

Missouri Department of Natural Resources  
**Total Maximum Daily Load Information Sheet**

## Straight Fork

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### Water Body Segment at a Glance:

**County:** Morgan  
**Nearby City:** Versailles  
**Length of impairment:** 1.1 miles  
**Pollutant:** Volatile Suspended Solids (VSS)  
**Source:** Versailles Wastewater Treatment Facility (WWTF)

**A permit in lieu of a TMDL for VSS was approved in 2006**

**New Pollutants (2006):** Chloride and Low Dissolved Oxygen  
**Length of impaired segment:** 6 miles  
**Length of impairment within segment:** 2.5 miles  
**Water Body ID:** 0959



State map showing location of watershed

**Scheduled for TMDL Development:** 2007 (permit in lieu of TMDL submitted for chloride 9/28/07)  
2016 (low dissolved oxygen)

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### Description of the Problem

#### Designated beneficial uses of Straight Fork

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

#### Use that is impaired

- Protection of Warm Water Aquatic Life

#### Standards that apply

- The volatile suspended solids impairment is based on exceedence of the general criteria contained in Missouri's Water Quality Standards, 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.
- Also in the WQS, 10 CSR 20-7.031 Table A, the criterion for dissolved oxygen in streams is a minimum of 5 mg/L (milligrams per liter or parts per million).

- The criteria for chloride are found in WQS, 10 CSR 20-7.031 Table A. The chronic criterion is 230 milligrams per liter (mg/L or parts per million) and the acute criterion is 860 mg/L.

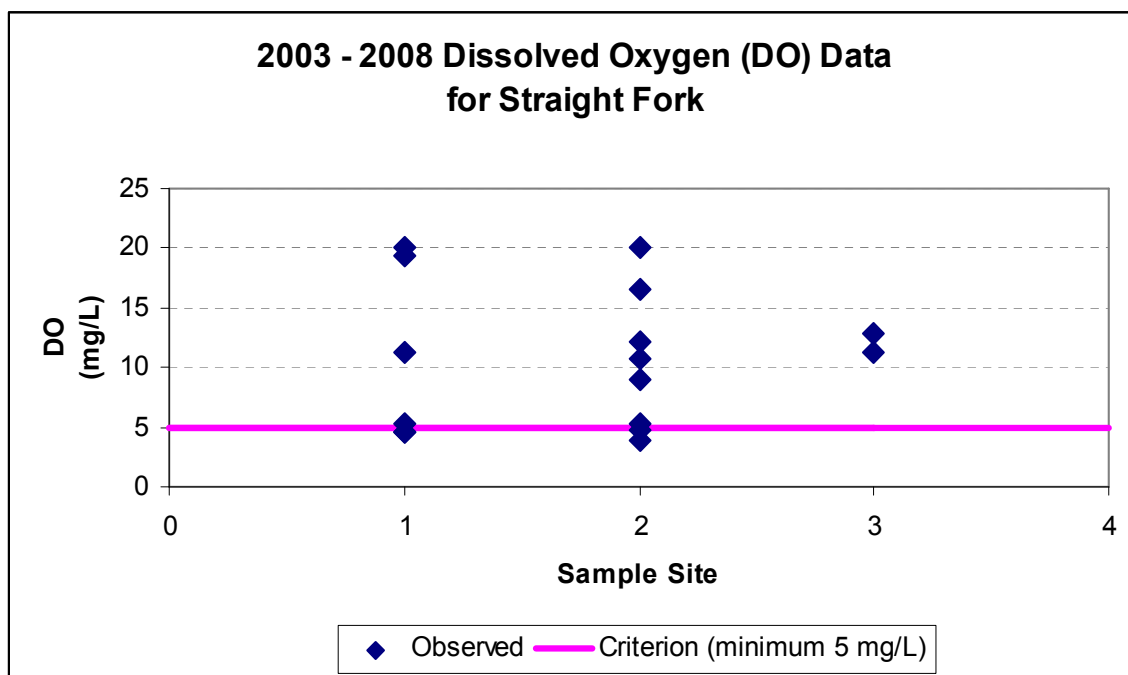
**Background information and water quality data**

History and PIL for Volatile Suspended Solids

Straight Fork is located northwest of Versailles in Morgan County, Mo., and flows north. Stream surveys conducted by the department in 1997 showed excessive suspended algae due to discharges from the stormwater basin of the Versailles Wastewater Treatment Plant (WWTF). VSS refers to particles that are suspended in water, like the algae in Straight Fork, or those that settle out, like sewage sludge. Suspended algae block sunlight and reduce dissolved oxygen in the water. Many aquatic organisms require high levels of oxygen to survive. Excess algae also cause unsightly color in the water and increased turbidity. Like all wastewater discharges in Missouri, the Versailles WWTF is required to meet specific limits contained in a discharge permit issued by the Missouri Department of Natural Resources. By making changes to the conditions of the discharge permit, the quality of the plant discharge will be improved and result in improvements in Straight Fork. The department conducted a water quality study of Straight Fork in 2003 and 2004 to help determine just what those limits should be. Their permit was reissued with new permit limits and was submitted to the U.S. Environmental Protection Agency, or EPA, as a permit in lieu, or PIL, of a TMDL. The EPA approved this PIL December 11, 2006.

Low Dissolved Oxygen

The additional pollutants of low dissolved oxygen and chloride were added to the 2004-06 303(d) list based on data gathered by the department from 2002-08. These data showed that the water quality in Straight Fork was not protective of aquatic life. 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 Straight Fork, 4 of 14 samples (28.6 percent) did not meet the water quality criteria of 5 mg/L for DO (Figure 1).



**Figure 1**

## Chloride

The Listing Methodology stipulates that only one exceedance of the chloride criteria in the last three years of available data is necessary to constitute an impairment. In the last three years of available data there are four different occasions when the chronic chloride criteria of 230 mg/L was exceeded in Straight Fork (Figure 2).

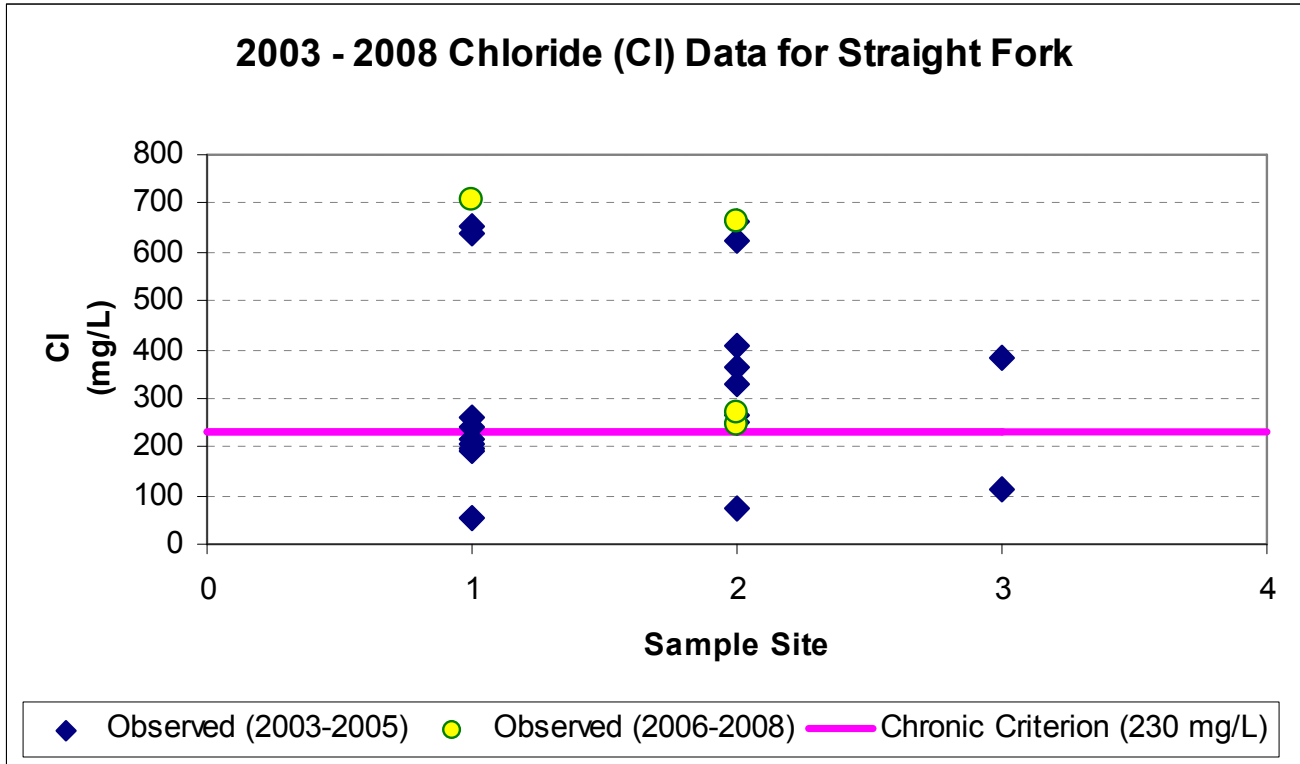
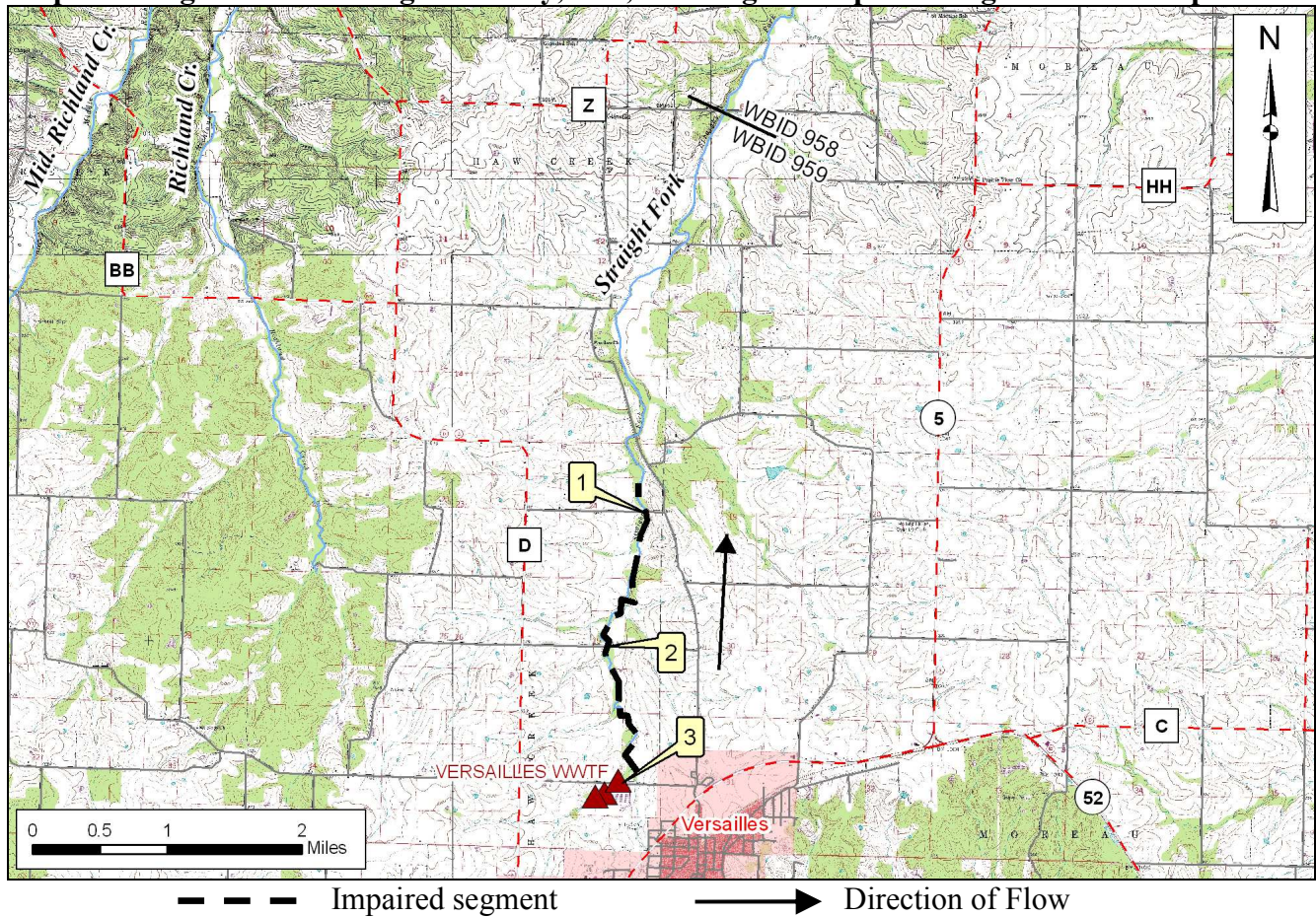


Figure 2

A map showing the impaired segment of Straight Fork and locations of sampling sites can be found on the next page.

**Map of Straight Fork in Morgan County, Mo., Showing the Impaired Segment and Sample Sites**



**Sample Sites**

1 – Straight Fork 2.3 miles below Versailles WWTF at Sims Road  
 2 – Straight Fork 1.4 miles below Versailles WWTF at Willow Creek Road  
 3 – Straight Fork 0.2 miles below Versailles WWTF at Gunn Road

The final Straight Fork 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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