

Region SCR County Grant Report Date 7/1990 Classification LFF  
 Water Body: Little Grant River  
 Discharger: Mount Hope WWTP

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 habitat
- 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.) - 1970 report
- Physical Data (flow, depth, etc.)
- Habitat Description
- Site Description/Map
- Other: photos

**Historical Reports in file:**

- 7/1990 - Roger Schlessor
- 10/11/1970 - Tom Bainbridge

**Additional Comments/How to improve report:**

- ~~10/11/1970 - Tom Bainbridge~~
- are low stream flow & habitat primary limiting factors?
- check W/region

*class change*

*INT. TO FAL(c) on  
a portion of stream*

LITTLE GRANT RIVER  
AT MOUNT HOPE, GRANT COUNTY

TRIENNIAL STANDARDS REVIEW  
MOUNT HOPE WWTP

JULY, 1990

ROGER SCHLESSER, SOUTHERN DISTRICT

BUREAU OF WATER RESOURCES MANAGEMENT  
WISCONSIN DEPARTMENT OF NATURAL RESOURCES

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APPENDIX II. 1989 DMR Data (2 pages)

APPENDIX III. 1976 Stream Classification (2 pages)

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

APPENDIX V. Chapter NR 104 (9 pages)

## SUMMARY

The Little Grant River below the Mount Hope 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 CTH "J". From this point extending downstream, and for the remainder of the Little Grant River, the classification is continuous fish and aquatic life (A). 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 CTH "J" upstream to a westerly tributary, Section 5; SE 1/4, NW 1/4; T5N; R4W. 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 Little Grant River, which is the receiving water for the Mount Hope 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 in-place pollutants,
- (b) Low natural stream flow,
- (c) Natural background conditions, and
- (d) Irretrievable cultural alterations.

## GENERAL DESCRIPTION

The Little Grant River is a seepage and spring fed stream originating on the east side of Mount Hope. The stream flows to the southwest before switching and then flowing in a southeasterly direction. Due to the unglaciated area numerous tributaries enter it along its entire length.

The reach included in this evaluation is a 2.1 mile stretch which extends from 50 ft. above the outfall downstream to CTH "J". Land use in the study area is primarily intense agriculture. The stream corridor is generally either pastured or in agricultural crops with some sections heavily pastured. Several barnyards drain to the stream and at times have contributed large amounts of sediment and nutrients to the stream.

The stream in the vicinity of the outfall has low perennial flow with a USGS computed  $Q_{72}$  of 0.01 cfs and a  $Q_{710}$  of  $<0.01$  cfs. On most occasions stream flow is very low above the outfall during the summer months.

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

Table 1: Low-Flow Characteristics, Little Grant River

<u>Drainage Area</u> <u>(mi<sup>2</sup>)</u>	<u>Date</u>	<u>Discharge</u> <u>(ft<sup>3</sup>/s)</u>
0.56	June 21, 1972	0.09
	Sept. 1, 1972	0.13
	Aug. 3, 1973	0.39
	Oct. 17, 1975	0.18
	July 27, 1976	0.10
	Oct. 26, 1976	0.03

#### STREAM HABITAT

The intermediate section of the Little Grant River is best characterized as having low flow and a lack of deep pools, mostly flat water and poor habitat. Bank erosion is a problem along some sections due to heavy pasturing and the proximity of barnyards to the stream channel. The substrate is one of rubble-gravel with heavy deposits of silt-sediment in some areas. The fish and aquatic life section has as many NPS problems but increased flow and deeper pools add additional habitat. The "stream system habitat rating forms" are contained in Appendix I.

#### WATER QUALITY AND BIOLOGY

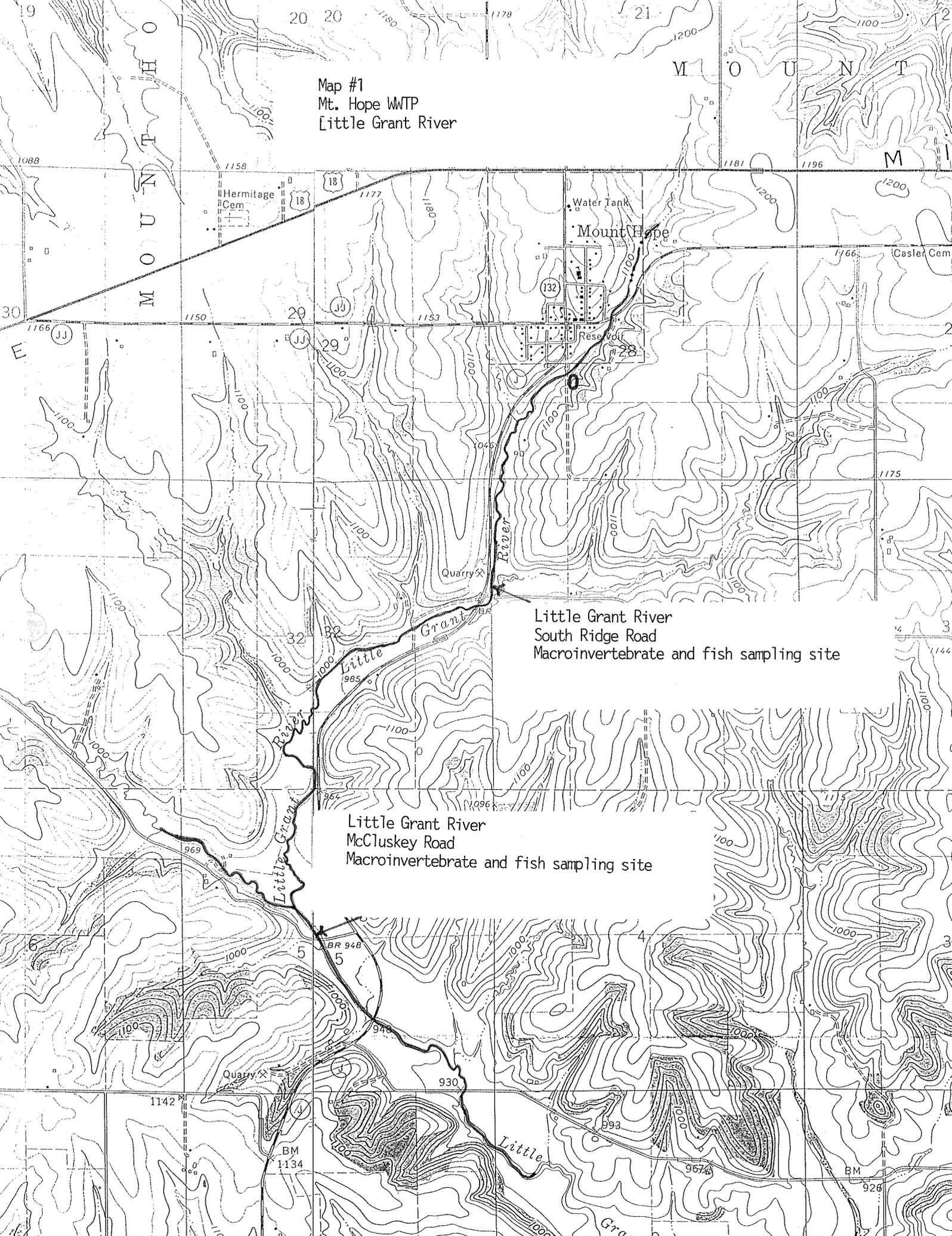
In this area of the Little Grant River NPS problems generally overshadow any impacts from the WWTP. Daily flow is only 0.006 MGD and the plant generally produces a good quality effluent.

Two sections of the Little Grant River were surveyed with a backpack fish shocker (Map #1). The first site was located a short distance above South Ridge Road (Table II) and was surveyed in April 1990. The sample was dominated by creek chubs, common shiners, and fathead minnows which are considered tolerant to very tolerant forage, although some southern redbelly dace and blacknose dace were also present. The southern redbelly dace were in spawning colors and had probably moved into the area looking for spawning sites.

The second site sampled was located upstream of McCluskey Road. The sample was dominated by creek chubs, white suckers, bluntnose and fathead minnows (Table IV), but 45% of the sample contained the intolerant species of blacknose dace and southern redbelly dace. Habitat was much better at this site with deeper pools and riffle-runs. Consequently numbers of fish were much higher.

The same two sites sampled for fish were also sampled for macroinvertebrates. At South Ridge Road the HBI was 4.984 which was considered "good water quality" (Table III). This probably indicates better water quality than what is expected. A large percentage of the sample was Gammarus pseudolimnaeus (45%) which seem to have the ability to live in small organically enriched streams with groundwater flow. Optioservus sp. (11%) was the second most common intolerant specie present. The most common tolerant species were Simulium vittatum and S. aurium (23%). The remainder of the species were scattered throughout several other orders.

Map #1  
Mt. Hope WTP  
Little Grant River



Little Grant River  
South Ridge Road  
Macroinvertebrate and fish sampling site

Little Grant River  
McCluskey Road  
Macroinvertebrate and fish sampling site

MOUNTAIN

MOUNTAIN

E

E

1142

BM 1134

BM 928

BR 948

930

993

967%

1088

1166

1000

969

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At McCluskey Road the HBI was 5.362 which also was considered "good water quality". Trichoptera (43%) dominated the sample which is expected from a stream of this size and quality (Table V). Optioservus sp. (21%) were common along with Simulium vittatum (11%). Two species of mayfly were present along with several species of chironomids. Both the fishery and macroinvertebrates at this site are typical for this size stream in this part of the state. Reductions in NPS runoff will only further improve the biological community.

#### WWTP

Appendix II contains the 1989 DMR monthly averages for flow, BOD, TSS, and NH<sub>3</sub>-N. According to this data the WWTP has been doing a good job. Most months they are well within their WPDES permit limits.

#### CLASSIFICATION

Based on this review of available physical and biological data, the Little Grant River from the Mt. Hope outfall downstream to a westerly tributary, should be classified as intermediate fish and aquatic life (D). From this tributary, Section 5; SE 1/4, NW 1/4; T5N; R4W; downstream to CTH "J" the classification should be upgraded to fish and aquatic life (C). This is based on the quality and the quantity of the fish and macroinvertebrate community present. Below CTH "J" the classification should remain fish and aquatic life (A).

TABLE: II List of fish for sampling site: South Ridge Road

DATE: 4/30/90

Twn 6N Rng 4W Sec 33 1/4 1/4 SW NW

STREAM: Little Grant River

Station mileage: 13.1

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	1	Intolerant
M28	COMMON SHINER	CYPRINIDAE	Notropis cornutus	4	Tolerant
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	11	Intolerant
M46	FATHEAD MINNOW	CYPRINIDAE	Pimephales promelas	4	Very Tolerant
M48	BLACKNOSE DACE	CYPRINIDAE	Rhinichthys atratulus	4	Intolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	21	Tolerant

SOUTHERN District Biotic Index Report TABLE III

HBI \_ 4.984 Rep1 \_ 0.000 Rep2 \_ 0.000 Rep3 \_\_\_\_\_

Sample ID # \_891024-22-01 Waterbody Name \_LITTLE GRANT R.

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

Sample Location: SW NW S33 T 6N R 4W\_ Master Waterbody # \_

Project Name \_TRIENNIAL STANDARDS REVIEW Storet Station # \_

Ave. Stream Width (Ft.) at Site \_2.5 Ave. Stream Depth (Ft.) at Site \_0.1

Collector \_SCHLESSER, R. Field # 01 Rep 1\_

Measured Velocity (fps) \_

Est. Velocity (fps)

Sorter \_BUCKLEY, K.

Est % of sample sorted \_28

\_Moderate (0.5-1.5)

Taxonomist \_DIMICK, J.

Sampled Habitat

Location Description \_UPS. SOUTH RIDGE ROAD

\_1. Riffle

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

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	55.0 Gravel	30.0 Silt	0.0 Detritus	15.0 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 0 % of Total Stream Channel at Sampling Site

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

	Not Present	Insig- nificant	Sig- nificant	Comments
Turbidity	1			
Corrosive or Toxic Scour	1			
Macrophytes	1			
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	1		

Pollutant Sources

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

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

SAMPLE ID# 891024-22-01

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	*** TAXA ***	*** SPECIES ***	TAXONOMIC TOL		ORGANISM ID	ORGANISM COUNT		
			KEY USED	VAL		REP1	REP2	REP3
EPHEMEROPTERA								
BAETIDAE								
	BAETIS	BRUNNEICOLOR	*1	4.00	02010101	2	0	0
HEPTAGENIIDAE								
	STENACRON	INTERPUNCTATUM	*2	7.00	02060501	2	0	0
ODONATA								
COENAGRIONIDAE								
	ARGIA	VIOLACEA	*1		03030207	3	0	0
		**POOR SPECIMEN**	*2		03030208	3	0	0
TRICHOPTERA								
HYDROPSYCHIDAE								
	CHEUMATOPSYCHE		*2	5.00	04040100	1	0	0
	HYDROPSYCHE	BETTENI	*3	6.00	04040201	5	0	0
	CERATOPSYCHE	SLOSSONAE	*3	4.00	04040706	4	0	0
	**POOR SPECIMEN**		*2		04041000	1	0	0
COLEOPTERA								
ELMIDAE								
	OPTIOSERVUS		*2	4.00	07020500	14	0	0
DIPTERA								
CHIRONOMIDAE								
	BRILLIA		*4	5.00	08050300	1	0	0
	CHAETOCLADIUS	SP.A	*4	5.00	08050503	2	0	0
	CRICOTOPUS	SP.C	*4	7.00	08051306	1	0	0
	ORTHOCLADIUS	SP.D	*4	5.00	08054004	2	0	0
	RHEOPELOPIA		*4		08058700	2	0	0
EMPIDIDAE								
	HEMERODROMIA		*5	6.00	08070200	1	0	0
SIMULIIDAE								
	SIMULIUM	AURIUM	*6	7.00	08110201	5	0	0
		VITTATUM	*6	7.00	08110217	23	0	0
TIPULIDAE								
	FILARIA		*2	7.00	08141000	3	0	0
	TIPULA		*2	4.00	08141200	1	0	0
STRATIOMYIDAE								
	EUPARYPHUS/CALOPARYP		*2		08170305	2	0	0
AMPHIPODA								
GAMMARIDAE								
	GAMMARUS	PSEUDOLIMNAEUS	*7	4.00	09010201	55	0	0
TURBELLARIA								
			*8		13000000	1	0	0
GASTROPODA								
	PHYSIDAE		*8		14040000	3	0	0
OLIGOCHAETA								
NAIDIDAE								
			*9		16020000	3	0	0
TUBIFICIDAE								
			*9		16030000	2	0	0
HIRUDINEA								
	ERPOBDELLIDAE		*9		17010000	1	0	0

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SAMPLE ID# 891024-22-01

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***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM
		SPECIES	KEY	VAL	ID	COUNT
			USED			REP1 REP2 REP3

*** TOTALS: ***						143	0	0
*** BIOTIC INDEX: ***						4.984		

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 Pennak 1978
- \*9 Klemm 1985

TABLE: IV List of fish for sampling site: McCluskey Rd.

DATE: 4/30/90 TwN 5N Rng 4W Sec 5 1/4 1/4 SE NW STREAM: Little Grant River

Station mileage: 12.3 County: 22

SOURCE OF DATA: WRM GEAR: 3 EFFORT: 015

CODE	COMMON NAME	FAMILY	GENUS/SPECIES	# FISH	TOLERANCE LEVEL
M43	SOUTHERN REDBELLY DACE	CYPRINIDAE	Phoxinus erythrogaster	33	Intolerant
M45	BLUNTNOSE MINNOW	CYPRINIDAE	Pimephales notatus	8	Tolerant
M46	FATHEAD MINNOW	CYPRINIDAE	Pimephales promelas	6	Very Tolerant
M48	BLACKNOSE DACE	CYPRINIDAE	Rhinichthys atratulus	4	Intolerant
M50	CREEK CHUB	CYPRINIDAE	Semotilus atromaculatus	24	Tolerant
N09	WHITE SUCKER	CATOSTOMIDAE	Catostomus commersoni	8	Tolerant

SOUTHERN District Biotic Index Report

TABLE V

HBI \_ 5.362 Rep1 \_ 0.000 Rep2 \_ 0.000 Rep3 \_\_\_\_\_  
 Sample ID # \_B91024-22-02 Waterbody Name \_LITTLE GRANT R.  
 Water Temp (Celsius) \_ \_\_\_\_\_ Dissolved Oxygen (mg/l) \_ \_  
 Sample Location: SE NW S 5 T 5N R 4W\_ Master Waterbody # \_  
 Project Name \_TRIENNIAL STANDARDS REVIEW Storet Station # \_  
 A . Stream Width (Ft.) at Site \_3.5 Ave. Stream Depth (Ft.) at Site \_0.2  
 Collector \_SCHLESSER, R. Field # 02 Rep 1\_  
 Measured Velocity (fps) \_  
 Sorter \_BUCKLEY, K. Est. Velocity (fps) \_  
 Est % of sample sorted \_7 \_Moderate (0.5-1.5)  
 Taxonomist \_DIMICK, J. Sampled Habitat  
 Location Description \_UP. McCLUSKEY RD. \_1. Riffle

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

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	45.0 Gravel	35.0 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 0 % 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			
Macrophytes	1			
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		2	
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		2	
Construction Runoff	1		
Point Source(Specify Type)		2	MOUNT HOPE WWTP
Other (Specify)			

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	*** TAXA ***	*** SPECIES ***	TAXONOMIC TOL		ORGANISM ID	ORGANISM COUNT		
			KEY USED	VAL		REP1	REP2	REP3
EPHEMEROPTERA								
BAETIDAE								
	BAETIS	INTERCALARIS	*1	6.00	02010103	1	0	0
		FLAVISTRIGA	*1	4.00	02010104	5	0	0
HEPTAGENIIDAE								
	STENACRON	INTERPUNCTATUM	*2	7.00	02060501	1	0	0
TRICHOPTERA								
HYDROPSYCHIDAE								
	CHEUMATOPSYCHE		*2	5.00	04040100	13	0	0
	HYDROPSYCHE	BETTENI	*3	6.00	04040201	46	0	0
	CERATOPSYCHE	ALHEDRA	*3	3.00	04040701	1	0	0
		BRONTA	*3	5.00	04040703	4	0	0
		SLOSSONAE	*3	4.00	04040706	2	0	0
	**POOR SPECIMEN**		*2		04041000	2	0	0
PHILOPOTAMIDAE								
	CHIMARRA	ATERRIMA	*1	4.00	04110101	3	0	0
COLEOPTERA								
DRYOPIDAE								
	HELICHUS	LITHOPHILUS	*4	5.00	07010101	2	0	0
ELMIDAE								
	OPTIOSERVUS		*2	4.00	07020500	29	0	0
		FASTIDITUS	*1	4.00	07020501	3	0	0
	STENELMIS		*2	5.00	07020600	9	0	0
		CRENATA	*5	5.00	07020601	3	0	0
DIPTERA								
CERATOPOGONIDAE								
	BEZZIA/PALPOMYIA		*2	6.00	08030215	1	0	0
CHIRONOMIDAE								
		**PUPAE**	*6		08050002	2	0	0
	CRICOTOPUS	NR.BICINCTUS	*5	6.00	08051301	2	0	0
		NR.INTERSECTUS	*5	7.00	08051302	4	0	0
	LIMNOPHYES		*5	8.00	08053100	1	0	0
	ORTHOCLADIUS	SP.D	*5	5.00	08054004	1	0	0
	TVETENIA	SP.B	*5	5.00	08058002	1	0	0
	CONCHAPELOPIA		*5	6.00	08058200	2	0	0
EMPIDIDAE								
	HEMERODROMIA		*6	6.00	08070200	2	0	0
SIMULIIDAE								
	SIMULIUM	VITTATUM	*7	7.00	08110217	16	0	0

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

SAMPLE ID# 891024-22-02

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***	TAXA	***	TAXONOMIC	TOL	ORGANISM	ORGANISM
		SPECIES	KEY	VAL	ID	COUNT
			USED			REP1 REP2 REP3

*** TOTALS: ***						156	0	0
*** BIOTIC INDEX: ***						5.362		

Taxonomic Key Code References

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



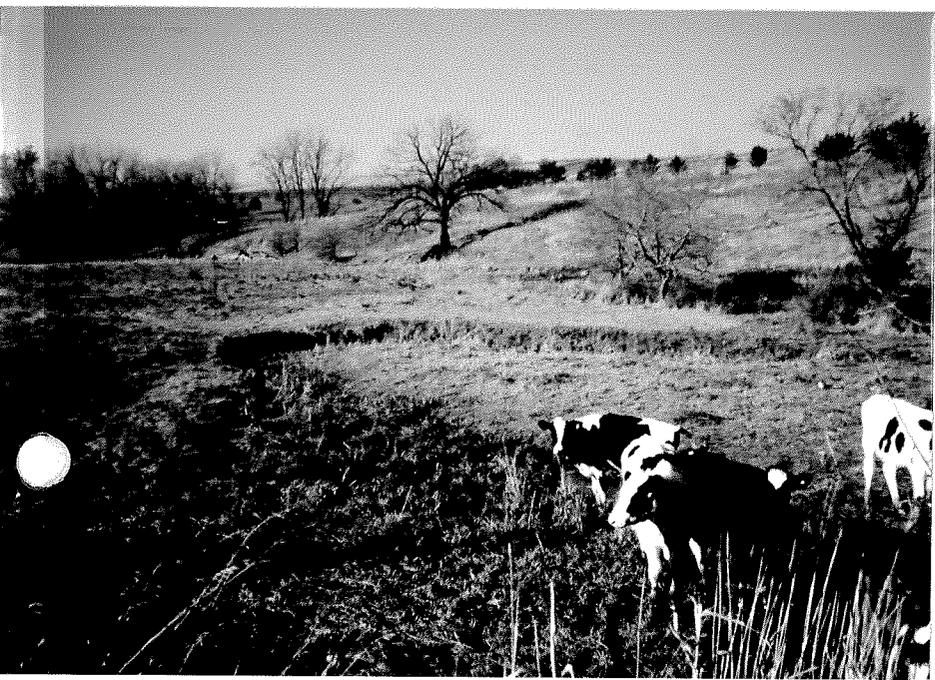
Little Grant River

Upstream of outfall.



Little Grant River

Mt. Hope WWTP outfall.



Little Grant River

Downstream of outfall.



Little Grant River

Upstream of South Ridge  
Road.



Little Grant River

Upstream of South Ridge  
Road - fish and  
macroinvertebrate  
sampling site.



Little Grant River

Upstream of McCluskey  
Road.



Little Grant River

Upstream of McCluskey

Road - fish and

macroinvertebrate

sampling site.



Little Grant River

Downstream of McCluskey

Road.

APPENDIX I

Stream Little Grant Reach Location South Ridge Road Reach Score/Rating 190/Fair  
 County Grant Date 10/24/89 Evaluator R. Schlessler 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. 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. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 11	<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. 12	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. 12	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. 12	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. 12	>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 7 111 72

Column Scores E 0 +G 7 +F 111 +P 72 = 190 = Score

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

Stream Little Grant Reach Location McCluskey Road Reach Score/Rating 158/Fair  
 County Grant Date 10/24/89 Evaluator R. Schlessner 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. (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. 9	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. (10)	<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. (12)	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. (10)	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' 15 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 15 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 15 143 0

Column Scores E 0 +G 15 +F 143 +P 0 = 158 = Score

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