

General InformationSurvey on -2003

Stream Name: Watab River

Alternate Name: North and South Fork Watab Creek

Tributary Number: M-73-0

Counties: Stearns

Nearest Town: Sartell

Source of flow: Flueger and Big Watab lake watersheds and associated wetlands

Waterway sequence: Wetland/Flueger Lake /North Fork Watab Creek /Watab River/Mississippi River
Wetland/Big Watab Lake/South Fork Watab Creek/Watab River/ Mississippi River

Stream Length: 21.1 miles, from headwater to confluence with Mississippi River

Gradient: 8.6 feet per mile overall and 41 feet per mile near mouth

Sinuosity: 1.2 in Rosgen Station

Classification: Class III (Warmwater)

Watershed Description

Watershed Name and Number

Major: Mississippi River M(1)

Minor: Watab River 15010

Watershed Area: 61,764 acres

Watershed Land Use: Agriculture 34%, forest 25%, Grassland/pasture 24%, Residential 5% (Residential values may have increased since 1991) (Figure1).

Riparian Zone: The surrounding land is primarily residential development in the lower portions of the watershed, while the upper portions of the watershed are either agricultural or forested. The stream is bordered by wetland or reed canary grass in upper reaches, with some willows, cottonwood and alders along the banks downstream. Some of the stream reaches have been channelized. Significant increases in housing developments in the Sartell area have likely made impervious surfaces an issue since 1991, when the last coverage of land use was available. Areas that once were agricultural, are now complete residential developments, although the change may only represent a little over one percent of land area, the impact downstream of this on the stream hydrology and morphology may be much larger.

Summary and Recommendations

The Watab River watershed is large, covering approximately 61,000 acres in Stearns County of primarily agricultural land with scattered areas of forested and residential land uses (Figure 1). In the upstream portion of the watershed the land is characterized by rolling hills which give way to wide alluvial valleys near the mouth. The majority of the riparian corridor remains intact, with the exception of the area within the City of Sartell. Residential land uses and developments have impacted this portion of the stream.

The Watab River was electrofished during June 2003 (Figure 2). Electrofishing revealed 39 species of fish. The greatest species richness occurred in two stations (18 species) in both the north and south forks of Watab Creek (Tables 1 and 2). The main stem of the Watab River near the mouth (EF 1) had a variety of species also associated with the Mississippi River including: channel catfish, walleye, smallmouth bass, silver redhorse and burbot.

Station EF1 (Figure 3) had the second highest species richness with 17 species captured. This station was characterized by increased elevation change with many riffles, coarse substrates, and a narrow flood-prone area. This was also the area where a Rosgen cross section was measured.

Station EF2 (Figure 4), was located just upstream of EF1 on the main stem of the Watab River. The flood prone area was very wide and sinuosity in the stream channel was high. The substrate composition was mostly sand with some areas of gravel. Many deadfalls were found in this reach, which contributed to the pool depth. Fifteen species of fish were captured including largemouth and smallmouth bass. This station was also downstream of Watab-Rossier Lake which likely had an influence on fish species composition.

Both North and South Forks of Watab Creek were sampled during June after higher flows had subsided. Station NFEF2 (Figure 5) was located just upstream of Old Collegeville Road near St. Johns University. This station had a heavy canopy of trees and considerable deadfalls. This station was downstream of a large tract of land where cattle were pastured and entered the stream channel. Only eight species of fish were captured at this site in 697 seconds of on-time.

Station NFEF1 (Figure 6) was just upstream of Stearns County Road 3 near St. Joseph. A wooden style culvert constricted the channel to less than 8 feet. The upstream portion of this station had evidence of flooding from the smaller channel size and the area appeared to have been ditched. The area had moderate sinuosity with pools and runs dominating the reach. Substrates were comprised primarily of silt and clay with areas of sand and gravel. Eighteen species of fish were captured in the station, with several lake species such as black crappie, walleye, and northern pike. The relative proximity to Watab-Rossier and Stump lake may have had some influence on the species composition at this site.

Station SFEF1 (Figure 7) was located on the South Fork Watab Creek just downstream of Stearns County Road 75 in Lions Park, St. Joseph. This station was downstream of the influence of a large pair of culverts under the county road. The morphology suggested that scouring had occurred recently. Electrofishing in this area captured 12 species. An area just upstream of the ending point was a scour hole downstream of the pair of large culverts under Stearns County Highway 75. While carp were not observed in the electrofishing several were observed in the large pool.

Station SFEF2 was located just downstream of Island Lake Road in an area with abundant wetlands and less rolling topography. The stream channel was well defined, and had moderate sinuosity. The water was stained brown which suggested tannins were common in the area upstream of the site. Electrofishing captured 13 species of fish. The northern redbelly dace captured here, is of interest because of its requirement for good water quality. This station had abundant vegetation and evidence of silt deposition.

Station SFEF3 (Figure 8) was located just downstream of Big Watab Lake. This station had 18 species of fish, some of which were lake related. This station was located in a section of horse pasture although,

the riparian plant community appeared mostly intact. The station did have considerable silt deposits likely due to several areas where the bank had been disturbed in the past.

Two tributaries to the Watab River were also electrofished. Stations TEF 1, 2, and 3. Stations TEF 1 and 2 were located within the City of Sartell on a ditched stream channel (Stearns County Ditch 13) that ran through a residential development. As expected, diversity in this area was low as primarily carp and sucker were sampled. A section (TEF2) (Figure 9) of channel had been re-meandered as part of a restoration effort. Habitat conditions appeared favorable, but flows were higher than normal from recent rains, which may have affected sampling efficiency. TEF3 was on an unnamed tributary that originated from Stearns County Ditch 12. This station had unique vegetation and relatively clear water, however, a ditched appearance was noticed. Ten species of fish were sampled, with blacknose dace, logperch, blackside and Johnny darters and common shiners most abundant.

A Rosgen cross section and longitudinal profile was completed on the lower portion of the Watab River at Watab Creek Park in Sartell (Table 3). This area of the stream has the highest gradient and the largest substrate components in the entire watershed. The stream type was classified as a C3. This stream type is sensitive to changes in bank vegetation, as the bank material is generally from fluvial deposits. This section of the stream was not representative of the entire river, however. The values found were indicators of discharge and overall condition of the channel. Impacts from development within the watershed would likely be observed at this site if repeated cross sections were performed over time.

The Watab River Watershed represents a large residentially developing area of central Minnesota. The sport fisheries value of this stream would be considered low with the exception of the lower five miles of the stream. The stream has been used by northern pike for spawning, channel catfish for nesting, and many other species for resting and feeding habitat. However, while not having considerable value to anglers, other species are indicators of overall stream and watershed health. Additionally, the presence or absence of certain species are also indicators of beneficial land management practices that would support a healthy diverse fish community.

If access were acquired a likely location would be the lower five miles. There are reports of anglers canoeing the lower stretch between Watab-Rossier Lake and the Mississippi River. Fishery data suggests the lower portion of the river has the most value to anglers.

Efforts will be made to work with municipal and township authorities to develop plans to protect the riparian corridors. With the lower portion of the Watab River Watershed in the Sartell community, efforts should also be made to educate residential developers on best management practices for home and development lots. The increases in impervious surface area since 1991 have likely changed the hydrograph of the Watab River. A stage and flow monitor would help answer questions about erratic flows and increased erosion potential.

Table 1. Species composition found within electrofishing stations in the Watab River watershed, MN, June 2003.

Species	Main Stem		North Fork		South Fork			Tributaries			Total
	EF1	EF2	NFEF1	NFEF2	SFEF1	SFEF2	SFEF3	TEF1	TEF2	TEF3	
Black chin shiner	1				1						2
Black bullhead				1	5	2	3	3	1		15
Black crappie				4							4
Bluegill sunfish	4							1			5
Black nose dace		4	61	2	3		15			2	87
Blunt nose minnow		1					2			11	14
Black nose shiner			3	1		4					8
Bowfin									1		1
Black side darter		3		1						4	8
Brook stickleback				1		1					2
Burbot	55	1									56
Carp									14		14
Channel catfish	2										2
Central mudminnow	1		1	9		10	82	5			108
Creek chub	1	1	24	1		8	57	2	2	5	101
Common shiner	2	8			4		5			16	35
Fathead minnow			8	8		119	12			13	160
Green sunfish	2	1			2	3	19				27
Horny head chub	3	6					3			1	13
Hybrid sunfish		1	1	2	1	52	4				61
Iowa darter				1	14	5	2			1	23
Johnny darter		13		2	8			1		10	34
Log perch	51			7	15						73
Largemouth bass		2									2
Long nose dace	75										75
Mimic shiner			8	2							10
Northern pike	1	3		1	6	2					13
Northern redbelly dace						28	47				75
Pumpkinseed sunfish						2					2
Pugnose minnow							11				11
Rock bass	1						1				2
Spotfin shiner		16									16
Silver redhorse	1							5	1		7
Smallmouth bass	9	2									11
Tadpole madtom							1				1
Walleye	7			1							8
White sucker	2	2	3	1	11		1	2	1	3	26
Yellow bullhead						1	4				5
Yellow perch				1	12		1				14

Table 2. Electrofishing station information from sampling in the Watab River watershed, MN, June 2003.

Site	EF1 ²	EF2 ²	TEF1 ¹	TEF2 ¹	TEF3 ¹
Location	Watab Creek Park	Upstream of Pine Cone Road	6th street crossing in development	Above 380' culvert in re-meandered area	Upstream of CR 4
Date	6/17/2003	6/17/2003	6/11/2003	6/11/2003	6/18/2003
Effort (on-time)	5400	2700	723	2373	905
Station length (ft)	432.25	780	74.75	728	477.75
Substrate	Cobble	Sand	Silt	Silt	Sand/Gravel
Vegetation	FA/Sedges Cottonwood	RC/Willow FA, Sedges	RC/Equisetum Some trees	RC, Arrowhead Bulrush, cattail, Equisetum, Willow Sedges	RC, Arrowhead Bulrush, cattail, Equisetum, Willow Sedges, Parsnip, Woolgrass, River PW Giant Burreed

Site	NFEF1 ¹	NFEF2 ¹	SFEF1 ¹	SFEF2	SFEF3
Location	Upstream CR 3	NW of old Collegeville Road	Lions Park St. Joseph	Downstream Island Lake Road	Downstream Big Watab Lake
Date	6/18/2003	6/18/2003	6/11/2003	6/17/2003	6/17/2003
Effort (on-time)	697	775	1364	567	884
Station length (ft)	360.75	260	429	383.5	705.25
Substrate	Sand/Silt	Sand/Clay	Sand/gravel	Silt/Sand	Sand/Silt
Vegetation	RC, Nettle Jewelweed River PW River PW Sedges Boxelder	RC/Nettle River PW, Bedstraw	Elodea, Sago PW RC/Willow FA	VAL/Duckweed River PW, Bulrush Sago PW, Willow Alder, Tussock Sedge Equisetum, FA Giant burreed Jewelweed	WW butter cup Willow, RC Bulrush, Cattail Arrowhead Equisetum

Gear: ¹Smith-Root Model 15-D (backpack), ²Custom electrofishing barge with two anodes.
 Crew: Eric Altena, Mark, Pelham, David Anderson, Paul Diedrich

Table 3. Rosgen Station values near the mouth of the Watab River, MN, June 2003.

Stream:	Watab River
Watershed:	61,764 Acres
Location:	Watab Creek Park
Easting	405850
Northing	5052351
County:	Stearns
Date:	06/10/03
Observers:	Altena, Anderson, Pelham
Channel Type:	C3
Drainage Area (sq mi):	96
x-area bankfull	55.3
width bankfull	33.3
mean depth	1.7
Width/Depth Ratio	20.1
Entrenchment Ratio	2.8
Riffle Max Depth Ratio	1.4
discharge rate, Q (cfs)	126.5
velocity (ft/sec)	2.28
shear stress @ max depth (lbs/ft sq)	1.11
shear stress (lbs/ft sq)	0.77
shear velocity (ft/sec)	0.63
unit stream power (lbs/ft/sec)	1.83
relative roughness	1.37
friction factor u/u*	3.61
threshold grain size @ max depth (mm)	89.4
threshold grain size (mm)	49.8
Sinuosity	1.2

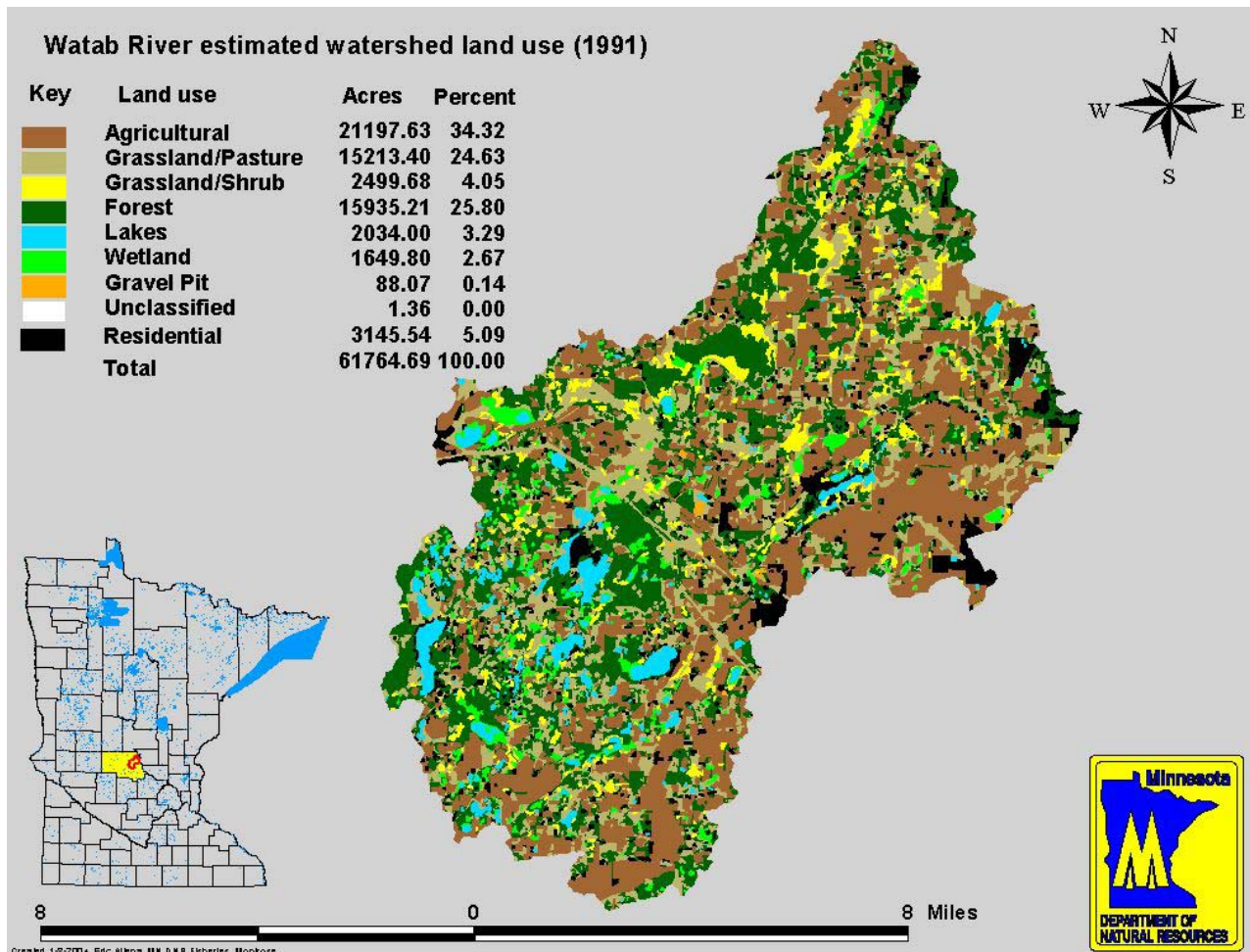


Figure 1. Estimated 1991 land use for the Watab River, MN watershed.

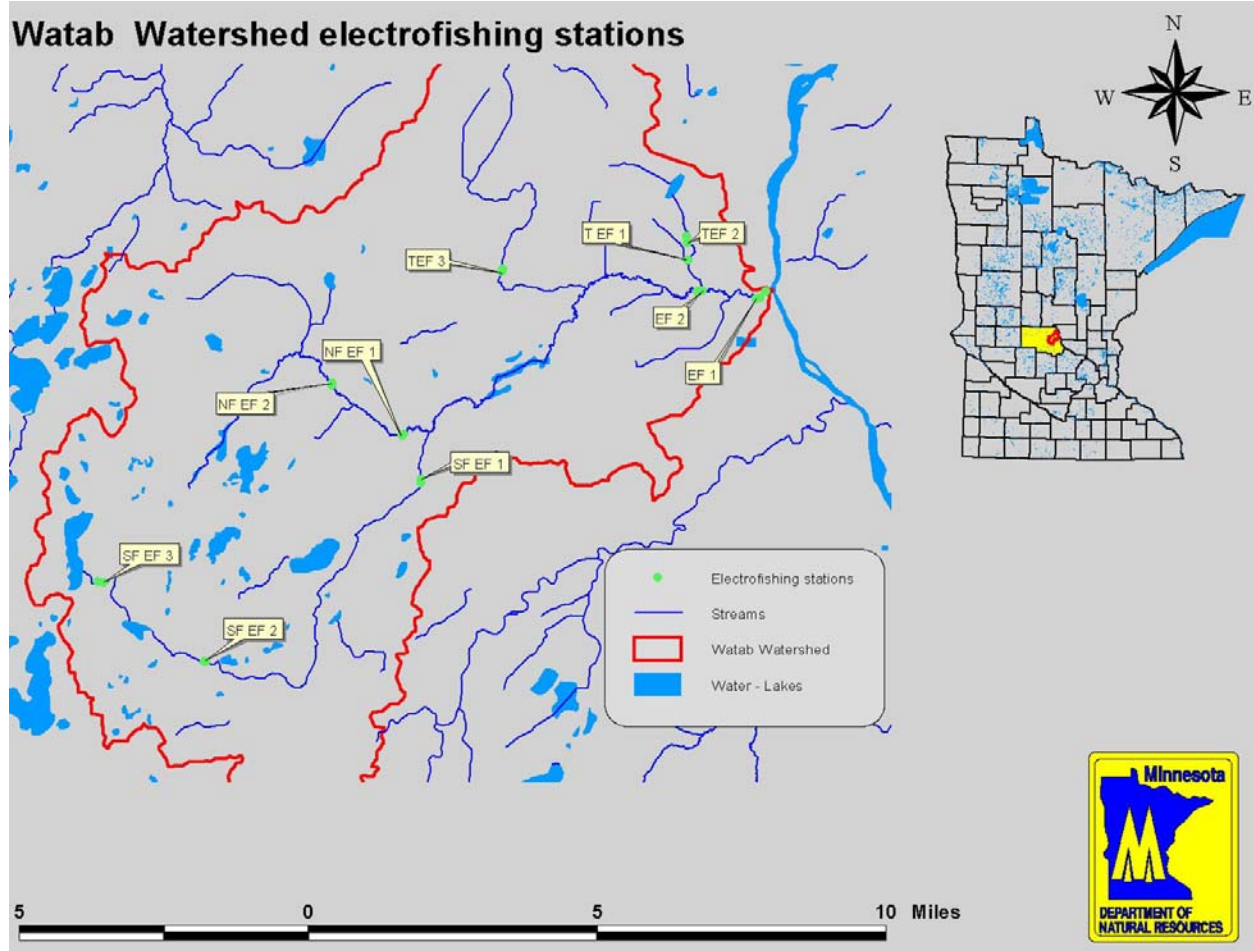


Figure 2. Electrofishing station locations in the Watab River watershed, MN, June 2003.



Figure 3. EF 1 at Watab Creek Park, Sartell MN, Approximately 200 m from mouth.



Figure 4. EF 2 upstream from Pine Cone Road on City of Sartell property adjacent to Bernicks Pepsi Arena.



Figure 5. NFEF 2, upstream of Stearns County Road 3.



Figure 6. NFEF 1 end, upstream of Old Collegeville Road. (Just below grazed area)



Figure 7. SFEF 1, Lions Park in St. Joseph, downstream of foot bridge.



Figure 8. SFEF 3, Downstream of Big Watab lake



Figure 9. TEF2 start, Tributary to Watab River near housing development (Re-meandered channel)

Author Date

Area Fisheries Supervisor Date

Regional Fisheries Supervisor Date

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