

**Ruffy Brook Stream Study
Clearwater County
2005**

**Submitted by Bill Evarts, Bemidji Area Fisheries
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Background: The survey and evaluation of Ruffy Brook was initiated in response to an expressed interest in bringing trout back to the stream by a group of citizens in the area. Through a partnership with the Red Lake Watershed District, a program of water quality monitoring and stream channel assessment was initiated in 2005.

The stream was stocked with brown trout from 1948 to 1962 (Table 1).

Trout populations declined in the 1960's as result of changes in land use. The stream was delisted as trout water in 1972. An excellent review of the history and description of the watershed is presented in the draft Red Lake Watershed District 2005 Ruffy Brook Monitoring Report.

Objectives: Determine if stream habitat and water quality will support trout.

Study Area:

Historical designated trout water from Clearwater County CSAH 9 T 149 R 37 S 8 to southern boundary of Clearwater County T 149 R 37 S 26 (for maps, see Hanson, 2005).

Methods: The Red Lake Watershed District is has implemented water quality studies monitoring water, dissolved oxygen and stage using continuous in-stream data loggers at three stations in the reach.

Minnesota DNR Fisheries will do Rosgen Level II surveys in three reaches: reference (stable, undisturbed site), impacted (heavily pastured with unstable banks and non-existent riparian zone), and intermediate (an area where riparian zone restoration is being implemented). As part of the survey, habitat for fish ≥ 8 inches in length will also be measured.

Once these surveys are completed, a fish community survey for each reach is to be done in the sections used for the Rosgen surveys. The Aggasiz Plain IBI (Niemela et al. 1998) will be used as another indicator of stream quality.

Completed in 2005:

The Red Lake Watershed District is analyzing the first year of water quality data. The draft report is attached.

Due to a late start and restrictions on access to the intermediate and reference Rosgen sites, only the Rosgen survey of a pastured reach was completed (see Figure 1 and Rosgen Classification Summary attached). Mesohabitat and fish habitat results are presented in Tables 1 and 2. Fish habitat was measured following the definitions in the 2005 Minnesota Department of Natural Resources draft Fisheries Stream Survey Manual. Fish habitat is essentially absent from this reach. Much of the boulder cover is water too shallow to be utilized by larger fish. The pools are shallow with the substrate dominated by sand.

% Riffle: 45
 % Pool: 41
 % Run/Glide: 14

Table 1. Mesohabitat composition percent of the station by length.

Undercut bank:	6 sq ft	.06 %
Overhanging vegetation:	0	0
Woody cover:	20 sq ft	.2 %
Other debris:	15 sq ft	.14 %
<u>Boulder ≥ 10" dia</u>	<u>315 sq ft</u>	<u>3.00 %</u>
Total	356	3.20 %

Table 2. Habitat for fish larger than 8" in square feet and percent wetted area.



Figure 1. Pastured reach used for Rosgen Level II survey.

Recommendations:

Complete the Rosgen and fish community surveys in 2006.

Complete water quality monitoring in 2006.

Determine if the stream will support trout.

Develop an action plan dealing with easements, future habitat improvement, trout stocking, and future monitoring.

Keep landowners informed.

Note: Photo and data files are in: [D:/Bill Evarts/Bemidji Area Projects and Info/Trout Streams/Ruffy Brook /](D:/Bill Evarts/Bemidji Area Projects and Info/Trout Streams/Ruffy Brook/)

References:

- Niemela, S., E. Pearson, T. P. Simon, R. M. Goldstein and P. A. Bailey. 1998.
Development of index of biotic integrity expectations for the Lake Agassiz plain
ecoregion. EPA 905R-96-005. U. S. Environmental Protection Agency, Region 7,
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- Hanson, C. 2005. Draft summary. Ruffy Brook monitoring. Red Lake Watershed District,
Thief River Falls, MN.

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