

**An Interim Watershed Management Plan for
the Lower, Non-Tidal Portion of the Rondout Creek,
Ulster County, New York**



December 2010

Prepared by the Rondout Creek Watershed Council

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EXECUTIVE SUMMARY

The Rondout Creek Watershed Council (RCWC), a coalition of multiple stakeholders, was formed in 2007 to promote watershed awareness, planning and protection for the central portion of the Rondout Creek. The incubation of the RCWC, began with stream monitoring, education and outreach and subsequent watershed planning efforts that were made possible by grant funding from the NYS DEC Hudson River Estuary program. The project was initially administered by Open Space Institute/Hudson Basin River Watch and Hudson River Sloop Clearwater and later in partnership with Cornell Cooperative Extension of Greene County/Agroforestry Center.

After experiencing a series of heavy rain events and subsequent severe flooding that occurred throughout the Hudson Valley between 2004-2007, there was an enthusiastic response to the proposed coalition by local property owners, businesses, municipalities and government agencies who sought to increase the number of consensus-building watershed partnerships that would help to identify, educate and implement solutions to these and related water resource issues. In 2010, the New England Interstate Water Pollution Control Commission graciously provided additional funding for completion of this project.

The Rondout Creek is one of the largest tidal tributaries to the Hudson River. For management purposes, the watershed has been delineated into three sections: the Upper portion can also be referred to as everything above the Rondout Reservoir, extends from the headwaters flowing southerly down the slopes of Rocky Mountain in the Slide Mountain Wilderness Area of the Catskill Park into a narrow valley, receiving the Picket Brook tributary and three unnamed streams from the slopes of Peekamoose Mountain to the outlet of the Rondout Reservoir; the Lower, Non-Tidal portion which includes the area below the Rondout Reservoir to the Eddyville Dam; and the Tidal portion which extends from the Eddyville Dam to the Hudson River.¹ The New York City Department of Environmental Protection, in collaboration with local stakeholders, has developed a management plan for the upper portion of the Rondout Creek. The development of a plan for the tidal Rondout section is currently underway.

The formation of the RCWC resulted in the adoption of an intermunicipal agreement (IMA) amongst the four major municipalities in the lower non-tidal portion of the watershed -- Wawarsing, Rochester, Marbletown and Rosendale -- to produce an interim watershed management plan for this section of the watershed. The RCWC envisions that the management plans for the three sections of the Rondout will eventually be combined into one complete document addressing the needs and providing information about the entire Rondout Creek Watershed.

The purpose of this document is to provide civic leaders, policy makers, community groups and individual citizens with comprehensive information about the state of the Rondout Creek and actions that are needed to enhance water quality and quality of life within the watershed boundaries. The plan acts to identify current information that will help inform interested parties about the watershed, as well as pointing out the gaps in available information and, suggesting

¹ [http://en.wikipedia.org/wiki/Rocky_Mountain_\(Ulster_County,_New_York\)](http://en.wikipedia.org/wiki/Rocky_Mountain_(Ulster_County,_New_York))

what research is needed and what future actions should be taken. The basis for the information presented in the plan and the recommendations that are proposed derive from a Municipal Watershed Questionnaire, water quality and spatial data specific to the region, and pertinent information gathered from RCWC stakeholders and advisors. Based on information provided through multiple workshops and meetings, watershed protection goals and recommendations were defined in the following four categories:

- 1) Stormwater Management,
- 2) Floodplain Management,
- 3) Agriculture and Forestry, and
- 4) Outreach and Education.

Findings: Utilizing an iterative process that included frequent meetings with RCWC members, municipal officials, and a variety of key stakeholders, along with input from area experts, the following observations have been documented in the Rondout Creek Interim Watershed Management Plan (RCIWMP):

- Topography: The topography of the watershed has developed over millions of years with four main periods of bedrock deposition: 1) Late Ordovician Flysch marine trough, 2) Silurian Shawangunk Conglomerate beach, 3) Late Silurian and Early Devonian Carbonates in warm shallow seas, and 4) Devonian Catskill delta.
- Climate: Daniel Smiley's Research Center at the Mohawk Preserve reports that the annual precipitation on the preserve, in Ulster County is 44.57 inches and the average for Nov 2010 is 3.79 inches (calculated by adding up all the measures from each rain event and dividing by the number of months in a year; with an average deviation of +/- 51)². Collected data also documents a shift over time to warmer temperatures and there have been fewer a number of zero degree or fewer days and more 90-degree or more days at the Mohawk Preserve. It has also been recorded that the past seven years since 2003 have been the warmest on record here.
- Impacts of Climate Change: Shoreline communities along the Rondout are very likely to see an increase in the frequency of flooding and erosion events due to climate change. This may result in:
 - The regular resuspension of waterborne pollutants that may put public health at risk
 - Inundation of critical infrastructure and facilities, especially those in flood-prone areas, leading to a loss of services
 - Further stress to already degraded stormwater and sewage systems, as well as municipal infrastructure
 - The impairment of water quality and an increase in water quantity
 - Impacts on populations of local fish and a possible increase in pest and insect epidemics.
- Biodiversity: The habitats that support biodiversity of the watershed and the species living in the diverse ecosystems provide important services such as the purification of drinking water, control of floodwaters, replenishment of aquifers, pollination of crops,

² <http://www.mohonkpreserve.org/index.php?id=146,162,0,0,1,0>

creation of fertile soil, control of insect pests, and adaptation to a changing climate. Healthy natural systems also provide opportunities for hunting and fishing, outdoor recreation, and environmental education and research. All of these services and benefits to the community cost less than the artificial or built alternatives, contribute to local economies, and are widely recognized as important assets by a variety of stakeholders.

- Riparian buffers: play a particularly important role in the watershed by:
 - Slowing the rate of runoff
 - Capturing excess nutrients carried from the land
 - Protecting stream banks and floodplains from erosion
 - Regulating water temperature changes
 - Providing food and cover to terrestrial and aquatic fauna
 - Acting as natural filtration systems.
- Water Quality: With only 9.4% average impervious cover, the lower non-tidal Rondout Creek is designated as “slightly impacted,” which means that it has maintained fairly good water quality. However, numerous point and non-point sources of pollution in the watershed may threaten the health of the creek and its watershed, with some areas identified through monitoring t showing early signs of variable human impact; overall the Creek is only slightly impacted. Depending on land use patterns, however, some sections of the watershed are more impacted than others, and much of the watershed is subject to development pressure.
- Reducing Effects of Impervious Surface: Impervious surfaces can greatly alter the hydrology of a watershed and have major impacts on the amount and quality of the water entering streams and other waterbodies and aquifers. Because Green Infrastructure practices, such as rain gardens, bioswales, pervious paving, and green roofs, are viable solutions to mitigating the problems caused by impervious surfaces and assuring groundwater recharge, strengthened local regulation and goals to reduce impervious surface for particular areas should be developed
- Stormwater Regulations: The towns of Marbletown and Rosendale have been designated as Municipal Separate Stormwater Sewer System (MS4) communities in the lower non-tidal portion of the watershed and are successfully implementing various stormwater management practices. Although Wawarsing and Rochester are not yet required to implement MS4 programs, MS4 practices are valuable for protecting water quality within the watershed whether the municipality is designated as MS4 community or not.
- Economic Development: Economic initiatives, if designed with conservation and environmental considerations, can potentially enhance watershed protection, minimize negative impacts, and create green jobs.

Recommendations

This plan suggests recommendations for each of the four watershed protection categories identified. However, as the plan was being developed it became apparent that there were recommendations that would serve to address multiple issues. These recommendations are summarized below:

1. Continue to facilitate the functioning of the RCWC and form an ongoing intermunicipal council to oversee and coordinate the work that is already being done by the committee.
2. Promote ordinances designed to protect the natural resources of the watershed.
3. MS4 communities should continue to work toward meeting all MS4 requirements. Where feasible, towns that are currently not MS4 communities (Wawarsing and Rochester) should voluntarily adopt practices and ordinances that parallel the MS4 program. Specifically, this means implementing Best Management Practices that satisfy the six minimum control measures: 1) Public education and outreach, 2) Public Participation and Involvement, 3) Illicit discharge detection and elimination, 4) Construction Site Runoff Control, 5) Post-Construction Runoff Control, 6) Pollution prevention (see Section 4).
4. Create a comprehensive Rondout Creek Watershed Atlas with standardized maps that not only inventory the natural resources in the watershed but also identify areas at risk due to climate change and development, identify access points to the creek and other existing recreational opportunities, and delineates local watershed management units.
5. Use zoning and planning tools to manage for open spaces, biodiversity, forestry, agriculture, and the protection of riparian and other sensitive areas. Promote education and outreach specifically to town Planning Boards and other municipal departments, advisory groups and agencies.
6. Adopt Better Site Design principles (also known as Low Impact Development or Green Infrastructure practices) to manage stormwater runoff and reduce impervious surfaces in the watershed.
7. Increase the focus on riparian zones and coordinate efforts to protect these areas throughout the watershed. This includes: mapping and identifying potential sites for restoration, creating zoning that will stop development in the floodplain, reducing impervious surfaces in these areas, increasing education about the importance of these areas.
8. Assure local food security and the rural character that graces much of the landscape in this portion of the watershed by promoting local agriculture and preserving farmland, as well as forestry and other open space, that serve to protect water quality.
9. Promote public education and outreach programs by collaborating with organizations that currently exist to raise awareness and garner support for watershed issues and best management practices. Issues to focus on include: invasive species, non-point source pollution, biodiversity, climate change
10. Intermunicipal collaborations should be explored to identify funding and cost-sharing opportunities that can further this Plan's objectives throughout all four municipalities.