

# Esopus Creek News

Fall/Winter 2012



Cornell University  
Cooperative Extension  
Ulster County

Ashokan Watershed Stream Management Program Newsletter

A quarterly publication of Cornell Cooperative Extension Ulster County

Esopus - Broadstreet Hollow - Woodland Valley - Stony Clove - Fox Hollow - Birch Creek - Beaverkill - Little Beaverkill - Peck Hollow - Bushnellville - Bush Kill

## Chichester Gets a Major Stream Restoration Project

Back in the Summer 2010 issue of *Esopus Creek News*, we ran an article called: **Examining the Patient: Stony Clove Creek's Chichester Reach.** That article described an "ailing" reach of the Stony Clove Creek that flows through the Chichester area. The conclusions were that, if left untreated, this troubled reach would **continue to erode and "bleed" lots of sediment causing cloudy, discolored stream water (known as "turbidity").** This reach of the Stony Clove Creek is the top contributor to chronic turbidity in the Ashokan Reservoir watershed.

When field crews assessed the Chichester reach of the Stony Clove Creek back in 2003, they found slumping hillslopes and eroding stream banks that may be contributing to the build-up of sediment in the hamlet of Phoenicia located 2 miles downstream. To fix the problem, the partnering agencies of the Ashokan Watershed Stream Management Program (AWSMP) developed a plan to begin stabilizing the hillslopes and restoring the **channel's stability along one-half mile of the stream.** In 2011, the engineering firm Milone & MacBroom, Inc.



Above: Contractors from Fastracs, Inc. work on a stream restoration project in Chichester, NY during the summer months of 2012.

working under contract with DEP produced a set of designs for restoring the stream reach to health. Milone & MacBroom created a **detailed map of the stream's width, depth, and course** through the reach. These measurements were used to simulate the flow of water through the Chichester reach using computer models. Engineers used the models to test and compare different designs for stabilizing the channel and

redirecting flows away from vulnerable stream banks.

The analysis showed that stabilizing the stream at four specific sites along the Chichester reach would reduce erosion and property loss. The first site scheduled for repair was about 400 feet downstream of the Silver Hollow Road Bridge. Stony Clove Creek was actively cutting into the base of a

*(Chichester Stream Project continued on page 4)*



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**We're on the web!**  
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## Recent Public Events in the Ashokan Watershed

### July

With financial support from the Catskill Watershed Corporation, AWSMP brought the Arm-of-the-Sea Mask and Puppet Theater troupe to the Phoenicia Playhouse on July 14. Nearly 100 people including children, adults and senior citizens packed the playhouse to see the production of **“City That Drinks the Mountain Sky”** about the building of the NYC reservoir system and history of the Catskill Mountains region. AWSMP is looking to have Arm-of-the-Sea return to the watershed to perform another one of their **“ecological”** theater productions.

On July 28 two events occurred simultaneously for AWSMP. AWSMP had an informational table at **this year’s** Woodstock Library Day held in Woodstock, NY.

Also on that day, AWSMP held their first ever Family Fish and Fun Day at Kenneth Wilson State Park. Made possible by the NYS DEC who allowed anyone (even those without a license) to fish. Representatives from that agency provided fishing poles to youngsters interested in learning how to fish. An arts and crafts table was also available for fish prints and a BBQ was held afterwards. A special thanks goes out to the DEC, Trout Unlimited and the volunteers who helped make that day a success despite the rainy weather!

### August

On August 1, AWSMP in partnership with the **Oliveria Landowner’s Association** held a Japanese knotweed pull on property owned by the Upper Esopus Fish and Game Club along Little Peck Hollow in Oliveria. The volunteers made quick work of this site by cutting and removing a large stand of knotweed. Knotweed is an invasive plant that has spread extensively throughout the Catskills and is detrimental to ecological health. AWSMP staff will help monitor the site to ensure that the stand does not regrow. For more information about Japanese knotweed and other invasive species please visit the Catskill Regional Invasive Species Partnership (CRISP) website at <http://catskillinvasives.com/>

On August 25, AWSMP had an informational table at the ninth annual Shandaken Day held this year in Pine Hill and Highmount, NY.

### September

**On September 8, AWSMP tabled at this year’s**



*Above: Parents and volunteers help children learn to fish at Family Fish and Fun Day held on July 28 at Kenneth Wilson State Park.*

Olive Day in West Shokan, NY.

As part of the third annual Ulster County Creek Week festivities, AWSMP hosted a stream walk called Creek Speak on September 16. Cory Ritz of Ulster County Soil & Water Conservation District led over 20 people on a 1-mile hike along a portion of Birch Creek in the Shandaken Wild Forest Area and explained stream features and how development affects streams.

### October

A Floodplain Map Steering Committee meeting was held on October 16 at the Shandaken Town Hall. Topics discussed included: updates on the upcoming new FEMA flood maps for the area as well as elevation certificates, hydraulic analysis studies and other flood management topics.

The second training for Master Watershed Stewards was held on October 20 at the

Agroforestry Center in Acra, NY. Organized by Cornell University and extension faculty and staff Master Watershed Stewards learned leadership skills and listened to expert speakers talk about environmental law and land use planning. The final training will occur in January.

The second ever Catskill Environmental Research and Monitoring Conference was held on October 25-26 at Belleayre Mountain in Highmount, NY. Dr. William Schlesinger of the Cary Institute for Ecosystem Studies gave the **keynote address entitled “Climate Change: Effects on Human and Ecosystem Health.”** This two-day event was filled with researchers giving presentations on studies they conducted on topics as diverse as climate change, invasive species, biodiversity, forest health, water quality and the role of large flows in stream ecosystem integrity.

## Featured Stream: The Bush Kill

The Town of Olive and the Ashokan Reservoir Watershed share an important natural asset, a small tributary stream named the Bush Kill. As with many of the creeks in the Catskill region, most of the time the Bush Kill is a quiet meandering brook. The creek follows County Route 42 through the heart of the Sundown Wilderness Area and is a great place to live or visit.

The creek and the surrounding watershed are mainly located within the Town of Olive. The headwaters begin in the undeveloped Sundown Wilderness Area and the surrounding tributary streams drain several nearby mountains including: Ashokan High Point, Little Rocky, and South Mountain. The stream parallels Ulster County Route 42 for much of its length before ending in West Shokan, where the stream drains directly into the Ashokan Reservoir. Along the 7.6 mile course, the Bushkill drains approximately 19.6 square miles. Most of Bush Kill watershed region is dominated by undeveloped forests (approximately 98%). Development and infrastructure in the watershed are located near the valley bottom and close to the stream. Unfortunately, placing roads, bridges, homes and streams in the same small area can have negative effects. Unfortunately, many of the area residents know too well what happens to this quiet brook when storms like, Tropical Storms Irene and Lee, fill the banks and flood roads and homes.

Tropical Storms Irene and Lee caused damage and changes to the stream system throughout the Bush Kill valley. According to USGS publications, Tropical Storm Irene was approximately a 50-year flood in the Bush Kill valley and Lee was estimated to be smaller. AWSMP has assisted local municipalities and landowners to assess multiple stream related issues. These include infrastructure assessments, flood threats identification, and best management practices to reduce stream bank erosion. Staff members from AWSMP have responded with stream

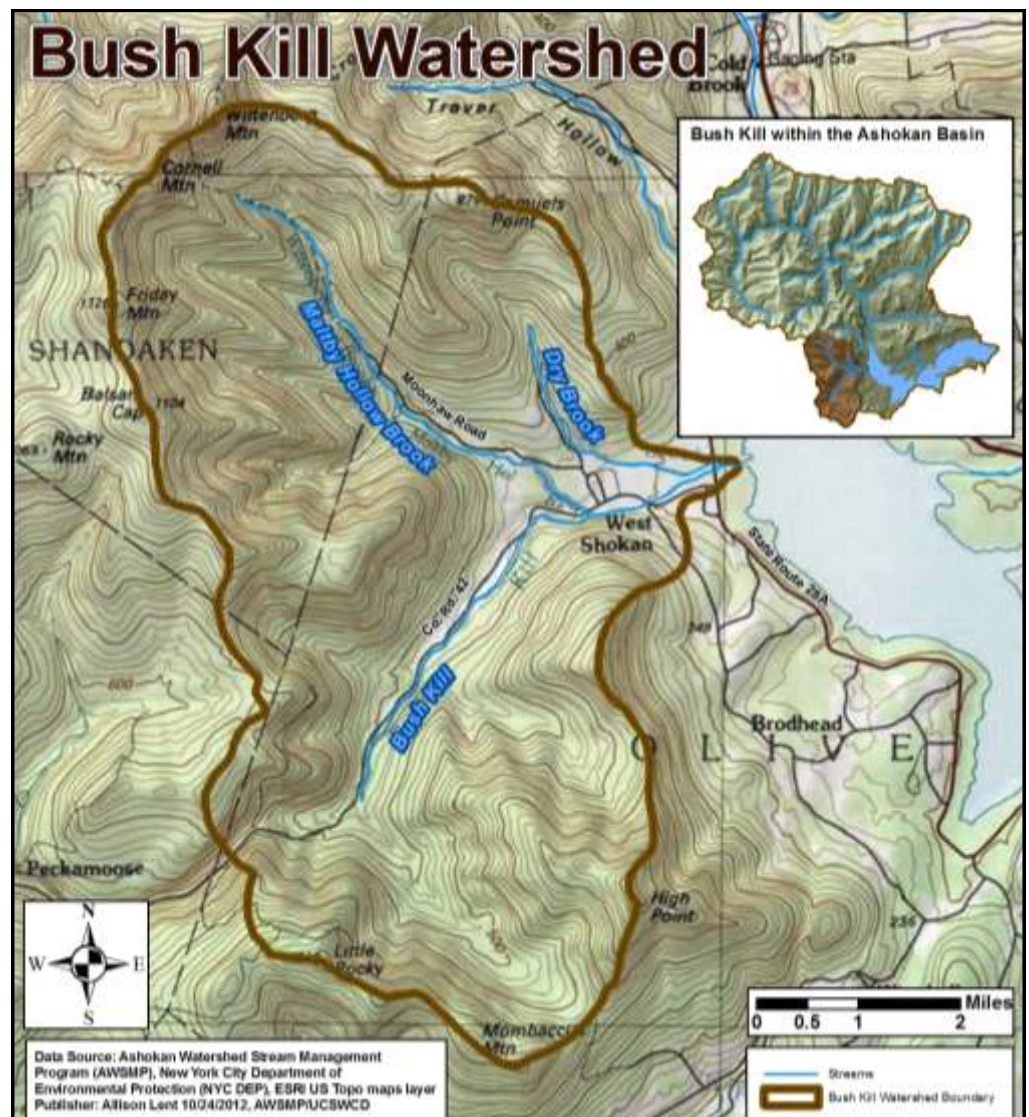


Above: *The Bush Kill near West Shokan, taken during the 2011 stream assessment.*

repair advice for private landowners and municipalities offering help to develop permit applications, proved project designs and construction oversight. Our staff have visited eleven landowners offering technical assistance and completed three riparian buffer plantings putting in nearly 1,000 trees and shrubs, and two engineering designs for post-flood response. In addition, the Catskill Watershed Corporation approved 17 post flood cleanup grants for a total of \$154,000.

This past summer, staff from the Ulster County Soil and Water Conservation District, assisted by interns from the Student Conservation Association and Ulster County Community Col-

*Bushkill continued on page 7*



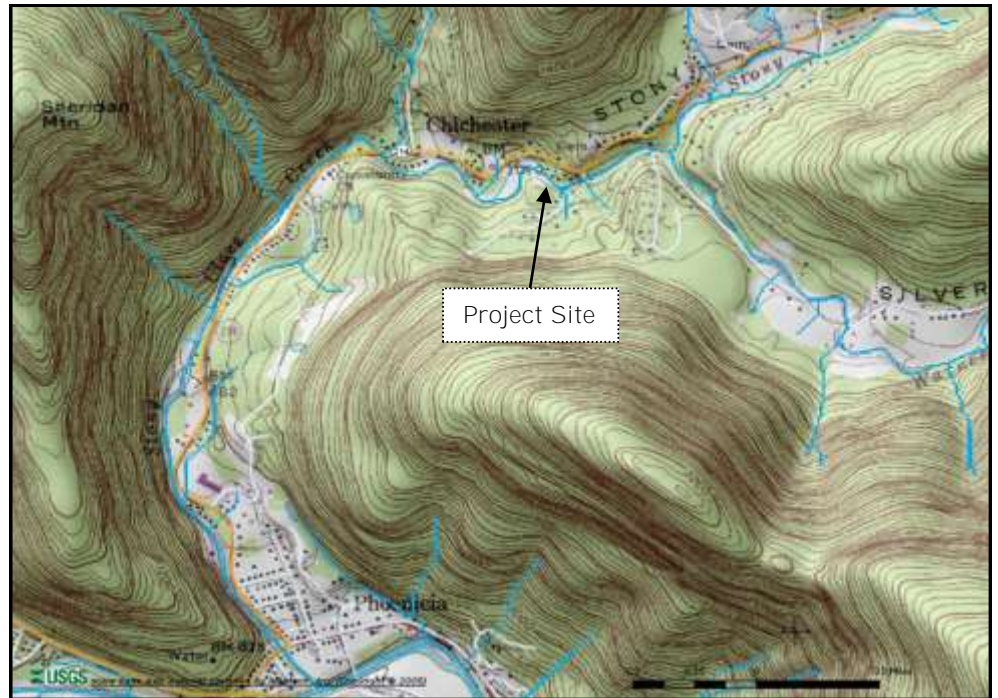
*Chichester Stream Project continued from page 1*

large hillslope approximately 30 feet high and 500 feet long. The hillslope was made almost entirely of clay, which erodes easily and is a source of turbidity. A design was developed to move the stream, reshape the surface of the hillslope, and stabilize the base of the eroding slope with a rock-constructed terrace that floodwater could flow across rather than cutting into the steep hillside. This first project in Chichester was scheduled for construction in early September 2011, but Tropical Storm Irene's arrival in the Catskills forced a year's delay. After Irene, this site continued to erode and ultimately required more work and expense than originally planned.

Project construction went forward one year later in August and September 2012. Fastracs, Inc., a firm specializing in construction of stream restoration projects, worked with the Town of Shandaken, Ulster County Soil and Water Conservation District, and Milone & MacBroom to implement the project. The hillslope was stabilized and reshaped, and vegetation was planted on the newly constructed bank to hold the rocks and soil in place. The stream was restored to a course and slope typical of this reach before the erosion occurred. Rock features were placed on the stream bed to prevent the bed from eroding downward and further under-cutting the bank. In the end, around 700 feet of badly degraded stream was **restored by changing the channel's course**, redirecting flows, and securing the failing hillslope. The project was completed for about \$1,000,000 with nearly 60% of the costs covered **by federal dollars from the USDA's Natural Resource Conservation Service, Emergency Watershed Program.** Federal funding was key to **the AWSMP's ability to repair this stream site** and others following Irene.

Soon after the project's construction

*Below: The approximate location of the Chichester stream restoration project completed in 2012.*



was completed, a high flow event occurred on September 18, 2012. This event was bigger than the flow that would have normally caused significant erosion through this reach. The project handled the flow very well, with floodwaters reaching the newly constructed terrace as planned.

In 2013, AWSMP plans to repair two more sites along this troubled reach of the Stony Clove Creek in Chichester. These sites are even more challenging than the project completed in 2012, and additional engineering assessment is underway to prepare for construction in

summer 2013. One of the sites has been **nicknamed "the bowl of doom,"** because of its large half bowl-like shape circling one of the largest and most dramatic hillside slumps seen in the Ashokan watershed. This site is the number one contributor to chronic turbidity in the watershed and its repair should make a substantial difference in clearing up the water flowing down the Stony Clove Creek through Phoenicia and into the Esopus Creek.

*Below, left to right: The Chichester site before and after construction was completed.*



## Science Corner: Retrofitting Your Home for Floods



*Above: An example of a home built on columns. Elevated homes are significantly less susceptible to flood damage and cost less in flood insurance premiums.*

Regular flooding is a fact of life in the Ashokan Watershed and homeowners need to be prepared before flood waters rise. Many area residents have evacuation plans and know where shelters are located. However, you may not be aware that there are things you can do to prevent damage to your home. In fact, there are a number of ways that you can retrofit your home to not only reduce flood damage, but also lower your flood insurance premiums.

The most effective way to reduce flood damage to your home is by elevating it. There are a number of methods you can use to elevate your home including using fill or by building your home on piles, posts, piers or columns, or by building

atop walls or crawlspaces. All of these techniques will require you to hire a contractor with knowledge of these techniques, and at times can be expensive, but they can be more cost effective than rebuilding after floods.

The purpose of raising the elevation of your home is to bring it above the base flood elevation (BFE). The BFE is the level that the water is expected to rise during a 100-year flood event. In New York State, new construction, buildings getting substantially improved and those that have been substantially damaged in the 100-year flood zone must be built at least 2 feet above the BFE. This extra space above BFE is called freeboard. The more freeboard you have the less

likely you are to have significant damage from flood waters. Your flood insurance premiums will also be lower.

Crawlspaces/walls they must be built in a particular way to prevent flood damage. Walls must be built with openings large enough to allow floodwaters to flow in and out. This prevents the structure from collapsing under hydrodynamic and hydrostatic forces. There is a formula available to determine the extent of openings that walls need to resist hydrostatic pressure. Regardless, designs should be done by a registered professional engineer or architect.

Hydrodynamic forces refers to the force that moving water has on solid structures. For example, the force of water hitting a building head-on can cause significant damage to the structure as well a drag effect on the sides of the structure. Hydrostatic forces refers to the weight that standing water has on structures. The deeper the water, the more it weighs and the greater the hydrostatic pressure. Since water is fluid it exerts the same amount of pressure sideways, known as lateral pressure, as it does downward. Most walls are not built to withstand hydrostatic pressure and tests have shown that as little as three feet of standing water can be enough to collapse the walls of a typical frame house. Basement walls and floors are particularly susceptible to hydrostatic pressure because they are subjected to the combined weight of water and saturated earth during a flood.

Buildings should also be anchored to stabilize them against flood forces. In areas of shallow flooding, normal building standards are usually sufficient. In areas with flooding that flow faster than 5 feet per second additional measures should be taken including reinforcing crawlspace walls, using deeper footings, using extra bolts to connect the sill to the foundation, or installing

*Flood Retrofitting continued on page 6*

rods to connect the cap to the sill.

In addition, it is important that all parts of a building exposed to floodwaters be made of flood-resistant materials. Flood-resistant material is defined as including any building product capable of withstanding direct or prolonged contact (at least 72 hours) with floodwaters without sustaining significant damage (any damage requiring more than low-cost cosmetic repair such as painting). Examples of flood-resistant materials include: concrete, clay or ceramic tile, galvanized or stainless steel nails, vinyl or rubber floor covering with waterproof adhesives, metal doors and window frames, polyester-epoxy paint, stone, slate or cast stone with waterproof mortar, and pressure treated or naturally decay resistant lumber or marine grade plywood.

All of these options are suggestions and each situation is different for every homeowner. It is highly advisable that you consult with a professional engineer or architect who has knowledge of flood retrofitting structures. You should also consult with **your town's code enforcement officer** as he or she may know of specific regulations that your local municipality requires.

All of these options cost money and often can be very expensive to do. However, FEMA and other federal agencies have an array of financial assistance programs that can assist individual property owners. If a Presidential Declaration of a Major Disaster has been issued (as it was after Tropical Storm Irene) you should seek out information from FEMA and the NYS Emergency Management Office as there is usually funding available to homeowners following a disaster. These funding sources are usually limited and some homeowners

may not qualify.

FEMA also offers Increased Cost of Compliance (ICC) grants for flood insurance policy holders. If your home is covered by a Standard Flood Insurance Policy, is in a Special Flood Hazard Area (a 100-year flood zone) and has been declared by your community to be substantially damaged or repetitively damaged by floods, ICC will help pay for certain types of retrofitting up to \$30,000.

#### FEMA's Hazard Mitigation Grant Program

(HMGP) funds critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. It is only available following a Presidential disaster declaration. The amount of HGMP money that can go to an applicant varies based upon Federal assistance formulas.

There are other agencies that can assist individuals with flood retrofitting. The US Army Corps of Engineers has the statutory authority to participate in flood protection projects that times may include residential retrofitting. The Natural Resources Conservation Service also has similar authority for eligible property owners. For more information on these resources please visit their respective websites at [www.usace.army.mil](http://www.usace.army.mil) and [www.nrcs.usda.gov](http://www.nrcs.usda.gov).

For more information on FEMA assistance programs and flood preparedness please visit [www.ready.gov/floods](http://www.ready.gov/floods).

#### CATSKILL STREAMS BUFFER INITIATIVE (CSBI)

The CSBI Program is currently seeking applications **for next year's planting season. If you own** streamside property within the Ashokan Watershed you may be eligible to receive free plants from the program. Native riparian (streamside) plants help to prevent erosion because their root structures help to hold the soil, even during high flows and floods. For more information about the CSBI

## Upcoming Programs

### January

The final in-person training of the inaugural class of Cornell Cooperative Extension Master Watershed Stewards (MWS) will be held on January 26 at the CCE office at 232 Plaza Road in Kingston, NY. MWS candidates will show their final projects and present their accomplishments to the rest of their classmates and CCE staff.

### February/March

AWSSMP staff from Cornell Cooperative Extension of Ulster County along with other agency and community partners plan on holding a workshop to discuss the issues associated with recreational releases and debris management. Date and time TBA.

### April

Save the Date! AWSMP will hold its annual conference on April 27, 2013 at the Ashokan Center in Olivebridge, NY. Themes we are expecting to explore include the history of the Ashokan Watershed and ways to restore streams.

*Go to our website [www.ashokanstreams.org](http://www.ashokanstreams.org) for more information about events and programs or follow us on Facebook!*

program and to find out if you are eligible please visit their website at [www.catskillstreams.org/CSBI/](http://www.catskillstreams.org/CSBI/).

Look for a story in our next issue about **AWSSMP's new willow bed in the Town of Woodstock!** These willows will help CSBI during stream stabilization and restoration projects.

## AWSMP Program Updates

### AWSMP STAFF ANNOUNCEMENTS

AWSMP is proud to announce the addition of Leslie Zucker to our staff. Leslie is the new CCE Program Coordinator, taking over for Elizabeth Higgins who transferred to a position in Cornell Cooperative Extension of Sullivan County earlier this year. Before joining the AWSMP, Leslie was the Hudson River Estuary Biodiversity Program Coordinator with Cornell's Department of Natural Resources and NYSDEC for 11 years. Leslie is originally from Ohio and moved to New York in 2001. She currently lives with her husband in Palenville and travels along the Stony Clove Creek on her daily commute to work. Leslie has a Master of Science degree from Ohio State University where she studied riparian ecology and contributed to stream management and water quality programs as an Extension Associate. She has authored several Extension bulletins and fact sheets and has experience with grant development. As Program Coordinator her responsibilities include developing and overseeing implementation of an annual education and outreach program and facilitating the distribution of program funds. In her free time she enjoys hiking, photography and nature writing.

As AWSMP welcomes Leslie Zucker to our team, we must say goodbye to Cory Ritz, Project Manager with the Ulster County Soil & Water Conservation District. Cory has recently accepted a position with the National Ecological Observatory Network (NEON), a nonprofit organization funded by the National Science Foundation that collects and analyzes data to better understand the impact of climate change. **Cory will be in charge of NEON's northeastern US data gathering operations.** Since 2009, Cory has overseen the technical operations and UCSWCD staff with AWSMP. He has been instrumental in numerous emergency flood response operations and was indispensable



*Above: Leslie Zucker, the new Cornell Cooperative Extension of Ulster County Program Coordinator for AWSMP.*

*Below: Cory Ritz (UCSWCD), will be leaving the program in December 2012.*

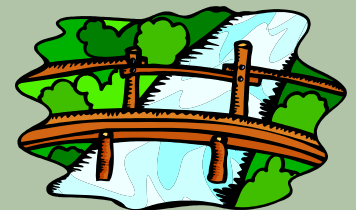


following Tropical Storms Irene and Lee. Cory has very often been the public face of this program, giving presentations at numerous AWSMP workshops and trainings and helping **innumerable landowner's one-on-one** with their streambank concerns. In addition, Cory has dedicated himself to working with local highway departments and contractors; educating them on the importance of proper stream management and natural channel design. The entire AWSMP team thanks Cory for his years of leadership and service and wishes him the very best in his new position.

*Bushkill continued from page 3*

lege, completed a stream assessment of the Bushkill. The assessment included walking and mapping five miles of stream to document the **conditions following Tropical Storm Irene's** flooding and the debris clearing and channel work that followed in the wake of the flood. The assessment focused on the area along Watson Hollow Road (County Route 42) beginning at the Kanape Brook Trail downstream to the reservoir. We identified many problem spots including future flood threats to County Route 42, landslide areas, large woody debris problems, the extent of invasive riparian species and water quality threats. Data collected from the Bushkill stream assessment will be used in the development of a guide to the stream as well as Ashokan Watershed-wide stream management plan. These publications will be made available on our website ([www.ashokanstreams.org](http://www.ashokanstreams.org)) when they are completed, so stay tuned. The Ashokan Watershed Stream Management Program (AWSMP) is a coordinated effort between Ulster County Soil and Water Conservation District (UCSWCD), Cornell Cooperative Extension of Ulster County, the Catskill Watershed Corporation and NYC Department of Environmental Protection. Although there is still much to be done, thousands of public dollars and hundreds of staff-hours have already been dedicated to the Bush Kill watershed.

For more information on our plans, best management practices or monitoring efforts along the Bushkill please contact Bobby Taylor, UCSWCD ([Bobby.Taylor@ashokanstreams.org](mailto:Bobby.Taylor@ashokanstreams.org), 845-688-3047).





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### Editors

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## Announcements: AWSMP is Getting a New Website!

Many of you have visited us on the AWSMP website ([www.ashokanstreams.org](http://www.ashokanstreams.org)) where you have gleaned useful information about area streams and their respective management plans, as well as information about upcoming events and programs. For the past few months AWSMP staff from Cornell Cooperative Extension of Ulster County with input from other agency partners have been working with a professional graphic designer to develop a new website. The goal of this website is to create a more user-friendly and intuitive layout so visitors to the site can quickly and easily access desired information.

Following Tropical Storms Irene and Lee, AWSMP was flooded (literally and figuratively) with requests for assistance from government officials and private citizens. As new information became available it

became increasingly difficult to keep **AWSMP's constituents up-to-date**. The old website was in an older format that was difficult to update. The new webpage will be using WordPress, an open source content management system which makes it much easier for AWSMP staff to keep the site updated.

Beyond its appearance the new website will also feature an expanded list of items and topics that are educational, technical, and fun! There will be individual pages dedicated to each of **AWSMP's committees** and working groups, pages dedicated to the major streams of the watershed, links to AWSMP publications and research, volunteer opportunities, and much, much more!

**"Our goal for the new** webpage is to provide an visually appealing clearinghouse of information that our constituents can



Above: A screenshot of the new website homepage.

access quickly and easily and get the **information that they need,"** said Brent Gotsch, Watershed Educator for the program.

We expect the new website to become live sometime this winter so check back periodically. The look and layout will be different but the web address will remain the same: [www.ashokanstreams.org](http://www.ashokanstreams.org).