

Region SCR County Grant Report Date 7/1990 Classification LFF → FAZ
 Water Body: Blake Fork, Trib to
 Discharger: Patch Grove WNTD

If stream is classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that are identified in the classification report:

- Naturally occurring pollutant concentrations prevent the attainment of use
- Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met
- Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place
- Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use
- Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses
- Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

Supporting Evidence in the report (include comments on how complete/thorough data is)

- Biological Data (fish/invert) fish, macro
- Chemical Data (temp, D.O., etc.)
- Physical Data (flow, depth, etc.)
- Habitat Description
- Site Description/Map
- Other: photos

Historical Reports in file:

7/1990 - Roger Schlessor
(10/11/74 - Tom Bainbridge)

Additional Comments/How to improve report:

- should this be listed in PI - says LFF → FAZ.
 * - "NPS runoff presently has most impact on Trib" p4, p6
 - habitat & flow ID'd as factors for FAZ vs LFF
 - seems like stream should be FAZ throughout since NPS is limiting??

* check w/ region on this class'n.

BLAKE FORK TRIBUTARY
AT PATCH GROVE, GRANT COUNTY

TRIENNIAL STANDARDS REVIEW
PATCH GROVE WWTP

JULY, 1990

ROGER SCHLESSER, SOUTHERN DISTRICT

BUREAU OF WATER RESOURCES MANAGEMENT
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

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PHOTOGRAPHS (5 pages)

APPENDIX I. Stream System Habitat Rating Forms (2 pages)

APPENDIX II. 1989 DMR Data (2 pages)

APPENDIX III. 1976 Stream Classification (1 page)

APPENDIX IV. Final Effluent Limitations and Monitoring Requirements (1 page)

APPENDIX V. Chapter NR 104 (9 pages)

SUMMARY

The tributary to Blake Fork below the Patch Grove WWTP was originally classified as intermediate fish and aquatic life (D), due to low natural stream flow and lack of habitat. The intermediate section extends from the WWTP downstream to the juncture with Blake Fork. From this point extending downstream, and for the remainder of Blake Fork, the classification is continuous fish and aquatic life (B). This review indicates that a short section of the existing intermediate classification should be changed to fish and aquatic life (C). This section extends from Blake Fork upstream to a westerly tributary, Section 16; SE 1/4, NE 1/4; T5N; R5W. When the stream was originally classified, this classification category was not in place.

INTRODUCTION

This paper presents the results of an evaluation of the stream classification for the Blake Fork tributary, which is the receiving water for the Patch Grove 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

The tributary to Blake Fork is a seepage and spring fed stream with its watershed originating within the Village of Patch Grove and slightly north of it. It flows in a south-easterly direction and eventually joins Blake Fork.

The reach included in this evaluation is a 3.4 mile stretch which extends from 50 ft. above the outfall downstream to the juncture with Blake Fork. Land use in the study area is primarily agriculture. The stream corridor is pasture with parts of it heavily grazed. Upland areas are in row crops. Nonpoint source runoff may come from the agricultural land, several barnyards or the Village of Patch Grove. Runoff from streets and residences may contain salt, sand, heavy metals, fertilizers, pesticides, etc.

The stream in the vicinity of the wastewater plant has low perennial flow with a USGS computed Q_{72} of 0.01 cfs and a Q_{10} of <0.01 cfs. Consequently, much of the flow below the WWTP is effluent during the dryer summer months.

Table 1 contains the actual stream flows in the Blake Fork tributary taken from the publication "Low-Flow Characteristics of Wisconsin Streams at Sewage Treatment Plants".

Table 1: Low-Flow Characteristics, Blake Fork Tributary

<u>Drainage Area</u> <u>(mi²)</u>	<u>Date</u>	<u>Discharge</u> <u>(ft³/s)</u>
1.31	June 21, 1972	0.04
	Aug. 31, 1972	0.00 ¹
	Aug. 3, 1973	0.49
	Oct. 17, 1975	0.15
	July 27, 1976	0.05
	Oct. 26, 1976	0.03

1-Negligible discharge; water ponded, unable to measure velocity.

STREAM HABITAT

The intermediate section of the tributary to Blake Fork is best characterized as having low flow and a lack of pools, mostly flat water and poor habitat. Bank erosion is not an overly serious problem but some areas have been trampled do to cattle access to the stream. The substrate could be one of primarily gravel-rubble but soil erosion has led to sedimentation of much of the stream bed. Areas of low stream velocity have accumulated the largest amounts of sediment. The "stream system habitat rating forms" are contained in Appendix I.

WATER QUALITY AND BIOLOGY

During the low flow months much of the flow below the outfall is dominated by the effluent. Effluent quality in 1989 had generally been pretty good. Nonpoint source runoff presently has the most impact on the tributary.

Two sections of the tributary to Blake Fork were surveyed with a backpack fish shocker (Map #1). The first site was located upstream of Hying Road at a railing along STH "35". The site was surveyed in April 1990 (Table II). A large percentage of the sample was dominated by creek chubs and brook stickleback, both tolerant species. Since the survey was conducted in the spring, a fair number of southern redbelly dace were present. They were in spawning colors and were probably looking for nesting areas.

The second survey site was located downstream of Kansas Road. This site was also surveyed in April 1990 (Table IV). This site had a good diversity of forage fish along with a high number of fish. Both tolerant and intolerant species were present including white suckers, creek chubs, stickleback, darters, dace, and stonerollers.

Also included is a survey which was conducted for the "fish distribution study" (Table VI). The survey was done in May 1978 upstream of Hying Road. Considering 100 yards of stream thread were surveyed not a lot of fish were found. Some of the intolerant species were again present, probably due to spawning.

Macroinvertebrate samples were taken October 24, 1989 at two locations. The first site sampled was located at the first fish sampling station (Table III). According to the HBI data the site was considered to have "poor water quality". The sample was dominated by Asellus intermedius which is very tolerant of pollution. This was expected considering the NPS runoff and low flows when the sample was taken.

The second site sampled was located on the tributary a short distance upstream of the juncture with Blake Fork (Table V). According to the HBI data the site was considered to have "fairly poor water quality". This sample also had a large percentage of Asellus intermedius but there were a good number of Ephemeroptera, Trichoptera, Coleoptera, and Amphipoda present. Reduction in N.P.S. runoff would greatly increase the numbers of less tolerant organisms since a good gravel-rubble substrate was present at this site.

WWTP

Appendix II contains the 1988 DMR monthly averages for flow, BOD, TSS, and NH₃-N. According to this data the WWTP has stayed well within their monthly permit limits. The plant was recently upgraded and should provide good treatment for many years.

CLASSIFICATION

Based on this review of available physical and biological data, the tributary to Blake Fork should be classified as intermediate fish and aquatic life (D) from the WWTP downstream to a westerly tributary. From the westerly tributary, Section 16; SE 1/4, NE 1/4; T5N; R5W, downstream to Blake Fork the classification should be upgraded to fish and aquatic life (C). In this section of stream, flow is higher and habitat is better with deeper pools and riffle-runs. A decent forage fish fishery is present now but with the elimination of N.P.S. problems a vastly improved macroinvertebrate and forage fish population could exist.

TABLE: II List of fish for sampling site: Railing above Hying Rd., Below entrance of culvert

DATE: 4/30/90 Twn 5N Rng 5W Sec 9 1/4 1/4 SE NE STREAM: Trib. to Blake Fork

Station mileage: 2.6 County: 22

SOURCE OF DATA: WRM GEAR: 3 EFFORT: 015

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M06	CENTRAL STONEROLLER	CYPRINIDAE	Campostoma anomalum	3	Intolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	11	Intolerant
M48	BLACKNOSE DACE	CYPRINIDAE	Rhinichthys atratulus	1	Intolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	17	Tolerant
U01	BROOK STICKLEBACK	GASTEROSTEIDAE	Culaea inconstans	9	Tolerant

SOUTHERN District Biotic Index Report

TABLE III

HBI _ 7.990 Rep1 _ 0.000 Rep2 _ 0.000 Rep3

Sample ID # _ 891024-22-04 Waterbody Name _ TRIBUTARY TO BLAKE FORK

Water Temp (Celsius) _ Dissolved Oxygen (mg/l) _

Sample Location: SE NE S 9 T 5N R 5W_ Master Waterbody # _

Project Name _ TRIENNIAL STANDARDS REVIEW Storet Station # _

/ . Stream Width (Ft.) at Site _1.5 Ave. Stream Depth (Ft.) at Site _0.15

Collector _SCHLESSER, R. Field # 04 Rep 1_

Measured Velocity (fps) _

Est. Velocity (fps) _

Sorter _BUCKLEY, K.

Est % of sample sorted _53

_Slow (0.2-0.5)

Taxonomist _DIMICK, J.

Sampled Habitat

Location Description _RAILING ABOVE HYING RD. - BELOW

_1. Riffle

ENTRANCE OF CULVERT

Est. Time Spent Sampling (Min.) _ 2_

Sampling Device _1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	0.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	50.0 Gravel	30.0 Silt	0.0 Detritus	20.0 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 _Poor_)

	Not Present	Insig- nificant	Sig- nificant	Comments
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Turbidity 1

E orine or Toxic Scour 1

Macrophytes 2

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

Channel Ditching 1

Down/Up Stream Impoundment 1

Low Flows 3

Wetlands 2

Pollutant Sources

Livestock Pasturing 3

Barnyard Runoff 3

Cropland Runoff 3

Tile Drains

Sentic Systems

E eam Bank Erosion 3

Urban Runoff 3

Construction Runoff

Point Source(Specify Type) 2 PATCH GROVE WWTP

Other (Specify)

*** SOUTHERN DISTRICT BIOTIC INDEX REPORT ***

SAMPLE ID# 891024-22-04

PAGE 2

***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM		
		SPECIES	KEY	VAL	ID	COUNT		
			USED			REP1	REP2	REP3
ODONATA								
	COENAGRIONIDAE							
	ARGIA	VIOLACEA	*1		03030207	8	0	0
		POOR SPECIMEN	*2		03030208	2	0	0
COLEOPTERA								
	HYDROPHILIDAE							
	TROPISTERNUS		*2		07091700	1	0	0
DIPTERA								
	CERATOPOGONIDAE							
	STILOBEZZIA		*2		08031800	1	0	0
	CHIRONOMIDAE							
	CRYPTOCHIRONOMUS		*2	8.00	08051400	3	0	0
	POLYPEDILUM	NR. SCALAEUM	*3	7.00	08055005	1	0	0
	TANYPODINAE	**POOR SPECIMEN**	*2		08059001	1	0	0
ISOPODA								
	ASELLIDAE							
	ASELLUS	INTERMEDIUS	*4	8.00	10010101	93	0	0
TURBELLARIA								
			*5		13000000	4	0	0
TELECYPODA								
	SPHAERIIDAE		*6		15010000	1	0	0
LIGOCHAETA								
	NAIDIDAE		*7		16020000	13	0	0
	TUBIFICIDAE		*7		16030000	4	0	0

*** TOTALS: *** 132

0

0

*** BIOTIC INDEX: *** 7.990

Taxonomic Key Code References

- *1 Hilsenhoff 1981,82
- *2 Hilsenhoff 1981
- *3 Hilsenhoff 1981,85
- *4 Williams 1972
- *5 Pennak 1978
- *6 Burch 1972
- *7 Klemm 1985

TABLE: IV List of fish for sampling site: Downstream of Kansas Rd.

DATE: 4/30/90

Twn 5N Rng 5W Sec 15 1/4 1/4 SW NW

STREAM: Trib. to Blake Fork

Station mileage: 1.3

County: 22

SOURCE OF DATA: WRM

GEAR: 3

EFFORT: 015

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M06	CENTRAL STONEROLLER	CYPRINIDAE	Campostoma anomalum	8	Intolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	24	Intolerant
M48	BLACKNOSE DACE	CYPRINIDAE	Rhinichthys atratulus	5	Intolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	18	Tolerant
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	2	Tolerant
U01	BROOK STICKLEBACK	GASTEROSTEIDAE	Culaea inconstans	13	Tolerant
X10	FANTAIL DARTER	PERCIDAE	Etheostoma flabellare	7	Intolerant
X12	JOHNNY DARTER	PERCIDAE	Etheostoma nigrum	4	Tolerant

HBI _ 6.886 Rep1 _ 0.000 Rep2 _ 0.000 Rep3 _

Sample ID # _ 891024-22-03 Waterbody Name _ TRIBUTARY TO BLAKE FORK

Water Temp (Celsius) _ Dissolved Oxygen (mg/l) _

Sample Location: SE SE S15 T 5N R 5W_ Master Waterbody # _

Project Name _ TRIENNIAL STANDARDS REVIEW Storet Station # _

Ave. Stream Width (Ft.) at Site _4.0 Ave. Stream Depth (Ft.) at Site _0.4

Collector _SCHLESSER, R. Field # 03 Rep 1_

Measured Velocity (fps) _

Est. Velocity (fps) _

Sorter _BUCKLEY, K.

_Moderate (0.5-1.5)

Est % of sample sorted _14

Sampled Habitat

Taxonomist _DIMICK, J.

Location Description _UPS. JUNC. WITH BLAKE FORK

_1. Riffle

Est. Time Spent Sampling (Min.) _ 2__

Sampling Device _1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	50.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	20.0 Gravel	20.0 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 2 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ _Fair____)

	Not Present	Insig-nificant	Sig-nificant	Comments
Turbidity	1			
Chlorine or Toxic Scour	1			
Microphytes		2		H2O CRESS
Filamentous Algae		2		
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

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

Pollutant Sources

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

SAMPLE ID# 891024-22-03

TAXA	SPECIES	TAXONOMIC KEY USED	TOL VAL	ORGANISM ID	ORGANISM COUNT		
					REP1	REP2	REP3
EPHEMEROPTERA							
BAETIDAE							
BAETIS	INTERCALARIS	*1	6.00	02010103	1	0	0
HEPTAGENIIDAE							
STENACRON	INTERPUNCTATUM	*2	7.00	02060501	5	0	0
ODONATA							
CALOPTERYGIDAE							
CALOPTERYX		*2		03020100	1	0	0
TRICHOPTERA							
HYDROPSYCHIDAE							
CHEUMATOPSYCHE		*2	5.00	04040100	1	0	0
CERATOPSYCHE	BRONTA	*3	5.00	04040703	1	0	0
	MOROSA BIFIDA	*3	6.00	04040704	1	0	0
	SLOSSONAE	*3	4.00	04040706	2	0	0
COLEOPTERA							
ELMIDAE							
OPTIOSERVUS		*2	4.00	07020500	22	0	0
STENELMIS		*2	5.00	07020600	1	0	0
	CRENATA	*4	5.00	07020601	2	0	0
DIPTERA							
CHIRONOMIDAE							
	PUPAE	*5		08050002	1	0	0
CRICOTOPUS	NR. BICINCTUS	*4	6.00	08051301	1	0	0
	NR. INTERSECTUS	*4	7.00	08051302	3	0	0
	SP. A	*4	6.00	08051304	1	0	0
ORTHOCLADIUS	SP. D	*4	5.00	08054004	7	0	0
SIMULIIDAE							
SIMULIUM	**POOR SPECIMEN**	*6		08110210	1	0	0
	VITTATUM	*6	7.00	08110217	1	0	0
AMPHIPODA							
GAMMARIDAE							
GAMMARUS	PSEUDOLIMNAEUS	*7	4.00	09010201	14	0	0
ISOPODA							
ASELLIDAE							
ASELLUS	INTERMEDIUS	*8	8.00	10010101	121	0	0
		*9		13000000	9	0	0
TURBELLARIA							
OLIGOCHAETA							
TUBIFICIDAE		10		16030000	1	0	0
HIRUDINEA							
ERPOBDELLIDAE		10		17010000	1	0	0

SAMPLE ID# 891024-22-03

*** TAXA ***	*** SPECIES ***	TAXONOMIC KEY USED	TOL VAL	ORGANISM ID	ORGANISM COUNT	REP1	REP2	REP3
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*** TOTALS: ***					198		0	0
*** BIOTIC INDEX: ***					6.886			

Taxonomic Key Code References

- *1 Hilsenhoff 1981,82
- *2 Hilsenhoff 1981
- *3 Hilsenhoff 1981,86
- *4 Hilsenhoff 1981,85
- *5 Merritt,Cummins 84
- *6 Hilsenhoff 1985
- *7 Holsinger 1972
- *8 Williams 1972
- *9 Pennak 1978
- 10 Klemm 1985

TABLE: VI List of fish for sampling site: Upstream of Hying Rd.

DATE: 5/18/78

Twn 5N Rng 5W Sec 9 1/4 1/4 NE SE

STREAM: Trib. to Blake Fork

Station mileage: 2.3E

County: 22

SOURCE OF DATA: 11

GEAR: B

EFFORT: 06

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M05	STONEROLLERS	CYPRINIDAE	Campostoma spp.	8	Intolerant
M06	CENTRAL STONEROLLER	CYPRINIDAE	Campostoma anomalum	6	Intolerant
M28	COMMON SHINER	CYPRINIDAE	Notropis cornutus	2	Tolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	18	Intolerant
M46	FATHEAD MINNOW	CYPRINIDAE	Pimephales promelas	2	Very Tolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	23	Tolerant



Trib. to Blake Fork

Downstream of outfall.



Trib. to Blake Fork

Upstream of private
drive - Patch Grove WWTP
in center of picture.



Trib. to Blake Fork

Upstream of private
drive.



Trib. to Blake Fork

Downstream of private
drive.



Trib. to Blake Fork

Along STH "35" upstream
of Hying Rd.



Trib. to Blake Fork

Along STH "35" upstream
of Hying Road -
Macroinvertebrate
sampling site.



Trib. to Blake Fork

Along STH "35" upstream
of Hying Road - fish
sampling area.



Trib. to Blake Fork

Just upstream of Hying
Road.



Trib. to Blake Fork

Downstream of Hying
Road.



Trib. to Blake Fork

Downstream of Hying
Road.



Trib. to Blake Fork

Upstream of juncture
with Blake Fork.



Trib. to Blake Fork

Upstream of juncture
with Blake Fork.



Trib. to Blake Fork

Upstream of juncture
with Blake Fork -
macroinvertebrate
sampling site.



Juncture of tributary
and Blake Fork

Blake Fork enters from
the left of the picture

APPENDIX I

Stream Trib. to Blake Fork Reach Location Outfall to downstream Hying Rd. Reach Score/Rating 209/Poor
 County Grant Date 4/30/90 Evaluator R. Schlessner Classification Intermediate

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. (14)	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). (14)	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. 16	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. (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 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. 10	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. 7	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 Warm >1.5' 0	6" to 1' 6 10" to 1.5' 6	3" to 6" 18 6" to 10" 18	<3" 24 <6" (24)
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' 18	<2' 24 <3' (24)
Flow, at Rep. Low Flow	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs 18	<.5 cfs 24 <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. (16)	>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 inhance aesthetics. Condition of stream is offensive. 16

Column Totals: _____ 17 _____ 120 _____ 72 _____

Column Scores E 0 +G 17 +F 120 +P 72 = 209 = Score

Stream Blake Fork Trib. To Blake Fork to upstream Kansas Rd. Reach Location Blake Fork to upstream Kansas Rd. Reach Score/Rating 158/Fair
 County Grant Date 4/30/90 Evaluator R. Schlessler Classification FAL/C

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. (14)	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). (14)	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. 16	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. (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 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. (10)	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. (11)	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. (11)	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. (7)	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 Warm >1.5' 0	6" to 1' 6 10" to 1.5' 6	3" to 6" 18 6" to 10" (18)	<3" 24 <6" 24
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' (18)	<2' 24 <3' 24
Flow, at Rep. Low Flow	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs (18)	<.5 cfs 24 <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. (16)	>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	24	134	0

Column Scores E 0 +G 24 +F 134 +P 0 = 158 = Score

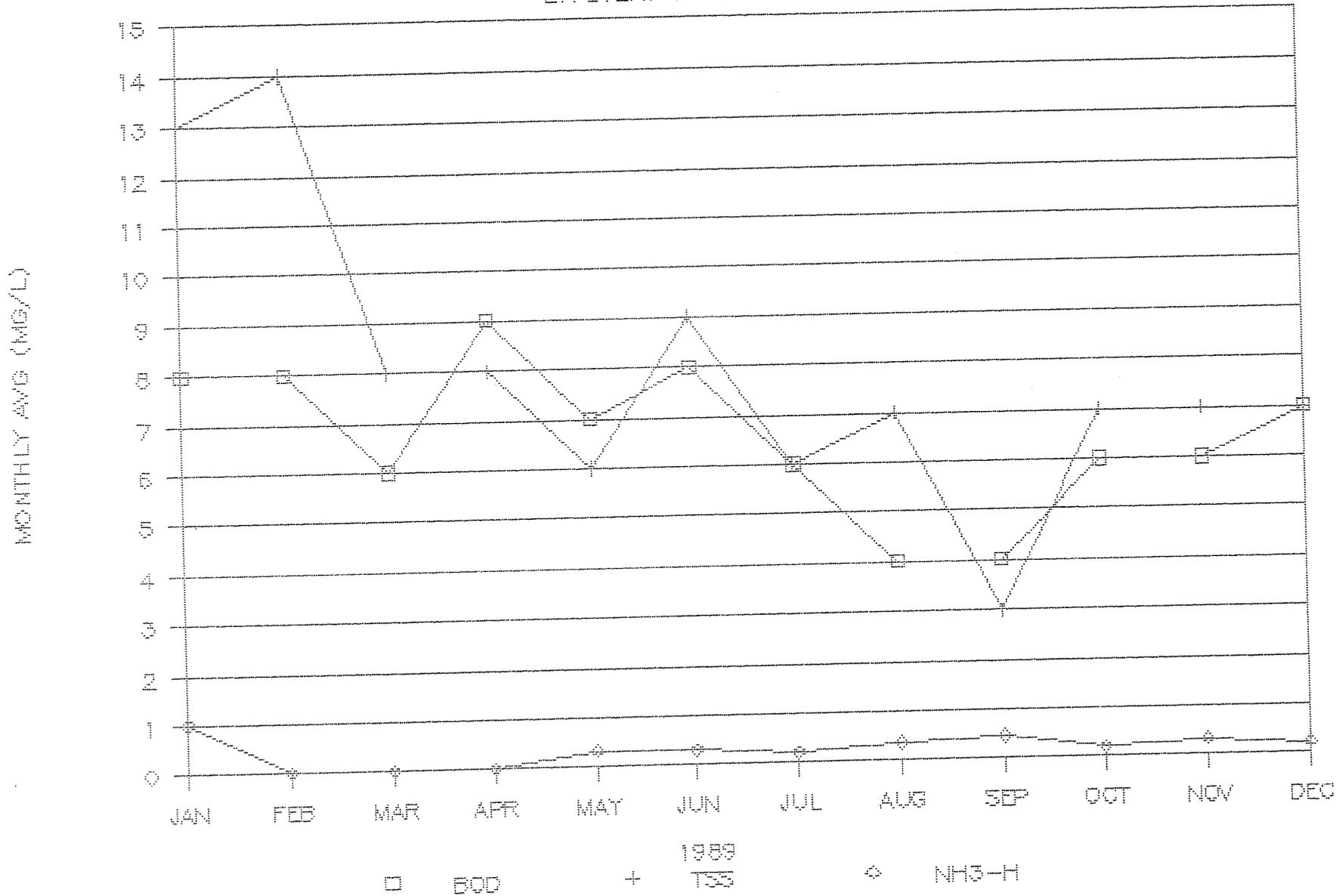
APPENDIX II

PATCH GROVE SEWAGE TREATMENT PLANT
 MONTHLY AVG., EFFLUENT QUALITY, 1989

	FLOW (MGD)	BOD (MG/L)	TSS (MG/L)	NH3-N (MG/L)
JAN	0.0180	8.00	13.00	1.00
FEB	0.0160	8.00	14.00	<0.1
MAR	0.0200	6.00	8.00	<0.1
APR	0.0150	9.00	8.00	<0.1
MAY	0.0160	7.00	6.00	0.34
JUN	0.0130	8.00	9.00	0.30
JUL	0.0210	6.00	6.00	0.21
AUG	0.0250	4.00	7.00	0.36
SEP	0.0270	4.00	3.00	0.46
OCT	0.0220	6.00	7.00	0.19
NOV	0.0190	6.00	7.00	0.33
DEC	0.1900	7.00	7.00	0.24

PATCH GROVE SEWAGE TREATMENT PLANT

EFFLUENT QUALITY 1989



APPENDIX III

Patch Grove Sewage Treatment Plant
Grant County

October 11, 1976
Blake Fork Tributary

The Blake Fork Tributary is a small stream which has very slight flow in its headwaters. Most of the tributary flows through pasture and is heavily eroded entering Blake Fork approximately 2.5 miles below the Patch Grove Sewage Treatment Plant.

Blake Fork

Surface area = 16.2 acres, Length = 16.7 miles, Gradient = 20 ft./mile.

Blake Fork is a spring and seepage-fed stream which flows southeast through Bloomington and then into the Grant River six miles west of Lancaster. About 90 percent of this watershed has been cleared for agricultural purposes and the stream flows through firm pasture land for its entire length. Flooding is common. The stream is characterized by areas of long flat pools and heavily eroded banks. Farm animals and feed lots are frequently seen along these seriously-eroded banks. Several portions of this stream have been straightened by the local farmers in an effort to lessen these erosion problems, only to cause more of a problem downstream. Smallmouth bass provide a limited sport fishery. Crappies and rock bass were stocked at one time. Forage fish are common and bait dealers have seined minnows from this stream in previous years.

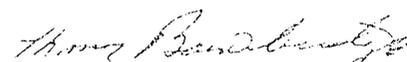
Recommendations

From the Patch Grove Sewage Treatment Plant outfall downstream to the juncture with Blake Fork SE $\frac{1}{4}$, SE $\frac{1}{4}$, Section 15, T5N, R5W, the classification should be noncontinuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Blake Fork 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

SPECIAL CONDITIONS

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting until June 30, 1994, 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 a representative location.

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 BOD₅ and of total suspended solids shall not exceed 15% of the average influent concentrations, respectively.

EFFLUENT CHARACTERISTIC	DAILY EFFLUENT LIMITATIONS				MONITORING REQUIREMENTS		
	Quantity-kg/day (lbs/day)		Other Limitations (Specify Units)		Sample	Sample	
	Average	Maximum	Minimum	Average	Frequency	Type	
Flow ¹	-	-	-	-	-	Daily	Continuous
BOD ₅ (monthly)	-	-	-	15 mg/l	-	3xweekly	24-hr comp ²
BOD ₅ (daily)	-	-	-	-	30 mg/l	3xweekly	24-hr comp ²
Suspended Solids (monthly)	-	-	-	20 mg/l	-	3xweekly	24-hr comp ²
Suspended Solids (daily)	-	-	-	-	30 mg/l	3xweekly	24-hr comp ²
pH	-	-	6.0 s.u.	-	9.0 s.u.	Daily	Grab
Dissolved Oxygen (daily)	-	-	4.0 mg/l	-	-	Daily	Grab
Ammonia Nitrogen (NH ₃ -N)	-	-	-	3.0 mg/l	-	3xweekly	24-hr comp ²
(Weekly, May-Oct)	-	-	-	6.0 mg/l	-	3xweekly	24-hr comp ²
Ammonia Nitrogen (NH ₃ -N)	-	-	-	-	-	-	-
(Weekly, Nov.-Apr.)	-	-	-	-	-	-	-

¹Flow measurement of the wastewater volume discharged from the treatment plant, and any bypassed flow, shall be monitored continuously.

²Samples shall be composited on a flow-proportional basis at 4°C.

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 hierarchy 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 in-place 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.

Register, October, 1985, No. 358

(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 Maximum (mg/ l)	Weekly	
			Average (mg/l)	Other (mg/l)
BOD ₅	15	30	-	-
Total Suspended Solids	20	30	-	-
NH ₃ -N (May-October)	-	-	3	-
NH ₃ -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 ₅	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)
1. Goose Lake Tributary (Arlington)	Tributary upstream from Goose Lake	Noncontinuous	II	Effluent limitations to be determined
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	Effluent ditch	II	B
8. Tributary - Dead Creek (Clyman)	Spring Brook in Clinton Township	Continuous	II	NA
9. West Branch Pecatonica River (Cobb)	Tributary from Clyman STP downstream to Dead Creek	Noncontinuous	II	B
	From the Cobb STP downstream to confluence with an unnamed tributary NE¼, NW¼, Sec. 2, T5N, R1E.	Continuous	I	A
10. Door Creek (Cottage Grove)	Door Creek upstream from STH 12 & 18	Noncontinuous	I	A
	From STH 12 & 18 downstream to Lake Kegonsa	Continuous	I	NA
11. Coon Branch (Cuba City)	Upstream from westerly tributary approximately 1 mile above STH "11"	Noncontinuous	II	B
	Downstream from above tributary to confluence with Galena River	Continuous	I	NA
12. Mud Creek and Tributary (Deerfield)	Tributary from Deerfield STP to confluence with Mud Creek	Effluent ditch	II	B
	Mud Creek from above tributary downstream to confluence with Koshkonong Creek	Continuous	I	

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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, SE¼, SE¼, 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 (Ixonian San. Dist.)	From the Ixonian 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	
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	From the Randolph STP downstream to Beaver Creek Tributary	Noncontinuous	II	Effluent limitations to be determined
Beaver Creek (Randolph)	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	
47. Badger Mill Creek (Verona)	Badger Mill Creek from road at Verona STP downstream to STH "69".	Continuous	I	A

DEPARTMENT OF NATURAL RESOURCES

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NR 104

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

- (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 Jeanne 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):

Register, October, 1985, No. 358

Patch Grove Sewage Treatment Plant
Grant County

October 11, 1976
Blake Fork Tributary

The Blake Fork Tributary is a small stream which has very slight flow in its headwaters. Most of the tributary flows through pasture and is heavily eroded entering Blake Fork approximately 2.5 miles below the Patch Grove Sewage Treatment Plant.

Blake Fork

Surface area = 16.2 acres, Length = 16.7 miles, Gradient = 20 ft./mile.

Blake Fork is a spring and seepage-fed stream which flows southeast through Bloomington and then into the Grant River six miles west of Lancaster. About 90 percent of this watershed has been cleared for agricultural purposes and the stream flows through firm pasture land for its entire length. Flooding is common. The stream is characterized by areas of long flat pools and heavily eroded banks. Farm animals and feed lots are frequently seen along these seriously-eroded banks. Several portions of this stream have been straightened by the local farmers in an effort to lessen these erosion problems, only to cause more of a problem downstream. Smallmouth bass provide a limited sport fishery. Crappies and rock bass were stocked at one time. Forage fish are common and bait dealers have seined minnows from this stream in previous years.

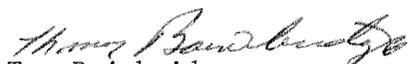
Recommendations

From the Patch Grove Sewage Treatment Plant outfall downstream to the juncture with Blake Fork SE $\frac{1}{4}$, SE $\frac{1}{4}$, Section 15, T5N, R5W, the classification should be noncontinuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Blake Fork 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