

*class change*  
*INT. - FAL-C*

PEDLER CREEK  
AT BLOOMFIELD MANOR

TRIENNIAL STANDARDS REVIEW  
BLOOMFIELD MANOR WWTP

JULY, 1989  
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BUREAU OF WATER RESOURCES MANAGEMENT  
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

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## SUMMARY

Pedler Creek below the Bloomfield Manor WWTP was originally classified as intermediate fish and aquatic life (D) due to sedimentation, marginal habitat, and a forage fish fishery. The intermediate section extended to the confluence with an unnamed tributary, SE¼, SE¼; Section 34; T6N; R2E. The remainder of Pedler Creek was classified as continuous fish and aquatic life (B). This review of the classification would indicate that the intermediate section should be upgraded to full fish and aquatic life (C), forage fish. This classification category was not in place when the stream was originally classified in 1976.

## INTRODUCTION

This paper presents the results of an evaluation of the stream classification for Pedler Creek which is the receiving stream for the Bloomfield Manor WWTP. The evaluation was conducted as part of the Triennial Standards Review.

The sites being reviewed are listed in NR 104.05 (Appendix V). These sites received a variance due to one or more of the following criteria:

- (a) The presence of inplace pollutants
- (b) Low natural stream flow
- (c) Natural background conditions, and
- (d) Irretrievable cultural alterations

## GENERAL DESCRIPTION

Pedler Creek is a spring and seepage fed stream originating on Iowa County land and flowing southwesterly as the principal tributary of the Sudan Branch. The mouth of Pedler Creek is located southeast of Linden. The headwaters are located in a historically heavily used agricultural area. Sediment deposition on the stream bed has been a problem in the past and was noted again during this survey.

The reach included in this evaluation is a 1.5 mile stretch which extends from approximately 0.2 mile above the outfall downstream to the confluence with an unnamed tributary, SE $\frac{1}{4}$ , SE $\frac{1}{4}$ ; Section 34; T6N; R2E. It has a fairly steep gradient and about 95% percent of its watershed area is cleared land devoted to crops and pasture. As a result, the runoff of precipitation is quite rapid which is evidenced by the records of sudden flooding and subsequent heavy bank erosion.

The stream in the vicinity of the wastewater plant generally has low perennial flow with a USGS computed Q<sub>72</sub> of 0.48 cfs and a Q<sub>710</sub> of 0.27 cfs. The USGS flows were taken upstream of the outfall at CTH. "CH". Table 1 contains the actual flows at the site taken from the publication "Low-Flow Characteristics of Wisconsin Streams at Sewage Treatment Plants and Industrial Plants".

Table 1: Low-Flow Characteristics, Pedler Creek

<u>Drainage Area</u> (mi <sup>2</sup> )	<u>Date</u>	<u>Discharge</u> (ft <sup>3</sup> /s)
1.46	June 2, 1972	0.44
	Aug. 10, 1972	1.72
	July 31, 1973	1.64
	Oct. 10, 1975	1.21
	July 27, 1976	0.54
	Sept. 15, 1976	0.40

Two upstream flows were taken during the WLA's of 1988. The July 13, 1988 flow was 0.74 cfs and the August 10, 1988 flow was 0.79 cfs.

#### STREAM HABITAT

Due to the agricultural uses adjacent to Pedler Creek one of the major problems the stream has is sedimentation. This was most noticeable during the surveys conducted in 1988. The pools that are present above and below the outfall are inundated with sediment along with some organic material. But the strong point this stream does have is that it has good consistent groundwater flow into it. This was especially true during the drought of 1988 and 1989 when the stream continued to have good base flow in its headwaters. During the wasteload allocations the stream bed directly above and below the outfall was covered with watercress and Veronica sp. These two species are indicators of groundwater discharge to the stream. Due to several shallow flat riffle areas in the headwaters, habitat is not suitable to maintain a good solid sport fishery, namely smallmouth bass.

This section of stream is more suited to a good population of forage fish which will only get better with reduced sedimentation and consistent wastewater treatment.

#### WATER QUALITY

The most recent study conducted was a wasteload allocation survey done in 1988. The wasteload's were done on July 13-14 and August 10-11, 1988. The sampling sites are identified on Map #1 and the water chemistry results are in Table II and Table III.

Effluent flow was very small in relation to stream flow. On both surveys the upstream flow was approximately .75 cfs. Upstream water quality was good with the BOD<sub>5</sub> on the first survey of 0.09 mg/l and on the second survey it was <0.1 mg/l. Total phosphorus was 0.11 mg/l and 0.07 mg/l; dissolved phosphorus was 0.05 mg/l and 0.054 mg/l.

Effluent quality was good with the BOD<sub>5</sub> being 4.6 mg/l, 3.4 mg/l; Ammonia-N was 0.1 mg/l on both surveys; and suspended solids were 8 mg/l and 9 mg/l.

Due to the small effluent flow the water chemistry at the second downstream sampling site is similar to the background sample except for nutrients, which are still somewhat elevated. With the influx of groundwater and the assimilation of the wastewater by the stream, water quality at the last



## INORGANIC

WR11	192	BM1	25
071488 WWTP (-.01 MI)	0830	PEDLER CR. UPS. BLOOMFIELD	
SCHLESSER		SOURCE CODE SU	
DNR		WS PLANTYPE	
DODGEVILLE		MISC. CODES	
WR048		LAB COMM.	
SCHLESSER LABSLIP- I9005129		REPORTED: 081988	
1 BOD 5 DAY	0.9	MG/L	
0 BOD LONGTERM	SEE FILE	MG/L	
1 CALCIUM TOTAL	80.	MG/L	
1 CHLORIDE	22.	MG/L	
1 CHLOROPHYL A	4.	UG/L	
1 HARDNESS TOTAL CaCO3	390.	MG/L	
1 MAGNESIUM TOTAL	47.	MG/L	
1 NITROGEN NH3-N DISS	0.09	MG/L	
1 NITROGEN NO3+NO2 DISS	11.6	MG/L	
1 NITROGEN KJELDAHL TOTAL	0.4	MG/L	
1 PH LAB	7.90	SU	
1 PHOSPHORUS	0.11	MG/L	
1 PHOSPHATE ORTHO DISS	0.051	MG/L	
1 RESIDUE TOTAL NFLT	38.	MG/L	

INORGANIC

253027  
WR11

192

BM2

25

071488  
SAMPLE (0.0 MI)

0825

BLOOMFIELD MANOR OUTFALL

SCHLESSER

SOURCE CODE EF

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES SU

WR048

LAB COMM.

SCHLESSER

REPORTED: 080288

LABSLIP- I9005130

1 BOD 5 DAY	4.6	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	210.	MG/L
1 NITROGEN NH3-N DISS	0.1	MG/L
1 NITROGEN NO3+NO2 DISS	15.4	MG/L
1 NITROGEN KJELDAHL TOTAL	1.4	MG/L
1 PH LAB	7.90	SU
1 PHOSPHORUS	5.90	MG/L
1 PHOSPHATE ORTHO DISS	4.48	MG/L
1 RESIDUE TOTAL NFLT	8.	MG/L

INORGANIC

WR11

192

BM3

25

071488  
(+0.01 MI.)

0820

PEDLER CREEK MIX SAMPLE

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER

REPORTED: 080288

LABSLIP- I9005131

1 BOD 5 DAY	1.2	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	27.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	11.6	MG/L
1 NITROGEN KJELDAHL TOTAL	0.6	MG/L
1 PH LAB	7.90	SU
1 PHOSPHORUS	0.24	MG/L
1 PHOSPHATE ORTHO DISS	0.141	MG/L
1 RESIDUE TOTAL NFLT	48.	MG/L

INORGANIC

192

BM4

25

WR11

071488  
FENCELINE (0.2 MI.)

1040

PEDLER CREEK DOWNSTREAM

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER  
LABSLIP- I9005132

REPORTED: 080288

1 BOD 5 DAY	0.9	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	29.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	11.3	MG/L
1 NITROGEN KJELDAHL TOTAL	0.6	MG/L
1 PH LAB	8.00	SU
1 PHOSPHORUS	0.19	MG/L
1 PHOSPHATE ORTHO DISS	0.136	MG/L
1 RESIDUE TOTAL NFLT	12.	MG/L

INORGANIC

WR11

192

BM5

25

071488  
1ST TREES (0.5 MI.)

1150

PEDLER CREEK DOWNSTREAM AT

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER  
LABSLIP- I9005133

REPORTED: 080288

1 BOD 5 DAY	0.9	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	29.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	11.0	MG/L
1 NITROGEN KJELDAHL TOTAL	0.6	MG/L
1 PH LAB	8.20	SU
1 PHOSPHORUS	0.21	MG/L
1 PHOSPHATE ORTHO DISS	0.125	MG/L
1 RESIDUE TOTAL NFLT	48.	MG/L

INORGANIC

WR11

192

BM6

25

MI.) 071488

1315

PEDLER CREEK END POINT (1.0

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER

REPORTED: 080288

LABSLIP- I9005134

1 BOD 5 DAY	1.2	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	29.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	10.9	MG/L
1 NITROGEN KJELDAHL TOTAL	0.8	MG/L
1 PH LAB	8.30	SU
1 PHOSPHORUS	0.26	MG/L
1 PHOSPHATE ORTHO DISS	0.126	MG/L
1 RESIDUE TOTAL NFLT	103.	MG/L

## INORGANIC

WR11

192

BN

25

081088  
(-0.01MI)

0820

PEDLER CR UPS BLOOMFIELD WWTP

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM. Corrected

version

SCHLESSER

REPORTED: 092088

LABSLIP- I9014726

1 BOD 5 DAY	4.0	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CALCIUM TOTAL	77.	MG/L
1 CHLORIDE	22.	MG/L
1 CHLOROPHYL A	1	UG/L
1 HARDNESS TOTAL CAC03	380.	MG/L
1 MAGNESIUM TOTAL	45.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	11.4	MG/L
4 NITROGEN KJELDAHL TOTAL	<0.2	MG/L
1 PH LAB	8.10	SU
1 PHOSPHORUS	0.07	MG/L
1 PHOSPHATE ORTHO DISS	0.054	MG/L
1 RESIDUE TOTAL NFLT	6.	MG/L

INORGANIC

WR11 253027

192

BM2

25

(0.0MI) 081088

0825

BLOOMFIELD MANOR OUTFALL

SCHLESSER

SOURCE CODE EF

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER

REPORTED: 091288

LABSLIP- I9014727

1 BOD 5 DAY	3.4	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	71.	MG/L
1 NITROGEN NH3-N DISS	0.1	MG/L
1 NITROGEN NO3+NO2 DISS	7.7	MG/L
1 NITROGEN KJELDAHL TOTAL	1.1	MG/L
1 PH LAB	8.20	SU
1 PHOSPHORUS	4.43	MG/L
1 PHOSPHATE ORTHO DISS	3.88	MG/L
1 RESIDUE TOTAL NFLT	9.	MG/L

INORGANIC

WR11

192

BM3

25

081088

0830

PEDLER CR MIX SAMPLE (0.02MI)

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER

REPORTED: 091288

LABSLIP- I9014728

1 BOD 5 DAY	3.4	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	24.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	11.1	MG/L
1 NITROGEN KJELDAHL TOTAL	0.3	MG/L
1 PH LAB	7.90	SU
1 PHOSPHORUS	0.30	MG/L
1 PHOSPHATE ORTHO DISS	0.25	MG/L
1 RESIDUE TOTAL NFLT	11.	MG/L

INORGANIC

192

BM4

25

WR11

081088

1045

PEDLER CR BELOW FENCE LINE

(0.2MI)

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER

REPORTED: 091288

LABSLIP- I9014729

1 BOD 5 DAY	0.6	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	23.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	10.6	MG/L
1 NITROGEN KJELDAHL TOTAL	0.3	MG/L
1 PH LAB	7.90	SU
1 PHOSPHORUS	0.16	MG/L
1 PHOSPHATE ORTHO DISS	0.123	MG/L
1 RESIDUE TOTAL NFLT	4.	MG/L

INORGANIC

WR11

192

BM5

25

081088  
TREES 0.4 MI

1230

PEDLER CR FIRST STAND OF

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER  
LABSLIP- I9014730

REPORTED: 091288

1 BOD 5 DAY	0.9	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	23.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	10.4	MG/L
1 NITROGEN KJELDAHL TOTAL	0.3	MG/L
1 PH LAB	8.10	SU
1 PHOSPHORUS	0.15	MG/L
1 PHOSPHATE ORTHO DISS	0.113	MG/L
1 RESIDUE TOTAL NFLT	20.	MG/L

INORGANIC

192

BM6

25

WR11

081088  
 TRIB. (0.7MI.)

1400

PEDLER CR. END POINT AT POND

SCHLESSER

SOURCE CODE SU

DNR

WS PLANTYPE

DODGEVILLE

MISC. CODES

WR048

LAB COMM.

SCHLESSER

REPORTED: 091288

LABSLIP- I9014731

1 BOD 5 DAY	1.2	MG/L
0 BOD LONGTERM	SEE FILE	MG/L
1 CHLORIDE	23.	MG/L
4 NITROGEN NH3-N DISS	<0.1	MG/L
1 NITROGEN NO3+NO2 DISS	10.1	MG/L
1 NITROGEN KJELDAHL TOTAL	0.5	MG/L
1 PH LAB	8.20	SU
1 PHOSPHORUS	0.17	MG/L
1 PHOSPHATE ORTHO DISS	0.109	MG/L
1 RESIDUE TOTAL NFLT	43.	MG/L

sampling station is comparable to the upstream site. Phosphorus is the only parameter above the background levels.

The first section of stream below the outfall has a heavy growth of aquatic macrophytes. Due to his heavy growth, reaeration is very poor. Consequently, the effluent limits developed by the model are very restrictive with a discharge at the existing outfall site into a full fish and aquatic life stream. The final report on the two wasteload allocations conducted on Pedler Creek is contained in Appendix VI.

## BIOLOGY

Pedler Creek was surveyed for fish with a backpack shocker above and below the outfall (Map #2). Approximately 2,500' of stream thread was surveyed in May of 1988. The stream was dominated by creek chubs which is considered a tolerant fish (Table IV). But a couple of intolerant species were also present, stonerollers and southern redbelly dace. Also found was one smallmouth bass. Overall, the stream contained a good population of forage fish.

Also included is fishery data from the fish distribution study which was conducted in June 1976 (Table V). Fish were collected downstream of the outfall at CTH. "B". There was a good mixture of tolerant and intolerant species at this site.



Macroinvertebrate samples were taken May 12, 1988. The results are contained in Table VI and VII. Two sites were sampled, one a short distance above the outfall and the other approximately 600' below the outfall.

The upstream site was considered to have "very good water quality" according to the Hilsenhoff Biotic Index of 4.306. The site located below the outfall had an HBI of 4.562 and was considered to have "good water quality". Both samples had a good population of Baetis sp. mayflies. Also a good population of Gammarus pseudolimneus (freshwater shrimp) was present at both sites.

Water quality was better above the outfall than what it was below. But the aquatic insect population is pretty typical of a stream this size and quality. The upstream site had a good diversity of macroinvertebrates but was lacking in filter feeders, probably due to impacts of sedimentation. The Hilsenhoff biotic index is based on dissolved oxygen and does not reflect other water quality problems which may be impacting the site.

#### WWTP

Appendix II contains the DMR monthly averages for BOD and TSS from January 1983 until April 1989. Also included are the DMR monthly averages for NH<sub>3</sub>-N from January 1988 to April 1989. This data would indicate that monthly limits are exceeded from time to time. Consequently, Bloomfield Manor is in facility planning to upgrade their WWTP.

TABLE: IV List of fish for sampling site: FS 1

DATE: 5/11/88 Twp 6N, R2E, SEC. 35 STREAM: PEDLER CREEK

Station mileage: 7.6 County: 25

SOURCE OF DATA: 05 GEAR: 03 EFFORT: 0.5

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M05	STONEROLLERS	CYPRINIDAE	Campostona spp.	2	Intolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	1	Intolerant
M46	FATHEAD MINNOW	CYPRINIDAE	Pimephales promelas	17	Very Tolerant
M50	CREEK CHUB	CYPRINIDAE	Senotilus atromaculatus	99	Tolerant
M09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	7	Tolerant
U01	BROOK STICKLEBACK	GASTEROSTEIDAE	Culaea inconstans	12	Tolerant
W11	SMALLMOUTH BASS	CENTRARCHIDAE	Micropterus dolomieu	1	Sport Fish

TABLE: V List of fish for sampling site: FS 2

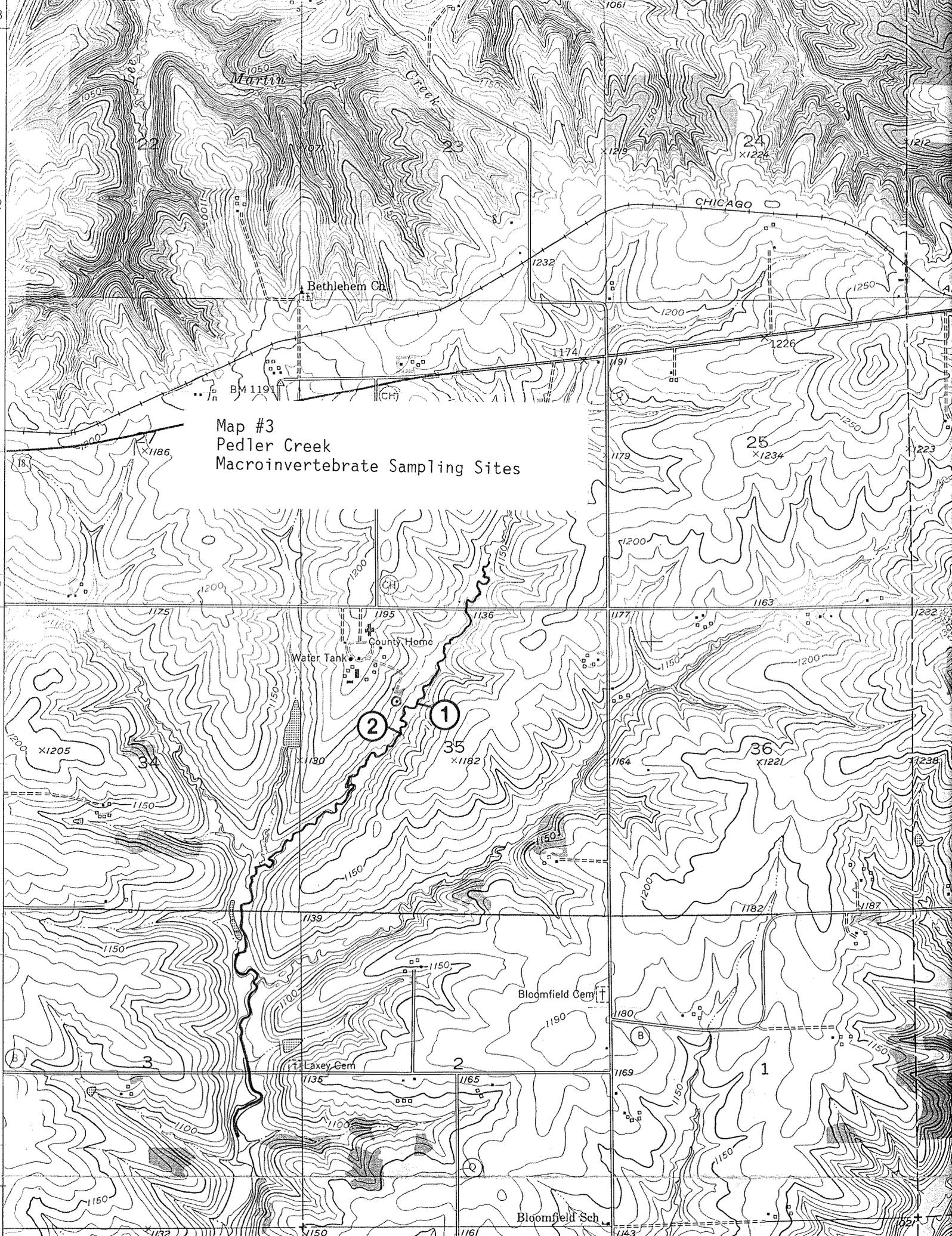
DATE: 6/17/76 Twp 5N, R2E, SEC. 3, SE NE STREAM: PEDLER CREEK

Station mileage: 5.7E County: 25

SOURCE OF DATA: 11 GEAR: 02 EFFORT: 07

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M05	STONEROLLERS	CYPRINIDAE	Campostoma spp.	99	Intolerant
M06	CENTRAL STONEROLLER	CYPRINIDAE	Campostoma anomalum	3	Intolerant
M07	LARGESCALE STONEROLLER	CYPRINIDAE	Campostoma oligolepis	1	Intolerant
M19	HORNYHEAD CHUB	CYPRINIDAE	Nocomis biguttatus	99	Intolerant
M28	COMMON SHINER	CYPRINIDAE	Notropis cornutus	99	Tolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	99	Intolerant
M45	BLUNTNOSE MINNOW	CYPRINIDAE	Pimephales notatus	46	Tolerant
M50	CREEK CHUB	CYPRINIDAE	Senotilus atronaculatus	91	Tolerant
M79	COMMON SHINER X SO. REDBELLY DACE	CYPRINIDAE		2	
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	99	Tolerant
O05	BLACK BULLHEAD	ICTALURIDAE	Ictalurus melas	1	Sport Fish
U01	BROOK STICKLEBACK	GASTEROSTEIDAE	Culaea inconstans	7	Tolerant
X10	FANTAIL DARTER	PERCIDAE	Etheostoma flabellare	3	Intolerant
X12	JOHNNY DARTER	PERCIDAE	Etheostoma nigrum	3	Tolerant

Map #3  
Pedler Creek  
Macroinvertebrate Sampling Sites



HBI \_ 4.306 Rep1 \_ Rep2 \_ Rep3 \_  
 Sample ID # \_980512-25-01 Waterbody Name \_FEDLER CR.  
 Water Temp (Celsius) \_ Dissolved Oxygen (mg/l) \_  
 Sample Location: SE NW S35 T 6N R 2E\_ Master Waterbody # \_  
 Project Name \_TRIENNIAL STANDARDS REVIEW Storet Station # \_ 9  
 Ave. Stream Width (Ft.) at Site \_4.0 Ave. Stream Depth (Ft.) at Site \_0.4  
 Collector \_SCHLESSER, R. Field # 01 Rep 1\_  
 Measured Velocity (fps) \_  
 Sorter \_DIMICK, J. Est. Velocity (fps) \_  
 Est % of sample sorted \_4 \_Moderate (0.5-1.5)  
 Taxonomist \_DIMICK, J. Sampled Habitat  
 Location Description \_UPS. BLOOMFIELD MANOR \_1. Riffle

Est. Time Spent Sampling (Min.) \_ 1\_\_

Sampling Device \_1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	10.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	70.0 Gravel	10.0 Silt	0.0 Detritus	10.0 Debris/Veg

Substrate Sampled (%) (Same as above Yes)

0.0 Bedrock	0.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	0.0 Gravel	0.0 Silt	0.0 Detritus	0.0 Debris/Veg

Aquatic Vegetation 5 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ \_Good\_\_\_\_ )

	Not Present	Insig- nificant	Sig- nificant	Comments
--	-------------	-----------------	---------------	----------

Turbidity	1			
Chlorine or Toxic Scour	1			
Macrophytes		2		VERONICA sp., WATERCRESS
Filamentous Algae	1			
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

Sludge Deposits	1			
Silt and Sediment			3	POOLS & EDGES
Channel Ditching	1			
Down/Up Stream Impoundment	1			
Low Flows	1			
Wetlands		2		

Pollutant Sources

Livestock Pasturing			3	
Barnyard Runoff		2		
Cropland Runoff			3	
Tile Drains				
Septic Systems				
Stream Bank Erosion			3	
Urban Runoff	1			
Construction Runoff	1			
Point Source(Specify Type)	1			
Other (Specify)				

SAMPLE ID# 880512-25-01

10

	*** TAXA ***	*** SPECIES ***	TAXONOMIC TOL		ORGANISM ID	ORGANISM COUNT		
			KEY USED	VAL		REP1	REP2	REP3
EPHEMEROPTERA								
BAETIDAE								
	BAETIS	BRUNNEICOLOR	*1	4.00	02010101	33	0	0
		FLAVISTRIGA	*1	4.00	02010104	10	0	0
		**POOR SPECIMEN**	*2		02010115	3	0	0
TRICHOPTERA								
BRACHYCENTRIDAE								
	BRACHYCENTRUS	OCCIDENTALIS	*3	1.00	04010104	1	0	0
HYDROPSYCHIDAE								
	CERATOPSYCHE	SLOSSONAE	*4	4.00	04040706	2	0	0
COLEOPTERA								
ELMIDAE								
	OPTIOSERVUS		*2	4.00	07020500	2	0	0
DIPTERA								
CERATOPOGONIDAE								
	PROBEZZIA		*2	6.00	08030600	1	0	0
CHIRONOMIDAE								
	EUKIEFFERIELLA	SP.A	*5	8.00	08052301	1	0	0
	LIMNOPHYES		*5	8.00	08053100	3	0	0
	ORTHOCLADIUS	SP.B	*5	3.00	08054002	8	0	0
		SP.D	*5	5.00	08054004	25	0	0
	PARATENDIPES		*2	8.00	08054700	1	0	0
	POLYPEDILUM	NR.CONVICTUM	*5	5.00	08055001	4	0	0
EMPIDIDAE								
	HEMERODROMIA		*6	6.00	08070200	1	0	0
SIMULIIDAE								
	SIMULIUM	VITTATUM	*3	7.00	08110217	1	0	0
AMPHIPODA								
GAMMARIDAE								
	GAMMARUS	PSEUDOLIMNEUS	*7	4.00	09010201	66	0	0
ISOPODA								
ASELLIDAE								
	ASELLUS	INTERMEDIUS	*8	8.00	10010101	1	0	0

\*\*\* SOUTHERN DISTRICT DISTRICT BIOTIC INDEX REPORT \*\*\*

SAMPLE ID# 880512-25-01

11

*** TAXA ***	SPECIES	TAXONOMIC KEY VAL USED	TOL	ORGANISM ID	ORGANISM COUNT	REP1	REP2	REPO
--------------	---------	------------------------------	-----	----------------	-------------------	------	------	------

\*\*\* TOTALS: \*\*\* 164

0

\*\*\* BIOTIC INDEX: \*\*\* 4.306

Taxonomic Key Code References

- \*1 Hilsenhoff 1981,82
- \*2 Hilsenhoff 1981
- \*3 Hilsenhoff 1985
- \*4 Hilsenhoff 1981,86
- \*5 Hilsenhoff 1981,85
- \*6 Merritt,Cummins 84
- \*7 Holsinger 1972
- \*8 Williams 1972

SOUTHERN DISTRICT District Biotic Index Report

TABLE VII

HBI \_ 4.562 Rep1 \_ Rep2 \_ Rep3 \_\_\_\_\_  
 Sample ID # \_880512-25-02 Waterbody Name \_FEDLER CR.  
 Water Temp (Celsius) \_ Dissolved Oxygen (mg/l) \_  
 Sample Location: SE NW S35 T 6N R 2E\_ Master Waterbody # \_  
 Project Name \_TRIENNIAL STANDARDS REVIEW Storet Station # \_ 12  
 Ave. Stream Width (Ft.) at Site \_4.5 Ave. Stream Depth (Ft.) at Site \_0.4  
 Collector \_SCHLESSER, R. Field # 02 Rep 1\_  
 Measured Velocity (fps) \_  
 Sorter \_DIMICK, J. Est. Velocity (fps) \_  
 Est % of sample sorted \_2 \_Moderate (0.5-1.5)  
 Taxonomist \_DIMICK, J. Sampled Habitat  
 Location Description \_DWS. BLOOMFIELD MANOR \_1. Riffle

Est. Time Spent Sampling (Min.) \_ 1\_\_

Sampling Device \_1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	30.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	43.0 Gravel	15.0 Silt	0.0 Detritus	12.0 Debris/Veg

Substrate Sampled (%) (Same as above Yes)

0.0 Bedrock	0.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	0.0 Gravel	0.0 Silt	0.0 Detritus	0.0 Debris/Veg

Aquatic Vegetation 7 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ \_\_\_\_\_ )

	Not Present	Insig- nificant	Sig- nificant	Comments
Turbidity	1			
Chlorine or Toxic Scour	1			
Macrophytes		2		VERONICA sp., WATERCRESS
Filamentous Algae	1			
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

Sludge Deposits	1		
Silt and Sediment			3 POOLS & EDGES
Channel Ditching	1		
Down/Up Stream Impoundment	1		
Low Flows	1		
Wetlands		2	

Pollutant Sources

Livestock Pasturing			3
Barnyard Runoff		2	
Cropland Runoff			3
Tile Drains			
Septic Systems			
Stream Bank Erosion			3
Urban Runoff	1		
Construction Runoff	1		
Point Source(Specify Type)			3 BLOOMFIELD MANOR
Other (Specify)			

SAMPLE ID# 880512-25-02

*** TAXA ***	*** SPECIES ***	TAXONOMIC KEY USED	TOL VAL	ORGANISM ID	ORGANISM COUNT	REP1	REP2	REP3
EPHEMEROPTERA								
BAETIDAE								
BAETIS	BRUNNEICOLOR	*1	4.00	02010101	25	0	0	0
	FLAVISTRIGA	*1	4.00	02010104	3	0	0	0
TRICHOPTERA								
BRACHYCENTRIDAE								
BRACHYCENTRUS	OCCIDENTALIS	*2	1.00	04010104	1	0	0	0
COLEOPTERA								
ELMIDAE								
OPTIOSERVUS		*3	4.00	07020500	1	0	0	0
	FASTIDITUS	*1	4.00	07020501	1	0	0	0
DIPTERA								
CHIRONOMIDAE								
CRYPTOCHIRONOMUS		*3	8.00	08051400	1	0	0	0
LIMNOPHYES		*2	8.00	08053100	7	0	0	0
ORTHOCLADIUS	SP.A	*2	6.00	08054001	1	0	0	0
	SP.B	*2	3.00	08054002	2	0	0	0
	SP.D	*2	5.00	08054004	20	0	0	0
POLYPEDILUM	NR.CONVICTUM	*2	5.00	08055001	13	0	0	0
SIMULIIDAE								
SIMULIUM	VITTATUM	*4	7.00	08110217	1	0	0	0
AMPHIPODA								
GAMMARIDAE								
GAMMARUS	PSEUDOLIMNEUS	*5	4.00	09010201	52	0	0	0
ISOPODA								
ASELLIDAE								
ASELLUS	INTERMEDIUS	*6	8.00	10010101	2	0	0	0
*** TOTALS: ***					130			
							0	
*** BIOTIC INDEX: ***					4.562			

Taxonomic Key Code References

- \*1 Hilsenhoff 1981,82
- \*2 Hilsenhoff 1981,85
- \*3 Hilsenhoff 1981
- \*4 Hilsenhoff 1985
- \*5 Holsinger 1972
- \*6 Williams 1972

## CLASSIFICATION

Based on this review of available chemical, physical, and biological data the intermediate section of Pedler Creek should be upgraded to full fish and aquatic life (C). This section had good groundwater inflow even during the drought of 1988-1989. The macroinvertebrate survey revealed a good diversity of aquatic insects and very good water quality upstream of the outfall. The fish survey resulted in finding a good population of forage fish including some intolerant species. Improvements in water quality will continue the improvement in the macroinvertebrate and fish community. Due to stream flow and habitat limitations it is not expected that this section of Pedler Creek would support a good solid warmwater fishery. But, it is felt that a good forage fish population can be maintained.

Pedler Creek below this point should remain classified as full fish and aquatic life (B).

Pedler Creek

Upstream of the outfall.

Pedler Creek

Upstream of the outfall.

Macroinvertebrate  
sampling site.

Pedler Creek

Directly above the  
outfall.



Bloomfield Manor WWTP  
Outfall.



Pedler Creek

Juncture of effluent and  
stream.



Pedler Creek

Directly below the  
outfall.



Pedler Creek

Downstream  
macroinvertebrate  
sampling site.



Pedler Creek

Downstream fish sampling  
area.



Pedler Creek

Upstream of CTH "B".

Pedler Creek

Downstream of CTH "B".



APPENDIX I

Stream Pedler Creek Reach Location Downstream Bloomfield Manor Outfall Reach Score/Rating 165/C  
 County Iowa Date 5/12/88 Evaluator R. Schlessor Classification Full Fish & Aquatic (forage fish)

Rating Item	Category							
	Excellent	Good	Fair	Poor				
Watershed Erosion	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. 12	Heavy erosion evident. Probable erosion from any run off. 16				
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 12	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16				
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 10	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20				
Bank Vegetative Protection	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. 7	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 Channel Capacity	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. 9	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16				
Lower Bank Deposition	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18				
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% 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				
Bottom Substrate/ Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 4	10-30% 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				
Avg. Depth Riffles and Runs	Cold >1'	0	6" to 1'	6	3" to 6"	18	<3"	24
	Warm >1.5'	0	10" to 1.5'	6	6" to 10"	18	<6"	24
Avg. Depth of Pools	Cold >4'	0	3' to 4'	6	2' to 3'	18	<2'	24
	Warm >5'	0	4' to 5'	6	3' to 4'	18	<3'	20
Flow, at Rep. Low Flow	Cold >2 cfs	0	1-2 cfs	6	.5-1 cfs	18	<.5 cfs	24
	Warm >5 cfs	0	2-5 cfs	6	1-2 cfs	18	<1 cfs	24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 10	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20				
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured 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 Totals:	0	20	125	20				

Column Scores E 0 +G 20 +F 125 +P 20 = 165 = Score

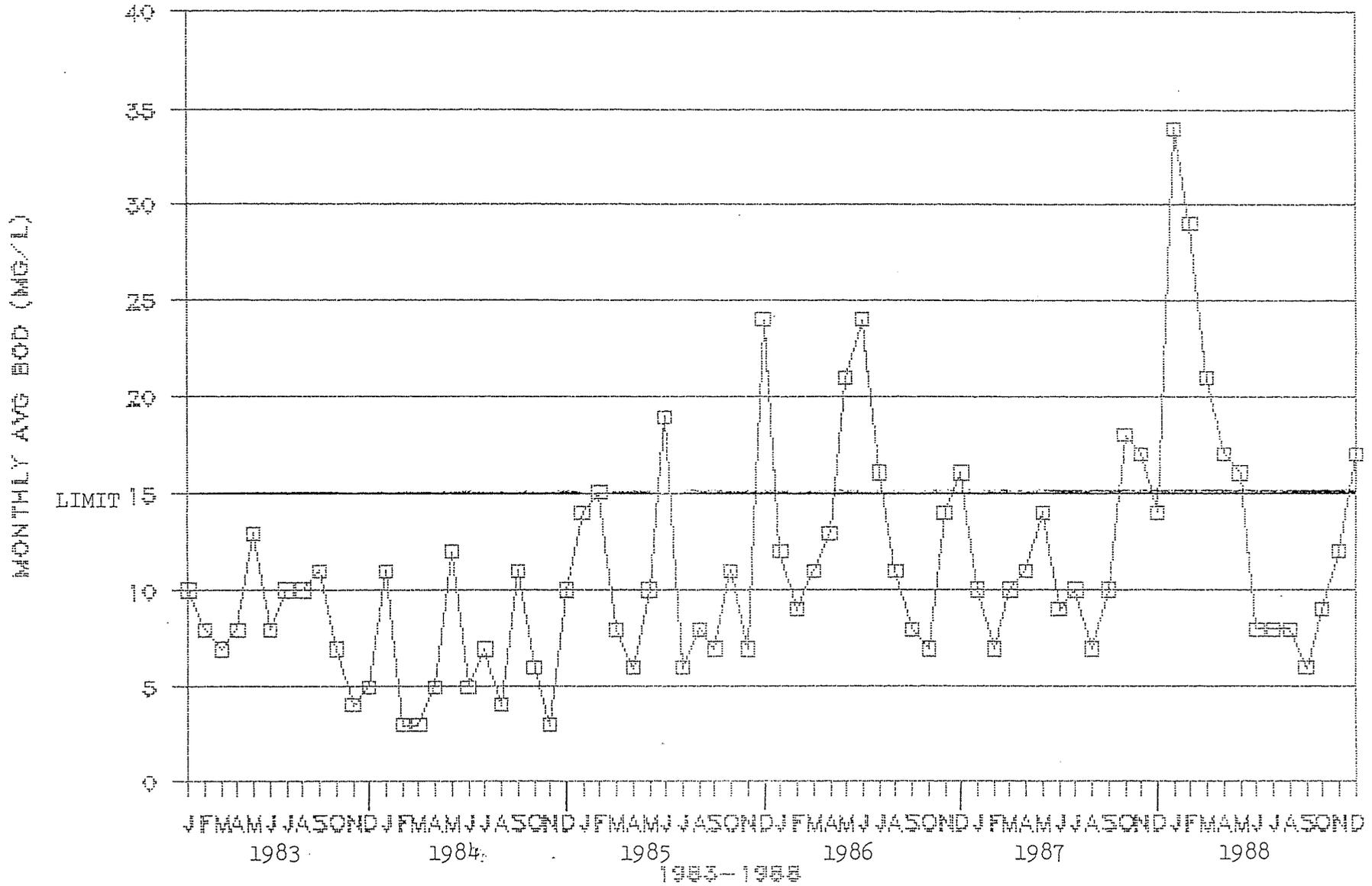
APPENDIX II

BLOOMFIELD MANOR  
EFFLUENT QUALITY 1983-1988

YEAR	MONTH	BOD	TSS				
1983	J	10	17		M	10	9
	F	8	14		A	11	12
	M	7	7		M	14	21
	A	8	10		J	9	11
	M	13	25		J	10	11
	J	8	19		A	7	6
	J	10	8		S	10	12
	A	10	19		O	18	24
	S	11	12		N	17	26
	O	7	14		D	14	18
	N	4	8	1988	J	34	18
	D	5	6		F	29	17
1984	J	11	19		M	21	10
	F	3	9		A	17	17
	M	3	8		M	16	10
	A	5	11		J	8	12
	M	12	29		J	8	12
	J	5	16		A	8	7
	J	7	8		S	6	10
	A	4	17		O	9	12
	S	11	23		N	12	15
	O	6	18		D	17	19
	N	3	19	1989	J	18	13
	D	10	19		F	31	20
1985	J	14	10		M	30	16
	F	15	16		A	8	11
	M	8	13		M		
	A	6	16		J		
	M	10	21		J		
	J	19	15		A		
	J	6	14		S		
	A	8	11		O		
	S	7	9		N		
	O	11	23		D		
	N	7	10				
	D	24	13				
1986	J	12	9				
	F	9	12				
	M	11	8				
	A	13	10				
	M	21	17				
	J	24	33				
	J	16	42				
	A	11	19				
	S	8	14				
	O	7	15				
	N	14	26				
	D	16	32				
1987	J	10	7				
	F	7	12				

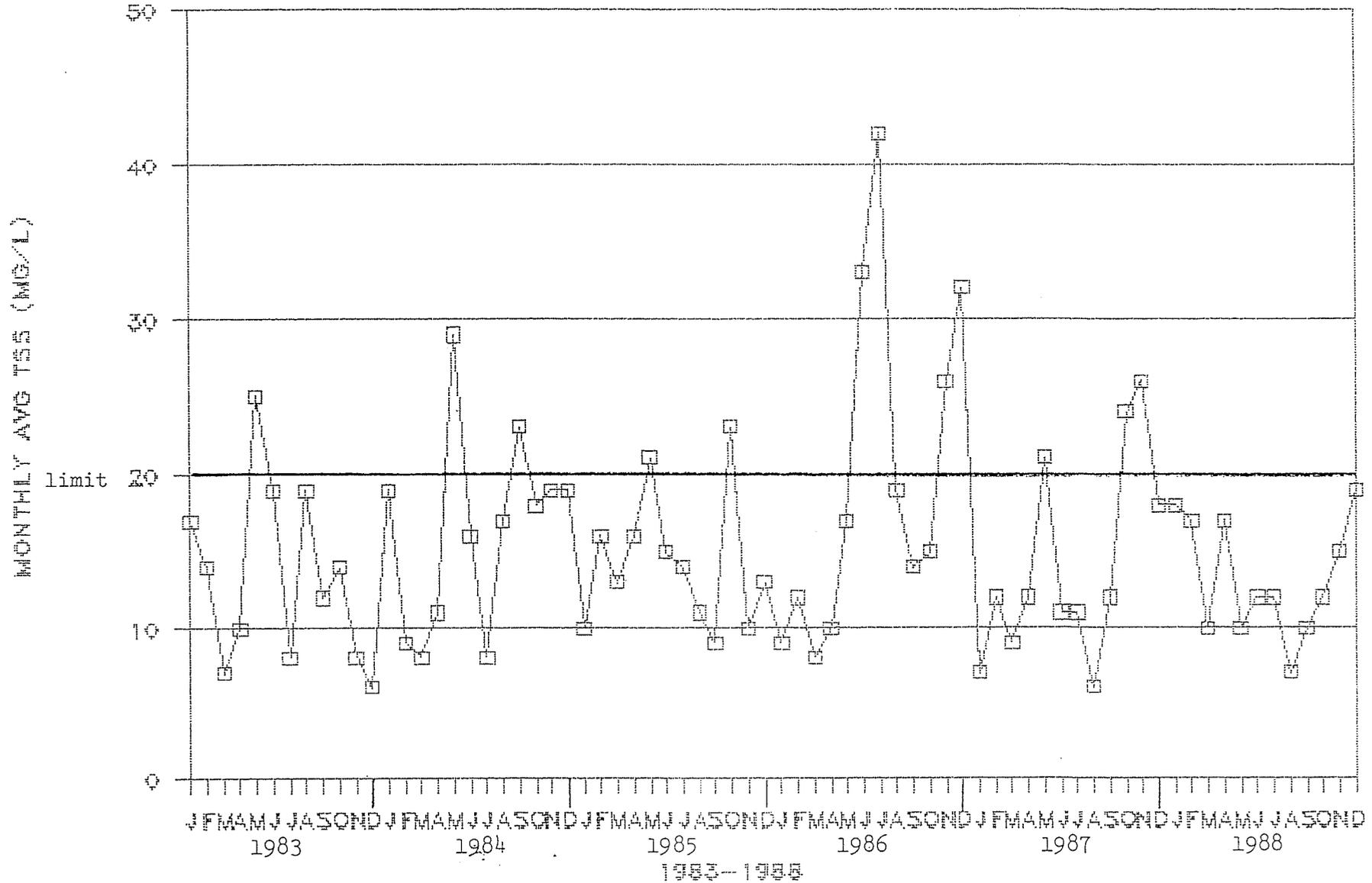
# BLOOMFIELD MANOR SEWAGE TREATMENT PLANT

EFFLUENT BOD 1983-1988



# BLOOMFIELD MANOR SEWAGE TREATMENT PLANT

EFFLUENT TSS 1983-1988



WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
SUMMARY REPORT OF DISCHARGE MONITORING DATA

CONT'D> FACILITY: BLOOMFIELD MANOR  
DISTRICT: SOUTHERN

COUNTY: IOWA

PERMIT #: 0030805  
AREA: DODGEVILLE

SAMPLE POINT: 001: EFFLUENT

EFFLUENT

PARAMETER: 00610: NITROGEN (AMMONIA) NH3-N  
EFFECTIVE DATES: 81/05 TO 99/99 EFFECTIVE MONTHS:  
LIMITS: MONTHLY AVG. DAILY MAX.

SAMPLE TYPE: 3HR COMP SAMPLE FREQ.: 3/WEEK  
M J J A S O  
DAILY MIN. WEEKLY AVG. 3.00

PARAMETER: 00610: NITROGEN (AMMONIA) NH3-N  
EFFECTIVE DATES: 81/11 TO 99/99 EFFECTIVE MONTHS: J F M A  
LIMITS: MONTHLY AVG. DAILY MAX.

SAMPLE TYPE: 3HR COMP SAMPLE FREQ.: 3/WEEK  
N D  
DAILY MIN. WEEKLY AVG. 6.00

DATA:	MONTHLY MG/L MEAN	DAILY MAX	DAILY MIN	# OF SAMPLES	WEEKLY AVERAGES				
					WEEK1	WEEK2	WEEK3	WEEK4	WEEK5
JAN,88	6.200	11.100	0.570	12	5.710	6.800	4.970	7.250	
FEB,88	5.300	10.800	3.500	12	4.020	7.530	4.010	4.950	
MAR,88	2.940	5.310	0.680	15	3.690	3.390	3.820	2.180	1.250
APR,88	0.950	3.800	0.140	09	0.260	1.900	N	1.940	N
MAY,88	0.570	2.300	0.080	12	0.460	0.880	0.440	0.480	N
JUL,88	0.640	2.910	0.040	12	0.280	0.400	0.530	1.320	N
AUG,88	0.510	1.570	0.040	15	0.780	0.450	0.450	0.400	
SEP,88	0.270	0.500	0.040	12	0.090	0.360	0.280	0.160	0.500
OCT,88		2.980	0.080	12	0.090	0.230	0.580	1.270	
NOV,88	0.690	1.500	0.160	12	0.580	0.610	0.350	1.020	1.500
DEC,88	3.510	10.800	0.110	12	3.750	4.320	1.500	5.840	1.090
JAN,89	4.700	15.900	0.540	13	8.500	7.180	1.430	1.930	4.140
FEB,89	5.800	13.300	2.300	12	9.280	3.160	3.770	5.700	
MAR,89	6.790	27.600	1.760	14	8.150	6.680	10.440	4.370	1.740
APR,89	0.950	1.820	0.370	12	1.610	0.770	0.730	0.670	

PARAMETER: 74055: FECAL COLIFORMS, GENERAL SAMPLE TYPE: GRAB SAMPLE FREQ.: WEEKLY  
EFFECTIVE DATES: 77/10 TO 99/99 EFFECTIVE MONTHS: J F M A M J J A S O N D

DATA:	MONTHLY NO./100 ML MEAN	DAILY MAX	DAILY MIN	# OF SAMPLES	WEEKLY AVERAGES				
					WEEK1	WEEK2	WEEK3	WEEK4	WEEK5
JAN,88	> 99,999.000	> 99,999.000		04					
FEB,88	< 99,999.000	< 99,999.000		04					
MAR,88	38,420.000	> 99,999.000		05					
APR,88	38,839.000	> 99,999.000		03					
MAY,88	2,294.000	86,000.000		04					
JUN,88	7,877.000	31,000.000		03					
JUL,88	> 99,999.000	> 99,999.000		04					
AUG,88	48,316.000	> 99,999.000		05					
SEP,88	14,555.000	51,000.000		04					
OCT,88	33,295.000	76,000.000		04					
NOV,88	13,105.000	51,000.000	12,000.000	04					
DEC,88	37,282.000	> 99,999.000		04					
JAN,89	36,956.000	> 99,999.000		05					
FEB,89	63,161.000	> 99,999.000	> 99,999.000	04					
MAR,89	66,028.000	> 99,999.000		05					
APR,89	45,346.000	> 99,999.000		04					

SAMPLE POINT: 701: INFLUENT TO PLANT

INFLUENT

APPENDIX III

Iowa County Nursing Home  
Iowa County

October 26, 1976

Pedler Creek (Spincely)

Surface area = 6.1 acres, Length = 7.5 miles, Gradient = 42.3 feet per mile.

Pedler Creek begins at springs and ground seepage on the vale of the cuesta which is part of the Galena-Black River uplands and flows southwesterly as the principle tributary of the East Pecatonica River. It has a fairly steep gradient and about 95 percent of its watershed area is cleared land devoted to crops and pasture. As a result, the runoff of precipitation is quite rapid which is evidenced by the records of sudden flooding and subsequent heavy bank erosion.

Electrofishing surveys show that it is a good smallmouth bass stream and catfish are present; especially in the lower sections. Panfishes present include green sunfish and pumpkinseed. Forage and rough fish include bluntnose and stoneroller minnows, creek and hornyhead chubs; white and hogsuckers; common shiners, johnny darters, northern redhorse and quillback.

There are five known farm ponds in the watershed which serve as erosion controls and support small populations of largemouth bass to supplement the stream fishery.

Aquatic game assets include wood ducks and green herons near the mouth. Muskrats are found throughout most of its length.

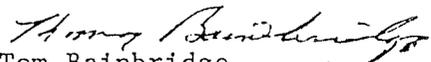
Recommendations

From the Iowa County Nursing Home outfall downstream to the confluence with an unnamed tributary, SE $\frac{1}{4}$ , SE $\frac{1}{4}$  of Section 34, T6N, R2E, the classification should be noncontinuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Pedler Creek the classification should be continuous fish and aquatic life.

The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

Dennis Iverson, District Engineer  
Gene Van Dyck, Area Fish Manager  
Tom Bainbridge, District Biologist  
Roger Schlessler, Natural Resources Technician

Respectfully submitted,

  
Tom Bainbridge  
Stream Classification Coordinator

TB:cb

APPENDIX IV

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of the permit and lasting until June 30, 1987 the permittee is authorized to discharge from outfall serial number 001.

Samples taken in compliance with the monitoring requirements specified below shall be taken at the discharge from the treatment facility.

There shall be no discharge of visible or floating solids in other than trace amounts.

During any 30 consecutive days, the average effluent concentrations of BOD<sub>5</sub> and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively.

EFFLUENT PARAMETERS	EFFLUENT LIMITATIONS					MONITORING REQUIREMENTS	
	Quantity-kg/day(lbs/day)		Other Limitations (Specify Units)			Sample Frequency	Sample Type
	Average <sup>1</sup>	Maximum	Minimum	Average	Maximum		
Flow (MGD)	-	-	-	-	-	Continuous	
BOD <sub>5</sub> (monthly)	2 (4.4)	-	-	15 mg/l	-	3X Weekly	3-hr. composite <sup>2</sup>
BOD <sub>5</sub> (daily)	-	4 (8.8)	-	-	30 mg/l	3X Weekly	3-hr. composite <sup>2</sup>
Suspended Solids (monthly)	2.6 (5.8)	-	-	20 mg/l	-	3X Weekly	3-hr. composite <sup>2</sup>
Suspended Solids (daily)	-	4 (8.8)	-	-	30 mg/l	3X Weekly	3-hr. composite <sup>2</sup>
pH	-	-	6.0	-	9.0	Daily	Grab
Total Residual CL <sub>2</sub> (daily)	-	-	-	-	0.5 mg/l	Daily	Grab
Fecal Coliform (monthly)	-	-	-	#/100 ml	-	1X Weekly	Grab
NH <sub>3</sub> -N Weekly)							
(May-October)	.4 (.88)	-	-	3.0 mg/l	-	3X Weekly	3-hr. composite
NH <sub>3</sub> -N Weekly)							
(November-April)	.8 (1.75)	-	-	6.0 mg/l	-	3X Weekly	3-hr. composite
Dissolved Oxygen	-	-	4.0 mg/l	-	-	3X Weekly	Grab

<sup>1</sup>Based on a design flow of .035 MGD.

<sup>2</sup>A 3-hour composite sample consists of 3 grab samples of equal volume collected at least 1 hour apart and composited for analysis. Recommended sampling times are 11:00 A.M., 12:00 Noon and 1:00 P.M.

APPENDIX V

Chapter NR 104

INTRASTATE WATERS — USES AND  
DESIGNATED STANDARDS

NR 104.01	General (p. 33)	NR 104.07	Variances and additions applicable in the Lake Michigan district (p. 44)
NR 104.02	Surface water classifications and effluent limitations (p. 34)	NR 104.08	Variances and additions applicable in the north central district (p. 48)
NR 104.03	Classification of surface waters and antidegradation (p. 37)	NR 104.09	Variances and additions applicable in the west central district (p. 49)
NR 104.04	Provision for changes (p. 38)	NR 104.10	Variances and additions applicable in the northwest district (p. 52)
NR 104.05	Variances and additions applicable in the southern district (p. 38)		
NR 104.06	Variances and additions applicable in the southeast district (p. 41)		

Note: Chapter NR 104 as it existed on September 30, 1976 was repealed and a new chapter NR 104 was created effective October 1, 1976.

NR 104.01 General. (1) "It is . . . the goal of the state of Wisconsin that, wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water be achieved by 1983. . . ." s. 147.01(1)(b), Stats. The long-range goal of Wisconsin water quality standards is, therefore, to permit the use of water resources for all lawful purposes. Surface waters which because of natural conditions are not conducive to the establishment and support of the complete heirarchy of aquatic organisms shall not be degraded below present levels, but shall be upgraded as necessary to support assigned uses. Most surface waters within the state of Wisconsin already meet or exceed the goals specified above. However, certain waters of the state may not meet these goals for the following reasons:

- (a) The presence of inplac pollutants,
- (b) Low natural streamflow,
- (c) Natural background conditions, and
- (d) Irretrievable cultural alterations.

(1m) Where it is determined that one or more of these factors may interfere with the attainment of the statutory objectives, a variance from the criteria necessary to achieve those objectives is provided.

(2) Surface waters within the boundaries of the state shall meet the standards for fish and aquatic life and recreational use with the variances and additions listed below in ss. NR 104.05 to 104.10. A system is provided within which small streams and other surface waters which cannot support high quality uses are granted a variance from the high quality criteria.

(3) Effluent limitations specified in this chapter shall be achieved by industrial, private and municipal dischargers by July 1, 1983 unless an earlier date is otherwise provided in a permit issued under s. 147.02, Stats. Municipal dischargers eligible for state or federal grant-in-aid

shall achieve the specified effluent limitations upon completion of construction or modification of facilities approved by the department of natural resources subsequent to adoption of this chapter unless otherwise provided in a permit issued under s. 147.02, Stats.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. (1), Register, December, 1977, No. 264, eff. 1-1-78.

NR 104.02 Surface water classifications and effluent limitations. (1) HYDROLOGIC CLASSIFICATION. "Surface waters" as defined in s. NR 102.01(7), may be classified according to their hydraulic or hydrologic characteristics. For purposes of this chapter, surface waters will be classified by the department into one of the following categories:

(a) *Lakes or flowages*. This classification includes bodies of water whose current is more or less stagnant or which lacks a unidirectional current.

(b) *Diffused surface waters*. This classification includes any water from rains, intermittent springs or melting snow which flows on the land surface, through ravines, etc., which are usually dry except in times of runoff. This category does not include waters at the land surface in the vicinity of agricultural or wastewater irrigation disposal systems.

(c) *Wellands*. This classification includes areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which have soils indicative of wet conditions.

(d) *Wastewater effluent channels*. This classification includes discharge conveyances constructed primarily for the purpose of transporting wastes from a facility to a point of discharge. Drainage ditches (including those established under ch. 88, Stats.) constructed primarily for the purposes of relieving excess waters on agricultural lands shall not be construed as effluent channels. Modifications made to natural watercourses receiving wastewater effluents for the purpose of increasing or enhancing the natural flow characteristics of the stream shall not be classified as effluent channels.

(e) *Noncontinuous streams*. This classification includes watercourses which have a defined stream channel, but have a natural 7-day  $Q_{\cong}$  flow of less than 0.1 cfs and do not exhibit characteristics of being perpetually wet without wastewater discharges.

(f) *Continuous streams*. This classification includes watercourses which have a natural 7-day  $Q_{\cong}$  flow of greater than 0.1 cfs or which exhibit characteristics of a perpetually wet environment, are generally capable of supporting a diverse aquatic biota and flow in a defined stream channel.

Note: The application of this classification system is not dependent on the the navigability properties of the watercourse, but is dependent upon the quantity-quality relationships of the surface water.

(2) WATER QUALITY CLASSIFICATION. (a) Whenever the goals as specified in s. 147.01(1)(b), Stats., cannot be attained because of conditions enumerated in s. NR 104.01(1), a variance may provided. Variances from a specific water quality criteria may be given in s. NR 104.05 et. seq. or a variance under one of the categories provided in this chapter may be specified.

(b) Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development, or other activities shall be controlled so that waters regardless of their hydrologic and water quality classifications meet the general aesthetic and acute toxicity conditions in s. NR 102.02(1).

(3) VARIANCE CATEGORIES. (a) Surface waters not supporting a balanced aquatic community (intermediate aquatic life):

1. Applicability. This category of variance may be applied to either the continuous or noncontinuous stream hydrologic classification.

2. Surface water criteria. The following water quality criteria shall be met in all surface waters included in this variance category:

a. Dissolved oxygen shall not be less than 3 mg/l.

b. Ammonia nitrogen (as N) at all points in the receiving water shall not be greater than 3 mg/l during warm temperature conditions nor greater than 6 mg/l during cold temperatures to minimize the zone of toxicity and to reduce dissolved oxygen depletion caused by oxidation of the ammonia.

c. The pH shall be within the range of 6.0 to 9.0.

d. Other substances may not exceed concentrations determined in accordance with s. NR 102.02(1).

3. Effluent criteria. a. The effluent limitations determined necessary to meet the surface water criteria listed above are enumerated in table 1.

Parameter	Monthly Average (mg/l)	Daily		Weekly Average (mg/l)	Other (mg/l)
		Maximum (mg/1)	Maximum (mg/1)		
BOD <sub>5</sub>	15	30	-	-	-
Total Suspended Solids	20	30	-	-	-
NH <sub>3</sub> -N (May-October)	-	-	3	-	-
NH <sub>3</sub> -N (November-April)	-	-	6	-	-
Dissolved Oxygen	-	-	-	-	4 (minimum)

b. Unless otherwise specified in table 1 above, effluent limitations for sewage treatment works shall be as adopted in ch. NR 210.

c. In addition to the effluent limitations enumerated in table 1 above, effluent limitations for these and any other substance necessary to protect assigned uses shall be met.

(b) Marginal surface waters: 1. Applicability. This variance category may be applied to the continuous or noncontinuous stream hydrologic classification, except that it shall be applied to all surface waters classified as effluent channel, wetland or diffuse surface water.

2. Surface water criteria. The following surface water quality criteria shall be met in all surface waters included in this variance category:

a. Dissolved oxygen shall not be less than 1 mg/l.

b. The pH shall be within the range of 6.0 to 9.0.

c. Other substances may not exceed concentrations determined in accordance with s. NR 102.02(1).

3. Effluent criteria. a. The effluent limitations determined necessary to meet the surface water criteria listed above are enumerated in table 2.

Parameter	Table 2		Other (mg/l)
	Monthly Average (mg/1)	Weekly Average (mg/1)	
BOD <sub>5</sub>	20	30	-
Total Suspended Solids	20	30	-
Dissolved Oxygen	-	-	4 (minimum)

b. Unless otherwise specified in table 2 above, effluent limitations for sewage treatment works shall be as adopted in ch. NR 210.

c. In addition to the effluent limitations enumerated in table 2 above, effluent limitations for these and any other substance necessary to protect assigned uses shall be met.

(4) OTHER CLASSIFICATIONS AND EFFLUENT CRITERIA. (a) *Surface waters significant to the environmental integrity of the state or region.* Under all hydrologic categories, the department reserves the right to require other effluent limitations, including allocation of wasteloads for organic material, toxicants and chlorine residuals if it is determined that the specified surface water is important to the overall environmental integrity of the area. In waters identified as trout streams, located in scientific areas or wild and scenic areas, providing endangered species habitat or of high recreational potential, effluent criteria will be evaluated on a case-by-case basis.

(b) *Surface waters classified for fish and aquatic life.* 1. Streams. Where flowing streams or rivers are specified to achieve fish and aquatic life criteria, wasteload allocation for organic material, toxicants and chlorine residuals shall determine effluent criteria necessary to achieve that standard.

2. Lakes and flowages. Effluent characteristics for discharges to lakes or flowages shall be based upon an evaluation of water quality necessary to protect fish and aquatic life taking into account mixing zone and nutrient removal criteria.

3. Minimum effluent criteria. If it can be reasonably demonstrated that the quality of the surface water is independent of a wastewater discharge, effluent limitations established under ss. 147.04 and 147.06, Stats., shall apply.

(c) *Wastewater treatment lagoons.* Effluents from fill-and-draw wastewater treatment lagoons or domestic waste stabilization ponds discharging to waters receiving a variance in this chapter may be permitted to vary from the limitations specified in table 1 or 2 provided the following conditions are met:

1. The discharge occurs only during the spring and fall of the year when the flow in the receiving water is normally high, and the temperature is low. The rate of discharge shall not exceed that specified in a permit under s. 147.02, Stats., or where no rate is indicated, the allowable discharge quantities shall be determined by the department based upon current evaluation of the receiving water.

2. In lieu of the previous conditions, the discharge from a fill-and-draw lagoon may occur at any time provided the rate does not exceed the assimilative capacity of the receiving water as specified in a permit under s. 147.02, Stats.

3. The dissolved oxygen in the effluent is maintained at a level greater than or equal to 4 mg/l, and the permitted rate of discharge shall be such that the dissolved oxygen and ammonia nitrogen criteria necessary to sustain fish and aquatic life are maintained in the stream during the period of discharge.

4. The effluent limitations do not exceed those established under ss. 147.04 and 147.06, Stats.

(5) CHANGES IN CLASSIFICATION. Surface waters which exhibit changing hydrologic and quality characteristics shall be classified accordingly. Effluent criteria for upstream discharges shall be based upon the most critical downstream classification and shall be specified by the department either on the basis of justified inference or by the application of a wasteload allocation analysis. Any subsequent changes in a stream's morphology or potential may necessitate the reevaluation of the classification.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. Tables 1 and 2, (2), (3) (a) 2a and d, (3) (b) 2a and c, (4) (c), Register, December, 1977, No. 264, eff. 1-1-78; am. (3) (a) 2a, Register, June, 1978, No. 270, eff. 7-1-78; am. (1) (c), Register, June, 1984, No. 342, eff. 2-1-84; r. (3) (a) 2. b. to d., (b) 2. b. and c., renum. (3) (a) 2. e. to g. and (3) (b) 2. d. and e. to be (3) (a) 2. b. to d. and (3) (b) 2. b. and c. and am (3) (a) 2. g. and (3) (b) 2. c., am. (3) (a) 3. a. and (3) (b) 3. a., Register, October, 1986, No. 370, eff. 11-1-86.

NR 104.03 Classification of surface waters and antidegradation. In no case shall the effluent criteria specified herein cause degradation of surface water quality below present levels. Surface waters which, because of their hydrologic classification, are permitted to receive a new effluent of a quality specified in NR 104.02 shall not receive such effluent unless it has been affirmatively demonstrated to the department that such degradation is necessary to protect the public health or to maintain or restore the environmental integrity of a higher value resource. In no case shall a new effluent interfere with or become injurious to any assigned uses made of or presently possible in any surface water.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. Register, December, 1977, No. 264, eff. 1-1-78.

NR 104.04 Provision for changes. The surface waters specified in this chapter are not intended to be an exclusive listing nor do the specified effluent criteria purport to meet the 1983 water quality goals set forth in ch. 147, Stats. Additions to or deletions from these listings may be made based upon the accumulation of information necessary to make such determination and in accordance with the requirements of ch. 227, Stats.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76.

NR 104.05 Variances and additions applicable in the southern district. Subject to the provision of NR 104.04, intrastate surface waters in the southern district counties of Columbia, Dane, Dodge, Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock and Sauk shall meet the criteria for fish and aquatic life and recreational use with exceptions and additions as follows:

Register, October, 1986, No. 370

(1) ADDITION. The public water supply standard shall be met on the Wisconsin river in section 8, township 10 north, range 7 east.

(2) VARIANCE. Surface waters in the southern district subject to a variance under NR 104.02(3) are listed in table 3.

TABLE 3  
SOUTHERN DISTRICT

Surface Water (Facility Affected)	Reach Description	Hydrologic Classification	Applicable Criteria (1)	Effluent Limitations (2) Effluent limitations to be determined
1. Goose Lake Tributary (Arlington)	Tributary upstream from Goose Lake	Noncontinuous	II	B
2. Tributary - East Branch Pecatonica River (Barneveld)	From the Barneveld STP downstream to the East Branch Pecatonica River	Noncontinuous	II	B
3. Williams Creek (Blue Mounds)	From the Blue Mounds STP downstream to the east line of Sec. 14, T6N, R5E	Noncontinuous	I	A
4. Sanders Creek (Boscobel)	From the Boscobel STP downstream to the Wisconsin River	Continuous	I	A
5. Allen Creek (Brooklyn)	Upstream from Butts Corner Road	Continuous	I	A
6. Kummel Creek (Brownsville)	From Brownsville STP downstream to CTH "HH"	Noncontinuous	I	A
7. Spring Brook and Tributary (Clinton)	Tributary from the Clinton STP to Spring Brook Spring Brook in Clinton Township	Effluent ditch Continuous	II II	B NA
8. Tributary - Dead Creek (Clyman)	Tributary from Clyman STP downstream to Dead Creek	Noncontinuous	II	B
9. West Branch Pecatonica River (Cobb)	From the Cobb STP downstream to confluence with an unnamed tributary NE $\frac{1}{4}$ , NW $\frac{1}{4}$ , Sec. 2, T5N, R1E.	Continuous	I	A
10. Door Creek (Cottage Grove)	Door Creek upstream from STH 12 & 18 From STH 12 & 18 downstream to Lake Kegonsa	Noncontinuous Continuous	I I	A NA
11. Coon Branch (Cuba City)	Upstream from westerly tributary approximately 1 mile above STH "11" Downstream from above tributary to confluence with Galena River	Noncontinuous Continuous	II I	B NA
12. Mud Creek and Tributary (Deerfield)	Tributary from Deerfield STP to confluence with Mud Creek Mud Creek from above tributary downstream to confluence with Koshkonong Creek	Effluent ditch Continuous	II I	B

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13. Indian Creek and Tributary (Dickeyville)	Tributary from Dickeyville STP to confluence with Indian Creek	Noncontinuous	II	NA
	Indian Creek from above tributary downstream to confluence with Platte River	Continuous	I	A
14. Dodge Branch (Dodgeville)	Upstream from a point approximately 3,500 feet downstream from STH "191"	Noncontinuous	I	A
15. Tributary - North Branch Crawfish River (Fall River)	Tributary from the Fall River STP downstream to the North Branch Crawfish River	Noncontinuous	II	Effluent limitations to be determined
16. Gregory Branch (Fennimore)	Upstream from STH "61"	Continuous	I	A
17. Tributary - Rock River (Hidden Meadows Mobile Home Park)	Tributary from the Hidden Meadows Mobile Park STP discharge downstream to the Rock River	Noncontinuous	II	B
18. Big Spring Branch (Highland)	Upstream from the North line of Sec. 19, T7N, R1E	Noncontinuous	I	A
19. Pedler Creek (Iowa Co. Nursing Home)	From the Iowa Co. Nursing Home STP downstream to the confluence with an unnamed tributary, SE $\frac{1}{4}$ , SE $\frac{1}{4}$ , Sec. 34, T6N, R2E	Noncontinuous	I	A
20. Tributary - Wildcat Creek (Iron Ridge)	From the Iron Ridge STP downstream to Wildcat Creek	Noncontinuous	II	B
21. Tributary & Rock River Tributary (Ixonia San. Dist.)	From the Ixonia San. Dist. STP downstream to the juncture with the Rock River Tributary	Noncontinuous	II	B
	Rock River Tributary from above tributary to confluence with Rock River	Continuous	II	NA
22. Tributary - Menominee River (Jamestown San. Dist. #2)	From Jamestown San. Dist. #2 STP to the Menominee River	Diffused surface water	II	B
23. Dead Creek (Juneau)	Upstream from CTH "M"	Effluent ditch	II	B
	From CHT "M" to St. Helena Rd.	Continuous	I	NA
24. Sinnipee Creek (Kieler San. Dist. #1)	From Kieler lagoon outfall to Bluff Road	Continuous	I	A
25. Rock Creek (Lake Mills)	From the Lake Mills STP downstream to CTH "V"	Noncontinuous	I	A
	From CTH "V" to Harper's Mill Pond	Continuous	I	NA
26. Tributary - Pigeon Creek (Lancaster)	Tributary from Lancaster STP downstream to south line of section 10	Continuous	II	Effluent limitations to be determined
	Tributary from above point downstream to confluence with Pigeon Creek	Continuous	I	determined
27. Tributary - Baker Creek (Lebanon San. Dist.)	From Lebanon STP downstream to Baker Creek	Noncontinuous	II	B
28. Little Platte River (Livingston)	From Livingston STP downstream to New California Road	Noncontinuous	I	A
29. Tributary-East Branch Rock River (Lomira)	Tributary upstream from confluence with East Branch Rock River.	Noncontinuous	I	A
30. (Madison Metro Sewerage Commission)	From the STP outfall aerator to the Oregon Branch	Effluent ditch	II	Effluent limitations to be determined

31. Brewery (Furnance) Creek (Mineral Point)	Brewery Creek upstream from confluence with Mineral Point Branch	Continuous	II	B (Note: the above limitation shall remain in effect until significant nonpoint source problems can be corrected)
32. Tributary - Blue River (Montfort)	From the Montfort STP downstream to the Blue River	Continuous	I	A
33. Little Grant River (Mount Hope)	From the Mt. Hope STP downstream to the west boundary of Sec. 10, T5N, R4W	Noncontinuous	I	A
34. West Branch Sugar River (Mt. Horeb)	From Mt. Horeb STP downstream to CTH "JG".	Continuous	I	A
35. Tributary - Austin Branch (Orchard Manor)	Drainage from Orchard Manor outfall to Austin Branch	Diffused surface waters	II	Effluent limitations to be determined
36. Oregon Branch - Badfish Creek (Oregon)	From the Oregon outfall downstream to juncture with the Madison Met effluent ditch	Noncontinuous	II	Effluent limitations to be determined
	From this point downstream to CTH "A"	Continuous	I	
37. Swan Creek and Tributary (Orfordville)	Tributary from Orfordville STP outfall to Swan Creek.	Effluent ditch	II	NA
	Swan Creek from confluence with above tributary to Dicky Road.	Noncontinuous	I	A
38. Tributary - Blake Fork (Patch Grove)	Tributary from the Patch Grove STP downstream to Blake Fork	Noncontinuous	I	A
39. Tributary - Honey Creek (Plain)	From the Plain STP downstream to Honey Creek	Continuous	I	Effluent limitations to be determined
40. Randolph Branch - Tributary Beaver Creek (Randolph)	From the Randolph STP downstream to Beaver Creek Tributary	Noncontinuous	II	Effluent limitations to be determined
	Tributary to Beaver Creek upstream from Beaver Creek	Noncontinuous	I	A
41. Tributary-Beaver Dam River (Reeseville)	Tributary from Reeseville STP to confluence with Beaver Dam River	Noncontinuous	I	A
42. Conley - Smith Creek (Ridgeway)	From the Ridgeway STP downstream to the south boundary of Sec. 14, T6N, R4E	Noncontinuous	I	Effluent limitations to be determined
43. Tributary - Rocky Run Creek (Rio)	From the Rio STP downstream to Rocky Run Creek	Noncontinuous	II	B
44. Tributary - Narrows Creek (Sauk Co. Health Care Center)	From the Sauk County Health Care Center STP downstream to Narrows Creek	Noncontinuous	I	A
45. Duck Creek and Tributary (Sullivan)	Tributary from the Sullivan STP to Duck Creek	Effluent channel	II	Effluent limitations to be determined
	Duck Creek from the effluent ditch downstream juncture with northerly drainage ditch in Sec. 5, T6N, R16E	Noncontinuous	I	
46. Koshkonong Creek (Sun Prairie)	Koshkonong Creek upstream from first bridge above Sun Prairie STP	Noncontinuous	II	Effluent limitations to be determined
	Koshkonong Creek from above location to CTH "T".	Continuous	II	A
47. Badger Mill Creek (Verona)	Badger Mill Creek from road at Verona STP downstream to STH "69".	Continuous	I	A

48. Tributary - Murphy Creek (Wisconsin Department of Health & Social Services - Oakwood State Camp)	Tributary from Oakwood State Camp STP downstream to Murphy Creek	Noncontinuous	II	B
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- (1) Criteria I requires the maintenance of surface water criteria specified in NR 104.02(3)(a)2.  
 Criteria II requires the maintenance of surface water criteria specified in NR 104.02(3)(b)2.
- (2) Effluent limitation A requires those limits specified in NR 104.02(3)(a)3.  
 Effluent limitation B requires those limits specified in NR 104.02(3)(b)3.  
 NA—Not applicable

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. table 3, r. (3), Register, December, 1977, No. 264, eff. 1-1-78.

NR 104.06 Variances and additions applicable in the southeast district. Subject to the provisions of NR 104.04, intrastate surface waters in the southeast district counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington and Waukesha shall meet the criteria for fish and aquatic life and recreational use with exceptions and additions as follows.

(1) VARIANCE. Surface waters in the southeast district subject to a variance under NR 104.02(3) are listed in table 4.

(2) OTHER VARIANCES. (a) The following surface waters in the southeast district shall meet the standards for fish and aquatic life except that the dissolved oxygen shall not be lowered to less than 2 mg/l at any time, nor shall the membrane filter fecal coliform count exceed 1,000 per 100 ml as a monthly geometric mean based on not less than 5 samples per month nor exceed 2,000 per 100 ml in more than 10% of all samples during any month:

1. Underwood creek in Milwaukee and Waukesha counties below Juneau boulevard.
2. Barnes creek in Kenosha county.
3. Pike creek, a tributary of Pike river, in Kenosha county.
4. Pike river in Racine county.
5. Indian creek in Milwaukee county.
6. Honey creek in Milwaukee county.
7. Menomonee river in Milwaukee county below the confluence with Honey creek.
8. Kinnickinnic river in Milwaukee county.
9. Lincoln creek in Milwaukee county.

(b) The following surface waters in the southeast district shall meet the standards for fish and aquatic life except that the dissolved oxygen shall not be lowered to less than 2 mg/l at any time, nor shall the membrane filter fecal coliform count exceed 1,000 per 100 ml as a monthly geometric mean based on not less than 5 samples per month nor exceed 89DF at any time at the edge of the mixing zones established by the department under s. NR 102.03 (4):

APPENDIX VI

## CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: September 13, 1989

FILE REF:

TO: Duane Schuettpelz - WR/2

FROM: Rick Wulk - WR/2 *RW*SUBJECT: Bloomfield Manor Effluent Limits Based on the Protective  
Assimilative Capacity of Pedlar Creek

The Bloomfield Manor STP discharges to Pedlar Creek which is classified under NR 104 as an intermediate variance waterway. However, recently a water quality standards review conducted by district WRM staff indicates that the Pedlar Creek classification will be changed to a nonvariance warm water forage fish waterway. An effort to determine the protective assimilative capacity of Pedlar Creek followed by development of a water quality based wasteload allocation was pursued for the following reasons:

- 1) Prior to reclassification it was determined that the discharge had the potential to impact nonvariance waters approximately 1 mile downstream where Pedlar Creek changes classification to warm water sport fish.
- 2) At present the discharge facility is having some difficulties in meeting its permit limit requirements. The facility has reached its design life and thus a facility upgrade is likely.

A water quality based model was utilized to develop effluent limits for Bloomfield Manor. Field data collected (pages 2-4) were used for both documentation of existing conditions and calibration/verification of the model output. Both the July and August survey data were used to characterize model input variables (decay rates, CBOD, NBOD, K2, P, R). Prediction models for warm and cold seasons were developed to determine effluent limits that would not exceed the protective assimilative capacity of Pedlar Creek. Bloomfield Manor limit options are on page 5 of this report.

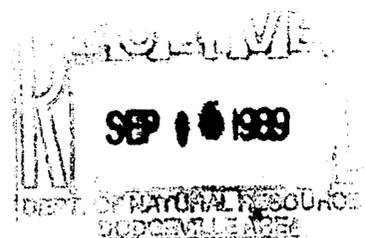
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~~cc~~ Roger Schlessor - Dodgeville  
Jack Saltes - Dodgeville  
C. Burney - WW/2

APPROVED:

*Duane H. Schuettpelz* 9/14/89



LOCATION: BLOOMFIELD MANOR  
 DATE: SURVEY 1 JULY 13-15 1988  
 WATERWAY: PEDLAR CREEK

PREDICTION MODEL RUN PARAMETERS

DESI 0.035MGD 0.05CFS  
 Q7-1 0.31CFS  
 CRITICAL STREAM TEMPER SUMMER 25C WINTER 7C  
 AMBIENT STREA 8.38

STATION DATA	EFFLUENT					
MILEAGE:	-0.01	0.00	0.01	0.16	0.61	1.12
T.O.T. HOURS/MIN.:		0830		1030	1150	1315
PEAK-PEAK HRS/MIN:				2/0	1/20	1/25
SAMPLE TIME:	0830	0825	0820	1040	1150	1315
CBOD/BOD5 RATIO:		2.30				
BOD LT MG/L:	4.10	17.00	4.40	4.80	4.80	5.80
CBOD MG/L:	0.50	10.50	0.70	1.10	1.10	2.10
NBOD MG/L:	1.80	6.40	2.70	2.70	2.70	3.70
BOD5 MG/L:	0.90	4.60	1.20	0.90	0.90	1.20
TOT-P MG/L:	0.11	5.90	0.24	0.19	0.21	0.26
DISS-P MG/L:	0.05	4.48	0.15	0.14	0.13	0.13
ORG-N MG/L:	0.40	1.40	0.60	0.60	0.60	0.80
NO2-NO3 MG/L:	11.60	15.40	11.60	11.30	11.00	10.90
NH3-N MG/L:	0.09	0.10	0.10	0.10	0.10	0.10
PH FIELD:	8.05			8.15	8.27	8.38
PH LAB:	7.90	7.90	7.90	8.00	8.20	8.30
CHLORIDE MG/L	22.00	210.00	27.00	29.00	29.00	29.00
CHLOROPHYLL A	4.00					
SUS. SOLIDS:	38.00	8.00	48.00	12.00	48.00	103.00
DISS.O2:						
FLOW CFS:			0.79	0.97	0.85	0.83

METALS PARAMETERS

CALCIUM 80.00  
 HARDNESS 390.00  
 MAGNESIUM 47.00

SEGMENT DATA:

SEGMENT LENGTH FT:		856.00	2385.00	2699.00
AVE. WIDTH FT	4.00	4.00	4.00	4.50
AVE. DEPTH FT	0.30	0.30	0.30	0.40
GRADIENT FT/M	41.00 FOR THE ENTIRE STUDY REACH			
AVE. VELOCITY FT/S:		0.12	0.50	0.53
K2:	3.0 FOR THE FIRST 0.16 MI AND 6.0 FOR THE REMAINING STUDY REAC			
AVERAGE TEMP OVER DECAY PERIOD:				
CBOD REMOVAL RATE:	2.50			
CBOD DECAY RATE:	2.50			
NBOD REMOVAL RATE:	3.00			
NBOD DECAY RATE:	3.00			
SOD DECAY RATE:	ACCOUNTED FOR IN THE RESPIRATION TERM			
RESPIRATION:	10.00			
PHOTOSYNTHESIS:	15.00	20.00		
PHOTD. FACTOR:	0.46	0.62		

AVERAGE STATION TEMP FOR START TIMES

		-0.01	0.00	0.16	0.61	1.12
T	600		20.00	17.00	18.00	18.00
I	1200		22.00	23.00	25.00	24.00
M	1800		21.00	23.00	23.00	24.00
E	2400		18.00	17.00	18.00	20.00

LIGHT DATA HOURLY FOR TWO DAYS STARTING AT MIDNIGHT

0	0	0	0	0	0	5	16	32	56	93	101	80	117	92	75	47	48	15	2	0	0	0	
0	0	0	0	0	0	0	5	16	32	56	93	101	80	117	92	75	47	48	15	2	0	0	0

DIURNALS TEMPERATURE/DO

LOCATION: BLOOMFIELD MANOR  
 START DATE: JULY 14-15 1988

		STATION MILEAGE				
		-0.01	0.00	0.16	0.61	1.12
TIME						
1000	21/7.8		15/8.0	18/10.6	17/10.0	
1100	21/7.6		15/8.0	20/10.5	19/9.8	
1200	21/7.4		20/7.8	22/10.3	21/9.6	
1300	21/7.1		22/7.4	24/9.9	23/9.2	
1400	22/6.8		23/7.1	25/9.6	25/8.9	
1500	22/6.6		24/6.8	26/9.1	25/8.5	
1600	22/6.6		24/6.2	26/8.6	26/8.2	
1700	22/6.6		25/6.0	26/8.2	26/8.0	
1800	22/6.6		25/5.4	25/7.6	25/7.8	
1900	22/6.5		24/4.8	25/6.8	25/7.4	
2000	21/6.5		23/4.3	24/6.5	24/7.2	
2100	21/6.5		22/4.0	23/6.5	23/7.0	
2200	20/6.6		21/4.1	22/6.7	23/7.2	
2300	19/6.7		20/4.3	21/6.9	22/7.4	
2400	19/6.7		19/4.6	20/7.1	22/7.6	
100	18/6.8		18/4.8	19/7.2	21/7.7	
200	17/7.0		17/4.9	18/7.5	20/7.9	
300	17/7.0		16/5.0	18/7.7	20/8.0	
400			16/5.3	17/7.9	19/8.2	
500			15/5.4	17/8.1	18/8.5	
600			15/5.7	16/8.4	17/8.7	
700			15/6.4	16/8.7	17/8.9	
800			16/7.2	17/9.1	17/9.0	
900			17/7.9	18/9.1	17/8.7	
1000			18/8.4	19/9.1	8.6	
1100			19/8.3	21/9.2	8.5	
1200			21/8.0	24/9.2	8.4	
1300			23/7.9		8.2	

LOCATION: BLOOMFIELD MANOR  
 DATE: SURVEY 2 AUGUST 9-11 1988  
 WATERWAY: PEDLAR CREEK

PREDICTION MODEL RUN PARAMETERS  
 DESIGN FLOW 0.035MGD 0.05CFS  
 Q7-10=0.31CFS  
 CRITICAL STREAM TEMP IS SUMMER 25C WINTER 7C  
 AMBIENT STREAM PH = 8.38

STATION DATA	EFFLUENT					
MILEAGE:	-0.01	0.00	0.01	0.16	0.61	1.12
TOT (HOURS/MIN):		0715		1030	1215	1340
PEAK-PEAK HRS/MIN:				3/15	1/45	1/25
SAMPLE TIME:	0820	0825	0820	1040	1150	1315
CBOD/BOD5 RATIO:		3.60				
BOD LT MG/L:	3.20	16.80	4.00	4.10	4.00	4.10
CBOD MG/L:	1.20	12.20	1.20	1.80	2.10	1.30
NBOD MG/L:	0.91	5.03	1.40	1.40	1.40	2.30
BOD5 MG/L:	4.00	3.40	3.40	0.60	0.90	1.20
TOT-P MG/L:	0.07	4.43	0.30	0.16	0.15	0.17
DISS-P MG/L:	0.05	3.88	0.25	0.12	0.11	0.11
ORG-N MG/L:	0.20	1.10	0.30	0.30	0.30	0.50
NO2-NO3 MG/L:	11.40	7.70	11.10	10.60	10.40	10.10
NH3-N MG/L:	0.10	0.10	0.10	0.10	0.10	0.10
PH FIELD:	7.86	8.17	7.91	7.88	8.06	6.22
PH LAB:	8.10	8.20	7.90	7.90	8.10	8.20
CHLORIDE MG/L	22.00	71.00	24.00	23.00	23.00	23.00
CHLOROPHYLL A	1.00					
SUS. SOLIDS:	6.00	9.00	11.00	4.00	20.00	43.00
DISS.O2:						
FLOW CFS:			0.82	0.68	0.82	0.73

SEGMENT DATA:

SEGMENT LENGTH FT:			856.00	2385.00	2699.00
AVE. WIDTH FT	4.00		4.00	4.00	4.50
AVE. DEPTH FT	0.30		0.30	0.30	0.40
GRADIENT FT/M	41.00 FOR THE ENTIRE STUDY REACH				
AVE. VELOCITY FT/S:			0.07	0.38	0.53
K2:	FROM 0.0 TO 0.16 K2=4.0, FROM 0.16 TO 1.12 K2=25				
AVERAGE TEMP OVER DECAY PERIOD:					
CBOD REMOVAL RATE:	2.50				
CBOD DECAY RATE:	2.50				
NBOD REMOVAL RATE:	3.00				
NBOD DECAY RATE:	3.00				
SOD DECAY RATE:	ACCOUNTED FOR IN RESPIRATION TERM				
RESPIRATION:	10.00				
PHOTOSYNTHESIS:	15.00	20.00			
PHOTO. FACTOR:	0.46	0.62			

AVERAGE STATION TEMP FOR START TIMES

		-0.01	0.00	0.16	0.61	1.12
T	600		20.00	17.00	18.00	18.00
I	1200		22.00	23.00	25.00	24.00
M	1800		21.00	23.00	23.00	24.00
E	2400		18.00	17.00	18.00	20.00

LIGHT DATA HOURLY FOR TWO DAYS STARTING AT MIDNIGHT

0	0	0	0	0	0	0	5	16	32	56	93	101	80	117	92	75	47	48	15	2	0	0	0
0	0	0	0	0	0	0	5	16	32	56	93	101	80	117	92	75	47	48	15	2	0	0	0

DIURNALS TEMPERATURE/DO

LOCATION: BLOOMFIELD MANOR  
 START DATE: AUGUST 10-11 1988

TIME	STATION MILEAGE				
	-0.01	0.00	0.16	0.61	1.12
900	13/7.1		15/6.0	15/8.0	16/8.0
1000	13/7.3		16/6.5	15/8.2	16/8.2
1100	14/7.3		16/6.8	16/8.2	17/8.2
1200	14/7.3		16/6.8	17/8.4	19/8.3
1300	15/7.3		17/6.9	18/8.4	19/8.1
1400	16/7.1		18/6.7	18/8.2	20/8.0
1500	17/6.8		19/6.6	19/8.0	20/7.8
1600	18/6.5		19/6.2	19/7.8	20/7.6
1700	18/6.0		19/5.5	19/7.6	20/7.4
1800	18/5.8		20/5.1	19/7.2	20/7.2
1900	18/5.6				20/7.2
2000	18/5.3				19/7.0
2100	17/5.1				19/6.9
2200	17/5.2				19/7.0
2300	16/5.4				19/7.1
2400	16/5.5				19/7.0
100	15/5.6				19/7.1
200	15/5.7				18/7.1
300	15/5.7				18/7.2
400	14/5.8				18/7.2
500	15/5.9				18/7.3
600	14/6.1				18/7.4
700	14/6.2				18/7.4
800	14/6.4				18/7.6
900	14/6.6				18/7.8
1000					
1100					
1200					
1300					

Bloomfield Manor Limit Options

1. If the creek is reclassified to nonvariance (warm water forage) water and effluent discharge location doesn't change.

Limits:	<u>Summer</u>	<u>Winter</u>
BOD/SS	10/10	25/25
NH <sub>3</sub> -N	1.81	8.44
pH	6-9	6-9
eff D.O.	6	6

2. If the outfall location is moved downstream 200 yards to where the first continuous monitoring system was set up during field data collection. (Classification warm water forage)

Limits:	<u>Summer</u>	<u>Winter</u>
BOD/SS	22/22	25/25
NH <sub>3</sub> -N	1.81	8.44
pH	6-9	6-9
eff D.O.	6	6

Iowa County Nursing Home  
Iowa County

October 26, 1976

Pedler Creek (Spincely)

Surface area = 6.1 acres, Length = 7.5 miles, Gradient = 42.3 feet per mile.

Pedler Creek begins at springs and ground seepage on the vale of the cuesta which is part of the Galena-Black River uplands and flows southwesterly as the principle tributary of the East Pecatonica River. It has a fairly steep gradient and about 95 percent of its watershed area is cleared land devoted to crops and pasture. As a result, the runoff of precipitation is quite rapid which is evidenced by the records of sudden flooding and subsequent heavy bank erosion.

Electrofishing surveys show that it is a good smallmouth bass stream and catfish are present; especially in the lower sections. Panfishes present include green sunfish and pumpkinseed. Forage and rough fish include bluntnose and stoneroller minnows, creek and hornyhead chubs; white and hogsuckers; common shiners, johnny darters, northern redhorse and quillback.

There are five known farm ponds in the watershed which serve as erosion controls and support small populations of largemouth bass to supplement the stream fishery.

Aquatic game assets include wood ducks and green herons near the mouth. Muskrats are found throughout most of its length.

Recommendations

From the Iowa County Nursing Home outfall downstream to the confluence with an unnamed tributary, SE $\frac{1}{4}$ , SE $\frac{1}{4}$  of Section 34, T6N, R2E, the classification should be noncontinuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Pedler Creek the classification should be continuous fish and aquatic life.

The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

Dennis Iverson, District Engineer  
Gene Van Dyck, Area Fish Manager  
Tom Bainbridge, District Biologist  
Roger Schlessler, Natural Resources Technician

Respectfully submitted,

  
Tom Bainbridge  
Stream Classification Coordinator

TB:cb

