

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
SURFACE WATER QUALITY DIVISION  
JANUARY 1999

STAFF REPORT

REPORT ON A SITE VISIT TO THE NORTH BRANCH OF THE UNNAMED TRIBUTARY OF  
SHINGLEBOLT CREEK, MECOSTA COUNTY  
OCTOBER 15, 1998

As part of the nonpoint surveillance activity of the Surface Water Quality Division, staff of the Great Lakes and Environmental Assessment Section (GLEAS), along with Land and Water Management Division (LWMD) staff, visited the North Branch of the upper unnamed tributary of Shinglebolt Creek in southwest Mecosta County. General habitat observations were made for the North Branch and a side tributary, identified as the Cabin Tributary (CT), which are both within the area of the proposed project. Habitat and macroinvertebrate assessments were conducted in the middle portion of the CT and were conducted according to GLEAS Procedure # 51 (P-51, available upon request). The main objectives of the site visit were to become familiar with the area, with respect to the review of a revised LWMD permit application which proposes to create an impoundment on the North Branch of the unnamed tributary (UT), and to determine the nature of the aquatic resources present. A previous site reconnaissance visit to the lower portions of the UT was summarized in an earlier GLEAS report (MI/DEQ/SWQ-98/036). The map in the earlier report shows the UT and the previous project area. The revised project area is the more upstream portion of the previous proposal.

The UT is one of the two main branches of the Shinglebolt Creek system. The upper reaches of the UT splits into two branches which shall be called the North and South Branches for discussion purposes. This site visit was to the upper portion of the UT which is upstream of the confluence of the South Branch with the North Branch. The segments of the North Branch evaluated in this assessment are first and second order streams in the Southern Michigan/Northern Indiana Till Plain ecoregion. Shinglebolt Creek is a designated trout stream and flows into the Little Muskegon River which is also a designated trout stream.

SUMMARY

1. The approximate location of the CT assessment station is shown in Figure 1. The macroinvertebrate and habitat data for this reach are presented in Tables 1A and 1B, and 2, respectively. The site assessment was conducted later in the year than what is specified in P-51. There is the potential for some seasonal variations present in what was observed compared to what may have been observed in an assessment conducted earlier in the year.
2. The macroinvertebrate community present in the reach assessed was rated as acceptable. Twenty taxa were found and this number is similar to the data presented in a previous assessment of other areas in the Shinglebolt Creek system conducted by Northern Ecological Services. During the October visit, two mayflies and three Trichoptera families were observed. The empty cases of another Trichoptera family,

Lepidostomatidae, were also observed. This suggests that the late season assessment may understate the number of Trichoptera families, and possibly other orders or taxa, present in the system.

3. Habitat quality (Table 2) in the reach assessed was rated as fair. The stream flow was slightly more focused in this area and bottom characteristics reflected this condition. The area rated had primarily a hard sand bottom in the main flow with silt and detritus accumulations in depositional areas and along the lateral portions of the stream channel. Some woody debris was present, especially farther downstream where numerous large trees had fallen across the channel, and there were occasional pieces of cobble. The CT appears to originate from spring seeps which apparently feed the two small ponds at the upper end of the stream approximately 200'- 250' upstream of the area assessed.

Habitat closer to the ponds was of lower quality with about 1"- 5" of detritus/silt eventually covering all the bottom area. The stream banks were poorly defined in this area. There were a few spots which were 6"- 8" deep. The portion of the CT nearest the confluence with the North Branch was wider and slower with a silty bottom which supported some Vallisneria or a similar appearing plant.

The North Branch UT habitat also varied in the project area. From the confluence with the South Branch to the CT confluence, the North Branch channel was primarily a soft silt/detritus bottom which reflected the thick muck soil bottomland and banks the stream flowed through. Just below the proposed dam location, one section had a hard sand bottom in the main flow along with silt/detritus deposits and margins. Silt/detritus accumulations increased in an upstream direction with a soft bottom predominating. Silt/detritus deposits were 2'- 3' deep in some areas. As noted in a previous visit to the lower UT, the culvert at the two-track trail (about 180' below the proposed dam location) was poorly sized/installed and probably contributed to the retention of silts and sediments upstream of that point. The channel varied between approximately 1.5'- 6' wide with typical widths being 2'- 4' wide. The stream averaged 4"- 5" deep although some holes were seen that were close to 1' deep. Occasional rootwads and scattered woody debris were present and some undercut banks also were observed.

At and immediately above the confluence with the CT, the North Branch was wider, shallower, and slower with a fine silt bottom. A couple hundred feet above the confluence, North Branch channel became quite well defined although the flow volume dropped sharply. The amount of silt in the channel decreased in an upstream direction until a mostly hard sand bottom was present again. Fair amounts of woody debris were also present and the amount of streamside alders increased going upstream. Flow was negligible up by the two-track road near the upper project boundary. The pipe under that crossing was perched and would impede upstream fish movement at that point under lower flow conditions. At the time of the survey, the CT supplied most of the flow in the North Branch at the confluence and for some distance downstream.

Water cress, indicating groundwater inputs, and some Lemna also were observed at scattered locations along the North Branch. Numerous minnows and small fish were observed in some locations and a few larger fish were also noted. The capture and identification of fish were not included in this survey because of time limitations.

4. Overall, based on the macroinvertebrate data, it appears that the UT (here comprised of the Cabin Tributary and the North Branch) in the project area would be rated as

acceptable. It also appears to have coldwater resource values at least seasonally if not year round in some years. Habitat quality varies, ranging from fair to probably low fair and the flow regime apparently can vary across seasons or years. The habitat reflects the low gradient, headwater watershed conditions and the wetlands and bottomland meadow areas which the stream flows through. The stream supports an acceptable macroinvertebrate community and, as previously suggested, appears to have value as potential nursery areas.

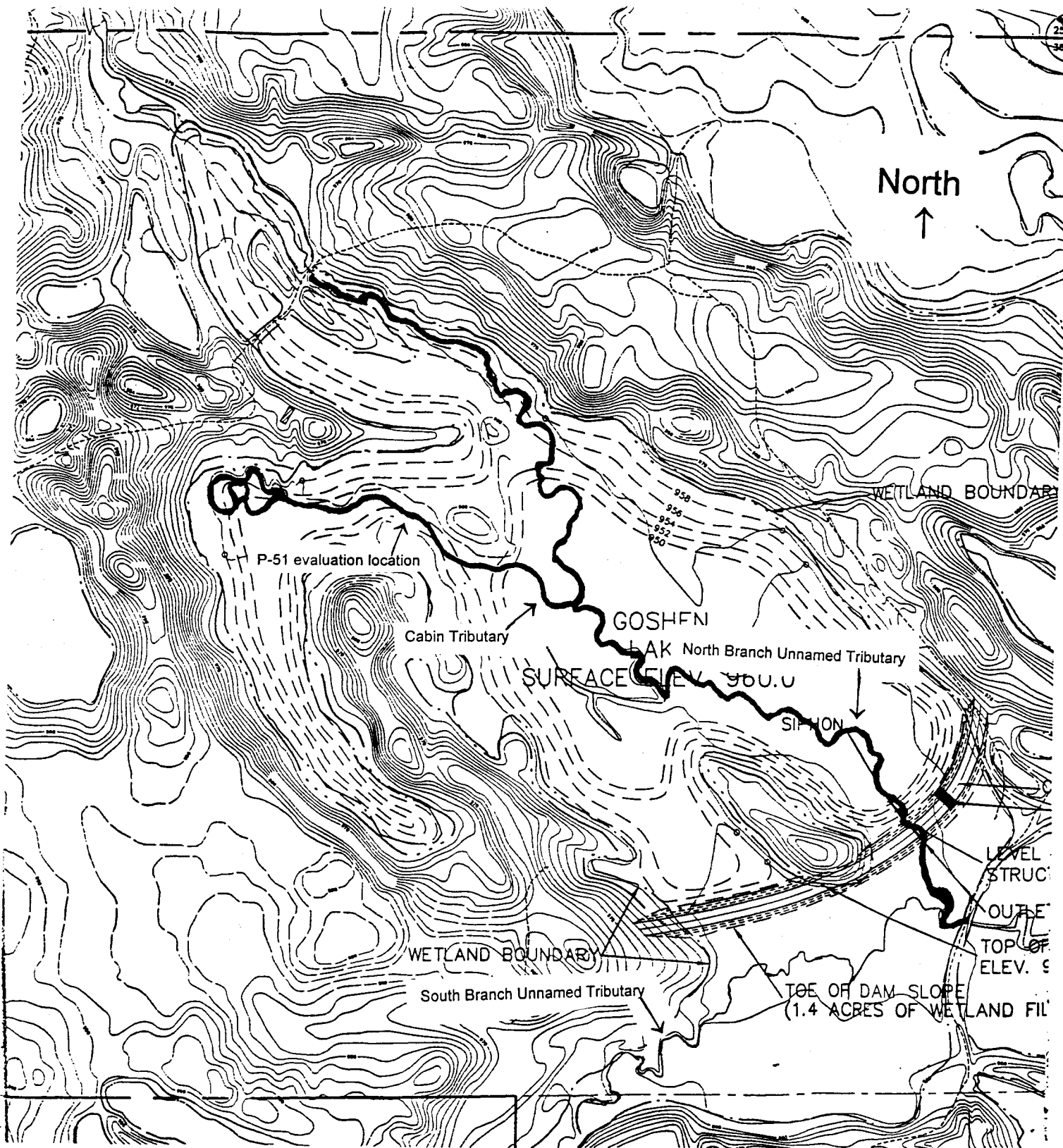
#### REFERENCES

Canadian Lakes Development Company. Application for permit, submitted to the Michigan Department of Environmental Quality. February 5, 1998. Northern Ecological Services.

Walker, Bruce R. Report on a site visit to the unnamed tributary of Shinglebolt Creek, Mecosta County. May 6, 1998. Report MI/DEQ/SWQ-98/036. Surface Water Quality Division, Michigan Department of Environmental Quality.

**Field Work by:** Bruce R. Walker, Aquatic Biologist  
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**Report by:** Bruce R. Walker, Aquatic Biologist  
Water Quality Appraisal North Unit  
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— Stream area viewed 10/15/98

Scale: 0 300'

Figure 1. The area of the upper Unnamed Tributary of Shinglebolt Creek, Mecosta County, assessed for habitat and macroinvertebrates on October 15, 1998. Map was adapted from N. E. S. report.

Table 1A. Qualitative macroinvertebrate sampling results in a portion of the Cabin Tributary of the Unnamed Tributary of Shinglebolt Creek, Mecosta County, on October 15, 1998.

STATION 1	
TAXA	
<b>ANNELIDA (segmented worms)</b>	
Hirudinea (leeches)	3
Oligochaeta (worms)	2
<b>ARTHROPODA</b>	
Crustacea	
Amphipoda (scuds)	35
Decapoda (crayfish)	1
Insecta	
Ephemeroptera (mayflies)	
Heptageniidae	8
Leptophlebiidae	6
Odonata	
Anisoptera (dragonflies)	
Aeshnidae	3
Cordulegastridae	4
Zygoptera (damselflies)	
Calopterygidae	3
Hemiptera (true bugs)	
Gerridae	6
Megaloptera	
Sialidae (alder flies)	5
Trichoptera (caddisflies)	
Hydropsychidae	7
Limnephilidae	5
Psychomyiidae	1
Coleoptera (beetles)	
Dytiscidae (total)	1
Elmidae	4
Diptera (flies)	
Chironomidae	5
Ptychopteridae	3
<b>MOLLUSCA</b>	
Gastropoda (snails)	
Ancylidae (limpets)	
Physidae	5
Pelecypoda (bivalves)	
Pisidiidae	4
<b>TOTAL INDIVIDUALS</b>	<b>111</b>

Table 1B. Macroinvertebrate metric evaluation of a portion of the Cabin Tributary of the Unnamed Tributary of Shinglebolt Creek, Mecosta County, on October 15, 1998.

STATION 1		
METRIC	Value	Score
TOTAL NUMBER OF TAXA	20	1
NUMBER OF MAYFLY TAXA	2	1
NUMBER OF CADDISFLY TAXA	3	1
NUMBER OF STONEFLY TAXA	0	-1
PERCENT MAYFLY COMP.	12.61	0
PERCENT CADDISFLY COMP.	11.71	0
PERCENT CONTR. DOM. TAXON	31.53	0
PERCENT ISOPOD, SNAIL, LEECH	7.21	0
PERCENT SURF. AIR BREATHERS	9.01	0
<b>TOTAL SCORE</b>		<b>2</b>
<b>MACROINV. COMMUNITY RATING</b>		<b>ACCEPT.</b>

Table 2. Habitat evaluation for a portion of the Cabin Tributary of the Unnamed Tributary of Shinglebolt Creek, Mecosta County, on October 15, 1998.

STATION 1	
HABITAT METRIC	
Bottom Substrate	
Avail. Cover (20):	7
Embeddedness (20):	8
Velocity:Depth (20):	7
Flow Stability (15):	7
Bottom Depos. (15):	5
Pools-Riffles-Runs-Bends (15):	6
Bank Stability (10):	8
Bank Vegetative Stability (10):	7
Stream Cover (10):	5
<b>TOTAL SCORE (135):</b>	<b>60</b>

HABITAT RATING: FAIR  
(MODERATELY IMPAIRED)

Date: 10/15/98  
 Weather: Partly Cloudy  
 Air Temperature: - Deg. F.  
 Water Temperature: 49 Deg. F.  
 Ave. Stream Width: 4 Feet  
 Ave. Stream Depth: 0.25 Feet  
 Surface Velocity: 0.33 Ft./Sec.  
 Estimated Flow: 0.33 CFS  
 Stream Modifications: N  
 Nuisance Plants (Y/N): N  
 Report Number: MI/DEQ/SWQ-98/090

STORET No.:  
 Stream Name: Shinglebolt Creek, unnamed tributary  
 Road Crossing/Location: Cabin Tributary  
 County Code: 54  
 TRS: T14NR9WS36

Latitude (dd): 43.5625  
 Longitude (dd): 85.3300  
 Ecoregion: SMNITP  
 Stream Type: Coldwater

USGS Basin Code: 04060102