

CORRESPONDENCE/MEMORANDUM

State of Wisconsin

NOV 15 2002

DATE: November 12, 2002

FILE REF: Peterson Creek, Fox River Basin

TO: Laura Bub

FROM: Craig Helker, Water Resources Biologist

SUBJECT: Stream Classification for Peterson Creek

Peterson Creek (WBIC 748500) is located in the County of Kenosha, and is part of the Fox (Illinois) Waterbasin. The stream originates as surface water drainage on the Richard Bong State Recreational Area. From there, it flows 2.7 miles southwest to a wetland complex located at T2N R20E Section 30 SE 1/4 NE 1/4. From there, it continues southwest for 3.5 miles, running as a defined channel within surrounding wetlands, ultimately discharging to the Fox River at T2N R19E Section 35 SE 1/4 SE 1/4.

Peterson Creek is the receiving water for the Richard Bong Recreational Area WWTP (WPDES Permit WI-0031887). The facility discharges once per year for a 14-day period, with a design average flow of 0.133 MGD.

Currently, Peterson Creek is listed in NR 104 Wis. Admin. Code as a variance waterbody, subject to limits protective of a Limited Aquatic Life stream classification. The most recent Stream Classification was written in 1993 (Galarneau):

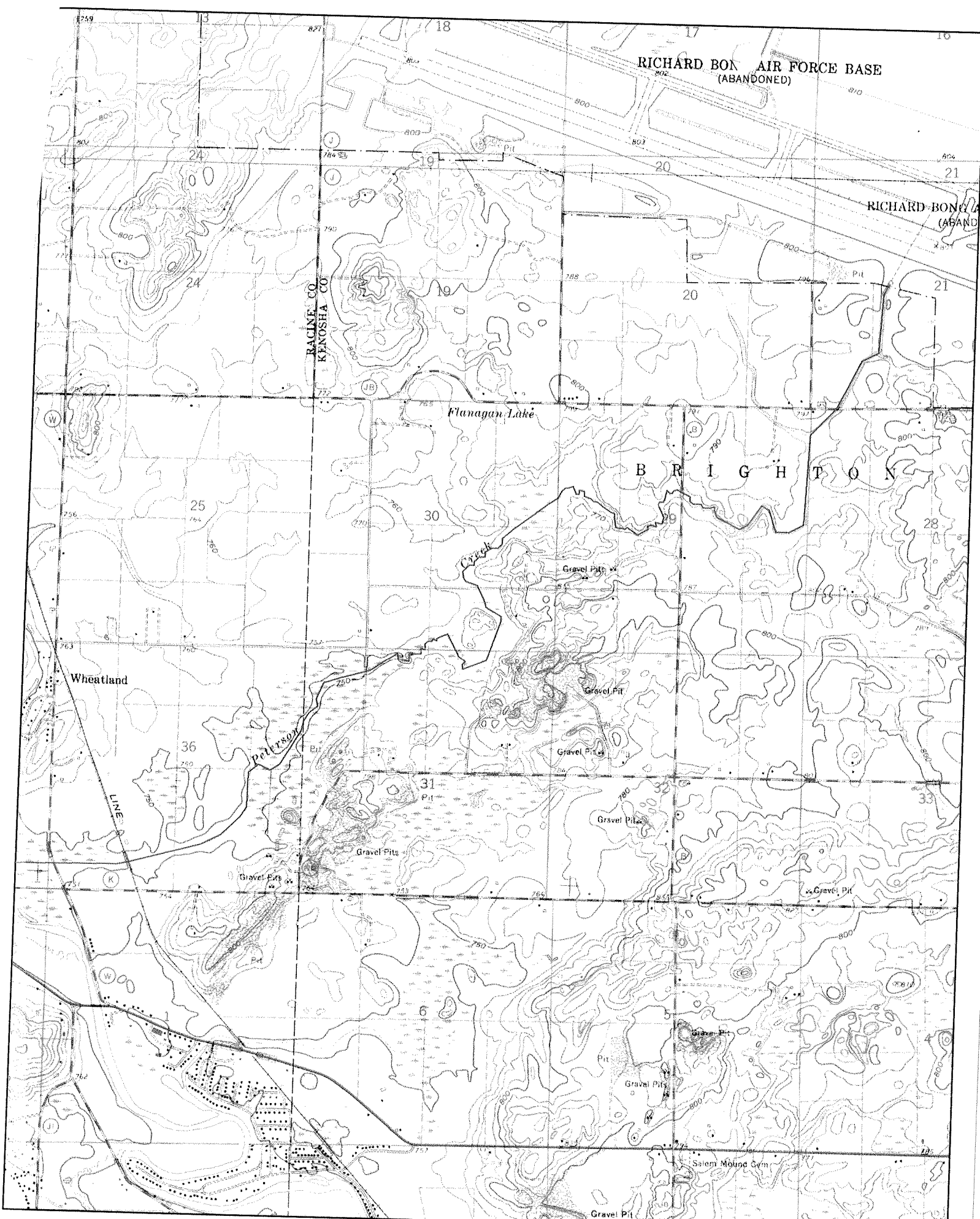
**“Based on the biological and physical habitat conditions, the stream reach from the headwaters downstream to the wetlands area (T2N R20E Section 30 SE 1/4 NE 1/4) shall be classified as a Limited Forage Fish Community. Based on the biological and physical habitat conditions, the stream reach downstream from the wetlands area (T2N R20E Section 30 SE 1/4 NE 1/4) to the confluence of Peterson Creek and Fox (II) River shall be reclassified as a Warm Water Sport Fish Community.”** Water Quality Standards Review and Stream Classification for Peterson Creek. 10/15/93. Galarneau, Steve

The Peterson Creek section classified LFF is not attaining FFAL conditions due to low flow (S. Galarneau, 2002). Q7,2 and Q7,10 values were estimated at 0.0 cfs in the 1993 Stream Classification document. Furthermore, stream flow values taken on August 27<sup>th</sup>, 2002, upstream of 308<sup>th</sup> Street were recorded at 0.07 cfs (see attached table). This location is 1.5 miles downstream of the LFF stream section in question, so it is expected that flows within the LFF classified area upstream were at less than 0.07 cfs on the day of sampling and providing insufficient habitat to support a diverse aquatic life community.

In summary, Peterson Creek should be classified a Limited Forage Fish Community from the headwaters downstream to the wetlands area (T2N R20E Section 30 SE 1/4 NE 1/4). The existing biological community within this reach is limited due to low flows, and does not have the potential to support a Full Fish and Aquatic Life Community. The reach downstream from the wetlands area (T2N R20E Section 30 SE 1/4 NE 1/4) to the confluence of Peterson Creek and Fox (II) River shall be reclassified as a Warm Water Sport Fish Community.

Attachement:

Topographic Map



RICHARD BON AIR FORCE BASE  
(ABANDONED)

RICHARD BON AIR FORCE BASE  
(ABANDONED)

RACINE CO  
KENOSHA CO

Flanagan Lake

B R I G H T O N

Wheatland

LINE

Date 12/13/2001

Facility Name STAR NE Wisconsin - Bing Recreational Facility

Receiving Water PETERSEN CREEK

Evaluated by CALMANN, SCOTT

This stream classification is not included in the revised code because (select one):

The discharger is no longer at this location.

A new classification has resulted in a full fish and aquatic life designation.  
New survey date \_\_\_\_\_ Please provide copy of new classification report.

This receiving water should be added to the database and to the code. Specify information, as it should be included in code.

REVISE FROM LAL TO LFF  
"FROM THE WWTTP OUTFALL IN THE NW SE T2N  
R20E S.16 TO THE WETLAND IN THE SE NE  
T2N R20E S.30"

Other (please explain)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Water Quality Standards Review  
and Stream Classification for  
Peterson Creek, Fox River (IL) Basin  
Kenosha County, Wisconsin  
October 15, 1993**

by Steve Galarneau, Southeast District

## INTRODUCTION

A Water Quality Standards Review and Stream Classification was completed for Peterson Creek located in Kenosha County, Wisconsin. This report contains survey results, an updated Stream Classification, and other water quality management recommendations.

## BACKGROUND

Peterson Creek is located in the Fox (Illinois) River Basin, Lower Fox River Watershed in northwestern Kenosha County. Peterson Creek originates in the Bong Recreation Area. The portion of the creek within the recreation area was channeled underground to provide drainage for a runway area (abandoned Air Force Base). Peterson Creek surfaces at the southern margin of the Bong Recreation Area and flows south for one mile in an altered channel through agricultural lands. Peterson Creek returns to a natural state (unchannelized) as it enters the southern 1/4 of the northeast 1/4 of section 29 (T2N R20E). This section of the creek flows west for one mile through agricultural lands to a marsh area. Peterson Creek then flows through primarily marsh land before entering the Fox River.

Peterson Creek upstream of the marsh is shown on the USGS Silver Lake 7.5 minute quadrangle as having a continuous flow. An earlier stream classification (WDNR, 1978) reported that the stream flow was thought to be intermittent. I'm basing a continuous flow determination based on the USGS Quad. map and a Q7,2 and Q7,10 discharge for Peterson Creek will be obtained from USGS and those results will be included as an addendum to this report.

The DNR Bong Recreational Area WWTP (WI-0031887) is the only known point source discharge to Peterson Creek. The Bong Recreational Area WWTP has a primary stabilization pond and secondary holding pond with a 365 day storage capacity of 1.83 million gallons. The system is designed to discharge once per year during a 14 day period. The design average flow for a 14 day discharge is 0.133 MGD. Discharge is during spring high flow period (Rozite, 1993).

## METHODS

The stream classification for Peterson Creek is based on guidelines developed by Ball (1984). Fish community and habitat surveys were completed at two sites on Peterson Creek during April, 1993. The upstream sample site was approximately 1,000 feet downstream of CTH JB and below the confluence of Peterson Creek and an intermittent tributary stream. The downstream site was downstream of 308th Avenue. Fish community samples were obtained along a 200 ft reach at both sites using a DC back pack shocker operating 1.7 - 2.0 amps and between 148 and 150 volts. Sampling efficiency was estimated at less than 25%. Previous fish community sample results reported by Fago (1978) were also used to classify Peterson Creek. In-stream habitat was evaluated over the same reaches.

## RESULTS

## Water Quality

No recent physical or chemical water data is available for Peterson Creek.

## Habitat

Peterson Creek habitat quality was rated "fair" at the CTH JB site and "good" at the 308th Avenue site. Bank and stream shading is primarily from shrubs and grass, with some trees. Fish and aquatic life cover along the CTH JB reach is provided by overhanging stream bank vegetation, limited macrophytes and woody debris in-stream and no significant undercut banks. The stream was channelized in the past over this stream reach and the upper bank is a straight channel. The stream channel is fairly straight and some meanders are being re-established. No riffles were present and an almost uniform depth of 2 feet was observed throughout this reach. No plunge pools were present. Substrate is dominated by silt and sand or silt and sand over cobble and gravel. Bank erosion as scour is present along some short reaches and is probably a result of past channelization. Intense agriculture in the form of row crops abut the upper stream bank. A large field drain tile enters the stream at the confluence of Peterson Creek and the tributary. Large amounts of algae were noted at the drain tile suggesting significant nutrient contribution to the stream.

Peterson Creek habitat quality was rated "excellent" at the 308th Avenue site. This entire stream reach is bordered by wetlands. Bank and stream shading is primarily from grasses, with a few woody shrubs and trees. Fish and aquatic life cover along the 308th Avenue reach is provided by overhanging stream bank vegetation, undercut banks, macrophytes and occasional in-stream woody snag. These wetlands provide valuable fish and wildlife habitat. The stream channel meanders through the wetland with well developed thalweg. The thalweg depth at low flow would be 1.0 - 1.5 feet deep and approximately 2.0 feet across the channel. Substrate is dominated by gravel with silt and sand deposition in pools and inside bends. A small amount of bank erosion as scour was evident on some bends. Old point bars were well vegetated and no new point bars were present.

Factors and sources responsible for limiting habitat quality include historical stream channelization, sedimentation from agricultural sources of nonpoint source pollution. These include bank and upland erosion, and potential animal wastes resulting from livestock pasturing and manure piles observed along upper bank upstream of CTH JB.

All of these factors and sources which limit habitat quality are controllable. Installation of agricultural land use best management practices, and other stream and riparian management practices would enhance or restore Peterson Creek habitat quality.

## Fish Community

Peterson Creek upstream of the wetland area (T2N R20E Section 30 SE 1/4 NE 1/4) supports a limited forage fish community both in diversity and numbers. Four fish species have been collected at three sites upstream of the wetlands since 1978 (Appendix 1). Downstream of the wetlands 13 species of forage fish including species ranging from intolerant to very tolerant of degraded habitat. This includes one fish collected during a summer survey in 1978, the Lake Chubsucker, which is attributed the Special Concern status by the State of Wisconsin (Fago, 1984). Furthermore, four sport fish were collected during a fish survey during the same summer survey, Black Bullhead, Green Sunfish, Bluegill, and numerous Northern Pike. Peterson Creek below the wetlands supports a year-long diverse forage fish community and seasonal sport fish community. Peterson Creek below the wetlands probably is important breeding habitat for these sport fish; in particular, for Northern Pike.

## Recreational Use

Full body contact forms of recreation, such as swimming, are not likely to occur on a frequent basis due to shallowwater depths. Disinfection is not required for the Bong Recreational Area WWTP because the 14 day discharge period is during spring high flows and cold water temperatures which further restrict recreational uses.

## SUMMARY

A Stream Classification was completed for Peterson Creek in October 1993. In 1978, Peterson Creek was classified as a non-continuous intermediate aquatic life stream upstream of the wetlands. The section from the wetlands downstream to the confluence of Peterson Creek and the Fox (Illinois) River was classified as a continuous fish and aquatic life stream. Peterson Creek receives treated effluent from the WDNR Bong Recreational Area which discharges to the headwaters. This discharge occurs during a fourteen day period during spring high flow; therefore, this discharge is not thought to significantly lower water quality due to the high flow rate at this period.

Peterson Creek habitat quality rating ranges from "fair" above the wetlands to "good" from the wetlands downstream to the Fox (II) River. Factors which limit habitat quality include stream channel modifications, erosion and runoff from agricultural lands and livestock pasturing. All of these factors are controllable or partially controllable. As such, habitat quality could be significantly improved with installation of agricultural land use best management practices, and other stream and riparian management practices. These practices are most applicable to the stream section upstream from the wetlands; however the entire stream would benefit from the use of best management practices. The wetlands which the stream flows through enhance habitat for fish and wildlife.

Peterson Creek supports limited diversity and abundance of forage fish upstream of the wetlands to the headwaters. Downstream of the wetlands to the confluence of Peterson Creek and the Fox (II) River, Peterson Creek supports a diverse and relatively abundant forage fish community and a lesser number of sport fish species. Sixteen different fish species have been identified. Forage fish include species intolerant to very tolerant of degraded habitat. Peterson Creek below the wetlands probably is important breeding habitat for the sport fish community; in particular, for Northern Pike. The Lake Chubsucker which is assigned a Special Concern status is present.

## RECOMMENDATIONS

1. Peterson Creek from the headwaters downstream to the wetlands contains a limited community of tolerant and intolerant forage fish. The Q7,2 and Q7,10 values are probably 0.0 cfs (USGS will be contacted to confirm this determination). Based on the biological and physical habitat conditions, the stream reach from the **headwaters downstream to the wetlands area (T2N R20E Section 30 SE 1/4 NE 1/4) shall be classified as a Limited Forage Fish Community.** Based on the biological and physical habitat conditions, the stream reach **downstream from the wetlands area (T2N R20E Section 30 SE 1/4 NE 1/4) to the confluence of Peterson Creek and Fox (II) River shall be reclassified as a Warm Water Sport Fish Community.** The stream classification for this stream reach was Warm Water Forage Fish Community (1978). This stream reach has been changed to be most protective of the sport fish seasonal use of Peterson Creek. These are in accordance with the Stream Classification Guidelines for Wisconsin by Ball (1982).

2. USGS Q7,2 and Q7,10 stream flow values for Peterson Creek need to be calculated.
3. Significant improvements in Peterson Creek biological and recreational uses could be attained. The following land and stream management practices should be implemented to enhance or restore aquatic life and wildlife communities, water quality, and recreational use opportunities;
  - a) Prevent future modifications to the stream channel, stream corridor and wetlands throughout the watershed.
  - b) Restore headwater channelized reaches. Restore headwater riparian habitat, by isolating livestock from stream banks and stream channel.
  - c) Encourage installation of soil erosion control practices on lands which have agricultural runoff, including drain tiles, to Peterson Creek or its' tributaries.
  - d) Develop and implement a comprehensive watershed management plan which will protect Special Concern status biota.

## REFERENCES

- Ball, Joseph. 1982. Stream Classification Guidelines for Wisconsin. Technical Bulletin. Wisconsin Department of Natural Resources, Madison, Wisconsin.
- Fago, Donald. 1984. Distribution and Relative Abundance of Fishes in Wisconsin. Volume 1. Fox (Illinois) River Basin. Technical Bulletin No. 136. Wisconsin Department of Natural Resources, Madison, Wisconsin.
- Galarneau, Stephen. 1993. Effluent Limits for the WDNR Bong Recreational Area WWTP Discharge to Peterson Creek. DNR Bong Recreational Area WWTP file memo, Water Resource Management, Southeast District.
- Wisconsin Department of Natural Resources. 1978. Stream Classification for Peterson Creek. Peterson Creek file memo, Water Resource Management, Southeast District.
- Wisconsin Department of Natural Resources. 1991. Natural Resource Administrative Code NR 104. Register July, 1991, No. 427.

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Peterson Creek, Kenosha County  
Fox River Drainage Basin

Peterson Creek, a tributary of the Fox (Illinois) River, originates in the Bong Recreation Area. The portion of the creek within the recreation area was channeled underground to provide drainage for the runway area.

Peterson Creek surfaces at the southern margin of the Bong Recreation Area, near the location of the proposed waste stabilization lagoon. The creek then flows south for one mile in an altered channel through agricultural lands. Soft substrates and rooted vascular aquatic plants are common throughout this section. An electrofishing survey conducted by Department of Natural Resources personnel in May, 1978, near CTR "JB", noted a creek chub (*Semotilus atromaculatus*).

Peterson Creek returns to a natural state (unchannelized) as it enters section 29 (T2N, R20E). This section of the creek flows west for one mile through agricultural lands to a marsh area. Trees along the banks provide shade for much of this section. The portion of the creek upstream of the marsh is thought to have intermittent flow. No fish were noted in an electrofishing survey conducted in May, 1978, near CTR "B".

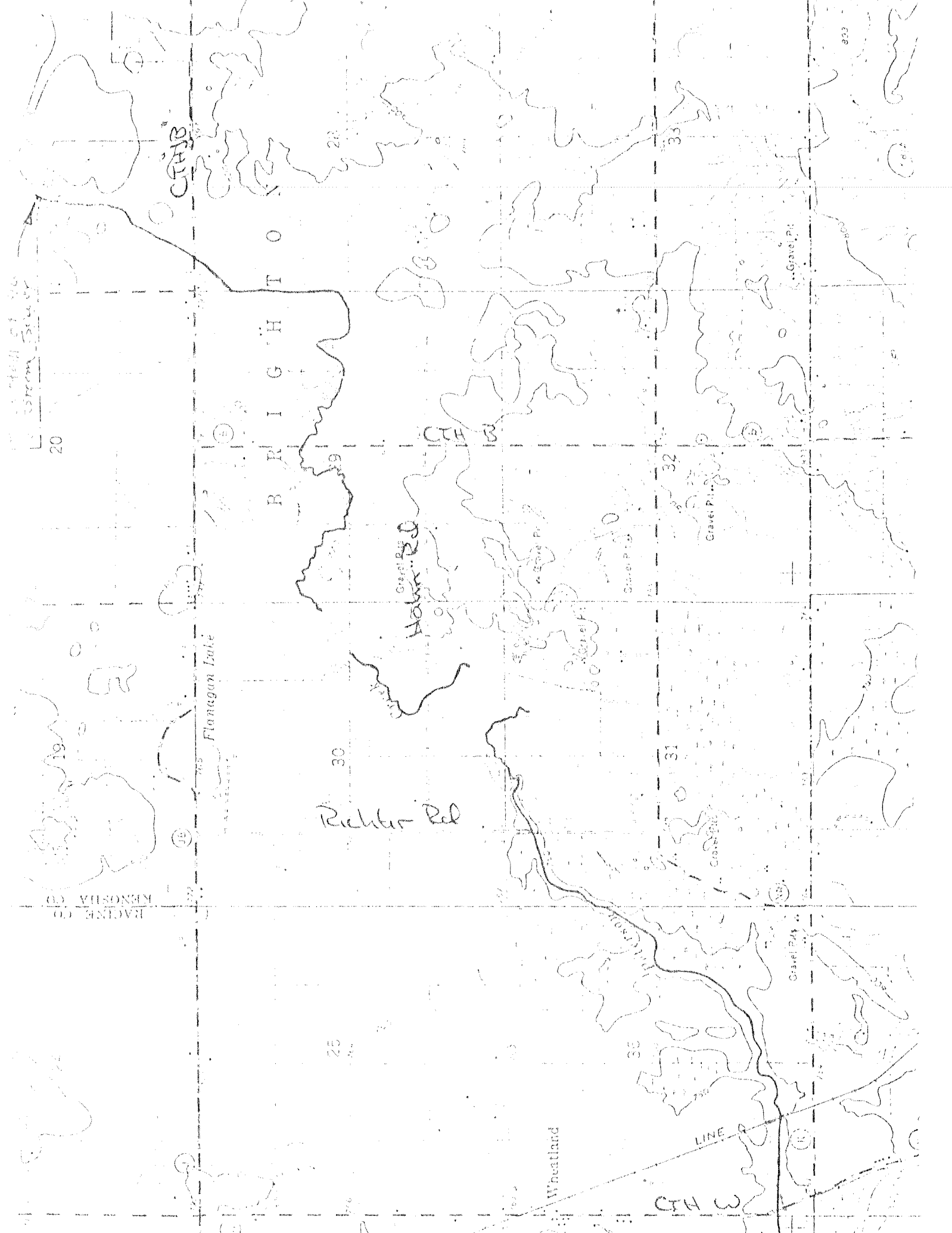
Peterson Creek then flows several miles through primarily marsh land before entering the Fox River. A sand and gravel substrate is present throughout this portion of the stream. Vegetation in the marsh area provides only limited shading of the stream. This section of the creek is thought to flow continuously. An electrofishing survey conducted in May, 1978, at Hahn Road noted the following fish: central mudminnow (*Umbra limi*), golden shiner (*Notemigonus crysoleucas*), common shiner (*Notropus cornutus*), spotfin shiner (*Notropus spilopterus*), sand shiner (*Notropus stramineus*), fathead minnow (*Pimphales promelas*) and white sucker (*Catostomus commersoni*). At Richter Road the following fish were noted: golden shiner, spotfin shiner, sand shiner and white sucker. At CTR "W", the following fish were noted: spotfin shiner, bluntnose minnow (*Pimphales notatus*), sand shiner, black bullhead (*Ictalurus melas*) and orange spotted sunfish (*Lepomis gulosus*). This section of the stream is also utilized in the spring for spawning by northern pike (*Esox lucius*).

Recreational use of the stream appears to be limited to sport fishing.

Recommendations

The section of Peterson creek upstream of the marsh area (section 30, T2N, R20E) shall be classified as a non-continuous intermediate aquatic life stream. The section from the marsh downstream to the Fox (Illinois) River shall be classified as a continuous fish and aquatic life stream.

RJ:ls



Stream

20

CFAB

BRIGHTO

28

33

203

Flanagan Lake

Hollow Rd

CHB

32

Gravel Pt

Gravel Pt

Richter Rd

30

31

Gravel Pt

RENSSELAER CO NY

Wheatland

CHW

LINE A

Gravel Pt

Gravel Pt

25

36