

Missouri Department of Natural Resources

## Total Maximum Daily Load Information Sheet

### Hickory Creek

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#### Water Body Segment at a Glance:

|                                    |                    |
|------------------------------------|--------------------|
| <b>County:</b>                     | Daviess            |
| <b>Nearby Cities:</b>              | Jameson and Coffey |
| <b>Length of impaired segment:</b> | 1.5 miles          |
| <b>Pollutant:</b>                  | Unknown            |
| <b>Source:</b>                     | None given         |
| <b>Water Body ID:</b>              | 442                |



State map showing location of watershed

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**Scheduled for TMDL development:** Approved by EPA Oct. 20, 2010

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#### Description of the Problem

##### Beneficial uses of Hickory 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

Because Hickory Creek has been listed as impaired for unknown pollutants, no identifiable numeric criteria apply. However, all Missouri Streams are protected by the general criteria contained in Missouri's Water Quality Standards at 10 CSR 20-7.31(3). The particular criteria that apply to Hickory Creek state:

- (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.
- (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.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life.
- (G) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community.

**Background information and water quality data**

The creek was first documented as impaired during the department’s Visual/Benthic Low Flow Surveys in July 2000 and this was reported in the revised “Monitoring Report on 26 Waters”. Evidence of impairment was primarily narrative rather than numeric, indicated by the presence of duckweed and dense filamentous algae. These observations supported the case that nutrient enrichment was negatively impacting the stream. “Rocks darkened by manganese” were also noted. However, no numeric data was collected to support these observations and the creek was listed for unknown pollutants.

A study was conducted in 2006 and 2007 by Versar, Inc. to determine what the stressors, or possible causes of impairment, were on Hickory Creek. This study found that the aquatic community was impaired (table below) and listed the following as stressors: low dissolved oxygen levels, increased silt and sediment in the stream, poor habitat quality and low/altered flow regime.

**Stream Condition Index Scores for Hickory Creek, Daviess County**

Scores below 16 indicate impairment

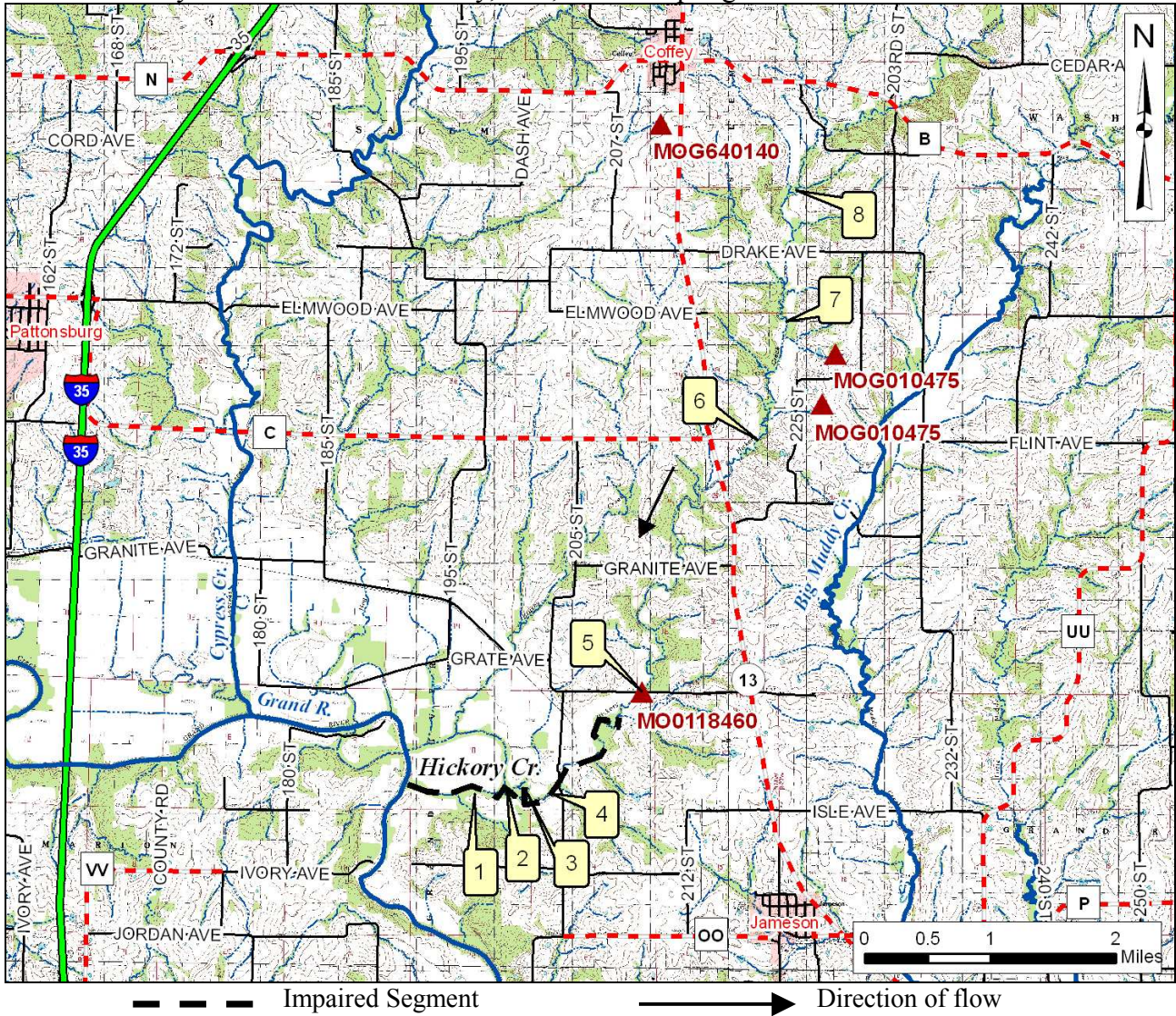
| <b>Org</b>  | <b>Site</b>    | <b>Date</b> | <b>Score</b> |
|-------------|----------------|-------------|--------------|
| Versar Inc. | Hickory Cr.- 1 | Fall 2006   | 14           |
| Versar Inc. | Hickory Cr.- 1 | Spring 2007 | 12           |
| Versar Inc. | Hickory Cr.- 1 | Fall 2007   | 10           |
| Versar Inc. | Hickory Cr.- 2 | Spring 2007 | 4            |
| MDNR        | Hickory Cr.- 1 | Fall 2008   | 16           |
| MDNR        | Hickory Cr.- 1 | Spring 2009 | 18           |
| MDNR        | Hickory Cr.- 2 | Fall 2008   | 20           |
| MDNR        | Hickory Cr.- 2 | Spring 2009 | 18           |

As a follow-up to the Versar study, the department conducted a bioassessment of Hickory Creek in 2008-09. The rainfall those years was above average and the SCI scores for invertebrate data were all 16 or higher (table above). Also, the dissolved oxygen levels rebounded in 2008-09 and were better than the state’s criteria. However, the data for total suspended solids (sediment) and the nutrients of phosphorus and nitrogen from these studies and from other data provided by two permitted facilities in the watershed exceed regional ecosystem levels for creeks of this caliber. To address these, the TMDL is targeting sediment and nutrients.

Site list for the map shown on the following page:

| <b>Site Description</b>                                 |
|---|
| 1 - Hickory Cr near mouth                               |
| 2 - Hickory Cr MDNR bioassessment site 1, below 202 St. |
| 3 - Hickory Cr below 202 St                             |
| 4 - Hickory Cr MDNR bioassessment site 2, below 202 St. |
| 5 - Hickory Cr at Harbor Ave                            |
| 6 - Hickory Cr downstream of CG Hickory Cr (Site 15)    |
| 7 - Hickory Cr at CG Hickory Cr (Site 3)                |
| 8 - Hickory Cr downstream of CG Hickory Cr (Site 19)    |

## Hickory Creek in Daviess County, Mo., with Sampling Sites and Permitted Facilities



**For more information call or write:**  
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