



Hudson Basin River Watch

NYS DEC Hudson River Estuary Program
Hudson River Estuary Citizen Monitoring and Administration Project

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ALBANY

Hudson River

Authors:

Doug Reed, Director, Hudson Basin River Watch
J. Kelly Nolan, Regional Coordinator
Martha Cheo, Regional Coordinator
Margie Turrin, Regional Coordinator
Diana Bregman, Regional Coordinator
Simon Gruber, Stormwater Coordinator

NEW YORK CITY

Hudson Basin River Watch (HBRW) supports the Hudson River Estuary Action Plan commitments of ecosystem monitoring, public education activities, and watershed outreach within the Hudson River Estuary and its tributaries. HBRW organized schools, citizen groups and municipalities to monitor, protect, and restore the Hudson River Ecosystem through a coordinated educational river stewardship program. HBRW provided the following FY 2004-2005 contract services:

1. Coordinated “A Day in the Life of the Hudson River/Snapshot Day”

FY 2004-2005 represented a transition year for the coordination of Snapshot Day. Working with the Hudson River Estuary Program, HBRW helped plan, coordinate, execute, and evaluate Snapshot Day 2004 and began planning for Snapshot Day 2005. More than one thousand students and teachers participated in this “Day in the Life of the Hudson River/Snapshot Day” on Oct 6, 2005. They observed and sampled the estuary over its entire length from Troy to New York Harbor, documenting physical, chemical, and biological data. As of June 2005, HREP and HBRW have 29 sites confirmed for Snapshot Day 2005 with over 50 environmental educators and participating school groups. Four training sessions were developed and scheduled for August and September 2005. For more information, go to the web site <http://www.ldeo.columbia.edu/edu/k12/snapshotday/>

2. Presented three Clean Water Congresses

The Capital Region Clean Water Congress was held on December 9th, 2004 at Darrow School and attended by approximately 125 students, teachers, citizens and government officials. Five schools and one environmental organization were involved making up a total of 6 teams participating in the Mock Stream Analysis; a lab practical where teams were tested on their ability to correctly conduct water chemistries and properly identify macroinvertebrate specimens following HBRW protocols. Each team was also required to orally present their stream study findings. Additionally, 5 schools and 2 environmental organizations provided poster displays and 6 scientific reports were submitted on their stream monitoring programs. See Hudson River Estuary Watershed Assessments.

HBRW partnered with Cornell Cooperative Extension, Keep Rockland Beautiful and Rockland County Americorp to present the Rockland Land Use Planning Symposium on November 16, 2004. Partners developed a case study on the land use decision to develop Patriot Hill’s Golf Course in Stony Point. The study focused on the impacts of Land development decisions on local water quality, specifically the Minisceongo Creek and ground water. Seventy-five students and teachers attended from North Rockland High School, Nyack High School, Pearl River High School, and Clarkstown South High School.

HBRW partnered with Westchester County Parks Department, Cornell Cooperative Extension of Westchester, and Westchester County Planning Department to present the Westchester Land Use Symposium on April 6, 2005. Ninety students, teachers and Urban

Park Rangers attended from Edgement Middle School, Seven Bridges Middle School, Fox Lane High School, John Jay Middle School, Evander Child's High School, and the Tri County Home Schoolers of Croton. See Rockland and Westchester Symposium Programs in appendix.

2. Held one Hudson River Bioassessment Institute

A 2.5-day Stream Biomonitoring Training Workshop was conducted on June 1-3, 2005 for 16 participants at Black Rock Forest. Participants included: NYS DEC staff, county planning, health, and natural resource personal, citizen volunteers and environmental organizations. This training/refresher workshop covered classwork in the theory, methods, and study design of stream monitoring. Practical field work included collecting physical, chemical, and biological data (see Black Rock Creek Watershed Report).

□Participants received classroom instruction prior to working together in the field to perform a watershed site assessment. The Institute program included but was not limited to the following subjects: Anatomy of a Watershed Assessment; NYS Water Quality Standards and Regulations; Quality Assurance and Quality Control; Chemical indicators of water quality □; □Physical site assessment; Biological indicators of water quality: Bacteriological plating and incubation; Program planning; □Data interpretation & analysis; and Taking action.

3. Completed ten Hudson River Estuary Watershed Assessments

HBRW provided support and assistance to **ten** (10) watershed groups to monitor and assess the health of their watersheds or segments of the Hudson River Estuary. Over 600 students, teachers and volunteers participated in HBRW training and sampling events. Waterbodies chosen for assessment were identified and chosen by key watershed constituencies, HBRW, DEC Division of Water, and the HR Estuary Program.

Eight Hudson River Estuary Watershed assessment reports (and two Upper Hudson River Watershed reports) were completed. See the following "State of the Hudson River Estuary Watershed." Reports are posted online at www.hudsonbasin.org. Copies of these reports were mailed with cover letters to their respective watershed communities explaining the results of each waterbody assessment and indicating the overall health of the stream or watershed, whether it is meeting minimum State water quality criteria, and how land use decisions are potentially contributing to non-point source pollution.

State of the Hudson River Estuary Watershed

The Hudson River Estuary Watershed remains polluted with sediment, nutrients, and pathogens. The Upper and Mid-Hudson tributaries are least impacted, though all contribute some nutrients and significant sediment loads to the Estuary. The Lower Hudson Estuary and its tributaries are the most impacted which is reflected in the

chemical, biological and physical data. Watershed groups and school-based volunteers have documented significant nutrient loading, extreme high and low dissolved oxygen saturations, altered macroinvertebrate populations, and low alkalinity.

HBRW has implemented Hudson River Volunteer Estuary Monitoring through joint coordination with HREP sof “A Day in the Life of the Hudson River/Snapshot Day.”

Lower Hudson Estuary

Chelsea Pier

Between September 2004 and January 2005 students from the Humanities Preparatory Academy in New York City monitored the Hudson River at Chelsea Pier with the help of their Teacher, Christina Trowbridge and Diana Bregman, Regional Water Monitoring Coordinator for Hudson Basin River Watch (HBRW) in partnership with NYC Soil and Water Conservation District (NYCSWCD).

Over 4 days in September, October, December and January 2004/2005 monitoring took place at the chosen test site: the Hudson River at Chelsea Piers from the floating docks just in front of the Surfside Marina. QAQC was followed according to the HBRW Guidance Document which follow (EPA) guidelines for volunteer stream monitoring programs.

The Hudson River flows through industrial and residential areas alongside Manhattan and the Bronx to the north with urbanized New Jersey on its east bank. It is evident that the river has been impacted by large scale industrial and residential use which continues to pose threats to water quality through pollution discharge, Combined Sewer Overflows (CSOs), siltation, non-source point pollution, road run-off, toxic dumping and dumping of debris.

79th Street Boat Basin

On 3 days in May and June, 2005, Diana Bregman, New York City, Regional Water Monitoring Coordinator for Hudson Basin River Watch (HBRW), in partnership with NYC Soil and Water Conservation District (NYCSWCD), conducted 3 chemical monitoring efforts on the east side of the Hudson River at the 79th Street Boat Basin on the Upper West Side of Manhattan. The Upper West Side’s 79th Street Boat Basin in Manhattan is a city-owned marina located on the Hudson River at approximately Hudson River mile 8. Here at the 79th Street Boat Basin the Hudson River is a tidal estuary that travels along Manhattan's West side through industrial and residential areas between Manhattan island and New Jersey.

1. Water appearance (oily film, greasy globules, floatables) indicated the test segment may not be conducive to aquatic diversity. Pollution sensitive macro-invertebrate species that provide essential protein sources for fish and fauna may be compromised.
2. Excess silt from development may be significantly reducing aquatic habitat.

3. Lack of natural shoreline substrate, vegetation cover and riparian buffer zone may not provide adequate habitat for aquatic and terrestrial wildlife.
4. Dumping of garbage and debris degrades the Hudson River esthetically, recreationally and environmentally.
5. Lack of public access to the river severely limits educational and recreational opportunities for the community resulting in neglect of land and water quality.
6. Chemical data indicates that the test segment is conducive to supporting aquatic life (certain fish, pollution tolerant macro-invertebrates), however, a definitive conclusion may not be drawn without further testing.

Mid-Hudson Estuary

Black Rock Creek

During June 1 – 3, 2005, Hudson Basin River Watch performed a biological stream assessment on the Black Rock Creek, in Orange County, NY, as part of a Hudson Basin River Watch stream monitoring training workshop. Individual biological assessment indices indicated a water quality range from moderately to non-impacted however, due to time constraints the tier 2 biological analyses was not completed. This likely indicated poorer water quality than actually exists.

Orange County Stream Survey

HBRW contracted with the Orange County Water Authority to undertake the 2004-2005 Water Quality Biomonitoring Project. J. Kelly Nolan, HBRW Capital District Coordinator, was the Principal Investigator. The purpose of this study was to sample 59 stream sites within Orange County for benthic macroinvertebrates and to determine both water quality and impact sources. The Wallkill, Moodna, and Quassaic were three major Hudson River Estuary watersheds sampled during this survey.

A majority of stream sites sampled (51%) were slightly impacted, exhibiting a macroinvertebrate community significantly altered from the pristine state. Thirty seven percent of stream sites sampled were non-impacted, indicating very good water. Nine percent of sites sampled exhibited poor (moderately impacted) water. There was a significant negative correlation between increasing specific conductance levels and declining water quality.

Orange County Water Authority and HBRW will continue to work into 2006 to complete the Water Quality Biomonitoring Project. See appendix for the full report.

Black Creek

Members of the Town of Lloyd Environmental Conservation Council (ECC), Education staff at Minnewaska State Park, Teachers from High Meadow School, and other participants assessed the water quality of the Black Creek on June 25, 2005 with assistance of Hudson Basin River Watch (HBRW) Mid-Hudson Coordinator, Martha

Cheo. A physical habitat assessment, chemical testing, and benthic macroinvertebrate analysis were completed on that day.

The physical habitat of the 200 foot long segment ranked “good,” but this assessment comes with a caveat that key aspects of the habitat are human-created and not representative of the overall creek in the area. The “good” rating essentially came from the fact that the stream, banks, and riparian corridor were undisturbed (except for the railroad bridge). The BMI analysis yielded a “slightly-impacted” to “moderately-impacted” result. The only chemical indicators of concern were temperature and dissolved oxygen. The pH was neutral; the alkalinity was not sensitive. Although there seemed to be a solid cover of algae growing on the rocks in the stream at the site, nutrients (nitrate-nitrogen and orthophosphate) were not detected in the chemical sampling.

Upper Hudson Estuary

Kinderhook Creek

The Stream Ecology class from Darrow School collected two sets of evaluations of the Kinderhook Creek in New Lebanon, NY in October of 2004. The Kinderhook Creek has been identified as a Class C trout spawning stream. Its main uses include fishing, trout spawning, and limited contact recreation. The Kinderhook Creek is located off of Adams Crossing Road in New Lebanon. The majority of surrounding land is pastures and farmland.

Based on the physical analysis we can assume that the Kinderhook Creek is a non-impacted stream. According to the chemical standards, the Kinderhook Creek is a slightly impacted stream. The slight impact comes from the decrease in the levels of dissolved oxygen. According to the biological parameters, the Kinderhook Creek is a slightly impacted stream. Benthic data levels generally indicated a non impacted stream, while the fecal coliform levels indicated an impacted stream ecosystem.

Wynants Kill

In September 2003 the Environmental Science Class at Averill Park High School began a long-term study to investigate the health of the Wynants Kill, in West Sand Lake, New York. The Wynants Kill was chosen for study due to its proximity to the Bonded Concrete Plant and several major roads and parking lots. Runoff from these paved surfaces and nearby residential lawns may be negatively impacting the Wynants Kill. The stream depth and flow were determined in addition to collecting benthic macroinvertebrates and analyzing the water for temperature, pH, alkalinity, phosphates, nitrates, and dissolved oxygen. Based on the data collected this year and last year, the Wynants Kill does not appear to be negatively impacted by runoff from the surrounding area according to the chemical data. The biological data indicates that the stream is being slightly impacted and based on the dominant organisms in the sample, the source is most

likely from organic waste or nutrient pollution. More study is necessary to determine if pollutants are entering the watershed in this area and to determine if heavy rains and spring runoff negatively influence the health of the stream.

Upper Hudson & Mohawk

Lisha Kill

The Niskayuna Environmental Study Team of Niskayuna High School is continuing their long-term stream monitoring of the Lisha Kill in the Lisha Kill Preserve in Niskayuna, New York. The goal of the study is to make sure that the stream remains unaffected by pollutants. Physical, chemical, and biological tests were performed at one site on the Lisha Kill. All results fell within the DEC acceptable range.

Based on the chemical, biological, and physical data that was collected, the Lisha Kill is not severely impacted by human pollutants. If there are any pollutants in the water, it is due to the run-off from roadways and nearby lawns. We think the surrounding nature preserve acts as a buffer, absorbing any pollutants before they reach the stream. The major negative aspect of the Lisha Kill is the fluctuations in discharge. These fluctuations can impact the macro invertebrate population.

Sandsea Kill

The Schalmont Central School River Watch team monitored the Sandsea zkill stream in Rotterdam Junction on April 29, Oct 10, and Oct 17, 2004. to study the effects of a local landfill that is located a mile upstream of the test site. The data gathered from the chemical test indicates that the Sandseakill has good quality of water. Three out of the four tests fell within the optimum results. The nitrate, phosphate and pH levels indicates that the stream is unpolluted. Biological test results also support that the water quality is high. The Landfill located near the Sandsea kill in Rotterdam Junction, NY has little to no effect on the quality of the water. This conclusion is based on the chemical tests performed on water samples and the biotic scores comparing downstream and upstream.

Upper Hudson River Watershed

Battenkill

Physical, chemical and biological parameters were assessed during normal stream flow at sites previously studied by the NYS-DEC during low flow years in order to determine the effect of flow on water quality of the Battenkill. Metrics obtained from data at seven sites (above and below a sewage treatment plant) demonstrated that during a normal flow year the Battenkill's macroinvertebrate community structure was significantly affected from nutrients originating from point sources.

It appears that during normal flow years the Battenkill's macroinvertebrate community structure is adversely affected from nutrients originating from a point source. These changes are significant, and once they occur the river struggles for many kilometers, and

does not fully recover. More so, the water quality in the Battenkill appears to be especially vulnerable during low flow years, when presumably minor point and non-point source discharges result in substantial changes in the stream ecosystem.

Hudson River at Hadley

During the 2003 and 2004 school year, the River Watch Consortium students at Hadley-Luzerne High School performed field analysis at four test sites on two rivers, for the ninth consecutive year. The contents of this report will disclose the data received from three test sites on the Hudson River and one on the Sacandaga River. The analytical data tested in the field and in the lab combined with physical surveys from the preceding eight years has shown a slight improvement in the water quality of all four sites in our monitoring zone. While the nitrates and phosphates levels remain relatively similar for the past eight years, there has been an improvement in other aspects such as pH levels, which are now neutral rather than being slightly acidic in the past years, and there is an increase in the alkalinity levels. Dissolved oxygen and percent saturation have continued to remain relatively high, which is beneficial for Class A-S Waters. It is only fitting to monitor the Hudson and Sacandaga Rivers for any adverse impacts that they might have on the environment since both rivers greatly contribute to the economic and recreational resources of Hadley and Lake Luzerne. Along the banks of both rivers there are numerous summer camps. These homes could influence the water quality through runoff by either septic runoff or rain runoff ñ depositing nitrates, phosphates, and even coliform bacteria. Additionally, during the summer months, the Hudson and Sacandaga Rivers are popular for recreational activities. Due to the controlled rapids produced by the Stewarts Bridge Dam, the Sacandaga River has become a popular place for white water rafting, and many local companies depend on this as a stimulant to the summer time tourist economy that has developed in Hadley and Lake Luzerne. Similarly, the Hudson River is used during the summer for fishing, boating, swimming, and other recreational activities. By testing the water quality of these rivers, the public can know that the water that is being used for recreation is clean and safe.

Cataract and Millington Brooks

During each August of 2002 through 2005, Hudson Basin River Watch conducted bioassessment surveys on the Cataract and Millington Brooks as part of a stream bioassessment training program. Sites were assessed for physical, chemical, biological, and bacteriological parameters. This report provides an abbreviated summary of the general water quality and water quality trends at those sites. For more extensive background information on the watershed, site locations, rationale of data collected, methods, bibliography, and quality assurance and quality control protocol the reader is directed to the 2002 Cataract and Millington Brook report available at: www.hudsonbasin.org. Complete physical, chemical, biological, and bacteriological data is available from the author, J. Kelly Nolan at <hbrw@att.net>. Physical site assessments, ranging from good to excellent, remained relatively unchanged for each site over the survey period. Cataract and Millington Brooks will continue to be sampled yearly as part of the Hudson Basin

River Watch's Stream Bioassessment Institute training program. This will allow for continued trend monitoring and follow-up of the watersheds general water quality.

4. Developed and provided Phase II Stormwater Management Outreach

HBRW continued Storm Drain Marking in Rockland with Pearl River Environmental Club and worked with Orangetown Drainage Dept. to develop storm drain map for school clubs to use to locate and track storm drains. Outreach and education meetings were held to plan the routes, prepare the handouts, and collect parent authorization. Seventy (70) storm drain decals were installed and volunteers distributed 185 EPA pamphlets on storm drain education. Margie Turrin, HBRW Lower Hudson Regional Coordinator, prepared and presented reports on Storm Water Decal and Education Program and Snapshot Day for Oct. 2004 DEC Estuary advisory board meeting.

Martha Cheo, HBRW Mid-Hudson Regional Coordinator, organized a day to install storm drain decals with local volunteers, co-sponsored by the Village of New Paltz Environmental Conservation Commission. Volunteers placed Hudson River Estuary decals on 44 storm drains in the Village that say "Don't Dump, Drains to Wallkill River."

HBRW worked with the Saw Mill River Coalition to develop storm drain decal programs with three Westchester County community groups.

During 2005, Hudson Basin River Watch began a comprehensive outreach program with Simon Gruber, environmental planning consultant who is knowledgeable about the MS4 program requirements. He has experience working with municipal officials on education, outreach and technical assistance projects related to water quality, and is currently working on Orange County's MS4 education and technical assistance project with the Orange County Water Authority and Soil and Water Conservation District.

To date, we have obtained several databases and mailing lists that contain information including MS4 designations for municipalities in the Hudson River Estuary watershed. We have decided that the most efficient way to identify four MS4 communities that can take advantage of this project will be to work through county Water Quality Coordinating Committees in all the Estuary watershed counties. We will send a letter to each of these committees requesting recommendations and referrals to MS4 communities that will potentially be interested in having a presentation at a municipal board meeting about stream biomonitoring. We will make a presentation to four communities during 2006.

This presentation will include a very brief overview of the six minimum measures required to be implemented by MS4s. The presentation will focus on the potential for stream biomonitoring to be used as part of the implementation of three of the minimum measures: public education, public participation, and post-construction stormwater management. For the first two measures, we believe that volunteer participation in stream biomonitoring training and ongoing monitoring can provide an excellent way of educating and involving the public in local water quality and stormwater programs. For post-construction stormwater management, we will use the presentations to outline the

potential for using stream biomonitoring as a tool for assessing the effectiveness of stormwater programs over time. This kind of monitoring may be a useful component of the overall inspection and management program that is required for stormwater facilities. In the presentations, we will discuss the possibility that financing mechanisms developed to support the maintenance and inspection requirements of the post-construction stormwater management measure can also provide funding to support stream biomonitoring, and thus provide a dedicated funding stream for ongoing monitoring over time. Our goal will be to identify at least one municipality that is interested in implementing this approach, and then to work with them and with HREP and other stakeholders and experts to begin designing the program.

5. Facilitated one integration discussion between HREP staff, HBRW coordinators, and partners.

HBRW planned and facilitated a discussion between HREP staff, HBRW coordinators, and two environmental consultants from Columbia and Orange Counties. Though this meeting did not take place within the contract period, much of the ground work for integration between HBRW and the Orange County Water Authority, the Moodna Creek Coalition, and Black Rock Forest, took place during the 2004-2005 fiscal year. Building on one HREP funded training session for the Moodna Creek Coalition and a separate two-year contract with Orange County Water Authority, HBRW has integrated volunteer monitoring protocols with Orange County water resource data and MS4 outreach program development. HBRW also developed new program integration with Ric Fry, environmental consultant in Columbia County, Friends of Hudson, and Columbia Land Conservancy. On June 30, 2005 HBRW submitted a proposal with Clearwater to the HRE grants program to establish two new watershed groups for Kinderhook Creek and the Rondout. HBRW will continue to partner with other Hudson River agencies, institutions, watershed groups, educators and citizens to expand service and ensure lasting protection for the Hudson River Estuary Watershed.