
New York Rising Community Reconstruction Plan Conceptual Plan

Ulster County NY Rising Community

Villages of Ellenville, New Paltz and Saugerties

Towns of: Rochester, Rosendale, Wawarsing, New Paltz Olive & Woodstock



October 2013

This document was developed by the Ulster County New York Rising Community Group Planning Committee as part of the NY Rising Community Reconstruction (NYRCR) program within the Governor's Office of Storm Recovery. The NYRCR Program is supported by NYS Homes and Community Renewal, NYS Department of State, and NYS Department of Transportation.

Assistance was provided by the following consulting firms: AKRF, Inc.; CDM Smith, Inc.; Arch Street Communications, Inc.; and Nagle, Tatich, Cranston LLC d/b/a Elan.3.Consulting (E.3)



FOREWORD

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

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

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

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

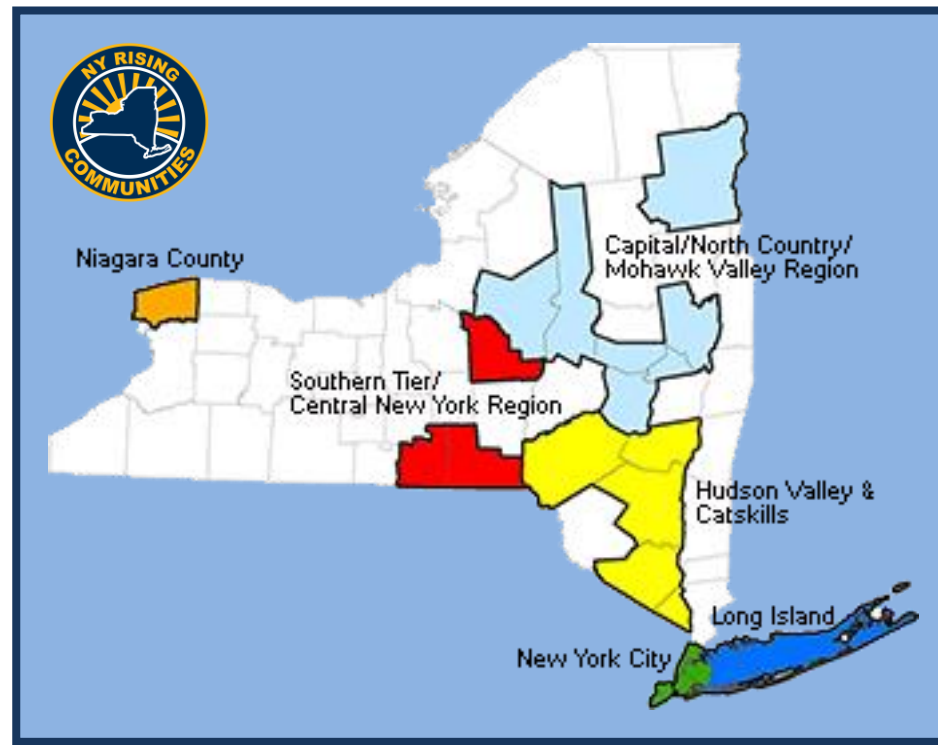
In the months ahead, communities will develop ways to implement additional strategies for economic revitalization, human services, housing, infrastructure, natural and cultural resources, and the community's capacity to implement changes.

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

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

October 31, 2013

New York Rising Communities



Find out more at:

StormRecovery.ny.gov/Community-Reconstruction-Program



Table of Contents

1.0	Overview.....	1
1.1	Purpose	1
1.2	Geographic Scope of Plan	2
1.3	Community Overview	4
1.4	Community Vision	5
1.5	Summary of Storm Impacts	6
1.6	Summary of Relevant Existing Plans and Studies	7
2.0	Identification of Assets.....	10
2.1	Description of Community Assets.....	10
3.0	Identification and Understanding of Risk	11
3.1	Assessment of Risk to Assets	11
4.0	Identification of Needs and Opportunities.....	13
5.0	Potential Projects, Strategies and Management Measures	
	Identified by the Planning Committee.....	14
5.1	Projects	14
5.2	Strategies and General Management Measures Overview	14
5.1.1	Preliminary General Strategies.....	15



5.2.2 Management Measures.....	16
7.0 Regional Projects and Reconstruction Strategies.....	27
7.1 Relationship to Regional Plans.....	27
8.0 Public Engagement	33
9.0 Next Steps.....	34
Appendix.....	35

List of Tables and Figures

Tables

Table 1 Preliminary Project List.....	17
Table 2 Regional Projects and Strategies	27

Figures

Figure 1: Geographic Scope	3
Figure 2: Sample Risk Assessment	12



Acronyms, Abbreviations, and Key Terms

NYRCR	New York Rising Community Reconstruction
NYS	New York State
NYSDOS	NYS Department of State
NYS DHCR	NYS Department of Housing and Community Renewal
Catskills/Hudson Valley Regional Lead - NYS Homes and Community Renewal	Lori DuBord, DHCR
NYSDOS – Regional Lead	William Harding
NYSDOS Planners	Barbara Kendall, Lisa Melville
Planning Team	Ulster County Community Group, Co-Chairs and At-Large Members Comprising Representatives from Each of the Ten (10) Ulster County Communities
Communities	The Ten Ulster County Communities (Villages of Ellenville, New Paltz and Saugerties, and the Towns of Rochester, Rosendale and Wawarsing, New Paltz, Saugerties, Olive and Woodstock)
Planning Firm	The AKRF/CDM Team Assigned to Ulster County
AKRF	AKRF, Inc.
CDM	CDM Smith
ELAN	Nagle, Tatich, Cranston LLC d/b/a Elan.3 Consulting (E.3)
ARCH	Arch Street Communications
Work Plan	NYRCR Work Plan



1.0 Overview

1.1 Purpose

The NY Rising Community Reconstruction (NYRCR) program has been initiated by New York State to help communities impacted by Hurricane Irene, Tropical Storm Lee and Superstorm Sandy to rebuild better and safer through community-driven plans that consider current damage, future threats to community assets, and the community's economic future. The focus of the program is resiliency planning to not only help communities recover from the impacts of the storms, but also to build back better and fortify their communities so that they will be protected from the devastating impacts that they have witnessed in the recent past.

The NYRCR planning process is intended to be a collaborative effort between NYS and the ten communities in Ulster County selected to take part in this program. These communities are: Villages of Ellenville, New Paltz and Saugerties, and the Towns of Rochester, Rosendale and Wawarsing, New Paltz, Saugerties, Olive and Woodstock.

NYS has designated the New York State Department of State (NYSDOS) as the lead agency running the program. New York State Department of Homes and Community Renewal (NYS DHCR) is the contracting agency overseeing contracting and project reimbursements.

The NYRCR program created Planning Teams, which include the NYSDOS, the Planning Firm and Community Co-Chairs and Committees will use the planning process to:

- Assess each community's vulnerabilities to natural disasters and extreme natural events and its needs for economic development;
- Identify where funds should be used to repair or reconstruct critical facilities and essential public assets damaged or destroyed by Hurricane Irene, Tropical Storm Lee and Superstorm Sandy; and
- Identify projects and actions that will increase resilience, protect vulnerable populations and promote sound economic development.

The outcome of the NYRCR program is to create a roadmap to guide the community in becoming more resilient to extreme natural events. Another outcome will be a specific list of short, medium and long-term strategies, programs and actions that can be funded by the NYRCR program, FEMA hazard mitigation funding or other sources.



The purpose of this Conceptual Plan is to provide to the Ulster County New York Rising Community Group a comprehensive document that explains the program and is reflective of where the Ulster County NY Rising Community Group is within the NYRCR process to date. This Conceptual Plan will continue to be refined and developed over the coming months, resulting in the completion of the final NYRCR Plan in March 2014. This Conceptual Plan will focus on the relationship of assets, risks, needs and opportunities, strategies, projects and actions of the six Recovery Support Functions. The six functions are:

- Community Planning and Capacity Building
- Economic
- Health and Social Services
- Housing
- Infrastructure
- Natural and Cultural Resources

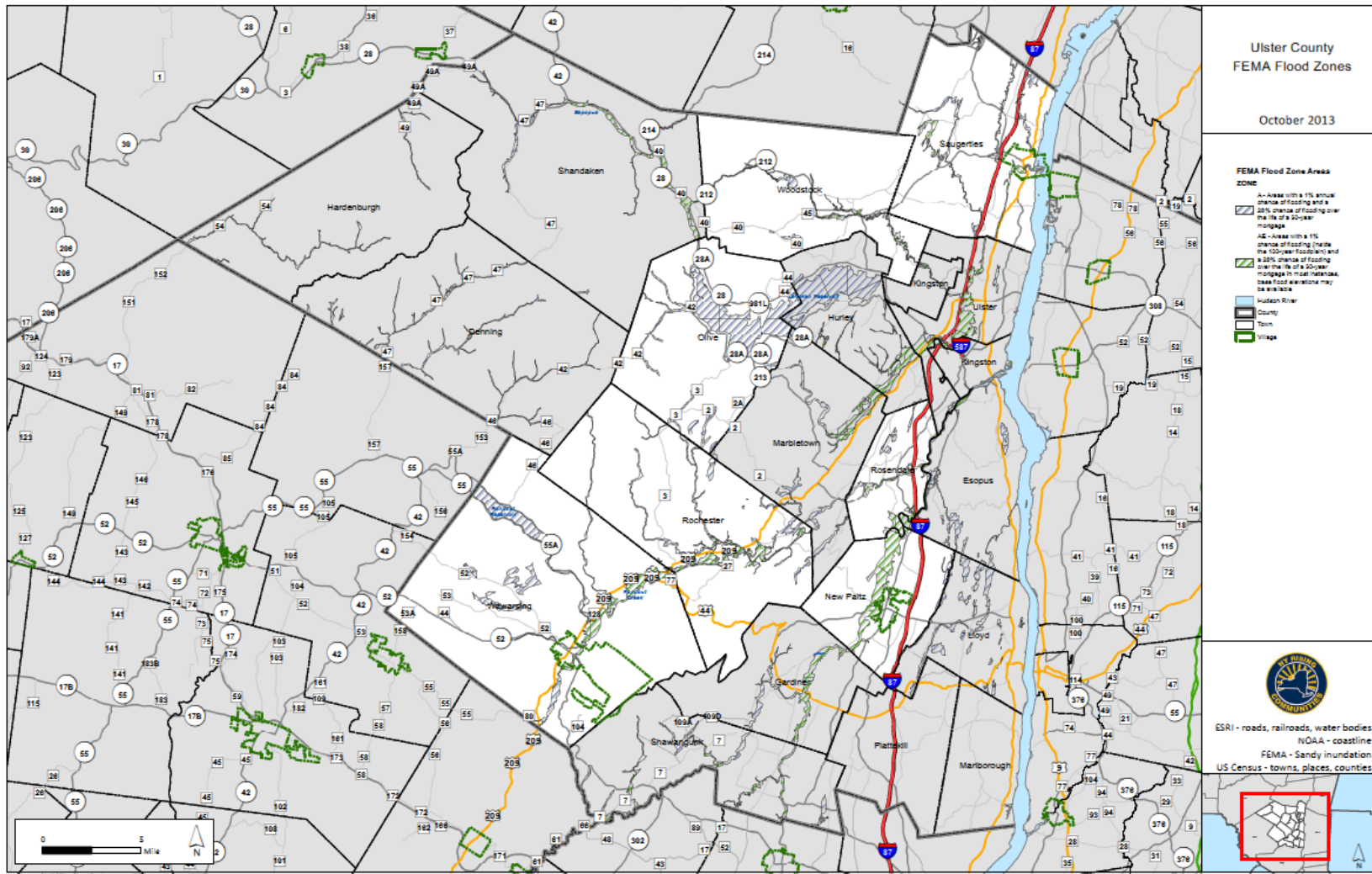
1.2 Geographic Scope of Plan

The Ulster County NY Rising Community Group includes eight riverine communities and two coastal communities that were severely impacted by flooding associated with Hurricane Irene and Tropical Storm Lee. These municipalities include: the Villages of Ellenville, New Paltz and Saugerties and the Towns of Rochester, Rosendale, Wawarsing, New Paltz, Olive, Woodstock and Saugerties.

At the second Committee Meeting, held on October 7, 2013, the final geographic scope was confirmed to be coterminous with each of the municipal boundaries of the ten communities within the Ulster County NY Rising Community Group, as shown in Figure 1, Geographic Scope. Some of the areas within the geographic scope have not been directly damaged by Irene or Lee, but include important community assets and opportunities for reconstruction, that Committee members agreed were important to include within the scope of the NYRCR plan.



Figure 1 - Geographic Scope





1.3 Community Overview

The Ulster County NY Rising Community Group is comprised of eight riverine communities and two coastal communities. The riverine communities include the Towns of Rochester, Rosendale, Wawarsing, New Paltz, Olive, Woodstock and the Villages of Ellenville and New Paltz. The coastal communities include the Village and Town of Saugerties.

Ulster County located in the mid-Hudson region of New York State, measures 1,161 square miles and is located approximately 100 miles north of New York City and 50 miles south of Albany. Ulster County is within a 2-hour drive from New York City and borders the western shore of the Hudson River. A considerable portion of the County is located within the Catskill Mountains and the Shawangunk Ridge. The County is comprised of 20 towns, three villages and the City of Kingston, and according to the 2010 US Census, includes 182,493 residents. The County is well served by a network of interstate, state, and local highways including Interstate 87, as well as State Routes 9W, 28, 32, 52, 55 and 209. The local economy is dependent on a variety of industries including tourism, agriculture, the arts and creative industries, and manufacturing. Ulster County's largest population centers are the City of Kingston and the Town of Saugerties.

The ten municipalities of the Ulster County NY Rising Community Group cover approximately 475 square miles, and have been divided into three subgroups based on geography.

The Esopus Creek subgroup, covers 190.4 square miles, and includes the Towns of Olive, Woodstock and Saugerties and the Village of Saugerties in the northeastern portion of the county. The Upper Esopus Creek flows from Slide Mountain to the west into the Ashokan Reservoir in the Town of Olive. The Lower Esopus Creek flows from west to east from the Ashokan Reservoir towards Saugerties, where it is met by the Saw Kill River and Plattekill River before flowing into the Hudson through the Village of Saugerties.

The Wallkill River subgroup covers 35.6 square miles and includes the Town and Village of New Paltz. The Wallkill River flows through New Paltz and the City of Kingston to its outlet at the Hudson River. The largest economic activity center and employment generator in New Paltz is the State University of New Paltz (SUNY), followed by tourism, recreational resources and activities and small and large scale agricultural operations.

The Rondout Creek subgroup encompasses 248.4 square miles and includes the Towns of Rochester, Rosendale, and Wawarsing and the Village of Ellenville. The Rondout Creek flows from the north into the Rondout Reservoir in the Town of Wawarsing and then flows east along Route 209, a major population and transportation corridor, through Rochester and Rosendale, where it joins the



Wallkill River to its outlet at the Hudson River. The communities in the Rondout Creek subgroup are generally more rural than their neighbors in Ulster County, with an abundance of recreation and natural amenities and an economy supported by small scale industry, tourism and agriculture.

1.4 Community Vision

The Vision Statement for the Ulster County NY Rising Community Group was developed by the Planning Committee with the assistance of the AKRF/CDM team. The Committee conducted a preliminary visioning exercise at their second meeting on October 7, 2013, and a formal visioning exercise at their third meeting on October 21, 2013. The members of the community who attended the public meeting on October 21, 2013 also provided additional feedback to shape the vision statement. Through the visioning process, the Planning Committee and the Public worked to identify, assess and conceptualize local and regional opportunities within the Ulster County NY Rising Community Group. The Planning Committee and the public outlined short, medium, and long range measures to help the Ulster County NY Rising Communities build back better.

Preliminary project goals were identified through discussions with the Committee, the public and through consultation with the guidance document. These preliminary goals are:

- Improve crisis planning and communication between municipalities and the county
- Improve flood mitigation and adaptation, waterfront access and infrastructure
- Develop a business continuity plan
- Advance public/private partnerships
- Foster a relationship with New York City and the Department of Environmental Conservation
- Develop design and construction zoning standards for resilience
- Retain and attract Volunteers for emergency services



The current draft Vision Statement is as follows:

Through our collaborative efforts, the Ulster County NY Rising Community Group will work together to ensure a regionally coordinated, resilient approach to protect our communities, vulnerable populations, infrastructure, economies, cultural and natural resources, and neighbors with a preparedness plan and projects to mitigate future disasters.

The draft Vision Statement along with the input received at the Public Engagement meeting will be refined and a revised version is expected to be discussed at the next Committee Meeting (November 4, 2013). The final Vision Statement will be incorporated into the final NYRCR Plan.

1.5 Summary of Storm Impacts

In late August 2011, Hurricane Irene and Tropical Storm Lee hit the Ulster County NY Rising communities with full force. The torrential downpour caused water levels in the Rondout Creek, Wallkill River and Lower Esopus Creek to reach record heights of six to nine feet above flood stage. On August 26th, 2011, a county-wide state of emergency was declared.

The rising waters of the Rondout Creek, Wallkill River and Lower Esopus Creek and of the many smaller streams and tributaries surrounding the region caused flash flooding, destroying homes, businesses and infrastructure in all ten communities, particularly in low-lying areas. Woodstock and Rosendale both recorded floodwaters.

Countless roads were closed due to culverts and bridges overtopping. Many sections of Route 209, the main transportation corridor through many of these towns, remained closed for a record five days. Many areas became isolated from essential emergency and community services for multiple days. One bridge failed in Saugerties, leaving 30 homes secluded. The force of Hurricane Irene resulted in massive infrastructure damage to water mains, sewage treatment facilities, and water delivery systems in the Village of Ellenville and stream bank erosion severely impacted more than a dozen homes on Ida Lane.

Many residents throughout the Ulster County NY Rising Community Group were forced to evacuate, moving to shelters established in local emergency service buildings, schools and community centers. County-wide shelters were set up at the Belleayre Mountain Ski Center and the SUNY New Paltz Health and Wellness Center. Unfortunately many of these shelters lacked back-up power generators,



compromising their ability to offer support to residents. In many areas, power outages lasted for days, with some phone lines down for up to four weeks.

Emergency services were supported by many volunteers within the community. However, emergency response was complicated by the communication difficulties due to the lack of cellular reception in the more rural areas of the county. The Ulster County Emergency Response Center also provided strong support.

The storms resulted in significant damage to agricultural farm fields, and livestock pastures, with water 12 feet deep over croplands in some locations. The Wallkill River flooded its banks, inundating hundreds of acres of farmland, notably in Rochester and New Paltz.

The physical damage to roads, bridges, homes, and other essential infrastructure compounded short and long term economic impacts that rippled throughout the County and the region. Irreparable losses to commodity farms, power failures, and in some cases, isolation from economic centers complicated and delayed recovery efforts. Tourism, a major industry in this region, suffered greatly through both an overall loss of revenue and the loss wages due to postponed business activity. Today, this area of Ulster County is still recovering from the damage caused by Hurricane Irene and Tropical Storm Lee in 2011.

1.6 Summary of Relevant Existing Plans and Studies

To gain a better understanding of the existing conditions in the Ulster County NY Rising Community Group, the project team conducted an inventory and analysis of the existing local and regional plans and studies. This document inventory provides the base information from which the Committee will form flood mitigation, recovery and resiliency strategies to meet the Ulster County NY Rising Community Group's long-term vision and goals. It provides the basis for assessing local and regional issues to be incorporated into the Ulster County NY Rising Community Reconstruction Plan.

A complete list of the local and regional planning documents, reviewed by the project team, for all ten communities in the Ulster County NY Rising Community Group was presented in Table 4 of the final Work Plan (Final Work Plan – October 11, 2013). The list was updated and augmented based on discussion at our September 23, 2013 kick off meeting and our October 7, 2013 Planning Committee meeting with the Ulster County NY Rising Community Group.



This initial review identified the following key documents, from which components will form the foundation for the asset inventory and program and policy recommendations for the Ulster County NY Rising Community Reconstruction Plan. The documents listed below are categorized by specific NYRCR Plan Deliverables.

Community Vision

The following plans contain information and recommendations that have been incorporated into developing the Ulster County NY Rising Community Group's Vision:

- Village of Ellenville Comprehensive Plan
- Town of Olive DRAFT Comprehensive Plan for Public Hearing
- Town of Rochester Comprehensive Plan
- Town of Rochester Comprehensive Plan, Zoning Code, Map Task for Recommendations Report (May 2009)
- Town of Rosendale Comprehensive Plan
- Town/Village of Saugerties Comprehensive Plan
- Town of Wawarsing Comprehensive Plan

Community Asset Inventory

The following plans contain materials that were incorporated into the Ulster County NY Rising Community Group's Asset Inventory:

- Town/Village of New Paltz Open Space Plan
- Town/Village of New Paltz Land Use/Transportation Project Report
- Town of Olive DRAFT Comprehensive Plan for Public Hearing
- Town of Rochester Historic Resources Report Reconnaissance Survey
- Town of Rochester Draft Natural Resource Inventory
- Town of Rochester Groundwater Protection Plan
- Town of Rosendale Natural Resource Inventory
- Town/Village of Saugerties Comprehensive Plan
- Town/Village of Saugerties Open Space Plan



- Town of Woodstock Significant Habitat Study
- Upper Esopus Creek Management Plan

Risk Assessment

The following local and regional planning documents contain materials that will be used toward producing the Ulster County NY Rising Community Group's Risk Assessment:

- Ulster County Multi-Hazard Mitigation Plan
- Town and Village of New Paltz Emergency Preparedness Plan
- Town of Rochester Comprehensive Emergency Management Plan
- Upper Esopus Creek Management Plan
- Section 905 (b) Reconnaissance Study: Esopus Creek and Plattekill Creek

Economic Needs and Opportunities Assessment

The following plans contain materials that can be used toward producing the Ulster County NY Rising Community Group's Economic Needs and Opportunities Assessment:

- Ulster County Multi-Hazard Mitigation Plan
- Town/Village of Saugerties Economic Development Strategy

Housing Needs Assessment and Strategies

The following plans contain materials that can be used toward analyzing current and future housing needs throughout the Ulster County NY Rising communities.

- Ulster County Multi-Hazard Mitigation Plan
- Tri-County Housing Needs Assessment



2.0 Identification of Assets

Based on the geographic scope identified by the Community co-chairs and Committee members, the AKRF/CDM Team has been working with the Ulster County NY Rising Community Group preparing an inventory of assets in each of the communities. The asset inventory task followed the classification protocol developed by the DOS, categorizing the assets into the following classes:

- Economic Assets
- Health and Social Services Assets
- Housing Assets
- Infrastructure Assets
- Natural and Cultural Resource Assets; and
- Socially Vulnerable Populations

The initial asset inventory was prepared by the Committee members through a series of meetings, and additional asset inventory information was collected at the Community Engagement Meeting held on October 21, 2012. The inventory began with a mapping exercise requiring the committee members to locate assets on area mapping, both within the 100 and 500 year floodplains, and also throughout the communities. The directive to the communities was to identify assets that were not only specifically vulnerable or damaged during storm events, but also to identify assets that were cut off or inaccessible due to other logistical difficulties and/or infrastructure failures, whose loss or impairment due to flood events would compromise any essential social, economic or environmental functions or critical facilities of the community. The asset inventory provides a holistic investigation of community risk, concentrating assets most likely to be affected by flood and most important to the community. Identifying both assets that were damaged and assets that are vulnerable to damage provides the community with the information they need to plan for and build a more resilient community.

2.1 Description of Community Assets

The Ulster County NY Rising Community Group has prepared a preliminary asset inventory, and is currently reviewing and revising their asset lists. The final asset inventory is expected to be completed by October 28th. The preliminary inventory as assets for the



three subgroups is provided as an Appendix to this Conceptual Plan. Once the inventory lists are completed, final asset maps will be updated

3.0 Identification and Understanding of Risk

3.1 Assessment of Risk to Assets

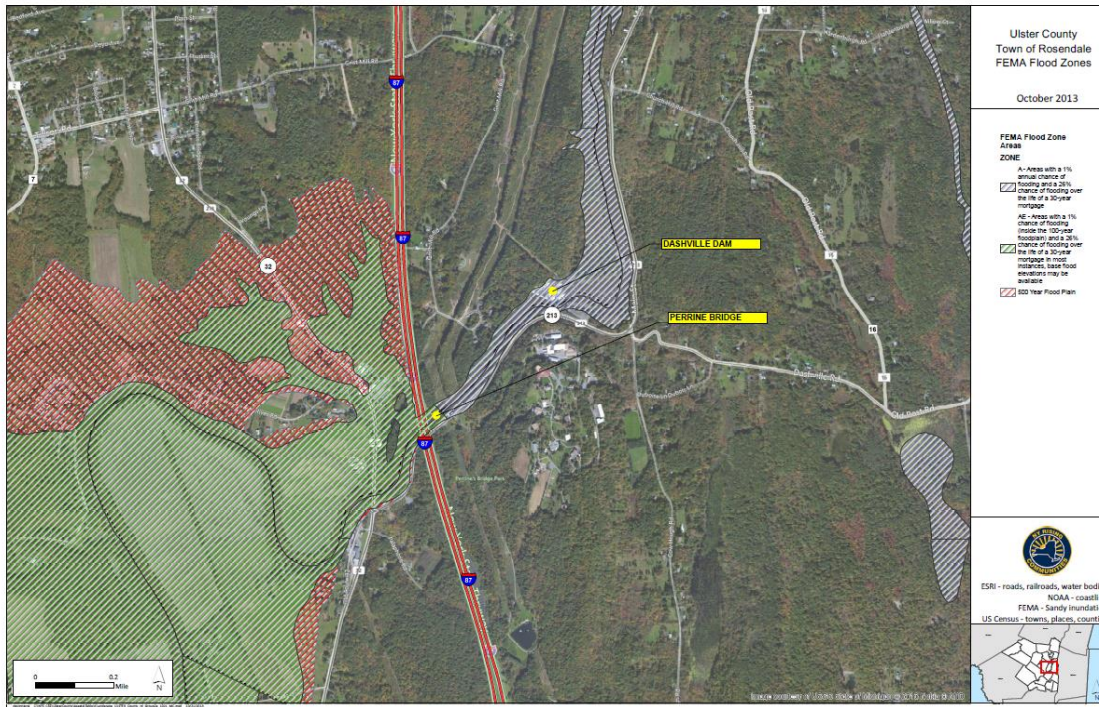
Building from the draft Asset Inventory worksheet prepared by the Planning Committee, the Planning Team will perform the Risk Assessment using the Risk Assessment tool. In order for the assessment of risk to the community's assets to be most useful, it is critical to evaluate hazard (i.e. Risk Area) and exposure (i.e. Landscape Attributes) consistently across all assets and to clearly document this assessment for transparency. As a starting point, all fields from the Asset Inventory worksheet that have an impact on the Risk Score will be quality assured and updated, if necessary, by analyzing them using a standard methodology and documentation process. Further discussion of this process is provided below.

Risk Area

To verify and document the Risk Area (Extreme, High, Moderate, N/A) initially entered in the Asset Inventory worksheet, GIS maps overlaying the assets with the flood risk areas will be prepared along with a data table correlating the asset name, address, latitude, longitude, flood hazard area, and corresponding risk area. For demonstration purposes, an example of this using a small sample set of the Ulster County Assets is presented in Figure 2 below.



Figure 2 - Sample Risk Assessment



Asset Name	Address	Longitude	Latitude	Flood Area	Risk Area
Dashville Dam	2032 Rte 213 Rifton, NY	-74.0498	41.822	A - Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage	Moderate
Perrine Bridge	Perrine Bridge Esopus, NY	-74.0556	41.818	AE - Areas with a 1% chance of flooding (inside the 100-year floodplain) and a 26% chance of flooding over the life of a 30-year mortgage. In most instances, base flood elevations may be available	Moderate

Landscape Attributes

The exposure of an asset is dependent upon its physical situation and the surrounding landscape. To consistently analyze landscape attributes across all assets, evaluation methods have been initially developed for riverine landscape attributes (defensive flood protection measures, elevation, freeboard, point of confluence,

storm water discharge, and vegetated stream bank buffers) that will rely on available aerial photographs, geospatial data, historic documentation, and field verification. Draft “Landscape Attribute Determination Worksheets” included in the Appendix to this document have been developed for riverine landscape attributes in order to document the evaluation methods and the resulting determination of the landscape attributes for each asset.



Vulnerability Score

In addition to evaluating and clearly documenting the hazard and exposure consistently across all assets as described above, evaluation of the vulnerability score will also be performed using a standard methodology and documentation process. Although not developed at this time, it is envisioned that a scoring methodology will be developed that combines multiple characteristics that can be indicative of an asset's vulnerability in order to ultimately define the final vulnerability score of 1 through 5 that is entered into the Risk Assessment tool. Vulnerability characteristics that are being considered as part of this scoring methodology may include, but not necessarily be limited to, the following:

- Impact on service or function from Table 3 of the Guidance for New York Rising Community Reconstruction Plans (as reported by the Planning Committee members and/or managers of the assets)
- Materials of construction (e.g. wood, concrete, level of reinforcement, etc.)
- Age of asset
- Condition of asset
- Historic impairment due to previous storm effects
- Presence of critical features that are vulnerable
- Vulnerable populations' dependence on the asset and/or percent occupation of asset
- Elevation relative to BFE
- Accessibility to/from asset

This section provides information only about the risk assessment process at the present time. The analysis, which is underway, will be posted in future updates.

4.0 Identification of Needs and Opportunities

The Needs and Opportunities for the Ulster County NY Rising Community Group will be identified by the Planning Committee with the assistance of the AKRF/CDM team. The Committee will develop a preliminary list of needs and opportunities according to the asset classes generated from the local and regional Project ideas. The planning team expects to refine this list throughout the planning process.



Public Engagement is central to the development of the Needs and Opportunities assessment, and will be conducted in workshop sessions following the Committee's development of the draft list.

5.0 Potential Projects, Strategies and Management Measures Identified by the Planning Committee

5.1 Projects

The Ulster County NY Rising Community Group has developed a preliminary list of potential projects, strategies and management measures. A summary of those projects is provided in Table 1 below. This preliminary list is based on the inventory of community assets and known areas of vulnerability, flooding and damage. The list will continue to be refined and then modeled through the risk assessment, and cost benefit analysis processes. Where preliminary cost estimates were available, they have been included in the table. In most cases, preliminary proposed projects have been found to fit into several of the management measures categories and are therefore indicated as such.

A template for future analysis of projects is appended to this document in the Appendix. Once projects have been identified and analyzed through the risk assessment and cost benefit analysis process, the Ulster County NY Rising Community Group will complete the attached templates for priority recovery and resiliency projects.

5.2 Strategies and General Management Measures Overview

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

- **Community Planning and Capacity Building.** Strategies that present ways to restore or enhance its ability to organize, plan, manage, and implement recovery.



- Economic Strategies. Strategies that present ways to return economic and business activities to a state of health, and to develop new economic opportunities.
- Health and Social Services Strategies. Strategies that address the restoration and improvement of essential health and social services, particularly those that serve vulnerable populations.
- Housing Strategies. Strategies that address the demand for affordable housing; promotion of affordable housing availability; non-CDBG programs that are available for public and private housing providers; and how the community will encourage the provision of disaster-resistant housing for all income groups.
- Infrastructure Strategies. These strategies should express how a community will restore, repair, and manage essential services the local government provides through its infrastructure in the community.
- Natural and Cultural Resource Strategies. These strategies will address management of natural and cultural resources from a risk reduction and economic development perspective.

5.1.1 Preliminary General Strategies

- Ensure that there is proper language in plans and ordinances to protect properties from future flooding.
- Ensure that new development/redevelopment is resistant to flood damage.
- Comprehensively prepare the Ulster County communities for disasters.
- Increase awareness among residents regarding home preparedness and emergency notifications.
- Protect key areas and critical facilities in the Ulster County communities.
- Preserve and restore natural areas (floodplains, streams and wetlands).
- Improve the quality of life for residents after flood recovery.
- Create a diversified economy in the Ulster County communities, supported by tourism, light industry, and small business.
- Ensure a diversity of safe, affordable market rate housing options.



- 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.

5.2.2 Management Measures

The programs, plans, and actions used to implement each strategy can be organized in six classes of management measures that encompass initiatives ranging from conservation or regulatory methods to construction projects. The six classes of management measures include the following:

Class 1. Conserve, Restore, and Enhance Natural Protective Features. Measures that use the landscape to promote safety and livability and to reduce costs.

Class 2. Resilient Construction. Measures designed to provide an adequate level of safety for structures, including elevating the building so that the lowest floor is above the flood level; dry flood-proofing, or making the building watertight to prevent water entry; wet flood-proofing, or making uninhabited or non-critical parts of the building resistant to water damage; relocation of the building; and the incorporation of levees and floodwalls into site design to keep water away from the building.

Class 3. Structural Defenses. Measures that employ engineered or non-engineered construction techniques designed to resist flooding.

Class 4. Land Use Planning and Regulation. Measures that use municipal planning, zoning, subdivision, site planning regulations to reduce the vulnerability of development and infrastructure to storm effects.

Class 5. Market-Based Methods. Measures that reduce vulnerability by incorporating the cost of risk into the carrying cost of land.

Class 6. Increased Awareness and Information. Measures that provide sound information on storms and erosion, environmental services, risk to development, and community costs designed to help decision makers in both the public and private sectors.



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
Village of Ellenville								
Flood Control Project (*)	Ellenville Flood Control Project Certification – Inspect and repair as necessary the Ellenville Flood Control Project so that can be certified by the ACOE	INFRA	2,3,4					
Canal Street (*)	Village of Ellenville Senior Housing Complex - Senior housing complex is prone to flooding, frequently requiring the evacuation and temporary sheltering of the entire population.	HOUSING	2,3,4					
Town of Rosendale								
Wastewater Treatment Plant (*)	Protection of Sewer Treatment Plan from storm water infiltration	INFRA	3					
	Elevate or move creek side residences to offer additional protection	HOU CP/CB	2,3,4					
	Restore Little League Field	NAT/CUL	2					
	Increase public access to Creek	NAT/CUL	1,2					
	Floodplain Coordination – Coordinate floodplains with upstream communities	CP/CB NAT/CUL	1,2	Y				



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
Creek Locks Road (CR 73) (*)	Embankment Repair and stabilization - surface erosion causing the narrowing of a traveling lane due to the need of placing concrete barriers along the shoulder to protect the users of the road.	NAT/CUL INFR	3		60K			
Rondout Creek Reservoir	Coordinate DEP reservoir releases	INF NAT/CUL	2,4					
	Bury power lines	INFR	2,3					
	Educate communities in Disaster Planning - Alerts to seniors particularly important	CP/CB	6	Y				
	Coordination of Emergency Services – Between services, communities, Town to County, including more planning and training	CP/CB	5,6	Y				
Rosendale Nursing Facility (adjacent to little league fields) (*)	Project is located in the flood plain – and is elevated - but the access road to the nursing floods	HOU HEAL/SS	3, 4					
Route 32 over the Wallkill River (*)	Drainage improvement - Main thoroughfare between population centers. This roadway is subject to regular closure due to high water by Plaza at the base of the hill. Either improve the flow beneath the bridge, or elevate the bridge and roadway.	INFR	2,3					
WWTP, Town Hall, Pool house (used as shelter area, and pump stations	Back-up Generators – For critical infrastructure including	INFR HOU HEAL/SS	2					



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
Main Street (*)	Complete recommended work on the Rosendale Flood Control Project – to increase resiliency - Review and revised flood mapping for Main Street	INFR	3					
	Examine siltation for canal channel and consider dredging	INFR NAT/CUL	1,2					
	Establish Back-Up Water Supply	INFR	1,2,5					
	Revise Zoning Codes and building codes to include flood mitigation measures, bank stabilization, erosion control to be implemented during site plan review, subdivision.	CP/CP	4					
Rondout Creek, Wallkill River, Coxingkill Creek, Cottekill Brook, Dewitt Mill Stream, unnamed stream adjacent to River Road, and River Road extension.	Update Comprehensive Plan – to prioritize flood mitigation measures at various locations including:	CP/CB	4					
High Falls Park, Tillson Estates and Clark Estates	Consider underground storm water drainage measures (combined with Route 32 improvements)	INFR HOUS	2,3					
	Highway Department projects to replace stormwater basins and culverts,	INFR	2,3					
	US Army Corps of Engineers updating flood control engineering and mapping	INFR	4,5					
	Improve public outreach and education, and	CP/CB	5,6					



<div> <div>Table 1</div> <div>Preliminary Project List</div> </div>								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
	Emergency management coordination with Highway Department, Fire Department, Police Department, and EMS.							
Joppenbergh Mountain, All former mining areas, NYS RT 213 corridor from Lawrenceville Bridge to Keator Ave Bridge, Woodland Drive at terminus, Mountain Road, Shawangunk Ridge, Creek Locks Road, Bruceville Road, School lane, Spring Street, NYS Route 32	Landslide/Erosion control. Mitigation will include bank stabilization, erosion control, culverts and ditches, removal of hazards through blasting and coordinating with Federal, State and County agencies to share mitigation tasks. Management Coordination with Highway Dept, Fire Dept., Police Dept. and EMS	INFR NAT/CUL CP/CB	1,2,4,5	Y				
Sturgeon Pool, Iron Mountain Dam, Mountain Road Dam adjacent to Binnewater Road.	Dam Failure Mitigation - including coordinating with emergency action plans with Dam owners, requiring engineering reports and inspection, repair and maintenance programs or materials to property owners	INFR CP/CB	2,3 ,5					
Wallkill Valley Railroad trestle and communications tower located on Maple	Vulnerable Structure mitigation - extreme wind storm, tornadoes, lightning, winter storm and earthquake	HOU HEAL/SS	2,3,5					



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
Town of Rochester								
	Rail Trail Completion for connectivity	NAT/CUL	1,2	Y				
	Develop Flood Plain Mapping and Plan	CP/CB	4	Y				
	Hire a hydrologist	CP/CB NAT/CUL	4,5					
	Solar Power	CP/CB INFR ECON	1,2,5					
	Research Implementation of water pollution control measures including use of fungi (E-Coli Pollution, runoff from local farms)	NAT/CUL CP/CB	1,4					
North of Whitfield	Provide another rescue station location	CP/CB HEAL/SS	2	Y				
	Riparian buffer remediation along necessary waterways	NAT/CUL	1,2					
	Town wide drainage, culvert maintenance and clearance	INFR	3					
	Communication and training – improve citizen emergency preparedness and response system	CP/CB	4,5	Y				
Route 209 - Accord, Rochester Creek Culvert (*)	Elevate Route 209 roadway and redesign culvert carrying the Rochester Creek into the Rondout – State Route regularly flooded and has extensive truck traffic detoured through residential neighborhoods on tertiary roads.	INFR	3	Y				



<div> <div>Table 1</div> <div>Preliminary Project List</div> </div>								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
County Bridge 148 Abutment Repair (*)	One abutment of County Bridge 148 has been severely scoured from recent storms. Repair the damaged abutment to lengthen the expected life of the structure	INFR	3	Y	\$250K			
Town of Wawarsing								
Hang Glider Bridge Wing Wall Repair (*)	Heavy rainfall events have eroded the stream bank and fill behind the upstream wing wall of the Hang Glider Bridge. This project will build back the embankment with stone or other suitable material thus leaving the bridge less vulnerable to damage in large rainfall events.	ECON INFR	1,2		\$150K			
Town and Village of New Paltz								
Springtown Road (*)	Important secondary road leading to several neighborhoods This roadway needs re-engineering to either elevate, relocate or some combination of the two.	HOUS INFR	3					
Huguenot Street - New Paltz Sewer Treatment Plant (*)	New Paltz Sewer Treatment Plant -The plant needs to be hardened against flooding and stormwater infiltration should be addressed	INFR	3	Y				
Rte. 299 Over the Wallkill River (*)	The New Paltz Bridge serves as a "gateway" to the Village. The current bridge's truss has weathered and before this imposes a risk to the structural strength of the bridge, this project	INFRA ECON	3		\$400K			



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
	proposes to sandblast and refinish it to better protect it from environmental factors. The project will also be an aesthetic boost to the area, encouraging tourism and visitors to the Village.							
Lower Main Street - Route 299 - New Paltz Stormwater Improvements	Current heavy rainfall events cause flooding on NYS Rt. 299 with associated traffic detours, building flooding and business shutdowns	INFRA ECON	3					
Route 299 – Core Business District Main Street Stormwater Management (*)	Stormwater improvements to reduce flooding on main street caused by overflows from manholes	INFR	1,2,3					
Wallkill River Flooding	Methods to reduce Wallkill River Flooding and damage caused by flooding	INFR	1,2,3					
	Improve accessibility West of the Wallkill River - Including Emergency Sub-Station – possible relocation: Ulster County Fair Grounds	INFR HEAL/SS	4,5					
	Replace/repair Carmine Liberta Bridge, identify a potential second bridge location	INFR	3					
	Supplement and find storage location for emergency equipment (including rescue air boats)	INFR HEAL/SS	5	Y				
	Technology Use for Emergency Service	CP/CB	4,5	Y				



<div> <div>Table 1</div> <div>Preliminary Project List</div> </div>								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
Town of Olive								
Watson Hollow Road (C.R. 139)/ Bushkill Creek Remediation (*)	Sediment has aggregated within the Bushkill causing two critical problems The Watson Hollow Bridge is a two span structure, however, sediment has aggregated under one span which directs all water under the other span, lowering the hydraulic capacity of the bridge and creating scour of the abutment. The second threat is downstream of the bridge where sediment has accumulated within the channel directing flow towards a vulnerable Watson Hollow Road embankment. This project proposes to remediate both problems through stream engineering and remediation in the troubled reach.	INFRA	2		\$850,000			
Boiceville - Rte. 28 (*)	Address repetitive flooding in the Route 28 corridor through Boiceville. The services provided in this hamlet are vital to not only the locals, but communities to the east and west. Boiceville contains a supermarket used by residents between West Hurley and Margaretville. Additionally, addressing this issue under the umbrella of economic growth also	INFRA ECON	2,3					



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
	addresses the critical east-west corridor from an infrastructure perspective.							
Town and Village of Saugerties								
Barclay Heights, Mt. Marion, Blue Mountain Park, Village of Saugerties	Increase culvert diameter size	INFR	3					
Barclay Heights	Debris Removal - Cul-de-sacs in Barclay Heights are key drainage areas for runoff however years of debris have accumulated and need to be removed	INFR HOUS	1,2					
State Route 9	Raise Route 9 in Glenerie, which is a major evacuation route. This stretch of highway is located next to the Esopus and has experienced flooding	INFR						
George Sickie Rd and surrounding the Plattekill Creek.	Wetland designation - Designate more protected wetland areas within the Township.	NAT/CUL	1,4					
Malden Sewer Plant - Riverside Drive (*)	The plant needs to be hardened against flooding.	INFR	3					
US Coast Guard Station – Lighthouse Drive (*)	Identify measures to protect the US Coast Guard Station from Storm Surge and damage	INFR	2,3					



Table 1 Preliminary Project List								
Location		Asset Category & Imp. Strategy	Mgmt. Measures	Regional Connection	Cost	Risk Area	Timing	Community Support
Hudson River marsh areas - Esopus Meadows, Kingston Point, Saugerties Lighthouse (*)	Sensitive environmental areas all along the Hudson need to be encouraged as they act as flood control and storm surge barriers	NAT/CUL	1					
West Saugerties Road (C.R. 135) (*)	Two (2) corrugated squash pipes crossing West Saugerties road have been compromised due to the deterioration of the bottoms of both pipes. This project will replace both pipes with three sided box culverts.	INFR	3		\$450,000			
Rte. 212 Flooding Improvements	Sections of Rte. 212 Saugerties flood repeatedly and as do houses in some locations.	INFR	3					
Light House Dr.	Housing Elevation and/or relocation – along Light House Drive	CP/CP HOUS ECON	3,4					
Town of Woodstock								
Ohayo Mountain Road (C.R. 114) adjacent to Mill Stream (*)	The embankment of Ohayo Mountain Road adjacent to the Mill Stream has become unstable due to high waters. Creating a secure embankment with a retaining structure such as an H-Pile Wall will protect Ohayo Mountain Road and its users.	INFR	3		\$300,000			
Note: In addition to being identified by the Ulster County NY Rising Community Group, projects with an asterisk (*) have also been identified either in the 2009 Ulster County Hazard Mitigation Plan or through consultation with the Ulster County Department of Planning.								



7.0 Regional Projects and Reconstruction Strategies

7.1 Relationship to Regional Plans

The recommendations included in the 2009 Ulster County Hazard Mitigation Plan were aggregated to form the foundation for a list of the regional projects and strategies. This list was refined through preliminary meetings with Ulster County Departments of Planning, Public Works, Engineering and Environment, and a preliminary list of regional projects and strategies were developed. Many of the projects and strategies identified in this data gathering phase were echoed in Committee meetings and the list developed to date is presented herein. The Committee will continue to refine these regional projects and strategies to maximize their efficiency and achieve success in recovery from past storm damage and plan a more resilient future. Regional projects highlighted in red present resiliency measures using innovative technologies that may be implemented region-wide, not only just in the Ulster County NY Rising Community, but also potentially throughout NY State.

Table 2 Regional Projects and Strategies						
Project Name	Project Description	Asset Category & Strategy	Mgmt. Measures	Cost	Timing	Community Support
Emergency Services and Communications						
Enhanced EMS coverage	The number of EMS providers is declining as volunteerism and increased training requirements take their toll. Several areas have resorted to hiring paid staff to supplement their own service; other agencies have mutual aid agreements with					



Table 2
Regional Projects and Strategies

Project Name	Project Description	Asset Category & Strategy	Mgmt. Measures	Cost	Timing	Community Support
	commercial providers. There is a need to allocate resources, both personnel and financial to emergency services providers.					
Effective Disaster Communication and Post Disaster Recovery	Implement Social Media Info Center for Disaster - Utilize many eyes and correct erroneous info - Provide open for business post disaster as well as where to find help.					
Regional Sheltering	A regionalized sheltering concept would allow focus on the best facilities, and provide the necessary support staff. Additional consideration shall be given to vulnerable populations with medical conditions who could not be suitably housed in another type of shelter.					
Critical Area Broad Band Service	Critical County corridors and entire areas lack broad band service including the Rt. 28 and Shandaken Area - Service coverage would also provide economic benefit.					
Road Closure mapping and detour	Increase capability of county emergency services to provide on-the-fly road closure mapping and to disseminate quickly using social media, Google maps, etc. also public education on the use of these features.					
Detour Route - on the fly mapping	Upgrade GIS capabilities to provide on the fly mapping capabilities for road closures - should include training - note current road closure efforts					



Table 2
Regional Projects and Strategies

Project Name	Project Description	Asset Category & Strategy	Mgmt. Measures	Cost	Timing	Community Support
	are lists rather than maps and create confusion even for professionals					
FLOOD CONTROL, MAPPING AND PROTECTION						
Implementation of best practices for stream management	This project consists of education, planning, and actual implementation of best practices that will, in the long term, help alleviate flooding rather than exacerbating the problem with short term "solutions".					
Rondout Reservoir Flood Control Improvement	Utilize NYCDEP Modeling and forecasting to manage the Rondout Reservoir more effectively for flood control on the Rondout. Consider release and transfer protocols for the reservoir.					
Upgrade flood maps	Flood mapping outside the watershed is based on new contour data from Lidar but relies on old modeling - upgrading flood maps to the level of detail in the watershed would help make better decisions on risk, vulnerability, etc.					
Debris & Gravel Removal Sites	Establish areas where deposition of both woody debris and gravel create flood problems and create a debris removal zone that allows repetitive removal that recreates essential channel functions after major flood events.					



Table 2
Regional Projects and Strategies

Project Name	Project Description	Asset Category & Strategy	Mgmt. Measures	Cost	Timing	Community Support
POLICY MEASURES						
Advance flood warning	Project would provide advance flood warning using spotters, additional gage locations, and other means.	HOU VUL				
Implementation of appropriate planning/zoning regulations	Implement more stringent planning and zoning standards to prevent projects from locating in unsafe areas that put people at risk.	HOU VUL				
Floodplain zoning	Establish flood zones within zoning and restrict uses, density and the extension of infrastructure. Current zoning statutes in communities do not recognize flood zones within the zoning statute; this allows density bonuses and extension of infrastructure in vulnerable areas.					
High Hazard Zones Relocation	Change zoning statutes and create a hierarchy within the flood plain for uses and reinforce with permit system from state agencies to allow this to occur.					
Education - FEMA flood insurance rate response	Educate communities and homeowners of the new FIRM and their impact on residents. Provide education and assistance to allow these homeowners to remain in the community despite the higher cost of flood insurance. If residents cannot afford and therefore do not renew policies, people without flood insurance will not be eligible for FEMA assistance, and the potential economic	HOU ECON VUL				



Table 2
Regional Projects and Strategies

Project Name	Project Description	Asset Category & Strategy	Mgmt. Measures	Cost	Timing	Community Support
	impacts of foreclosure is significant. Create an elevation and/or buyout program structured to help low/mod homeowners. Use existing flood insurance payments to assist in funding. Also create an educational program and website on the changes.					
Community Rating System	Seek funding to develop the necessary plans and policies to participate in Community Rating System.					
Housing Assistance Program	Ongoing housing assistance program based on repetitive loss tied to low/mod income. Consider assistance that includes both buyouts and a place to go in the community.					
TRANSPORTATION AND INFRASTRUCTURE						
Detour Route Signage and road upgrades	Establish better “wayfinding” signage along well known detour routes and incentivize better road maintenance on these segments; areas known are Rt. 209, Rt. 213, and Rt. 32 Thruway Detours.					
Drainage Ditches, driveways and Culverts	Establish drainage and culvert sizing program for repetitive flooded roadways where flooding is due to improper or clogged drainage.					



<div> <div>Table 2</div> <div>Regional Projects and Strategies</div> </div>						
Project Name	Project Description	Asset Category & Strategy	Mgmt. Measures	Cost	Timing	Community Support
VULNERABLE POPULATIONS						
Elevation / acquisition program	The County has implemented several acquisition programs for people living in flood prone areas. Steps need to be taken to implement elevation programs where possible that will still protect the individual homeowners.					
Public Generator Program	The generator program should be intrinsically linked to the regional sheltering concept and critical public buildings such as DPW sites, emergency responders, critical communication infrastructure, and water and sewer facilities.					
Private Generator Program	Link to private owners that have vulnerable or large populations that could be stranded or offer critical services- sites include: hospitals, nursing facilities, gas stations, resorts, local hardware stores.					



8.0 Public Engagement

The NYRCR 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.

A Planning Committee comprised of a cross-section of representatives from the ten Ulster County Communities (Villages of Ellenville, New Paltz and Saugerties, and the Towns of Rochester, Rosendale and Wawarsing, New Paltz, Saugerties, Olive and Woodstock) that applied for and received Long Term Community Recovery Grant funding was formed, and tasked with developing the Long Term Recovery Strategies that will serve as the guide to advancing a more sustainable and resilient future in this region. The Committee includes representation from government, business, civic organizations, and residents.

The Ulster County NY Rising Community Group Planning Committee members are working with the AKRF/CDM Team to identify issues and concerns, prioritize recovery projects, develop a community vision, identify recovery strategies, and develop both local and cross-jurisdictional regional approaches to ensure long-term recovery.

The Planning Committee developed the elements of a vision statement for the Communities over three work sessions, in which they participated in activities including a group brainstorming to imagine a more resilient community, a board exercise in which they contributed specific projects and concepts related to flood mitigation and adaptation, resiliency measures, and crisis planning, and completed an evaluation of potential vision concepts. Their work has been further expanded in public engagement sessions to collect input to shape the planning process. A total of four public engagement meetings have been scheduled to share the work of the Planning Committee, and to gain input from the public on the strategies and projects identified by the Committee.

The first Public Engagement Session of the Ulster County NY Rising Community Group was held on October 21, 2013 to gather input to shape the planning process. After an overview of the NYRCR Program and the work completed by the Committee to date, the community was asked to share their thoughts in what a draft vision statement for the community would encapsulate. The public



worked in small breakout sessions with Committee members, supported by the AKRF/CDM consultant team, to identify an initial list of community assets, and regional project ideas for the community. Community members contributed their ideas by providing insight into individual assets on a large map representing the geography of the three subcommittees, and to gauge their level of priority when it comes to project ideas for the asset classes – economic development, health and social services, housing, infrastructure, natural and cultural resources, and housing.

A second Public Engagement Session is scheduled for November 20, 2013. The focus of this meeting will be a review of the Conceptual Plan with the community to gather their thoughts. Attendees will also be asked to prioritize projects and brainstorm on implementation ideas. This meeting will include a brief presentation of the Conceptual Plan and facilitated group discussion at tables with time to report back on the work.

Outreach for the public engagement meetings includes a template of publicity, including a media alert, email blasts, distribution of flyers, and postings on social media websites.

9.0 Next Steps

The following list provides an overview of the next steps towards prioritizing projects through implementation.

- Finalize list of assets in the Ulster County Communities Group and complete asset inventory mapping.
- Conduct Needs and Opportunities analysis.
- Conduct the risk analysis assessment for identified assets utilizing the guidance provided by NYSDOS.
- Continue to meet with the Planning Committee on a bi-weekly basis to refine list of potential projects for inclusion in the Reconstruction Plan.
- Continue to investigate projects that may be included under existing funding sources.
- Conduct the second Public Engagement meeting on November 20, 2013 to present the Conceptual Plan and identify additional regional projects and opportunities for coordination.



Appendix