

# USE CLASSIFICATION OF UNNAMED GRANT RIVER TRIBUTARY, T. 5 N. - R. 3 W., Sections 34, 33, 32, Grant County, Wisconsin

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Prepared by

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A small groundwater fed stream arises in Section 34 of North Lancaster Township and flows west to the confluence with the Grant River in Section 32. Prior to the classification survey, the only stream information available were a few statistics listed in the "Surface Water Resources of Grant County" report (WDNR, 1972). Average stream width, depth and gradient were 1.5', 0.4' and 57'/mile respectively. The stream was listed as a forage fishery and a single flow was measured at 0.2 cfs in July, 1970.

Two classification surveys were performed in May, 1995, which included collecting chemical, physical and biological data. On May 3rd, we sampled the stream in Section 33 (Site B). Flow was measured at 0.5 cfs and the stream supported a diverse fish and aquatic life community. Macroinvertebrates indicated "good" water quality based on a Family Biotic Index (FBI) value of 4.85. The FBI is a rapid bioassessment technique based on varying tolerances of aquatic insects and crustaceans to organic pollution. The FBI scale ranges from 0 to 10 with 0 indicating best water quality and 10 indicating worst. Seven fish species were also collected along a 250' reach.

On May 12, we sampled the stream near a city park in Section 34 (Site A). Stream flow at that location was measured at 0.4 cfs. The Lancaster, Wisconsin Geological Survey map (1962) indicates the stream is intermittent at that location, however the presence of a diverse macroinvertebrate community and numerous springs, bearing water cress, reflect permanent aquatic resources. The macroinvertebrates indicated "very good" water quality with a FBI value of 4.12.

Intolerant macroinvertebrates or good water quality indicators are not characteristic of ephemeral streams. The inconsistencies may be explained since a long-time park user observed that the stream partially disappears into the ground during drought years, but some segments persist near the springs. This explanation is plausible since a diverse aquatic community exists in spite of the intermittent stretch identified by USGS. Furthermore, the map may no longer be accurate since recent information

*no discharges*

supplied by USGS indicate that stream baseflows have increased throughout southwestern Wisconsin over the last ~20 years.

Habitat is a limiting factor for fish in the riffle zones near the park since stream flow becomes braided around rubble and boulders. Based on a 450' stream shocking survey, fish were limited to runs and small pools found within the reach. Two additional species were found at this location, bringing the total to nine fish species in the stream.

Near site B, flow was measured at 1.65 cfs on May 12th indicating increased stream flow compared to the May 3rd survey. Between the park and Site B, we observed numerous springs and tributaries discharging to the stream.

Sampling equipment used during the classification survey included a YSI Model 57 oxygen/temperature meter, Swiffer Model 2100 digital flow meter, AccuNav Sport GPS unit, D-frame macroinvertebrate net and battery powered pulse DC backpack stream shocker.

Water samples were also collected at Site B on May 3rd and were analyzed at the State Laboratory of Hygiene Environmental Sciences Unit. Chemical results: Chlorides = 38 mg/l, pH = 8.3, Alkalinity = 249 mg/l, Conductivity = 637 umhos, NH<sub>3</sub> = 0.027 mg/l, Tot. P = 0.03 mg/l, Sus. Sol. = 9 mg/l, Hardness = \_\_\_\_\_.

## Classification

The stream is clearly intermittent in the headwaters reach downstream to the city park in Section 34. The classification in the headwaters reach is **Limited Aquatic Life (LAL)**. Based on high use potential of the park, coupled with an intolerant and diverse macroinvertebrate community, the classification changes to **Warm Water Forage Fish (WWFF)** beginning at the east end of the city park and continuing downstream to the confluence with the Grant River.

## References

Ball, Joe. 1982. Stream Classification Guidelines for Wisconsin. WDNR Technical Bulletin.

Becker, George C. 1983. Fishes of Wisconsin. The Univ. Wisc. Press.

Hilsenhoff, William L. 1988. Rapid Field Assessment of Organic Pollution with a Family-level Biotic Index. J. N. Am. Benthol. Soc. 7 (1):65-68

Smith, Tom D. and Joe Ball. 1972. Surface Water Resources of Grant County. WDNR Lake and Stream Classification Project.

# MACROINVERTEBRATE DATA

Trib. to Grant River    May, 1995    Grant County

Site A - below park, 42°51.434 90°43.522

Site B - SW 1/4 SW 1/4 Sec. 33, 42°51.439 90°43.622

family name	common name	w. q. value	Site A #	Site B #
Nemouridae	stonefly	2	2	0
Baetidae	mayfly	4	0	3
Ephemerellid.	mayfly	1	16	0
Hydropsychid.	caddisfly	4	3	13
Elmidae	rifle beetle	4	0	11
Chironomidae	midges	6	36	34
Simulidae	black fly	6	2	8
Tipulidae	crane fly	3	1	0
Gammaridae	shrimp	4	50	32

Site A Family Biotic Index (FBI) = 4.18

Site B Family Biotic Index = 4.85

3.76 - 4.25 = VERY GOOD WATER QUALITY

4.26 - 5.00 = GOOD WATER QUALITY (Hilsenhoff, 1988)

## Trib. to Grant River Fisheries Survey

Site B May 3, 1995 SW  $\frac{1}{16}$  SW  $\frac{1}{4}$  Sec. 33, 42°51.439' 90°43.615'  
 Length = 252' Temp. = 14.9 °C D.O. = 13.3 mg/l Field Cond. = 630  
 umhos Gear: battery powered pulse DC backpack shocker Comments:  
 crayfish abundant

SPECIES	NUMBER
CREEK CHUB <i>Semotilus atromaculatus</i>	18
S. REDBELLY DACE <i>Phoxinus erythrogaster</i>	2
COMMON SHINER <i>Notropis cornutus</i>	2
WHITE SUCKER <i>Catostomus commersoni</i>	1
JOHNNY DARTER <i>Etheostoma nigrum</i>	26
BANDED DARTER <i>Etheostoma zonale</i>	6
BROOK STICKLEBACK <i>Culaea inconstans</i>	8

Site A May 12, 1995 42°51.434' 90°43.522' Length = 450' Temp =  
 13.6°C D.O. = 11.2 mg/l Gear: battery powered pulse DC backpack  
 shocker Comments: Gammarus abundant

SPECIES	NUMBER
CREEK CHUB <i>Semotilus atromaculatus</i>	9
CEN. STONEROLLER <i>Campostoma anomalum</i>	1
FANTAIL DARTER <i>Etheostoma flabellare</i>	3
BROOK STICKLEBACK <i>Culaea inconstans</i>	8

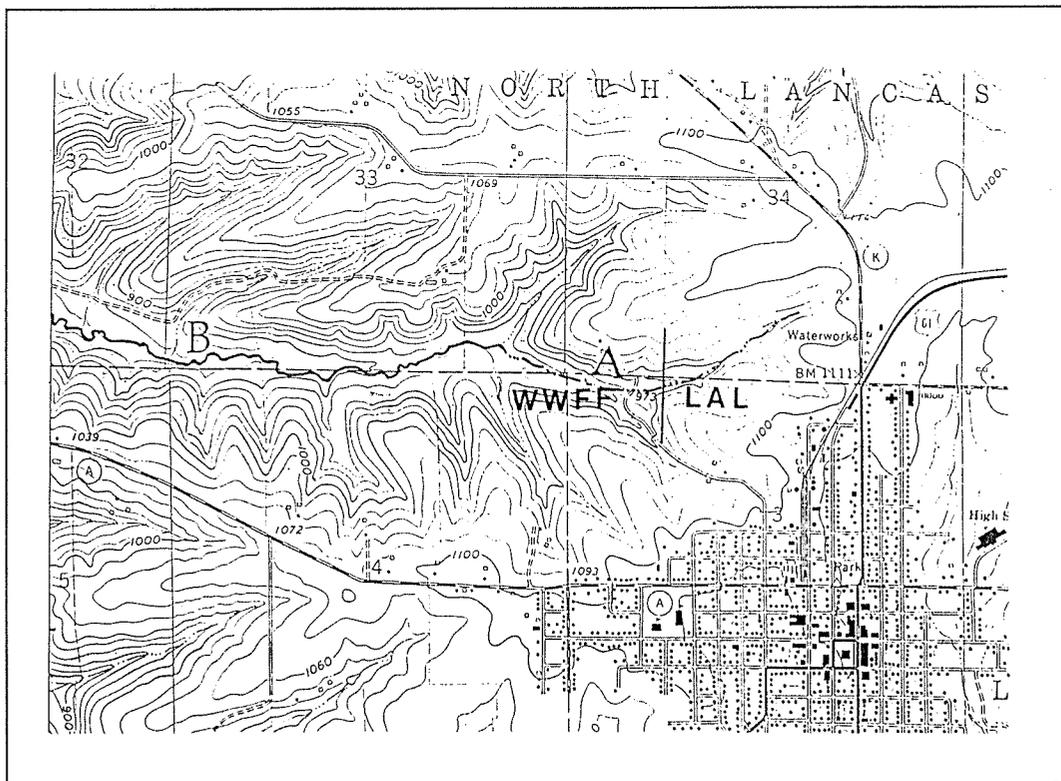
In general, numbers of darters represented in the samples are low. When shocked, darters usually roll along the bottom making collection difficult.

# STREAM FLOW DATA

STREAM Trib. to Grant River DATE May 3, 1995 COUNTY Grant

BASIN 200 SITE B, SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub> Sec. 33, 42°51.439' 90°43.615'  
 GEAR Swoffer Model 2100

Dist. to bank ft.	Depth ft.	Velocity fps	Discharge cfs
0.5	0.3	0.38	0.06
1.0	0.5	0.47	0.12
1.5	0.6	0.69	0.21
2.0	0.45	0.48	0.11
2.5	0.25	0.23	0.03
total			0.53

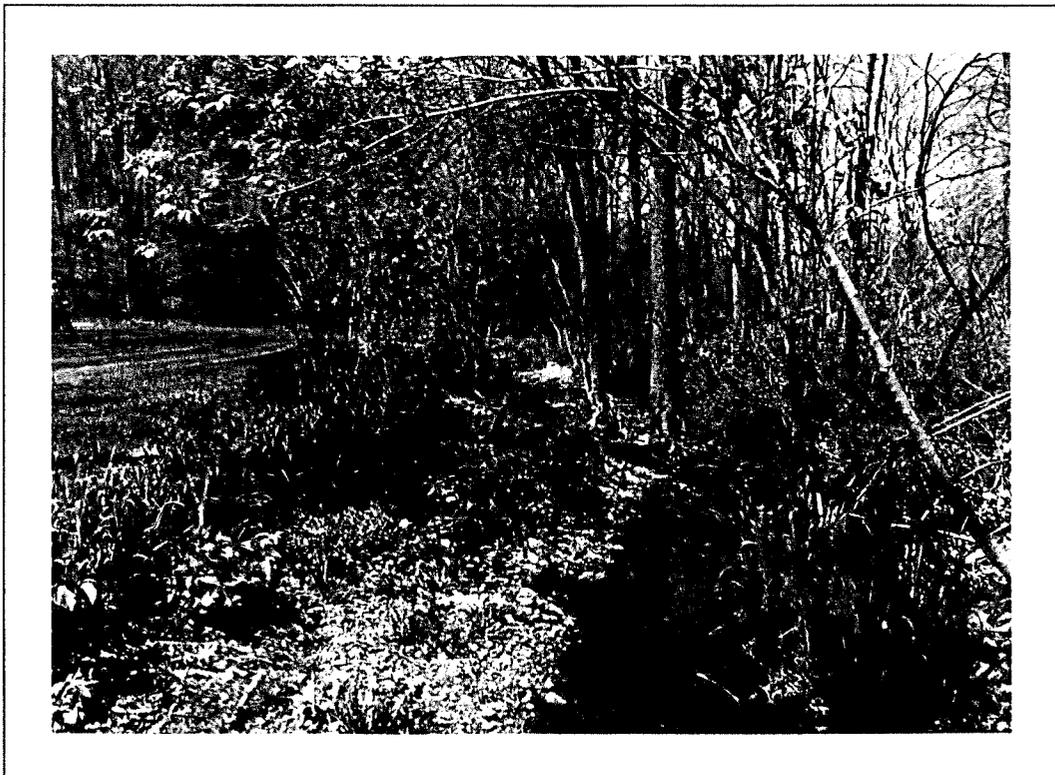


# STREAM FLOW DATA

STREAM Trib. to Grant River DATE May 12, 1995 COUNTY Grant

BASIN 200 SITE A, ~250' below park 42°51.434' 90°51.522'  
GEAR Swoffer Model 2100

Dist. to bank ft.	Depth ft.	Velocity fps	Discharge cfs
0.5	0.12	0	0
1.0	0.12	0	0
1.5	0.12	0	0
2.0	0.25	0	0
2.5	0.30	0.35	0.05
3.0	0.35	0.99	0.17
3.5	0.38	0.97	0.18
4.0	0.15	0.29	0.02
4.5	0.15	0	0
Total			0.42



# STREAM FLOW DATA

STREAM Trib. to Grant River DATE May 12, 1995 COUNTY Grant

BASIN 200 SITE B, SW<sup>1</sup>/<sub>4</sub>, SW<sup>1</sup>/<sub>4</sub>, Sec. 33, 42°51.439' 90°43.615'  
GEAR Swoffer Model 2100

Dist. to bank ft.	Depth ft.	Velocity fps	Discharge cfs
0.5	0.6	0.74	0.22
1.0	0.62	0.67	0.21
1.5	0.74	0.85	0.32
2.0	0.70	0.71	0.25
2.5	0.65	0.91	0.29
3.0	0.51	0.88	0.22
3.5	0.42	0.65	0.14
total			1.65

