

The Black River Basin

Basin Description

The Black River Basin is located in north central New York State where it drains the western slopes of the Adirondack Mountains and the eastern edge of the Tug Hill Plateau before emptying into Lake Ontario near Watertown. The Black River originates in the southwestern Adirondacks and flows over 180 miles to the north and west along the valley between the Adirondacks and the Tug Hill Plateau. The eastern (Adirondack) side of the basin is drained primarily by two large tributaries – the Beaver River and the Moose River – as well as a number of smaller tribs (Independence River, Otter Creek, Woodhull Creek). To the west of the Black River, smaller tribs flow off the steeper eastern slope of the Tug Hill. All together the Black River Basin encompasses approximately 1,920 square miles, including much of central Lewis and northern Herkimer Counties, and smaller parts of Jefferson, Oneida and Hamilton Counties.

The Black River Basin is primarily a forested region, with more than half the basin area falling within the boundaries of the Adirondack Park. However the Black River Valley and Tug Hill areas support significant agricultural activity. This area is very lightly populated, with an estimated 71,792 residents (2000). About half of this total population resides in the Watertown area. Outside the City of Watertown (29,429), the next largest population centers are Lowville (3,632) and West Carthage (2,166). The basin experiences a seasonal influx of residents during the summer. The Fort Drum military installation is also located in the basin near Watertown.

There are about 3,910 miles of rivers and streams (and canal) and over 600 lakes and ponds of various size in the basin. Many of the ponds are too small to be individually assessed, but 179 significant* lake, pond and reservoir waterbody segments (covering 30,890 acres) are included in the Black River Basin Waterbody Inventory. The largest tributaries to the Black River include the Moose River with about 857 miles of streams or 22% of the basin total, Beaver River (624 miles, 16%), Independence River (207 miles, 5%), Dear River (201 miles, 5%) and Woodhull Creek (160 miles, 4%). Of the lakes/reservoirs, the largest are Stillwater Reservoir (6,195 acres, or 20% of lake waterbody acres in the basin), the Fulton Chain of Lakes (4,301 acres, 14%), Lake Lila (1,414 acres, 5%) Big Moose Lake (1,286 acres, 4%) and Woodhull Lake (1,158 acres, 4%). Together these handful of lakes comprise nearly half of the lake acres in the basin.

Water Quality Issues and Problems

Any water quality assessment of the Black River Basin is strongly influenced by atmospheric deposition. Atmospheric deposition of mercury, which results in impairment to fish consumption in basin lakes, and of NO_x and SO_x, which results in acid rain impacts, is responsible for well over half the water quality impairment in the basin. Given the light population and large tracts of forest and state parkland, it is not surprising that impacts from human activities within the basin are generally limited. Beyond the impacts of atmospheric deposition, the most significant source of water quality impact in from considerable agricultural activities throughout the Black River valley. Toxic sediments and chemical spills are cited as sources of impairment (fish consumption advisories) in some localized waters of the basin. Similarly, inadequate on-site wastewater treatment systems in a few smaller unsewered communities have also localized impacts on uses in nearby waters.

* *Significant Lakes* are lakes of 6.4 acres (0.01 square miles) or larger and are included the New York State Lakes Gazetteer.

Atmospheric Deposition of Mercury

Mercury is a toxin that rapidly bioaccumulates up the food chain, and can concentrate in large predatory fish. This is particularly true in acidic waters. While mercury has been largely removed from most wastewater and industrial effluents, air emissions and the resulting atmospheric deposition of mercury on the land and into the waters remain a significant source. New York State has issued health advisories limiting the consumption of various species of sportfish for about a dozen specific waterbodies in the Black River Basin, including two of the three largest lakes: Stillwater Reservoir and Big Moose Lake. A general advisory for limiting the consumption of sportfish from all waters of the state is in place due to the common occurrence of some chemicals (including mercury) in fish and the inability to test all waters. There are additional more restrictive advisories for women and children regarding the consumption of fish from waters of the Adirondacks and Catskills because of the likelihood of atmospheric deposition to acidic waters in these areas.

Acid Rain

Low pH attributed to atmospheric deposition/acid precipitation has been documented in many small lakes and ponds in the basin. Such conditions are known to have a significant impact on ecosystems, impairing fish and aquatic life support in some lakes and ponds. Efforts are underway on a national level to address problems caused by acid rain by reducing pollutant emissions, as required by the Clean Air Act. New York State (and other northeastern states) have taken legal action against USEPA to accelerate implementation of controls. Monitoring of these waters will continue, in order to assess changes in water quality resulting from implementation of the Clean Air Act. However, these changes are expected to occur only slowly over time.

In 2006, NYSDEC established and USEPA approved a TMDL to address acid rain impairment to 143 Adirondack lakes that are located in NYS Forest Preserve lands, including some in the Black River Basin. Recognizing that the available pH data for many of these lakes is 20-30 years old, the TMDL outlines a phased/adaptive management approach, that initially relies heavily on monitoring and assessment to determine current conditions, modeling refinements to estimate future conditions, and the implementation of statewide, regional and national efforts to reduce atmospheric loadings causing the impairment.

Previous Priority Waterbodies Lists included a significant number of small lakes impacted by acid rain/atmospheric deposition. However, with the expansion of the WI/PWL database to accommodate all waterbodies, it was necessary to limit individual listing of smaller lakes. Although these lakes and ponds are no longer listed separately, and the sum total lake area affected is not that large a percentage of the total lake area in the basin, acid rain/atmospheric deposition remains a significant water quality issue affecting a large number of waterbodies in the Black River Basin.

Agricultural Activity

Considerable agricultural activity in the Black River valley and along the Tug Hill has measurable impacts on aquatic life use support and recreational uses of some basin waters. Agricultural runoff contributes nutrient and silt/sediment loads to the streams. Poor agricultural management practices, including permitting livestock unrestricted access to streams, improper manure application on fields, lack of silage leachate control, manure or milkhouse wastewater treatment facilities, intensively cultivated crop lands with little riparian buffer and fertilizer and pesticide application to fields in the absence of approved nutrient/pesticide management plans can have significant impacts on nearby waters. Aside from atmospheric sources, agriculture is the most frequently cited contributing source of pollutants to PWL waters, appearing in over one-quarter of PWL rivers in the basin. Various state and local (county) agencies are working with the farming community to address these issues.

Fish Consumption Advisories

Fish consumption advisories for a number of lakes in the Black River Basin are the result of atmospheric deposition of mercury, as noted and discussed above. An advisory is also in place for Fourth Lake in the Fulton Chain of Lakes due to elevated levels of DDT. The specific source of the pesticide contamination is unknown but under investigation and remediation to remove some contaminated sediments is underway.

Failing and/or Inadequate On-site Septic Systems

Recreational uses and aesthetics of lakes and streams in a number of smaller rural communities are impacted by failing and/or inadequate on-site septic systems. In some cases, raw sewage discharges to the waters have been observed. Such conditions also raise obvious public health concerns as well. Efforts to address these problems are hindered by fiscal considerations. Correcting individual systems and/or the sewerage of a larger neighborhood or community results in significant (often insurmountable) financial burden. The NYSDEC works with local communities to identify funding opportunities to address the water quality impacts.

Groundwater Resources

Although groundwater resources are not specifically tracked through the WI/PWL, they are considered *Priority Waters* nonetheless. Ground water provides drinking water for about one-third of the population of New York State and is the source of base flow for most rivers and streams in the state. Management and protection of both the quantity and quality of this resource is critical for protecting public health, and is also a key element of surface water quality and wetland management efforts. In the Black River Basin, the more significant threats to groundwater resources include agricultural activity and animal feeding operations, on-site wastewater treatment systems, historic/past industrial discharges, hazardous waste sites and pesticide application.

Black River Basin Water Quality Assessment

The series of charts presented on the following pages provides an overall assessment of water quality conditions in the entire Black River Basin. For each waterbody type (rivers/streams and lakes/reservoirs) the first chart shows the percentage of the miles/acres of waters in the basin that fall into the various *Water Quality Assessment Categories*. The red portion of the first pie indicates the percentage of waters characterized as *Impaired Segments* which do not support appropriate uses. The purple portion represents segments with *Minor Impacts* and *Threatened Waterbody Segments*. Taken together, waters in both of these categories (represented by the red and purple segments) comprise the **Priority Waterbodies** (for that waterbody type) within the basin. The percentage of miles/acres for the other Water Quality Assessment Categories – *Waterbodies Having No Known Impacts*, *UnAssessed Waterbodies*, and *Waterbodies with Impacts Needing Verification* – are shown in blue, light blue, and green respectively.

The second pie chart shows the severity of the most significant use impact or restriction for *Priority Waterbodies*. The levels of severity are:

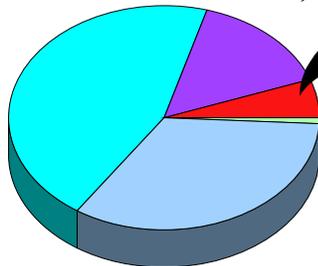
- Precluded:* waters do not support appropriate uses,
- Impaired:* waters frequently do not support appropriate uses,
- Stressed:* waters support appropriate uses, but other water quality impacts are apparent, and
- Threatened:* waters support uses and have no impacts, but activities threaten future use support.

More detailed descriptions of these levels of severity are outlined in [Appendix A - Assessment Methodology](#).

The bar charts indicate the pollutant sources that are most frequently cited as major contributors to the water quality impacts for *Priority Waterbodies* in the Black River Basin. The charts reflect the percentage of miles/acres of the total waterbody area on the Priority Waterbodies List where the source is listed as a major contributor to the water quality impact. For each source, the color shading of the bar indicates the severity (*Precluded, Impaired, Stressed, Threatened*) of the most significant water use impact to the waterbody.

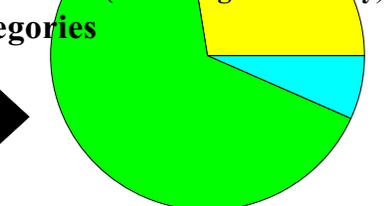
Rivers/Streams

Water Quality Assessment Categories
(for ALL Waters in the Basin)



- PWL - Not Supporting Uses
- PWL - Other Minor Impacts
- No Known Impacts
- UnAssessed Waters
- Impacts Needing Verification

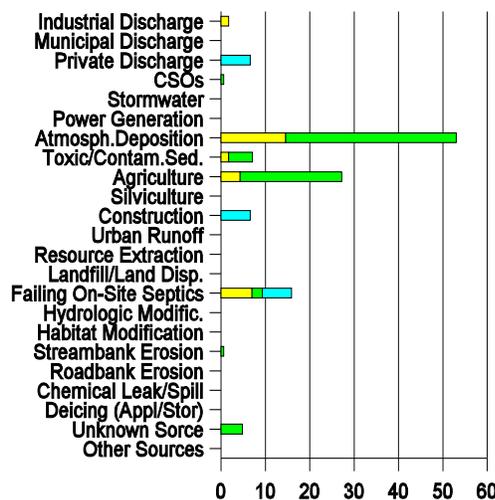
Severity of Problems
(PWL Segments Only)



- Precluded
- Impaired
- Stressed
- Threatened

Black River Basin
Total River Miles: 3,909
Total PWL Miles: 806

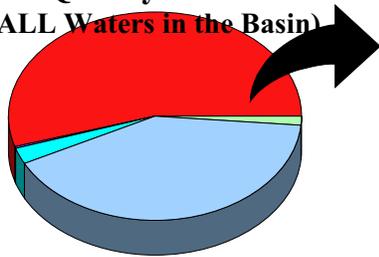
Major Sources of Impact
(PWL Segments Only)



Percent of PWL Waters Affected

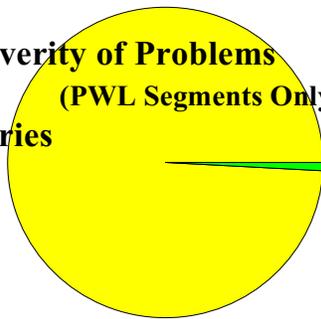
Lakes/Reservoirs

Water Quality Assessment Categories
(for ALL Waters in the Basin)



- PWL - Not Supporting Uses
- PWL - Other Minor Impacts
- No Known Impacts
- UnAssessed Waters
- Impacts Needing Verification

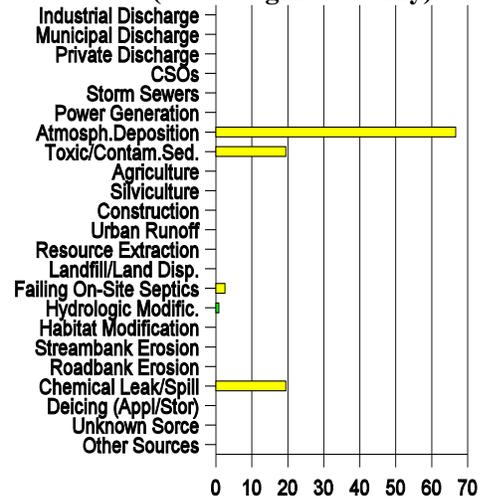
Severity of Problems
(PWL Segments Only)



- Precluded
- Impaired
- Stressed
- Threatened

Black River Basin	
Total Lake Acres:	30,893
Total PWL Acres:	17,059

Major Sources of Impact
(PWL Segments Only)



Percent of PWL Waters Affected

Basin Water Quality Summary

About twenty-one percent (21%) of the river miles in the Black River Basin (806 miles) are listed on the Priority Waterbodies List as either not supporting uses or having minor impacts or threats to water quality. About three-fourths of these PWL river miles are considered *Stressed* or *Threatened* waters that fully support appropriate uses, but that have minor impacts/threats. About six percent (6%) of basin river miles are *Impaired* and do not support appropriate uses.

There are 75 separate lake segments included on the PWL as having Impaired uses or Minor Impacts/Threats to uses. Seventy-four of the 75 lakes are impaired and do not support uses. Altogether these impaired lakes represent 54% of the total lake acres in the basin. About 85% of the lakes are impaired due to acid rain, however because acid rain impacts are more likely to affect smaller lakes this 85% makes up only about one-third of the impaired lake acres in the basin. About 21% of the impaired lakes impaired are listed as a result of fish consumption advisories, primarily due to atmospheric deposition of mercury. These fish consumption advisory lakes comprise almost 80% of the lake acres with impairment.

The most significant source of impact and impairment to the waters of the basin is atmospheric deposition (cited as a source in over half of PWL river miles and in two-thirds of PWL lake acres). Other notable sources include agricultural activities, which are cited as a contributing source of impact/impairment in 27% of affected river miles, and inadequate on-site wastewater treatment, cited in 16% of PWL river miles. Next to atmospheric deposition of mercury, toxic/contaminated sediments and chemical spill are cited most frequently in relation to fish consumption advisories.

Figure 2 - Black River Basin Water Quality Assessment Map

The 2004 Black River Basin Waterbody Inventory/Priority Waterbodies List

This inventory of water quality information includes individual waterbody *Data Sheets* describing the water quality conditions in the Black River Basin of New York State. Causes (pollutants) and sources of water quality problems for those waterbodies with known or suspected impacts are also outlined.

The data sheets on the following pages are compiled in hydrological order and grouped by US Geological Survey Hydrologic Unit Code (HUC) basin and smaller watersheds in the Black River Basin (see Figure 2). An outline of the specific waterbodies in each watershed is presented at the beginning of each Watershed Section. Data sheets are included for each waterbody that has been assessed; that is, waterbodies listed as ***Impaired Segments, Segments with Minor Impacts, Threatened Waters***, waters with water quality impacts ***Needing Verification***, or waterbodies with ***No Known Impact***. ***UnAssessed*** waterbodies are listed in the hydrologic outline of waterbodies at the front of each Watershed Section; however, separate data sheets for these segments are not included.

The information outlined on the data sheets includes *Waterbody Location Information, Water Quality Problem/Issue Information, Resolution/Management Information* and *Further Details*. More explicit explanations of these data fields are outlined in Appendix B - Waterbody Inventory Data Sheet Background Information.

Note also that the inventory reflects the best available water quality information at the time of publication. Water quality information may be added or modified subsequent to the preparation of this edition of the Waterbody Inventory and Priority Waterbodies List. When water quality information is updated, the corresponding waterbody segment data sheet is issued with an appropriate revision date. The information on more recently revised data sheets supercedes the information in this listing.

In addition to the more detailed data sheets, a *Summary Listing of Priority Waters* provides a brief overview of all ***Priority Waterbodies*** (i.e., *Impaired Segments, Segments with Minor Impacts* and/or *Threatened Waters*). This listing follows the Data Sheet Section of the report.

Cross-referenced lists of the waterbody data sheets are included at the end of the report as Appendix C - County Index of Data Sheet Segments and Appendix D - Alphabetic Index of Data Sheet Segments.

Figure 3

Black River Drainage Basin Watershed

