

March 2010

Yellow Creek Watershed TMDL Report

What are the essential facts?

- Ohio EPA studied the Yellow Creek and Little Yellow Creek watersheds 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 Yellow Creek 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 Yellow Creek watershed and what is it like?

The Yellow Creek and Little Yellow Creek are small watersheds that drain directly to the Ohio River in eastern Ohio. These watersheds typically have high topographic relief and good water quality, although the impacts of mining have degraded quality in several locations. Yellow Creek drains 239 square miles while Little Yellow Creek drains 45 square miles.

The Yellow Creek watershed covers parts of four counties, flowing for 31 miles before meeting the Ohio River. Little Yellow Creek is north of Yellow Creek and begins in Columbiana County and flows nearly 14 miles before joining the Ohio River.

Among the larger streams tributary to Yellow Creek are North Fork Yellow Creek, Upper North Fork Yellow Creek, Brush Creek, Elkhorn Creek Long Run, and Town Fork.

The watersheds are dominated by forest cover; however, the Little Yellow Creek has far more urban

and industrial land uses than the Yellow Creek watershed. Pasturelands are also significant and typically occur on flatter ridge tops or valley bottoms. Across both watersheds the land cover is approximately as follows: 70% forest, 13% pasture, 6% cropland, and 10% urban.

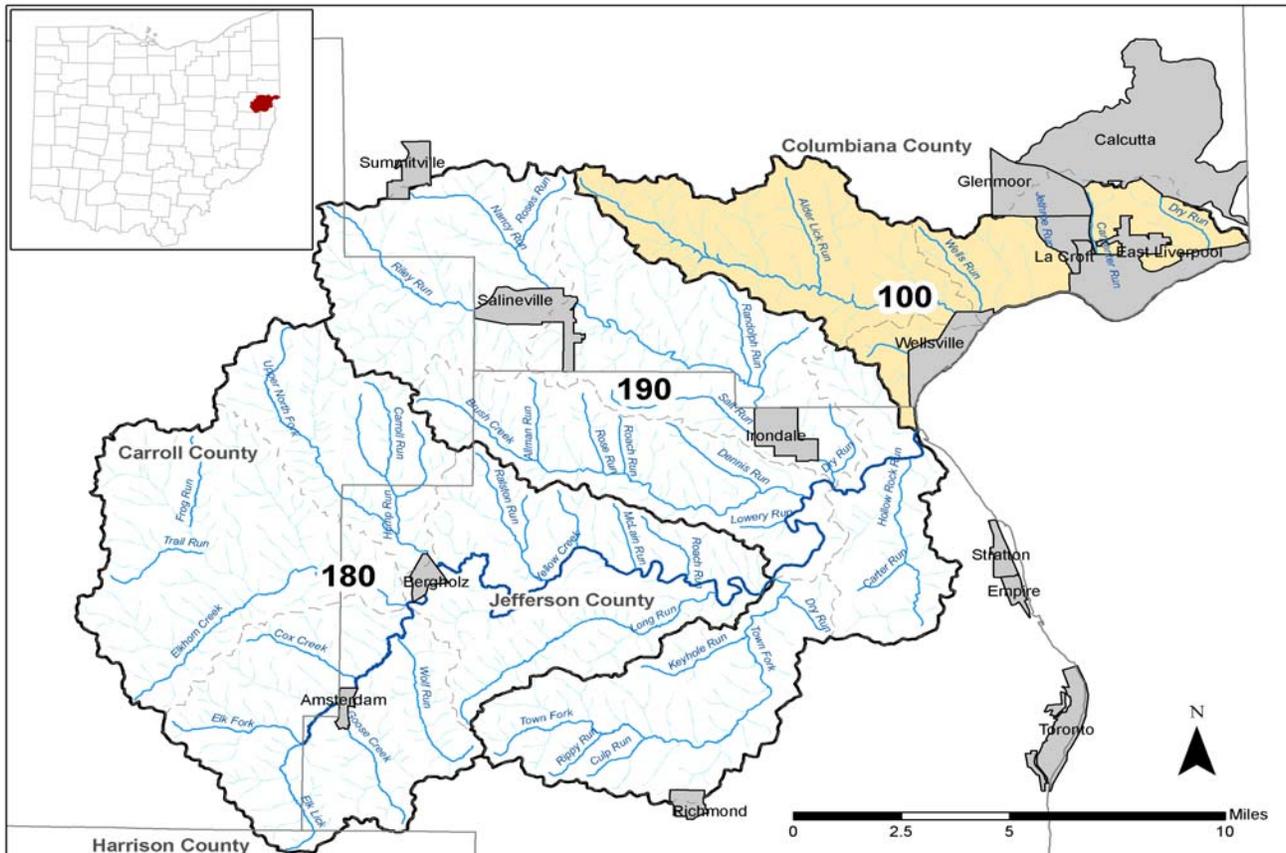
The population in these watersheds is small and new land

development is minimal. East Liverpool and Wellsville, in the Little Yellow Creek watershed, are the most populated municipalities. Salineville, located along the North Fork of Yellow Creek, is the only municipality in the Yellow Creek watershed that exceeds 1,000 people. Other communities in the Yellow Creek watershed include Amsterdam, Bergholtz, and Irondale.



Yellow Creek near Hammondsville, Ohio

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What is the Yellow Creek 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 do not currently meet water quality goals. This study focused on the Yellow Creek and Little Yellow Creek watersheds. On the map above, the Little Yellow Creek watershed (identified by yellow shading and the watershed code 100) and the two subwatersheds of the Yellow Creek watershed (upper (180) and lower (190)).

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 Yellow Creek watershed?

Ohio EPA measured the water quality in the Yellow Creek TMDL area in 2005 and 2006 finding some of the highest water quality measured in the state. Aquatic life is generally very healthy and in several locations these communities are exceptionally diverse and sensitive to pollution.

Of the 73 locations evaluated for aquatic life uses, 55 (75%) fully met water quality goals, while 10 (14%) met only some and 8 (11%) met none of them. The majority of the impairment occurs in the Little Yellow Creek watershed and the upper Yellow Creek met nearly all of it aquatic life use goals.

High concentration of bacteria can make streams unsafe for wading, swimming, or other recreational activities. Problems were found at scattered locations throughout the watersheds. Particularly problematic are areas associated with inadequate treatment of human wastes in and around the towns of Amsterdam, Bergholtz, Hammondsville, and Irondale. Manure from livestock increased bacteria levels at some locations and was most problematic in and around the North Fork of Yellow Creek.

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Other sources of pollution that impacted aquatic life were a number of historic mines that produce very acidic run off and high concentrations of dissolved metals.

Three reservoirs impact stream health. The Highlandtown and Wellsville reservoirs on Little Yellow Creek alter stream habitat due to backwaters and changes in flow conditions. Jefferson Lake impounds a part of Town Fork and causes water quality problems downstream of the spillway.

Runoff from rain events contributes pollution in 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 a few areas throughout the watershed. Excessive nutrients are also entering waterways from cropland. These land uses are particularly

What are the most important “fixes” in the watershed?

- ◆ ***Eliminate pervasive bacteria problems***
 - *Reduce home sewage treatment system failures*
 - *Improve manure management at livestock operations*
- ◆ ***Address acid mine drainage at certain locations in the watershed***
 - *Implement recommendations of abatement plan*
- ◆ ***Manage storm water quantity and quality in suburban areas***
 - *Preserve natural stream function through channel protection*
 - *Store or detain storm water on the land where the rain falls rather than concentrating it into centralized systems*

important relative to the high level of nutrients in Jefferson Lake.

How will water quality get better?

The Yellow Creek 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, depend on action by local residents.

Water quality impacts associated with acid mine drainage are not addressed in this TMDL but are being studied by other state and federal agencies. Specifically, an Acid Mine Drainage Abatement and Treatment plan for Yellow Creek watershed has been developed.



“Gray water” emerges from a storm sewer outlet near the community of Irondale indicating the presence of sewerage effluent.

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A hillside seep of mine drainage entering Roach Run.

What actions are needed to improve water quality?

There are many reasons why streams in the Yellow Creek watershed are not meeting water quality goals, so several types of actions are needed to make improvements 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. In particular, any bypass or disconnection from septic treatment systems should be identified and addressed.
- Nutrient loading from land applied manure and synthetic fertilizers would be abated by conservation and management practices promoted by the USDA Natural Resource Conservation Service.

- 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.
- Problems associated with acid mine drainage can be abated by implementing recommendations made in the Yellow Creek AMDAT study. Four sites are recommended for remediation with such actions as sealing off old mines, surface reclamation, construction of treatment wetlands and limestone treatment channels.

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. Locally, discussion of actions to restore the watershed has occurred.

In addition, local and state planning has occurred in parts of the watershed. Watershed groups continue their mission 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 www.epa.ohio.gov/dsw/Home.aspx.

The Yellow Creek TMDL report was approved on March 18, 2010, and is currently available at www.epa.ohio.gov/dsw/tmdl/YellowCreekTMDL.aspx.

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