

# CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: March 10, 1981  
To: Central Office - Madison

File Ref: 3200  
(Mark Tusler - WQM/2)

From: Frank J. Koshere

MAR 13 1981

Subject: Stream Classification for Unnamed Tributary to the Pokegama River, T48N, R14W, Sec. 4, Douglas County, Wisconsin

Recommendation: The unnamed tributary to the Pokegama River, T48N, R14W, Sections 4, 9, 16, 17, Douglas County, Wisconsin, shall be classified a continuous stream (NR 104.02(1)(f)) and shall be categorized as surface water not supporting a balanced aquatic community (NR 104.02(3)(a)).

Description: This stream originates in an extensive wetland composed of primarily sedge and tag alder, with scattered poor quality aspen present. The contributing watershed at the start of a defined stream channel near the Section 16/17 line may consist of all or portions of the contiguous wetlands lying in Sections 16, 17, 18, 19, 20 and 21. The U.S.G.S. 1975 revised West Duluth, Minnesota-Wisconsin 7.5 minute quadrangle (copied portion attached) shows an approximate maximum elevation change of 34 feet from stream bed to highland within the described area.

The stream channel at the Section 16/17 culvert crossing the active Duluth Mesabi and Iron Range railroad grade has previously been ditched. The upstream channel quickly becomes ill-defined in the wetland. The downstream channel is approximately six feet wide near the culverts and soon diffuses into tag alder and sedge growth.

Flow at this point has been measured at 13.4 cfs on September 4, 1980, and approximately 0.24 cfs on October 16, 1980. Water depth does not vary as extremely as flow. Water depth on the downstream side of the culvert varied from approximately 2.0 feet at the higher flow to approximately 1.5 feet at the lower flow. Downstream channel depth is approximately 1.5 to 3.0 feet and appears likely to remain wet under most conditions.

The stream crosses an abandoned railroad grade midway in Section 9. A large beaver dam with approximately eight feet of head creates a narrow flowage extending about .25 mile upstream. An abandoned beaver dam is located near the Section 9/16 line with a small residual flowage. Land use in this area is a combination of wooded and lowland pasture, with grass and aspen predominating over sedge and tag alder.

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2.

The stream gradient increases below the abandoned railroad grade. The channel is sharply cut into steep sided clay banks, characteristic of streams in the red clay soils of the area. Near stream vegetation is primarily aspen forest. Another beaver dam and flowage is located just above HWY 105.

U.S.G.S. predicts a  $Q_{7,10}$  of 0.0 cfs for this stream. Because of the wetland in the upper watershed and storage capacity in the beaver flowages, some flow will probably occur in the stream above the abandoned railroad grade under all but the most extreme drought conditions. Below the abandoned railroad grade the stream may be periodically dry.

Seasonal low flow and wetland drainage low in dissolved oxygen will probably combine as the primary limiting factor to a strong and diverse aquatic community. Habitat is limited by poor quality substrate (primarily organic above the abandoned railroad grade and scoured clay below), fluctuating water levels due to beaver activity, indistinct stream banks, shallowly flooded dead or dying terrestrial vegetation, and shading of sunlight from vegetation and red clay turbidity.

A classification of continuous-intermediate aquatic life best describes naturally existing conditions and should allow the continuation of any existing aquatic community.

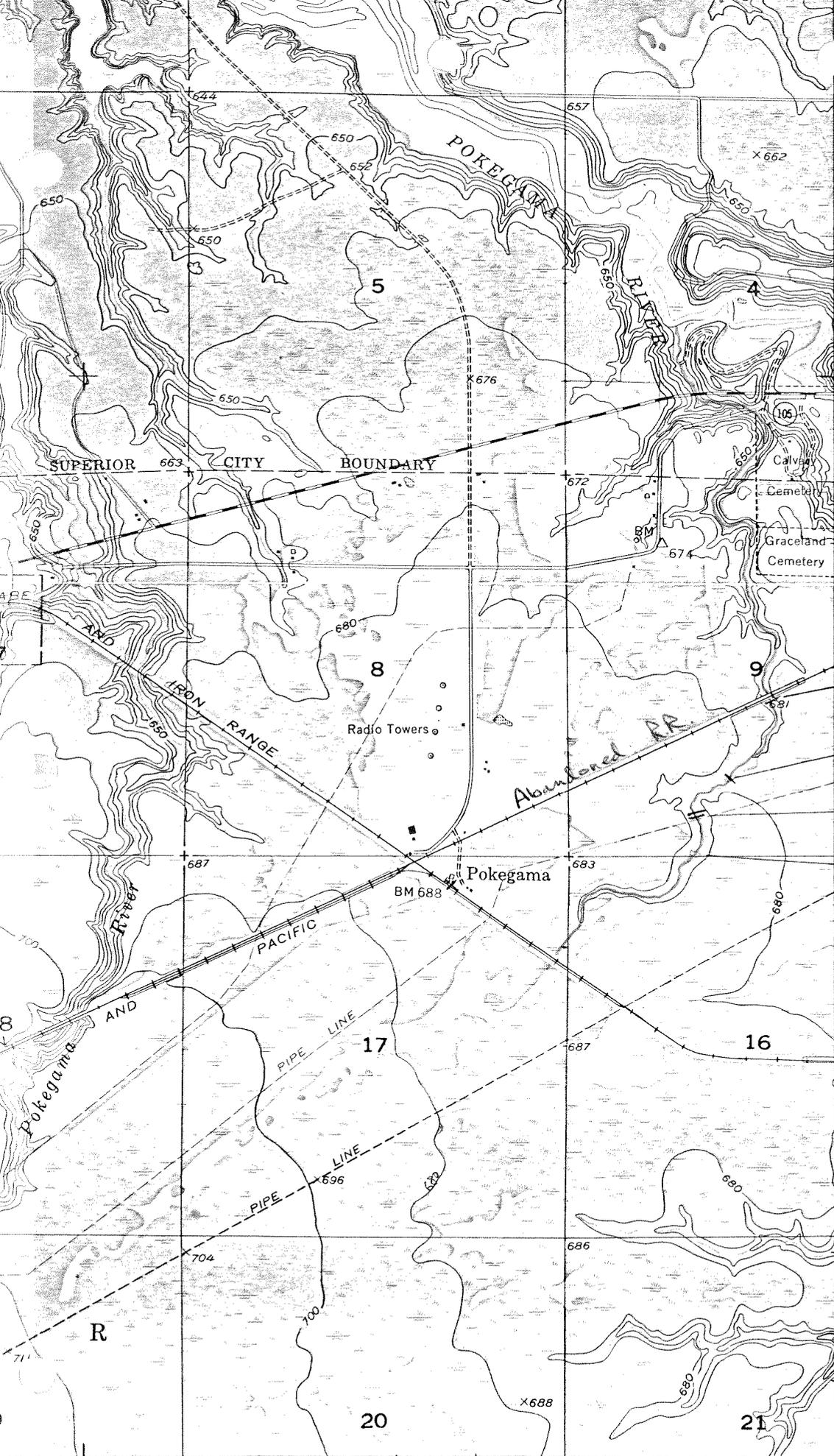
Personnel involved in documenting this classification include Larry Prenn, Greg Sevener, Ted Smith and Frank Koshere of the Northwest District Surface Water Surveillance Unit. The Brule Area fish manager agrees with our assessment.

Attachment

FJK:mj

cc: R. Gothbland

*BRULE AREA*



T. 49 N.  
 T. 48 N.  
 5169  
 40'  
 SOUTH SUPERIOR 0.8 MI.  
 SUPERIOR (CH) 3.7 MI.

5167 - Bewer dam  
 Upper end of  
 Bewer flowage  
 Tractor Bridge  
 old Bewer dam  
 → Match with  
 Superior Quadrangle

5166  
 5165  
 50 000 FEET  
 (MINN.)  
 5164000m.N.

West Duluth, Minn.; Wi.  
 1954 - 7.5'  
 Revised 1969 - 1995

10' ● INTERIOR - GEOLOGICAL SURVEY, RESTON, VIRGINIA - 1977; 2 240 000 FEET (MINN.) 46°37'30"  
 566000m E. 92°07'30"

1 MILE

Match with Borea Quadrangle  
 ROAD CLASSIFICATION

(SUN)

BOREA QUADRANGLE

WISCONSIN-DOUGLAS CO.

7.5 MINUTE SERIES (TOPOGRAPHIC)

SW/4 SUPERIOR 15' QUADRANGLE

(SUPERIOR)

Match  
↑

UTH)

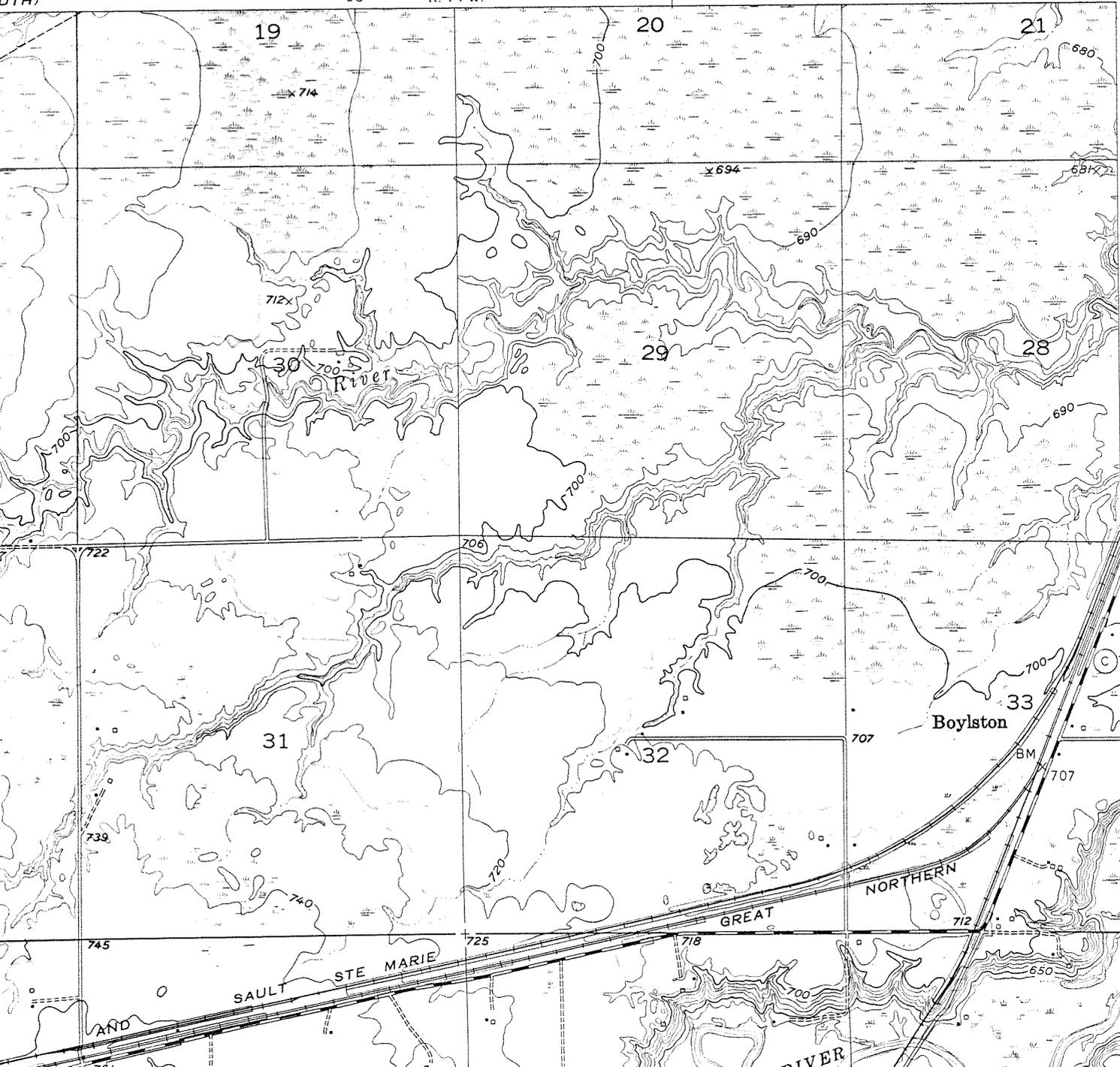
10' R. 14 W.

1 460 000 FEET

1964

92°07'30"

46°37'30"

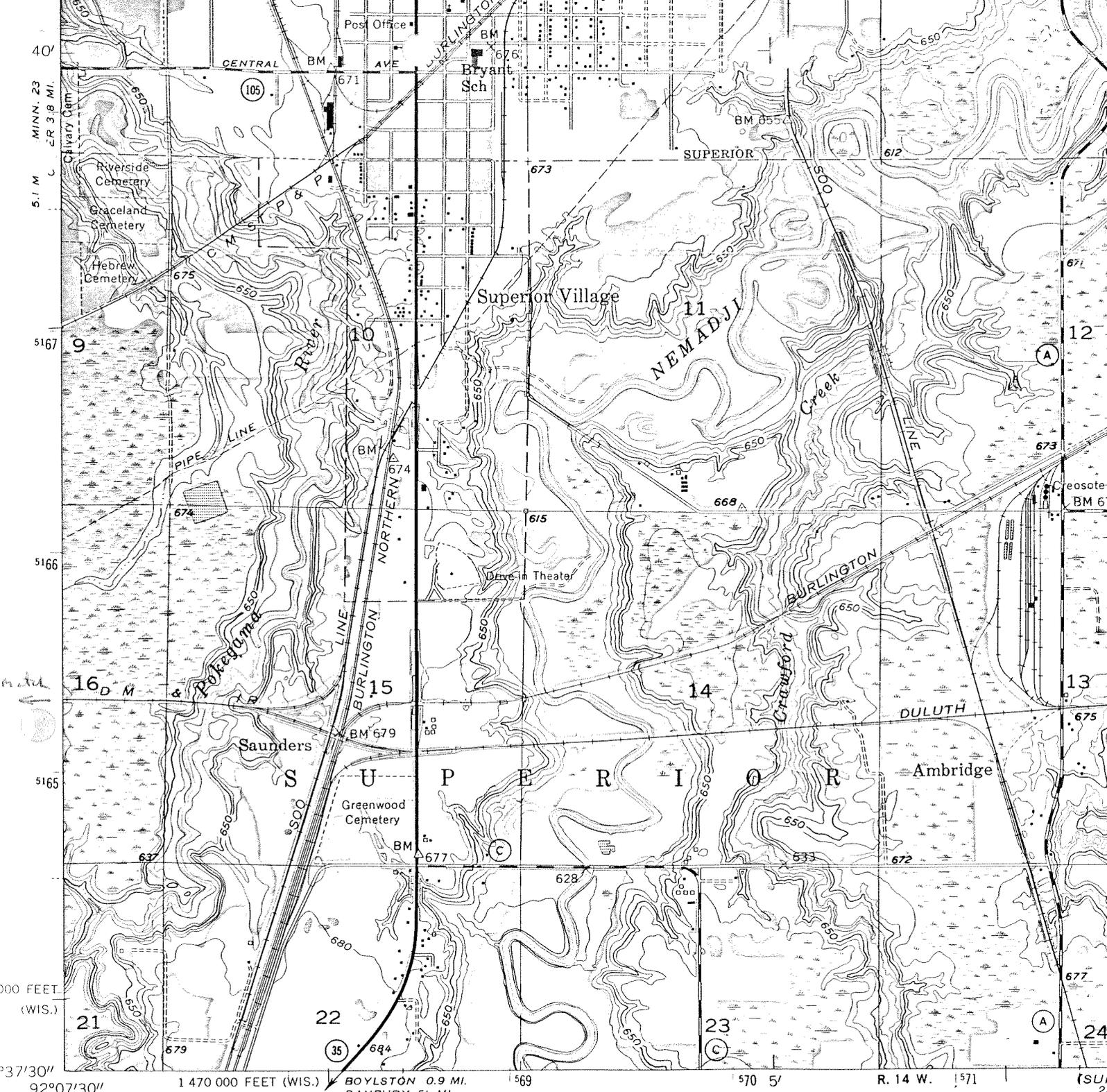


BOYLSTON JUNCTION 0.8 MI.  
SUPERIOR (COURTHOUSE) 8.8 MI.

530 000  
FEET

T. 48 N.

T. 47 N.



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

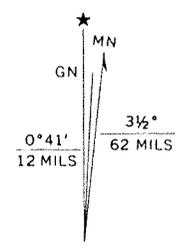
Topography from aerial photographs by Kelsh plotter and by plane-table surveys 1954. Aerial photographs taken 1952  
Hydrography from U. S. Lake Survey Chart 966 (1:15,000)

Polyconic projection. 1927 North American datum  
10,000-foot grids based on Wisconsin coordinate system, north zone, and Minnesota coordinate system, north zone

Red tint indicates areas in which only landmark buildings are shown

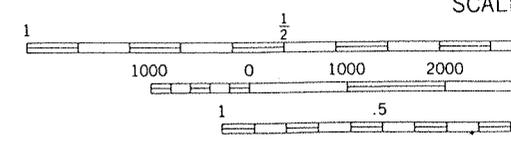
Revisions shown in purple compiled in cooperation with the State of Minnesota from aerial photographs taken 1969 and 1975. This information not field checked

Purple tint indicates extension of urban areas



UTM GRID AND 1975 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

*Superior, Wis - Minn.  
1954 - 75'  
Revised 1969 & 1975*



CONTOUR IN NATIONAL GEODETIC DEPTH CURVES AND SOUNDINGS

THIS MAP COMPLIES WITH NATIONAL MAP ACT FOR SALE BY U. S. GEOLOGICAL SURVEY AND WISCONSIN GEOLOGICAL AND NATURAL HISTORY DEPARTMENT A FOLDER DESCRIBING TOPOGRAPHIC MAPS

March 10, 1981

3200

(Mark Tusler - WQM/2)

Central Office - Madison

Frank J. Koshera

*(Duluth, Winnipeg, and Pacific site)*

Stream Classification for Unnamed Tributary to the Pokegama River, T48N, R14W, Sec. 4, Douglas County, Wisconsin

Recommendation: The unnamed tributary to the Pokegama River, T48N, R14W, Sections 4, 9, 16, 17, Douglas County, Wisconsin, shall be classified a continuous stream (NR 104.02(1)(f)) and shall be categorized as surface water not supporting a balanced aquatic community (NR 104.02(3)(a)).

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Flow at this point has been measured at 13.4 cfs on September 4, 1980, and approximately 0.24 cfs on October 16, 1980. Water depth does not vary as extremely as flow. Water depth on the downstream side of the culvert varied from approximately 2.0 feet at the higher flow to approximately 1.5 feet at the lower flow. Downstream channel depth is approximately 1.5 to 3.0 feet and appears likely to remain wet under most conditions.

The stream crosses an abandoned railroad grade midway in Section 9. A large beaver dam with approximately eight feet of head creates a narrow flowage extending about .25 mile upstream. An abandoned beaver dam is located near the Section 9/16 line with a small residual flowage. Land use in this area is a combination of wooded and lowland pasture, with grass and aspen predominating over sedge and tag alder.

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The stream gradient increases below the abandoned railroad grade. The channel is sharply cut into steep sided clay banks, characteristic of streams in the red clay soils of the area. Near stream vegetation is primarily aspen forest. Another beaver dam and flowage is located just above HWY 105.

U.S.G.S. predicts a  $Q_{7,10}$  of 0.0 cfs for this stream. Because of the wetland in the upper watershed and storage capacity in the beaver flowages, some flow will probably occur in the stream above the abandoned railroad grade under all but the most extreme drought conditions. Below the abandoned railroad grade the stream may be periodically dry.

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Attachment

FJK:mj

cc: R. Gothbland

BRULE AREA

TO: FILES

FROM: Larry Prenn

DATE: May 21, 1991

SUBJECT: **DULUTH-WINNIPEG & PACIFIC RAILWAY  
POINT SOURCE EVALUATION**

**Description:**

The DW&P railyard treatment plant consists of a combined industrial and sanitary wastewater treatment system that utilizes both physical and chemical processes for treatment. The outfall, located just to the northwest of the plant, discharges to the upper end of a spill containment impoundment. Also, feeding the upper end of the impoundment is runoff from the railyard and wetland drainage.

Discharge from the lower end of the impoundment is controlled by a weir that has a subsurface draw. Additional channelized wetland and yard drainage joins the discharge from the east just below the control structure. These two sources form the headwaters of an intermittent tributary to the Pokegama river located approximately two miles downstream.

The tributary channel is poorly defined along the upper portion of flow where it is surrounded by extensive wetland and lowland scrub vegetation. About halfway to the Pokegama River, elevation and stream gradient change resulting in a well defined stream channel. Characteristic of this section are steeply cut clay banks and a scoured, sometimes deeply cut channel that is indicative of the high flow potential and the flashy nature of this and other streams in the red clay region.

U.S.G.S. predicts a  $Q_{7,10}$  of 0.0 cfs for the tributary. A previous site visit on July 26, 1988 during unusually dry conditions proved this to be accurate. Only a trickle of flow was present emerging from the wetland above the treatment facility (Map attached, Site D-A), and at a tractor bridge crossing (Site D-2) downstream of the spill containment impoundment. Flow at both sites was too slight to be measured. Further downstream, where an abandoned road crosses the tributary (Site D-3), isolated pools of standing water were present in the streambed. At Hwy. 105 (Site D-4) the culvert for the tributary was completely dry.

The potential for zero flow was also evidenced in August, 1980. A stream gaging just downstream of Hwy. 105 measured flow at 0.017 cfs.

## Summary:

A background sample, representative of the wetland drainage/yard runoff that forms the headwaters of the Pokegama tributary, was collected at only one of two possible sties. Lack of flow prevented sampling the intermittent drainage directly feeding the spill containment impoundment. A slight flow, estimated at 0.04 cfs., allowed sampling at the culvert under the blacktop road just to the east of the STP (Site D-A). Nutrients, BOD<sub>5</sub>, and suspended solids were all measured at low levels. Abundant filamentous algae was present in the channel downstream of the culvert.

No discharge was occurring from the STP to the containment impoundment. A heavy planktonic algae bloom was present throughout the impoundment, and abundant mats of filamentous algae were in place near the tail-end of the impoundment. Sample results of the discharge at the weir (Site D-D1) showed moderate increases in nutrient and BOD<sub>5</sub> levels. Indicative of the heavy algae bloom occurring in the impoundment were an elevated pH and a supersaturated dissolved oxygen level.

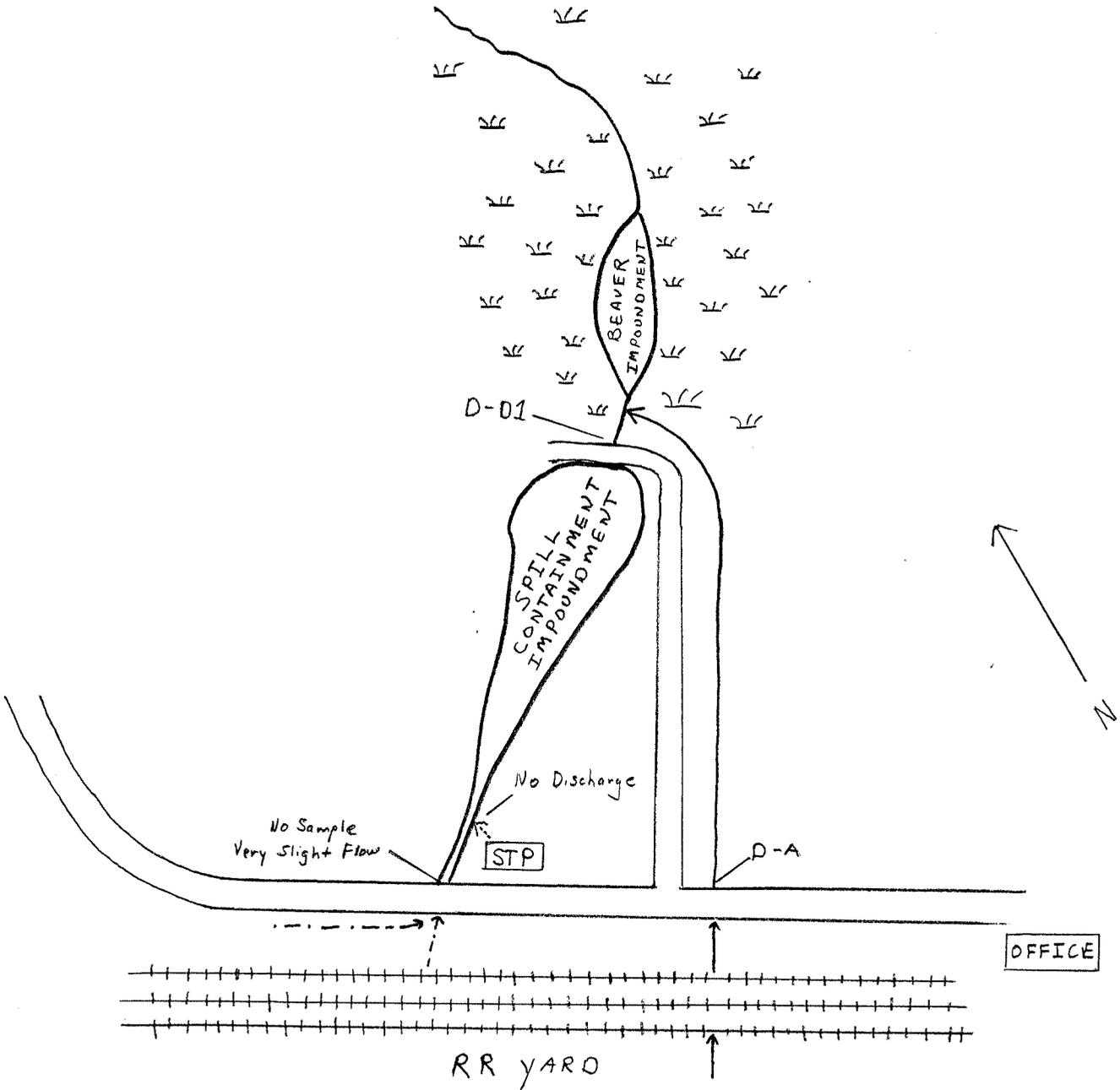
A downstream sample of the tributary was collected at the Hwy. 105 crossing (Site D-D4) located one quarter of a mile above the junction with the Pokegama River. Nutrient and BOD<sub>5</sub> levels were similar to those measured in the background sample. Flow had increased to an estimated 0.78 cfs.

Immediately below the Hwy. 105 culvert the stream channel is very steeply sloped and is subject to severe erosion. Large chunks of concrete, that have broken off from a partially intact concrete spillway leading from the culvert, fill and the stream channel. The concrete chunks, and a vertical drop from the lip of the spillway to the eroded streambed below, act as a barrier to possible upstream movement of aquatic life beyond this point.

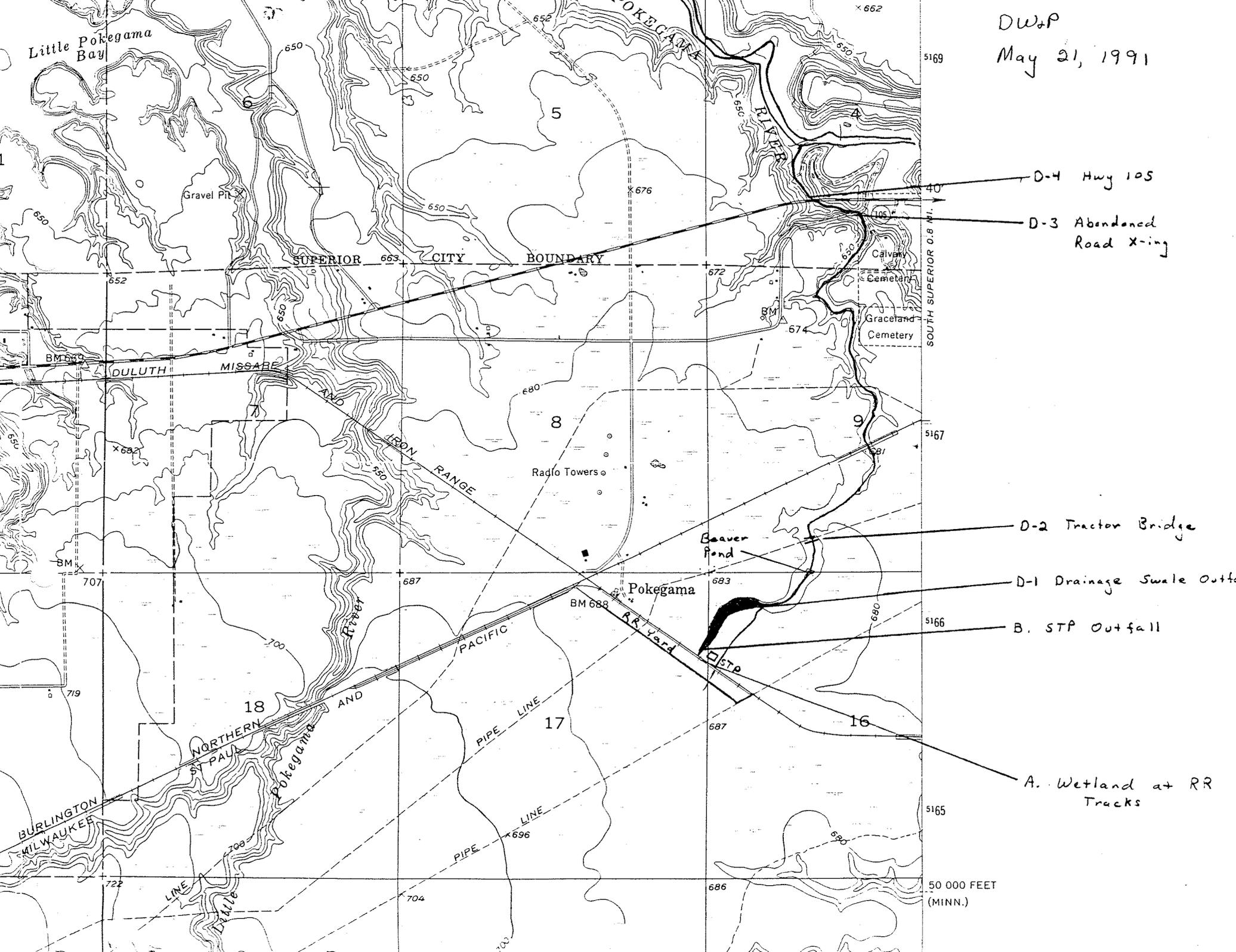
It is apparent from the physical features present, and measured and observed flows, that the tributary is severely limited in its potential to support a balanced aquatic community.

DW+P Site Review

May 21, 1991



DW+P  
May 21, 1991



D-4 Hwy 105

D-3 Abandoned Road X-ing

D-2 Tractor Bridge

D-1 Drainage Swale Outfall

B. STP Outfall

A. Wetland at RR Tracks

50 000 FEET  
(MINN.)

