

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

RIVER OR STREAM SURVEY

Initial Survey

DATE(S) OF FIELD WORK Various, August-September, 1986

Resurvey

LEADER Rory Freiermuth
ASSISTANT(S) Dale Sogla, Larry Watson, Mike
Davis, Henry VanOffelen

NAME, LOCATION, AND FLOW CHARACTERISTICS

- (1) Stream Name Spring Creek
- (2) Alternate Name(s) Silver Creek
- (3) Tributary Number M-34-49-26
- (4) Counties Goodhue
- (5) Watershed Name and Number Zumbro River - 35
- (6) Sequence of Waterways to Basin to North Fork Zumbro River to Zumbro River to Mississippi River
- (7) Map(s) Used USGS Quadrangles: Wanamingo - 1968, Kenyon - 1968
- (8) Length of Stream 8.2 miles
- (9) Average Width - Upper Station 6.4 feet Lower Station 16.3 feet
- (10) Mouth Location T. 110N. R. 17W. S. 26 (NW¼)
- (11) Flow at Mouth * cfs, Date _____
- (12) Flow at Gaging Station - Minimum -- cfs Average -- cfs
- (13) Location of Gaging Station none
- (14) Initial Source of Sustained Flow Swamp seepage located 8.2 miles from mouth in T.109N., R.17W.,NW¼ S.7 (chcked on 082586)
- (15) Gradient 21.2 feet per mile
- (16) Sinuosity 1.7

WATERSHED DESCRIPTION AND USE

- (17) Description of Watershed (soil types, cover types, topography, land usage and ownership)
 - a) Entire watershed The lower watershed consists of silt loam soils on moderately sloping hills. The upper watershed soil type is silty clay loam on gently sloping hills. Land usage in the watershed is largely agricultural (row crops and pasture) with scattered areas of wild land.
 - b) Land adjacent to stream The lower 1.8 miles of stream corridor is wild-wooded. The remaining 6.4 miles of stream corridor alternates between pastureland and row crops with scattered areas of wild grasses. The entire stream corridor is privately owned.

*No flow was taken due to very high groundwater levels.

GENERAL INFORMATION ON THE STREAM

(18) Reason for Survey Requested by Area Fisheries Supervisor for inventory and fish management purposes.

(19) Previous Investigations and Surveys _____

(20) Special Problems or Conditions Pastureland and row crops bordering the upper two-thirds of Spring Creek contribute moderate loads of sand and silt to the stream during runoff. This problem is mitigated by wide, grassy strips in some areas.

(21) Sources of Pollution

Source	Loc. (mi. from mouth)	Substance discharged
Agriculture	2.6-8.2	Silt, agricultural use chemicals

(22) Erosion

Type	Degree	Affected reach
Bank	Moderate	Mile 0.6
Bank	Moderate	Mile 3.1-4.3
Bank	Light, scattered	Mile 5.0-8.2

(23) Stream Alterations (dredging, channeling) - location and date A ditched channel is present between miles 7.2 and 8.2. Date is unknown but it was ditched previous to 1968.

(24) Dams and other obstructions (include beaver dams)

Type	Mi. from Mouth	Head (ft.)	Length of Dam (ft.)	Type of Control Structure	Use	Fish Barrier	Owner	Condition or Status
Beaver	0.3	1.0	30	--	--	Yes	--	Active
Ledgerock	2.2	1.5	--	--	--	Yes	--	--
Beaver	2.5	1.5	6	--	--	Yes	--	Inactive
Beaver	4.3	2.0	5	--	--	Yes	--	Active
Beaver	4.3	0.5	5	--	--	Yes	--	Active
Beaver	4.4	2.0	4	--	--	Yes	--	Active

(25) Use of Water: Fishing Recreation _____ Commercial navigation _____ Power _____ Irrigation _____
 Livestock watering Other (specify) Minnow seining, trapping

(26) Access (location and ownership) Access is available from state, county, and township road bridges.

(27) Shoreline Developments There are no shoreline developments within the stream corridor. Several farmsteads are nearby.

(28) Recreational Boating - a) Navigable reach none
 b) Type of boating _____

(30) Stream Physical Characteristics

311 311 312

a)	Station no.	1A	1B	2
b)	Date	090386	090386	090386
c)	Loc. (mi. from mouth)	0.3	3.5	5.6
d)	Length of station (ft.)	770.0	740.0	615.0
e)	% of station in:	--	--	--
	Pools	81	59	55
	Riffles and rapids	19	41	38
	Runs	--	--	--
	Other (list)	--	--	-- 70
f)	Average width (ft.)	16.4	13.0	6.3
g)	Average depth (ft.)	1.0	0.8	1.0
h)	Flow (cfs)	*	2.0	0.6
i)	High water mark (ft.)	8.0	6.0	3.5
j)	Present stream stage (high, normal, low)	normal+	normal+	normal+
k)	Banks:	2.9	3.4	2.3
	Average height (ft.)	1.0-5.0	1.0-12.0	1.0-3.0
	Height range (ft.)	light	moderate	light
	Erosion (lt., mod., severe)	.0	100	0
	% grazed	0	0	0
	% ditched or channeled	moderate	light	light
l)	Shade ¹			
m)	Pools ²			
	Average width (ft.)	16.5	17.8	9.5
	Width range (ft.)	12.0-19.0	8.0-30.0	7.0-14.0
	Average depth (ft.)	1.1	1.0	1.6
	Maximum depth (ft.)	4.8	2.5	3.0
	Type - No. of each			
	A	1	0	0
	B	0	1	1
	C	1	0	1
	D	1	6	1
	Bottom type - % ³			
	Boulder	5	3	3
	Rubble	37	12	2
	Gravel	11	19	15
	Sand	37	47	61
	Silt	10	18	16
	Clay	0	1	3
n)	Riffles and rapids			
	Average width (ft.)	16.0	7.5	3.6
	Width range (ft.)	13.0-17.0	5.0-12.0	2.0-7.0
	Average depth (ft.)	0.3	0.5	0.5
	Maximum depth (ft.)	0.5	1.0	0.9
	Max. velocity range (fps)	ND	ND	ND
	Bottom type - %			
	Boulder	0	1	1
	Rubble	33	17	20
	Gravel	50	52	38
	Sand	15	28	40
	Silt	2	2	1

(30) Stream Physical Characteristics (continued)

	1A	1B	2
o) Runs:			
Average width (ft.)			3.5
Width range (ft.)			3.0-4.0
Average depth (ft.)			0.8
Maximum depth (ft.)			1.4
Max. velocity range (fps)			ND
Bottom type - %			
Gravel			5
Sand			50
Silt			45
Other (describe)			
Average width			
Width range			
Average depth			
Maximum depth			
Max. velocity range (fps)			
Bottom type - %			
DATA PERTAINING TO SIMILAR REACH			
q) Location (mi. to mi.)	0.0-4.3	0.0-4.3	4.3-8.2
r) Gradient (ft./mi.)	23.5	23.5	19.2
s) Sinuosity	1.5	1.5	1.9
t) Channel changes (slight, mod., exten.)	slight	slight	slight

Remarks *No flow was taken due to high groundwater levels.

¹Shade:

light 0-25 percent shaded
 moderate 26-75 percent shaded
 heavy over 75 percent shaded

²Pool types:

Type A - Good cover, 3 ft. or deeper
 B - Good cover, less than 3 ft.
 C - Poor cover, 3 ft. or deeper
 D - Poor cover, less than 3 ft.

³Bottom 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, etc.
 Marl - calcareous material

(31) Characteristics of Water

a)	Station no.	1A		
b)	Date	081186		
c)	Loc. (mi. from mouth)	0.3		
d)	Length of station (ft.)	770.0		
e)	Time	1440		
f)	Air temp. °F.	74		
g)	Water temp. °F.	63		
h)	Color	clear		
i)	Cause of color	--		
j)	Secchi disc. (ft.)	4.5 (bottom)		
FIELD DETERMINATIONS:				
	Diss. oxygen (ppm)	9.5		
	Free carbon dioxide (ppm)	ND		
FIELD DETERMINATION OR LABORATORY ANALYSIS				
	(Indicate by F or L)	L		
	Total alkalinity (ppm)	248		
	Conductivity (micromhos/cm)			
	pH	8.15		
LABORATORY ANALYSIS				
	Total nitrogen (ppm)			
	NH ₃ (ppm)			
	NO ₂ (ppm)			
	NO ₃ (ppm)			
	Total phosphorus (ppm)	0.029		
	Orthophosphates (ppm)			
	Sulfate ion (ppm)	40		
	Chloride ion (ppm)			
	B.O.D. (ppm)			
	or C.O.D. (ppm)			
	Turbidity (JTU)			
	Tot. diss. solids (ppm)	466		

Remarks Spring Creek is a hardwater stream of high fertility similar to most streams in this region.

(33) Biological Characteristics

a)	Station no.	1A	1B	2	entire stream
b)	Date	090386	090386	090386	various
c)	Loc. (miles from mouth)	0.3	3.5	5.6	0.0-8.2
d)	Length of station (ft.)	770	740	615	--
e)	Aquatic plants or filamentous algae: ¹				
	Species	Abundance	Abundance	Abundance	Abundance
	Broadleaf arrowhead			O	O
	Narrowleaf arrowhead				P
	Narrowleaf pondweed spp.		O	C	C
	Filamentous algae	O			C
	Ranunculus sp.		R		O
	Canada waterweed		O	C	C
	White waterlily				R
	Common cattail				P
	Softstem bulrush				P
	Smartweed				R
	Water plantain				P

f) Distribution of aquatic plants Most in-stream vegetation is located in slow moving pools in the upper half of the stream. One pool at mile 5.2 had heavy vegetation to the extent of impounding the water. Occasionally, heavy stands of reed canary grass are also present in the upper portions of the stream corridor.

g) Common invertebrates:
 order or family (check blank if present)

Pelecypoda	X	X	X	
Decapoda	X	X		
Trichoptera	X	X	X	
Ephemeroptera	X			
Gastropoda	X	X	X	

Remarks Invertebrates were sampled by visual inspection; therefore lists may be incomplete.

¹Plant or algae abundance:

- A - abundant
- C - common
- O - occasional
- R - rare
- P - present

(37) Escape Cover for Gamefish

Similar reach	Type ¹ and Amount ² of Cover
I (mile 0.0-4.3)	LJ-S, OV-S, B-O, UB-S
II (mile 4.3-8.2)	OV-F, IV-F

¹Cover types:

- LJ - log jam
- B - boulders
- OV - overhanging vegetation
- UB - undercut bank
- IV - instream vegetation

²Amount of cover:

- S - scarce
- O - occasional
- F - frequent

(38) Portion of Stream Suitable for Gamefish

Species	Suitable Reach (mi. to mi.)
The lower mile (0.0-1.0)	of Spring Creek has physical characteristics suitable for game fish.

(39) History of Stream and Fishing Conditions

- a) Comparisons with past investigations and surveys None available.
- b) History of fishing conditions Conversations with local residents indicate that largemouth bass have occasionally been caught in the deeper pool areas of lower Spring Creek. Several landowners stated that the middle and upper portions of the stream were heavily seined for bait minnows in the springtime.

(40) Discussion of Fishery (continued)

b) Fish management problems Agricultural practices in the middle and upper portions of the watershed result in moderate loads of sand and silt being deposited in Spring Creek. Lack of available escape cover for adult fish species limits the fishery potential of Spring Creek.

(41) Ecological Classification of Waterway Class III (Warmwater feeder)

(42) Summary Physical characteristics in the lower mile of Spring Creek are suitable for a very limited fishery of smallmouth bass, although none were recovered during this survey. Currently only forage fish species are present in the stream. Bait minnow seining and light recreational angling are the primary uses of Spring Creek.

The lower portions of the stream corridor are wild-wooded and provide good habitat for upland game birds, deer, furbearers and other wildlife. Protection of this corridor is desirable.

(43) Credits and Signatures

a) Funding F-29-R-6

b) Field work by

Name of crew leader Rory Freiermuth

Name of aide(s) Dale Sogla

Larry Watson

Mike Davis, Henry VanOffelen

c) Completed report by

Name Rory Freiermuth

Title N.R. Technician (Fisheries)

Approved by

William D. Johnson
Regional Fisheries Manager

Date

5/13/89

Typist's Initials: bkd

Station Descriptions - Spring Creek

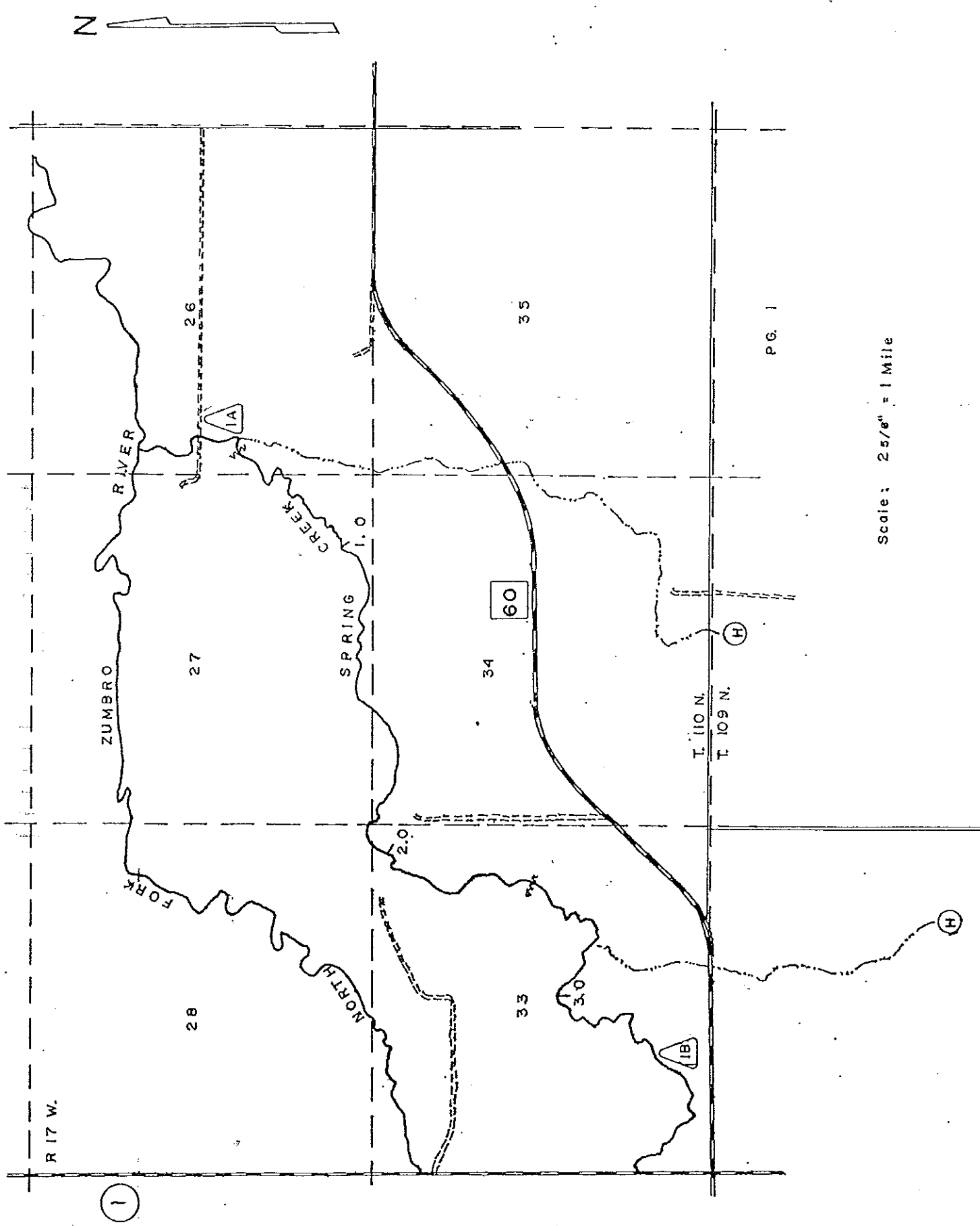
- Station 1A - Station begins at unimproved road crossing 0.3 mile from the mouth. It ends at the head of a riffle just above a trail bike crossing 770 feet upstream.
- Station 1B - Station begins at the head of a riffle 740 feet below a large, impounded pool just off of State Highway 60. This is located in T.110N.,R.17W.,S.33 (SW $\frac{1}{4}$). The station ends 740 feet upstream at the bottom of the large, impounded pool.
- Station 2 - Station begins at the constricted area of a pool located 615 feet below a large, impounded pool just off of County Road 12. This is located in T.109N.,R.17W.,S.5 (SE $\frac{1}{4}$). The station ends 615 feet upstream at the bottom of the large impounded pool.

FISHERIES RECOMMENDATIONS FOR STREAM MANAGEMENT



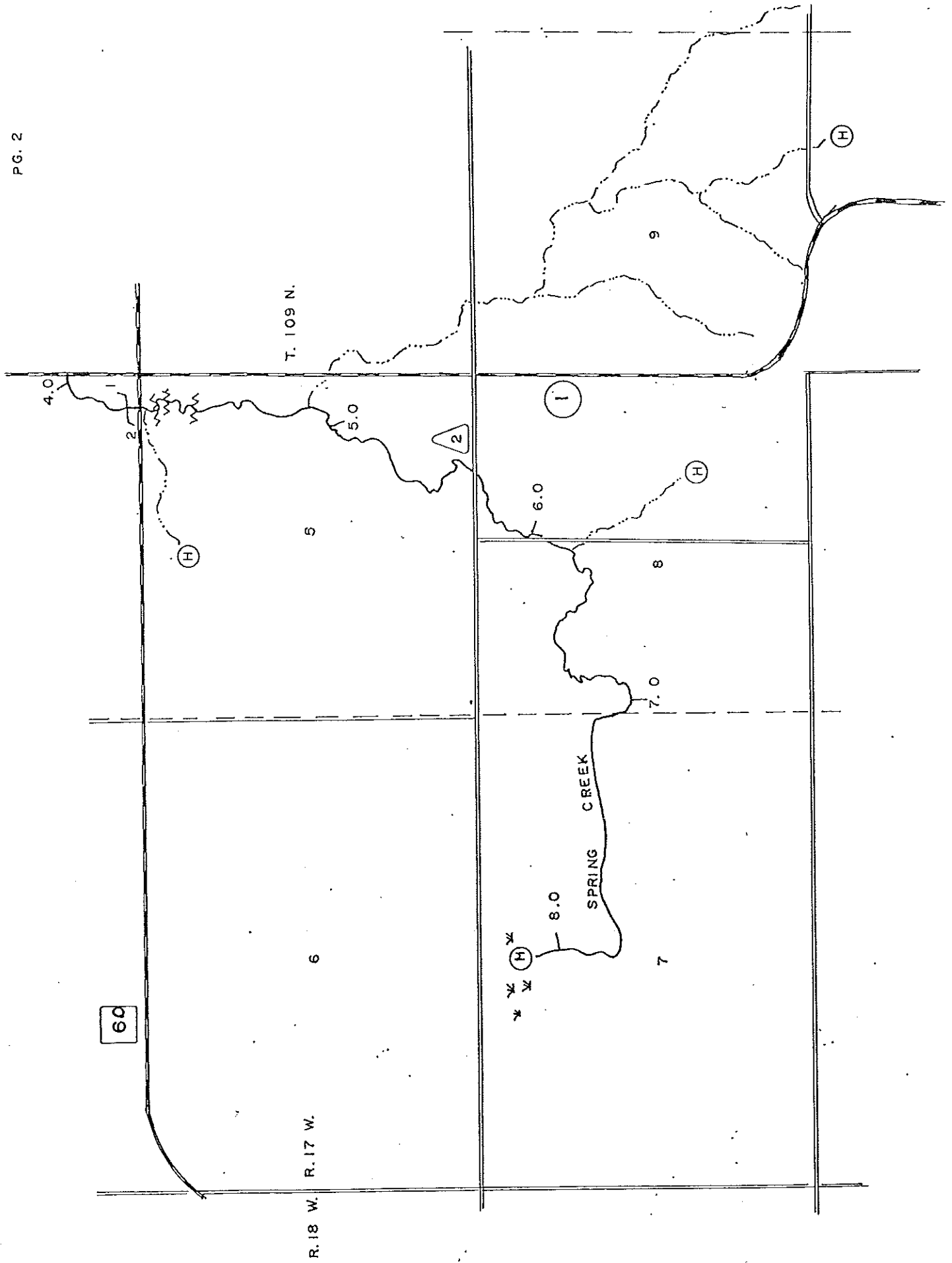
Stream Name (Alternate Name in parenthesis) Spring Creek (Silver Creek)	Upper End T.R.S. 109N.,17W.,7	Lower End T.R.S. 110N.,17W.,26	Tributary Number M-34-49-26
Reach (mile to mile) entire stream	Ecological Classification Class III	Counties Goodhue	
Management Goal: The only management recommended is environmental protection.			
Stocking Recommendations: No stocking is recommended.			
Habitat Improvement Recommendations: None is recommended.			
Land Acquisition Recommendations: No acquisition is recommended.			
Other Recommendations: None			
Additional Survey Work Recommended: None			
Area Fisheries Supervisor's Signature 		Date 042787	
Regional Fisheries Supervisor's Signature William D. Johnson		Date 5/13/87	

SPRING CREEK

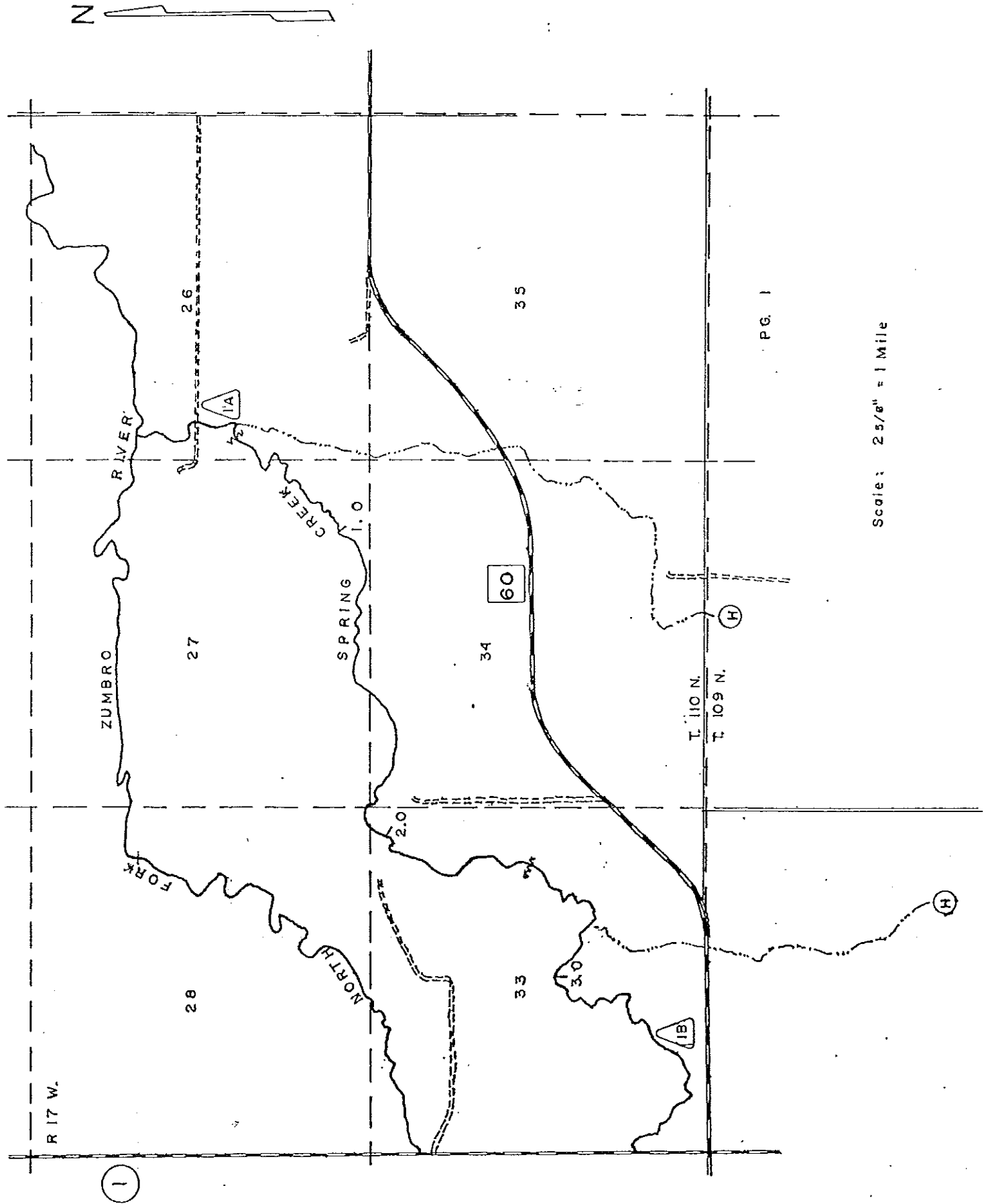


Scale: 25/e" = 1 Mile

PG. 1



SPRING CREEK



Scale: 2.5/8" = 1 Mile

PG. 1