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Rio Tributary to  
Rocky Run Creek

Triennial Standards Review

October 1993

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Southern District

Bureau of Water Resource Management  
Wisconsin Department of Natural Resources

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## INTRODUCTION

After an on-site evaluation and review of information relating to stream habitat, water quality, and biology, it is recommended that the Rio Tributary to Rocky Run Creek remain classified Limited Aquatic Life, LAL(f). Low natural stream flow, in-place pollutants, and irretrievable cultural alterations suggest that there be no classification upgrade.

## GENERAL DESCRIPTION, HABITAT, AND STREAM BIOLOGY

Rio Tributary is a low gradient, noncontinuous tributary located in southeast Columbia County. It originates northwest of the town of Rio and flows northwest to connect with Rocky Run Creek near Gorman Road (see map). It flows past Rio's two aerated lagoons where wastewater is stored for a six month period before discharge. Since no discharge was occurring at the time of our classification evaluation (Sept. 30, 1993), there was no stream flow upstream of State Highway 16 (photo 1). Considerably different features are found downstream from the highway, so State Highway 16 will be used as a upstream/downstream dividing line for this narrative.

### UPSTREAM FROM HIGHWAY 16

Although no flow was present upstream, an obvious streambed could be seen which averaged between 0.5 and 1.5 m wide (photo 2). Depths would be dependent on various factors, namely discharge.

The tributary originates in a residential area in the town of Rio, flows past the lagoons, and then follows railroad tracks towards Highway 16. The entire section is channelized and flows through a disturbed area characterized by brush and small trees. This provides some overhead canopy for the tributary, but for the most part, the channelization and low flow limits aquatic life.

The gravel/rock substrate upstream would provide some good aquatic life habitat dependent on flow, but both instream vegetation and overhead bank cover is lacking with many "raw" areas along the banks. Erosion potential is significant due to lack of vegetative cover especially during high flow periods (i.e. discharge periods). The steep bank leading down to the stream along the railroad tracks also increases both erosion and pollution potential.

# Rio Tributary to Rocky Run Creek



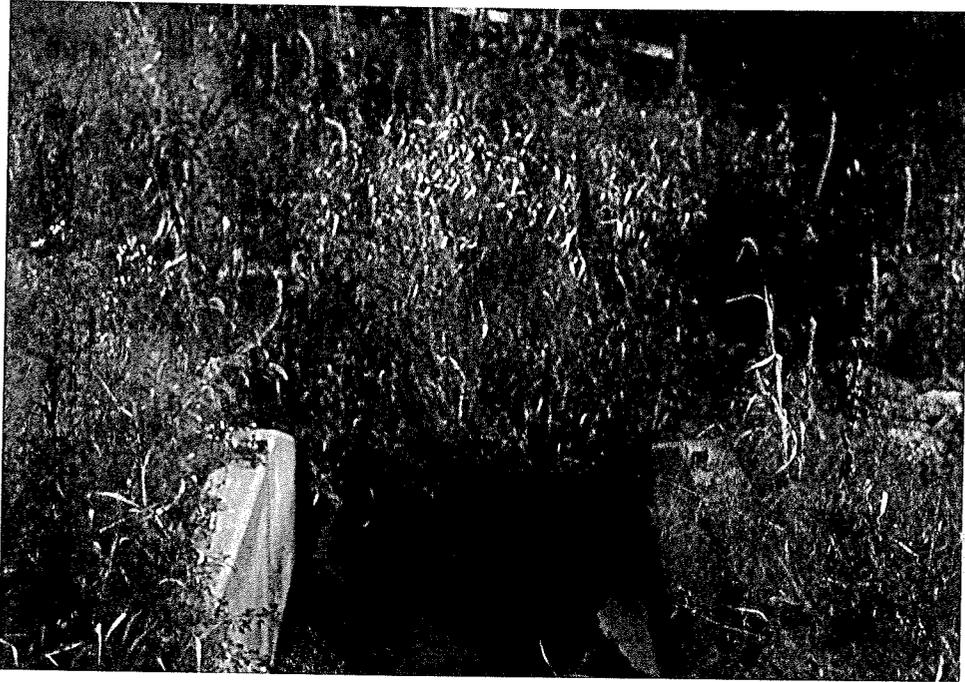


Photo 1 - Discharge area north of the wastewater lagoons. The streambed was dry during the classification evaluation with weedy vegetation dominating.



Photo 2 - Typical shot of streambed upstream of State Highway 16. The entire section has been channelized. Erosion potential is significant with many raw areas and a steep bank leading down from the railroad tracks towards the right of this picture.

## DOWNSTREAM FROM HIGHWAY 16

Downstream from the highway, stream features change dramatically. The riparian area turns into a mainly wetland setting with different types of wetland vegetation (photo 3). This includes tall wetland grasses along with willow species. Both overhead bank cover and canopy are increased.

Instream vegetation also increases downstream. Both submergent and emergents, such as cattails, provide cover for aquatic animals like frogs and waterfowl and habitat for forage fish species.

Backpack electroshocking conducted on September 20 revealed a very limited forage fish community (table 1). Brook sticklebacks and mudminnows constituted the only species found, and both are very tolerant of adverse conditions.

The substrate in the downstream segment is mainly fine inorganic silt. Embeddedness is 100% in this entire section with sediment depths over one foot not uncommon. No riffled areas are present.

Erosion problems are not significant in the downstream section due to the low flow and high bank stability. During high flow periods, most erosion would occur upstream where the riparian area is disturbed and bank cover minimal. There is potential for farmland runoff in the downstream segment.

Although water depths can reach up to 2 feet downstream, flow is one of the tributary's biggest limiting factors. The low gradient coupled with the low flow kept water movement minimal which helped spawn large amounts of filamentous algae (photo 4).

Based on the obvious conditions (especially the low flow) and the irretrievable cultural changes, such as the upstream channelization, it is recommended that the stream use classification remain Limited Aquatic Life, LAL(f).



Photo 3 - The tributary enters a wetland area downstream from State Highway 16. Wetland grasses along with willows dominate the riparian area.



Photo 4 - With a substrate of deep muck and large amounts of filamentous algae present, good fish habitat is limited. Some brook sticklebacks and mudminnows were present here.

FISH SHOCKING / RIO TRIBUTARY

Sept. 30, 1993 - Mark Sesing/Rick Dreher

species	number	classification
brook stickleback	6	tolerant forage
mudminnow	8	tolerant forage

\* Electroshocking was conducted in a 50 meter segment near Gorman Road.

Table 1

Stream RIO Reach Location SOUTH OF GOMMAN Rd Reach Score/Rating 193  
 County Columbia Date 9/30/93 Evaluator DREHER Classification LAL

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. 10	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: 53 68 72

Column Scores E 53 +G 68 +F 72 = 193 = Score

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



Region SCR County Columbia Report Date 10/1993 Classification CA2  
 Water Body: Rocky Run Creek, Rio Trib  
 Discharger: Rio WWTP

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:

- (in place)  
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/slides

**Historical Reports in file:**

- 10/1993 - Richard Dreher / Marc Seeling
- 1/12/83 - Keith Hutchinson
- 10/20/76 - Tom Bambridge

**Additional Comments/How to improve report:**

- adequate supporting data
- low flow & "in place" pollutants are ID'd as limiting factors - seems like low flows primary factor
- good report

Date: January 12, 1983

File Ref: 3200

To: Files

From: Keith F. Hutchison

Subject: Stream Classification of the Tributary to Rocky Run Creek at Rio

On October 13, 1982, the tributary to Rocky Run Creek was assessed at the Rio Wastewater Treatment Plant (WWTP) in Columbia County. The stream above the Rio WWTP was dry and below the WWTP it runs through a wetland area. The stream channel was dry and not well defined above highway 16, which is below the WWTP outfall. Ditching had occurred between highway 16 and Magan Road which is a short distance below highway 16. There was standing water in the ditched portion of the stream, but no noticeable flow. The Q<sub>7,2</sub> of the stream is zero. The lack of water in this stream obviously severely limits its use by aquatic life.

Based on the above information this tributary to Rocky Run Creek should be classified as a class E stream, or noncontinuous marginal surface waters at Rio.

KFh:bes

cc: Tom Bainbridge - SD

→ Dan Moran - WRM/2

NOTED:

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Date

Rio Sewage Treatment Plant  
Columbia County

October 20, 1976  
Rocky Run Tributary

Rocky Run Creek - Surface Acres = 65.75 Miles, Miles = 21.7, Gradient = 6.22 feet per mile.

A long low-gradient stream which originates at Mud Lake and flows to the Wisconsin River. The stream is unusual in that it originates in an open marsh and has warm water for several miles before receiving sufficient spring flow and bank cover to make conditions suitable for trout. After several miles the stream again warms and warm water fishes persist downstream to the mouth. The stream is stocked annually with brook and brown trout. About 2,200 acres of wetland adjoin the stream.

Rocky Run Tributary is a small intermittent stream which flows into Rocky Run Creek. The Rio sewage treatment plant has a ~~two-cell lagoon~~ <sup>7.5 acre existing pond</sup> system which discharges into this tributary. Most of the stream has been ditched and more than three-fourths of it flows through marsh acreage.

Recommendations

From the Rio lagoon downstream to the juncture with Rocky Run Creek, the classification should be noncontinuous marginal surface waters. From this point and for the remainder of Rocky Run the classification should be continuous fish and aquatic life.

The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

Robert Weber - District Engineer  
Jim Congdon - Area Fish Manager  
Tom Bainbridge - District Biologist  
Roger Schlessler - Natural Resources Technician

Respectfully submitted,

  
Thomas Bainbridge  
Stream Classification Coordinator

TB:lg

