Site Code: 510

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

River or Stream Survey
Date(s) of Field Work Various,1990

Initial Survey X
Resurvey

Leader Dale Sogla
Assistant(s) Joyce Kassen

NAME, LOCATION, AND FLOW CHARACTERISTICS

1. Stream Name Union Spring Creek
2. Alternate Name(s) Stone Quarry Creek
3. Tributary Number M-34-56-4-17
4. Counties Dodge
5. Watershed Name and Number Zumbro River - 35
6. Sequence of Waterways to Basin tributary to South Branch Middle Fork Zumbro
7. Map(s) Used USGS Quadrangles: Dodge Center - 1965
8. Length of Stream 2.55 miles
9. Average Width-Upper Station 7.0 ft. Lower Station 10.0 ft.
10. Mouth Location T. 107N R. 16W S. 17
11. Flow at Mouth 3.0 cfs. Date 053090
12. Flow at Gaging Station-Minimum none cfs Average cfs
13. Location of Gaging Station none
14. Initial Source of Sustained Flow tile line in S-1/2 of Section 30, T.107N.,R.16W.
15. Gradient 64 ft/mi
16. Sinuosity 1.3

WATERSHED DESCRIPTION AND USE

17. Description of Watershed (soil types, cover types, topography,land use age and ownership.

    a. Entire Watershed The soils are dark silt-loams, well drained in the rolling, agricultural lands and poorly drained along the marshy, pastured areas along the stream. Except for road rights-of-way, all of the watershed is in agricultural use and privately owned.

    b. Land adjacent to stream There is a wooded area from the confluence with the South Branch Middle Fork Zumbro River upstream for 0.15 miles. The remainder of the stream is adjacent to wooded or marshy pasture.

GENERAL INFORMATION ON THE STREAM

18. Reason for Survey initial survey

19. Previous Investigations and Surveys none

20. Special Problems or Conditions Stream flow was intermittent during the dry summer of 1989.

21. Sources of Pollution

Source	Loc(mi.from mouth)	Substance discharged
agriculture, runoff	entire stream	herbicide, animal waste

22. Erosion

Type	Degree	Affected Reach
bank erosion	moderate	entire stream

23. Stream Alterations (dredging, channeling) - location and date
It is possible the spring source was impounded years ago.

24. Dams and other obstructions (including beaver dams)

Type	Mi. from Mouth	Head (ft)	Length of Dam	Type of Control Structure	Use	Fish Barrier	Owner	Status
none								

25. Use of Water: Fishing___Recreation___ Com.Nav.___Power___Irrigation__ Livestock Watering X Other(specify) Trapping

26. Access (location and ownership)
All access and ownership is private except for rights of way at bridges.

27. Shoreline Developments none

28. Recreational Boating - a) Navigable reach none
b) Type of Boating

29. Tributaries/Springs none
Names-Trib #

Water Source

Bank(R or L)

Length(mi)

Width(mouth)

Miles from
Mouth

Flow(cfs)

Stage(high,
normal, low)

Temperature
Mouth-Air
Mouth-Water
Source-Air
Source-Water
Time

Date

Remarks Several tile lines enter this stream. All were flowing in 1990.

30. Stream Physical Characteristics

a.	Station no.	1	2
b.	Date	082490	082490
c.	Loc.(mi.-mouth)	0.15	1.80
d.	Length of station(ft)	868	864
e.	% of station in:		
	Pools	74	86
	Riffles,rapids	26	14
	Runs		
	Other(list)		
f.	Ave.width(ft)	10	7
g.	Ave.depth(ft)	0.9	1.1
h.	Flow(cfs)		
i.	High water mark	none noted	none noted
j.	Present stream stage (high,normal,low)	high	high
k.	Banks:		
	Ave.height(ft)	4.0	2.0
	Height range(ft)	1.0-8.0	1.0-5.0
	Erosion (degree)	moderate	light
	% grazed	100	100
	% ditched	0	0
l.	Shade[1]	light	light
m.	Pools[2]		
	Ave.width(ft)	11.0	7.0
	Width range(ft)	7-19	5-14
	Ave depth(ft)	1.4	1.5
	Maximum depth(ft)	5+	2.8
	Type -No.each		
	A	1	
	B		
	C	1	
	D	8	3
	Bottom type %[3]		
	Ledge rock		1
	Boulder		5
	Rubble	7	4
	Gravel	54	11
	Sand	15	32
	Silt	24	21
	Clay		26
n.	Riffles and Rapids		
	Ave width(ft)	9.0	7.0
	Width range(ft)	5-14	5-9
	Ave. depth(ft)	0.4	0.4
	Max.depth(ft)	0.7	0.6
	Max.velocity rge(fps)		
	Bottom type-%		
	Ledge rock	4	
	Boulder	1	16
	Rubble	34	26
	Gravel	49	14
	Sand	12	18
	Clay		26

30. Stream Physical Characteristics (cont'd)

o. Runs:
- Ave.width(ft)
- Width rge.(ft)
- Ave. depth(ft)
- Max. depth(ft)
- Max. vel. rge.(fps)
- Bottom type-%

Other (describe)
- Ave width
- Width rge.
- Ave.depth
- Max.depth
- Max. vel. rge.(fps)
- Bottom type

Data Pertaining to Similar Reach

q.	Location(mi. to mi.)	0.0-0.7	0.7-2.6
r.	Gradient (ft/mi)	57	67
s.	Sinuosity	1.3	1.3
t.	Channel changes (slight>enten)	slight	slight

Remarks

[1]Shade:
- light 0-25%
- moderate 25-75%
- heavy 75-100%

[2]Pool types:
- Type A - Good cover, 3 ft or deeper
- B - Good cover, less than 3 feet
- C - Poor cover, 3 ft or deeper
- D - Poor cover, less than 3 feet

[3]Bottom types:
- Ledge rock -Large mass of solid rock
- Boulder -over 10" in diameter
- Rubble -3" to 10" in diameter
- Gravel -1/8" to 3" in diameter
- Sand -less than 1/8" in diameter
- Silt -fine material with little grittiness
- Clay -compact, sticky material
- Muck -decomposed organic material, usually black
- Detritus -organic material composed of sticks, leaves, decaying plants
- Marl -calcareous material

31. Characteristics of Water No sample was collected in 1990.

a. Station no.
b. Date
c. Loc.(mi. mouth)
d. Length of station
e. Time
f. Air temp.
g. Water temp.
h. Color
i. Cause of color
j. Secchi disk

Field Determinations:

Diss. O-2(ppm)
Free CO-2(ppm)

Field Determination or
Lab Analysis(F or L)

Total alkalinity(ppm)
Conductivity(microomhs/cm)
pH

Laboratory Analysis

Total nitrogen(ppm)
NH3 (ppm)
NO-2 (ppm)
NO-3(ppm)
Total Phos(ppm)
Orthophosphate(ppm)
Sulphate ion(ppm)
Chloride ion(ppm)
B.O.D.(ppm)
or C.O.D.(ppm)
Turbidity(JTU)
Tot. diss. solids(ppm)

Remarks A water sample will be collected in 1991.

32. Temperature Profile[1]

Date	Location (mi. from mouth)	Water Temp.	Air Temp	Water Stage	Time	Cloud Cover

Remarks [1]A temperature profile was not taken in 1990. During the summer of 1989, Union Spring Creek had intermittent flows as a result of the drought.

33. Biological Characteristics

a.	Station no.	1	2		
b.	Date	082490	082490		
c.	Loc.(mi. from mouth)	0.15	1.8		
d.	Length of station(ft)	868	864		

e. Aquatic plants or filamentous algae:[1]

Species	Abundance	Abundance	Abundance	Abundance
Sagittaria		P		
Scirpus acutus	P	P		
Potamogeton spp.		P		
Lemna minor		P		
Carex sp.		P		

f. Description of aquatic plants Aquatic vegetation is scattered along the edge of the stream. The area on both sides of the stream is a wet pasture and was probably a marsh at one time.

g. Common Invertebrates:

order or family(check blank if present)		
Tricoptera	X	X
Decapoda	X	X
Plecoptera	X	X
Diptera		X
Gastropoda		X

Remarks

[1]Plant or algae abundance:
A-Abundant C-Common O-Occasional R-Rare P-Present

34. Fishery Characteristics

a.	Station no.	1		2		2	
b.	Date	082490		082490		082490	
c.	Loc.(mi. mouth)	0.15		1.8		1.8	
d.	Length of station(ft)	747[1]		864		184[2]	
e.	Gear	one backpack shocker		one backpack shocker		one backpack shocker	
f.	Amt of sample effort	one upstream run				one upstream run	
g.	Species Present	No	Wt	No	Wt	No	Wt
	Largescale stoneroller	Common		Occasional		5	0.31
	Common shiner	Present					
	Bigmouth shiner	Present		Present		2	trace
	Sand shiner			Present		3	trace
	Southern redbelly dace	Present		Occasional		8	0.13
	Bluntnose minnow	Occasional		Occasional		5	0.13
	Fathead minnow	Abundant		Common		55	0.31
	Blacknose dace	Common		Common		63	0.44
	Creek chub	Common		Occasional		12	0.50
	White sucker	Occasional		Occasional		10	1.59
	Green sunfish	Occasional		Rare		7	0.25
	Fantail darter	Occasional		Occasional		32	0.13
	Johnny darter	Common		Occasional		18	0.13

h. Gamefish young-of-year

Species	No	Wt	No	Wt	No	Wt

Remarks [1]The first pool of the station (121 ft.) was too large to electrofish. [2]All fish collected were counted and weighed from one pool and one riffle in station 2. An estimated 60% of the fish present were captured during electrofishing. The total numbers of fish for 184 feet of station 2 were expanded from this estimate.

Total Length(Inches)	SPECIES
3.0-3.4	
3.5-3.9	
4.0-4.4	
4.5-4.9	
5.0-5.4	
5.5-5.9	
6.0-6.4	
6.5-6.9	
7.0-7.4	
7.5-7.9	
8.0-8.4	
8.5-8.9	
9.0-9.4	
9.5.9.9	
10.0-10.4	
10.5-10.9	
11.0-11.4	
11.5-11.9	
12.0-12.4	
12.5-12.9	
13.0-13.4	
13.5-13.9	
14.0-14.9	
15.0-15.9	
16.0-16.9	
17.0-17.9	
18.0-18.9	
19.0-19.9	
20.0-20.9	
21.0-21.9	
22.0-22.9	
23.0-23.9	
24.0-24.9	
25.0-25.9	
26.0-26.9	
27.0-27.9	
28.0-28.9	
29.0-29.0	
30.0-30.9	
31.0-31.9	
32.0-32.9	
33.0-33.9	
34.0-34.9	
Totals	

36. Age and Growth of Gamefish No gamefish were sampled

a. Age class distribution

Species	Sample Size	Subsample Size	Num.of Fish in Age Group I	II	III	IV	V	VI	VII	VII+

b. Growth of gamefish

	Calculated mean total length at last annulus							
Species	I(N)	II(N)	III(N)	IV(N)	V(N)	VI(N)	VII(N)	VII+(N)

37. Escape Cover for Gamefish Gamefish cover would be temporary.

Similar Reach	Type[1] and Amount[2] of Cover
Mile 0.0-0.7	LJ-S /
	UB-S 3
Miles 0.7-2.6	UB-S
	OV-S

[1]Cover types
- LJ - log jam
- B - boulders
- OV - overhanging vegetation
- UB - undercut bank
- IV - instream vegetation

[2]Amount of Cover
- S - scarce
- O - occasional
- F - frequent

38. Portion of Stream Suitable for Gamefish None

Species	Suitable Reach(mi. to mi.)

39. History of Stream and Fishing Conditions

a. Comparisons with past investigations and surveys None are available.

b. History of fishing conditions In 1951, 1,000 brown trout fingerlings were stocked. No other information is available.

39. History of Stream and Fishing Conditions (continued)

c. Records of past management

Fish stocking

Year	Species	Size	Number or Pounds
1951	Brown trout	fgl.	1,000

Rough fish removal None

Year	Species	Size	Number or Pounds

Special regulations None

Habitat improvement: None

Year Installed	Type and Amount	Location (mile to mile)	Cost	Present Condition

40. Discussion of Fishery

a. General characteristics The fish population consists of forage fish species. Fish from the Zumbro River could have access to the stream during of high water, but there is no evidence to indicate use by gamefish.

40. Discussion of Fishery (Continued)
b. Fish management problems Landowners adjacent to the stream stated there was only intermittent or no flow during the summer of 1989.

41. Ecological Classification of Waterway Class IV Forage fish, rough fish

42. Summary Union Spring Creek is a warmwater feeder stream to the South Branch Middle Fork Zumbro River. The flow originates from the drainage and seepage from wet, marshy pasture. During drought conditions the stream becomes intermittent.

There are two small private ponds near the stream that may have been springs that contributed to the flow. These ponds have warm-water fish that have been privately stocked.

43. Credits and Signatures
a. Funding F-29-R-10

b. Field work by
Name of crew leader Dale Sogla
Name of aide(s) Joyce Kassen

c. Completed report by
Name Dale Sogla
Title N.R. Technician

Approved by _____ Date 4/25/91
Regional Fisheries Manager

Typist's initials:

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
STREAM SURVEY SUMMARY
Data Pertaining to Entire Stream

Name Union Sp. Creek Alt.Name Stone Quarry Creek Trib.No. M-34-56-4-17
County(ies) Dodge Loc. of Mouth T.107 N. R.16 W. S.17
Major Drain.Basin Mississippi River Watershed Zumbro 35
Trib. to So. Br. Middle Fork Zumbro Ave. width-upper 7.0ft. lower 10.0ft.
Total length 2.55 miles Flow-mouth 3.0 cfs Gradient 64 ft./mi.
Watershed Desc. A.Entire Watershed Lands are privately owned, rolling, well drained and under intensive agricultural use.
B.Land adjacent to stream The land along the stream is wooded or marshy pasture except for a wooded area along mile 0.0 to 0.15.
Special problems and conditions Stream flow was intermittent during the dry summer of 1989.
Use of Water Livestock watering, trapping
Public Access Rights of way at two bridges.
Navigable reach none
Sources of information 1.Str. Survey Report-Date: 2.File
3.Recon. Survey-Date: various, 19904.Hydro. atlas
5. 6. 7.
Maps 8. USGS Quadrangle: Dodge Center, Mn.; 19659.

Data Representative of Each Similar Reach

Item	Data	Source	Data	Source	Data	Source
Sim. reach(m to m)	0.0-0.65		0.65-2.55			
Rep. stat. #	1		2			
% in :pools	74		86			
Riffles/rapids	26		14			
runs						
other						
Avg.width(ft)	10.0		7.0			
Avg.depth(ft)	0.9		1.1			
Flow(cfs))	3.0		none taken			
High water mark(ft)	none noted		none noted			
Present str. stage	high		high			
Banks:avg.height(ft)	4.0		2.0			
Height range(ft)	1.0-8.0		1.0-5.0			
Erosion	moderate		light			
% Grazed	100		100			
% Ditched	0		0			
Shade	light		light			
Gamefish cover	scarce 1		scarce 3			
Gradient(ft/mi)	57		67			
Sinuosity	1.3		1.3			
Channel changes	slight		slight			
Maj.bottom types	gravel/sand 33%		sand/clay 74%			
No.tribs,springs	tiles		tiles			
No.manmade dams	none		none			
No.beaver dams	none		none			
Water chemistry						
Air temp.						
Water temp.						
Color						
pH						
Total alkal.						
Turbidity						
Total phos.						
Total nitrogen						
Nitrates						
Ammonia						
Chloride						

Item	Data	Source	Data	Source	Data	Source
Sim.Reach(m to m)	0.0-0.65		0.65-2.55			
Aquatic Plants or Filamentous Algae						
Species	Abundance		Abundance		Abundance	
Sagittaria			Present			
Scirpus acutus	Present		Present			
Potamogeton spp.			Present			
Lemna minor			Present			
Carex spp.			Present			
Fishery Characters.						
Gear Used	One backpack shocker		One backpack shocker			
Effort	One upstream run		One upstream run			
Species	No. Wt.		No. Wt.		No. Wt.	
Largescale stoneroller	Common		Occasional			
Common shiner	Present					
Bigmouth shiner	Present		Present			
Sand shiner			Present			
Southern red-belly dace	Present		Occasional			
Bluntnose minnow	Occasional		Occasional			
Fathead minnow	Abundant		Common			
Blacknose dace	Common		Common			
Creek chub	Common		Occasional			
White sucker	Occasional		Occasional			
Green sunfish	Occasional		Rare			
Fantail darter	Occasional		Occasional			
Johnny darter	Common		Occasional			
Eco. Class.	IV		IV			

Summary Union Spring Creek is a warmwater feeder stream to the South Branch Middle Fork Zumbro River. Flow originates from tile drainage and seepage from wet, marshy pasture. During drought conditions the stream becomes intermittent. There are two small private ponds that may have been springs that contributed to the stream flow. These ponds have warmwater fish that have been privately stocked.

Remarks

FISHERIES RECOMMENDATIONS FOR STREAM MANAGEMENT

Stream Name (Alternate Name in Parentheses): Union Spring Creek

Upper End T.R.S.: T.107N.,R.16W.,S.30

Lower End T.R.S.: T.107N.,R.16W.,S.17

Tributary No.: M-34-56-4-17

Reach (mile to mile): 0.0-2.55

Ecological Classification: Class IV (Rough fish-forage fish)

Counties: Dodge

Management Goal: Provide environmental Protection

Stocking Recommendations: None

Habitat Improvement Recommendations: None

Land Acquisition Recommendations: None

Other Recommendations: None

Additional Survey Work Recommended: None

Area Fisheries Supervisor's Signature: Wm. Thom

Date: 3/18/91

Regional Fisheries Supervisor's Signature: Mark Hyndt

Date: 4/25/91

UNION SPRING CREEK
M-34-56-4-16