State of Ohio Environmental Protection Agency

Fact Sheet

September 2009

Hocking River Watershed TMDL Report

What are the essential facts?

- *Ohio EPA studied the Hocking River watershed and found water quality problems at several locations.*
- *Water quality improvements can be made with practical, economical actions.*
- *Making water quality improvement depends on the participation of the watershed's residents.*

What is the significance of this report? *The Hocking River Watershed TMDL Report provides information that can be used to help improve and maintain water quality and habitat in the watershed, including ideas from local watershed planning.*

What is a watershed? *A watershed is the land area from which surface runoff drains into a specific body of water.*

Where is the Hocking River watershed, and what is it like?

The Hocking River watershed in central and southeast Ohio covers all or part of seven counties. Beginning in Fairfield County just to the southeast of the City of Columbus the Hocking River flows southeast for 102 miles to join the Ohio River in Athens County.

The Hocking River watershed is one of the larger river systems in the state, draining 1,197 square miles. Among its major tributary streams are Rush Creek, Clear Creek, Monday Creek, Sunday Creek, Margaret Creek, and Federal Creek.

The northern most portion of the watershed is characterized primarily by row crop agriculture, interspersed with pastures and forests. The City of Lancaster is the largest urban area in this part of the watershed.

Moving south and southeast the landscape quickly becomes rolling with much steeper terrain. This rolling topography dominates the watershed, accounting for over three quarters of the land area.

The land cover in the hilly part of the watershed is primarily forest, with pastureland in valley bottoms and some of the flatter hilltop areas. Overall estimates of land cover in the watershed are 62% forest, 14% pastureland, 13% row crop, and 9% urban.

The cities of Logan, Athens and Nelsonville are located directly along the Hocking River and are the largest municipalities in the lower watershed. New Lexington, Somerset, and Bremen located in the Rush Creek subwatershed and The Plains located just northeast of Athens are the only other municipalities with a population greater than 1,000 people.

Hocking River near Route 33 crossing, Fairfield County

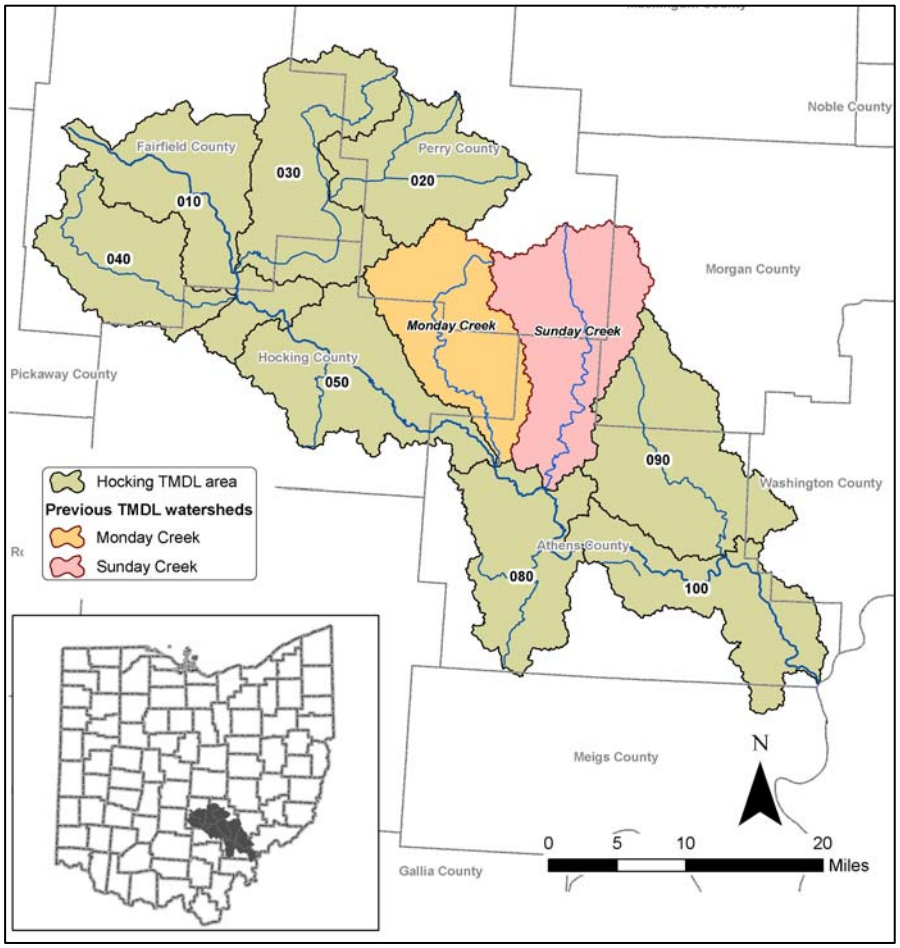
Hocking River Watershed TMDL Report

Current land development is most rapid around Lancaster and the portion of the watershed associated with the new U.S. Route 33 bypass. Some development is also occurring near Athens and Nelsonville.

What is the Hocking River Watershed TMDL Report?

TMDL stands for total maximum daily load. A TMDL is a study to find out how to improve the quality of rivers, streams, and lakes that are not currently meeting water quality goals.

This study focused on most of the Hocking River watershed, as shown in the figure to the right. TMDLs were developed for the Monday and Sunday Creek subwatersheds in 2005 and 2006, respectively, so those areas are not included in this current study. The Monday and Sunday Creek TMDLs focused on acid mine drainage; poor habitat and high bacteria concentration were also included for Sunday Creek.



How does Ohio EPA measure water quality?

Ohio is one of the few states to measure the health of its streams by examining the number and types of fish and aquatic insects in the water. An abundance of fish and insects that are very tolerant of pollution is an indicator of an unhealthy stream. A large number of insects and fish that are sensitive to pollution indicate a healthy stream.

Other ways to determine quality include testing the chemistry of the water and stream sediment and evaluating physical characteristics of the habitat. The safety of the water for swimming and other recreation largely depends on having low concentrations of certain bacteria.

What is the condition of the Hocking River watershed?

Water quality in the Hocking River and its tributaries was measured in 2004 and 2005.

Several areas of the watershed displayed exceptional quality, particularly Federal Creek. Overall, aquatic communities met water quality goals at over 70% of the sites surveyed. Of the remainder, about 20% met at least some of the water quality standards while approximately 10% did not meet any of the quality goals. Clear Creek and its tributaries fully met aquatic life goals and the Federal Creek subwatershed had only minimal impairments. The most impaired area was the upper part of the Rush Creek subwatershed.

Fifty-three of 166 sites (32%) failed to meet water quality standards for recreational uses due to high levels of bacteria. The majority of these failures occurred in the upper portion of the Hocking River watershed.

Point source discharges send treated waste water to rivers and streams. Water quality impacts were found in the Hocking River down from Lancaster's waste water treatment plant. These impacts are expected to be abated as the City continues to address sewage collection and treatment. Other concerns regarding point sources are due to elevated nutrient and bacteria levels; however, only about 5% of the overall impairments are attributable to such sources.

Runoff from rain events contributes pollution from urban and rural areas. Pollutants accumulate on the landscape based on how land is used and are washed off when it rains. Manure is causing problems in isolated areas throughout the watershed, especially in the Rush Creek subwatershed.

Streams lose quality when they are converted to drainage ditches because valuable habitat is altered and erosion and sediment problems often follow. Areas along the headwaters of the Hocking River have been especially impacted in this way. However, even more widespread is the absence vegetation such as trees along stream channels that can protect against bank erosion and filter pollutants washing off the land.

High levels of bacteria found impair safe recreational use of the waterways. A primary source of bacteria is inadequately treated sewage that makes its way to streams from poorly functioning home septic systems as well as manure from livestock.

Acid mine drainage coming from previously coal mined areas have severely impacted aquatic communities in the upper Rush Creek subwatershed. The acidity of the water and toxic levels of dissolved metals left several areas nearly lifeless. Other smaller areas are impacted by mining activity but with less severe impact.

How will water quality get better?

The Hocking River watershed is included on Ohio's list of impaired waters. Under the Clean Water Act, a cleanup plan is required for each impaired watershed. This TMDL serves as that cleanup plan because it determines the maximum amount of pollutants a water body can receive and meet standards (goals). The TMDL report specifies how much pollution must be reduced from various sources and recommends specific actions to achieve these reductions.

The TMDL report provides specific goals for reducing pollutants, including pathogens, phosphorus, sediment and improving habitat. Ohio EPA can address some of the water quality problems through regulatory actions, such as permits for wastewater and storm water dischargers. Other actions, such as proper maintenance of home sewage system and appropriate manure management, will mostly depend on local residents.

Water quality impacts associated with acid mine drainage are not addressed in this TMDL but there is ongoing study by other state and federal agencies regarding these issues.

What are some of the most important "fixes" in the watershed?

- ***Include phosphorus effluent limits of 1.6 mg/l in NPDES permits issued to wastewater treatment plants***
- ***Eliminate pervasive bacteria problems***
  - o *Reduce home sewage treatment system failures*
  - o *Improve manure management at livestock operations*
- ***Manage stormwater quantity & quality in suburban areas***
  - o *Preserve natural stream function through channel protection*
  - o *Store or detain stormwater on the land where the rain falls rather than concentrating it into centralized systems*
- ***Improve erosion and sediment control in all areas***
  - o *Storm water controls in developing areas and construction sites*
  - o *Establish and protect riparian buffers on streams*
  - o *Practice conservation tillage on row crop farms*
  - o *Install filter strips along <u>all</u> agricultural tributaries*

What actions are needed to improve water quality?

There are many reasons why streams in the Hocking River watershed are not meeting water quality goals, so several types of actions are needed to improve and protect the watershed in the future. The recommendations focus on reducing pollutant loads and/or increasing the capacity of the streams to better handle the remaining pollutant loads. Areas of focus in making water quality improvements include:

- Poorly functioning home sewage treatment systems (HSTS) should be addressed in rural, urban and developing areas by the county health departments.
- Residential, commercial, and other areas can reduce loading of nutrients by practicing more environmentally sensitive turf

management such as reducing the rate of fertilizer application and using organic-based fertilizers.

- The amount of phosphorus being discharged should be reduced at some sewage treatment facilities. These facilities operate within the upper Rush Creek, Center Branch, and Raccoon Run subwatersheds.

- Sediment flowing into streams is a concern in both agricultural and developing areas. Controls aimed at reducing erosion from farm fields include using cover crops or conservation tillage; providing buffers along stream banks; identifying and fixing concentrated flow paths from agricultural fields and implementing site-specific practices to reduce sources of sediment and nutrient loads. Addressing erosion caused by land disturbance and construction include measures that cover bare surfaces, trap sediment, and provide for infiltration or detention of rainwater.

- Nutrient loading from livestock operations and agriculture chemicals would be abated by conservation and management practices promoted by the USDA Natural Resource Conservation Service. Suggestions include adoption of phosphorus index and nitrogen index strategies to address nitrogen leaching and the long-standing trend of phosphorus concentration buildup on agricultural land in the watershed.

The absence of trees or other deep rooted vegetation along the Hocking river near state route 33 results in unstable and eroding banks.

- Livestock producers are encouraged to provide improved manure and residual nutrient management on the production area of their operations, including developing protocols for reducing the potential for uncontained manure or polluted residuals to leave the site during runoff events.

Who is responsible for taking action?

Implementation of this report's recommendations will be accomplished by state and local partners, including the voluntary efforts of landowners.

At the state level, point source dischargers will be issued permits that are consistent with the findings of this TMDL report.

Local and state planning has occurred for the Federal Creek subwatershed, resulting in a formally endorsed watershed action plan.

The Friends of the Hocking River, the Hocking River Commission, the Federal Valley Watershed Group and the Upper Hocking Action Group are watershed groups whose missions are to protect water resources through public education and outreach.

Where can I learn more? *The Ohio EPA report containing the findings of the watershed survey, as well as general information on TMDLs, water quality standards, 208 planning, permitting and other Ohio EPA programs, is available at http://www.epa.ohio.gov/dsw/Home.aspx.*

The draft Hocking River TMDL report was available for public comment from July 2 through August 3, 2009. The final report was approved on September 25, 2009 and is currently available at http://www.epa.ohio.gov/dsw/tmdl/HockingRiverTMDL.aspx.

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