

Region NOR County Douglas Report Date 12/1984 Classification LFF  
Water Body: Copper Creek - unnamed trib  
Discharger: Four Corners School

**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
- 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)
- Chemical Data (temp, D.O., etc.)
- Physical Data (flow, depth, etc.)
- Habitat Description
- Site Description/Map
- Other: photos

**Historical Reports in file:**  
12/1984 - F. Kosher

**Additional Comments/How to improve report:**  
- low flow is cited as being the limiting factor  
- included data is good  
- current database indicates proposed LFF classh -- is this correct?  
report appears to recommend LAL.  
- overall, good report & justification.

## CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: December 11, 1984 File Ref: 3200

To: Duane Schuettpeiz - WRM/2

From: *Fm* Frank J. Koshere - NWD *WJ*

DEC 12 1984

Subject: Surface Water Classification of an Unnamed Tributary to Copper Creek, Douglas County, For the Proposed Wastewater Discharge From Four Corners School

Description

This stream originates near the presently under construction Four Corners Elementary School. The stream reach classified begins at its headwaters located in the NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , Section 24, T47N, R14W and extends downstream to the confluence with Copper Creek in Pattison State Park in the SE $\frac{1}{4}$ , SE $\frac{1}{4}$ , Section 15, T47N, R14W. A field inspection of this stream was conducted on October 25, 1984.

This stream appears typical of the many small intermittent streams found in the heavy clay soils of northern Douglas County. The stream is reported to be commonly dry during ordinary summer low flow periods and is highly variable at other times. Low flow appears to be the key limiting factor to the presence of aquatic life in the upper reach. A macroinvertebrate sample at the upstream sample site (No. 1) substantiates this with only two snails and one leech egg case and no aquatic insects found. The stream bed had a scoured appearance with no aquatic vegetation established on the substrate. Flows appear to peak above bank level commonly. Substrate at the upper end is mostly clay with some gravel. A stream bed is well defined and cut sharply into steep banks, again characteristic of clay soil streams in the region. The site scored 166 - Fair on Ball's Stream System Habitat Rating Form.

Site No. 2 at Numan Road is approximately 5,000 feet downstream. Here the stream has joined with two similar small intermittent tributaries and was approximately doubled in size. The stream bed was cut much deeper into the landscape. Substrate was composed of mostly rubble sized rock with some boulders, gravel, and silt present. A biotic index sample scored 2.09 - very good and the habitat rating score was 151 - Fair. A local resident indicated the stream flows year-round and has an abundant population of chubs. Approximately 500' below this site the streams joins an unnamed perennial stream which is tributary to Copper Creek, approximately 3,000 feet further downstream.

Water chemistry data for Site No. 1 and No. 2 are limited to one field survey and are summarized on Table 1. No water quality problems are evident.

Site No.3 is at Darrel Road on the perennial stream (as shown on the Sunnyside 7.5' USGS Quadrangel map). Flows were not measured but estimated to be 40% from the "Four Corner's" tributary and 60% from the perennial stream. Here the stream bed is wider, shallower, more turbid, and flows through an active wooded pasture. Fish survey data are lacking for the perennial tributary but it is strongly suspected to contain trout. A local resident claims good trout fishing exists on this tributary just below Site No. 3, and that the stream is "full of chubs" above.

Copper Creek is a Class II native brook trout stream and supports a healthy fishery according to Bill Weiher, Area Fish Manager.

### Summary

Low flow near the proposed discharge site is limiting aquatic life to only those organisms capable of withstanding periodic zero flow conditions. At the lower end of this reach (at Numan Road), the effects of low flow are not as restrictive. The presence of a healthy macroinvertebrate community, a fair habitat rating, and existing good water quality support a difference in use classifications between sample points 1 and 2.

Below Numan Road the stream joins with a slightly larger stream. Both have potential to support cold water sport fish. This combined stream is tributary to Copper Creek, a known high quality brook trout stream.

John Semo, Pattison Park Superintendent reports the recreational importance of Copper Creek is very significant. The unnamed tributary joins Copper Creek in a presently little developed area of Pattison State Park. Present use of the area consists of brook trout fishing, hiking, skiing, snowmobiling, and geological and archeological field trips. A 25 foot waterfall is present on the creek to attract visitors. The area is the site of late 19th century copper mining and has evidence of prehistoric Indian encampments and copper mining. Because of the nature of uses and remote aspect of the area, users are in frequent contact with the stream water.

The Pattison State Park Master Plan and Implementation Element of the plan call for development of hiking trails into the Copper Creek area. Presently the area is accessible by snowmobile and cross-country ski trails, and undeveloped hiking trails. Use of the area occurs on a year-round basis. A map from the Pattison State Park Master Plan is attached.

This stream system, consisting of the unnamed tributary at Four Corners School, the unnamed perennial tributary it joins with, and

Copper Creek, is part of a highly significant surface water resource involving trout streams and developed and potential multiple recreational use.

Recommendation

To maintain existing uses and water quality it is recommended the waters be classified as follows:

- 1) The unnamed tributary originating near Four Corners School at NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , Section 24, T47N, R14W downstream to the first confluence with another unnamed tributary at SW $\frac{1}{4}$ , NE $\frac{1}{4}$ , Section 23, be classified noncontinuous (NR 104.02(1)(e)) and meet marginal surface water standards (NR 104.02(3)(b)), or Class E in Ball's Stream Classification Guidelines.
- 2) The stream from the first confluence with another unnamed tributary at SW $\frac{1}{4}$ , NE $\frac{1}{4}$ , Section 23, downstream to Numan Road at NW $\frac{1}{4}$ , NE $\frac{1}{4}$ , Section 23, T47N, R14W be classified for fish and aquatic life (NR 102.02(3)), or Class C in Ball's Stream Classification Guidelines.
- 3) The stream from Numan Road to Copper Creek and including Copper Creek at SE $\frac{1}{4}$ , SE $\frac{1}{4}$ , Section 15, T47N, R14W, be classified continuous and meet trout fish and aquatic life standards (NR 102.02(2)(e)), or Class A in Ball's Stream Classification Guidelines.

FJK:mj

Attachments: Photocopy of USGS Map  
Table 1 - Water Chemistry Data  
Table 2 - Biotic Index Data  
Macroinvertebrate Field Sampling Data  
Habitat Rating Form (2)  
Photocopy of Photos  
Map of Pattison State Park

cc: Tom Bennwitz - WRM/2  
Jim Lund - Pattison Park



Table 1 - Water Chemistry

LOCATION	DATE	TIME	DEPTH	ACCOUNT-#	LAB-SLIP-#	END-DATE	END-TIME
16MISC	841025	1150	F000	030010	031253		
TEST-#	STORET-#	TEST--NAME--AND--UNITS			TEST-VALUE		
EXTRA INFORMATION ABOUT SAMPLE: FK							
EXTRA INFORMATION ABOUT SAMPLE: F#1							
131	00010	WATER	TEMP	CENT			5.8
091	00300	DO		MG/L			9.3
096	00400	PH		SU			8.1
026	00310	BOD	5 DAY	MG/L			0.6
106	00530	RESIDUE	TOT NFLT	MG/L			<2
100	00665	PHOS-TOT		MG/L			0.04
136	00671	PHOS-DIS	ORTHO	MG/L P			0.010
087	00625	TOT KJEL	DL N	MG/L			0.7
086	00608	NH3-N	DISS	MG/L			0.03
085	00631	NO2&NO3	N-DISS	MG/L			<0.02
035	00940	CHLORIDE	CL	MG/L			3.4

\*\*\*\*\* COMMENT: UNNAMED TRIB AT 4 CORNERS SCHOOL (BOD, TEMP Q.A.)

LOCATION	DATE	TIME	DEPTH	ACCOUNT-#	LAB-SLIP-#	END-DATE	END-TIME
16MISC	841025	1246	F000	030010	031254		
TEST-#	STORET-#	TEST--NAME--AND--UNITS			TEST-VALUE		
EXTRA INFORMATION ABOUT SAMPLE: FK							
EXTRA INFORMATION ABOUT SAMPLE: F#2							
131	00010	WATER	TEMP	CENT			6.2
091	00300	DO		MG/L			10.7
096	00400	PH		SU			7.0
026	00310	BOD	5 DAY	MG/L			0.6
106	00530	RESIDUE	TOT NFLT	MG/L			2
100	00665	PHOS-TOT		MG/L			0.06
136	00671	PHOS-DIS	ORTHO	MG/L P			0.015
087	00625	TOT KJEL	DL N	MG/L			0.6
086	00608	NH3-N	DISS	MG/L			<0.02
085	00631	NO2&NO3	N-DISS	MG/L			<0.02
035	00940	CHLORIDE	CL	MG/L			9.5

\*\*\*\*\* COMMENT: UNNAMED TRIB AT 4 CORNERS SCH NUMAN RD (BOD, TEMP Q.A.)

MFFCC

/100ml

10



#2

MACROINVERTEBRATE FIELD SAMPLING DATA

BASIN: \_\_\_\_\_

STREAM: Trib to Cu Creek COUNTY Douglas

SAMPLE NO. \_\_\_\_\_

PRIMARY STATION NO. \_\_\_\_\_

LOCATION: NW 1/4, NE 1/4, S 23, T 27 N, R 14 W WATERSHED L. Sage

DATE: 10/25/84  
mo day yr.  
Chemical Sample?  yes  no

On stream side of rd crossing  
Number 21

BIOTIC INDEX: 2.09

(Very Good)

13:10 TIME (24 hr)

AT SAMPLE SITE: 8 AVG. WIDTH (ft) Estimated

10.7 DO (mg/l)

.2 AVG. DEPTH (ft)

6.2 TEMP (°C)

AVG. VELOCITY (measured fps)

7.0 pH (s.u.)

EST. VELOCITY (fps) 1. very slow (.2); 2. slow

CONDUCTIVITY (umhos)

(.2-.5); 3. moderate (.5-1.5); 4. fast (1.5)

SAMPLED HABITAT: 1 Riffle 2. Run 3. Pool

SAMPLER: 1. D Frame Net 2. Artificial Substrate 3. Other \_\_\_\_\_

SUBSTRATE AT SITE LOCATION (%):

Bedrock 10 Boulders (10" dia.) 80 Rubble (2 1/2 - 10" dia.) 5 Sand 5 Silt Clay Detrius Muck Debris & Vegetation

SUBSTRATE SAMPLED (%): SAME AS ABOVE OR/

Bedrock Boulders (10" dia.) Rubble (2/12 - 10" dia.) Gravel (1/10 - 2 1/2" dia.) Sand Silt Clay Detrius Muck Debris & Vegetation

AQUATIC VEGETATION: 0 % of Total Stream Channel at Sample Site some small tufts of grass

OBSERVED INSTREAM CONDITIONS AT SAMPLING SITE LIMITING W.Q.

not present slight moderate significant

Comments

	not present	slight	moderate	significant
Judge Deposits	ni	sl	m	s
Silt & Sediment Deposits	ni	sl	m	s
Turbidity	n	sl	m	s
Chlorine or Toxic Scour	n	sl	m	s
Macrophytes	ni	sl	m	s
Filamentous Algae	m	sl	m	s
Planktonic Algae	ni	sl	m	s
Slimes	ni	sl	m	s
Iron Bacteria	ni	sl	m	s

lots of fragmental rock in streambed. Rock area very clean, no periphyton

FACTORS WHICH MAY BE AFFECTING SAMPLING SITE

degree of influence: General Watershed (not present, possible, important) At Site (direct impact)

Comments

	not present	possible	important	direct impact
Livestock Pasturing	np	pos	imp	di
Barnyard Runoff	np	pos	imp	di
Cropland Runoff	np	pos	imp	di
Tile Drains	np	pos	imp	di
Septic Systems	np	pos	imp	di
Streambank Erosion	np	pos	imp	di
Channel Ditching & Straightening	np	pos	imp	di
Downstream Impoundment	np	pos	imp	di
Upstream Impoundment	np	pos	imp	di
Low Flow	np	pos	imp	di
Wetlands	np	pos	imp	di
Urban Runoff	np	pos	imp	di
Construction Runoff	np	pos	imp	di
Point Source (specify type)	np	pos	imp	di
Other (specify)	np	pos	imp	di

curbs, boulders, riprap, 1st bridge, glassine across stream, (off site Aspen day) areas

PERCEIVED WATER QUALITY: 1. Excellent 2. Good 3. Fair 4. Poor 5. Very Good

SAMPLE TRACKING INFORMATION

Dates Artificial Sampler In \_\_\_\_\_

Time Spent Collecting Sample (minutes) 25 Replicate #'s Nine

Out \_\_\_\_\_

Sampler Collector L.P.

Sorter \_\_\_\_\_

Identifier \_\_\_\_\_

Date 10/25/84

Date \_\_\_\_\_

Date \_\_\_\_\_

STREAM SYSTEM HABITAT RATING FORM

Stream 11 Avenue School Reach Location El Access

Reach Score/Rating 166 - Fair

County Douglas Date 12/25/84 Evaluator J. K. P.

Classification (Recommended C (11/11/84))

Rating Item	Category			
	Excellent	Good	Fair	Poor
1. <u>Watershed Erosion</u>	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 runoff. 16
2. <u>Watershed Nonpoint Source</u>	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 20
3. <u>Bank Erosion, Failure</u>	No evidence of significant erosion or bank failure. Little potential for future problem. 6	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 15	Many eroded areas. "Raw" areas frequent along straight sections and bends. 18
4. <u>Bank Vegetative Protection</u>	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. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
5. <u>Lower Bank Channel Capacity</u>	Ample for present peak flow plus some increase. Peak flows 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 to 25. 14	Inadequate, overbank flow common. W/D ratio > 25. 16
6. <u>Lower Bank Deposition</u>	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from course gravel. 9	Moderate deposition of new gravel and course sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
7. <u>Bottom Scouring and Deposition</u>	Less than 5% of the bottom affected by scouring and deposition. 4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30 to 50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20

12  
8  
9  
6  
14  
15  
8

Rating Item	Category							
	Excellent		Good		Fair		Poor	
8. <u>Bottom Substrate</u>	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	24
10. <u>Flow, at Rep. Low Flow</u>	Warm water, >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
11. <u>Pool/Riffle, Run/Bend Ratio</u>	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occasional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. <u>Aesthetics</u>	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured 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 Total Without Effluent --

Column Total With Effluent --

Add Column Scores Without Effluent, E \_\_\_ + G \_\_\_ + F \_\_\_ + P \_\_\_ = Reach Score

Add Column Scores With Effluent, E \_\_\_ + G \_\_\_ + F \_\_\_ + P \_\_\_ = Reach Score

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

0258T

166

No macroinvertebrate found other than 1 eel egg with 2 snails. Apparent lack of bottom org from buffer substrate is mostly clay, 30% gravel, 10% rubble. Further at flow reaching a 2" depth above present pool habitat

20

24

24

16

10

166

D.O. T  
9.3 5.8 8.1

Nutrients + BOD

#2 Four Corners School

STREAM SYSTEM HABITAT RATING FORM

Stream Trick to Cu Creek Reach Location NW 1/4 NE 1/4, Sect 23 Number of Reaches 1 Reach Score/Rating 151 - Fair

County Dodge Co Date 10/25/00 Evaluator FKW/LP Classification (Lemon Creek A/B/C/D/E/F/G/H/I/J/K/L/M/N/O/P/Q/R/S/T/U/V/W/X/Y/Z)

Rating Item	Category			
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2. Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 20
3. Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 6	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 15	Many eroded areas. "Raw" areas frequent along straight sections and bends. 18
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Rating Item	Category								
	Excellent		Good		Fair		Poor		
8. <u>Bottom Substrate</u>	Greater than 50% rubble, gravel or other stable habitat.	2 2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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	2
9. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	24	24
10. <u>Flow, at Rep. Low Flow</u>	Warm water, >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24	24
11. <u>Pool/Riffle, Run/Bend Ratio</u>	5 to 7. Variety of habitat. Deep riffles and pools. <i>lots of riffles &amp; pools</i>	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat. <i>poor depth</i>	8	15 to 25. Occassional riffle or bend. Bottom contours provide some habitat. <i>15</i>	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20	15
12. <u>Aesthetics</u>	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured corridor.	8	High natural beauty. Trees, historic site. Some development may be visible. <i>10</i>	10	Common setting, not offensive. Developed but uncluttered area.	14	Stream does not enhance aesthetics. Condition of stream is offensive.	16	10

Column Total Without Effluent --

Column Total With Effluent -- *1.5 MG total, over 30 days = 0.077 cfs #2*

Add Column Scores Without Effluent, E \_\_\_ + G \_\_\_ + F \_\_\_ + P \_\_\_ = Reach Score

Add Column Scores With Effluent, E \_\_\_ + G \_\_\_ + F \_\_\_ + P \_\_\_ = Reach Score

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

0258T

*P.O. 10.7*     *PH 7.0*  
*Nutrients, BOD, & B.C.T. & B.I.*

2  
24  
24  
15  
10  
151



Access Rd - #1  
Upstream view



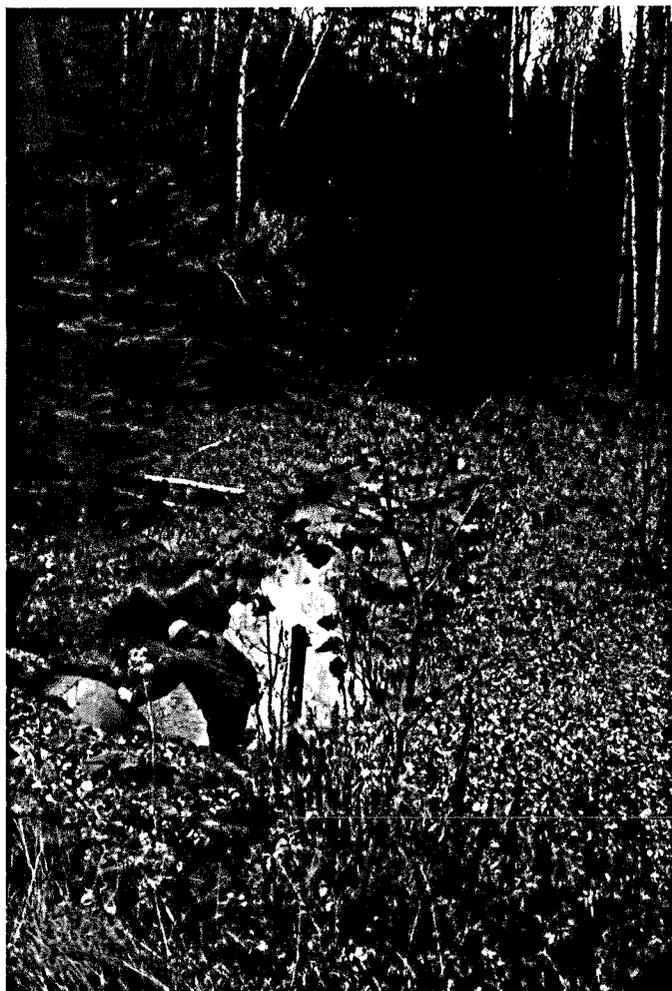
Access Rd - #1  
Downstream view  
←



Access Rd - #1  
Stream channel just  
below culvert →



Naman Rd - #2  
Upstream view



Naman Rd - #2  
Downstream view →



Darrel Rd - #3  
upstream view



Darrel Rd - #3  
Downstream view



