LONG TERM COMMUNITY RECOVERY STRATEGY

Town of Nichols, New York

Date: September, 2013

Sponsored by the NYS Department of State, Office of Communities and Waterfronts

ELAN
Planning / Design / Landscape Architecture PLLC

This document is intended to be printed double-sided on letter size paper.

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Project Overview

The State of New York Department of State (DOS) has provided funding to the Town of Nichols to create the Long Term Community Recovery Strategy (LTCRS). The Town is working in conjunction with the Tioga County Department of Economic Development and Planning and the New York State Department of State to complete this study.

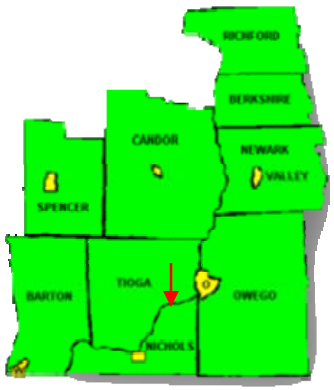
Regional Setting

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

Tioga County is comprised of nine towns and six villages, and according to the 2010 US Census, includes more than 51,125 residents. The County is well served by a network of interstate, state, and local highways including Interstates 88, 81, and 17/I-86, as well as State Routes 17C, 34, 38, 79, 96, and 434. Easily accessed by major transportation routes, the local economy is dependent on a wide variety of industries including tourism, retail, manufacturing, and education. The majority of the county's residents live within the Town of Owego.

Community Profile

The Town of Nichols is a rural, bedroom community located in the Southern Tier Region of New York State. The Town, established in 1824, encompasses approximately 33.7 square miles. Nichols is located between the Susquehanna River to the north and west, the Town and Village of Owego to the east, and Bradford County, Pennsylvania to the south. As a part of the Susquehanna River Basin, the Town is located in one of the most flood-prone watersheds in the country, and is vulnerable to local flash floods which often affect smaller tributaries with little advance warning.



The major employers in the Town of Nichols are the Best Buy Warehouse/ Distribution Center and Tioga Downs Casino. Other key employment sectors include agriculture and gravel mining.

In 2010, the U.S. Census reported that the Town of Nichols' population was 2,525 residents. This represents a 59 person decrease from the 2,584 person population reported in 2000. The median age of community residents was 41.6 years, which is slightly less than the 42.6 years of age reported for the County. The 2010 Census also reported that the Town population was predominately white (96.2%), the median household income was $47,009 (slightly less than the County figure of $53,789 and the New York State reported figure of $56,951), and that approximately 81.6% of the Town's housing units were owner occupied and the remaining 18.4% were rentals.

The Town of Nichols is currently guiding is local land use decisions based on the following:

- Town of Nichols Code
- Town of Nichols Zoning Ordinance
- Zoning Amendment – create I-2 District and I-2-B-A-R District
- 2011 Nichols Agriculture and Farmland Protection Plan

In 2006 the Town completed the Greater Nichols 2020 Plan. Although this work was completed, it still has not been officially adopted by the Town Board.

Impact of Tropical Storm Lee

On September 7, 2011, Tropical Storm Lee stalled over the Southern Tier and dropped over 11" of rain on Tioga County during a 24-hour period. The torrential rains, coupled with a swollen Susquehanna River and saturated grounds from Hurricane Irene, led to record high water levels.

The rising waters of both the Susquehanna River and the Wappesening Creek caused severe flash flooding, and damaged homes, businesses and infrastructure in the Town of Nichols. Many of the roads in Nichols were closed, including I-86, West River Road, South Main Street, Moore Hill, Briggs Hill, Decker Hill and Sulpher Springs Road.

Many residents were forced to leave their homes and take shelter in the Nichols Elementary School. Thanks to the generous volunteers in the Nichols community, these families were provided with immediate shelter needs—beds, blankets, and food.

During the storm, many residents and stranded motorists from out of town took shelter at the Nichols Elementary School. The storm knocked out the power for a week, and the emergency shelter site was left without electricity. A local elected official provided a small 5,500 watt generator that was used to power several lights in the hallway. The remainder of the building was dark. The Steering Committee stated that the shelter would benefit in future emergencies from a generator.

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, 100 were located in the Town of Nichols. In 2012, the Town requested buyout assistance for 8 homes.

The residential areas hardest hit were located along the banks of the Susquehanna River (River Road) and Wappasening Creek. Most who suffered flood damage reported that they had to replace all items located on the ground floors, including heating systems and water tanks. They also talked about the painful loss of irreplaceable items like family photographs and memorabilia.

Nichols Elementary School

Extreme Weather Events

According to the recent report, *ClimAID: the Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State,* the need to plan for the mitigation and recovery from future flood events in the Town of Nichols, and the entire Southern Tier, is a growing concern as we enter into the 21st century.

In 2008, the New York State Energy Research and Development Authority (NYSERDA) initiated "ClimAID" as part of its Environmental Monitoring, Evaluation, and Protection Program (EMEP). As part of the project, a three-year study was conducted by more than 50 scientists from Cornell University, Columbia University, and the City University of New York to identify and assess climate change impacts and adaptation options for New York State.

The results of the study were compiled in the 600-page report that warns that New Yorkers should begin to prepare for an increased number of heat waves and snowier winters, severe floods, and a range of other effects on the environment, communities and human health. Average annual temperatures in New York State are projected to rise by 4 to 9 degrees by the year 2080, and the amount of precipitation that falls in the State is projected to increase by 5 to 15 percent.

A summary of extreme weather events predicted for the Southern Tier in the 21st century is provided below:

ClimAID Region 3 (Southern Tier): Projected Extreme Events					
	Extreme Event	**Baseline**	**2020s**	**2050s**	**2080s**
Heat Waves	Number of days/ year with maximum temperature exceeding 90° F	10	11 - 25	15 - 45	19 - 70
	Number of days/ year with maximum temperature exceeding 95° F	1	2 - 7	2 - 18	4 - 38
	Number of heave waves/year	1	1 – 3	2 – 6	2 - 9
	Average duration of heat wave	4	4 – 5	4 – 5	4 - 7
Cold Events	Number of days/year with minimum temperature at or below 32° F	152	116 - 145	86 - 168	68 - 124
Intense Precipitation	Number of days/year with rainfall exceeding 1 inch	6	5-8	5 - 8	5 - 10
	Number of days per year with rainfall exceeding 2 inches	0.6	0.5 - 1	0.5 - 1	0.4 - 2

Public Participation

The goal of public participation during this project was to foster communication, create a sense of ownership and build trust between the public, Tioga County, the Town of Nichols, and regulatory agencies. Citizen participation provides an opportunity to compile the public's knowledge of the community and understand the public's hopes, concerns and desires for the future of the Town.

To gather public input, the project team worked closely with the LTCRS Executive Committee, and the Town of Nichols LTCRS Steering Committee, and collected input from various stakeholders, and community residents, business owners and representatives from non-profit organizations. In total, there were two public meetings including a public workshop, several stakeholder interviews, and a series of Steering Committee meetings.

LTCRS Executive Committee

In November of 2011, the NYS Department of State announced funding for the Long Term Community Recovery program. The program, which provides financial and technical assistance to those towns and villages hardest hit by Tropical Storms Irene and Lee, provides communities with the tools they need to develop a vision and strategies to reestablish themselves as vibrant communities that are less vulnerable to future disaster.

The Town of Nichols, along with the Village of Owego, the Village of Nichols and the Town of Tioga, applied for and received Long Term Community Recovery grant funding. As the first step in the planning process, local leaders from each of the communities were invited to join a LTCRS Executive Committee.

Members of the Executive Committee include:

- Kevin Millar – Village of Owego
- Jana Ingalsbe – Village of Owego
- Louis Zorn – Town of Tioga
- Drew Griffin – Town of Tioga
- Barb Crannell – Town of Nichols
- Ches Spencer – Town of Nichols
- Elaine Jardine – LTCRS Coordinator

Executive Committee members served on the consultant selection team, organized the Community Workshop, attended a multi-state Peer-to-Peer Long Term Recovery Meeting, and have provided general guidance to the local Steering Committees.

Nichols LTCRS Steering Committee

In the summer of 2012, a Steering Committee comprised of a cross section of the Town including representatives from county government, local government, and business and not-for profit organizations was assembled. This committee was tasked with developing the Nichols Long Term Community Recovery Strategy (LTCRS) which will serve as a guide to making flood-related decisions to ensure a more sustainable and resilient future for the Town of Nichols.

Steering Committee members include:

- Barb Crannell, Chair
- Dick LeCount
- Lesley Pelotte
- Patty Porter
- Dot Richter
- Jason Settlemoir
- Ches Spencer

Steering Committee members worked with the Project Team from Elan Planning, Design, and Landscape Architecture (Elan), New England Environmental (NEE), and Griffiths Engineering to identify issues and concerns, draft a community vision, identify recovery strategies, and to prioritize long term recovery projects.

Stakeholder Interviews

As part of the public participation process, the Project Team met with several key stakeholders in the community to gain a better understanding of the impacts of Tropical Storm Lee as well as ongoing recovery efforts. Stakeholders included representatives from the Tioga County Soil and Water Conservation District, local farmers and the Highway Superintendent.

Public Workshop

On October 25, 2012 the LTCRS Executive Committee hosted a public workshop at the Hubbard Auditorium located in the Tioga County office building. The event was publicized in print and electronic media (Owego Penny Saver, WBNG Binghamton), on the County website, and flyers were posted in local businesses and not-for-profit organizations. The workshop included a brief presentation about the LTCRS program, and then provided residents with an opportunity to share their ideas about how to make their community flood resistant and describe their vision for recovery.

As part of the public workshop, the residents of the Town of Nichols were asked to identify their community's strengths and the challenges that they faced as a result of Tropical Storm Lee. A summary of their comments is provided.

Strengths	Challenges
Resiliency of community	Early warning system
Neighbors helping each other, cooperation	Stabilizing banks of the River
Volunteers – Fire Department, community care network	How do you keep people up to date on how to prepare
Natural beauty	Communication system failed during storm
Susquehanna River	State and Federal assistance
Kirby Park, Kirby Band	Roadside maintenance (ditching)
School system, golf course, Cady public library	Stream deposits and bank stabilization
Accessibility	Buyouts/House raisings/Flood proofing
Local businesses	Dike well being

You're Invited!

Come Share Your Ideas to Make Your Community Flood Resilient

October 25, 2012

6:00 pm - 8:00 pm

Hubbard Auditorium
Tioga County Office Building
56 Main Street
Owego, NY

The Village of Owego and the Towns of Tioga and Nichols are each developing a Long Term Community Recovery Strategy to address flooding concerns in your communities.

Please join us and let us know...

- What you love about living and working in your community
- Your issues and concerns regarding recent flood events
- Your vision for your community

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Community Vision for Recovery

As part of the public workshop, community residents were asked to describe their vision of what the Town of Nichols would be like twenty years from now. A snapshot of their responses is provided below:

- Homeownership rates at 90%
- Natural resources stabilized
- Rain gauges & 15 years of historical data
- Emergency management plan up to date every five years
- Package for a welcome kit with community information
- High speed Internet throughout Tioga County

Using the input provided during the public workshop, coupled with their own knowledge of the Town, the Steering Committee developed a vision statement for the Town of Nichols LTCRS.

Vision Statement

Nichols is a close-knit community situated on the picturesque Susquehanna River. Residents take pride in the wide variety of assets including:

- Community stability through high homeownership rates
- Aware and educated residents regarding emergency preparedness
- Critical facilities including schools, municipal buildings, businesses, and homes that are either protected from flooding or located outside of the floodplain
- Healthy 'Main Street' economy with commercial, retail, and restaurants serving the local population
- Protected and preserved natural resources including the Susquehanna River, streams, wetlands, and floodplains
- Access and recreational opportunities are abundant along the Susquehanna River

Peer to Peer Meeting

On April 27, 2013, FutureScapes, a 501(c)(3) nonprofit organization, hosted a Long-Term Recovery Peer to Peer Meeting in Sayre, PA. During the four hour meeting, representatives from the Town and Village of Nichols, the Village of Owego, and Tioga County were joined by their counterparts from Athens, PA, West Pittston, PA, and Shickshinny, PA to discuss how their communities were impacted by Tropical Storm Lee and share their experiences preparing and implementing long term community recovery plans.

Topics of discussion, facilitated by Community Recovery Specialists from FEMA, included:

- Successes and challenges associated with the long-term recovery process
- Community involvement and volunteer management
- Mitigation measures
- Working with local government and elected officials
- Grants and fundraising efforts
- Partnerships and shared resources

At the close of the meeting, all of the participants agreed that steps should be taken to set a future meeting date and to continue the collaborative approach between the communities. Ideas for future meetings included site visits to peer communities to share success stories and brainstorming sessions to identify best practices to shared challenges.

Existing Conditions

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

Existing Resources

As part of the planning process, the Project Team reviewed the following local and regional planning studies and local legislation:

- 2012 Tioga County Hazard Mitigation Plan (Section 9.8: Town of Nichols)
- 2012 Tioga County Emergency Management Plan (CEMP)
- 2012 Tioga County After Action Report/Improvement Plan – Tropical Storm Lee Flood Response
- 2010 Upper Susquehanna River Basin, NY: Flood Risk Management and Watershed Assessment
- 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
- The Greater Nichols 2020 Plan, January 2006
- Town of Nichols Code
- Town of Nichols Zoning Ordinance
- Zoning Amendment – create I-2 District and I-2-B-A-R District
- 2011 Nichols Agriculture and Farmland Protection Plan

Land Use

The Town of Nichols, New York is located in the Southern Tier of New York State in Tioga County. It is approximately 33 sq. miles, sharing its entire northern border with the Susquehanna River and its southern border with the State of Pennsylvania. The Nichols town center is located on the southern bank of the Susquehanna River on historic floodplain soils. It is separated from the river by a narrow strip of river bank land that abuts the Southern Tier Expressway, Rt. 17/I-86. Nichols Center is approximately .25 square miles and located at the intersection of several important roads such as the Southern Tier Expressway, Rte 17/I-86, Main Street (NY Rte 282), and East and West River Roads. The area also includes important natural resource features such as the Susquehanna River 800 feet north, Wappasening Creek to the east and Sackett Creek to the west. Nichols town center is surrounded to the west, south and east by the forested and agriculture landscape of Nichols.

Natural Resources

The Town and Village of Nichols and the watershed ecosystems in the Southern Tier region were most recently inundated by Tropical Storm Lee (2011) and Hurricane Irene (2011). These recent storms caused rivers, streams, floodplains, and wetlands to overflow their banks throughout the watershed resulting in fractured infrastructure networks, flooded houses and schools, decimated village and town centers, and significantly altered the shape and function of riparian ecosystems. The dike surrounding the Village provided protection to the businesses and houses from the full force of the flooding, although most structures did get water in their basements resulting from high ground water. Many areas within the town were severed from emergency services due to the flooding and destruction of roads and utilities. These flood events were so severe that FEMA (Federal Emergency Management Agency) has updated and expanded the flood mapping throughout many towns in the Southern Tier.

Over the past decade, this region has seen two 100 year flood events and one 500 year flood event. Each storm event and subsequent flooding impacts the watershed in different ways. In many cases, these storms have altered the streams, creeks and rivers within the watershed by eroding the banks of the water body and creating unstable riparian areas. The sediment and debris that has eroded from the up slope areas of the watershed moves down stream and settles in areas of the water body that may already be impounded by culverts or debris, or in “slack water” areas of the river or stream. This erosion and deposition/ sedimentation effect reduces the volume of water that the channel can allow to pass within its banks.

The flood damage from these storm events may also be in part attributed to the rise of the Susquehanna River. The Susquehanna River is the outlet for most of the rivers and streams in the Southern Tier. The increased elevation of the river causes the flow of water from the tributaries into the Susquehanna River to back up creating a ponding situation reducing the ability of the tributaries to drain water in the watershed. The outflow vicinity of the tributaries and their adjacent floodplains become inundated with "backwater" from the Susquehanna River and water flowing from up-slope in the watershed. This can cause the river and stream tributaries and riparian ecosystems in the watershed to overflow their banks, resulting in flood damage to utilities, infrastructure, and property in areas of the town that are up-slope from the Susquehanna.

Some storm events can cause the river and stream tributaries to breach their banks first while the Susquehanna River is still within its banks. This can be caused by a narrowing or an obstruction in the river or stream channel. Many of the creeks and streams within the town are eroded and void of vegetation on the banks causing an excessive amount of sediment to flow downstream during even a normal high water event.

This sediment often collects at pinch points in the stream such as culverts, bridge

abutments, or a crossing with a center pier that collect debris during the high water event. This debris can clog many of these pinch points or structures in the water body and reduce or obstruct a river or stream's ability to convey the high water to pass. This can cause a stream to top its banks, create a ponding condition above the stream banks, and flood the adjacent areas. The volume and velocity of water will allow it to find its way around the impoundment and scour the downstream side of the pinch point, eventually causing a failure of the obstruction and allowing this built up ponded area on the up-gradient side to release downstream. When these events occur, the rivers and streams cannot handle the volume and velocity of water thus causing massive amounts of erosion on the banks, and undercutting the vegetation and sending it down stream. When the flood water recedes, the debris often remains in the channel, locked into culverts, spread throughout the floodplain, and ultimately into the Susquehanna River.

The flow direction and watershed of the Susquehanna River are important considerations regarding flood impacts. The Susquehanna River flows east to west. However, the river flows in a southwest direction, then turning due west at the eastern edge of the Nichols Town Center. The outside bend of the river can be described as having fast flowing water that has incisive forces along the bank of the outside bend. This fast moving water flows against the river banks of Nichols Town Center. The combination of the river morphology and the location of the developed area on the outside bend of the river may cause an increase in flood waters during storm events that cause the river to over-flow its banks. The velocities of these flood waters at the outside bend of the Susquehanna River are generally much lower than flow from the tributaries, but the impacts can be more severe due to the volume of water.

Figure 1: Banks of Wappasening Creek after Tropical Storm Lee

The Susquehanna River as it enters into the eastern town center boundary drains a watershed size of approximately 4,650 square miles. The watershed generally is comprised of moderate to high sloping terrain with a shale bedrock base at varied depths. In large rain events, rainwater is conveyed in stream tributaries at a high velocity through the localized watersheds, flowing down slope into the Susquehanna River. The high velocity conveyance of rainwater from the tributaries to the outflow can create a situation in which the Susquehanna River water elevation rises quickly to a bank-full condition in short time. This condition is often referred to as a "flashy" stream system where the time between the rain water falls on the ground to when it is conveyed through the watershed occurs quickly.

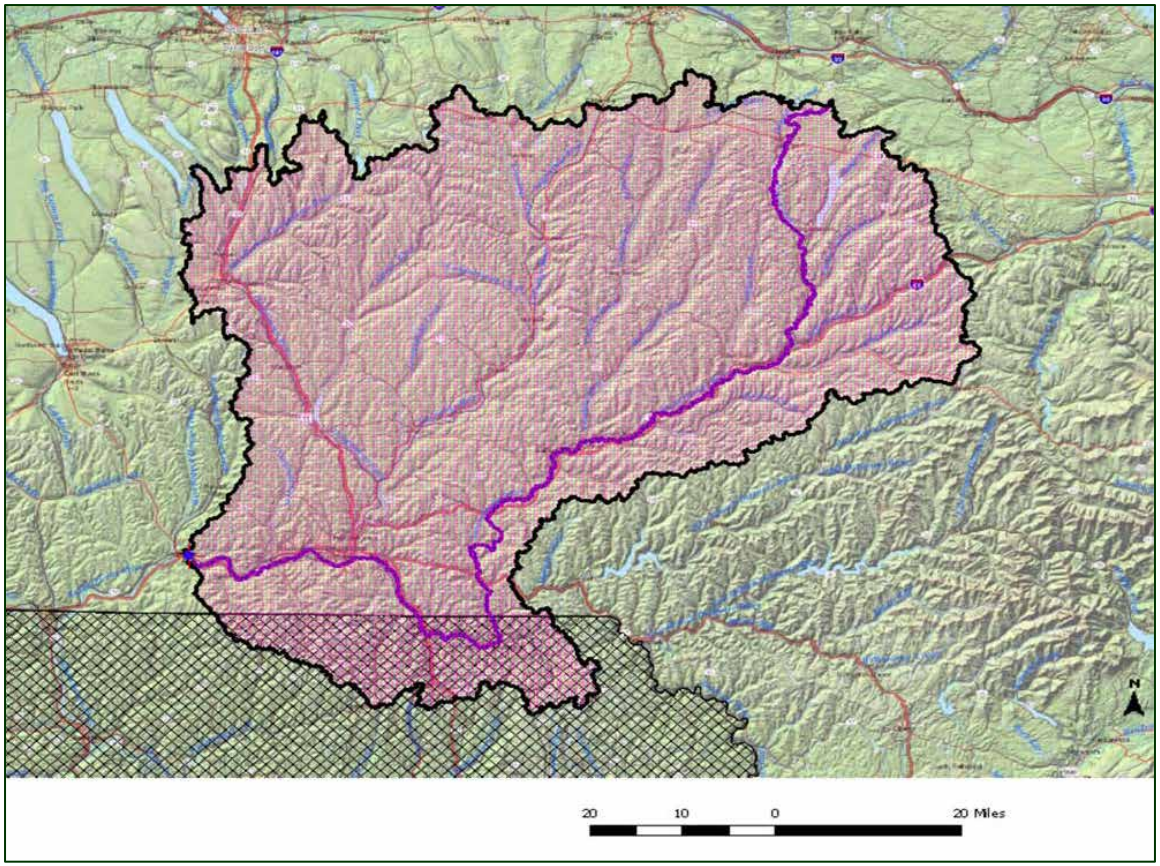


Figure 2: Susquehanna River Watershed from the Village of Owego up-gradient (Stream Stats - http://streamstatsags.cr.usgs.gov)

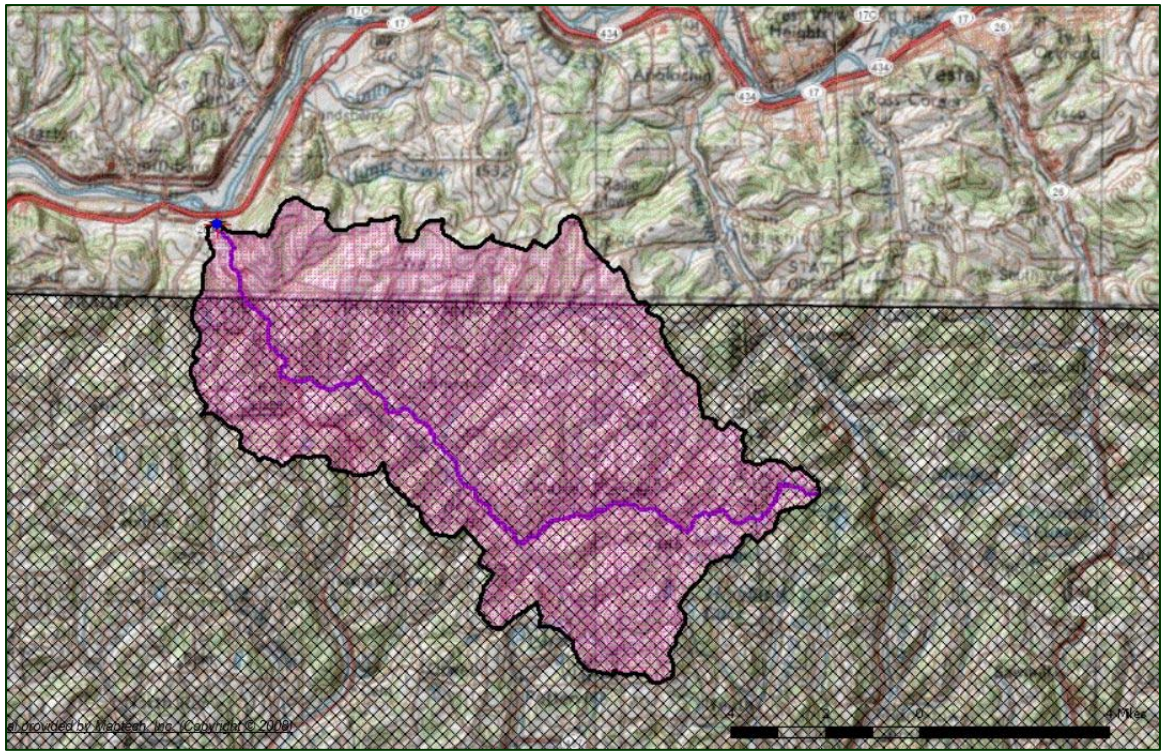


Figure 3: Wappasening Creek Watershed(Stream Stats - http://streamstatsags.cr.usgs.gov)

The Wappasening Creek at the eastern edge of the town center has a localized watershed of 71.8 square miles with approximately 66% of the watershed being covered by forest. This creek has historically overtopped its banks during large rain events causing flooding and damaging parts of the towns infrastructure. The dike system installed by the Army Corp of Engineers (ACOE) helps protect the Town Center but its design also isolates the Village of Nichols from surrounding area. Undersized culverts that became clogged with debris are thought to be the cause of the massive erosions and flooding from this creek. The Town and Village have worked with the Tioga County Soil and Water Conservation to help reduce the impact of this creek during large rain events and has begun to implement some of these mitigation measures.

New England Environmental conducted a small scale geomorphic assessment on a stretch of the Wappasening Creek south of Kirby Park. The information gathered was used to determine the creek profile and longitudinal survey. This information can then be used to analyze and compare the data against regional data, thereby giving a picture of the overall health, stability, relative dimensions and slope of the creek through this reference reach. This study will determine a classification for the stream channel in this location using Rosgen's Stream Classification System. This classification system compiles all the data collected during the survey to determine the classification. This classification allows the municipality to predict how the channel will react and adjust during high flooding events. This information is also needed to determine what restoration techniques may be used if a stream is unstable and needs to be restored.

Figure 4: Wappasening Creek Locus Map for Reference Reach Example (Google Maps)

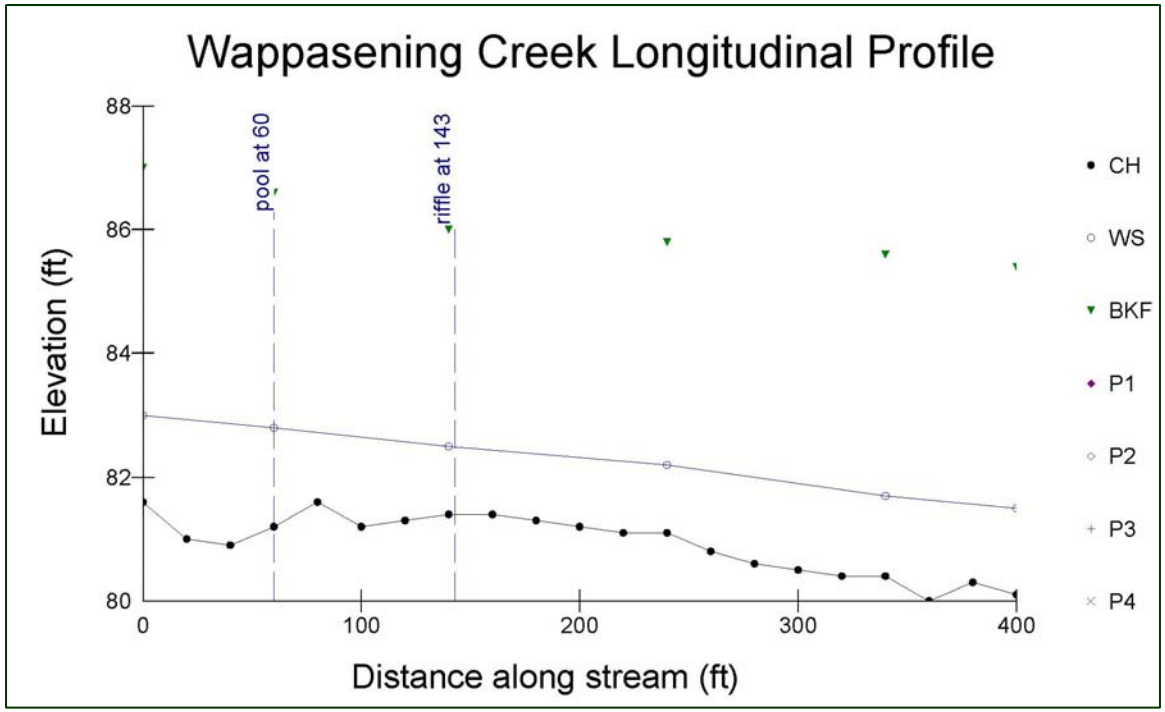


Figure 5: Wappasening Creek Longitudinal Profile

The project team conducted a site visit of the Wappasening Creek in December of 2012. The information gathered was used to create a series of profiles, including the longitudinal profile depicted at left in Figure 5. This profile of the creek surveying parallel to the flow of river was taken at the thalwag (deepest section of the river).

Once the longitudinal profile was created, tow cross sections were taken; one in the shallowest section (Riffle) and one in the deepest section (Pool).

Riffle Cross Section Dimensions:

- Width at bankfull = 88 feet
- Depth at bankfull = 3.6 feet
- Bankfull area = 316 square feet

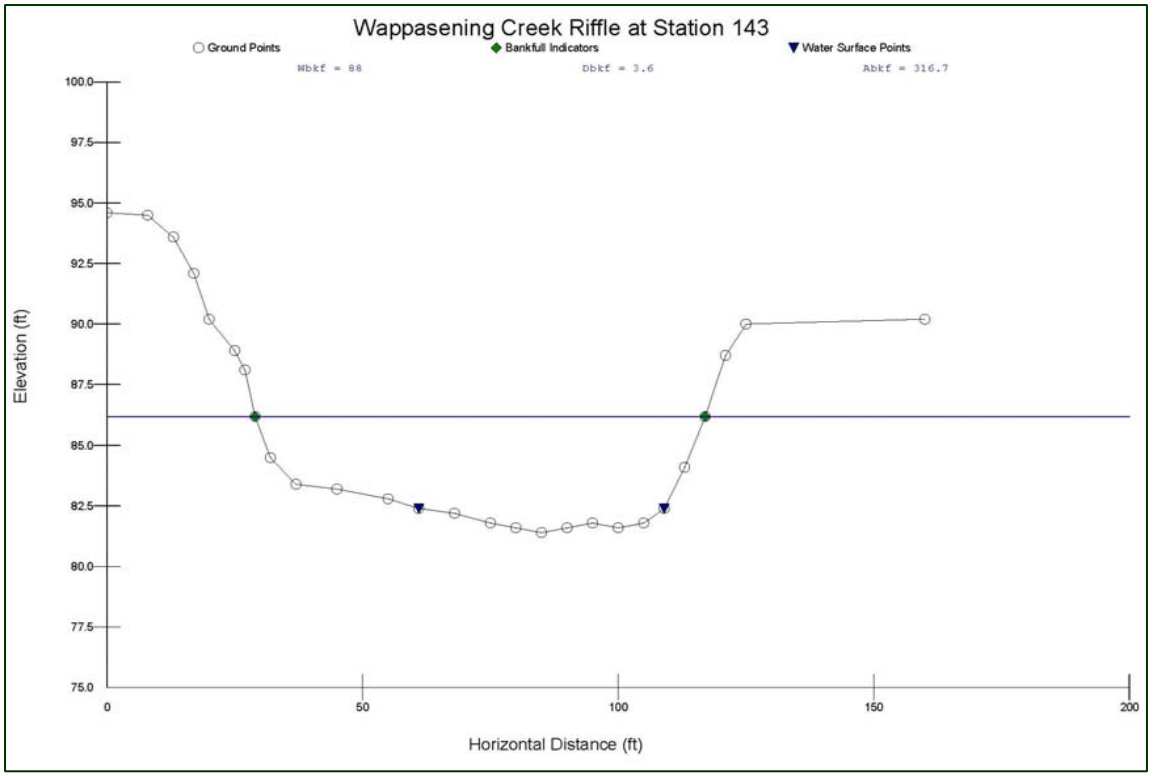


Figure 6: Wappasening Creek Riffle Cross Section

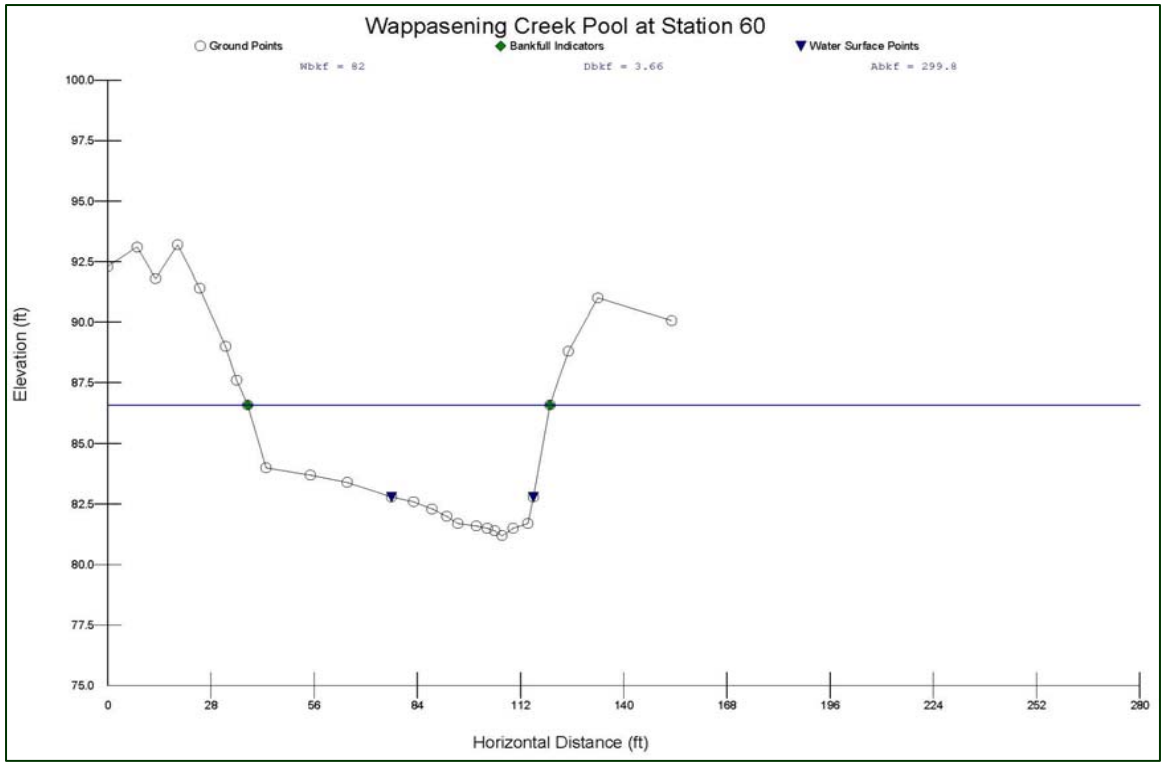


Figure 7: Wappasening Creek Pool Cross Section

Pool Cross Section Dimensions:

- Width at bankfull = 82 feet
- Depth at bankfull = 3.66 feet
- Bankfull area = 299 square feet

Once the cross sections were completed, the substrate of the channel was measured. This process (Pebble Count) was completed by blindly measuring 100 particles diameter across reference reach area. This information is used to get a gradation of the material found the channel reach.

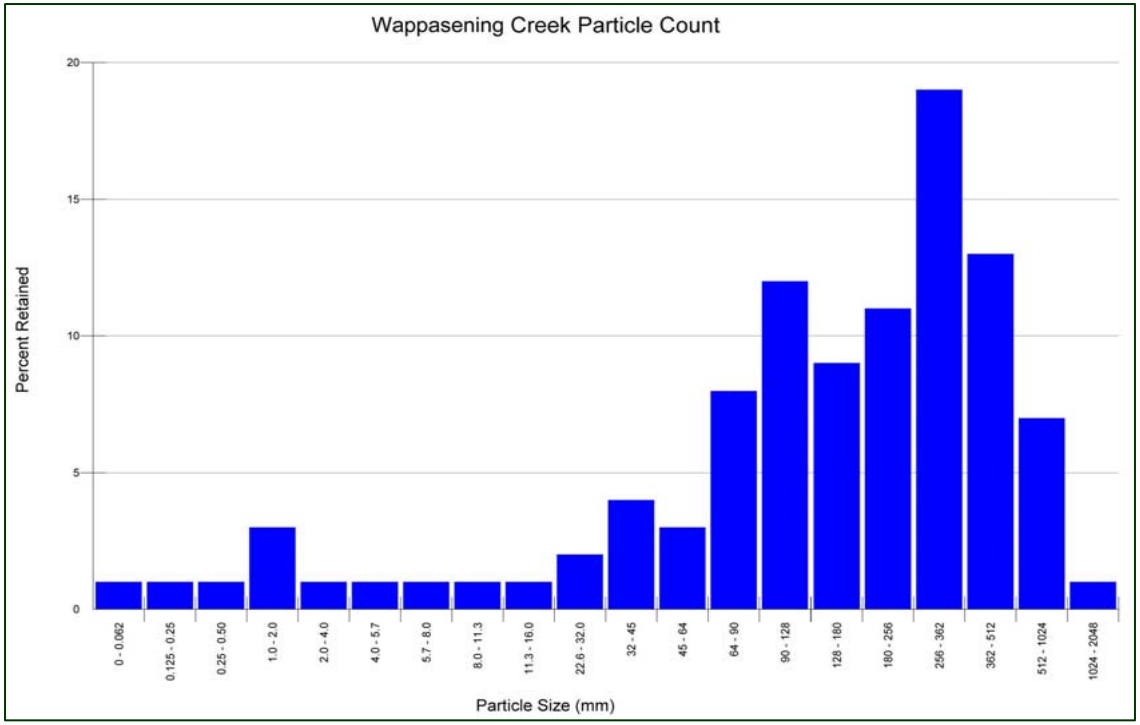


Figure 8: Wappasening Creek Particle Count Bar Graph

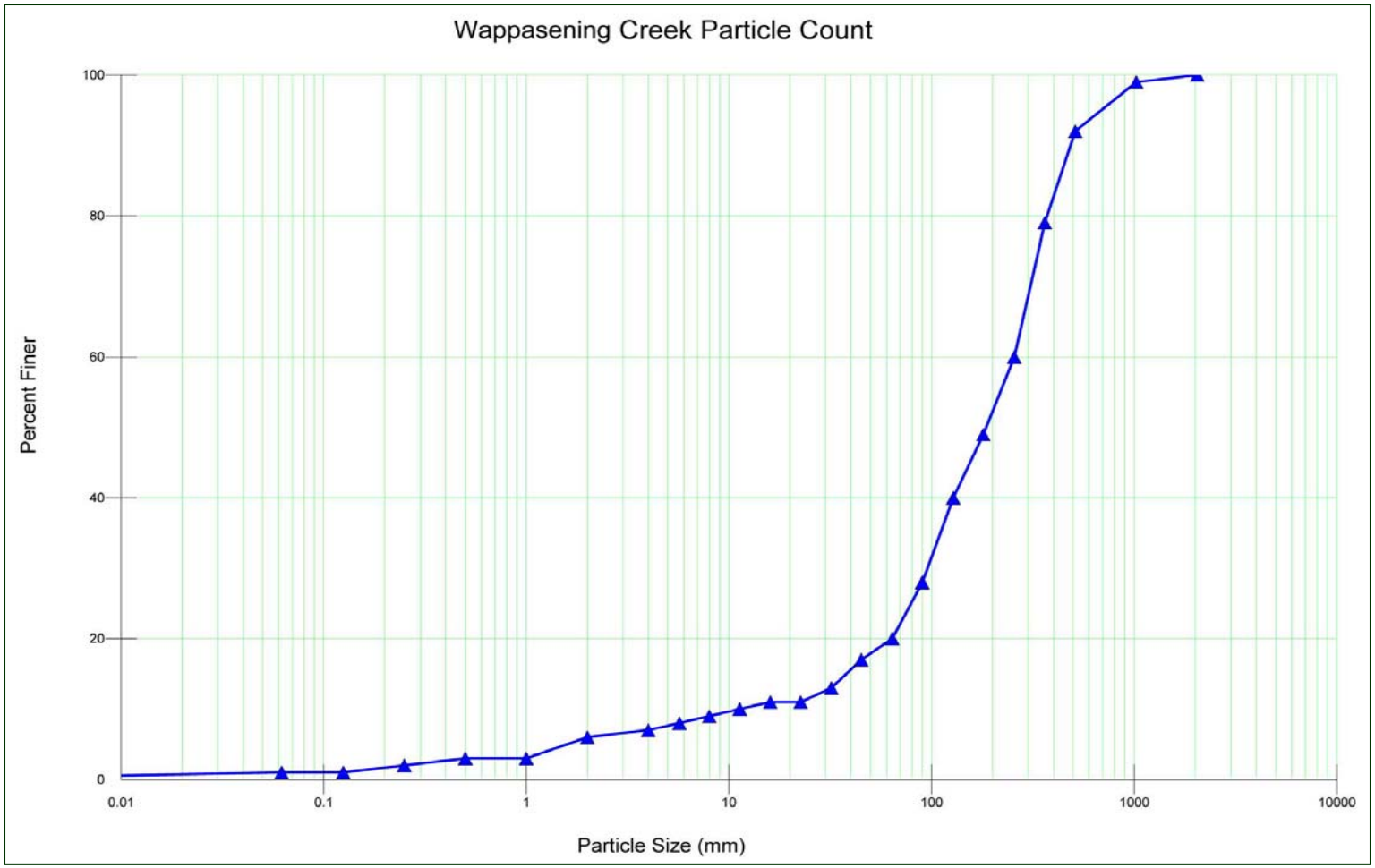


Figure 9: Wappasening Creek Particle Count Linear Graph

Once all this information was collected, the following Wappasening Creek Rivermorph Stream Channel Classification was calculated.

WAPPASENING CREEK RIVERMORPH STREAM CHANNEL CLASSIFICATION

River Name: Wappasening Creek	
Reach Name	Reach 1
Drainage Area	71.8 sq mi
State	New York
County	Tioga
Latitude	42.02056
Longitude	76.36222
Survey Date	01/03/2013
Surveyed By	Andrew Bohne and Jesse Laford
Classification Data	
Valley Type	Type VII
Valley Slope	0.0091 ft/ft
Number of Channels	Single
Width	82 ft
Mean Depth	3.66 ft
Flood-Prone Width	228.63 ft
Channel Materials D50	186.91 mm
Water Surface Slope	0.00378 ft/ft
Sinuosity	2.4
Discharge	1063.105 cfs
Velocity	3.551 fps
Cross Sectional Area	299.82 sq ft
Entrenchment Ratio	2.79
Width to Depth Ratio	22.4
Rosgen Stream Classification	**C 3**

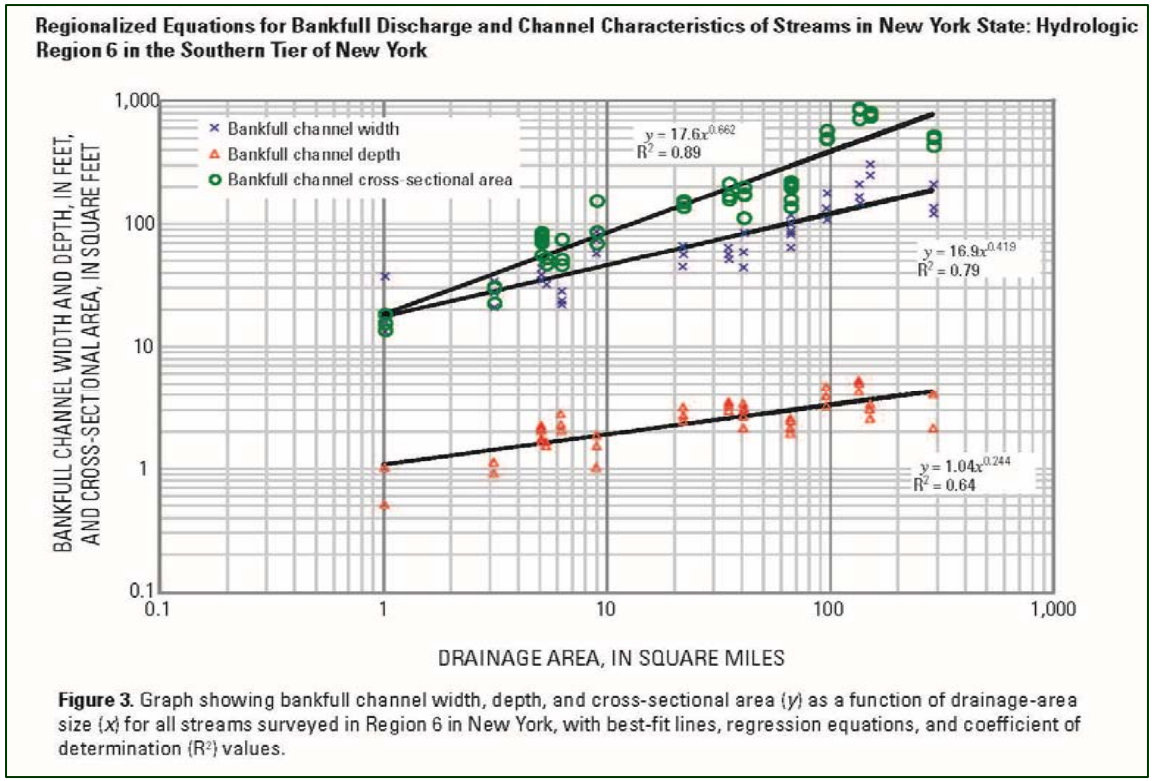


Figure 10: Southern Tier Regional Curve Data
(USGS Regional Curve Data for Region 6 – Southern Tier)

Based on the regional curve data presented in the attached graph (see Figure 10), one can see that generally a river with a watershed 71.8 square miles in size will have a bankfull width of approximately 120 linear feet, a bankfull depth of approximately 3.2 linear feet, and a bankfull area of approximately 350 square feet.

Summary

Analyzing the data collected in the field and comparing this data to the regional curves will help the Town of Nichols understand the overall conditions of their streams and rivers. It is important to note that this stream was recently re-shaped prior to the survey. This section of the stream seems to be narrower and a bit deeper at bankfull than average streams with a similar watershed size based on the regional curve data. The Susquehanna River's proximity to this site will have an impact on the dimensional profile. As the Susquehanna River level rises, it will back up with a section of the Wappasening Creek, creating a ponding effect. When this section of the stream begins to pond, the velocity of the river is reduced, impairing the River's ability to properly move sediment. This sediment and debris will fall out of the water column at this location. The presence of very large sediment islands up stream of the survey location are evident that this sedimentation is occurring.

The Creek at this location seems to be incised and down cutting at this location and lacking a connection to its floodplain on both sides of the River during high flow event (less than 100 year storm event). When the River begins to down cut and becomes disconnected to the floodplain, the velocity of the stream cannot slow down causing massive erosion along its banks.

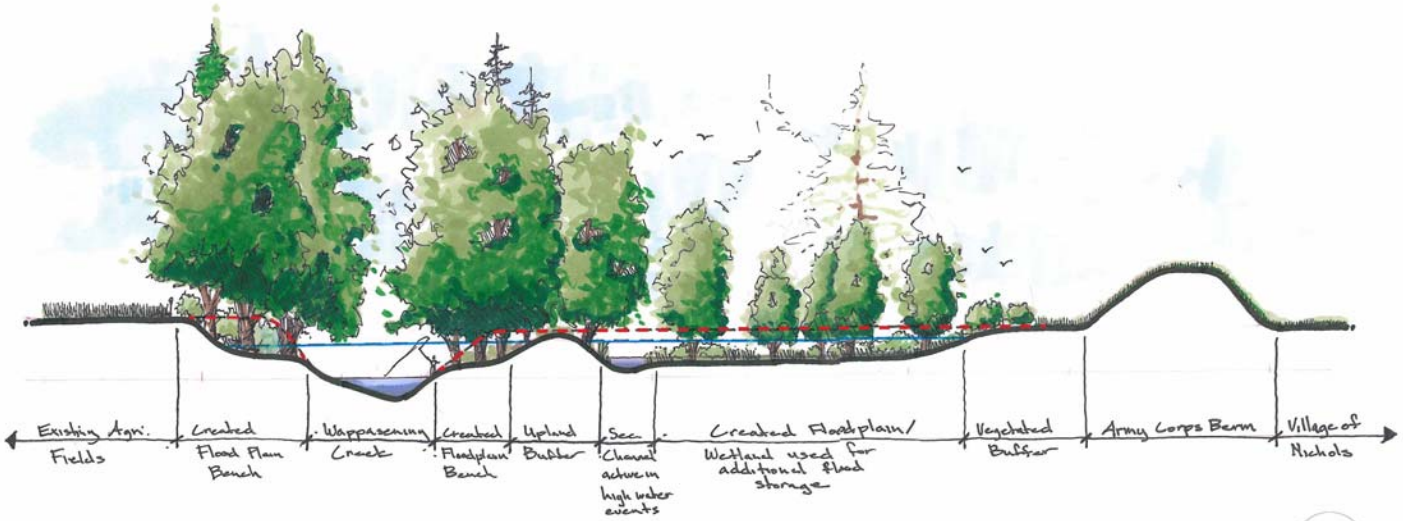
The eastern bank of the Creek at this location had large deciduous trees atop of its banks but was void of vegetation and extremely unstable collapsing under foot on the slope of the bank. The western bank of the Creek was stabilized with large angular stone and void of trees and shrubs. The eastern floodplain is a large open agricultural field. The western bank was lower than the eastern banks. The western floodplain is a large open turf field with the ACOE berm at its far western edge adjacent to the Village core.

These banks should be stabilized with native vegetation to help reduce the excessive movement of sediment downstream into the Susquehanna River. This a good example of an area that can be used for flood storage reconnecting the creek to its floodplain. On the following page is a conceptual graphic that was developed to show how this area may be used to create flood storage as well as a flood proof education pavilion. It should be noted this example will be most effective if developed within the upper watershed slowing the storm surge before it gets down to the Town and Village of Nichols. This area should be continually monitored to ensure the channel maintains its pattern and profile.

Figure 11: Conceptual Flood Storage for the Wappasening Creek

This location on the Wappasening Creek with its proximity to the Susquehanna River will continue to flood. Development should be avoided in the floodplain to the maximum extent possible. This will help reduce the financial, cultural, and ecological impact of future flooding.

This information can also be used to model how the streams will perform during certain rain events (i.e., 5, 10, 50, 100 and 500 year storms). This information will be extremely useful in determining where and at what level of rain event (in inches) flooding will begin to occur. Surveying, modeling and completing the overall geomorphological assessment will help guide the Town in developing flood mitigation measures, as well as aid in the planning of emergency management and response activities.



Flood Mitigation and Prevention Projects

This Long Term Community Recovery Strategy (LTCRS) expresses the Town's vision for recovery following the flood-damage caused by Hurricane Irene and Tropical Storm Lee. During the public participation process, it became clear that one of the community's biggest concerns was taking steps to reduce future flood damage and loss. The Steering Committee recognizes that the majority of the Town of Nichols has been developed in the 100-year flood-plain, and therefore one of the priority areas for long term recovery for the community is Flood Mitigation and Prevention.

Recommended Flood Mitigation and Prevention projects include both pre- and post-disaster mitigation actions that are designed to either prevent the occurrence of an emergency or reduce the community's vulnerability in ways that minimize the adverse impact of future flood disasters.

As part of the planning process, the Nichols LTCRS Steering Committee identified six initiatives that support the community's overall vision with respect to flood mitigation and prevention activities:

- Prevention Activities
- Property Protection
- Emergency Services Measures
- Public Information
- Structural Projects
- Natural Resource Protection

Prevention Activities (PA)

Background

Simply stated, flood mitigation and preventive activities keep problems from getting worse. The use and development of land located in floodplains and watersheds can have a direct impact on the movement and storage of water. If not designed and built with consideration to the floodplain or in areas vulnerable to flooding, new uses could negatively impact the community causing an increase in erosion or flood damage to the property itself or to other lands within the community. To prevent and minimize damage during a flood event, and to ensure sound use and development of areas of special flood hazard so as to minimize future flood blight areas, Nichols can strengthen existing land use regulations and institute new measures to help control the type, amount, and location of new development within the Town especially within the floodplain.

Land use planning can be an effective tool to reduce the risk to life loss and property damage in the event of a future flood event. Improved land use tools, such as site plan review, overlay districts and zoning regulations can reduce risk to people and property in the event of a future flood. These land use tools are often administered by the code enforcement officials.

Goal

Ensure that there is proper language in plans and ordinances to protect properties within the Town of Nichols from future flooding.

Prevention Activity Recovery Projects

The Nichols LTCRS Steering Committee identified four Prevention Activity recovery projects.

- PA-1: Customize flood damage prevention local law.
- PA-2: Update and adopt a Comprehensive Plan.
- PA-3: Develop and adopt a site plan review ordinance that connects with the floodplain damage prevention local law.
- PA-4: Reconcile the Town's Agriculture and Farmland Protection Plan with the Zoning Ordinance.

PA-1: Customize Flood Damage Prevention Local Law

Project Description

In 2012, the Town of Nichols adopted a Flood Damage Prevention Law as authorized by the NYS Constitution, Article IX, Section 2, and the ECL, Article 36. This local law indicates that if development is to occur in a mapped flood hazard area, then the development is required to be built to standards identified in the National Flood Insurance Program's (FIRM) regulations (44 CFR 60.3) and the New York State Building and Residential Codes. If development is being considered for a Special Flood Hazard Area as shown on the Flood Insurance Rate Map (FIRM), then the local floodplain administrator, an officer designated in the local law, reviews the development to ensure that construction standards have been met before issuing a floodplain development permit.

The local law template is provided by the New York State Department of Environmental Conservation (NYSDEC) and sets forth purpose, objectives, applicability, definitions, and prescribes methods of building in the Special Flood Hazard Area. It is intended as a preventive technique by taking into consideration the Base Flood Elevation (BFE) and building structures that use techniques to minimize flood damage. It is recommended that the Town review this law to determine if any sections could be strengthened to meet the specific needs found in Nichols and/or if the law could incorporate text and language that easily articulates the required standard. For example, if the Town wants to mandate that houses be constructed on piers, it can be stipulated in this law.

Figure 12: Example of elevated home in the Village of Owego

For example, Section 5.3-1 Elevation requires that, new residential structures or residential structures proposing substantial improvements to the lowest floor (including basement) be elevated to or above two feet of the base flood elevation (BFE). The Town could require that, at a minimum, the lowest floor be two feet above BFE. The Town could articulate these standards using graphics that illustrate options such as building the first floor above a garage or building the structure on piers. The idea of creating 'design standards' to articulate these options is more fully described under the Property Protection section.

Project Champion

- Town Board

Potential Partners

- Code Enforcement Officer
- NYS Department of Environmental Conservation (DEC)

Potential Resources

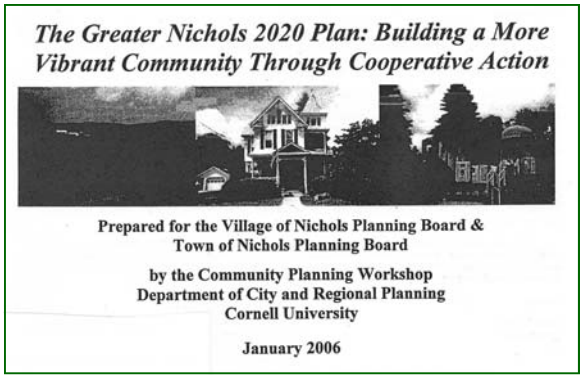
- NYS Department of State, Local Government Training
- NYS Hazard Mitigation Grant Program

PA-2: Update and Adopt a Comprehensive Plan

Project Description

The Town of Nichols prepared a Comprehensive Plan in 2006, but it was never adopted. It is recommended that the Town review the draft Comprehensive Plan and update as necessary, including incorporating reference to this Long Term Community Recovery Strategy. As the Town looks to grow and expand, while maintaining the high quality of life found in Nichols, it is important to have a Comprehensive Plan that articulates the desired vision for the community.

To strengthen its legitimacy and application, it is recommended that the Town Board adopt the *Greater Nichols 2020 Plan*. This will assist the Town in securing future grant opportunities and guiding future investment by businesses and homeowners. Also, should the Town desire to update the zoning ordinance, NYS law stipulates that the zoning shall be 'in accordance with the comprehensive plan.'



Project Champion

- Town Board

Potential Partners

- Town Planning Board
- Tioga County Department of Planning and Economic Development

Potential Resources

- NYS Department of State, Local Government Training
- NYS Department of State, Local Waterfront Revitalization Program
- Community Development Block Grants
- NYS Hazard Mitigation Grant Program

PA-3: Develop and Adopt a Site Plan Review Ordinance that Connects with the Floodplain Damage Prevention Local Law

Project Description

To assist with the review of selected projects in the Town it is recommended that the zoning ordinance be amended to include a site plan review article which requires applicants to file a site development plan for review and approval. The site development plan specifies the present characteristics of a particular parcel of land and its surroundings, and describes intended activities and their potential impact on the community and adjacent neighborhoods.

Site development plans have two functions. First, they illustrate the intended design, arrangement and uses of the land to be improved. Second, they describe the proposal's physical, social and economic effects on the community. The plans may be in either or both narrative and graphic form, as appropriate. Information on factors such as: means of access, parking, landscaping, buffers, architectural features, location of structures, impact on adjacent land uses, and other elements related to the health, safety and general welfare of the community are often considered during the review of the plan. The responsibility of reviewing the site development plan typically falls to the Town Planning Board.

NYS General Town Law, Section 274-a, provides language that can be incorporated in its entirety into the Town's zoning ordinance. The language stipulates what should be submitted as part of a site plan application and provides standard objectives the Planning Board should use in reviewing the application, such as means of access, ingress/egress, stormwater, lighting, signage, landscaping, buffers, etc. In addition to the standard objectives, it is recommended that the Town include an objective that directly relates to the Flood Damage Prevention Local Law. This will ensure that all uses requiring site plan approval in the Special Flood Hazard Area are in compliance with this law, helping to mitigate and prevent future damage.

Project Champion

- Town Board

Potential Partners

- Planning Board,
- Zoning Board of Appeals
- County Planning Board
- Code Enforcement Officer

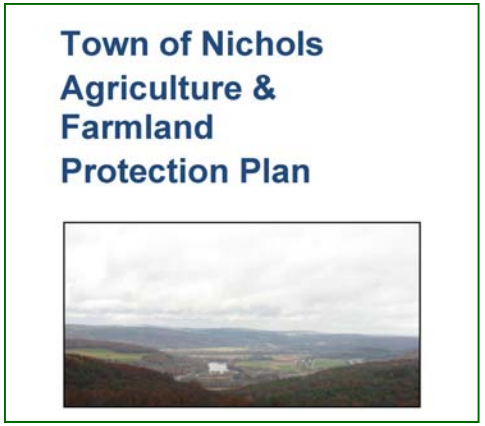
Potential Resources

- NY Rising Community Reconstruction (CR) Program
- NYS Department of State, Local Government Training
- NYS Department of State, Local Waterfront Revitalization Program
- Community Development Block Grants
- NYS Hazard Mitigation Grant Program

PA-4: Reconcile the Town's Agriculture and Farmland Protection Plan with the Zoning Ordinance

Project Description

In 2011, the Town adopted an Agricultural and Farmland Protection Plan that focuses on the preservation and enhancement of farm activities town-wide. The plan also recognized that much of the farmland in the Town lies within the floodplain. As such, the plan recommends that these activities continue as the primary use in the floodplain.



It is recommended that the Town review existing zoning ordinances to ensure that the *2011 Town of Nichols Agriculture & Farmland Protection Plan* recommendations have been incorporated.

Project Champion

- Town Board

Potential Partners

- Town Planning Board
- Zoning Board of Appeals
- County Planning Board
- Code Enforcement Officer
- Agriculture Advisory Committee (to be established)

Potential Resources

- NYS Department of State, Local Government Training
- NYS Department of Agriculture and Markets, Agriculture Development Program
- Community Development Block Grants
- NYS Hazard Mitigation Grant Program

Property Protection (PP)

Background

Property protection measures typically relate to individual owners on a building-by-building basis or parcel basis. Examples include relocation efforts, acquisition, retrofitting, and insurance. Often times it is a combination of many of these elements. Property protection methods are not intended to be a 'one size fits all' in form of recommendations. Some options may work well for some building owners and not others. Also, there are many different property types from historic homes to older building stock. In some cases, retrofitting may not be feasible given the constraints of the property.

Goal

Ensure that new development/redevelopment is resistant to flood damage.

Property Protection Recovery Projects

- PP-1: Continue participation in the NYS Hazard Mitigation Grant Program (HMGP).
- PP-2: Develop and distribute a Homeowner's Resource Guide for Property Protection.
- PP-3: Develop and implement a Flood-Proofing Technical Assistance Program.
- PP-4: Establish a low-interest loan program to assist residents with the expenses associated with moving water heater/furnace to upper levels of their homes.

PP-1: Continue Participating in the NYS Hazard Mitigation Grant Program (HMGP)

Project Description

In 2012, the Town of Nichols applied for and received funding through the New York State Hazard Mitigation Grant Program (HMGP) Elevation and Acquisition programs. These monies are provided to communities to reduce or eliminate risk and losses, to people and property, from natural hazards and their effects.

Action Steps

The Nichols LTCRS Steering Committee recommends that the Town Board continue to work with residents who have experienced long-term flood damage as a result of Hurricane Irene and Tropical Storm Lee to:

- Designate areas for future buyouts focusing on cost-benefit ratio to justify buyout or elevation.
- Promote awareness to homeowners in future buyout areas.
- Pursue HMGP funding by the Town Board.

Project Champion

- Town Board

Potential Partners

- Tioga County Hazard Mitigation Planning Committee
- New York State Office of Emergency Management
- Nichols Emergency Management Preparation Committee

Potential Resources

- NYS Hazard Mitigation Grant Program (HMGP)

PP-2: Develop and Distribute a Homeowner's Resource Guide for Property Protection

Project Description

A Resource Guide for Property Protection would introduce Town residents to various design changes and flood damage resistant materials they can use to protect their property against future flood damage or loss. In 2009, the Flood Emergency Management Agency (FEMA) produced a "Homeowner's Guide to Retrofitting" which could serve as a model. The Town of Nichols should customize the information for the Southern Tier environment. Guide elements could include:

- A definition of "retrofitting". Some homeowners may be unaware that they can make their existing home more floodproof; providing a definition for retrofitting is the first step in resident education. FEMA defines retrofitting as "making changes to an existing building to protect it from flooding or other hazards such as high winds and earthquakes."
- Methods for retrofitting including elevation, wet floodproofing, relocation, dry floodproofing, levee and floodwall, and demolition.
- Illustrations to show how each method of flood protection is implemented.
- Contact information for the local building official. This is a critical step, as local officials know which retrofitting methods meet state and local government requirements.
- A list of potential financial assistance methods. The cost and extent of flood prevention and mitigation quickly become overwhelming to a homeowner, particularly when prefaced by retrofitting design strategies. Providing information on government and non-government financial assistance (i.e. loans, grants, and insurance payments) can help reduce feelings of being overwhelmed. For instance, under FEMA's National Flood Insurance Program, a policy holder may qualify for Increased Cost of Compliance (ICC) coverage, which may help to pay for some types of retrofitting. In addition, the Hazard Mitigation Assistance grant programs are designed to provide financial assistance for retrofit projects.
- A detailed section about building with flood damage resistant materials.

<u>Build with Flood Damage Resistant Materials</u>

If a property is in a flood hazard area, damage caused by flood waters can be reduced, and cleanup made easier by using flood damage resistant building materials.

Building materials are considered flood resistant if they can withstand direct contact with flood waters for at least 72 hours without being significantly damaged. "Significant damage" means any damage that requires more than low cost, cosmetic repair (such as painting). As shown in the figure, flood damage resistant materials should be used for walls, floors, and other parts of a building that are below the base flood elevation (BFE). Both the Federal Emergency Management Agency (FEMA) and the U.S. Army Corps of Engineers (ACE) have published lists of these materials. Commonly available flood damage resistant materials include the following:

- Flooring Materials - concrete, concrete tile, and pre-cast concrete; latex or bituminous, ceramic, clay, terrazzo, vinyl, and rubber sheets and tiles; pressure-treated (PT) or decay resistant lumber, PT wood and cold-formed steel
- Wall and Ceiling Materials - brick, metal, concrete, concrete block, porcelain, slate, glass block, stone, and ceramic and clay tile cement board, cold-formed steel, and reinforced concrete, polyester epoxy paint, PT and decay resistant lumber
- Other - hollow metal doors, cabinets, foam or closed-cell insulation

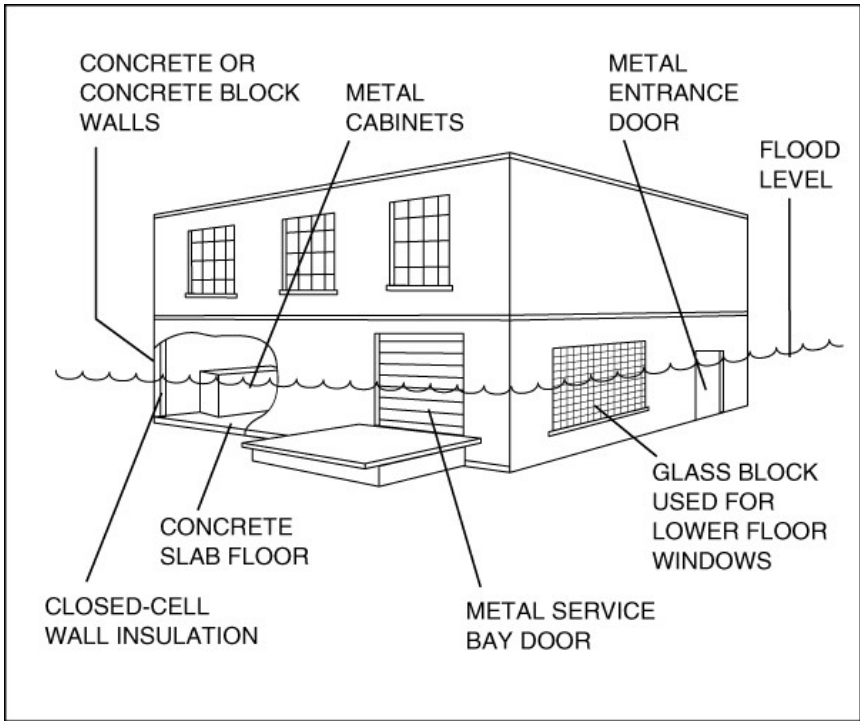


Figure 13: Example of commercial structure built with flood damage resistant materials

Source: FEMA Technical Bulletin 2, Flood Damage-Resistant Materials Requirements for Buildings Located in Special Flood Hazard Areas, August 2008

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Code Enforcement Officer
- Planning Board
- Town Board

Potential Resources

- The Hurricane Irene-Tropical Storm Lee Business Flood Recovery Grant Program
- New York State Rural Area Revitalization Projects
- New York Works Flood Mitigation and Flood Control Grants
- FEMA Public Assistance (PA) Grant Program
- FEMA Hazard Mitigation Grant Program
- Small Business Administration Disaster Assistance Loans for Homes & Personal Property
- Community Development Block Grant (CDBG) Disaster Recovery Assistance
- USDA Rural Development Rural Repair and Rehabilitation Loans and Grants
- Farm Service Agency Emergency Conservation Program
- New York State Office of Parks, Recreation & Historic Preservation, Historic Preservation Office
- New York State Historic Home Ownership Rehabilitation State Tax Credit

PP-3: Develop and Implement Flood-Proofing Technical Assistance Program

Project Description

To supplement the development of a *Homeowner's Resource Guide for Property Protection* (See PP-2), a technical assistance program should be developed that provides additional flood proofing education to residents, government leaders and business owners. A series of seminars, led by representatives from FEMA, the US Corp of Army Engineers, and the local code enforcement office could be tailored to the community's needs. Topics could include:

- Benefits of Flood Proofing
- Home Elevation
- Dry Flood Proofing vs. Wet-Flood Proof
- Building with Flood Damage Resistant Materials

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Code Enforcement Officer
- Planning Board
- Town Board

Potential Resources

- FEMA Public Assistance (PA) Grant Program
- FEMA Hazard Mitigation Grant Program
- Small Business Administration Disaster Assistance Loans for Homes & Personal Property
- Community Development Block Grant (CDBG) Disaster Recovery Assistance
- USDA Rural Development Rural Repair and Rehabilitation Loans and Grants
- Farm Service Agency Emergency Conservation Program
- NYS Office of Emergency Management

PP-4: Establish a Low-Interest Loan Program to Assist Residents with the Expenses Associated with Moving Water Heater/Furnace to Upper Levels of their Homes

Project Description

A primary goal of any flood plain management strategy is the reduction of economic loss and threats to public health and safety from flooding. The primary purpose of this strategy to move water heaters and furnaces to upper levels of homes is to reduce property losses and to provide for early return to normalcy after floods have receded. Disaster assistance may be provided by federal, state, or local governments and certain nonprofit organizations to repair, replace, or restore facilities damaged or destroyed by a disaster. In today's political climate, federal assistance is usually available to assist state and local governments in the recovery effort.

Working collaboratively with local, county, state and federal government agencies, and perhaps a local bank, Nichols may be able to establish a low-interest loan program for residents to proactively move their furnaces and water heaters out of lower levels that are frequently flooded. Before such a program is fully developed, the Town should take an informal poll to determine the level of community interest.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Code Enforcement Officer

Potential Resources

- Empire State Development
- Community Development Block Grants
- U.S. Department of Commerce, Economic Development Administration
- U.S. Department of Agriculture Rural Development
- U.S. Small Business Administration, Disaster Loans Program

Emergency Services Measures (ESM)

Background

Emergency Services Measures describe those actions taken by Town officials and first responders during a flood event. For the purpose of this study, the Steering Committee also included after action review items that will hopefully improve emergency response during any future storms.

Goal

Comprehensively prepare the Town of Nichols community for disasters.

Emergency Services Measures Recovery Projects

To accomplish this goal, the Steering Committee identified the following ESM recovery projects for the Town of Nichols:

- ESM-1: Continue the Emergency Preparedness Committee.
- ESM-2: Develop a Consolidated Emergency Plan for the Town of Nichols.
- ESM-3: Establish a Multi-Tiered Emergency Alert System.
    - ◊ *ESM-3A*: Purchase and install a Siren/Alert System.
    - ◊ *ESM-3B*: Increase enrollment in the Hyper-Reach program.
    - ◊ *ESM-3C*: Implement a Pony Express program.
    - ◊ *ESM-3D*: Implement a Stream Gauge Monitoring Program.
- ESM-4: Purchase a generator for satellite Emergency Operations Center (EOC) at the Nichols Elementary School.

ESM-1: Continue Emergency Preparedness Committee

Project Description

During the public outreach sessions, participants told the Project Team that community residents must plan on being on their own for the first twenty-four hours of an extreme weather event. They recognize that during a flood event, the Federal Emergency Management Agency (FEMA) is not a first responder. To that end, in October of 2012 when Hurricane Sandy started to make its way up the East Coast, a group of 6-10 volunteers in the community formed an Emergency Preparedness Committee. Representatives from the Town, Village, Tioga Downs, the School System, the Community Care Network of Nichols (CCNN), the Fire Department and residents banded together and conducted a "functional exercise" to prepare for the storm. The Committee worked round the clock for 5 days, and by the time Super Storm Sandy reached the Southern Tier, the Town of Nichols was ready.

It is recommended that the Emergency Preparedness Committee be maintained, and that funding be secured for the purchase of disaster supplies including, but not limited to: bottled water, non-perishable food, manual can openers, plates, cups, utensils, paper towels, flashlights and extra batteries, first aid kits, battery-powered or hand crank radio and a NOAA Weather Radio, blankets, pillows and cots.

These supplies are not meant to replace those provided by organizations like the American Red Cross, but to provide immediate assistance to residents during the first 24-48 hours following a storm event.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Town Board
- Town Clerk's Office

Potential Resources

- New York State Office of Emergency Management
- Farm Service Agency Emergency Conservation Program

ESM-2: Develop a Consolidated Emergency Plan for the Town of Nichols

Project Description

This recovery project seeks to develop a Consolidated Emergency Plan for the Town of Nichols. The Town currently participates in a number of formal and informal emergency management and hazard mitigation plans, including:

- The Tioga County Multi Jurisdictional Hazard Mitigation Plan
- The Tioga County Comprehensive Emergency Operations Plan
- Town of Nichols Emergency Response Plan (ERP)

Section 9.11 of the Tioga County Hazard Mitigation Plan presents the jurisdictional annex for the Town of Nichols. The plan provides an overview of the community, the history of natural hazards and a prioritized list of proposed hazard mitigation initiatives.

The Town's Emergency Response Plan is prepared by first responders and outlines what the community should do in the event of an emergency.

To ensure an integrated emergency management process, the Steering Committee proposes the following action steps be taken to develop a Consolidated Emergency Plan for the Town of Nichols.

Action Steps

1. Work with Tioga County to review and assess the Town's Emergency Response Plan (ERP) and County's Hazard Mitigation Plan for the Town of Nichols annex.
2. Identify the existing gaps between the two plans.
3. Consolidate into one comprehensive plan for the Town.
4. Coordinate actions amongst all parties to implement (Town, Tioga County, Tioga Downs, Tioga Central School District, CCNN, residents, TCEMO, and Fire Department).
5. Periodically test and redefine corrective actions.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Tioga County Emergency Management Organization (TCEMO)
- Nichols Fire Department
- Community Care Network of Nichols
- Village of Nichols
- Tioga Central School District
- Tioga Downs

Potential Resources

- Red Cross and Salvation Army
- NYS Office of Emergency Management

ESM-3: Establish a Multi-Tiered Emergency Alert System

Project Description

Despite the fact that the arrival of Tropical Storm Lee was well publicized on the national and local news, many of the Town's residents indicated during the LTCRS public participation process that they were away from a television, radio or computer and were caught by surprise, that residents had a hard time understanding emergency communications, or that they heard the emergency siren, but were unsure of where to go or what to do next.

Development of a multi-tiered emergency alert system would ensure that all residents and critical facilities personnel are aware of threats regardless of where they are or what they are doing. The system would include:

- *ESM-3A: Purchase and installation of Emergency Weather Alert System*
- *ESM-3B: Increased enrollment in the County's Hyper-reach program*

- *ESM-3C: Implementation of a Pony Express program*
- *ESM-3D: Implementation of a Stream Gauge Monitoring Program*

ESM-3A: Siren /Alarm System

Project Description

The Nichols Steering Committee identified the need for a new siren/alarm system as a high priority for the community. The Town should partner with TCEMO to purchase and install a new siren at the Fire Station that is audible throughout the Town and Village. It is recommended that the Town also develop and distribute an information packet designed to educate residents about the new alarm system, including what to do in the event of an emergency.

Project Champion

- Town Board

Potential Partners

- Emergency Preparedness Committee
- Village of Nichols
- Fire Department

Potential Resources

- Mildred Faulkner Truman (MFT) Foundation
- NY Rising Community Reconstruction (NYRCR) Program

ESM-3B: Hyper-Reach Enrollment

Project Description

Encourage 100% enrollment in Tioga County's computer-based emergency notification system known as Hyper-reach. Hyper-reach, a free service similar to a reverse 911 call, is a tool that public safety officials can use to send a recorded message to community residents in the event of an emergency situation. The system automatically contacts all land-line phone numbers which are listed in the phone company 911 databases. Residents can also sign up to receive alerts on their cell phone and/or e-mail address.

Project Champion

- Tioga County Emergency Management Organization (TCEMO)

Potential Partners

- Emergency Preparedness Committee

Potential Resources

- NYS Office of Emergency Management
- Municipal budgets

ESM-3C: Pony Express

Project Description

Emergency warning to community members and giving ample time for families and individuals to respond effectively to threats, is an ongoing concern. Warnings, particularly for vulnerable populations (elderly, disabled, those requiring oxygen) are a prime concern.

During the public participation process, a need was identified for the development of a more systematic approach to warning notifications. The Steering Committee proposed establishing a Pony Express program as an "informal" method to improve overall communication during emergency events. This program would utilize community volunteers to augment the emergency services provided by the Town's first responders. The Town would be divided into different sectors. Each sector neighborhood would identify a Pony Express Leader who would be responsible for:

- Collecting contact information from residents in their sector;
- Educating and asking residents to register for Tioga County emergency notification updates;
- Asking residents to self-identify as a vulnerable population or a medical professional; and,
- Going door-to-door notifying neighbors of a hazardous event, as well as serving the organization for emergency preparedness education.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Community Care Network of Nichols

Potential Resources

- NYS Office of Emergency Management
- Municipal budgets

ESM-3D: Implement a Stream Gauge Monitoring Program

Project Description

The Nichols LTCRS Steering Committee recommends that an early warning system based on the Corning Mode be implemented in the Town. Monitoring of the system is volunteer-based. The system includes rain gauges and river gauges and is tied into the federal warning system. The potential exists to house a similar system in the Town of Nichols in the new Army Reserve Training Center once it is completed. A temporary home for the system could be at Tioga Downs.

A stream/river monitoring program could be incorporated into the curriculum for high school students enrolled in the AP science programs at local schools within Tioga County. The Upper Susquehanna Watershed Project currently provides high school students from Cooperstown to Afton, NY with hands-on experience monitoring environmental conditions on the Upper Susquehanna.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Tioga Central School District
- Village of Sidney and City of Corning, NY
- Tioga Downs

Potential Resources

- NYS Department of Environmental Conservation (DEC)
- NY Rising Community Reconstruction (NYRCR) Program

ESM-4: Purchase Generator for Satellite EOC at the Nichols Elementary School

Project Description

During Tropical Storm Lee, and in the days immediately following, many residents and stranded motorists found shelter in the Emergency Operations Center (EOC) established at the Nichols Elementary School. The storm knocked out power to the EOC. A local elected official provided a small 5,500 watt generator that was used to power several lights in the hallway. The Steering Committee stated that the Town needs to purchase and install a generator in order to be prepared for the possibility of future flood events.

Project Champions

- Emergency Preparedness Committee
- Town Board

Potential Partners

- Tioga County Emergency Management Organization (TCEMO)
- Nichols Fire Department
- Community Care Network of Nichols (CCNN)
- Village of Nichols
- Tioga Central School District

Potential Resources

- NYS Office of Emergency Management
- NY Rising Community Reconstruction (NYRCR) Program
- Appalachia Regional Commission
- FEMA, Hazard Mitigation Assistance
- USDA, Rural Community Development Initiative

Public Information (PI)

Background

Research has shown that an important step to minimizing flood damage and loss is the implementation of public education activities that are initiated at the local level.

Goal

The goal of the Public Information recovery projects in the Town of Nichols is to increase awareness among residents regarding home preparedness and emergency notifications.

Public Information Recovery Projects

To accomplish this goal, the Nichols LTCRS identified the following three public information recovery projects:

- PI-1: Develop and distribute a flood safety awareness brochure.
- PI-2: Develop a Comprehensive Information System to raise public awareness of flood hazards.
- PI-3: Purchase and install solar-powered electronic sign board outside of the fire station for emergency notification purposes.

PI-1: Develop and distribute a Flood Safety Awareness Brochure

Project Description

When new homeowners, renters and businesses move to the Town of Nichols, they should be provided with a welcome packet that includes a *Flood Safety Awareness* brochure. The brochure should inform residents of the location of flood zones within the Town and outline steps they can take to protect their property and reduce potential losses during a flood event.

The brochure could include information regarding:

- The National Flood Insurance Program (NFIP)
- A Nichols flood zone map
- Flood hazard information including important phone numbers (Fire Department, Police Department, Emergency Operation Center, Red Cross, utilities, etc.)
- Information about the Town's Flood Warning System (what does it sound like, what should they do when they hear it)
- Flood safety and preparedness tips
- Evacuation and emergency shelter information
- Steps to follow after the flood (contact insurance agent, take photos of water and damaged property, keep receipts)

The brochure should also provide the phone number of the Town Clerk for those residents who wish to self-identify as a person needing special assistance during a flooding or other emergency events. Seniors and other vulnerable population members (those requiring electricity to operate oxygen tanks, etc.) should be encouraged to register with the Town Clerk to ensure that first responders are aware of their need for additional assistance.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Town and Village Board

Potential Resources

- Municipal budget
- AmeriCorps State and National Grant Competition
- National Endowment for the Arts, NEA Our Town Application

PI-2: Develop a Comprehensive Information System to Raise Public Awareness of Flood Hazards

Project Description

One of the best ways to mitigate flood damage and loss is to be prepared. The development of a comprehensive information system would focus on educating the public about the hazards associated with extreme weather events and flooding, as well as provide the public access to resources designed to reduce their own exposure to flood damage and property loss.

The Town can be proactive and implement a series of community outreach projects designed to increase awareness among residents, businesses, and property owners about what to do during flood events and how to protect themselves and their property. These outreach projects will inform the community regarding what the Town is doing to protect residents and property. The program should build awareness among Town residents regarding what to do during a flood emergency, the benefits of flood insurance, and loss-reduction measures.

Outreach projects could include:

- Upgrade the County website to include a flood prevention page for Nichols that includes local information, flood map, flood insurance information, property protection measures, and/or educational materials.
- Provide emergency information (evacuation procedures, emergency contacts, flood map) on a weather-resistant door hanger.
- Hold work sessions at churches, the senior center, and schools to enroll residents in the Hyper-Reach program.
- Include informational message from Town Board in year-end State of the Town report.
- Hold community seminars at the library, churches, senior center and schools to educate residents about what to do before, during and after a flood, and assist them in signing up to receive emergency alerts.
- Coordinate with NYSEG to educate residents what to do during a flood event.
- Establish a media campaign - consider TV, radio, backpack brigade, articles and ads in Penny Saver.

Project Champion

- Emergency Preparedness Committee

Potential Partners

- Town and Village Board

Potential Resources

- NYS Office of Emergency Management
- Economic Development Administration, Disaster Relief Opportunity
- NYS Department of State, Local Waterfront Revitalization Program

PI-3: Purchase and Install Solar-Powered Electronic Sign Board for Emergency Notification

Project Description

The public participation process yielded the fact that the Town of Nichols could significantly benefit from a solar powered, permanent mount LED display. The message board should be located outside of the fire department and used to share important safety messages with community residents. It is important that the message board be solar powered because in the event that power is lost communitywide, the sign can still be used to communicate messages with the public. Further, having the ability to remotely change the message allows for officials to make changes immediately from wherever they may be, making for "real-time" communication.

Project Champion

- Town and Village Board

Potential Partners

- Town Fire Department

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Office of Emergency Management
- Economic Development Administration, Disaster Relief Opportunity

Structural Projects (SP)

Background

Structural projects keep flood waters away from an area or help efficiently move water while minimizing negative impacts on the surrounding lands. Structural projects are typically 'engineered' projects designed and undertaken by civil engineers, hydrologic engineers, and structural engineers. Typically, engineers involved in this field specialize in water resource engineering services including dams, floodplain management and stormwater management.

While it is possible to mitigate and prevent impacts from future flood events using non-engineered (i.e., soft engineering) solutions (such as natural stream bank restoration or creating mitigation areas throughout the watershed), it is sometimes necessary to develop and install an 'engineered solution' (such as constructing berms or flood walls, or correctly sizing and replacing culverts). This LTCRS combines both the 'soft engineering' solutions to mitigation and prevention as well as the 'hard engineering' solutions focusing on berms, culverts, and stormwater system improvements. The following recommendations relate to potential engineered solutions to prevent and mitigate impacts from future flooding.

Goal

To protect key areas and critical facilities in the Town of Nichols.

Structural Projects Recovery Projects

To accomplish this goal, the Nichols LTCRS Steering Committee indentified the following Structural Projects:

- SP-1: Relocate the Town Highway Barn
- SP-2: Partner with the Village of Nichols to evaluate the levee.
- SP-3: Bridge/culvert inspection and appraisal.
- SP-4: Prepare a Roadside Maintenance Plan.

SP-1: Relocate Town Highway Barn

Project Description

During Hurricane Irene and Tropical Storm Lee, the Town's Highway Barn flooded and various machinery was damaged. The Highway Barn is currently very dated; built in the floodplain many years ago. A new facility in another location outside of the floodplain would protect the Town's equipment and storage. Therefore, it is recommended that the Highway Barn be rebuilt outside of the floodplain, and modernized with green technologies focusing on energy efficiency. The first step in the process will involve an assessment of needs for a new facility. After understanding facility needs and requirements, the Town should then determine alternative sites for relocation before selecting a preferred location.

Project Champion

- Town Board

Potential Partners

- Town Highway Department

Potential Resources

- New York State Energy Resource and Development Authority (NYSERDA)
- NY Rising Community Reconstruction (NYRCR) Program
- USDA Rural Development

SP-2: Partner with the Village to Evaluate the Levee

Project Description

In 1972, the U.S. Army Corps of Engineers (ACOE) built the levee system in the Village of Nichols to protect people, homes and businesses. As a result of Hurricane Irene and Tropical Storm Lee water came to the top edge of the dike and came very close to spilling over. After these two storms the Town and Village asked the New York State Department of Environmental Conservation (NYSDEC) and FEMA about the adequacy and safety of the levee. As a result, FEMA suggested that the levee be recertified, though NYSDEC and ACOE have stated that the levee is adequate. If the flood waters run over the top of the levee the entire Village and a portion of the Town will be flooded, resulting in a high loss of homes and businesses.

It is recommended that the Town and Village work together with NYSDEC, ACOE, FEMA, Tioga County, and others to complete an engineering feasibility study of the levee system. The results of the study should indicate the type and level of improvements that will be necessary to bring the levee system into compliance with FEMA guidelines.

Levee system in Nichols

Project Champion

- Nichols Village Board

Potential Partners

- Nichols Town Board

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of Environmental Conservation (DEC)
- NYS Office of Emergency Management
- FEMA, Hazard Mitigation Assistance
- U.S. Army Corps of Engineers (ACOE)

SP-3: Bridge/Culvert Inspection and Appraisal

Project Description

Where culverts are located to allow vehicular crossing of streams, they can become pinch points for water during extreme rain events. They can become clogged with debris and reduce or obstruct a river or stream's ability to convey the high water to pass. This can cause a stream to top its banks, create a ponding condition above the stream banks, and flood the adjacent areas. This is especially true for double culverts (culverts that have a center pier).

As the Town (with its own funding or with federal or state dollars) replaces culverts, a hydrologic analysis should be undertaken to ensure that a culvert is sized correctly to handle the flow of water. If a new culvert is installed and is still undersized, then it remains a pinch point and continues to disrupt the natural flow of water.

When culverts are replaced, care should be given to their installation and design to ensure that they not only continue to work properly, but that they also preserve the natural characteristics of the stream. For example, culverts should be placed into the substrate of the channel or stream so that one third of the culvert can be filled with native channel substrate, and allowing the upper two thirds to pass the volume of water. This is important for many ecological and hydrological reasons. Using this technique tricks the stream into thinking there is no impediment in the stream. Communities must consider a cost-benefit analysis when thinking about increasing culvert size as this usually means an associated increase in cost.

One additional consideration should be evaluated with regard to the outflow of the culvert. When not installed property, culverts normally fail from down stream and work back upstream undercutting pipe. It is recommended that cutoff walls are installed at the entrance and exit (normally around 4 to 5 feet deep), depending on the soils be installed. Another option is to set the cutoff walls on riprap at the entrance and exit, ensuring that voids on either option be grouted. Another technique is to install an energy dissipater, similar to building a waterfall with a plunge pool. This slows the water down and helps with erosion. If an energy dissipater is used then native stone should be used where possible.

Project Champion

- Town Highway Department

Potential Partners

- Tioga County Soil and Water Conservation District

Potential Resources

- NYS Department of Environmental Conservation (DEC)
- NYS Office of Emergency Management
- FEMA, Hazard Mitigation Assistance

SP-4: Prepare a Roadside Maintenance Plan

Project Description

As roadside ditching takes place and care is not taken to re-seed or re-plant the ditch, it often causes erosion and stormwater runoff to negatively affect adjacent water bodies, depositing silt and sand.

The Town of Nichols should undertake a study to evaluate the effectiveness of various simple, low-cost, low-maintenance Best Management Practices (BMPs) designed to improve stormwater quality and/or flow control within existing roadside ditches. If effective, these BMPs could offer alternatives to traditional stormwater treatment practices, such as retention/ detention ponds and vaults.

The study should explore the use of ditch BMPs to promote storage, treatment and infiltration of stormwater within the existing ditch network. The BMPs should be designed to function within the constraints of road engineering and safety standards while incurring the lowest possible installation and maintenance costs. Ditch BMPs should be designed to provide stormwater treatment and/or flow control benefits for low to moderate intensity precipitation events, while maintaining ditch capacity and allowing conveyance of peak winter flows, to minimize the risk of localized flooding.

Source: King County Department of Transportation

Funding an effective stormwater management plan will be a difficult task. Many local governments have successfully turned to alternative funding strategies. Local governments have funded stormwater pollution measures through charging inspection and permit fees, collecting dedicated contributions from land developers, taxing new development at an increased rate, forming regional stormwater management districts, and creating stormwater utilities. Developing an effective funding mechanism should be considered an integral part of the study.

Project Champion

- Town Highway Department

Potential Partners

- Stormwater Conservation District
- Broome/Tioga Stormwater Coalition

Potential Resources

- NYS Department of Environmental Conservation (DEC)
- NY Rising Community Reconstruction (NYRCR) Program
- Environmental Protection Agency, Celan Water Action Section 319(h)
- NYS Environmental Facilities Corporation, Green Grants

Natural Resource Protection (NRP)

Background

Natural resource protection involves the management of natural resources such as water, soils, vegetation and animals. While growth and development are central themes of economic development, it is important to balances these goals with effective and efficient land use development patterns. When and where appropriate, technological advancements can be employed to help achieve this balance. The Natural Resource Protection recovery projects identified in this study include activities designed to restore natural areas or the natural function of floodplains, streams and watersheds within the Town of Nichols in an effort to reduce, or in some cases eliminate, the effects of heavy rain events. Activities include best practices, stormwater control, erosion and sediment control and public education.

Goal

Preserve and restore natural areas (floodplains, streams and wetlands).

Natural Resource Protection Recovery Projects

To accomplish this goal, the Nichols Steering Committee identified the following four Natural Resource Protection recovery projects:

- NRP-1: Complete Watershed Assessment and Geomorphological Analysis.
- NRP-2: Complete Flood and Hazard Mitigation Analysis.
- NRP-3: Consider Natural Resource Stabilization and Restoration Projects.
- NRP-4: Continue Public Education and Outreach.

NRP-1: Watershed Assessment and Geomorphological Analysis

Project Description

The first stage of understanding the health and behavior of streams and tributaries is to conduct a Geomorphological Assessment. Geomorphology is the scientific study of landforms and the processes that shape them. Geomorphologists seek to understand why landscapes look the way they do, to understand landform history and dynamics, and to predict changes through a combination of field observations, physical experiments and numerical modeling.

This recommendation is to complete a morphological and survey assessment of the Wappasening Creek. The process combines engineering survey information and with scientific data. The combined data set will be used to model how the streams will perform during certain rain events (i.e., 5, 10, 50, 100 and 500 year storms). This information will prove extremely useful in determining where and at what level of rain event (in inches) flooding will begin to occur. The Geomorphological Study should assess channel stability, sediment transport capabilities, the patterns and profiles of the streams, and other features that will be used to determine the overall condition of the streams.

The streams can then be classified using the Rosgen Classification System which will help predict how the Wappaseneing Creek will perform during high flow events. This information can be used as a baseline against future surveying and assessment. Completing this assessment will help guide the Town in various ways including concentrating emergency warning systems and identifying potential mitigation measures higher up in the watershed to help alleviate rushes of water near the outflow to the Susquehanna during storm events. (See NPR-2)

Project Champion

- Town Board

Potential Partners

- Tioga County Soil and Water Conservation District

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- Department of State Local Waterfront Revitalization Program (LWRP)
- NYS Department of Environmental Conservation(DEC)
- NYS Environmental Facilities Corporation, Green Grants

NRP-2: Flood and Hazard Mitigation Analysis

Project Description

This project may be combined with the Watershed Assessment and Geomorphological Analysis Project described in NRP-1.

Using the information gathered during the Watershed Assessment and Geomorphological Analysis, a consultant can complete an analysis and assessment of possible flood mitigation alternatives. These mitigation alternatives should be modeled to show how they will reduce the impact of the flood during different sized storms. As part of this project, a cost benefit analysis should be completed to understand the viability of the mitigation measures. As part of this analysis, a series of recommendations can be developed regarding appropriate uses that may be developed within the floodplain areas. These recommendations should be detailed about the 100 year flood plain, 500 year flood plain, as well as looking at development standards within 100 and 200 linear feet of a perennial stream, and 100 linear feet of an intermittent stream. This plan should set the standard of what the Village will expect with any new development and could be incorporated into the municipalities' by-laws or zoning.

Project Champion

- Town Board

Potential Partners

- Tioga County Soil and Water Conservation District
- Village of Nichols

Potential Resources

- NY Rising Community Reconstruction Zone (NYRCR) Program
- NY Department of State Local Waterfront Revitalization Program (LWRP)
- NY Department of Environmental Conservation (DEC)
- NYS Environmental Facilities Corporation, Green Grants

NRP-3: Natural Resource Stabilization and Restoration

Project Description

Based on the fluvial geomorphic assessment completed in NRP-1, a plan will be developed that will guide the Town in the restoration of natural resources. This project will take the information in the assessment, and provide restoration construction drawings that will be used to restore the rivers, streams and wetlands within the Town boundaries. The project will target the areas for immediate restoration, as well as the areas that are beginning to show signs of failure. The plans will promote natural channel design that ensures that resource areas are restored with scientific backing that promotes sediment transport, stable vegetated banks, ecological diversity, and connection to the floodplain. A matrix will be developed identifying the project, its level of priority, permits needed and estimated cost.

Project Champion

- Nichols Town Board

Potential Partners

- Tioga County Soil and Water Conservation District

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- Department of State Local Waterfront Revitalization Program (LWRP)
- NYS Department of Environmental Conservation (DEC)

NRP-4: Public Education and Outreach

Project Description

This strategy involved developing a local pilot program to educate and engage the local population about the rivers, streams and wetlands around the Town and in their own backyards. These programs will not only benefit the community as a whole, but also help get them organized and working with large watershed groups. Getting the grass roots advocacy going will help keep this process moving forward, engaging the entire community from the youngest to the oldest. Below is a list of events and programs that may be implemented to garner support, while providing a sense of ownership of the beautiful natural resources within the Town.

- River Days – Rafting Race/Paddle/ Fishing
- River Walks – Led by the local community experts
- Public School Class on River Gauges – Install river gauges in locations throughout the watershed to teach the children about river flow patterns
- Environ-thon
- Adopt a River Program – Possibly using corporate sponsors and volunteers to help the communities walk the banks removing rubbish
- Participate in the Tioga County Water Quality Coordinating Committee (TCWQCC) Tire Clean-Up Program

(Source: Living Lands & Waters)

Project Champion

- Nichols Town Board

Potential Partners

- Emergency Preparedness Committee
- Tioga County Soil and Water Conservation District
- Tioga Central School District
- Tioga County Water Quality Coordinating Committee
- NYS Envirothon

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of State, Division of Local Government Services

Community Revitalization & Economic Development Projects

The Community Revitalization and Economic Development (CRED) projects identified in this strategy are designed to improve quality of life issues for Town residents and enhance economic development activities including business attraction, retention and expansion, and tourism.

Goals

- Improve the quality of life for residents of the Town of Nichols after flood recovery.
- Create a diversified economy in the Town of Nichols, supported by tourism, light industry, and small business.

Community Revitalization & Economic Development Projects

- CRED-1: Create a healthy main street economy/sewer expansion project.
- CRED-2: Construction of a new Fire Station with enhanced rescue services.
- CRED-3: Establish community marketing and branding project.
- CRED-4: Seek to attract light industrial/commercial to NY 17/I-86 Exit 63 exchange.
- CRED-5 Complete boat landing beautification and river walk.

CRED-1: Create a Healthy Main Street Economy/Sewer Expansion Project

Project Description

One of the goals identified by the LTCRS Steering Committee is to create a diversified economy for the Town, supported in part by tourism and the growth of small businesses along Main Street. This recovery strategy recognizes that Nichols' Main Street is located within the Village, which serves as the Town's downtown.

For Nichols to grow a healthy Main Street economy, the businesses located downtown need to be served by municipal sewer. Currently, these buildings are served by individual septic systems. When these systems have failed in the past, they have resulted in the demolition of buildings and the loss of business.

The Town does have a sewer system in place that serves the Best Buy Distribution Center, located on Berry Road, and the Army Reserve Center.

In 2011, a Preliminary Engineering Report was prepared which evaluated three different options for providing sanitary sewer for the Village and surrounding area within the Town of Nichols. At that time, it was determined that the options presented were too costly to the taxpayer to undertake.

It is recommended that the Engineering Report be updated and new options be evaluated.

Project Champions

- Town and Village Boards

Potential Partners

- Downtown businesses
- Town and Village residents
- NYS Department of Transportation
- Tioga County Department of Public Works
- NYS Department of Environmental Conservation

Potential Resources

- USDA
- NYS Environmental Facilities Corporation
- New York State Department of State, Office of Communities and Waterfronts

CRED-2: New Fire Station including Rescue Services

Project Description

The Nichols Joint Fire District and Wappasening Hose Company Fire Station is located along West River Road in the Village of Nichols. The station was constructed in 2002. Hurricane Irene and Tropical Storms Lee demonstrated that the station is vulnerable to flooding, thereby putting the fire department's ability to respond to emergencies at risk. Further, the Town's communication's equipment is housed on the ground floor of the fire station. During a flood event, this equipment is the primary means for the Town and Village to stay in communication with the Tioga County Emergency Management Office (TCEMO). If flood waters reach the current structure, all communications with the County risk being lost during a natural disaster response.

This strategy proposes construction of a new flood-resistant fire station that would house emergency vehicles on the ground floor, and move essential communication equipment and offices to a second floor. In addition to upgrades to the fire station, this strategy proposes the purchase of a new response vehicle that has the capacity (hitch and trailer) to tow the Fire Company's rescue boat. To increase efficiency during flood events and other emergencies, the vehicle should also have capacity to carry passengers and emergency equipment.

Project Champion

- Nichols Fire District

Potential Partners

- Town and Village Boards
- Tioga County Rural Economic Area Partnership (REAP)

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- USDA Rural Development, Rural Housing Service Community Facilities Loans and Grants

CRED-3: Establish Community Marketing and Branding Project

Project Description

The Town of Nichols is a charming bedroom community that features waterfront access and quaint restaurants and bars. The Town is conveniently located off the Interstate, and shares an exit with the popular Tioga Downs Casino. To increase economic development opportunities in the Town, the Steering Committee seeks to increase public awareness of the resources available in the Town and Village of Nichols.

The Town, in partnership with the Village, should develop a marketing and tourism strategy to promote the natural, cultural and historic resources of the community, as well as the tourism related services available in the Village. Resources could include trails, scenic vistas, waterways, historic structures, local restaurants and shops.

These resources should be promoted in a marketing brochure that includes a brief description of each asset, along with a directional map. This brochure should be displayed in local businesses throughout the region to encourage lunch-time or weekend visitors, as well as at Tioga Downs and Thruway rest areas.

While Tioga Downs brings tourism dollars to the region, not all visitors are aware of the Casino's proximity to the Town of Nichols.

Nichols Gateway Signage

The natural beauty of the Town, coupled with the charm of local businesses, could provide a brief respite for Casino visitors looking for alternative activities.

In addition to the creation of a marketing brochure, it is recommended that the Town invest in gateway and directional signage. The Town could expand on their existing "Our Gates Are Always Open" brand to include street-light banners, window decals for businesses or vehicles, or painted on pots to house plantings for the main street area. More permanent marketing/branding installations should be accompanied by a maintenance schedule, to ensure that they remain appealing to Town residents and visitors.

Directional signage, featuring the Town brand and a list of available restaurants and services, should be installed at both NY 17/I-86 Exit 62 (Nichols/Tioga Downs) and Exit 63 (Lounsberry) to increase visitor awareness of the resources available in the Town and Village of Nichols.

Action Steps

- Form a Marketing and Tourism Committee comprised of local businesses, not-for-profits, and outdoor enthusiasts to inventory assets.
- Work with volunteers, or a marketing specialist, to design and produce marketing materials. Materials could include a tri-fold brochure highlighting waterfront access points, trails, and existing restaurants and businesses.
- Prepare design and construction documents for directional and gateway signage and enhancements. Consider partnering with higher education institutions or community residents for the structural design development, installation, and maintenance.
- Develop a planting/maintenance schedule for the Town gateway. Volunteers could be utilized under the guidance of a Master Gardner from Cornell Cooperative Extension.

Project Champion

- Town and Village Boards

Potential Partners

- Tioga Downs Casino
- Local Businesses
- Tioga County Economic Development and Planning
- Binghamton Metropolitan Transportation Study
- NYS Department of Transportation
- Tioga County Department of Public Works
- Army Reserve Training Center

Potential Resources

- New York State Division of Tourism
- Tioga County Chamber of Commerce
- U.S. Department of Commerce, Economic Development Administration
- Empire State Development
- SUNY ESF, College of Environmental Science and Forestry
- Cornell University Department of Landscape Architecture and Master Gardeners Program

CRED-4: Seek to Attract Light Industrial/Commercial to NY 17/I-86 Exit 63 Exchange

Project Description

To create a diversified economy in Nichols, the Town should continue to partner with the Tioga County Industrial Development Agency (TCIDA) and the Tioga County Department of Economic Development and Planning to attract light industrial companies to the area.

The TCIDA actively promotes, attracts, encourages and develops economically sound commerce and industry. They also maintain a revolving loan fund used for business start-ups and expansions. As borrowers repay the loans, the money is returned to the Revolving Loan Fund to make other loans.

The Tioga County Department of Economic Development and Planning maintains a list of available business sites in the county, and also offers small business assistance and workshops.

The Town currently owns property in Lounsberry, located near NY-17/I-86 Exchange (pictured) which is located out of the floodplain, is easily accessible by major transportation routes, and is serviced by municipal sewer and water.

It is recommended that the Town work with the TCIDA and Department of Economic Development and Planning to market sites to appropriate industries.

Project Champion

- Town Board

Potential Partners

- Tioga County Economic Development and Planning
- Tioga County Industrial Development Agency

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- Empire State Development Corporation
- U.S. Economic Development Administration
- Tioga County Chamber of Commerce

CRED-5: Boat Landing Beautification and River Walk

Project Description

The Town of Nichols currently has two NYS Department of Environmental Conservation (DEC) boat launch sites which provide access to the Susquehanna River. The first site is located on East River Drive, approximately one mile east of the Village. The site includes a concrete ramp suitable for float-on and float-off launching for most trailered boats. The parking area can accommodate twelve vehicles with trailers. The photos to the right depict the current conditions at the site.

The second DEC boat launch is located along West River Drive, approximately four miles west of the Village. This site also includes a concrete ramp and parking for eight vehicles with trailers.

This strategy proposes enhancements to the two existing boat launches, and development of a multi-purpose trail that would run along the shore of the Susquehanna River connecting Tioga Downs, the two DEC boat launches, and the restaurants and retail establishments located in the Town center.

Current Conditions at East River Drive Boat Launch

Boat landing beautification efforts should include removal of debris from the launch sites and surrounding areas, construction of docks for human-powered craft, installation of concrete or paved parking lots, and site enhancements including picnic tables and places to sit and view the River.

The second aspect of this recovery project would include the creation of a multi-purpose waterfront trail that will allow residents and visitors to experience the natural beauty of the Susquehanna River, and provide a safe connection between the Tioga Downs Casino and the Town Center. The majority of the proposed property line is in public domain, but some easements will be required.

If constructed as a single-path, straight-line connector between the four locations, the trail would be approximately 6.5 miles. The multi-use trail will be appropriate for pedestrians, dog-walkers, runners, and/or bicyclists. The trail would be designed with a uniform style of walking surface, lighting, and landscaping to establish a cohesive and easily recognizable public space. The design could also include a small picnic area adjacent to the trail, benches, and interpretive signage telling the story of the Susquehanna River and the fish, flora and fauna that inhabit the area. All improvements will recognize the occurrence of flooding in the area.

To build on the Town's Native American heritage, a Longhouse could be constructed that could house as an interpretive center, museum and café, which would serve to grow cultural and heritage tourism in Nichols.

Interpretive Waterfront Signage
Source: Eastonville News

Project Champions

- Town and Village Boards

Potential Partners

- NYS Department of Environmental Conservation (DEC)
- Binghamton Metropolitan Transportation Study
- Tioga Downs Casino

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- New York State Office of Parks, Recreation, and Historic Preservation
- New York State Department of State, Office of Communities and Waterfronts
- Rails to Trails Conservancy, Northeast Region
- National Park Service, Conservation Activities by Youth Service Organizations

Regional Recovery Projects

The majestic Susquehanna River is one of the longest rivers in the east coast. The river flows for 464 miles through three states, starting in Upstate New York (Cooperstown), and then proceeding west through the Southern Tier, across the rural heartland of southeastern Pennsylvania, and finally meeting its terminus in the Chesapeake Bay in Maryland. Since record keeping began nearly 200 years ago, flooding has been reported along the main stem of the Susquehanna River every 15 years, on average. This fact, coupled with the localized flash flooding that occurs annually on smaller tributaries, has led to the Susquehanna River Basin being identified as one of the most flood-prone watersheds in the country.

There are over 1,400 municipalities located within the tri-state Susquehanna River Basin. What one community does with respect to flood control directly impacts neighboring communities, as well as those communities located downriver. For the purpose of this study, the Region includes the flood impacted river communities located in Tioga County.

During the planning process, each of the Tioga County communities participating in the LTCRS program stated that when it came to flood mitigation and recovery, it was important to not only think of how these long term recovery strategies would impact their own community, but there needed to be a regional approach to flood control included as well.

The following section identifies the Regional Recovery Projects intended to benefit the flood-prone River communities located in Tioga County.

Goals

- Ensure long term sustainability of the flood recovery program.
- Ensure that flood-impacted communities have the necessary capacity to apply for/administer flood mitigation and community revitalization funds.

Regional Recovery Projects

The following section identifies six Regional Recovery Projects intended to benefit the flood-prone River communities located in Tioga County.

- RR-1: Maintain the LTCRS Executive Committee.
- RR-2: Establish a Regional Flood Recovery and Revitalization Office.
- RR-3: Conduct a regional study of the Susquehanna River Corridor.
- RR-4: Establish an environmentally sensitive maintenance of streams program for flood impacted river communities.
- RR-5: Create a shared engineer position.
- RR-6: Create a micro enterprise loan Program.

RR-1: Maintain LTCRS Executive Committee

Project Description

As part of the Long Term Community Recovery Strategy (LTCRS) planning process, an Executive Committee comprised of representatives from the Village of Owego, the Towns of Tioga and Nichols, the Tioga County Department of Planning and Economic Development, and the NYS Department of State was established.

This Regional Recovery strategy proposes keeping the existing Executive Committee intact to oversee implementation of the recovery strategies identified in the LTCRS. This Committee will work in close partnership with the newly created Tioga Communities Reconstruction Committee.

Project Champion

- LTCRS Executive Committee

Potential Partners

- Municipal Officials from the Towns of Tioga and Nichols and the Village of Owego
- Tioga County Planning and Economic Development
- Tioga County Legislature
- Tioga County Emergency Management Office (TCEMO)

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of State: Local Government Training Program
- NYS Department of Labor: NY Works—Neighborhood Rebuilding Corps
- US. HUD Community Development Block Grant (CDBG) Program
- Appalachian Regional Commission (ARC)

RR-2: Establish a Regional Flood Recovery and Revitalization Office

Project Description

At the project kick-off meeting, the LTCRS Executive Steering Committee identified the lack of staff/municipal capacity to obtain and administer flood-related grants as one of the highest concerns for the communities located in the Tioga County river region. The Town of Nichols does not have a Planner or Grant Writer on staff, and relies on technical assistance provided by the Tioga County Department of Economic Development and Planning and the Soil and Water Conservation Department.

This project seeks to establish a Flood Recovery and Revitalization Office with one or more shared program administrator positions within Tioga County. These positions will provide the municipal capacity needed to administer long term recovery programs for communities like the Town of Nichols, who would benefit from the increased community capacity that a Flood Recovery and Revitalization Office will provide. These program administrators should possess both technical and leadership skills, and will be responsible for:

- Working with the LTCRS Executive Committee and the NYRCR Committee to advance the Recovery Projects identified in this plan.
- Providing grant writing assistance to communities in Tioga County's River Region.

The office could be housed in Tioga County, Tioga Opportunities or the Upper Susquehanna Coalition.

Action Steps

- Apply for funding through available sources such as the NYS Consolidated Funding Application (CFA) process or NY Rising Community Reconstruction (NYRCR) Program
- Positions would be funded utilizing grant monies for years 1-3
- After year 3, funding for the positions would be financed by the flood impacted River communities

Project Champion

- Tioga County Legislature
- Tioga Opportunities, Inc.
- Upper Susquehanna Coalition

Potential Partners

- Tioga County Economic Development & Planning Agency
- Town and Village Boards
- LTCRS Executive Committee

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of State: Local Government Training Program
- NYS Department of Labor: NY Works—Neighborhood Rebuilding Corps
- NYS Division of Housing & Community Renewal
- US HUD Community Development Block Grant (CDBG) Program
- Appalachian Regional Commission (ARC)

RR-3: Conduct a Regional Study of the Susquehanna River Corridor

Project Description

This study will look at the regional flooding issues and existing ecology related to the Susquehanna River. It is important to understand how the river reacts during different flooding events based on the amount of rain, where in the watershed the rain is deposited, the intensity of the given storm. All this information will be modeled to show the areas that will be flooded during a given storm event. At a minimum this model should be studied as the river enters Tioga County, but incorporating more counties upstream will help to better understand what impacts the upper watershed is having on the river as it enters Tioga County. This model will highlight where there may be existing pinch points (i.e. undersized culverts and bridges, elevated roads that may be creating a dam situation, etc.) within the watershed that are not draining properly as well as help understand how long the it will take for floodwaters to rise.

Understanding the ecology of the river will help with determine overall water quality issues related to Susquehanna River. Looking at vegetation patterns, sediment transport (erosion issues), habitat types be used by the animals in the region, and other ecological features will provide the base line information needed to understand the dynamics of this living system. The information gathered will be used to support possible mitigation measures related to flooding and water quality.

This model will then be used to locate what possible mitigation measures should explored and modeled to reduce the flooding and ecological impacts during a given storm event. These mitigation measure include creating wetlands, reducing impervious cover, reconnecting streams with floodplains, green infrastructure practices promoting infiltration and storage, and minimizing encroachment on the tributaries.

Project Champions

- LTCRS Executive Committee
- Tioga Communities NYRCR Committee

Potential Partners

- Municipal Officials
- Tioga County Planning and Economic Development

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of State: Brownfield Opportunity Areas Program
- NYS Department of State: Local Waterfront Revitalization (LWRP) Program
- NYS Division of Housing & Community Renewal
- US HUD Community Development Block Grant (CDBG) Program
- Appalachia Regional Commission (ARC)
- US Army Corps of Engineers
- National Parks Service: Land & Water Conservation Fund

RR-4: Establish an Environmentally Sensitive Maintenance of Streams Program for Flood Impacted River Communities

Project Description

One of the universal issues identified during the public participation process was the flood related damage caused by debris (sediment, gravel, trees, and branches) "clogging" the streams and creeks in the County.

The Tioga County Soil & Water Conservation District (SWCD) supports the development of an environmentally sensitive maintenance of streams program. This would entail the District working with municipalities, including municipal officials and highway department staff, to ensure scientifically sound maintenance approaches are taken in streams that will not cause further degradation of the existing streambed and worsen conditions. The program would include the following elements:

- Training by SWCD of municipal highway department staff in environmentally sensitive maintenance of stream techniques.
- Municipal officials identifying locations of maintenance and working with SWCD to identify the best approach.
- SWCD obtaining permits for the work to be conducted.

This approach would include identification of stream debris jams (ie. log jams and gravel deposits) that will cause impact to infrastructure during future flooding events or those causing significant changes in stream dynamics. Other areas to be focused on would be the removal of gravel in order to open clogged channels and restore flow, channel realignment, and streambank stabilization to prevent future erosion. All of these sites will be evaluated by SWCD on a case-by-case basis.

Benefits of this program will include improved coordination and cooperation between municipal staff and the SWCD, as well as expediting the permitting process with regulating agencies as municipal departments show their growing knowledge of stream function and processes, while conducting environmentally sensitive maintenance on streams.

Project Champion

- Tioga County Soil and Water Conservation District

Potential Partners

- Town and Village Boards
- LTCRS Executive Committee
- Tioga County Department of Public Works

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of State: Brownfield Opportunity Areas (BOA) Program
- NYS Department of State: Local Waterfront Revitalization Program (LWRP)
- NYS Department of Environmental Conservation: Water Quality Improvement Project Program
- NYS Office of Emergency Management: Hazard Mitigation Planning Grants (HMGP)
- Federal Emergency Management Administration (FEMA)
- US Army Corps of Engineers
- Natural Resources Conservation Service, Wildlife Habitat Incentive Program

RR-5: Create a Shared Engineer Position

Project Description

The LTCRS Steering Committee 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 a still a need for an engineer or contract engineer to provide technical assistance to the flood impacted communities throughout the County.

This project seeks 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 per week.

The Tioga County shared Engineer would be responsible for:

- Conducting an inventory of existing infrastructure within specific communities, evaluating its effectiveness against current and future weather events, establishing requirements for infrastructure upgrades, and recommending upgrades to officials.
- Interfacing with state, regional, and federal agencies regarding required infrastructure upgrades pre- and post-weather events.
- Writing specifications and reviewing contractor proposals for infrastructure upgrades.
- Utilizing professional engineer (PE) stamp to review contractor shop drawings for infrastructure upgrades.
- As long-term community recovery projects are developed, analyzing any suggested infrastructure upgrades against potential weather events of the future.
- Examine county and regional engineering issues and trends; research and interpret laws, regulations, and general information; identify policy, procedural, and compliance issues, and recommend solutions.
- Should the County Soil & Water Conservation District require assistance, review land development proposals, and recommend infrastructure, and water and wastewater system requirements.
- Assure that activities are in compliance with all laws, policies, regulations, timelines and goals.

Action Steps

- Develop a specific job description for the shared engineer position.
- Determine the role of the engineer in terms of current and proposed recovery projects.
- Outline a work program and the expected percentage of time to be spent on each major project.
- Seek outside funding to support the position for a determined initial period.
- Once the necessary funding has been obtained, seek and hire part-time shared engineer.

Project Champion

- Tioga County Soil and Water Conservation District

Potential Partners

- Tioga County Department of Public Works
- Town and Village Boards

Potential Resources

- NY Rising Community Reconstruction (NYRCR) Program
- NYS Department of State: Local Government Services Program
- U.S. Department of Commerce Economic Development Administration (EDA)
- U.S. Department of Agriculture (USDA) Rural Development
- U.S. Department of Housing and Urban Development Community Development Block Grant (CDBG) program

RR-6: Create a Micro Enterprise Loan Program

Project Description

In addition to damage to many homes and neighborhoods throughout Tioga County there was flood damage to private businesses. Whether in downtown Owego or in the Town of Nichols, many different types of businesses were affected. During recovery there were programs established to restore homes and/or buy-out homes using FEMA dollars as well as other funding sources such as the HMPG program. However, there is not a similar source of funding available to private businesses to rebuild. This recommendation seeks to establish a micro enterprise loan program to provide assistance to private businesses in the flood affected areas.

Working with NYS Empire State Development, a Micro Enterprise loan program could be established. The proposed Micro-Enterprise Loan Program would be available to assist small businesses and start-up companies in Tioga County to repair property damage including buildings and grounds that were severely affected by Hurricane Irene and Tropical Storm Lee. If the original loan pool is capitalized by New York State Small Cities Community Development Program, which is a typical approach, funding would be available to businesses that create new job opportunities for low and moderate income persons. Potentially administered by Tioga county Department of Planning and Economic Development or the Southern Tier East Regional Planning and Development Board, the program could be designed to provide low interest loans and gap financing for small business start-ups with five or less employees. The loan administrator could work closely with the Binghamton University Small Business Development Center (SBDC), to help prospective applicants complete business plans and provide technical assistance that is needed to help small business.

Project Champion

- LTCRS Executive Committee

Potential Partners

- Flood Recovery and Revitalization Office (new staff person)
- Southern Tier East Regional Planning and Development Board
- Binghamton University SBDC

Potential Resources

- NYS Empire State Development: Minority & Women-Owned Business Development & Lending Program
- NYS Empire State Development: Small Business Revolving Loan Fund
- NYS Small Cities Community Development Program
- NY Rising Community Reconstruction Program
- US HUD Community Development Block Grant (CDBG) Program
- Appalachian Regional Commission (ARC)
- US Department of Agriculture: Community Facilities Direct & Guaranteed Loan & Grant Program
- US Department of Agriculture, Rural Business-Cooperative Service: Rural Micro Entrepreneur Assistance Program
- Home Depot Foundation
- Lowe's Charitable & Educational Foundation
- CITI Foundation

Implementation

The implementation plan outlined in the following table has been developed to support Nichols' Long Term Community Recovery Strategy. The table organizes strategies by topic area. Each topic area is identified by the bold fill within the cells. Below the topic area heading are the strategies identified to advance each topic area, which are identified in the left hand column.

A Project Champion has been assigned to each action and potential partners and funding sources have also been identified.

Finally, the plan sets a level of priority for each strategy. These priorities include immediate, short-term, medium-term, long-term and ongoing.

This implementation plan will be amended and updated as new actions are introduced and as strategies are implemented.

At the most basic level, this LTCRS identifies critical steps that are needed to enhance the quality of life and improve the economic opportunities in the Town. The specific recommendations are provided as a guide to those who participate in the effort to implement the goals of the community. Achieving these goals will require the efforts of local government, federal and state funding, and the participation of volunteers throughout the community. No one single person or group will be able to achieve the goals independently. It will command the determination, strengths and diversity of many offices, agencies and volunteers working towards a common vision. This section of the LTCRS proposes an implementation strategy to coordinate these efforts incrementally for long-term success in Nichols and the region.

	Recommendation	Project Champion	Potential Partners/Funding	Immediate*	Medium-Term	Long-Term	Ongoing
Prevention Activities (PA)							
PA-1	Customize Flood Damage Prevention Local Law	Town Board	Code Enforcement Officer, NYS Department of Environmental Conservation	H			
PA-2	Update and Adopt Comprehensive Plan	Town Board	Planning Board, Tioga County Department of Planning & Economic Development	H			
PA-3	Develop and Adopt a Site Plan Review Ordinance that Connects with the Floodplain Damage Prevention Local Law	Town Board	Code Enforcement Officer, Planning Board, Zoning Board of Appeals, Tioga County Planning Board, NY Rising Community Reconstruction (NYRC) Program		H		
PA-4	Reconcile the Town's Agriculture and Farmland Protection Plan with the Zoning Ordinance	Town Board	Code Enforcement Officer, Planning Board, Zoning Board of Appeals, Tioga County Planning Board, Agricultural Advisory Committee (to be developed)		M		
Property Protection (PP)							
PP-1	Continue Participating in the NYS Hazard Mitigation Grant Programs (HMGP)	Town Board	NYS HMGP, Tioga County Hazard Mitigation Planning Committee, NYS Office of Emergency Management, Nichols Emergency Management Preparation Committee				M
PP-2	Develop and Distribute a Homeowner's Resource Guide for Property Protection	Emergency Preparedness Committee	Code Enforcement Officer, Planning Board, Town Board				M
PP-3	Develop and Implement a Flood Proofing Technical Assistance Program	Emergency Preparedness Committee	Code Enforcement Officer, Planning Board, Town Board				M
PP-4	Establish a Low-Interest Loan Program to Assist Residents with the Expenses Associated with Moving Water Heater/Furnace to Upper Levels of Home	Emergency Preparedness Committee	Code Enforcement Office		M		

	Recommendation	Project Champion	Potential Partners/Funding	Immediate*	Medium-Term	Long-Term	Ongoing
Emergency Services Measures (ESM)							
ESM-1	Continue Emergency Preparedness Committee	Emergency Preparedness Committee	Town Board, Clerk's Office				H
ESM-2	Develop a Consolidated Emergency Plan	Emergency Preparedness Committee	Red Cross, Salvation Army, Tioga County Emergency Management Office, Nichols Fire Department, Town, Village, Community Care Network of Nichols, Tioga Central School District, Tioga Downs				H
ESM-3	Establish a Multi-Tiered Emergency Alert System	Town Board	Emergency Preparedness Committee, Village of Nichols, Fire Department	H			
ESM-3A	*Purchase and Install a Siren/Alarm System*	Town Board	Emergency Preparedness Committee, Village of Nichols, Fire Department	H			
ESM-3B	*Increase Hyper-Reach Enrollment*	Tioga County Emergency Management Organization (TCEMO)	Emergency Preparedness Committee				M
ESM-3C	*Implement a Pony Express Program*	Emergency Preparedness Committee	Community Care Network of Nichols				M
ESM-3D	*Implement a Stream Gauge Monitoring Program*	Emergency Preparedness Committee	Tioga Central School District, Village of Sidney, City of Corning, Tioga Downs				M
ESM-4	Purchase Generator for Satellite EOC at the Nichols Elementary School	Town Board, Emergency Preparedness Committee	Village, Tioga Central School District, Community Care Network of Nichols	H			
Public Information (PI)							
PI-1	Create a Flood Safety Awareness Brochure	Emergency Preparedness Committee	Town and Village Boards		M		
PI-2	Develop a Comprehensive Information System to Raise Public Awareness of Flood Hazards	Emergency Preparedness Committee	Town and Village Boards				M
PI-3	Shared Town/Village Solar-Powered Electronic Sign Board	Town/Village	Fire Department		M		

	Recommendation	Project Champion	Potential Partners/Funding	Immediate*	Medium-Term	Long-Term	Ongoing
Structural Projects (SP)							
SP-1	Relocate Town Highway Barn	Town Board	Highway Department, NYSERDA, USDA Rural Development		H		
SP-2	Partner with the Village to Evaluate the Levee	Village Board	Town Board		M		
SP-3	Bridge/Culvert Inspection and Appraisal	Town Highway Department	Soil and Water Conservation District				M
SP-4	Prepare a Roadside Maintenance Plan	Town Highway Department	Soil and Water Conservation District, Broome/Tioga Stormwater Coalition				M
Natural Resource Protection (NRP)							
NRP-1	Watershed Assessment and Geomorphological Analysis	Town Board	NY Rising Community Reconstruction Committee, Department of State Local Waterfront Revitalization Program, Storm Water Conservation District, Department of Environmental Conservation		H		
NRP-2	Flood and Hazard Mitigation Analysis	Town Board	NY Rising Community Reconstruction Committee, Department of State Local Waterfront Revitalization Program, Storm Water Conservation District, Department of Environmental Conservation		M		
NRP-3	Natural Resource Stabilization and Restoration	Town Board	NY Rising Community Reconstruction Committee, Department of State Local Waterfront Revitalization Program, Soil and Water Conservation District, Department of Environmental Conservation			H	
NRP-4	Public Education and Outreach	Town Board	Emergency Preparedness Committee, NY Rising Community Reconstruction Committee, Soil and Water Conservation District, Tioga Central School District, Water Conservation Coordinating Committee				M

	Recommendation	Project Champion	Potential Partners/Funding	Immediate*	Medium-Term	Long-Term	Ongoing
Community Revitalization & Economic Development (CRED)							
CRED-1	Boat Landing Beautification and River Walk	Town and Village Boards	NYS Department of Environmental Conservation, Binghamton Metropolitan Transportation Study, Tioga Downs Casino			M	
CRED-2	Establish Community Marketing and Branding Project	Town and Village Boards	Tioga Downs Casino, Local Businesses, Tioga County Economic Development and Planning, Binghamton Metropolitan Transportation Study, NYS Department of Transportation, Tioga County Department of Public Works, Army Reserve Training Center		M		
CRED-3	Create a Healthy Main Street Economy	Town and Village Boards	Downtown businesses, Town and Village residents, NYS Department of Transportation, Tioga County Department of Public Works, NYS Department of Environmental Conservation		H		
CRED-4	Seek to Attract Light Industrial/Commercial to NY 17/I-86 Exit 63 Exchange	Town Board	Tioga County Economic Development and Planning, Tioga County Industrial Development Agency		M		
CRED-5	New Fire Station including Rescue Services	Nichols Fire Department	Town and Village Boards, Tioga County Rural Economic Area Partnership (REAP)		H		
Regional Recovery Projects							
RR-1	Maintain LTCRS Executive Committee	LTCRS Executive Committee	Municipal officials from the towns of Tioga and Nichols, and Village of Owego, Tioga County Planning and Economic Development, Tioga County Legislature, Tioga County Emergency Management	H			
RR-2	Establish a Regional Flood Recovery and Revitalization Office	Tioga County Legislature, Tioga Opportunities, Inc., Upper Susquehanna Coalition	Tioga County Economic Development & Planning Agency, Town and Village Boards, LTCRS Executive Committee	H			
RR-3	Conduct a Regional Study of the Susquehanna River Corridor	LTCRS Executive Committee, Tioga Communities Reconstruction Committee	Municipal officials, Tioga County Planning and Economic Development	H			

	Recommendation	Project Champion	Potential Partners/Funding	Immediate*	Medium-Term	Long-Term	Ongoing
RR-4	Establish an Environmentally Sensitive Maintenance of Streams Program for Flood Impacted River Communities	Tioga County Soil and Water Conservation District	Town and Village Boards, LTCRS Executive Committee, Tioga County Department of Public Works	H			
RR-5	Create a Shared Engineer Position	Tioga County Soil and Water Conservation District	Tioga County Department of Public Works, Town and Village Boards	H			
RR-6	Create a Micro Enterprise Loan Program	LTCRS Executive Committee	Flood Recovery and Revitalization Office, Southern Tier East Regional Planning and Development Board, Binghamton University SBDC		H		