

Stream Classification
Spring Creek

Manitowoc River Basin
North Branch Manitowoc River Watershed (MA04)
Townships of Rantoul and Brillion, Calumet County

Submitted by Mary Gansberg
Wisconsin Department of Natural Resources
Northeast Region Headquarters
September 11, 1996

INTRODUCTION

In 1996, I conducted monitoring on Spring Creek for the purpose of determining the streams classification. Spring Creek discharges to the North Branch Manitowoc River at T19N, R20E, Sec 4, NW1/4 NW1/4 in the Township of Rantoul, Calumet County. Brillion Iron Works, Inc and Dean Foods Brillion Plant both discharge to Spring Creek; however, Dean Foods is scheduled to close in 1997. This report summarizes the assessment of the streams existing biological use and recommends the stream classification. See attached map for location.

METHODS

Monitoring was conducted at several locations along Spring Creek in the spring and summer to determine the existing and potential biological uses. Monitoring included the following:

Dissolved oxygen and temperature - grab samples were collected on several occasions at several locations using a YSI Model 55 Handheld meter.

Macroinvertebrate communities - aquatic invertebrates were collected and sent to UW-Stevens Point for sorting and identification. Sample results were evaluated using the Hilsenhoff Biotic Index which provides a relative measure of organic pollution in the stream.

Fish communities - a backpack stream shocker was use to collect fish. Fish were identified and released.

Stream habitat evaluation - aquatic life habitat was evaluated at several sites along the tributary and recorded on a stream habitat evaluation form.

Water chemistry - samples were collected during runoff events on three separate occasions at CTH PP in Brillion. Samples were sent to the State Lab of Hygiene and analyzed for total and dissolved phosphorus, ammonia, nitrate nitrogen, biochemical oxygen demand, and suspended solids.

Data sheets that include specific monitoring results are filed in the Manitowoc River Basin, North Branch Manitowoc River Watershed (MA04), Point Source folder in the Water Resources Section of the Northeast Region Headquarters Wisconsin Department of Natural Resources office.

RESULTS AND DISCUSSION

A stream is classified based on the streams natural physical and chemical characteristics, cultural influences of the stream system, and its potential biological use. These factors affect the ability of the surface water to support certain uses. I evaluated the streams existing biological use and determined what its potential use could be in the absence of controllable impacts.

The headwaters of Spring Creek downstream to the city limits at Hwy 10 are significantly impacted by controllable agricultural nonpoint source runoff. Cattle have access to the creek. Runoff from barnyards, feedlots, and manure stacks enter the creek. In some locations, buffers are minimal to none. Monitoring conducted in Spring Creek between the headwaters and Hwy 10 found average water temperature in summer to be 19 °C. Average dissolved oxygen was only 5.5 mg/l. Habitat evaluations rated this section of Spring Creek as fair aquatic life habitat. Stream flows are intermittent and the substrate is mostly soft sediment with rubble and gravel present. Duck weed and filamentous algae are common.

As Spring Creek flows through the city of Brillion, it receives storm sewer runoff and effluent from both Brillion Iron Works, Inc and Dean Foods Brillion Plant. Dissolved oxygen measurements taken at several locations in Spring Creek between Hwy 10 and Glenview Ave., where Spring Creek enter the Brillion Marsh Wildlife Area, found summer dissolved oxygen at a relatively low average concentration of 5.1 mg/l. Average water temperature was 22 °C.

Water chemistry samples collected during spring snowmelt and two rain runoff events show significantly elevated levels of ammonia (mean 0.74 mg/l), total phosphorus (mean 1.05 mg/l), dissolved phosphorus (mean 0.80), and nitrate-nitrogen (mean 2.81 mg/l). Since the samples were collected at CTH PP after the creek travels through several miles of agricultural land and the city of Brillion, these nutrients could be coming from rural or urban nonpoint sources or from point source discharges.

Fish surveys were conducted at two locations in Brillion. The first site was upstream of Brillion Iron Works at St. Francis Street and the second site was below Brillion Iron Works at E. Water Street. Both survey sites were approximately a 50 foot stretch of stream. At the upstream site, 188 fish were captured and identified. Brook stickleback were the most abundant species present followed by creek chubs, blacknose dace, fathead minnows, central mudminnows, and white suckers. At the downstream site, 82 fish were captured. Creek chubs were the most abundant followed by white suckers, brook stickleback, fathead minnows, common shiners, and blacknose dace. Although the number of fish caught was greater in the upstream site, all species collected are tolerant to very tolerant to environmental degradation and severe environmental conditions. This indicates that adverse conditions are limiting the number and type of fish species present in the stream.

A macroinvertebrate sample collected in spring at CTH PP received a Hilsenhoff Biotic Index value of 6.19 indicating fair water quality with fairly significant organic pollution present. The order Diptera was the most abundant order present with the family Chironomidae making up 75% of the entire sample. The lack of a diverse population and the presence of only tolerant organisms indicate significant pollution problems.

Habitat evaluations rated the section of stream within the city limits as fair aquatic life habitat. Where flows decrease, much of the rubble and gravel substrate is covered by silt and muck. Deep pools and riffles are rare. Macrophytes and filamentous algae are common.

No evaluation was made in Spring Creek from the Brillion Marsh downstream to the confluence of the North Branch Manitowoc River.

CONCLUSION

The existing biological use of Spring Creek from its headwaters downstream to Glenview ave. (T20N R20E Sec 26 NW1/4 SE1/4 - the start of the Brillion Marsh Wildlife Area) is warm water forage fish communities. Because of the size and flow of Spring Creek, it does not have the potential to support a higher use classification than it already supports; although with the reduction of sediment and nutrient loading, it does have the potential to support more abundant and diverse biological populations. Thus, the classification of Spring Creek should be **warm water forage fish communities**.

