

Hudson River Estuary Watershed Assessment & Outreach Project

General Information

The New York State Department of Environmental Conservation provided funding for this project from the state's Environmental Protection Fund through the Hudson River Estuary Program. This information is intended to increase awareness of water quality conditions in streams and support community-based watershed protection and restoration projects.

The NYS DEC Stream Biomonitoring Unit's (DEC SBU) methodology was used for all sample collection and analysis tasks. These methods involve collecting, sorting and counting a sample of benthic macroinvertebrates from streams. These are living creatures that live on the stream bottom and other surfaces, including aquatic insect larvae, worms, clams, snails, crustaceans and other groups. Because some organisms are especially sensitive to water pollution, some are moderately sensitive, and others are relatively tolerant of pollution, the relative numbers and diversity of organisms found at each site provide a reliable indicator of water quality. The DEC SBU's analysis methods evaluate the macroinvertebrate community structure (including the presence or absence, relative abundance, and diversity of different species) and yield one overall water quality score, known as the Biological Assessment Profile, or BAP, which is a number from 0-10, where 10 is the best water quality. The DEC SBU also assigns a narrative description of water quality based on the BAP score, as follows:

BAP numerical range	Narrative description
0-2.50	Severely impacted
2.51-5.00	Moderately impacted
5.01-7.50	Slightly impacted
7.51-10.00	Non-impacted

It's important to note that the term "slightly impacted" can be misleading if it's taken out of context, because even sites with water quality at only 5.1 on the BAP scale are described as only slightly impacted.

Another key indicator that results from the macroinvertebrate assessment is the Impact Source Determination, or ISD. The ISD is a ranking of the most likely cause of water quality impacts at each site. The ISD categories are: non point source nutrient enrichment; organic -- sewage and animal waste; complex -- municipal and industrial inputs; toxic; siltation; impoundment; and natural. Macroinvertebrates are very useful as water quality indicators for a number of reasons, including their relative lack of mobility (compared to fish), which means they can't move to avoid pollution problems, and the fact that they are relatively easy and inexpensive to sample. A water quality assessment using macroinvertebrates provides an integrated, holistic overview of water quality, and reflects the combined impacts of multiple influences over a period of time. Where problems are found, this method is designed to be followed up by more detailed water chemistry and other monitoring to identify specific causes and sources.

Interpreting and Following Up on Water Quality Findings

In some cases, findings for certain sites include references to the substrate, or type of material on the stream bottom, to the influence of headwaters, and other environmental conditions. These and other factors can influence the BAP score. Professional guidance should be sought from HBRW, the NYS DEC SBU, or other qualified sources about data interpretation questions. In general, however, sites with BAP scores below 7.5 warrant follow up biomonitoring, and sites below 5.0 should be subject to more detailed monitoring including water chemistry, macroinvertebrate tissue analysis, and/or other methods to identify the source(s) of impairment.

For More Information

NYS DEC Stream Biomonitoring Unit: go to <http://www.dec.ny.gov/chemical/23847.html> and download the Quality Assurance Work Plan (methodology) and 30 Year Trends in Water Quality (summary of statewide findings). Hudson Basin River Watch: go to <http://www.hudsonbasin.org/> for a workshop schedule or to download the Guidance Document and other documents. Hudson River Estuary Program: go to <http://www.dec.ny.gov/lands/4920.html> to download the Action Agenda, view the Top 12 Things Your Community Can Do to Protect Water Resources, and find other resources.

Hudson Basin River Watch, East Greenwich NY, 12865. 518-677-5029 <http://www.hudsonbasin.org/>

Watershed Report Card

Watershed Report Card -- A water quality assessment of the Kinderhook Creek watershed

Hudson River Estuary Watershed Assessment & Outreach Project

The Hudson River Estuary Program sponsored collection of water quality data at 10 sites in the Kinderhook Creek watershed in Columbia and Rensselaer counties. Macroinvertebrate samples and basic physical and chemical data were collected in the Kinderhook Creek and several of its tributaries in September 2006. The sampling sites were selected by Hudson Basin River Watch with input from stakeholders in the watershed. Water quality at these sites, based on analysis of the macroinvertebrate community structure following NY State Department of Environmental Conservation methods, was non-impacted at three sites and slightly impacted at seven sites (see back page for more information on NYSDEC methods and terminology and how to interpret these data). A map depicting the sampling locations and impact category is on pages 2-3 of this brochure. The Impact Source Determination (ISD) method indicated the most likely cause of water quality impacts is non-point source nutrient additions at five sites, natural conditions at three sites, and a weaker similarity to natural conditions at two sites.

Station 21205 in the Claverack Creek is located just below Vanwyck Lane. The BAP score, 6.98, is in the slightly impacted category. ISD indicated a community structure most similar to a natural, non-impacted macroinvertebrate community.

Station 19095 in the Claverack Creek is located approximately 400 meters above the CR 22 bridge and approximately 10 miles downstream from station 21205. The BAP score, 6.67, is slightly lower compared to station 21205, but remains in the slightly impacted category. ISD indicates a community structure most similar to one affected by non-point source nutrients.

Station 21207 in the Valatie Kill is located just below the Mead Road bridge. The BAP score, 7.70, is in the non-impacted category. ISD indicates a community affected by non-point source nutrients.

Station 19093 in the Valatie Kill is located just below the CR 203 bridge and approximately 10 miles downstream from station 21207. The BAP score, 7.40, is in the slightly impacted category. ISD indicates a community affected by non-point source nutrients. Specific conductance, an indicator of anthropogenic impacts, increased substantially when compared to the upstream station 21207.

Station 21208 in the Kinderhook Creek is located just below the Presbyterian Road bridge. The BAP score, 7.36, is in the slightly impacted category but close to non-impacted. ISD indicated a weak similarity to a natural, non-impacted community structure.

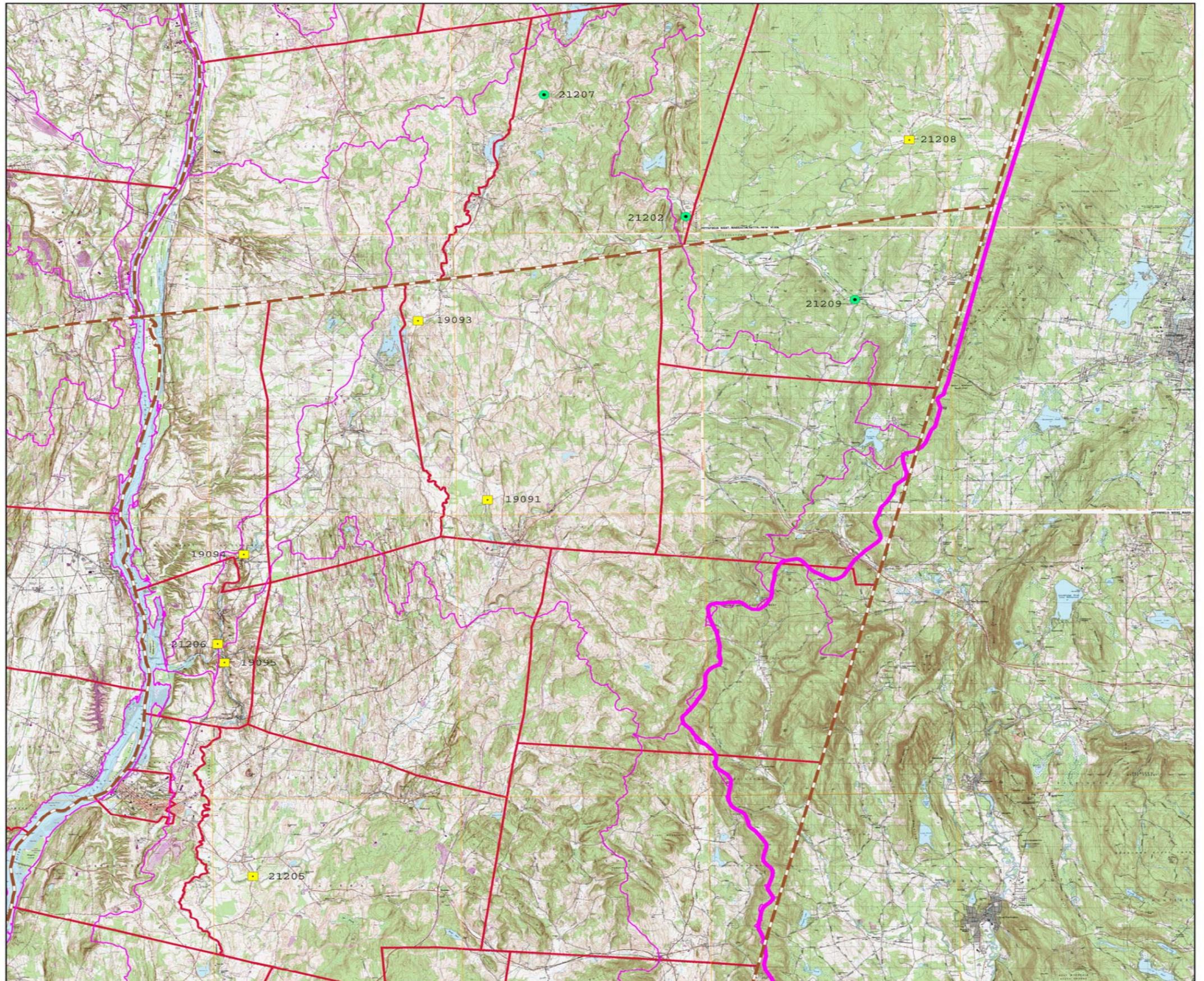
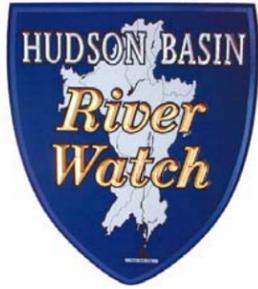
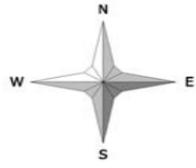
Station 21202 in the Kinderhook Creek is located just above the CR 66 bridge, approximately 10 miles below station 21208 and 4 miles below the confluence with Wyomanock Creek. The BAP score, 8.29, is in the non-impacted category. ISD is most similar to a natural, non-impacted community.

Station 19094 in the Kinderhook Creek is located just above the CR 25A bridge, approximately 12 miles below the Stony Kill confluence and 25 miles below station 21202. The BAP score, 6.05, is in the slightly impacted category, which is a notable decline compared to the upstream station 21202. ISD indicates a community most similar to a natural community, or to one affected by an impoundment, which does exist just above the station.

Station 21206 in the Kinderhook Creek is located just above the confluence with the Claverack Creek. The BAP score, 6.92, is in the slightly impacted category. Compared to station 19904, located 3 miles upstream, water quality shows some improvement. ISD indicates a community most similar to one impacted by non-point source nutrients.

Station 21209 is located on Wyomanock Creek just above the Mill Street bridge and approximately 2 miles upstream from its confluence with the Kinderhook. The BAP score, 8.20, is in the non-impacted category. ISD indicates a weak similarity to a natural community structure.

Station 19091 in the Stony Kill is located just below the High Bridge Road bridge and approximately 2 miles upstream from the confluence with the Kinderhook Creek. The BAP score, 5.85, is in the slightly impacted category but not far from the moderately impacted threshold. This BAP score is was the lowest in this survey. ISD indicates that the most likely causes affecting water quality are non-point source nutrients or impoundment effects, but the latter is considered a spurious finding because no impoundment exists nearby.



- Non
- Slight
- ▲ Moderate
- Severe
- Sub Drainage Basins (HUC11)
- County Boundary
- Town Boundary
- USGS 7.5 Min Quads

Kinderhook Creek Watershed

Hudson River Estuary Watershed Assessment



Transverse Mercator
Lon: 73°33.137' W
Lat: 42°23.058' N
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