



Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Muddy Creek

Water Body Segment at a Glance:

County:	Pettis
Nearby City:	Sedalia
Length of impaired segment:	55 miles
Pollutant 1:	Chloride
Source 1:	Multiple Point Sources
Length of impairment within segment:	39 mile
Pollutant 2:	Color
Source 2:	Tyson Foods
Length of impairment within segment:	1 mile
Pollutant 3:	Unknown
Source 3:	Unknown
Length of impairment within segment:	55 mile
Water Body ID:	0853



State Map Showing Location of Watershed

Scheduled for TMDL development: 2014

Description of the Problem

Beneficial uses of Muddy Creek

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

Uses that are impaired

- Protection of Warm Water Aquatic Life (chloride)
- General Criteria (color and unknown)

Standards that apply

- The criteria for chloride are found in Missouri's Water Quality Standards, or WQS, at 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.
- Missouri has no specific criteria for color, but the following the general criteria, found in the WQS at 10 CSR 20-7.031(3), apply:

(C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

(G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

- Since there is also an impairment to the aquatic community from unknown pollutants, the following general criteria also apply:

(A) 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.

(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.

Background information and water quality data

Muddy Creek flows northeast past Sedalia in Pettis County, Mo., to join the Lamine River. The Lamine River is a tributary to the Missouri River. Part of Sedalia drains to Muddy Creek, including the Sedalia Central Wastewater Treatment Plant.

Chloride

A water is judged to be impaired if the chronic or acute numeric criteria are exceeded on more than one occasion during the last three years for which data is available. The chloride impairment is based on data collected by the department in 2003-2005. Muddy Creek exceeded the chronic chloride criteria twice each at two locations during representative conditions of non-storm water flow. These exceedances were gathered during 2003 at sites 1 and 2 downstream of Brushy Creek, a tributary to Muddy Creek, which has its headwaters in Sedalia.

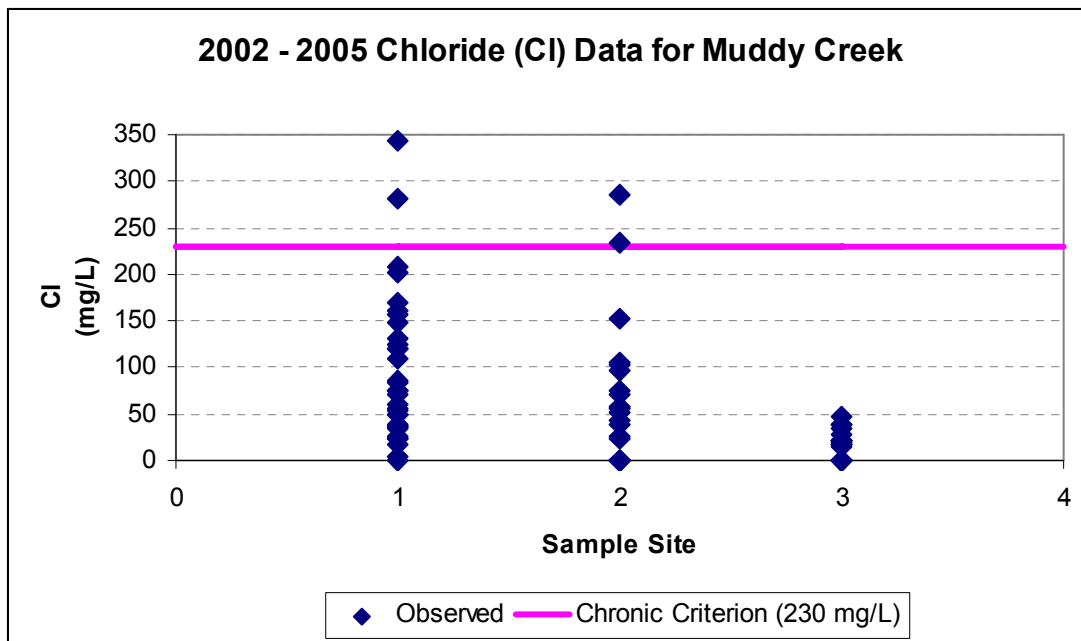


Figure 1

Color

Data supporting this impairment was gathered by the department from 2003-05. When a stream is “off color”, it is considered an impairment of the general criteria, paragraph (C), "unsightly color or turbidity", and not an impairment of the aquatic life use. Impairment is determined using the Platinum-Cobalt method where a test tube of the stream water is visually compared to a standard set of a range of colors and given a number. These results were then compared to a control stream (Table 1). The color in this creek can be traced to discharge from the Tyson Foods, Inc. [Sedalia] poultry processing plant.

Table 1. Color comparison of Two Sites on Muddy Creek

Org	Yr	Mo	Dy	Site 2 (Control)	Site 1
				Color	Color
MoDNR	2003	8	7	27	40
MoDNR	2003	10	8	35	45
MoDNR	2003	12	5	33	43
MoDNR	2004	2	13	16	14
MoDNR	2004	4	16	16	22
MoDNR	2004	6	30	18	34
MoDNR	2004	12	17	15	18
MoDNR	2005	4	5	15	25
MoDNR	2005	5	11	16	41
Mean				21.22	31.33

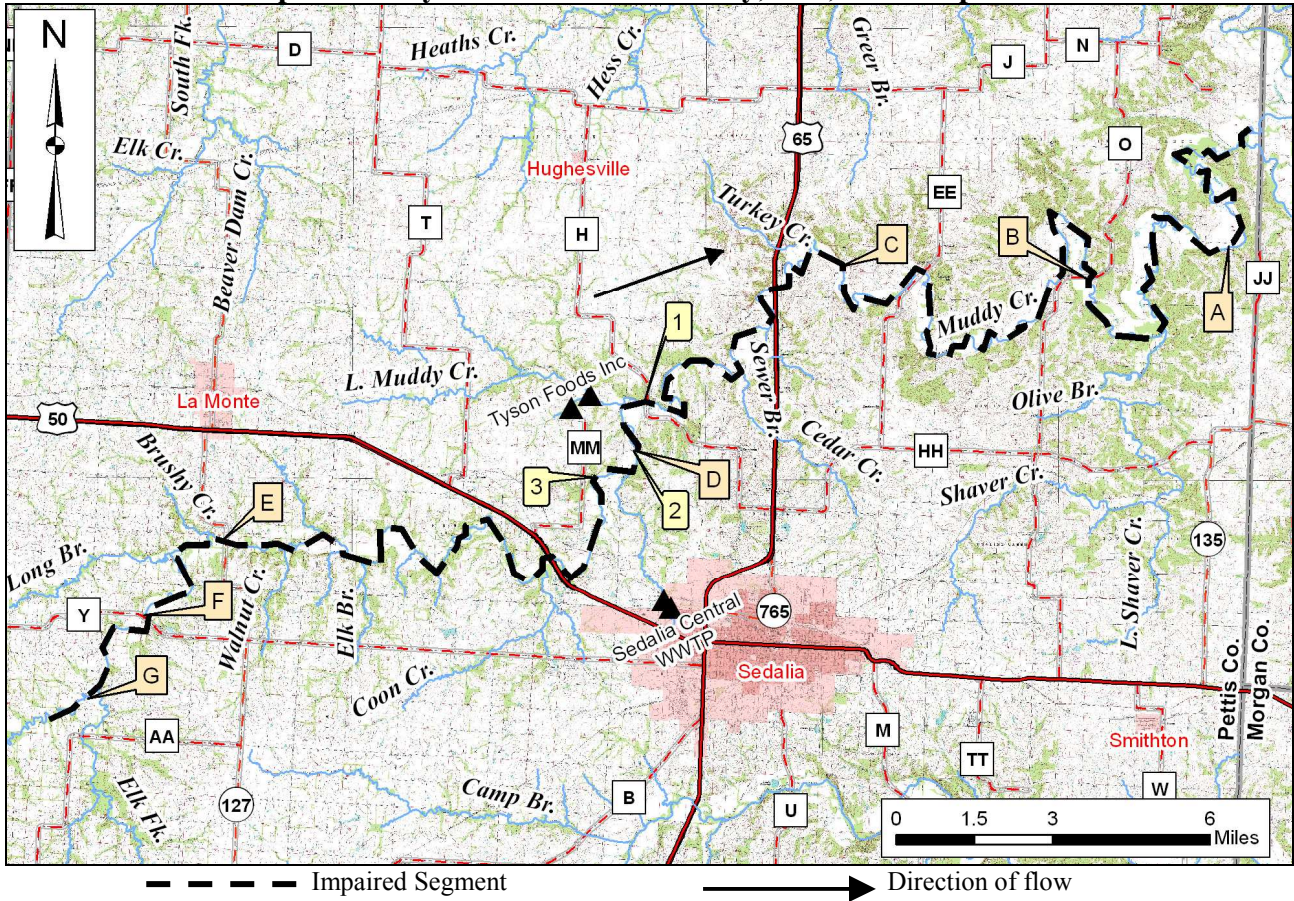
Unknown

The department’s Environmental Services Program collected and analyzed aquatic invertebrate samples in Muddy Creek in 1997 following the standard operating methods contained in “Semi-Quantitative Macroinvertebrate Stream Bioassessment”. Invertebrate communities are judged to be impaired if the percentage of sampling sites receiving a score of 16 or more is statistically significantly less than for reference streams in the same ecological drainage unit.

Reference streams in Muddy Creek’s ecological drainage unit scored 16 or higher on 83.6 percent of all glide/pool samples and 83.3 percent for all riffle/run samples. For Muddy Creek, no samples scored 16 or higher (Table 2). Scores of less than 16 are considered to reflect impaired macroinvertebrate communities. The cause of this impairment is unknown.

Org	Site	Site Name	Date	Score
MDC/DNR	B	Muddy Cr. At Hwy. O	Fall 1997	14
MDC/DNR	C	Muddy Cr. at Fristoe Rd.	Fall 1997	12
MDC/DNR	D	Muddy Cr. At Treasure Rd.	Fall 1997	8
MDC/DNR	G	Muddy Cr. At Schenk Rd.	Fall 1997	8
MDC/DNR	B	Muddy Cr. At Hwy. O	Spring 1997	14
MDC/DNR	C	Muddy Cr. at Fristoe Rd.	Spring 1997	14
MDC/DNR	E	Muddy Cr. At Hwy.127	Spring 1997	8
MDC/DNR	F	Muddy Cr. At Hwy.Y	Spring 1997	14
MDC/DNR	G	Muddy Cr. At Schenk Rd.	Spring 1997	12
MDC/DNR	A	Muddy Cr. At Lookout Rd.	Spring 1997	14

Map of Muddy Creek in Pettis County, Mo., and sample sites



Water Quality Sample Sites
 1 – Muddy Cr. at State Highway H
 2 – Muddy Cr. at Treasure Road
 3 – Muddy Cr. at Yeater Road

Biological Assessment Sample Sites

A – Muddy Cr. at Lookout Road	E – Muddy Cr. at State Highway 127
B – Muddy Cr. at State Highway O	F – Muddy Cr. at State Highway Y
C – Muddy Cr. at Fristoe Road	G – Muddy Cr. at Schenk Road
D – Muddy Cr. at Treasure Road	

For more information call or write:
 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
 573-522-9920 fax
 Program Home Page: www.dnr.mo.gov/env/wpp/index.html