

Clear Creek

Water Body Segment at a Glance:

Counties:	Barry, Lawrence
Nearby City:	Monett
Length of impaired segment:	2 miles
Pollutants:	Nutrients and Low Dissolved Oxygen
Source:	Monett Wastewater Treatment Plant
Water Body ID:	3239



State map showing location of watershed

Note: A TMDL for NH₃, BOD and NFR was approved 1999

Scheduled for TMDL development: 2014 for nutrients and 2016 for low dissolved oxygen

Description of the Problem

Designated beneficial uses of Clear Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- In the Missouri Water Quality Standards, found in 10 CSR 20-7.031 Table A, the criterion for dissolved oxygen, or DO, in streams is a minimum of 5.0 mg/L (milligrams per liter or parts per million).
- Missouri does not yet have nutrient criteria for rivers and streams. The nutrient impairment of Clear Creek is based on exceedance of the general criteria contained in the WQS at 10 CSR 20-7.031 (3)(A) and (C). These criteria state:
 - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
 - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Background information and water quality data

The Monett Wastewater Treatment Facility, or WWTF, has experienced recurring mechanical problems, which have led to frequent exceedances of permit limits. Adding to the problem were

sporadic, large discharges of wastewater from food processing industries within the city. The concern is the discharge of nutrients from the wastewater treatment plant. When water becomes rich in nutrients (like phosphorus and nitrogen), it results in an increase in plant life and algal blooms. Excessive algal growth is not only aesthetically unpleasant, it causes fundamental changes in a water ecosystem. Dissolved oxygen in the water can become depleted by algal respiration if large amounts of algae are present in a stream. Low levels of dissolved oxygen can cause stress or mortality (death) in fish and other aquatic animals.

The Missouri Attorney General’s Office initiated legal action against the city of Monett in December 1988 due to chronic noncompliance with permit limits. Water quality studies of Clear Creek in the 1980’s and early 1990’s showed that more stringent treatment requirements for the WWTF were needed. This resulted in an upgrade to the plant that was completed in 1996. Follow-up water quality studies conducted on the creek in 1999 and 2000 showed that ammonia, BOD and NFR levels were acceptable but that oxygen levels were still too low. Biological studies performed in 1997 and 2000 show that the aquatic invertebrate community in the creek is still impaired.

Clear Creek Aquatic Invertebrate Data - Below WWTF

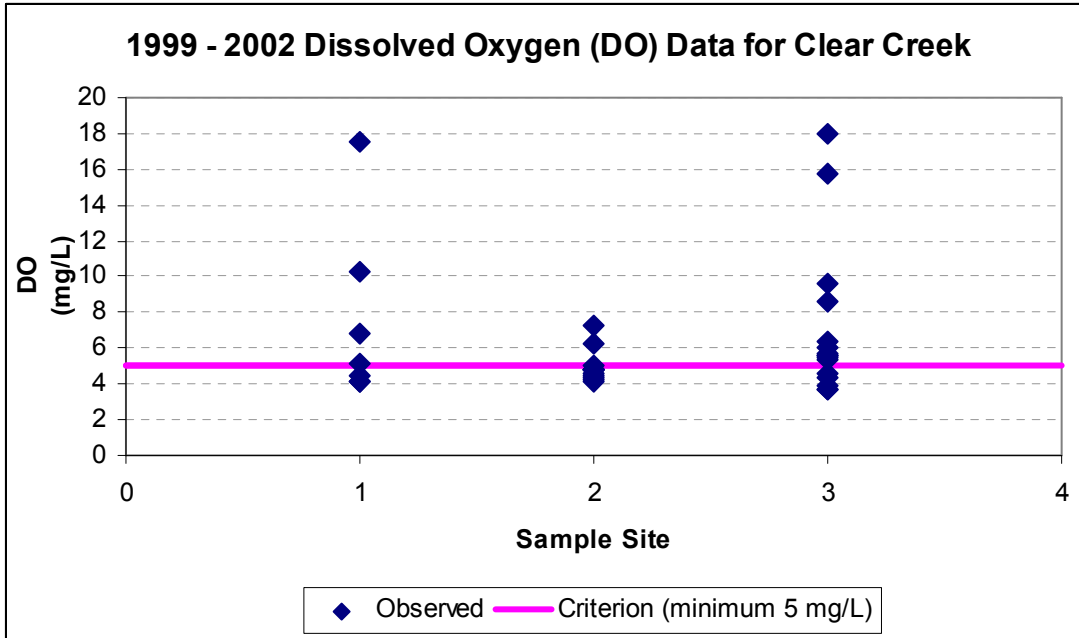
Date	Score
Fall 2000	10
Fall 2000	10*
Spring 1997	8
Fall 1997	10
Spring 2000	10
Spring 2000	6*
Spring 1997	8
Fall 1997	12

Scores less than 16 indicate an impaired condition

*duplicate sample – not used in assessment

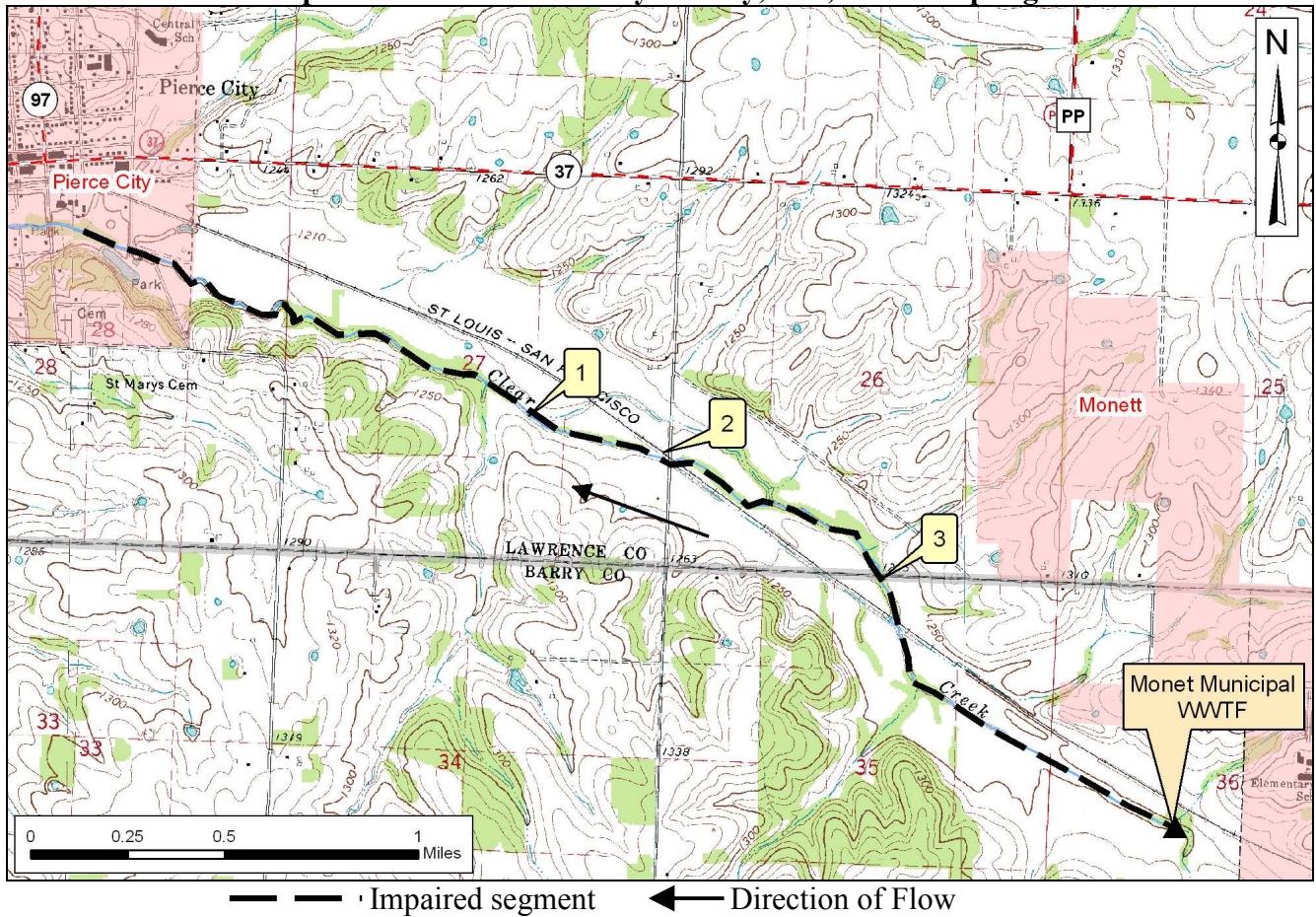
The most likely stressors of the invertebrate community are believed to be low dissolved oxygen and physical habitat changes caused by large growths of benthic algae, both of which are related to excess nutrients in Clear Creek. The assessment data used for the listing of this creek did not include nutrient data.

According to the terms in the TMDL (which was approved by the U.S. Environmental Protection Agency in December 1, 1999), since water quality standards are not being met, this TMDL will be re-opened and Missouri will re-evaluate the loading capacity and allocations, as appropriate. Because ammonia, BOD and NFR levels are acceptable, they were removed as pollutants from the 2002 303(d) list. However, there are still problems with Clear Creek. These include excessive algal growth and low dissolved oxygen. Therefore, nutrients were added to the 2002 list and low dissolved oxygen to the 2008 list as the pollutants of concern.



A map of clear creek showing the impaired segment and sampling sites can be found on the following page.

Map of Clear Creek in Barry County, Mo., with Sampling Sites



Sample Sites

1 – Clear Cr. 0.3 miles below County Road 1050
 2 – Clear Cr. at County Road 1050
 3 – Clear Cr. at County Line (County Road 2000)

The final Clear Creek TMDL will be based on the most current available data and information. For TMDL status or additional information, please contact the Water Protection Program.

For more information call or write:
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