

Mud Creek (2344100) Assessment Unit 14539

Listing Recommendation by Jon Kleist

Total Phosphorus concentrations in Mud Creek exceeded the numeric surface water standard for total phosphorus in NR 102 Wis. Adm. Code of 75ug/l in 8 of 11 water samples collected from October 2010 to September 2011. The average total phosphorus concentration of the samples collected was 151ug/l with a range of 57 to 335ug/l. The sample site was at the bottom of the watershed where Mud Creek crosses CTH D, just upstream of Mud Creek's confluence with the Chippewa River in Rusk County.

The increased phosphorus concentrations observed in Mud Creek are likely due to natural conditions within the watershed. Other studies in the area (sub-watersheds within the Jump River, Main Creek, and Deertail Creek watersheds) have shown increased phosphorus loading in waterways in undeveloped watersheds at levels nearly double the expected loading rates of forested and wetland watersheds in Wisconsin (Roesler, 2007). Mean total phosphorus concentrations in groundwater were reported to average 2 to almost 5 times the average total phosphorus concentrations observed for most areas of Wisconsin (Roesler, 2007).

The Mud Creek watershed is largely undeveloped based on 2006 land use data (Table 1). Forests and wetlands comprise 85.7% of the watershed. Ten percent of the watershed is developed or agricultural; 7.5 percent of the watershed is classified as agricultural land use and 2.5% is classified as urban. The remaining area is water or grassland.

Table 1. Mud Creek Watershed Land Use

Land Use	Agriculture	Forest	Grass	Urban	Water	Wetland
Percent of area (%)	7.5	57.8	0.9	2.5	3.3	27.9

The development percentages of the Mud Creek watershed compare similarly with the sub-watersheds studied in 2005-2006 by Roesler which averaged 2.6% developed and 23.2% wetland. Undeveloped land uses of forested and wetland were reported to average 97.4%. The agricultural lands were not averaged by sub-watersheds. The Jump River and Main Creek watersheds were reported to have 8.5 % and 23.8% agricultural lands respectively.

There is limited potential to address phosphorus concentrations in Mud Creek through changes in watershed land use; most of the watershed is currently undeveloped and the phosphorus sources uncontrollable. Other watersheds with similar development patterns in the area have higher naturally occurring phosphorus concentrations in surface waters and groundwater.

Recommend listing waterway as 5C.

References:

Roesler, C., 2007. Background Total Phosphorus Export Rates in the Jump River and Main Creek Watersheds and Implications for Total Phosphorus Load Reductions to the Jump River Embayment of the Holcombe Flowage. Internal WDNR Report.

2014 Impaired Waters Documentation Sheet

Author: Jon Kleist	Date Prepared: 08/29/2013
Waterbody Name: Mud Creek	Segment: 1
WADRS ID: 14539	WBIC: 2344100

Use [i-SWDV](#) (CTRL + Click) to find ID numbers

Choose from the following to indicate what you are recommending:

Proposed new **impaired water** listing
 Proposed change to **DRAFT list**

Proposed new **watch water** listing

Proposed changes for water already on 303(d) list (check type of change below) → TMDL ID #: _____

Proposed change to existing list (new pollutants, impairments, mileages, etc.)

Proposed for de-listing

General 303(d) documentation for water already on list

Description of waterbody segment

Start Mile: 0 End Mile: 13 Total miles: Lake Acres:	Detail (describe segment using road crossings, convergence with other waterbodies, etc.):
--	---

Use Designation Categories

List use designation & data source for each category.

Current (Existing) Fish & Aquatic Life Use:	
Attainable (Potential) Fish & Aquatic Life Use:	
Designated (Codified) Fish & Aquatic Life Use:	

Is it supporting its FAL Attainable Use?
 Fully Supporting
 Not Supporting
 Not Assessed

Is it supporting its Recreational Use?
 Fully Supporting
 Not Supporting
 Not Assessed

Does a *Specific* Fish Consumption Advisory Exist?
 Yes
 No
 Don't know

If so, what is the specific advisory:

Pollutants & Impairments

Pollutants: (Place an X next to all pollutants that you are recommending for listing or de-listing, or "watch water" monitoring needs.)

<input checked="" type="checkbox"/> Phosphorus	<input type="checkbox"/> Sediment	<input type="checkbox"/> Bacteria	<input type="checkbox"/> PAHs	<input type="checkbox"/> PCBs
<input type="checkbox"/> NH ₃ (Ammonia)	<input type="checkbox"/> Thermal	<input type="checkbox"/> Hg	<input type="checkbox"/> Creosote	<input type="checkbox"/> Metals
<input type="checkbox"/> Unknown	Other Pollutants:			

Impairments: (Place an X next to all impairments that you are recommending for listing, de-listing, or "watch water" monitoring needs.)

<input type="checkbox"/> Degraded Habitat	<input type="checkbox"/> Eutrophication	<input type="checkbox"/> Temperature
<input type="checkbox"/> Contaminated Fish Tissue	<input type="checkbox"/> Chronic Toxicity	<input type="checkbox"/> Aquatic Toxicity
<input type="checkbox"/> Unknown	<input type="checkbox"/> Degraded Biological Community	

Specific causes of impairment: (Describe to the best of your ability what you think is contributing to the impairment.)

Information is based on:
 Monitoring data collected on/after January 1, 2003? YES NO
 If 'NO' then provide justification for using data from the long term record:

Monitoring & Listing Data

Monitoring Study, Date, Results. List water quality exceedances indicating magnitude, duration and frequency (attach additional sheets, if needed).

Monitoring Studies:

Exceedances:

Stations:

Parameters:

Database where data is stored (Fish Database, SWIMS, FishSED, Personal PC):

Narrative on why you are proposing this waterbody to be listed or de-listed?

Total Phosphorus concentrations in Mud Creek exceeded the numeric surface water standard for total phosphorus in NR 102 Wis. Adm. Code of 75ug/l in 8 of 11 water samples collected from October 2010 to September 2011. The average total phosphorus concentration of the samples collected was 151ug/l with a range of 57 to 335ug/l. The sample site was at the bottom of the watershed where Mud Creek crosses CTH D, just upstream of Mud Creek's confluence with the Chippewa River in Rusk County.

The increased phosphorus concentrations observed in Mud Creek are likely due to natural conditions within the watershed. Other studies in the area (sub-watersheds within the Jump River, Main Creek, and Deertail Creek watersheds) have shown increased phosphorus loading in waterways in undeveloped watersheds at levels nearly double the expected loading rates of forested and wetland watersheds in Wisconsin (Roesler, 2007). Mean total phosphorus concentrations in groundwater were reported to average 2 to almost 5 times the average total phosphorus concentrations observed for most areas of Wisconsin (Roesler, 2007).

The Mud Creek watershed is largely undeveloped based on 2006 land use data (Table 1). Forests and wetlands comprise 85.7% of the watershed. Ten percent of the watershed is developed or agricultural; 7.5 percent of the watershed is classified as agricultural land use and 2.5% is classified as urban. The remaining area is water or grassland.

Table 1. Mud Creek Watershed Land Use

Land Use	Agriculture	Forest	Grass	Urban	Water	Wetland
Percent of area (%)	7.5	57.8	0.9	2.5	3.3	27.9

The development percentages of the Mud Creek watershed compare similarly with the sub-watersheds studied in 2005-2006 by Roesler which averaged 2.6% developed and 23.2% wetland. Undeveloped land uses of forested and wetland were reported to average 97.4%. The agricultural lands were not averaged by sub-watersheds. The Jump River and Main Creek watersheds were reported to have 8.5 % and 23.8% agricultural lands respectively.

There is limited potential to address phosphorus concentrations in Mud Creek through changes in watershed land use; most of the watershed is currently undeveloped and the phosphorus sources uncontrollable. Other watersheds with similar development patterns in the area have higher naturally occurring phosphorus concentrations in surface waters and groundwater.

List and attach any additional reports, updated watershed tables, analyses etc. including use designation survey.

1. Roesler, C., 2007. Background Total Phosphorus Export Rates in the Jump Ri
- 2.
- 3.
- 4.