

Bub, Laura A

From: Helker, Craig D
Sent: Thursday, November 14, 2002 2:15 PM
To: Bub, Laura A
Cc: Galarneau, Stephen G; Fratrack, James F; Chappelle, Jason A.
Subject: Yorkville SD#1

Dear Laura,

At our recent Stream Classification meeting over here in the SER, I agreed to look into the classification for Ives Grove Ditch, tributary to Hoods Creek. Yorkville SD #1 discharges to the headwaters of Ives Grove Ditch., and we determined that if the facility was currently discharging at limits protective of the downstream WWSF classification for Hoods Creek, then I would recommend Phase I addition.

Yorkville SD #1 is not discharging to meet WWSF classification. Their last permit allows them to discharge at LAL limits until April 1st, 2003, at which time they will upgrade to LFF limits (if NR 104 is promulgated). Therefore, Yorkville SD #1 does not fall into the Phase 1 category.

If you have any questions, please let me know.

Sincerely,

Craig Helker

Raine
co.

Bub, Laura A

From: Galarneau, Stephen G
Sent: Thursday, November 14, 2002 2:31 PM
To: Bub, Laura A; Helker, Craig D
Cc: Fratrack, James F; Chappelle, Jason A.; Schmidt, James W; Wawrzyn, William G
Subject: RE: Yorkville SD#1

I'm surprised. It has been a while since I've worked down that way but I recall that the distance of the discharge location in Ives Grove Ditch to Hoods Creek is relatively short and that they would have had to have more restrictive effluent limits to be protective of downstream resources. It will be good to get this one resolved.

From: Helker, Craig D
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Cc: Galarneau, Stephen G; Fratrack, James F; Chappelle, Jason A.
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If you have any questions, please let me know.

Sincerely,

Craig Helker

Department of Natural Resources Stream Classification for Ives Grove Ditch and Hoods Creek
Root River Watershed, Southeastern Wisconsin River Basin. Racine County.
October 30, 1996

by Steve Galarneau, Southeast Region

INTRODUCTION

Hoods Creek and Ives Grove Ditch are located in Racine County and are part of the Root River Watershed in the Southeastern Wisconsin River Basin. Ives Grove Ditch originates at T3N R21E S7 NESW out of a drain tile under agricultural fields and flows easterly 1.2 stream miles to a confluence with Hoods Creek at T3N R22E S9 NWSW (at stream mile 6.9: Map 1). Hoods Creek originates at T3N R22E S19 SENW and flows to a confluence with the Root River at T4N R22E S26 NWSE (at stream mile 11.7).

The Village of Yorkville's Wastewater Treatment Plant discharges to a drain tile located at T3N R21E S12 SESE which drains to the headwaters of Ives Grove Ditch (T3N R21E S7 NESW). Ives Grove Ditch and Hoods Creek in Racine County are currently classified as variance streams and identified in NR 104. The stream classifications that currently exist in NR 104 for Hoods Creek is Limited Forage Fish for its entire length and Ives Grove Ditch is classified as a Limited Aquatic Life stream. This classification was proposed without the benefit of any widely accepted and scientifically based stream classification guidelines, or the use of recent biological information (i.e. fish survey results).

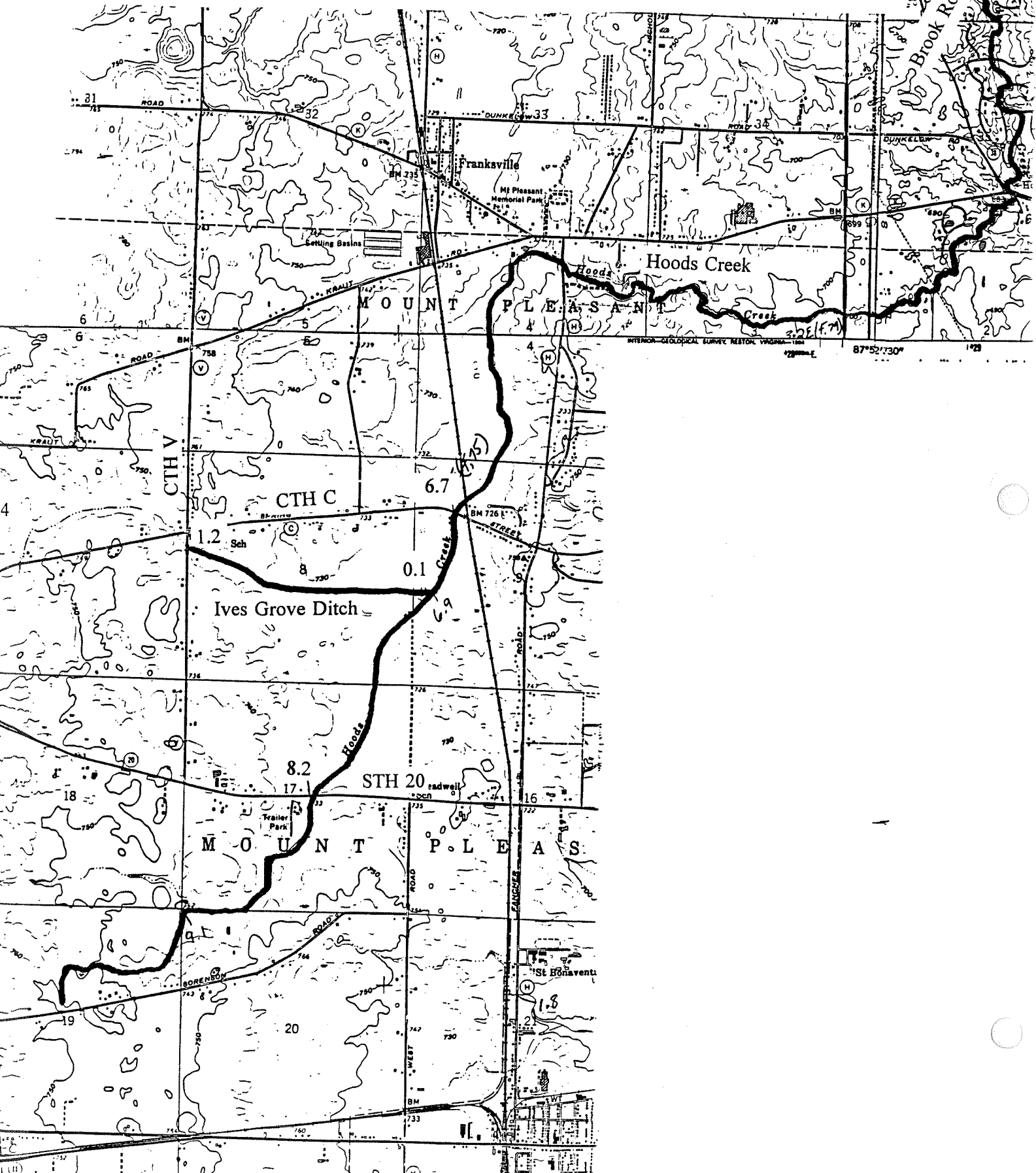
Wisconsin Stream Classification System

The Wisconsin Stream Classification System provides a basis for making and supporting water quality management decisions. Surface waters require classification as part of Wisconsin's codified water quality standards so that water quality criteria for specific waters, and point source discharge effluent limits needed to maintain water quality standards, can be designated and regulated. Written guidelines for classifying Wisconsin's streams were first developed in 1982, "Stream Classification Guidelines For Wisconsin". Although these procedures were developed primarily for designating stream uses, they can be applied to any surface water for the purpose of designating water quality standards.

The Wisconsin's Stream Classification system describes the potential biological use of Wisconsin streams. Although streams can be used for a variety of uses (i.e. recreation, food production, and wastewater assimilation), only those uses which can be described in terms of biological communities are considered. *Use* is defined by the biological community a surface water has the natural capacity to support. The stream classification system recognizes that not all stream have the capacity to support all forms of fish and other aquatic life communities due to natural limiting factors (e.g. stream size and depth, and water temperature), or culturally irreversible factors (e.g. dams and concrete channels). The differences in natural water quality and habitat can be measured or predicted and, along with biological data, form the basis for classifying surface waters into their appropriate biological use classifications.

The use classification in this system is also based on a surface water's *potential* to support a community type, (i.e., warm water sport fish), not necessarily on its *existing* biological community. Use classification based only on existing conditions could perpetuate non-attainment of potential uses

Map 1. Ives Grove Ditch and Hoods Creek, in Racine County from headwaters to the confluence with the Root River. River miles are denoted as the distance upstream from the confluences with the next major stream downstream (i.e. Hoods Creek for Ives Grove Ditch and Root River for Hoods Creek).



by allowing continued discharge of inadequately treated effluent, and could inhibit efforts to manage other water quality problems such as nonpoint source sediment and nutrient impacts.

Existing use is defined by the fish and other aquatic life community currently living in a stream. The existing use is dependent upon current habitat and water quality conditions, and any natural or cultural impacts that may or may not be controllable. The existing use may or may not be the same as the classified use depending on the controllability of water quality and habitat impacts. *Potential use* is the fish and other aquatic life community that could exist in a stream following the removal or management of controllable impacts. The potential use can be different from the existing use where controllable impacts have degraded habitat or water quality to the point that few fish and other aquatic life exist in a stream. Potential use is based on a stream's capacity to improve when controllable impacts are removed or properly managed. A stream's potential use is its designated classification and sets the standards for deriving water quality criteria and for calculating effluent limits needed to attain water quality standards *and* the potential use.

Historical Stream Classifications for Hoods Creek

The original report documenting the stream classification for Ives Grove Ditch and Hoods Creek that currently appears in NR104 is undated. However, based on information provided in the report, it was written between 1976 and 1982 (WDNR undated). A subsequent, reach by reach stream classification was conducted for Hoods Creek in 1983 (WDNR 1983). This stream classification used the then newly developed stream classification guidelines (WDNR 1982) to determine the existing use classification for Hoods Creek. *"Based on the observed instream and watershed conditions and biological communities, Hoods Creek should be presently capable of supporting the following Use Classes ..."*, WDNR 1983. Hoods Creek from the headwaters downstream to T3N R22E S4 NE NE (CTH H) was classified as a Limited Forage Fish communities stream. Hoods Creek downstream from T3N R22E S4 NE NE to Hoods Creek Road was classified as Warm Water Forage Fish communities, and classified as Warm Water Sport Fish communities from Hoods Creek Road downstream to the confluence with the Root River. It is important to note that the stream classification in 1983 classified the stream based on the existing conditions and yet alluded to potential use classifications: *"These use classes for Hoods Creek may be enhanced with non-point source controls and gradual shifts of the channelized portions of the stream to a more natural meandering pattern"*, WDNR 1983.

METHODS

Habitat Surveys

Stations were surveyed using the habitat protocols developed by Ball (1982) and Simonson *et al.* (1994). Both stream habitat assessment methods are used for each site because they evaluate different characteristics of the stream ecosystem. The Stream Classification Guidelines for Wisconsin developed by Ball (1982) is an assessment of the whole stream system habitat including the watershed, stream bank, and instream habitat. In conjunction with this assessment, the Fish Habitat Rating (FHR) developed by Simonson, Lyons, and Kanehl (1994) will be determined for each fish survey site as part of this year's basin sampling. The FHR is an assessment of the physical habitat available for fish within a given stream reach. The fish surveys included instantaneous water quality information consisting of temperature, dissolved oxygen, turbidity, pH, and conductivity.

Water Quality

Water chemistry data are being collected this year (1996 field season) in Hoods Creek as part of the Basin Monitoring. A stream site at Hoods Creek Road is being sampled for nutrients (total phosphorus, dissolved phosphorus, nitrate plus nitrite, TKN, ammonia), suspended solids, BOD, bacteria, chlorides, hardness, water temperature, dissolved oxygen, turbidity, pH, and conductivity.

This sampling is ongoing; hence, the water chemistry data and analysis will be appended to this report upon completion of the Southeastern Wisconsin River Basin Ambient Monitoring. Sediment quality and aquatic insect community information will also be collected this autumn as part of the Basin Monitoring.

Fish Surveys

Fish community surveys were conducted using a DC pulsed backpack shocker in Ives Grove Ditch and Hoods Creek at STH 20. The fish surveys for Hoods Creek at CTH C and Brook Road were conducted using a DC stream shocker (2 probes at CTH C and 3 probes at Brook Road). Each survey consisted of a single pass from downstream moving upstream. All fish were collected then identified, enumerated and released. Fish collections were assessed using the Index of Biotic Integrity (IBI) protocol developed by Lyons (1992). Seven fish community surveys have been conducted since 1995 on Ives Grove Ditch and Hoods Creek (Table 1).

Table 1. Fish habitat and community assessment station locations on Ives Grove Ditch and Hoods Creek sampled in 1995 and 1996.

STREAM	SAMPLE SITE	MONTH/YEAR	RIVER MILE	LEGAL DESCRIPTION
Ives Grove Ditch	upstream of confluence with Hoods Creek	9/96	0.1	T3N R22E S8 NESE
Ives Grove Ditch	downstream of CTH V	6/95 & 9/96	1.2	T3N R22E S8 SWNW
Hoods Creek	at Brook Road	10/96	0.4	T4N R22E S26 SESW
Hoods Creek	downstream of CTH C	9/96	6.7	T3N R22E S9 NWNW
Hoods Creek	upstream of STH 20	6/95 & 9/96	8.2	T3N R22E S17 E

RESULTS

Habitat - Ives Grove Ditch

Ives Grove Ditch fish and habitat surveys were conducted on June 27, 1995 and September 9, 1996 downstream of CTH V. A downstream site was also surveyed in Ives Grove Ditch 0.1 stream mile from the confluence with Hoods Creek on September 9, 1996 (Map 1). Ives Grove Ditch has been historically channelized to drain wetlands and accommodate agricultural land use. The watershed is primarily row crop agricultural uses with an urban (and urbanizing) headwater in the I94 corridor (tiled stream reach). Severe bank erosion exist in Ives Grove Ditch caused by extensive defoliation of stream bank vegetation by a chemical application along much of the stream. This appeared to have been applied in late 1994 or early 1995. Some of the woody brush were still partially alive in June 1995 and have subsequently died (e.g. downstream of CTH V). The recent survey earlier this month found many of the stream banks still without any vegetation (i.e. bare earth). The stream banks were primarily grass lined with woody shrubs prior to herbicide treatment. Alternative streambank management techniques would protect the stream from the severe bank erosion that is currently present and eventually result in the stream channel narrowing, improving fish and aquatic life habitat.

The stream is characterized as a long run with an average depth ranging from 0.2 to 0.9 feet. Pools are rare and limited to a single site immediately downstream of CTH V. This pool was 1.1 feet deep. The entire 1.2 stream mile length was not surveyed, so it is likely that other infrequent pools may exist around constrictions to flow.

Substrate conditions were silt over clay. Substrate scouring is minimal and deposition from streambank erosion and agricultural erosion is common and is very significant during high flows. Reed canary grass has become established in the stream channel downstream of CTH V resulting in a poorly defined thalweg meandering through the grasses. Additional bank erosion is caused during higher flows by the reed canary grass in the stream channel directing the stream's energy towards the bare earth banks (i.e. bank stabilizing vegetation has been denuded with a herbicide). This results in a wider shallower stream channel. In-stream shading is common from grasses.

Fish and aquatic life habitat throughout Ives Grove Ditch are limited by the effects of past channelization and enclosure through loss of stream length, pools, riffles and coarse substrate. Naturally limiting factors to the aquatic life communities in Ives Grove Ditch are stream size and depth. Near the confluence with Hoods Creek, Ives Grove Ditch appeared to have lost flow to groundwater recharge as observed by the very shallow water (0.2 avg. depth) and size of the stream (average width 3.0 ft.) Stream flows were very low during the summer stream surveys; however, the results of the surveys were that Ives Grove Ditch habitat is suitable to sustain a limited population of forage fish, and lesser numbers of tolerant sport fish. The habitat was generally rated as "poor" to "very poor" based on the habitat ratings conducted during the fish surveys.

Habitat - Hoods Creek

Hoods Creek fish and habitat surveys were recently conducted on June 28, 1995 and September 12, 1996 upstream of STH 20 and downstream of CTH C on September 9, 1996 (Map 1). These sites are upstream and downstream of the confluence of Ives Grove Ditch with Hoods Creek (STH 20 and CTH C respectively). An additional site on Hoods Creek near the confluence with the Root River (at Brook Road) was sampled October 24, 1996. The stream reaches surveyed on Hoods Creek for this stream

classification have been historically channelized to drain wetlands and accommodate agricultural land use. The watershed is primarily row crop agricultural land uses with residential land uses near the confluence with the Root River.

As with Ives Grove Ditch, a significant controllable limiting factor is the severe bank erosion caused by extensive defoliation of stream bank vegetation by herbicide application along many stream reaches. Hoods Creek upstream of STH 20 is characterized as a series of riffles (<0.3 ft.) and runs (0.5 - 0.7 ft.). Pools are infrequent and limited to bends and around obstructions to flow (pools averaged 0.9 ft.). Hoods Creek below the confluence with Ives Grove Ditch, (downstream of CTH C), is characterized as a series of riffles (<0.3 ft.), runs (0.5 - 1.0 ft.), and infrequent pools (1.1 - 2.1 ft.). The substrate at both sites was predominately silt over clay with some coarse substrate (sand, gravel and cobble) present.

Hoods Creek near the confluence with the Root River at Brook Road (0.4 stream miles) was channelized historically, but over time the stream reach has reestablished pools, runs and riffles. Hoods Creek at Brook Road is characterized by a series of riffles (<0.5 ft.), runs (0.6 - 1.0 ft.), and frequent pools (1.1 - 3.0 ft.). Substrate conditions consist of 30 - 50 % cobble and gravel. Fine sediment (fines) are present but limited to stream margins and pools.

As with Ives Grove Ditch, the fish and aquatic life habitat in the surveyed reaches of Hoods Creek are limited by the effects of past channelization through loss of stream length, pools, riffles and coarse substrate. The results of the surveys were that Hoods Creek habitat is suitable to sustain a viable population of forage fish, and lesser numbers of sport fish in the upstream reaches. As one moves downstream to Brook Road the habitat is capable of supporting a warmwater fish community of forage and sport fishes. The habitat in the upstream reaches was generally rated as "fair" to "poor" based on the habitat ratings conducted during the fish surveys. The habitat ratings for Hoods Creek at Brook Road was "fair" to "good".

Fish Community

The results from the seven fish community surveys conducted since 1995 for Ives Grove Ditch and Hoods Creek are shown in Table 2.

Table 2. Number of fish collected during the fish community surveys of Ives Grove Ditch and Hoods Creek during 1995 and 1996. (RM = River mile from the confluence with Hoods Creek for Ives Grove Ditch, and from the Root River for Hoods Creek, Map 1).

Fish Species	Ives Grove Ditch			Hoods Creek			
	CTH V RM = 1.2 6/95	CTH V RM = 1.2 9/96	Upstream of confl. RM = 0.1 9/96	STH 20 RM = 8.2 6/95	STH 20 RM = 8.2 9/96	CTH C RM = 6.7 9/96	Brook Road RM = 0.4 10/96
Bigmouth Shiner	45	20		60	99	103	
Bluegill		1					5
Bluntnose Minnow				1			11
Brook Stickleback	2	1	4	12		2	
Central Mudminnow	34	30				2	1
Common Shiner	34			7			3
Creek Chub	6	30	35	40	24	169	132
Fathead Minnow	275	31	2	32	6	24	
Green Sunfish	41	3		8	2	19	52
White Sucker			1	7	4	16	114
Black Bullhead							10
Yellow Bullhead							1
Blackside Darter							3
Johnny Darter							17
Golden Shiner							3
Largemouth Bass							3
Pumpkinseed							1

Ives Grove Ditch

The fish community in Ives Grove Ditch was represented by species considered tolerant to very tolerant of degraded environmental conditions. The survey conducted on September 9, 1996 was during low-flow conditions. During both stream surveys on Ives Grove Ditch downstream of CTH V, nearly all of the fish were collected in a single pool immediately downstream of the highway. The

fish survey conducted on Ives Grove Ditch, 300 feet upstream from the confluence with Hoods Creek resulted in only four species of fish. Habitat at this site was limited by very shallow water and as a result is capable of supporting fewer fish species. No historical fish collections are recorded for Ives Grove Ditch.

Hoods Creek

The fish community in the upstream reaches of Hoods Creek was represented by species considered tolerant to very tolerant of degraded environmental conditions. The surveys conducted in September, 1996 were during low-flow conditions. Hoods Creek was found to support a greater number of nontolerant fish per unit area than Ives Grove Ditch (34 to 117 / 300 m. at Ives Grove Ditch sites versus 205 to 217 / 300 m. for Hoods Creek upstream sites as per IBI protocol in Lyons 1992).

Historical fish surveys conducted at CTH C in September 1975 (Fago 1984) found a similar number of fish species (6) as the survey conducted in September 1996; however fewer specimens. A fish survey conducted at the same site in spring of 1983 found only three species, creek chubs (10), brook stickleback (5), and green sunfish (3). The impaired fish community in 1983 was probably the result of very poor water quality present at the time of the fish survey. The substrate at the site was reported as having a strong septic odor with small amounts of oil emanating from it (WDNR 1983). These limiting conditions were no longer present at the site during the recent survey.

The fish community for Hoods Creek at a downstream reach (Brook Road) consisted of forage fish species as well as six species of sport fish.

SUMMARY AND RECOMMENDATIONS

A stream classification survey was completed for Ives Grove Ditch and Hoods Creek as part of the 1996 Basin Monitoring. The stream classification provides information for establishing water quality criteria and for calculating effluent limits for dischargers to Ives Grove Ditch and Hoods Creek. Based on the results of the 1995 and 1996 stream classification surveys, the stream classification for **Ives Grove Ditch is classified as Limited Forage Fish Communities.** Furthermore, based on the results of the fish surveys conducted in 1975, the 1983 stream classification survey, and the recent fish and habitat classification surveys (1995 & 1996), **Hoods Creek is classified as a Full Fish and Aquatic Life Stream - Warm Water Forage Fish Communities.**

These stream classifications for Ives Grove Ditch and Hoods Creek uses recent fish surveys and is based on guidelines developed by Ball (1982). Water Resources Management recommends that this updated stream classification be included in the revision to NR 104. Due to the relative short length of Ives Grove Ditch (1.2 stream miles), Water Resources Management recommends that effluent limits for Yorkville WWTP be protective of Hoods Creek.

Water Resources Management recommends that alternative stream bank management practices be used along Ives Grove Ditch and Hoods Creek other than the current practice of herbicide application. The herbicide applications along the stream banks have resulted in areas devoid of vegetation susceptible to severe erosion which is impairing the streams water quality and ability to support a more diverse and abundant aquatic life community.

REFERENCES

- Ball, Joseph. 1982. Stream Classification Guidelines for Wisconsin. Technical Bulletin. Wisconsin Department of Natural Resources, Madison, Wisconsin.
- Fago, Don. 1984. Distribution and Relative Abundance of Fishes in Wisconsin. Wisconsin Department of Natural Resources, Madison, WI.
- Lyons, John. 1992. Using the Index of Biotic Integrity (IBI) to Measure Environmental Quality in Warmwater Streams of Wisconsin. North Central Forest Experiment Station, Forest Service - U.S. Department of Agriculture. St. Paul, MN.
- Simonson, T., J. Lyons and P. Kanehl. 1994. Guidelines for Evaluating Fish Habitat in Wisconsin Streams. U.S. Dept. of Agriculture, Forest Service, North Central Forest Experimental Station. General Technical Report NC-164. St. Paul, MN.
- Wisconsin Department of Natural Resources. undated. Hoods Creek, Racine County. Root River Drainage Basin. Water Resources Management File, Milwaukee, WI.
- Wisconsin Department of Natural Resources. 1983. Evaluation of Hoods Creek Stream Classification. Water Resources Management File, Milwaukee, WI.

→ Dan Moran
WRM/s

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: December 6, 1983

File Ref: 3200

To: File

From: Joe Kurz

Subject: Evaluation of Hoods Creek Stream Classification

Hoods Creek is presently classified as a noncontinuous, intermediate fish and aquatic life stream downstream of STH 20 in Racine County. A survey was conducted on March 3, 1983 to evaluate the accuracy of this classification and to review the present classification in respect to the new stream classification guidelines.

Hoods Creek originates in the Town of Mount Pleasant in T3N, R22E, Sec 19 SENW, Racine County and discharges to the Root River in T4N, R22E, Sec 26 NWSE. It is part of the Root River drainage basin. Land use in the Hoods Creek watershed is primarily agricultural with increasing wetland and low density residential areas in the downstream area. From the headwaters area downstream to T3N, R22E, Sec 4 NENE (approximately 5.3 miles) the stream is extensively channelized. Downstream of Section 4 the stream retains a natural meandering pattern for most of its remaining length (approximately 4.4 miles). The Q7,2 and Q7,10 of the stream at STH 20 are both 0 cfs. At the time of this survey the flow at STH 20 was approximately 2.0 cfs.

Two point source discharges are present in the Hoods Creek drainage basin. The new Yorkville WWTP discharges continuously to the Ives Grove ditch (T3N, R21E, Sec 13) with a design flow of 0.01 MGD. Franks Pure Foods discharges directly to Hoods Creek, 0.16 mile upstream of CTH "H", on a seasonal basis. The amount of discharge from Franks Pure Foods is dependent on the effluent BOD loading to the stream and the upstream flow of Hoods Creek (i.e. 26 lb rule).

Hoods Creek at STH 20 (photo 1) was channelized with tiles draining agricultural lands on both sides of the stream. The water was slightly turbid and a moderate filamentous algae growth was evident. The stream receives extensive non-point source inputs from surrounding croplands and poorly buffered stream banks (approximately 60 degree slope). The substrate was 70% silt-sand and 30% gravel. The macroinvertebrate community, dominated by Asellus, indicated poor water quality conditions. Fish collected at this site consisted of primarily tolerant species creek chubs(15), brook stickleback(11), bullhead minnow(14), bigmouth shiner(7), and other minnow species(5).

Hoods Creek at CTH "C" was also channelized with approximately 60 degree sloped banks. The stream was very turbid. The substrate was primarily clay and silt with some gravel inter-mixed and had a strong septic odor with slight amounts of oil emanating from it. Extensive non-point source inputs were present from surrounding croplands, drain tiles and poorly buffered stream banks. The flow was approximately 5.8 cfs. The macroinvertebrate community was dominated by Asellus and indicated very poor water quality. Fish collected were all tolerant species

creek chubs(10), brook stickleback(5) and green sunfish(3). Fish collected in a September, 1975 survey at this site included golden shiner(1), green sunfish(4), bigmouth shiner(14), brook stickleback(14), fathead minnow(>98), and creek chub(28). Ives Grove ditch, which discharges to Hoods Creek upstream of CTH "C" (photo 2), was relatively clear and had a silt substrate. A moderate growth of filamentous algae was present.

Hoods Creek upstream of the Franks Pure Foods outfall was channelized and had a flow of approximately 5.7 cfs. The water was very turbid from extensive non-point source inputs upstream. The macroinvertebrate community was dominated by Asellus. The community indicated a slight improvement in water quality but still within the very poor water quality range of the Hilsenhoff Biotic Index (HBI). Fish collected at this site included: black bullhead(1), creek chub(20), mudminnow(1), brook stickleback(1), bullhead minnow(2), white sucker(1) and other minnow species(4).

Hoods Creek at Airline Road (photo3) had a natural meandering channel with a good streamside vegetative buffer. The water was slightly turbid and had a moderate growth of filamentous algae. The substrate was 70 percent gravel and 30 percent sand-silt. Extensive riffle areas dominated this reach. The macroinvertebrate community, dominated by Asellus, showed signs of increasing diversity but still indicated a very poor water quality condition. No fish were collected due to equipment failure, however, a May, 1979 survey at this site found fathead minnow(6), creek chub(4), and brook stickleback(6). Stream flow at this site was approximately 10.2 cfs. Franks Pure Foods, two miles upstream of this site, was discharging cooling water at the time of the survey.

Hoods Creek at Hoods Creek Road (photo 4) flows through a low density residential area and had a good streamside vegetative buffer. Extensive riffle areas were present in this reach. The substrate was 80 percent gravel-rubble and 20 percent sand-silt. This was the only site where a substantial growth of periphyton was found on the substrate aside from the upstream filamentous algae populations. The macroinvertebrate community showed a substantial increase in diversity with Asellus and Simulium vittatum as co-dominant taxa. The HBI indicated an improved water quality condition but still remained in the poor water quality range. Few fish were collected most likely due to equipment problems. The collected fish included creek chub(9) and bullhead minnow(1). A September, 1975 survey at Brooks Drive, 0.61 miles downstream, found goldfish(1), fathead minnow(2), green sunfish(>98), bluegill(3), common shiner(32), black bullhead(7) and largemouth bass(11). Several of these species could have been immigrants from the Root River.

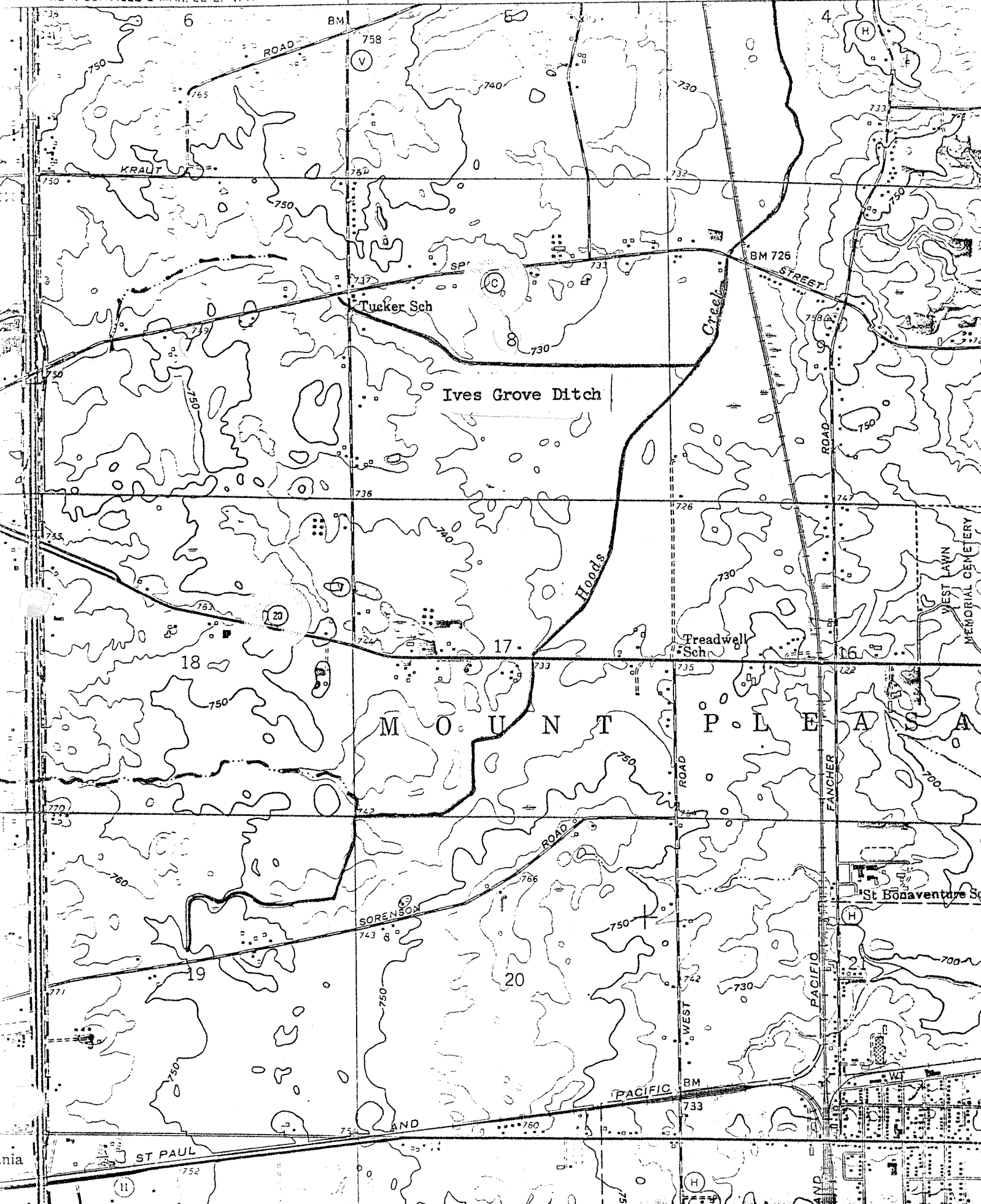
The habitat rating system indicated a continual increase in habitat potential from STH 20 downstream to Hoods Creek Road. The primary factors for the increase were increased flow, the change from a channelized stream to a natural meandering stream, increased streamside buffer and a more suitable substrate in the downstream areas.

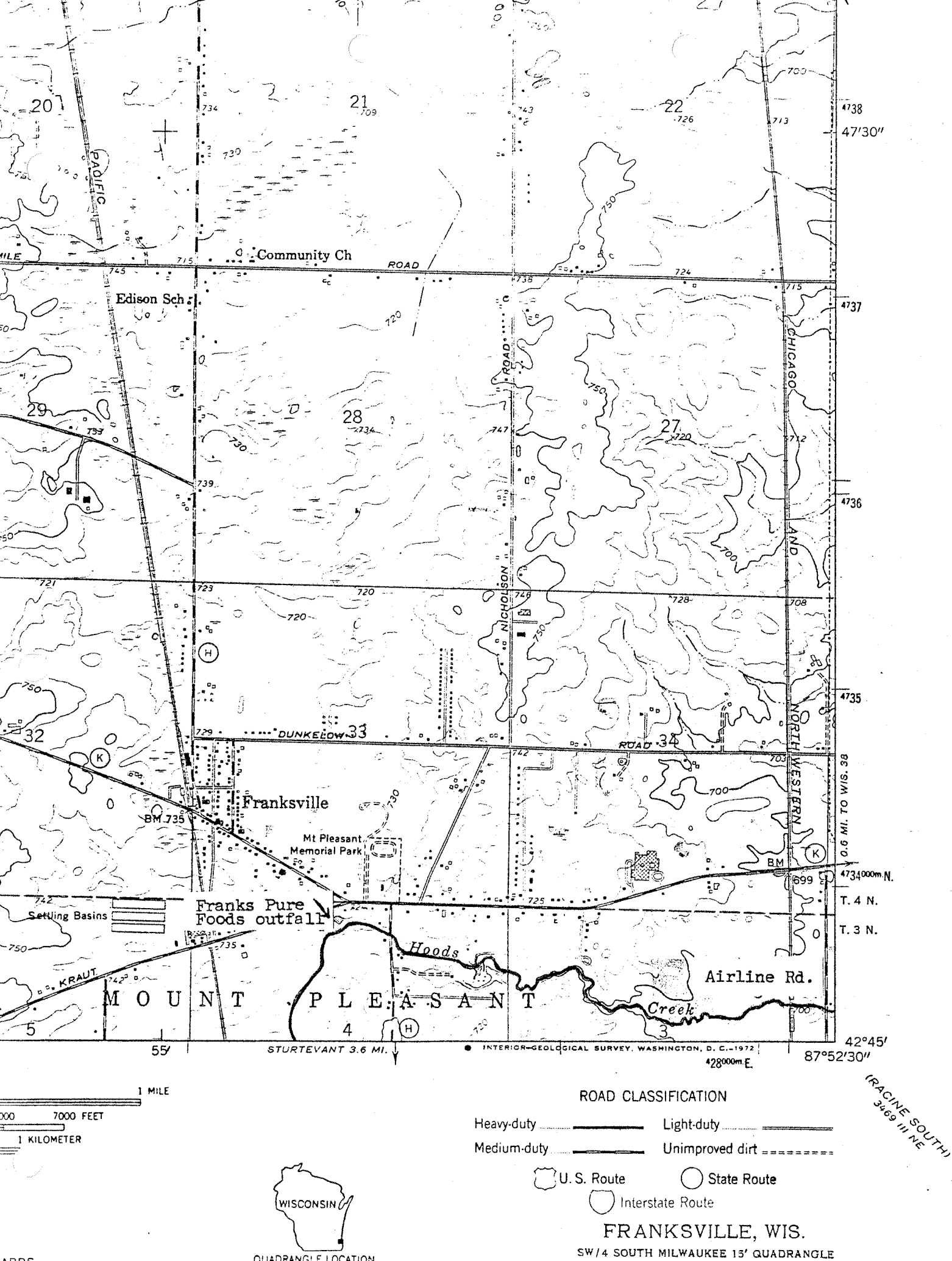
Based on the observed instream and watershed conditions and biological communities, Hoods Creek should be presently capable of supporting the following Use Classes: Use Class D (tolerant forage fish and macroinvertebrates) from the headwaters downstream to T3N, R22E, Sec 4 NENE; Use Class C (valuable population of forage fish) from T3N, R22E, Sec 4 NENE downstream to Hoods Creek Road; and, Use Class B (warm water sport fishery from Hoods Creek Road downstream to the confluence with the Root River. These use classes for Hoods Creek may be enhanced with non-point source controls and gradual shifts of the channelized portions of the stream to a more natural meandering pattern.

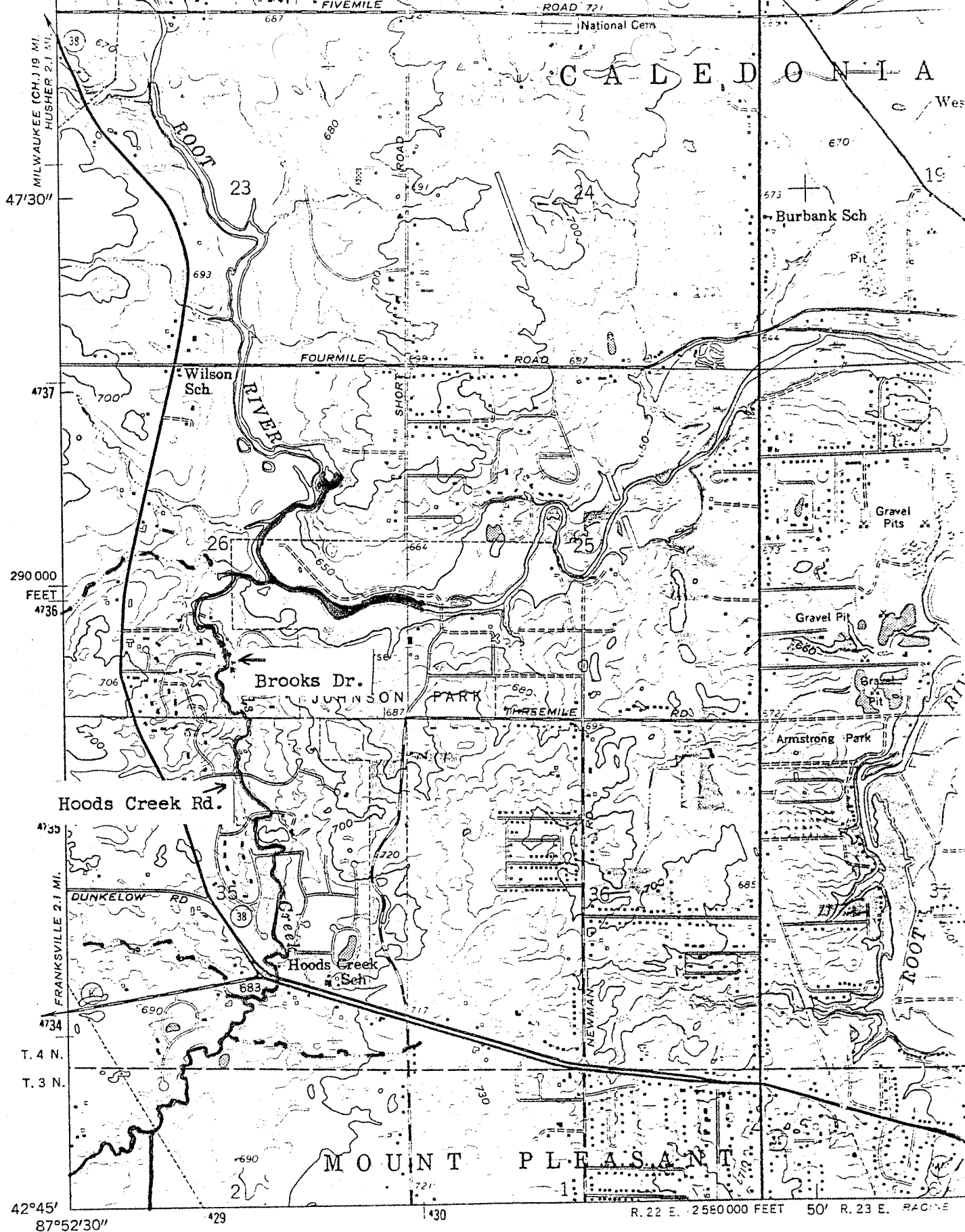
MILWAUKEE (CH.) 20 MI.
THOMPSONVILLE 2 MI. R. 22 E. (FRANKSVILLE) 8.5 MI. TO WIS. 100

55'

4.9 MI. TO WIS. 3
FRANKSVILLE 12







Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1955. Field check 1958

Hydrography compiled from U. S. Lake Survey chart 74 (1957)

Polyconic projection. 1927 North American datum
10,000-foot grid based on Wisconsin coordinate system, south zone

(STURTEVANT)
3469 III NW

★ MN
GN

1
1000

0°33' 1°
10 MILS 18 MILS

STREAM SYSTEM HABITAT RATING FORM

Stream Hoods Cr. Reach Location Above STA 20 Reach Score/Rating 199
 County Racine Date 3/3/83 Evaluator J. Kurtz Classification D

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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 runoff.	16
2. Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem.	4	Some potential sources. (roads, urban area, farm fields).	8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
3. Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem.	6	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	15	Many eroded areas. "Raw" areas frequent along straight sections and bends.	18
4. 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
5. Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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 to 25.	14	Inadequate, overbank flow common. W/D ratio > 25.	16
6. 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
7. Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	8	30 to 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

Rating	Category							
	Excellent		Good		Fair		Poor	
8. Bottom Substrate	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. Average Depth at Rep. Low Flow	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	24
10. Flow, at Rep. Low Flow	Warm water, >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
11. Pool/Riffle, Run/Bend Ratio	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occasional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured 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 Total Without Effluent -- 199

Column Total With Effluent --

Add Column Scores Without Effluent, E 6 + G 10 + F 63 + P 20 = Reach Score

Add Column Scores With Effluent, E ____ + G ____ + F ____ + P ____ = Reach Score

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

0258T

STREAM SYS. HABITAT RATING FORM

Stream Noodas

Reach Location

CTH "C" ; downstream of
Ives Grove Ditch

Reach Score/Rating

172

County

Racine

Date

3/3/83

Evaluator

J. Kurr

Classification

D

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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 runoff.	16
2. Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem.	4	Some potential sources. (roads, urban area, farm fields).	8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
3. Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem.	6	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	15	Many eroded areas. "Raw" areas frequent along straight sections and bends.	18
4. 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
5. Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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 to 25.	14	Inadequate, overbank flow common. W/D ratio > 25 .	16
6. 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
7. Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	8	30 to 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

Rating	Category							
	Excellent		Good		Fair		Poor	
8. <u>Bottom Substrate</u>	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	24
10. <u>Flow, at Rep. Low Flow</u>	Warm water, >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
11. <u>Pool/Riffle, Run/Bend Ratio</u>	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occasional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. <u>Aesthetics</u>	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured 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 Total Without Effluent --

Column Total With Effluent -- 172

Add Column Scores Without Effluent, E ____ + G ____ + F ____ + P ____ = Reach Score

Add Column Scores With Effluent, E 6 + G 16 + F 108 + P 42 = Reach Score

Racine Co. Hwy Dept.

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

0258T

STREAM SYSTEM HABITAT RATING FORM

Stream Hoods Cr Reach Location Above Franks Pure Foods outfall Reach Score/Rating 139
 County Raine Date 3/3/83 Evaluator J. Kurz Classification D

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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 runoff.	16
2. Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem.	4	Some potential sources. (roads, urban area, farm fields).	8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
3. Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem.	6	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	15	Many eroded areas. "Raw" areas frequent along straight sections and bends.	18
4. 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
5. Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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 to 25.	14	Inadequate, overbank flow common. W/D ratio >25.	16
6. 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
7. Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	8	30 to 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

Rating	Category							
	Excellent		Good		Fair		Poor	
8. <u>Bottom Substrate</u>	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	(6)	6" to 12".	18	Less than 6".	24
10. <u>Flow, at Rep. Low Flow</u>	Warm water, >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	(6)	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
11. <u>Pool/Riffle, Run/Bend Ratio</u>	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occassional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	(20)
12. <u>Aesthetics</u>	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured 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 Total Without Effluent --

Column Total With Effluent -- 139

Add Column Scores Without Effluent, E ____ + G ____ + F ____ + P ____ = Reach Score

Add Column Scores With Effluent, E 12 + G 30 + F 77 + P 20 = Reach Score

Racine Co. Hwy Dept.

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

0258T

STREAM SYSTEM HABITAT RATING FORM

Stream Hood Cr. Reach Location Airline Rd.

Reach Score/Rating 106

County Racine Date 3/3/83 Evaluator J. Kurtz

Classification C

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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 runoff.	16
2. Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem.	4	Some potential sources. (roads, urban area, farm fields).	8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
3. Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem.	6	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	15	Many eroded areas. "Raw" areas frequent along straight sections and bends.	18
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5. Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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 to 25.	14	Inadequate, overbank flow common. W/D ratio > 25 .	16
6. 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
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Rating	Category							
	Excellent		Good		Fair		Poor	
8. <u>Bottom Substrate</u>	Greater than 50% rubble, gravel or other stable habitat.	(2)	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	6	6" to 12".	(16)	Less than 6".	24
10. <u>Flow, at Rep. Low Flow</u>	Warm water, >5 cfs. Cold water, >2 cfs	(0)	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
11. <u>Pool/Riffle, Run/Bend Ratio</u>	5 to 7. Variety of habitat. Deep riffles and pools.	(4)	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occassional riffle or bend. Bottom contours provide some habitat.	16	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. <u>Aesthetics</u>	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured 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 inhance aesthetics. Condition of stream is offensive.	16

Column Total Without Effluent --

Column Total With Effluent -- 106

Add Column Scores Without Effluent, E ___ + G ___ + F ___ + P ___ = Reach Score

Add Column Scores With Effluent, E 12 + G 46 + F 48 + P 0 = Reach Score

Frank's Pure Foods

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

02587

STREAM SYS. HABITAT RATING FORM

Stream Hoodscreek, Reach Location Hood Creek Rd

Reach Score/Rating 88

County Racine Date 3/2/83 Evaluator J. Kure

Classification B

Rating Item	Category					
	Excellent		Good		Fair	
1. 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
2. Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem.	4	Some potential sources. (roads, urban area, farm fields).	8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture).	16
3. Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem.	6	Infrequent, small areas, mostly healed over. Some potential in extreme floods.	9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow.	15
4. 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
5. Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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 to 25.	14
6. 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
7. Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	8	30 to 50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools.	16

Rating	Category							
	Excellent		Good		Fair		Poor	
8. <u>Bottom Substrate</u>	Greater than 50% rubble, gravel or other stable habitat.	(2)	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	(6)	6" to 12".	18	Less than 6".	24
10. <u>Flow, at Rep. Low Flow</u>	Warm water, >5 cfs. Cold water, >2 cfs	(0)	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
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Column Total Without Effluent --

Column Total With Effluent -- 88

Add Column Scores Without Effluent, E ____ + G ____ + F ____ + P ____ = Reach Score

Add Column Scores With Effluent, E 12 + G 60 + F 14 + P 0 = Reach Score

Franks Pure Foods

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

0258T

Hoods Creek, Racine County
Root River Drainage Basin

Hoods Creek is a small non-continuous tributary of the Root River. The stream originates in Section 19, Mount Pleasant Township, and flows north for approximately 9 miles before entering the Root River in Section 26, Caledonia Township. Extensive channelization improves drainage of the surrounding intensively farmed land. The substrate reflects the surrounding land uses and ranges from silt and muck in the predominant slower reaches to rock and gravel in swifter sections. Channelization, fluctuating water levels and high nutrient loadings from surrounding farm lands, severely limit the fishery potential of the stream.

The effluent from the Racine City Highway Office Wastewater Treatment Plant (Section 13, T3N, R21E) discharges to an underground tile at the plant and flows approximately 1.5 miles before emptying into a tributary of Hoods Creek. This tributary flows approximately one mile before entering Hoods Creek in Section 9, Mount Pleasant Township.

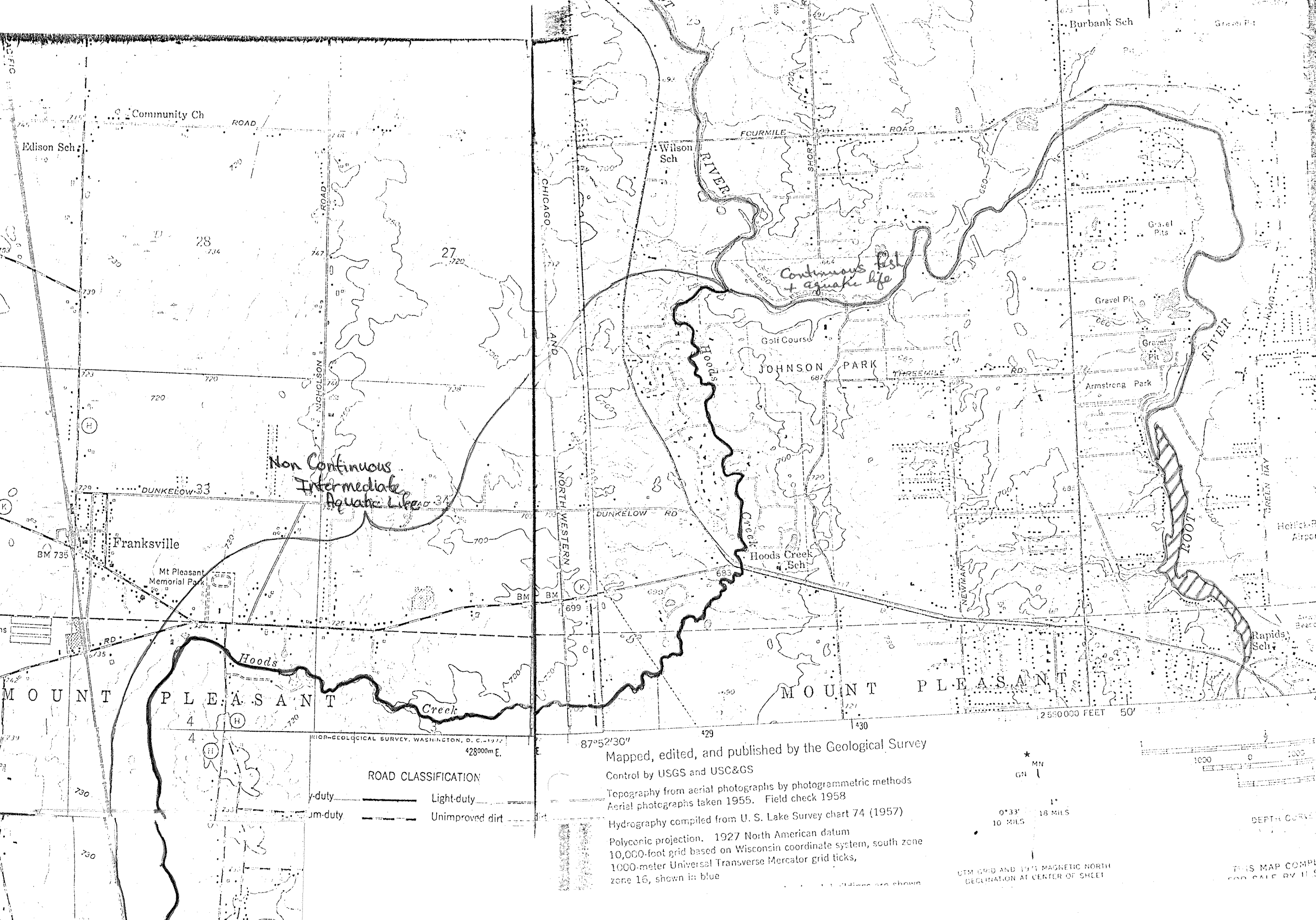
The effluent from Franks Pure Foods wastewater treatment lagoons (Section 4, T3N, R22E) discharges to a field tile which flows to Hoods Creek a short distance upstream of CTH H.

An investigation of a fish kill near the Frank's Pure Foods outfall by Department of Natural Resources' personnel in September, 1976, found the following fish: Common shiners, creek chubs, green sunfish, and 5-spined sticklebacks.

Recommendations

The tile from the Racine City Highway Office Wastewater Treatment Plant downstream to the tributary shall be classified as an effluent channel. The tributary from the above location downstream to the confluence with Hoods Creek shall be classified as a non-continuous agricultural stream. Hoods Creek from STH 20 downstream to the confluence with the Root River shall be classified as a non-continuous intermediate aquatic life stream.

new name
Yorkville WWTP



Non Continuous
Intermediate
Aquatic Life

Continuous fish
+ aquatic life

ROAD CLASSIFICATION

- Light-duty
- Unimproved dirt

Mapped, edited, and published by the Geological Survey
Control by USGS and USC&GS
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1955. Field check 1958
Hydrography compiled from U. S. Lake Survey chart 74 (1957)
Polyconic projection. 1927 North American datum
10,000-foot grid based on Wisconsin coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks,
zone 16, shown in blue

UTM GRID AND 1971 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

THIS MAP COMPILED
FOR SALE BY U.S.