

STREAM CLASSIFICATION

UNNAMED TRIBUTARY

TO BOWER CREEK

OCTOBER 14, 1981

Introduction

In order to determine effluent limits for a proposed discharge from the Ridgeway Nursing Home to an unnamed tributary of Bower Creek, Tim Doelger and Dennis Weisensel of the Lake Michigan District, conducted a stream classification survey on October 14, 1981. The tributary was evaluated at CTH G at Dollar Road and Bower Creek Road. These stations were numbered 1, 2, and 3, respectively. (See attached map.) In addition, the stations were evaluated by fisheries personnel.

Methods

The stream habitat rating form was the method used to determine the classification. One form was filled out by each evaluator at stations 1 and 2. They are attached and should be referred to for more detail. Electro-fishing was used at stations 1, 2 and 3 by Doug Welch and Mark Opgenorth. Their results which are tabulated and in memo form are also attached.

Discussion

The unnamed tributary in question arises in an area known locally as Scray's Hill which is a steep ridge dropping rapidly into the Fox Valley (note contours on attached map). It is composed of limestone bedrock and shallow clayey soils. The land use is predominately agricultural. The area is unique for this part of our District, has recreational potential and is aesthetically pleasing (see photos).

Upstream of the CTH G bridge is pasture land and cattle are allowed unrestricted access to the stream. Approximately 50 feet below the bridge is a waterfall that drops 40 feet into a glen. Numerous macroinvertebrates were observed between the bridge and the waterfall. They include: Gammarids, Ascellus, Hydropsychids, Elmids, Baetidae, Heptagenidae, Simulids and Leeches. No fish were observed.

The abundance of macroinvertebrates encountered would indicate that this stream is at least perpetually wet if not continuous, although it may cease to flow during dry periods.

From the waterfall downstream to Dollar Road the stream drops sharply and is very heavily wooded with a healthy variety of ground, brush and canopy cover.

At Dollar Road cattle are allowed limited access and the setting becomes more common although it is still very pleasant. Upstream from Dollar Road there seems to be a good mixture of small pools and rocky riffles. Heptagenidae, Simulids, Hydropsychids, Gammarids, Ascellus and Chimarra were observed in the riffles while Leeches and Snails were present in the pools. Fisheries personnel observed western blacknose dace and brook stickleback.

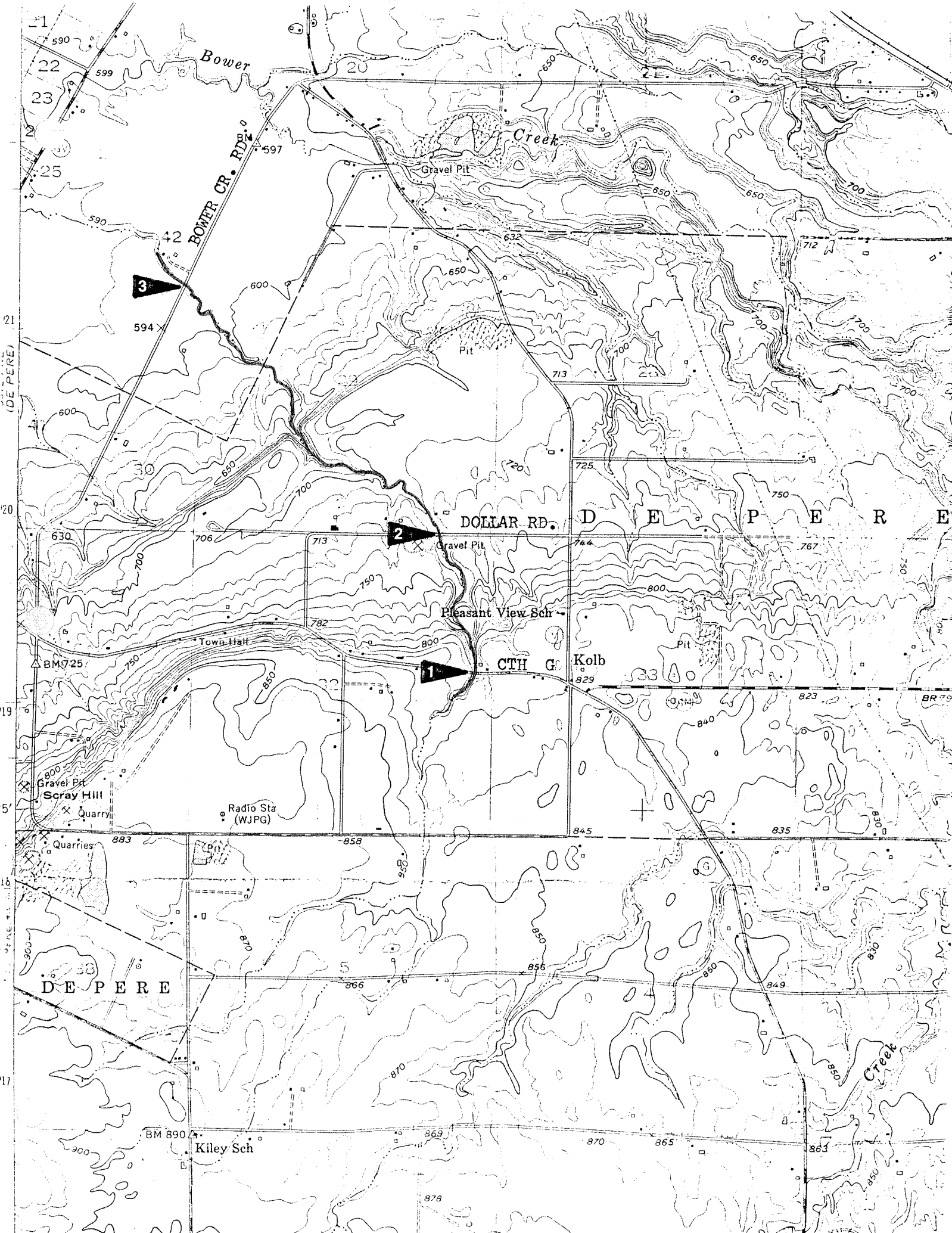
Downstream from Dollar Road to Bower Creek Road is entirely agricultural, but the stream is afforded protection by a wide buffer strip. We did not attempt to collect macroinvertebrates at this location, but Welch and Opgenorth observed northern pike, white sucker, green sunfish and western blacknose dace in this section.

It should be noted that in the request for a classification this stream is listed as a tributary to the East River. This is incorrect; it is a tributary to Bower Creek which then flows into the East River.

Conclusions

Due to low flow, high natural beauty, unusual topography, the presence of numerous species of macroinvertebrates and fish I am recommending that this stream be classified Continuous Fish and Aquatic Wasteload Allocated.





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Bower

Creek

BOWER CR. RD.

Gravel Pit

Pit

DOLLAR RD.

Gravel Pit

Pleasant View Sch

CTH G

Kolb

Gravel Pit
Scray Hill

Radio Sta
(WJPG)

Town Hall

Quarries

DEPERE

Kiley Sch

Creek

(DE PERE)

5'

16'

17'

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CTH G
FACING UPSTREAM



50 FT. BELOW
CTH G



DOWNSTREAM
FROM FALLS



DOLLAR RD.
FACING UPSTREAM



DOLLAR RD.
FACING DOWNSTREAM



BOWER CR. RD.
FACING UPSTREAM



STREAM SYSTEM HABITAT RATING FORM

Stream Trib to Brown Reach Location Cat G. 1/2 mile W. of Kelb

Reach Score/Rating 127 - Good

County Brown Date 10-14-81 Evaluator Daur

Classification Non-continuous - intermediate (equal) - with amphibious high aesthetic value

Rating Item	Category							
	Excellent	Good	Fair	Poor				
Watershed	1. <u>Erosion</u> No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. <i>Little contouring</i>	8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion.	10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion.	14	Heavy erosion evident. Probable erosion from any runoff.	16
	2. <u>Nonpoint Source</u> No evidence of significant source. Little potential for future problem.	4	Some potential sources. (roads, urban area, farm fields). <i>farm barn yard.</i>	8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
Upper Bank	3. <u>Erosion, Failure</u> No evidence of significant erosion or bank failure. Little potential for future problem.	6	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	15	Many eroded areas. "Raw" areas frequent along straight sections and bends.	18
	4. <u>Vegetative Protection</u> 90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system.	6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy.	9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding.	15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs.	18
Lower Bank	5. <u>Channel Capacity</u> Ample for present plus some increase. Peak flows contained. W/D ratio ≤ 7 .	8	Adequate. Overbank flows rare. W/D ratio 8-15.	10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15 to 25.	14	Inadequate, overbank flow common. W/D ratio >25.	16
	6. <u>Deposition</u> Little or no enlargement of channel or point bars.	6	Some new increase in bar formation, mostly from course gravel.	9	Moderate deposition of new gravel and course sand on old and some new bars.	15	Heavy deposits of fine material, increased bar development.	18
Bottom	7. <u>Scouring and Deposition</u> Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	8	30 to 50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools.	16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition.	20

Rating	Category							
	Excellent		Good		Fair		Poor	
Bottom 8. Substrate	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 30% rubble, gravel or other stable habitat. Habitat availability less than desirable.	17	Less than 10% rubble, gravel or other stable habitat. Lack of habitat is obvious.	22
9. Average Depth Q7,2	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	24
10. Flow Q7,2	Warm water, >5 cfs. Cold water, greater than 2 cfs.	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous flow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
Stream 11. Pool/Riffle, Pool/Bend Ratio	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occasional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured corridor.	8	High natural beauty. Trees, historic site. Some development may be visible.	10	Common setting, not offensive. Developed but uncluttered area.	14	Stream does not enhance aesthetics. Condition of stream is offensive.	16

Column Total --

Add column scores E ___ + G ___ + F ___ + P ___ Total Reach Score 127

≤ 70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 Poor

Macroinvertebrates Present in the Reach
 Abundant - Gammarids & asellus
 Common - Hydropterygids
 - Elmids
 BAETIDAE - Baetidae
 - Heptageniidae
 - Trichoptera

Present - Simuliids

I have observed the stream at this location to be non-flowing but perpetually wet in the past.

48

45

34

127

STREAM SYSTEM HABITAT RATING FORM

WLA
NO DEGRADATION

Stream UNNAMED TRIBUTARY

Reach Location CANAL

Reach Score/Rating 110 - GOOD

County DELAN

Date 10-14-81 Evaluator DOUGLAS

Classification _____

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed 1. <u>Erosion</u>	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. 8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. 14	Heavy erosion evident. Probable erosion from any runoff. 16
2. <u>Nonpoint Source</u>	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 20
Upper Bank 3. <u>Erosion, Failure</u>	No evidence of significant erosion or bank failure. Little potential for future problem. 6	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 15	Many eroded areas. "Raw" areas frequent along straight sections and bends. 18
4. <u>Vegetative Protection</u>	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. 6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank 5. <u>Channel Capacity</u>	Ample for present plus some increase. Peak flows contained. W/D ratio ≤ 7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. 10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15 to 25. 14	Inadequate, overbank flow common. W/D ratio > 25. 16
6. <u>Deposition</u>	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from course gravel. 9	Moderate deposition of new gravel and course sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
Bottom 7. <u>Scouring and Deposition</u>	Less than 5% of the bottom affected by scouring and deposition. 4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30 to 50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20

Rating	Category								
	Excellent		Good		Fair		Poor		
Bottom	8. Substrate	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat. BEDROCK	(7)	10 to 30% rubble, gravel or other stable habitat. Habitat availability less than desirable.	17	Less than 10% rubble, gravel or other stable habitat. Lack of habitat is obvious.	22
	9. Average Depth Q7,2	Greater than 24".	0	12" to 24".	6	6" to 12".	(18)	Less than 6".	24
	10. Flow Q7,2	Warm water, >5 cfs. Cold water, greater than 2 cfs.	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous flow.	(18)	Less than .5 cfs. Stream may cease to flow in very dry years.	24
Stream	11. Pool/Riffle, Pool/Bend Ratio	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	(8)	15 to 25. Occasional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
	12. Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured corridor.	8	High natural beauty. Trees, historic site. Some development may be visible.	(10)	Common setting, not offensive. Developed but uncluttered area.	14	Stream does not enhance aesthetics. Condition of stream is offensive.	16

Column Total --

Add column scores E 32 + G 12 + F 36 + P _____ Total Reach Score 110

≤ 70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 Poor

*Nice meadows - flows may be extremely low in dry years tho
 ≈ 30'
 Waterfalls & wooded habitat - pretty!!
 above is wooded pasture*

*Caddis flies
 2 sp Mayflies*

*beech
 seeds
 common*

STREAM SYSTEM HABITAT RATING FORM

Stream Tribble Branch Reach Location TN Rd. Belmont Co (Dollars Ct Rd) Reach Score/Rating 100 - Good

County Brown Date 10-14-81 Evaluator D.W. Classification Good. Light Aquatic
because of high aesthetic value

Rating Item	Category							
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Lower Bank	5. <u>Channel Capacity</u> Ample for present plus some increase. Peak flows contained. W/D ratio ≤ 7 .	8	Adequate. Overbank flows rare. W/D ratio 8-15.	10	Barely contains present peaks. Occasional overbank flow. W/D ratio 15 to 25.	14	Inadequate, overbank flow common. W/D ratio >25.	16
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Column Total --

Add column scores E 48 + G 10 + F 18 + P 24 Total Reach Score 100

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Macrosynth. - abundant - Hydropsychidae - alder & spruce
 Coenocentrus - Simuliids
 - Hydropsychidae
 - gammarids
 - asellus
 - Chironomus Caddisfly -

STREAM SYSTEM HABITAT RATING FORM

Stream TRIP BOWER CREEK Reach Location DUECKER CT Reach Score/Rating 125/600
 County BROWN Date 8-14-81 Evaluator DUECKER Classification _____

Rating Item	Category							
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Column Total --

Add column scores E 14 + G 60 + F 51 + P 175 Total Reach Score

≤ 70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 Poor

BELOW THIS SITE SETTING BECOMES MORE COMMON.
 LIMITED ACCESS FOR CATTLE AT BRIDGE
 LARGE OAK, MAPLE, & APPLE TREES
 2 SPECIES OF MAYFLIES } IN RIFTS
 " " " CADDIS FLIES }
 +
 MINNOWS }
 LEICHS } IN POOLS
 SNAILS }

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: November 9, 1981

File Ref: 3600

To: Dennis Weisensel

From: Douglas Welch

Subject: Fishery Survey, Unnamed Stream, Brown County

Mark Opgenorth and I electrofished three 300 foot sections of a stream rising in Township 22N, Range 21E, Section 6, and joining Bower Creek in Brown County on October 29, 1981.

Five species of fish were found including northern pike, white suckers, green sunfish, western blacknose dace, and brook stickleback. Numbers were low except for brook stickleback which were numerous.

Average width and depth of surveyed sections ranged from 2 to 6 feet, and .5 to 2 feet respectively. Water clarity was good and velocity was sluggish to moderate. Water temperatures ranged from 50° to 52° F and no pollution was apparent. The stream bottom consisted primarily of silt with some sand and detritus present. Aquatic vegetation was scarce as was instream cover. Undercut banks provide most of the cover available. Aquatic invertebrates were not sampled for and none were observed.

This stream does not support a successful spawning population of game fish although young of the year northern pike enter the stream from Bower Creek. White suckers and carp use the stream in the spring.

.DW:km

10/29/81

Backpack Electrofishing Survey

Section 3

Northern Pike	White Sucker	Green Sunfish	Western Blacknose Dace						
170mm	1	1							
205									
206									
Detained									

Section 2

Western Minnow	Brook Stickleback
Dace	
	Numerous

Section 1

NO FISH - 1 Muskrat observed

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: October 1, 1981

File Ref: 3200

To: → Dave Hildreth - L.M. District, Green Bay

REC'D DNR
OCT 5 1981
GREEN BAY,

From: Tom Kroehn - ADM/5

TOM

Subject: Stream Classification for Unnamed Tributary in Brown County

In order to determine effluent limitations for a discharge from Ridgeway Nursing Home to an unnamed tributary of the East River, it will be necessary for the Lake Michigan District staff to conduct a stream classification at this site. The tributary is located a quarter (1/4) of a mile west of the community of Kolb in Section 32, R21E, T23N.

Please have the results sent to Tom Bennwitz of the Water Quality Evaluation Section.

*3 gal/min
or .004 mgd*