

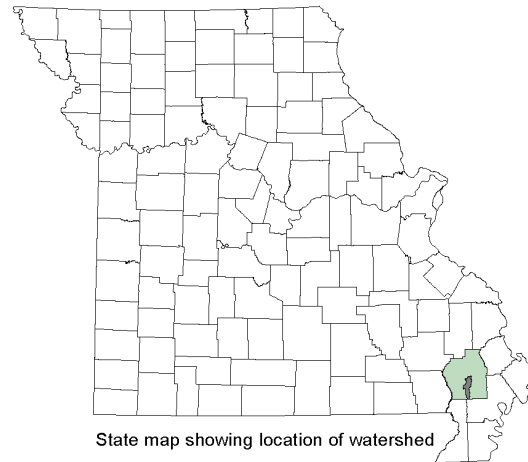
Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Lateral #2 Main Ditch

Water Body Segment at a Glance:

County: Stoddard
Nearby City: Dexter
Length of impaired segment: 11.5 miles
Pollutant 1: Low Dissolved Oxygen
Source 1: None Given
Pollutant 2: Temperature
Source 2: Channelization
Water Body ID: 3105



State map showing location of watershed

Scheduled for TMDL development: 2014 (temperature); 2016 (low DO)

Description of the Problem

Beneficial uses of Lateral #2 Main Ditch

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

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

- In the Missouri Water Quality Standards, or WQS, found in 10 CSR 20-7.031 Table A, the criterion for dissolved oxygen, or DO, in streams is a minimum of 5 mg/L (milligrams per liter or parts per million).
- The Water Quality Standards at 10 CSR20-7.031(D)(1) state that “Water contaminant sources or physical alteration of the stream shall not raise or lower the water temperature more than 5° F [2.8° C], or contribute to a stream temperature in excess of 90° F [32.2° C].”

Background information and water quality data

Lateral #2 Main Ditch is in Missouri’s bootheel, a low-lying area between the Mississippi and St. Francis rivers. Starting in 1893, the entire landscape was transformed into farmland by logging and constructing an extensive system of drainage ditches and diversion channels. These water bodies have low rates of reaeration (where the water gains oxygen), they experience high water

temperatures during the summer (no shade due to straightened channel) and they receive nutrients and sediment from agricultural runoff. All of these things contribute to low oxygen levels.

A TMDL for sediment in Lateral #2 Main Ditch was approved in 2008. However, data collected by the department from 2003 to 2007 indicates that the ditch is also impaired by low dissolved oxygen and temperature. These were added to the 2008 303(d) List.

The data show that dissolved oxygen levels in Lateral #2 Main Ditch do not always meet the water quality criterion of 5 mg/L. Dissolved oxygen is important as many aquatic organisms require high levels of oxygen to survive. For dissolved oxygen, if more than 10 percent of measurements in a water body fail to meet the water quality criterion, that water body is judged to be impaired. In the case of Lateral #2 Main Ditch, five of 16 samples (31.2 percent) for dissolved oxygen did not meet the water quality criterion (Figure 1). Although no source for the low dissolved oxygen impairment is identified on the 2008 303(d) List, it should be noted that the land use in this watershed is almost exclusively row crop agriculture.

The water quality standard for protection of aquatic life (warm-water fisheries) for temperature is 32.2° C. The Listing Methodology Document allows a water to be judged as impaired if more than 10 percent of the measurements fail to meet the water quality standard. In Lateral #2 Main Ditch, four of 16 temperature measurements (25 percent) exceeded the standard, so the water is judged to be impaired by temperature (Figure 2).

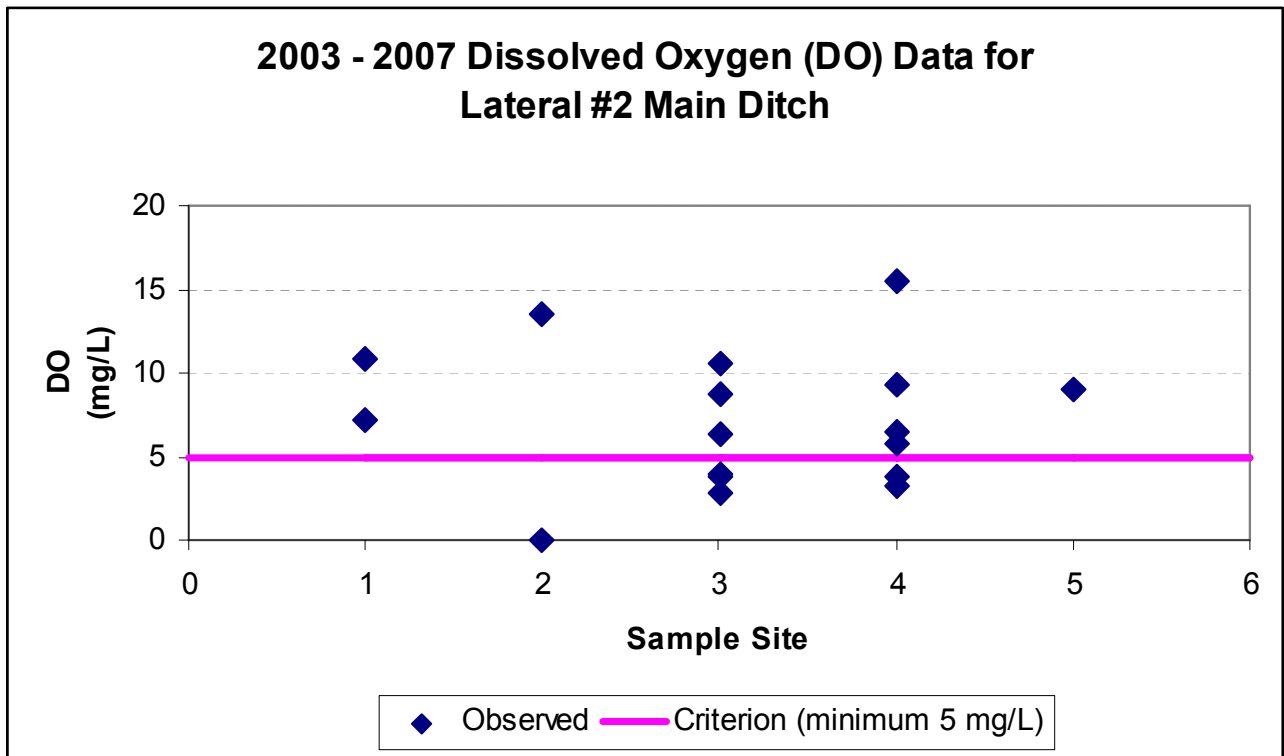


Figure 1

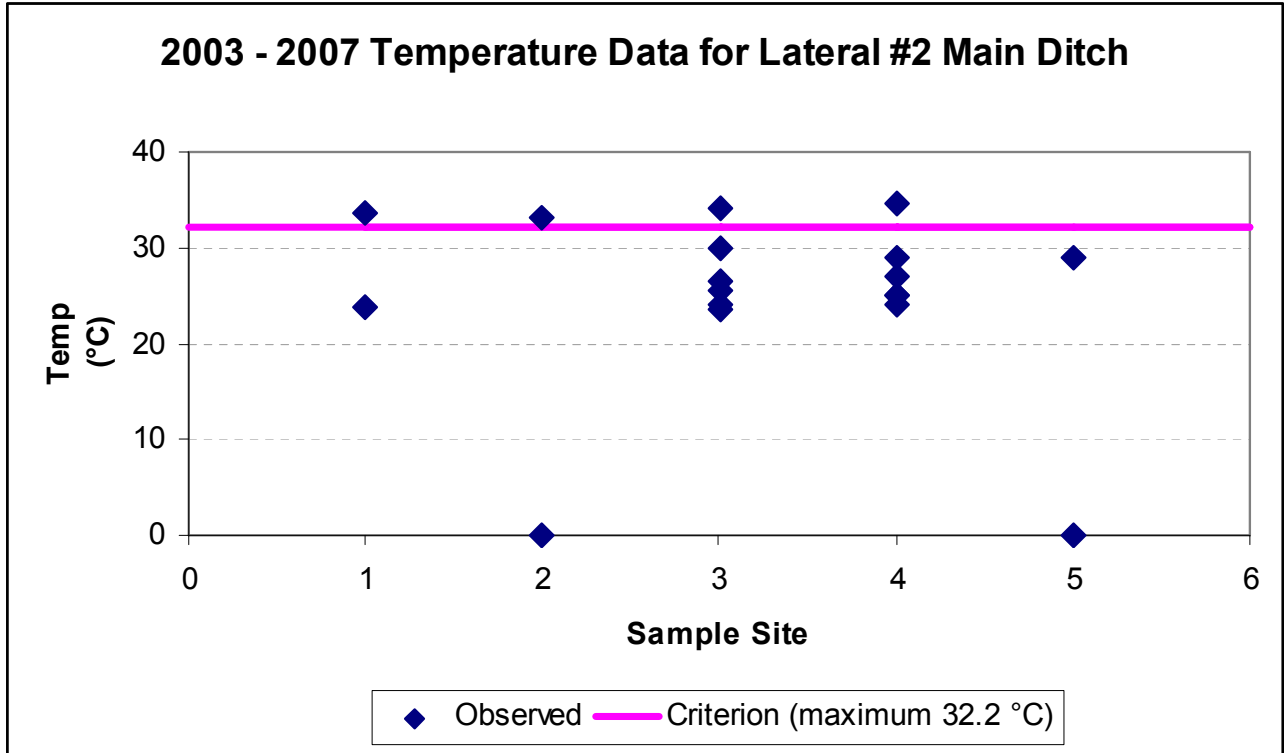
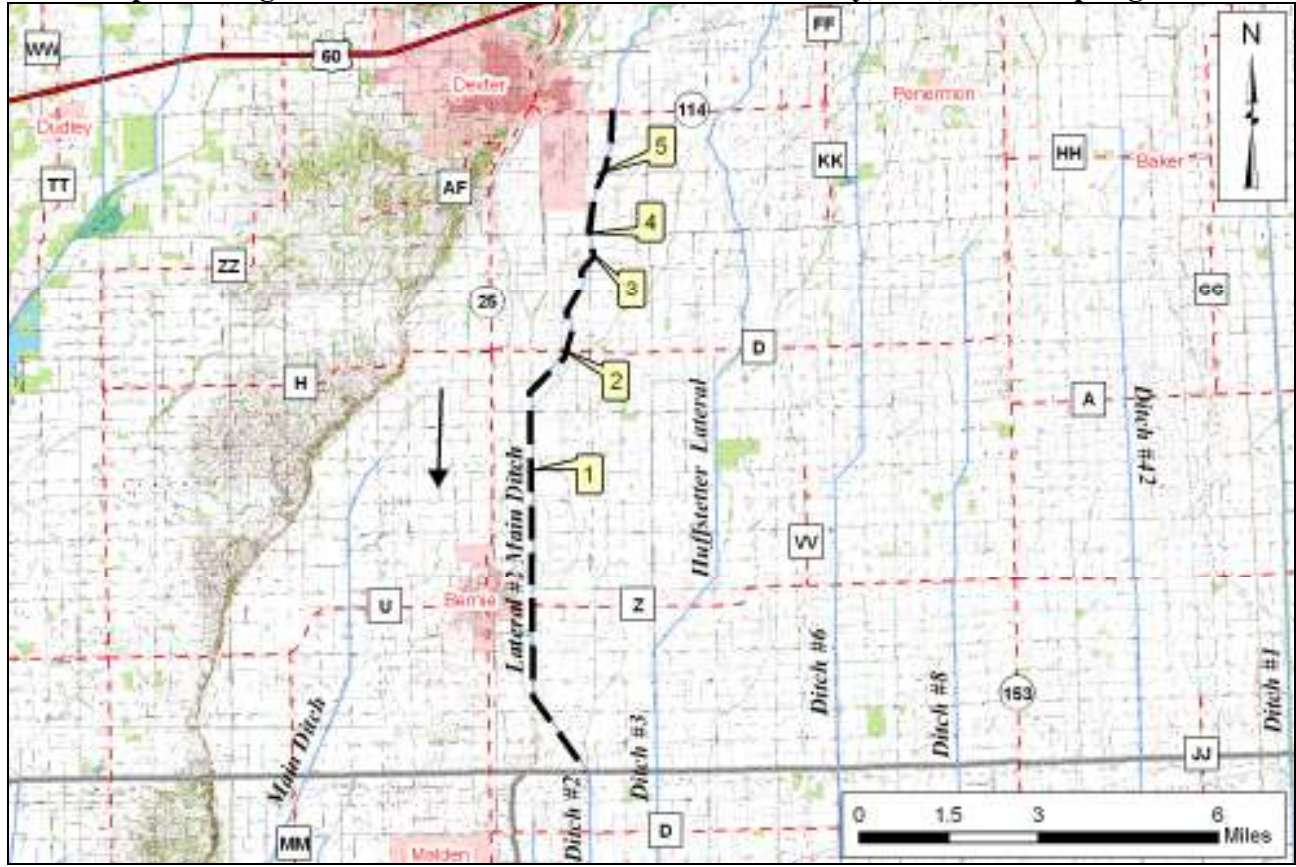


Figure 2

A map of Lateral #2 Main Ditch showing the location of the sampling sites can be found on the next page.

Map Showing Lateral #2 Main Ditch in Stoddard County, Mo., and Sampling Sites



--- Impaired Segment → Direction of flow

Sample Sites Descriptions

- 1 – Lateral #2 Main Ditch 6 miles below Dexter
- 2 – Lateral #2 Main Ditch at State Highway D
- 3 – Lateral #2 Main Ditch 2.1 miles below Dexter East Lagoon
- 4 – Lateral #2 Main Ditch above Dexter East tributary
- 5 – Lateral #2 Main Ditch at County Road 724

The final Lateral #2 Main Ditch TMDL will be based on the most current available data and information. For TMDL status or additional information, please contact the Water Protection Program at:

Missouri Department of Natural Resources, Water Protection Program
 P.O. Box 176, Jefferson City, MO 65102-0176
 1-800-361-4827 or 573-751-1300 office or 573-522-9920 fax
 Program Home Page: dnr.mo.gov/env/wpp/index.html