

Region NER County Ford du Lac Report Date Aug. 1975 Classification LFF to be upgraded to WWFF
 Water Body: Rosendale Tributary to the West Branch of the Ford du Lac River
 Discharger: Rosendale WWT P

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
- 1975 report cites low flow and describes stream as non-continuous. However the 1993 report contradicts this and calls it "continuous".
 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) 1975 report noted that "minnows" were observed. The 1993 report lists fish species found through electroshocking (10 species, including sunfish). No data on macroinvertebrates.
- 1993 Chemical Data (temp, D.O., etc.) None in the 1975 report. The 1993 report gives clarity, pH, and dissolved oxygen data. OK.
- 1993 Physical Data (flow, depth, etc.) The 1975 report gives a Q_{10} of 0.01 cfs. The 1993 report gives width, depth, evidence of channelization, but only cites the flow listed in the 1975 report.
- 1993 Habitat Description The 1975 report describes bottom as "muck". Also it says stream flows through some undergrowth. The 1993 report gives good description of cover, stream bottom, etc.
- 1993 Site Description/Map The 1975 report includes a hand-drawn map. The 1993 report gives a better description, including that of riparian land uses, length of stream, etc. Good.
- Other: _____

Historical Reports in file:

- Rosendale - Ford du Lac County - Wastewater Receiving Stream Classification, dated Aug. 6, 1975, 1 p. text, 3 photos, 1 map
- Rosendale Tributary to the West Branch of the Ford du Lac River, Triennial Stds. Review, dated Oct 1993, 3 p. text, 3 photos, 1 map.

Additional Comments/How to improve report:

The 1975 report is poor. However, the 1993 report appears to make a good case for reclassification to WWFF. No additional data should be necessary.

Rosendale Tributary to the
West Branch of the Fond du Lac River

Triennial Standards Review

October 1993

Richard Dreher / Mark Sesing

Southern District

Bureau of Water Resource Management
Wisconsin Department of Natural Resources

TABLE OF CONTENTS

SUMMARY 1

ROSENDALE TRIB. MAP 2

STREAM BIOLOGY, WATER QUALITY, AND HABITAT .. 3

PHOTOS 5

APPENDIX 1 - FISH DATA / 1990 6

APPENDIX 2 - FISH DATA / 1993 7

APPENDIX 3 - FIELD FORMS 8-12

SUMMARY

The Rosendale Tributary to the West Branch of the Fond du Lac River was originally designated as supporting Limited Forage Fish Communities, LFF(e). After reviewing available information relating to the stream habitat, water quality, and the aquatic life the stream supports, it is recommended that the stream be upgraded to a Warm Water Forage Fish Community, WWFF(d). This new classification may result in permit modification for the wastewater treatment plant in Rosendale.

INTRODUCTION

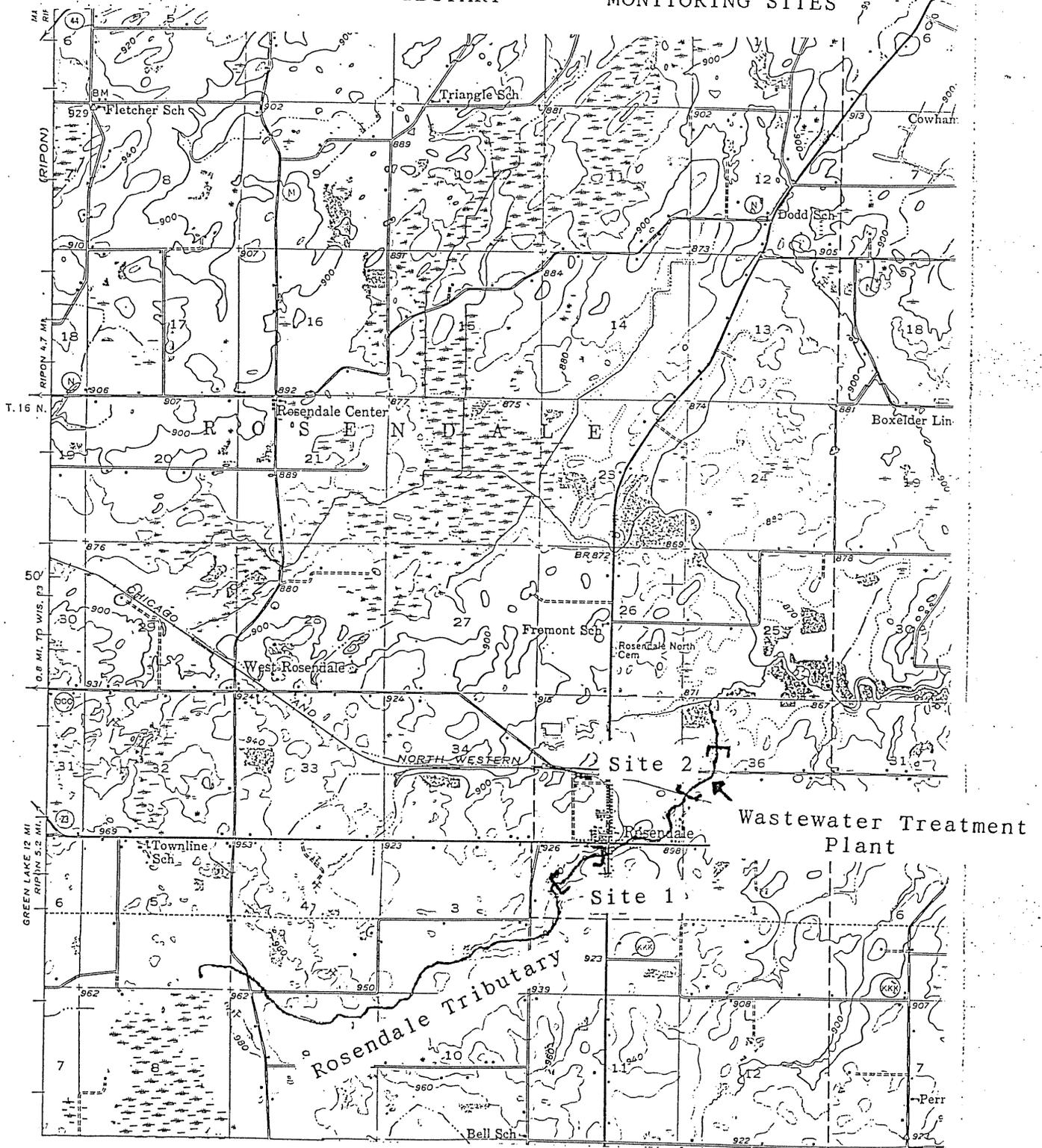
The Rosendale Tributary is a small continuous flowing stream which originates approximately 5 miles west of the village of Rosendale (T16N-R15E), flows northeasterly through the town, and joins the West Branch of the Fond du Lac about 2.5 miles northeast of the village (see map).

The majority of the stream's riparian land uses are agricultural with some wetland areas. There is some urban runoff as the stream flows through the Village of Rosendale.

The Village of Rosendale's wastewater treatment plant is located approximately 3500 feet from the confluence of the tributary to the West Branch. The plant is permitted to discharge treated wastewater to the tributary under WPDES Permit #WI-0028428.

The Q7,10 of the tributary is considered to be below .01 cfs.

ROSENDALE TRIBUTARY - - - MONITORING SITES



May 10, 1993

STREAM BIOLOGY, WATER QUALITY, AND HABITAT

Available habitat for fish and aquatic life was considered fair to good. Riparian cover and stream depth provide good shelter for smaller fishes. Although many downstream segments have a silt-clay substrate, fallen timber and brush provide good forage fish habitat (photo 1). Upstream segments are characterized by a sand-gravel substrate providing good cover for aquatic life.

Overhead bank cover and instream vegetation also provide suitable forage fish cover. The width of the stream varied from 1.5 m to 4 m with the reaches generally wider than 2 m. Depths averaged over 0.5 m and ranged from <0.5 m to 1.2 m in some deeper pools (App. 3). Channelization was obvious in certain segments and this reduced available cover for aquatic life (photo 2).

The riparian area around the Rosendale Tributary includes both residential and agricultural with frequent wetland areas (photo 3). Willow species provide good overhead canopy throughout these wetlands.

Watershed erosion and non-point pollution sources were not obvious. Various sources of agricultural runoff, along with a small amount of urban runoff account for most of the non-point sources entering the stream. Erosion was not a major problem instream as bank stability was >90%.

Rosendale Creek does support a diverse community of forage fish. Backpack electroshocking on both October 17, 1990 and May 10, 1993 documented a relatively diverse forage fish population. Fish species found in 1990 included white suckers, pearl dace, northern redbelly dace, northern creek chubs, mudminnows, and brook sticklebacks (App. 1). In 1993, all of these species were found, but also found were central stonerollers, fathead minnows, bluntnose minnows, and sunfish (App. 2). The presence of intolerant forage fish such as the dace species is an important criterion. These intolerants are susceptible to habitat and water quality degradation caused by cultural factors.

Water quality in the stream is generally good. No abnormal odors were noted and the stream is characterized with good water clarity. Dissolved oxygen readings ranged from 11.0 at site 2 to 13.0 at the first site with pH readings ranging from 7.8 to 8.0 respectfully.

After reviewing all the available information regarding the biology, habitat, and water quality of the Rosendale Tributary, it is recommended that the designated biological use classification be changed to WWFF(d), Warmwater Forage Fish Community.

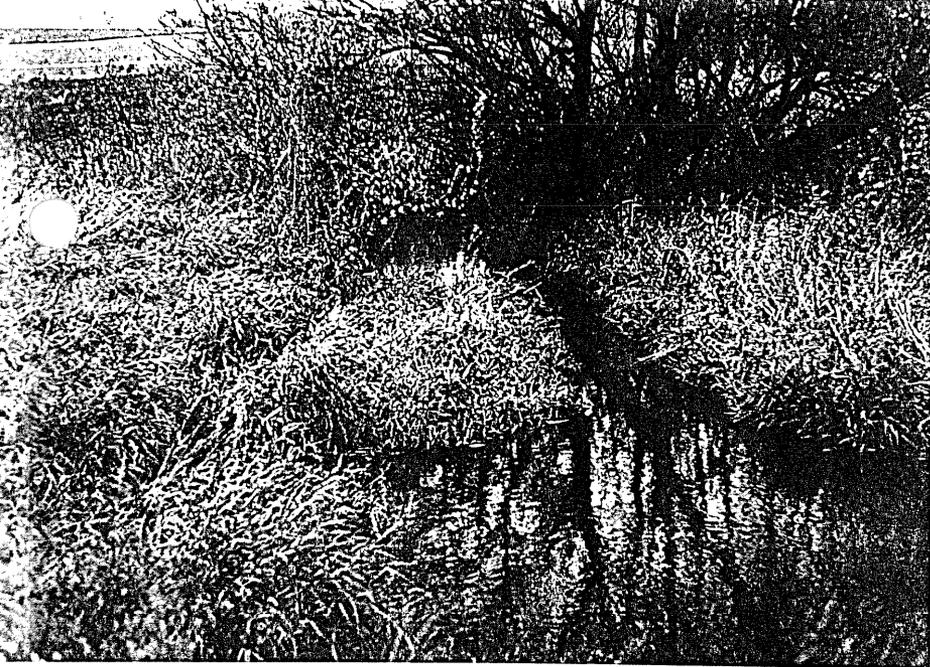


Photo 1 - Downstream from Rosendale WWTP. Overhead canopy along with available instream cover is good in this section. Many dace were found in this area.

Photo 2 - Site 1 west of State Highway 26. Although this segment was ditched, A good gravel/sand substrate along with some instream vegetation provide habitat.



Photo 3 - Good aquatic life habitat is found in the wetlands frequenting the area.

Rosendale Tributary - Fish Shocking

10/17/90 - - Mark Sesing

	site 2	classification
white sucker	8	tolerant forage
brook stickleback	3	tolerant forage
mudminnow	12	tolerant forage
northern creek chub	9	tolerant forage
pearl dace	13	intolerant forage
northern redbelly dace	3	intolerant forage

* Electroshocking in 1990 was conducted both above and below the wastewater treatment plant similar to site 2 in 1993.

Rosendale Tributary - Fish Shocking

5/10/93 - - - Mark Sesing / Rick Dreher

	site 1	site 2	classification
white sucker	14	5	tolerant forage
northern creek chub	4	11	tolerant forage
northern redbelly dace	-	1	intolerant forage
pearl dace	-	5	intolerant forage
brook stickleback	14	5	tolerant forage
bluntnose minnow	-	23	tolerant forage
fathead minnow	-	4	very tolerant for.
central stoneroller	4	2	intolerant forage
sunfish	-	1	sport fish
mudminnow	-	2	tolerant forage

* Electroshocking was done in two 150 meter segments of the tributary located on the map on page 2.

		Run	Pool
Stream Reach Type		150m	
Stream Reach Length			
Stream Reach Depth (ft.)	transverse	1'	14'
z present			
z max. present		2'	4'
low flow			
Stream Reach Width (ft.)	transverse	10'	10'
x present			
x high flow			
x low flow			
Substrate Size (Min. 10%)			
Detritus (P/Present)		10	10
Clay			35
Silt		10	35
Sand		20	
Gravel .25"-3.0"		50	10
Rubble 3.01"-12.0"		10	10
Boulder >12.01"			
Bedrock			
Velocity x present (m e) fps		1	<1
Vel. max. present			
Gradient		low	low
Bottom Deposition (Min. 10%)			
% area bottom covered		20	75
x depth sediment	transverse		
max. depth sediment	"		
deposition type	lateral		sheet
Material Comp. (Min. 10%)			
detritus		50	50
silt		50	50
sand			
gravel			
Overhead Bank Cover			
x bank width *0! <.25! <.5' etc.			
% of reach (10% Min.)		L	L
x depth below bank *		0	0
x bank + veg. width *		w	w
% of reach (10% Min.)			
x depth below bank+veg.*			
Instream Cover Rating		gf	gf
↑ Cover Material (Min. 10%)			
=np rock/bould. (P/Present)			
=ff log/tree/roots		10	
=gf debris (other)		10	
=fg instream veg.		10	
=gg bank+veg. (terrestrial)		35	25
depth/channel morph.		35	75
Shading (0,25,50,75,100)		25	25
aquatic Veg. (Min.10%) macro			
% coverage meso			
Floodplain Vegetation Type		URBAN	
Lower Bank Height			
Bank Stability % >90 >70 >50 <50		>90	>90
Bank Deposition			
Channelization		yes	?
Comments			

Rosendale trib/ W of 57th 26

PHYSICAL CHARACTERIZATION/WATER QUALITY
FIELD DATA SHEET

5-10-93

PHYSICAL CHARACTERIZATION

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Surrounding Land Use:

Forest Field/Pasture Agricultural Residential Commercial Industrial Other _____

Local Watershed Erosion: None Moderate Heavy

Local Watershed NPS Pollution: No evidence Some Potential Sources Obvious Sources

Estimated Stream Width 3 m Estimated Stream Depth: Riffle 46" m Run 0.5 m Pool 1.2 m

High Water Mark _____ m Velocity _____ Dam Present: Yes _____ No X Channelized: Yes No _____

Canopy Cover: Open Partly Open Partly Shaded Shaded

SEDIMENT/SUBSTRATE:

Sediment Odors: Normal Sewage Petroleum Chemical Anaerobic None Other _____

Sediment Oils: Absent Slight Moderate Profuse

Sediment Deposits: Sludge Sawdust Paper Fiber Sand Relict Shells Other silt + moderate

Are the undersides of stones which are not deeply embedded black? Yes No

Inorganic Substrate Components

Substrate Type	Diameter	Percent Composition in Sampling Area
Bedrock		
Boulder	>256-mm (10 in.)	
Cobble	64-256-mm (2.5-10 in.)	20
Gravel	2-64-mm (0.1-2.5 in.)	30
Sand	0.06-2.00-mm (gritty)	30
Silt	.004-.06-mm	> 20
Clay	<.004-mm (slick)	

Organic Substrate Components

Substrate Type	Characteristic	Percent Composition in Sampling Area
Detritus	Sticks, Wood, Coarse Plant Materials (CPOM)	10
Muck-Mud	Black, Very Fine Organic (FPOM)	10
Marl	Grey, Shell Fragments	

WATER QUALITY

Temperature 18.1 C Dissolved Oxygen 13.0 pH 8.0 Conductivity _____ Other _____

Instrument(s) Used YSI

Stream Type: Coldwater Warmwater

Water Odors: Normal Sewage Petroleum Chemical None Other _____

Water Surface Oils: Slick Sheen Globa Flecks None

Turbidity: Clear Slightly Turbid Turbid Opaque Water Color Brown

WEATHER CONDITIONS

PHOTOGRAPH NUMBER

5/10/93

South of Rd

North of Rd

Stream Reach Type	Run	Pool	Run	Pool
Stream Reach Length	200'		150'	
Stream Reach Depth (ft.)				(NO POOLS PRESENT)
z present	2'	3'	4'	
z max. present	4'	5'	4'	
z low flow				
Stream Reach Width (ft.)				
x present	8	8	10'	
x high flow	>8		>10'	
x low flow				
Substrate Size (Min. 10%)				
Detritus (P/Present)	10	20	10	
Clay	70	60	10	
Silt	20	20	80	
Sand				
Gravel .25"-3.0"				
Rubble 3.01"-12.0"				
Boulder >12.01"				
Bedrock				
Velocity x present (m e) fps	4	4	4	
Vel. max. present				
Gradient	low	low	low	
Bottom Deposition (Min. 10%)				
% area bottom covered	80	80	100	
x depth sediment	3"	3"	~4"	
max. depth sediment	6"	6"	12"	
deposition type	lateral	lat.	Sheet	
Material Comp. (Min. 10%)				
detritus	20	20		
silt	80	80	100	
sand				
gravel				
Overhead Bank Cover				
x bank width *0', <.25', <.5' etc.	.5'	.5'	.5'	
% of reach (10% Min.)				
x depth below bank *				
x bank + veg. width *				
% of reach (10% Min.)				
x depth below bank+veg.*				
Instream Cover Rating				
↓ Cover Material (Min. 10%)				
1=np rock/bould. (P/Present)	gf	gf	FAIR	
2=ff log/tree/roots				
3=gf debris (other)				
4=fg instream veg.	30	20	20	
5=gg bank+veg. (terrestrial)	30	30	75	
depth/channel morph.	40	40	5	
% Shading (0,25,50,75,100)	50	50	10	
Aquatic Veg. (Min.10%) macro	10	10	10	
% coverage meso				
Floodplain Vegetation Type				
Purple Loosestrife				
Lower Bank Height				
Bank Stability % >90 >70 >50 <50	>90	>90	>90	
Lower Bank Deposition	Some	-	some	
Channelization	NO	-	YES	
Comments				

PHYSICAL CHARACTERIZATION/WATER QUALITY
FIELD DATA SHEET

Rosendale Trl below WWTP

NORTH of EL DORADO NEAR ROAD treatment plant

(pool below culvert + ditched sewage)

PHYSICAL CHARACTERIZATION

RIPARIAN ZONE/INSTREAM FEATURES

Predominant Surrounding Land Use:

Forest Field/Pasture Agricultural Residential Commercial Industrial Other _____

Local Watershed Erosion: None Moderate Heavy

Local Watershed NPS Pollution: No evidence Some Potential Sources Obvious Sources

Estimated Stream Width 4 m Estimated Stream Depth: Riffle _____ m Run 1 m Pool _____ m

High Water Mark _____ m Velocity _____ Dam Present: Yes _____ No X Channelized: Yes X No _____

Canopy Cover: Open Partly Open Partly Shaded Shaded

SEDIMENT/SUBSTRATE:

Sediment Odors: Normal Slight Sewage Petroleum Chemical Anaerobic None Other _____

Sediment Oils: Absent Slight Moderate Profuse

Sediment Deposits: Sludge Sawdust Paper Fiber Sand Relict Shells Other Ag

Are the undersides of stones which are not deeply embedded black? Yes No

Inorganic Substrate Components

Substrate Type	Diameter	Percent Composition in Sampling Area
Bedrock		
Boulder	>256-mm (10 in.)	
Cobble	64-256-mm (2.5-10 in.)	
Gravel	2-64-mm (0.1-2.5 in.)	
Sand	0.06-2.00-mm (gritty)	
Silt	.004-.06-mm	
Clay	<.004-mm (slick)	<u>50</u> <u>50</u>

Organic Substrate Components

Substrate Type	Characteristic	Percent Composition in Sampling Area
Detritus	Sticks, Wood, Coarse Plant Materials (CPOM)	
Muck-Mud	Black, Very Fine Organic (FPOM)	
Marl	Gray, Shell Fragments	

WATER QUALITY

Temperature 19.0 c Dissolved Oxygen 11.0 pH 7.8 Conductivity _____ Other _____

Instrument(s) Used _____

Stream Type: Coldwater Warmwater

Water Odors: Normal Slight Sewage Petroleum Chemical None Other _____

Water Surface Oils: Slick Sheen Globs Flecks None

Turbidity: Clear Slightly Turbid Turbid Opaque Water Color _____

WEATHER CONDITIONS

PHOTOGRAPH NUMBER

Stream ROSENDALE TRAIL Reach Location SOUTH OF EL DORADO ROAD NEAR WWTP Reach Score/Rating 170
 County F.D.L. Date 5-10-93 Evaluator SEUNG Classification _____

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	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 run off. 16
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	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
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flow 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 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. 15	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% 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
Bottom Substrate/Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% 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
Avg. Depth Riffles and Runs	Cold >1' 0 Warm >1.5' 0	6" to 1' 6 10" to 1.5' 6	3" to 6" 18 6" to 10" 18	<3" 24 <6" 24
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' 18	<2' 24 <3' 24
Flow, at Rep. Low Flow	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs 18	<.5 cfs 24 <1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured 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 Totals: _____ 27 _____ 119 _____ 24

Column Scores E _____ +G _____ +F _____ +P _____ = 170 = Score

<10 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

Rosendale - Fond du Lac County

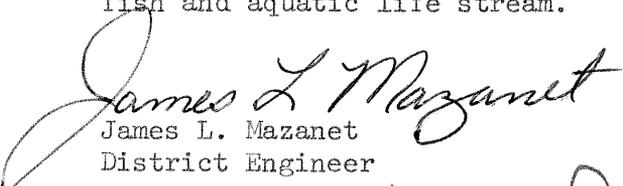
Wastewater Receiving Stream Classification

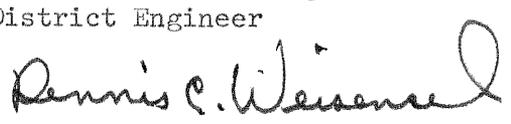
Survey Date: 8-6-75

The Village of Rosendale discharges its treated wastewater to a tributary of the West Branch of the Fond du Lac River. This tributary has a $7Q_{10}$ of 0.01 CFS. The stream showed evidence of minnows at State Highway "23", however, flow was minimal. The stream bottom is mostly muck. Down stream of the sewage treatment plant, the stream flows through heavy undergrowth and eventually joins the West Branch of the Fond du Lac River.

Recommendations

The tributary shall be classified as a noncontinuous, intermediate aquatic life stream to the confluence with the West Branch of the Fond du Lac River. The West Branch of the Fond du Lac River shall be classified as a continuous fish and aquatic life stream.


James L. Mazanet
District Engineer


Dennis C. Weisensel
District Biologist

JLM:DCW:sh



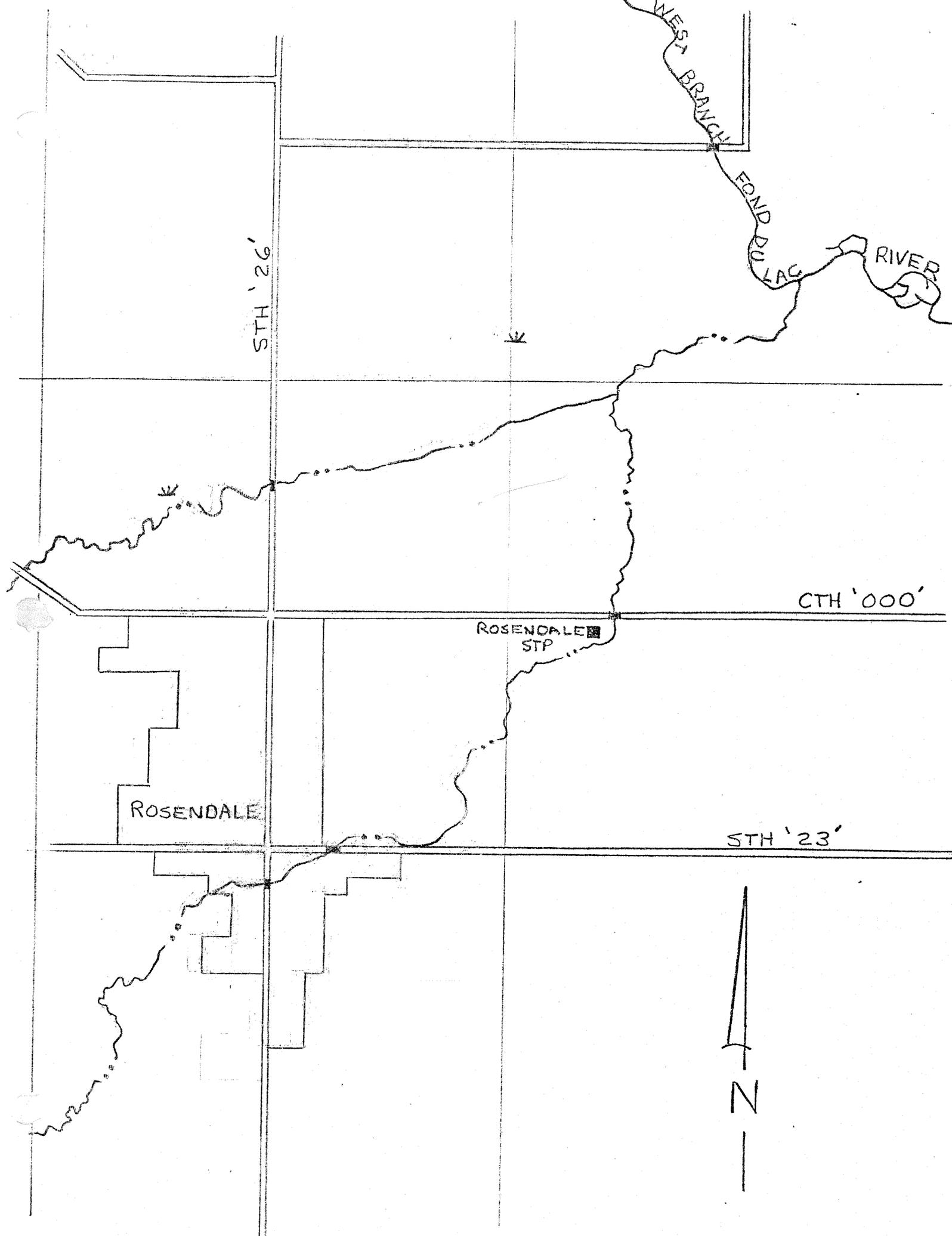
Tributary of the West Branch of the
Fond du Lac River at State Highway "23",
looking west. Upstream of Rosendale STP.



Stream looking east at State Highway
"23", upstream of Rosendale STP.



Stream at County "000", below
Rosendale STP.



WESA BRANCH
FOND DU LAC RIVER

STH '26'

CTH '000'

ROSENDALE STP

ROSENDALE

STH '23'

