Watershed Resilience Project:
2015 Cornell Cooperative Extension outreach activities and educational material development.
Summary prepared February 23, 2016

Overview
In 2015 the Hudson River Estuary Watershed Resilience Project supported collaboration across Cornell Cooperative Extension (CCE) of Columbia-Greene, Dutchess, and Orange Counties to address the challenges of flooding, stream and watershed management, and climate change. This partnership between the New York State Water Resources Institute (NYS WRI) at Cornell University and Cornell Cooperative Extension (CCE) is supported by the New York State Department of Environmental Conservation’s Hudson River Estuary Program (HREP). Project website: http://hudsonestuaryresilience.net

Timeframe
The collaboration started in July 2012 with funding continuing through December 2015. During this time NYS WRI has collaborated with academic and non-profit partners on research and outreach to promote watershed resiliency.
Project Outcomes
Development and distribution of educational materials regarding watershed management.

Collaboration across CCE to develop and distribute presentations and publications. Tasks included:

- Produced a flood guide for residents of the Village of Catskill. The flood guide can be adapted for use by other communities.
- Produced a list of flood preparedness resources for municipalities to post on their websites, and shared the resource list with 20 municipal partners.
- Revised land use planning portion of Streams 101.
- Produced two modules of the Streams 101 video series.
- Produced two videos on Climate Smart Communities actions, pledge element 7.15 & 7.21.
- Updated Resilience Project website for increased navigability. Developed new material for the website, including videos of seminars.
- Created GIS map of culvert assessment data points in the Roeliff Jansenkill watershed.
- Created GIS map of Village of Catskill flood zone.
- Distributed aquatic barrier brochure to dam owners identified by the Hudson River Estuary Program.
- Distributed educational materials at community events, county fairs, conferences and Resilience Project seminars.

Outreach to local government to assess needs and provide training on stream function and watershed management to local officials and the public.

Municipal officials need to understand the functions of streams and floodplains and how land use decisions can reduce the impacts associated with flooding.

Presentations and Seminar Series
CCE organized eleven presentations and seminars that were attended by 431 people, representing 84 Hudson Valley municipalities. Tasks included securing venues and speakers, hosting events, creating and analyzing evaluations. A summarized analysis of the 2015 seminars and presentations can be found in Appendix A.

- Resilience Project presentation for Columbia Greene Trout Unlimited (CCE Columbia Greene) January 20, Hudson
- Determining Peak Flow Under Different Scenarios and Identifying Undersized Culverts (CCE Dutchess & Columbia Greene, w/ Estuary Program & WRI) March 10, Ancram
- Streams 101 at Capital District Regional Planning Comission Conference (CCE Columbia Greene) March 27, Rensselaer
- Streams 101: Stream Basics and Planning for Flood Resiliency (CCE Columbia Greene & Dutchess) April 30, Claverack
- A Seminar on Dams (CCE Orange & Dutchess, w/Estuary Program) May 8, Rockland
- Streams 101 for Cornell Master Naturalist volunteers (CCE Columbia Greene) June 12, Acra
• **Catskill Creek Trees for Tribs Maintenance and Monitoring** (CCE Columbia Greene) June 23, Preston Hollow

• **NAACC Culvert Assessment Training** (CCE Dutchess & Columbia Greene w/ Estuary Program) June 20, Gallatin

• **A Seminar on Dams** (CCE Orange, Dutchess & Columbia Greene, w/ Estuary Program) September 2, New Paltz

• **Catskill Creek Summit** (CCE Columbia Greene & Estuary Program w/ CCE Dutchess) October 15, Acra

• **Wetlands, Woodlands and Water** (CCE-Columbia Greene w/ Estuary Program) October 30, Acra

**Local Government Assistance**

CCE provided direct outreach and assistance to communities that are coping with flooding and are seeking solutions that will increase their resilience.

• **Village of Catskill** – provided support and assistance to the Village of Catskill in implementing recommendations of the 2014 Waterfront Resilience Task Force.

• **Catskill Creek Summit** – hosted a meeting of Catskill Creek mainstem municipalities to discuss flooding, watershed management, and future planning for the creek corridor. This was the first meeting of its kind in the Catskill Creek watershed and attendees indicated interest in continuing to meet to explore watershed planning opportunities.

• **Town of Hyde Park** – tracked the progress of the Town of Hyde Park as they worked to become a FEMA Community Rating System (CRS) community. The goal was to better understand if CRS is a beneficial pursuit for Hudson Valley communities. Staff summarized Hyde Park’s 2015 efforts in a report that included a discussion on challenges encountered by the municipality and recommendations for other communities. See Appendix B for report.

• **CRS White Paper** – produced a white paper summarizing the findings of interviews conducted with a sampling of municipalities that are enrolled in the CRS in New York State. The white paper was produced to help determine the challenges and opportunities that municipalities face in enrolling in CRS and maintaining certification. See Appendix C for CRS white paper.

**Determining the feasibility of of volunteer and training programs related to stream and roadway intersections.**

Human impacts on stream function is often related to roadway infrastructure, such as culverts and bridges, or post-flood manipulation of stream channels. Undersized culverts can increase flood risk and stream instability, and perched culverts pose barriers to migration of aquatic organisms. Post-flood response in streams can have a negative impact on stream function. Some stream restoration techniques used after flood events are counterproductive, possibly increasing the potential cost of future storm impacts; they do not stop major flooding, create erosive forces upstream and downstream, and may degrade habitat. In 2015, CCE undertook two studies to advance our work related to human impact on streams.
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**NAACC Culvert Assessment Project**
During 2015, CCE associations from Columbia-Greene and Dutchess Counties began working with the Hudson River Estuary Program on an initiative to utilize trained volunteers to provide culvert assessments. The intention was to pilot a volunteer program in the Roeliff Jansenkill watershed in Columbia and Dutchess counties. Concurrently with the establishment of this pilot project, the Estuary Program was working with the North Atlantic Aquatic Connectivity Collaborative (NAACC) to adopt assessment and training protocols. These common protocols and trainings were made available in the spring of 2015.

CCE ensured proper insurance coverage, developed outreach materials, conducted volunteer recruitment and hosted a training. The training and recruitment efforts resulted in no applications from volunteers. In an effort to develop a better understanding of the process, as well as determine if the project is appropriate for volunteers, CCE staff became fully trained and conducted assessments in the Roeliff Jansen Kill watershed. As a result of these efforts, CCE does not currently recommend the Culvert Prioritization Project as a volunteer program. An alternative approach is to develop a for-credit internship for undergraduate and graduate students with environmental/engineering interests. The full report on efforts related to NAACC volunteer training can be found in Appendix D.

**Bowery Creek Training Facility Feasibility Study**
CCE Columbia-Greene conducted a study to assess the feasibility of developing a stream training facility on the Bowery Creek as a component of its Agroforestry Resource Center in Acra, New York. The Bowery Creek Training Facility (BCTF) will utilize a unique combination of features available at the Agroforestry Resource Center, which include the Siuslaw Forest, a 142-acre NYC Department of Environmental Protection (DEP) model forest, and two streams – a flood impacted reach of the Bowery, and a non-impacted stream reach that flows through the model forest. The site also includes a conference room equipped with presentation technology, and a gravel pit that could be utilized for practicing restoration techniques.

Elements of the feasibility study included outreach to partner organizations and others involved with trainings on waterway-roadway interaction to gauge interest; recruitment of key partners in facility development; analysis of evaluations from past trainings to determine ongoing need; an informal survey of highway personnel who have attended past trainings to determine ongoing need; and internal review by CCE Columbia-Greene administration.

The feasibility study indicated significant interest in the development of the BCTF from both partner organizations and potential trainees. Letters of support were received from a wide variety of stakeholders, including US Fish and Wildlife Service, NYS Department of Environmental Conservation, Vermont Rivers Program, NYC Department of Environmental Protection, Cornell Local Roads, Lower Hudson Coalition of Conservation Districts and Trout Unlimited. As a result of the study, CCE Columbia-Greene will pursue development of the BCTF. See Appendix E for the feasibility study.