CORRESPONDENCE/MEMORANDUM

DATE:

November 19, 2002

TO:

Laura Bub, WT/2

FROM:

Pamela Stubbe, Superior

SUBJECT:

Drummond S. D. - Surface Water Classification & Designated Use Review

The Drummond S. D. wastewater treatment facility in Bayfield County includes one primary and two secondary cells (Figure 1). Treated wastewater is discharged from the northeast pond through a dispersal pipe located in a bog wetland east of the lagoons (Figure 2). An unnamed, intermittent tributary to the Long Lake Branch of the White River begins at a weir outlet at the northwestern end of the bog (Figure 3). This tributary stream, which does not consistently exhibit defined bed and bank, continues for approximately 350 m, and then it diffuses just before a wetland that surrounds Weso Lake (Figures 4 and 5). The lack of stream connectivity and substrate habitat limits potential fish and aquatic macroinvertebrate communities in the intermittent stream.

Historically the course of the intermittent stream continued under an abandoned railroad grade, but beaver activity has impounded the watercourse (Figures 6 and 7). Historical data include low dissolved oxygen levels, which are characteristic of wetland drainage streams and limiting for potential fish communities. (05/16/91 L. Prenn Site Review)

On 4 November 2002 Water Resources Management Specialist Bill Jaeger, Wastewater Engineer Chuck Olson, Watershed Specialist Susan Watson, and I evaluated the site. There was no visible discharge from the dispersal pipe into the bog wetland (Figure 8). Flow from the weir into the tributary channel was negligible. The stream was less than 0.1 m deep and full of allochthonous material (Figure 9). The substrate consisted of silt and decaying organic material. We sampled for fish and aquatic macroinvertebrates immediately downstream of the weir and found nothing. Approximately 200 m downstream of the weir we found a few aquatic macroinvertebrates, including one physid snail and one caddisfly larvae, in an isolated area (<1 m²) that contained gravel and rock substrate.

RECOMMENDATION

The bog and intermittent tributary stream, which recieve treated wastewater from the Drummond S. D. facility, shall be classified as "wetland" (NR 104.02(1)(c)) and "noncontinuous stream" (NR 104.02(1)(e), respectively, and shall be placed in the "marginal surface water/limited aquatic life/very tolerant aquatic life" (NR 104.02(3)(b) category. The reasons for this recommendation are as follows:

- 1. Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of a Diverse Fish and Aquatic Life community.
- 2. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of a Diverse Fish and Aquatic Life community.
- 3. Naturally occurring pollutant concentrations prevent the attainment of a Diverse Fish and Aquatic Life Community.



Figure **1** WI-0031615-5

Drummond Sanitary District Wastewater Treatment Plant

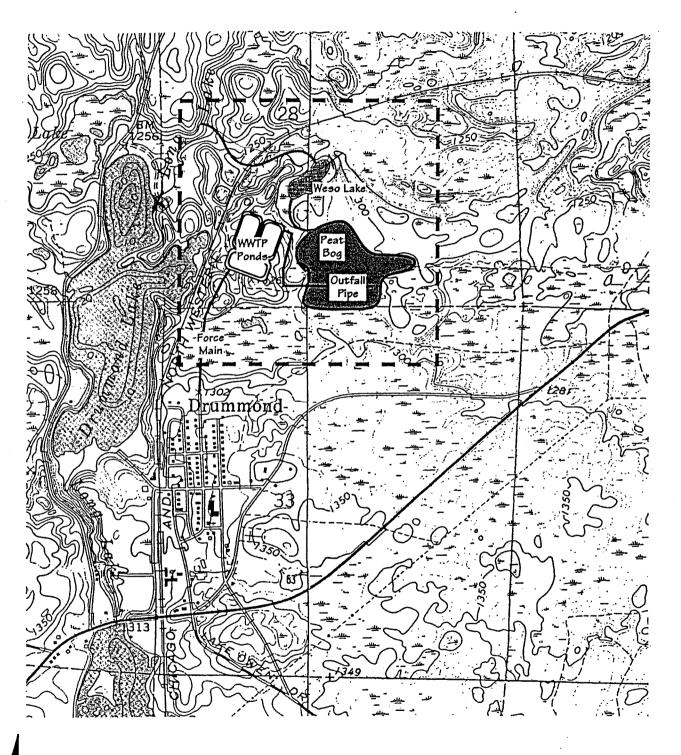




Figure 2. Drummond WWTF outfall pipe into bog.

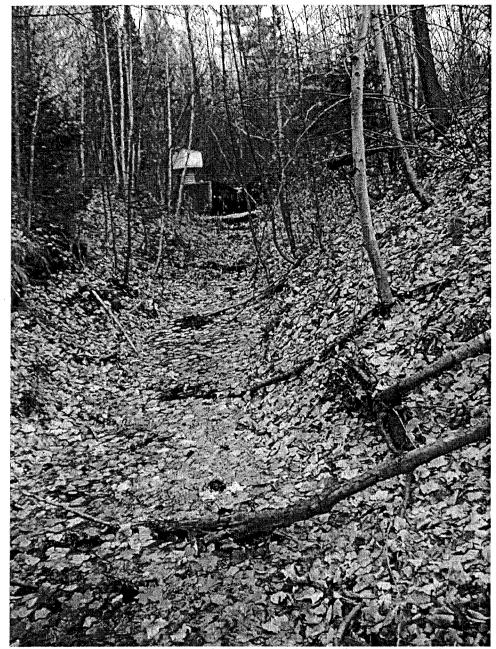


Figure 3. Drummond WWTF weir outlet into noncontinuous tributary stream to the Long Lake Branch of the White River.



Figure 4. Noncontinuous stream that receives Drummond WWTF effluent and bog discharge. Facing upstream at the end of the tributary segment where the channel loses defined bed and bank.



Figure 5. Noncontinuous stream that recieves Drummond WWTF effluent and bog discharge. Facing downstream At the end of the tributary segment where the channel diffuses.





Figure 7. Culvert through which tributary stream to the Long Lake Branch of the White River historically traveled.





Figure 9. Noncontinuous stream receiving Drummond WWTF and bog discharge.

TO:

FILES

FROM:

Larry Prenn

DATE:

May 16, 1991

SUBJECT:

DRUMMOND WWTP SITE REVIEW

Description:

The WWTP at Drummond operates on a fill and draw basis; it consists of one primary and two secondary cells. After treatment the final effluent is piped from the northeast corner of the northeast pond and fed into a dispersal pipe located in a bog wetland east of the treatment lagoons.

Emerging from this bog wetland at a weir outlet and flowing north is an unnamed tributary to the Long Lake Branch of the White River. Along its course this intermittent tributary flows into another wetland surrounding a 4.4 acre unnamed lake, passes under the abandoned CNW railroad grade, and is joined by a clearwater feeder of equal size.

Water Chemistry:

On May 16, 1991, no discharge was occurring from the WWTP to the bog. Water chemistry samples were collected at the weir outlet of the bog (D-D1), and just below the abandoned railroad grade (D-D2). Lowered dissolved oxygen levels, not atypical of bog drainage, were recorded. Levels were 2.6 (mg/l) and 4.5 (mg/l) respectively. Results showed there to be high levels of phosphorus at both sties. A substantial increase in the BOD₅ level was measured at D-D2, and a noticeable septic odor was present in the water at this site. No slimes, or excessive periphyton growths were present.

Physical and Biological Assessment:

Upstream from the railroad grade extensive beaver activity was in evidence, especially in the area surrounding the unnamed lake. From the abundance of brush, and the number of trees standing dead in the water, it was apparent the lake level had risen two to three feet. An equally large number of trees had been felled into and along the shoreline of the lake.

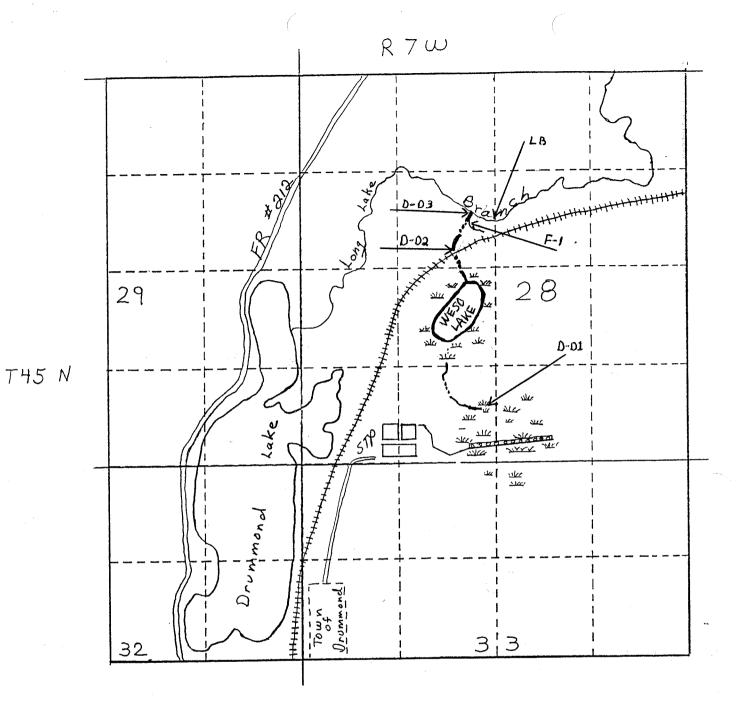
The stream reach at D-D2, just below the railroad grade, was evaluated with the use of a habitat rating form. For the most part, watershed characteristics rated excellent. Instream habitat, due to a lack of depth and siltation of the streambed, generally rated fair to poor. A composite total of 168 points classified habitat availability as fair.

Except for the presence of a minnow, aquatic organisms were noted as lacking.

Midway between D-D2 and the confluence with the Long Lake Branch, a clearwater feeder (F-1) joins the Drummond Tributary from the east. This feeder, viewed later in the year on October 31, 1991, appears to be spring fed. Temperature and dissolved oxygen in the feeder were measured at 3.5° C and 10.8 (mg/l). In comparison, temperature and oxygen measurements in the Drummond Feeder at D-D2 were 5.0° C and 3.9 (mg/l). The site at D-D2 still had its characteristic septic odor.

Below the junction of the spring feeder with the Drummond Tributary (D-D3), stream substrate was composed basically of clean sand. There were little or no siltation problems. In this stretch Tipula dipteran were present, as were numerous amphipods.

Downstream of their confluence (LB), there was no visible evidence of the Drummond Tributary adversely impacting the Long Lake Branch. Abundant arthropods including stonefly nymphs (Perlidae), and fixed cases of intolerant caddis larvae (Glossomatidae) were seen throughout the mixing zone. Also in abundance were dipterans (Chironomidae, Tipulidae), amphipods, and Megaloptera (Sialis).



Drummond Site Keview May 16, 1991

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Form 3200-68

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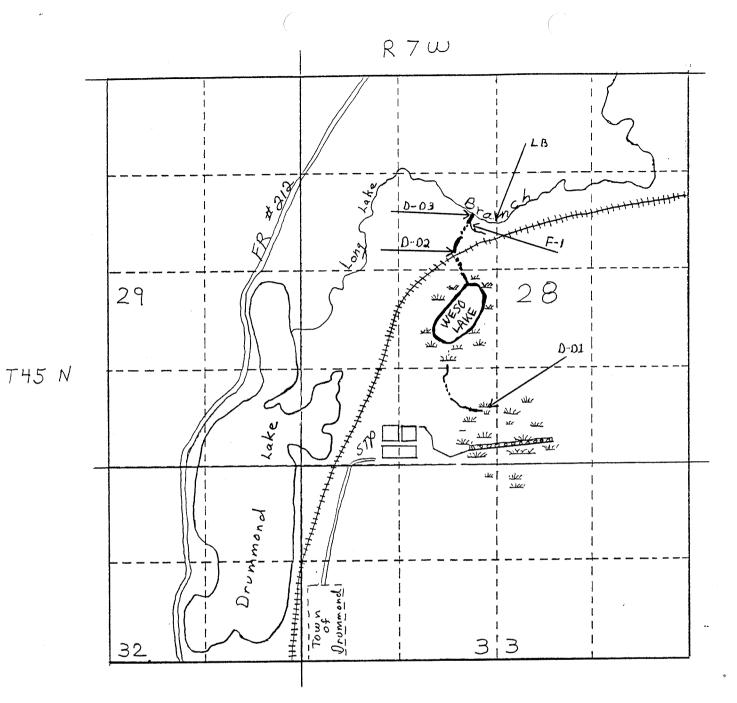
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