.

- **Emergency Response.** During public workshops, community residents stated they did not hear emergency sirens or did not know what to do or where to go once the sirens sounded. Some municipalities within the Tioga Communities did not have the necessities (e.g., generators) to run their emergency operations centers.

Flood waters in both the 2006 and 2011 storm events forced the closure of a number of roads within the Tioga Community. These road closures created temporary islands that cut off vulnerable populations, including senior citizens, from neighbors and left them unable to access emergency services, food, or medical care.

- **Planning and Capacity Building.** Community leaders cited the need to have good zoning in place that fully evaluates new development in the floodplain and integrates local flood damage prevention laws. Local municipalities lack the long-term capacity (i.e., planning and grant writing staff) to implement strategies, programs, and projects.

2

Assessment of Risk and Need

2.1 DESCRIPTION OF ASSETS

2.1.1 Description of Assets

One of the essential tasks of the NYRCR program is to inventory critical and significant assets within the 100-year and 500-year flood plains. These assets will then be evaluated to understand regional risks and vulnerabilities and help identify possible priority projects that can protect them.

Based on the preliminary inventory, more than 150 of Tioga's assets are located in either the 100-year flood plain (i.e., high risk area) or 500-year flood plain (i.e., moderate risk area). As shown on Figure 2.1 and in Table 2.1, these assets can be placed in one of six categories: economic, health and social services, housing, infrastructure, natural and cultural resources, or socially vulnerable populations.

Asset Class	Quantity
Economic	27
Health and social services	29
Housing	7
Infrastructure	57
Natural and cultural resources	31
Socially vulnerable populations	5

The purpose of the asset inventory is to identify a comprehensive collection of assets with high community values that can be advanced through the risk evaluation process. The first step in developing the asset inventory was to acquire existing digital data sets from multiple municipal, state, and federal agencies. These data sets were cross-referenced and supplemented with aerial imagery and address locators, and collated into a preliminary asset inventory listing.

The preliminary asset inventory was presented to both the NYRCR Steering Committee and the public to gain their input concerning its completeness and each assets' community value. This public and committee input is crucial to ensure the risk assessment process is focused on the assets that are important to the community. The NYRCR Steering Committee is currently working with the communities to edit the preliminary asset inventory.

The NYRCR Plan will also assess the risk to critical and significant systems, such as the water distribution and wastewater treatment systems or road networks that extend beyond municipal

boundaries. These systems are being identified and documented for further consideration by the NYRCR Steering Committee.

2.1.2 Assessment of Risk to Assets

Once the asset identification is complete and a community value has been assigned, high value assets will be analyzed using the riverine risk assessment spreadsheet tool developed by the NYSDOS. The risk assessment tool considers three aspects of risk:

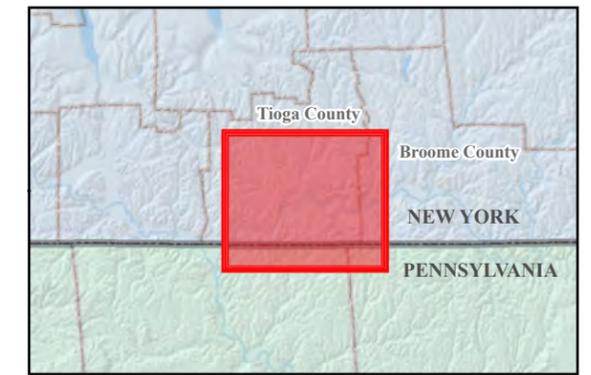
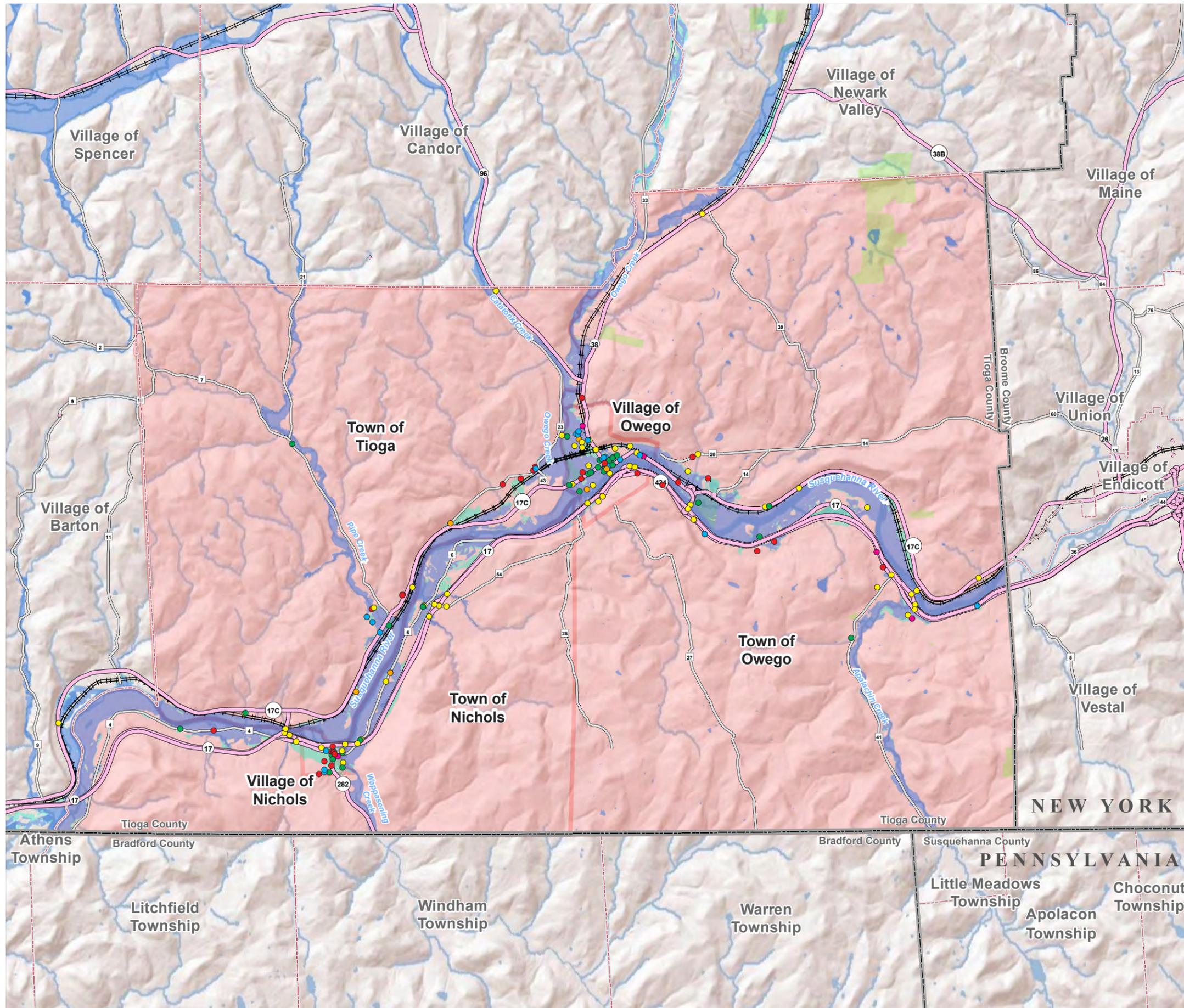
- **Hazard.** The likelihood and magnitude of future storm events;
- **Exposure.** The moderating effect of topographic and other features; and
- **Vulnerability.** The ability of the asset to resist damage from a storm.

The risk assessment tool will produce numerical scores with higher scores identifying those critical or highly valued assets that are vulnerable to riverine flooding and that may require additional protection, relocation, or other actions. Conducting the risk evaluation process will help the NYRCR Steering Committee understand regional vulnerabilities, opportunities, and possible priority projects that can assist to protect its critical assets.

Although the risk assessment process has not been completed, the August 2012 update to Tioga County's Hazard Mitigation Plan was reviewed because it contains estimates of the effects that could result from floods and other disasters. These estimates were prepared using FEMA's HAZUS program, a nationally applicable standardized methodology that contains models for estimating potential losses from earthquakes, floods, and hurricanes.

Based on the HAZUS models, the Hazard Mitigation Plan estimated that within the five municipalities, approximately 3,749 residents are located within the current 1 percent (100-year) flood hazard zone, and 4,735 residents are within the 0.2 percent (500-year) zone. The Hazard Mitigation Plan estimated that approximately 2,038 persons from the Tioga Community will be displaced by a 1 percent storm and that 1,018 persons would seek short-term shelter. Approximately 2,226 persons will be displaced by a 0.2 percent storm and 1,159 persons will require short-term shelter.

The five municipalities have a total area of approximately 199.6 square miles. Of this total, 16.08 square miles, or 8 percent, are located in the 100-year flood plain and 18.86 square miles, or 9.4 percent, are located in the 500-year flood plain. At the municipal level, the Village of Owego is most constrained by flood hazard, with 47.1 percent of its 2.8 square mile area located within the 100-year flood plain. The Town of Owego has the greatest land area within the 100-year flood plain, at 6.04 square miles.



Key Map

Legend

- Economic
- Health and Social Services
- Housing
- Infrastructure
- Natural and Cultural Resources
- Socially Vulnerable Populations
- High Risk (100-Year Flood Plain)
- Moderate Risk (500-Year Flood Plain)
- NYRCR Plan Study Area

North



0 5,000 10,000 20,000



Scale In Feet

Figure 2.1
Assets and Risk

The Tioga Community has approximately 2,696 properties within the 100-year flood plain. These properties have a combined assessed value for land and structures of more than \$405 million. In addition, there are 3,376 properties in the 500-year flood plain. These properties are estimated to have assessed value of more than \$444 million.

The estimated HAZUS general building stock replacement value for structures and contents was slightly more than \$2.030 billion for the 100-year flood and more than \$2.165 billion for the 500-year flood. The plan identified 234 properties in the Tioga Community as “Repetitive Loss” properties, meaning those that have received two or more claim payments of more than \$1,000 from the National Flood Insurance Program within any rolling 10-year period. These properties are not eligible for future FEMA assistance unless they are elevated above the base flood elevation. In addition, another 23 properties were identified as “Severe Repetitive Loss” properties, indicating there had been at least four claim payments over \$5,000 each.

2.2. ASSESSMENT OF NEEDS AND OPPORTUNITIES

As part of the planning process, community residents, government leaders, and key stakeholders were asked to identify issues and concerns about the recent floods in their communities. The following sections provide a condensed and general summary of these needs and opportunities for inclusion in this conceptual NYRCR Plan. These topics will be refined on a community-by-community basis in the coming months as the NYRCR planning process moves forward. It is possible that additional needs and opportunities will be identified.

2.2.1 Community Planning and Capacity Building

- **Need.** Although the arrival of Tropical Storm Lee was well publicized on the national and local news, many Tioga Community residents said they were either away from a television, radio, or computer and caught by surprise; they had a hard time understanding the emergency communications; or, they heard the emergency siren but were unsure of where to go or what to do next.
- **Opportunity.** Development of a multi-tiered stream and river gauge/early warning system would ensure that all residents and critical facilities personnel are aware of threats regardless of where they are or what they are doing.
- **Need.** During the planning process, the lack of staff/municipal capacity to obtain and administer flood-related grants was identified as one of the highest concerns for the communities located in the Tioga County river region. The Town of Owego is the only municipality within the Tioga Communities that has a Planner or Grant Writer on staff. The other four communities rely on technical assistance provided

by the Tioga County Department of Economic Development and Planning and the Tioga County Soil and Water Conservation District.

- **Opportunity.** An opportunity exists to establish a regional flood recovery and revitalization office to ensure community capacity to secure and administer grants funding and implement recommendations of the NYRCR Plan.

2.2.2 Economic Development

- **Opportunity.** There is an opportunity to establish a micro-enterprise loan program to assist small businesses and start-up companies in the Tioga Community. The loans would enable firms to repair property damage, including buildings and grounds that were severely affected by Hurricane Irene and Tropical Storm Lee.
- **Opportunity.** Providing infrastructure (i.e., broadband, water, sewer, and natural gas) to properties located outside of the floodplain can be a means to encourage economic development.
- **Need.** When rising waters from Tropical Storm Lee flooded the Tioga Community, many of its downtown centers and surrounding neighborhoods suffered extensive damage. In addition to property damage, the loss of homes and infrastructure, gateway signs, lighting and the stock of existing trees and plants were also greatly damaged. While many areas have since been restored, sustained recovery and maintenance of the streetscape will help ensure that residents continue to enjoy a high quality of life, give local businesses an environment in which to thrive, and continue the area's regional tourism draw.
- **Opportunity.** Implement streetscape and gateway enhancements to encourage economic development and tourism.

2.2.3 Health and Social Services

- **Need.** Residents stated that after the 2011 floods, many of their neighbors found themselves without access to electricity, pharmaceuticals, and critical medical supplies and equipment (oxygen, dialysis)
- **Opportunity.** Develop a plan to ensure emergency services for vulnerable populations, including provision of medical supplies and pharmaceuticals

2.2.4 Housing

- **Need.** One of the critical issues identified during the planning process was that many of the community's vulnerable citizens were displaced as a result of the flooding.
- **Opportunity.** Conduct a housing needs assessment for each of the municipalities that comprise the Tioga Community. This assessment should focus on housing for senior citizens and at-risk populations.

2.2.5 Infrastructure

- **Need.** During the planning process, all of the municipalities reported flood damage to their Town and/or Village Halls, Department of Public Works Barns, and water and sewage treatment facilities.
- **Opportunity.** Upgrade and relocate critical government facilities out of flood plain.
- **Need.** The communities identified that there is a need for municipal engineering services within Tioga County. While the Tioga County Soil & Water Conservation District provides technical assistance regarding natural disaster concerns, there is still a need for a municipal or contract engineer whom can provide technical assistance to the flood-affected communities.
- **Opportunity.** An opportunity exists to establish either a part-time shared engineer or contract engineer position within Tioga County. While the position would be housed within the Tioga County Soil & Water Conservation District, it could be filled by a part- or full-time employee, or an agreement with a consulting firm to provide a specified number of hours work per week.

2.2.6 Natural and Cultural Resources

- **Need.** During the planning process, each of the Tioga communities stated it was important to consider not only of how these long term recovery strategies would affect them, but also how flood recovery and mitigation could be addressed on a regional basis.
- **Opportunity.** Conduct a regional study of the Susquehanna River and its major tributaries to understand flooding issues and existing ecology related to the river.

- **Need.** One of the universal issues identified during the public participation process was the flood-related damage caused by debris (e.g., sediment, gravel, trees, and branches) “clogging” the streams and creeks in Tioga County.
- **Opportunity.** Establish an environmentally sensitive maintenance program for area streams.
- **Need.** A reoccurring issue among all communities is the erosion of stream banks, loss of riparian buffers, and avulsion of streams during flooding events.
- **Opportunity.** Conduct watershed assessments to identify and prioritize long term mitigation approaches within these watersheds.

3

Reconstruction Strategies & Implementation Actions

3.1 INTRODUCTION

3.1.1 Strategies

Reconstruction strategies are the overarching means by which a community will achieve rebuilding, resilience, and economic growth. The strategies are based on an inventory of community assets, risk assessment, and evaluation of needs and opportunities. Each strategy is implemented through community projects, programs, and actions to restore and protect assets. Strategies are aligned with the six FEMA recovery support functions as follows:

- **Community Planning and Capacity Building.** Strategies that present ways to restore or enhance its ability to organize, plan, manage, and implement recovery.
- **Economic Strategies.** Strategies that present ways to return economic and business activities to a state of health, and to develop new economic opportunities.
- **Health and Social Services Strategies.** Strategies that address the restoration and improvement of essential health and social services, particularly those that serve vulnerable populations.
- **Housing Strategies.** Strategies that promote and address affordable housing, increase access of non-CDBG programs to public and private housing providers, and advocate disaster-resistant housing for all income groups.
- **Infrastructure Strategies.** Strategies that enhance restoration, reparation, and management of essential local government services.
- **Natural and Cultural Resource Strategies.** These strategies will address management of natural and cultural resources from a risk reduction and economic development perspective.

3.1.2 Management Measures

The programs, plans, and actions used to implement each strategy are organized into six classes of management measures. The six classes of management measures include:

- **Class 1. Conserve, Restore, and Enhance Natural Protective Features.** Measures that use the landscape to promote safety and livability while reducing disaster recovery costs.
- **Class 2. Resilient Construction.** Measures designed to provide an adequate level of safety for structures. Measures may include elevating buildings, dry flood-proofing, constructing watertight structures, wet flood-proofing, relocating facilities, and incorporating levees and floodwalls into site design.
- **Class 3. Structural Defenses.** Measures that employ engineered or non-engineered construction techniques designed to resist flooding.
- **Class 4. Land Use Planning and Regulation.** Create new regulatory measures for municipal and site planning, zoning, and subdivision regulation to reduce impacts of storm events on existing and future infrastructure.
- **Class 5. Market-Based Methods.** Measures that reduce vulnerability by incorporating the cost of risk into the carrying cost of land.
- **Class 6. Increased Awareness and Information.** Measures that provide sound information on storms and erosion, environmental services, risk to development, and community costs designed to help decision makers in both the public and private sectors.

3.2 TIOGA COMMUNITY RECONSTRUCTION STRATEGIES

For the past year, the Village of Owego, Town of Tioga, Town of Nichols, and Village of Nichols have been developing LTCR plans and identifying the most important actions they can take to recover from past storm damage and plan a more resilient future. As a result, these communities identified the following reconstruction strategies:

- **Strategy 1.** Strengthen or create new plans or local laws to minimize damage from future flooding.
- **Strategy 2.** Ensure new development and redevelopment are resistant to flood damage.
- **Strategy 3.** Comprehensively prepare the Tioga Community for disasters.

- **Strategy 4.** Increase awareness among residents regarding home preparedness and emergency notifications.
- **Strategy 5.** Protect key areas and critical facilities in the Tioga Community.
- **Strategy 6.** Preserve and restore natural areas, including floodplains, streams, and wetlands.
- **Strategy 7.** Improve the quality of life for residents after flood recovery.
- **Strategy 8.** Create a diversified economy in the Tioga Community, supported by tourism, light industry, and small business.
- **Strategy 9.** Ensure a diversity of safe, affordable market-rate housing options.
- **Strategy 10.** Ensure long term sustainability of the flood recovery program.
- **Strategy 11.** Ensure flood-affected communities have the necessary capacity to apply for and administer flood mitigation and community revitalization funds.

3.3 IMPLEMENTATION ACTIONS

Table 3.1 lists the programs, projects, and policies that serve to implement the Tioga Community's reconstruction strategies. The table is organized by FEMA recovery area and lists each implementation action, its corresponding class of management measure, and the strategy it supports. Strategies and the implementation actions have been approved by the Town of Nichols, Town of Tioga, and Village of Owego. Once the assessment of risk to assets is completed, the Community may amend its action plan or change an actions priority or schedules.

Community	Description	Strategy	Mgmt Measures	Cost	Risk Area	Timing	Community Support
Community Planning and Capacity Building							
Nichols (T)	Policy. Customize flood damage prevention local law (LTCR Strategy: PA-1)	1, 2	4	TBD	TBD	TBD	TBD
Nichols (T)	Policy. Update and adopt Comprehensive Plan (LTCR Strategy: PA-2)	1	4	TBD	TBD	TBD	TBD
Nichols (TV)	Project. Purchase and install Emergency Weather Alert System (LTCR Strategy: ESM-4.1)	4	6	TBD	TBD	TBD	TBD
Nichols (TV)	Project. Purchase a generator for Satellite EOC at the elementary school (LTCR Strategy: ESM-3)	3	3	TBD	TBD	TBD	TBD
Note: TBD = To be determined.							

Table 3.1**Tioga Reconstruction Strategies and Implementation Actions**

Community	Description	Strategy	Mgmt Measures	Cost	Risk Area	Timing	Community Support
Nichols (TV)	Project. Partner with the Village to evaluate the levee to determine if improvements are needed (LTCR Strategy: SP-2)	5	3	TBD	TBD	TBD	TBD
Nichols (V)	Purchase and install solar-powered electronic message board	4	6	TBD	TBD	TBD	TBD
Owego (T)	Project. Purchase and install an early warning system/siren that can be heard town-wide.	4	6	TBD	TBD	TBD	TBD
Owego (V)	Policy. Update site plan review legislation (LTCR Strategy: PA-2)	1, 2	4	TBD	TBD	TBD	TBD
Owego (V)	Policy. Review and enforce special use language in zoning code (LTCR Strategy: PA-3)	1, 2	4	TBD	TBD	TBD	TBD
Owego (V)	Program. Participate in the National Flood Insurance Program's (NFIP) Community Rating System (CRS) (LTCR Strategy: PA-4)	1	6	TBD	TBD	TBD	TBD
Owego (V)	Project. Create a flood safety awareness brochure (LTCR Strategy: PI-1)	4	6	TBD	TBD	TBD	TBD
Owego (V)	Program. Develop a Comprehensive Information System to raise awareness of flood hazards (LTCR Strategy: PI-2)	4	6	TBD	TBD	TBD	TBD
Owego (V)	Project. Develop a 'real time' evacuation route mapping system (LTCR Strategy: PI-3)	3, 4	6	TBD	TBD	TBD	TBD
Owego (V)	Program. Increase voluntary enrollment in the County's Hyper-reach and NYS Alerts programs (LTCR Strategy: ESM-3A)	4	6	TBD	TBD	TBD	TBD
Owego (V)	Project. Purchase and install a new siren/alarm system (LTCR Strategy: ESM-3B)	4	6	TBD	TBD	TBD	TBD
Owego (V)	Program. Establish a Block Emergency Preparedness Program (LTCR Strategy: ESM-3C)	3, 4	4	TBD	TBD	TBD	TBD
Owego (V)	Program. Conduct emergency testing/flood drills (LTCR Strategy: ESM-3D)	3, 4	6	TBD	TBD	TBD	TBD
Tioga (T)	Project. Conduct a gap analysis and develop a Consolidated Emergency Plan (LTCR Strategy: ESM-2)	3	6	TBD	TBD	TBD	TBD
Regional	Develop and implement a comprehensive early warning - river/stream gauge system.	3, 4	6	TBD	TBD	TBD	TBD
Regional	Policy. Maintain LTCRS Executive Committee (LTCR Strategy: RR-1)	10	6	TBD	TBD	TBD	TBD
Regional	Policy. Establish a regional flood recovery and revitalization office (LTCR Strategy: RR-2)	10, 11	6	TBD	TBD	TBD	TBD
Regional	Project. Create a shared engineer position (LTCR Strategy: RR-5)	10, 11	6	TBD	TBD	TBD	TBD
Economic							
Owego (V)	Project. Reexamine and implement the Small Business Incubator Feasibility Study (LTCR Strategy: CRED-2)	8	5	TBD	TBD	TBD	TBD
Owego (V)	Policy. Encourage appropriate infill development at 202-204 Front Street (LTCR Strategy: CRED-9)	8	5	TBD	TBD	TBD	TBD
Tioga (T)	Project. Explore low cost energy alternative and/or natural gas service (LTCR Strategy: CRED-4)	8	5	TBD	TBD	TBD	TBD

Note: TBD = To be determined.

Table 3.1

Tioga Reconstruction Strategies and Implementation Actions

Community	Description	Strategy	Mgmt Measures	Cost	Risk Area	Timing	Community Support
Health and Social Services (to be identified by Committee)							
Owego (V)	Project. Create a pet evacuation plan (LTCR Strategy: CRED-5)	3, 4	6	TBD	TBD	TBD	TBD
Regional	Ensure access to medical supplies and pharmaceuticals	3, 4	6	TBD	TBD	TBD	TBD
Regional	Policy. Ensure emergency services for vulnerable populations (LTCR Strategy: ESM-2)	3, 4	6	TBD	TBD	TBD	TBD
Housing (to be expanded by Committee)							
Nichols (T)	Project. Flood mitigation gates for five homes (not in LTCR Plan)	5	3	TBD	TBD	TBD	TBD
Nichols (T)	Program. Buyouts - Awaiting FEMA/NYS Funding	7, 9	5	TBD	TBD	TBD	TBD
Owego (T)	Project. Conduct a housing assessment, with a focus on senior at-risk living	7, 9	6	TBD	TBD	TBD	TBD
Owego (V)	Project. Develop and distribute a Homeowners Guide for Property Protection brochure for Historic and Contemporary Homes (separate brochure), including information on building with flood damage resistant materials (LTCR Strategy: PP-1)	2, 3	6	TBD	TBD	TBD	TBD
Owego (V)	Policy. Protect historic publically owned buildings (LTCR Strategy: PP-3)	5, 9	3	TBD	TBD	TBD	TBD
Owego (V)	Project. Conduct a housing needs assessment (LTCR Strategy: CRED-10)	9	6	TBD	TBD	TBD	TBD
Tioga (T)	Program. Buyouts - Awaiting FEMA/NYS Funding	7, 9	5	TBD	TBD	TBD	TBD
Tioga (T)	Project. Build senior housing	7, 9	5	TBD	TBD	TBD	TBD
Infrastructure							
Nichols (T)	Project. Relocate Town highway barn (LTCR Strategy: SP-1)	5	3	TBD	TBD	TBD	TBD
Nichols (TV)	Project. Healthy Main Street Economy/Sewer Expansion Project (LTCR Strategy: CRED-1)	5, 7, 9	3	TBD	TBD	TBD	TBD
Nichols (TV)	Project. Reconfigure existing or construct new Fire Station with enhanced rescue services (LTCR Strategy: CRED-2)	5	3	TBD	TBD	TBD	TBD
Nichols (V)	Program. Emergency Facilities/School Buyout	5	5	TBD	TBD	TBD	TBD
Nichols (V)	Project. New Village Hall/Park	5	3	TBD	TBD	TBD	TBD
Nichols (V)	Project. Streets/Sidewalks and lighting upgrade	5, 7, 8	4	TBD	TBD	TBD	TBD
Nichols (V)	Project. Improvements to Kirby Park/ Creek Stabilization	5, 7	1	TBD	TBD	TBD	TBD
Owego (T)	Project. Extend water, sewer and broadband along Route 434	8	4	TBD	TBD	TBD	TBD
Owego (T)	Project. Upgrade and relocate Town Highway Department	5	3	TBD	TBD	TBD	TBD
Owego (V)	Project. Build a new shared Town/Village DPW Facility out of floodplain with green elements (LTCR Strategy: CRED-8)	5	3	TBD	TBD	TBD	TBD
Owego (TV)	Project. Create shared services Town Hall campus to house Town and Village offices	5	6	TBD	TBD	TBD	TBD

Note: TBD = To be determined.

Table 3.1**Tioga Reconstruction Strategies and Implementation Actions**

Community	Description	Strategy	Mgmt Measures	Cost	Risk Area	Timing	Community Support
Owego (V)	Project. Address water collecting at North Avenue underpass (LTCR Strategy: SP-1)	5	1	TBD	TBD	TBD	TBD
Owego (V)	Project. Develop a Comprehensive Stormwater Management Plan and integrate green infrastructure techniques (LTCR Strategy: SP-3)	1, 5	1	TBD	TBD	TBD	TBD
Tioga (T)	Project. Evaluate the potential for a berm or floodwall along the west side of Pipe Creek (LTCR Strategy: SP-1)	5	3	TBD	TBD	TBD	TBD
Tioga (T)	Project. Replace culvert in Smithboro under the railroad tracks (LTCR Strategy: SP-2)	5	3	TBD	TBD	TBD	TBD
Tioga (T)	Project. Replace culvert in west end of Tioga Center (goes into the west end of Lopke Pit) (LTCR Strategy: SP-3)	5	3	TBD	TBD	TBD	TBD
Tioga (T)	Project. Work with U.S. Post Office to realign zip code (LTCR Strategy: CRED-2)	5, 7	4	TBD	TBD	TBD	TBD
Tioga (T)	Project. Identify Permanent Water Source for Fire District (LTCR Strategy: CRED-7)	5	3	TBD	TBD	TBD	TBD
Tioga (T)	Project. Salt shed and cover (not in LTCRS Plan)	5	4	TBD	TBD	TBD	TBD
Tioga (T)	Project. Raise south end of Halsey Valley Road (not in LTCRS)	5	1	TBD	TBD	TBD	TBD
Regional	Project. Conduct a Regional Study and Identify Improvements (LTCR Strategy: RR-3)	5, 6	4	TBD	TBD	TBD	TBD
Regional	Program. Establish an environmental sensitive maintenance of streams program for flood impacted river communities (LTCR Strategy: RR-4)	5, 6	1	TBD	TBD	TBD	TBD
Natural and Cultural Resources							
Nichols (T)	Project. Boat Landing Beautification and River Walk (LTCR Strategy: CRED-1)	7, 8	1	TBD	TBD	TBD	TBD
Regional	Project. Watershed Assessment and Geomorphologic Analysis of major tributaries (Wappasening, Pipe and Owego creeks) (LTCR Strategy: NRP-1)	5, 6	6	TBD	TBD	TBD	TBD
Regional	Project. Conduct flood and hazard mitigation analysis (LTCR Strategy: RR-2)	5, 6	6	TBD	TBD	TBD	TBD
Regional	Program. Natural Resource Stabilization and Restoration of major tributaries (LTCR Strategy: NRP-3)	5, 6	1	TBD	TBD	TBD	TBD
Regional	Project. Conduct a Regional Study and Identify Improvements (LTCR Strategy: RR-3)	5, 6	6	TBD	TBD	TBD	TBD
Regional	Program. Establish an environmental sensitive maintenance of streams program for flood impacted river communities (LTCR Strategy: RR-4)	5, 6	1	TBD	TBD	TBD	TBD

Note: TBD = To be determined.

3.4 RELATIONSHIP TO REGIONAL PLANS

The municipalities of the Tioga Community have participated in county-level planning, including preparation of the Tioga County All Hazard Mitigation Plan in August 2012. In addition, the Tioga Community will participate in the Southern Tier Susquehanna River planning effort

with the Broome Community and Village of Sidney and plans to include a regional action plan in its final NYRCR Plan.

3.5 COMMUNITY ENGAGEMENT

Engagement of the public in developing a NYRCR Plan for the Tioga Community is, by necessity, multi-faceted. Because one important goal of this planning process is to develop a regional approach to the issue of resiliency, the public engagement process is based on melding the six municipalities into a coordinated group, working cooperatively to deal with hazard mitigation, economic development, and related issues. At the same time, it is necessary to recognize that the communities also have individual concerns that reflect their varied characters, their experiences during recent storms, and their individual governmental structures.

To accomplish both of these objectives, the NYRCR public engagement process has included the following:

- **Establishment of a NYRCR Steering Committee** that includes representatives of all of the Tioga communities plus key social service providers and other civic leaders. By design, this committee brings to the planning process a wide range of views from areas and groups throughout Tioga County. To date, the NYRCR Steering Committee has met two times; during these meetings they have discussed and agreed on a vision statement, reviewed and refined the inventory of vulnerable assets, shared potential project ideas being considered in each municipality, and considered ways in which inter-municipal cooperation and coordination could improve regional resiliency. The NYRCR Steering Committee will continue to meet on a regular basis to evaluate, vet and prioritize potential projects and actions. Four additional Steering Committee meetings are anticipated through the end of the planning process.

- **Public events** to which all local residents and interested parties are invited to attend and participate. The first of these events was held on September 24, 2013 at the audi-



Tioga NYRCR Steering Committee Meeting.

torium of the Tioga Center School Middle School from 7:00 pm to 9:00 pm.. The event was advertised to the community by means of flyers, media release, and digital e-vite to identified stakeholder and civic groups, ranging from municipal boards and business groups to schools and social service providers. At the event, the NYRCR Steering Committee worked with staff from the NYSDOS and the planning team to:



Tioga NYRCR Plan Public Meeting.

- inform the public about the NY Rising Community Reconstruction program, the Tioga Community NYRCR Plan, and schedule;
- solicit their input concerning problems they faced during past flood events and the assets they think are most important to protect;
- discuss with them the vision driving the development of the NYRCR Plan; and
- brainstorm potential strategies or specific projects for enhancing regional resiliency. The public event resulted in the planning team obtaining extensive input that was used to draft this conceptual NYRCR Plan and to establish the direction and focus for the rest of the NYRCR planning process.

To further enhance the regional focus, a regional summit has been scheduled for November 18, 2013 that will include communities from Broome County and Delaware County along with those from Tioga. The focus of this event will be educating the public about the realities of changing weather patterns and their potential effects on the region. Experts from government, academia and the private sector will also discuss the viability of various approaches to flood control, helping to shape future efforts to devise realistic and effective NYRCR plans in the region.