State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Fish and Aquatic Life Use Designation Summary

Form 3200-121 (12/04)

(Attach supporting data sheets)

Use Designation Information – Required

Water Body Name	WBIC #	Date
Little Bear Creek	1416900	04/21/2005

Region: ☐ NER ☐ NOR ☐ SCR ☐ SER ☑ WCR

Basin: Central Wisconsin Basin

County: Wood

Quad Map Where Segment is Shown: Honey Island

Reference Site(s) (Attach use designation form for reference site/cond.)

Segment Description for Segment 2 of 2 (headwater = segment 1)

From: The mouth of Little Bear Creek T25N R5E section 09 SE NE upstream 6.6 miles

upstream 6 ☑ mi., ☐ km., ☐ ft., ☐ M.

Latitude:	DEG	MIN	SEC	
	44	40	00.0000	N

Longitude:	DEG	MIN	SEC		Datum Used
	089	54	22.0000	W	

Township		Range			Section	¼-Section	¼, ¼-Section
25	N	05	☑ E ☐ W		09	SW	NW

To: The confluence with an unnamed tributary in T25N R4E sec24 NW SW.

Latitude:	DEG	MIN	SEC	
	44	37	59.0000	N

Longitude:	DEG	MIN	SEC		Datum Used
	089	58	53.0000	W	

Township		Range			Section	¼-Section	¼, ¼-Section
25	N	04	☑ E ☐ W		24	SW	NW

Attach site map and photos (prefer digital) showing stream segment and discharge point.

Date Fieldwork Conducted/Completed: 08/04/2004

Use Designation Status:
- ☐ New Use Designation (First Field Assessment)
- ☑ Standards Review (Updating Previous Field Assessment)
- ☐ Reference Site

Current Codified Fish and Aquatic Life Use Designation:
- ☐ Coldwater Community
- ☐ Warmwater Sport Fish Community
- ☐ Warmwater Forage Fish Community
- ☑ Tolerant Fish and Aquatic Life Community (LFF)
- ☐ Very Tolerant Aquatic Life Community (LAL)

- ☐ Default
- ☐ Field Assessment – Date (mm/dd/yyyy): _____

Existing FAL Use Based on Current Data:
- ☐ Coldwater Community
- ☐ Warmwater Sport Fish Community
- ☑ Warmwater Forage Fish Community
- ☐ Tolerant Fish and Aquatic Life Community (LFF)
- ☐ Very Tolerant Aquatic Life Community (LAL)

Recommended Attainable Use Designation:
- ☐ Coldwater A (Coldwater)
- ☐ Coldwater B (Coldwater)
- ☑ Diverse Fish and Aquatic Life
- ☐ Tolerant Fish and Aquatic Life (LFF)
- ☐ Very Tolerant Aquatic Life (LAL)

Recommended Seasonal Use Designation(s): Effective Date: (mm/dd/yyyy)

☐ Coldwater A (Coldwater)	_____	to	_____	
☐ Coldwater B (Coldwater)	_____	to	_____	
☐ Diverse Fish and Aquatic Life	_____	to	_____	
☐ Tolerant Fish and Aquatic Life (LFF)	_____	to	_____	
☐ Very Tolerant Aquatic Life (LAL)	_____	to	_____	

Other Applicable Uses (as recognized by existing administrative rule):
- ☐ Outstanding Resource Water
- ☐ Exceptional Resource Water
- ☐ Great Lakes System
- ☐ Public Drinking Water Supply
- ☐ Recreational Use
- ☐ Wildlife

Community Types:
- ☐ Class I Trout
- ☐ Class II Trout
- ☐ Class III Trout
- ☐ Coldwater A
- ☐ Coldwater B
- ☐ Game Fish
- ☑ Non-Game Fish
- ☐ Macroinvertebrates
- ☐ Endangered/Threatened Species
- ☐ Intolerant Species
- ☐ Coolwater
- ☐ Tolerant Fish
- ☐ Tolerant Macroinvertebrates

Water Body Name	WBIC #	Date
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Use Designation Information (continued)

Basis for Use Designation Decision (List and briefly discuss key elements for the decision) – Use Attachment A, if necessary

See attached report

Discharger Information – Required

Municipality/Company	WPDES Permit Number	Date Permit Issue	Permit Renewal
Village of Auburndale	0022411		

Outfall Location

T25N R4E Sec 23

Contact Person	Contact Date(s)

Did a Representative Observe Field Assessment? ☐ Yes ☑ No

Representative	Telephone Number (include area code)

Comments about facility representative's observations, etc.

Literature Review – Use Attachment B, if necessary

1. Previous classification reports and use designations – cite here and attach

The original classification of the stream can be found in the 1976 Auburndale classification report.

2. All previous studies and data associated with the water body that are applicable to use designation – cite here and attach

Observations in 1978 found a few minnows at CTH K, many minnows at Rangeline Road, some minnows at Yellow Stone Road and many minnows at CTH H. Observations completed in 2003 and 2004 can be found in attached report.

3. Is stream listed as trout water in Wisconsin Trout Streams? ☐ Yes ☑ No If yes, cite here and attach a copy

4. Any other literature applicable to the fish and aquatic life use designation – cite here and attach

5. Summarize and interpret the literature available and how it relates to and supports the recommended use designation

Water Body Name	WBIC #	Date
Little Bear Creek	1416900	04/21/2005

Field Assessment Data and Observations – Use Attachment C, if necessary

Assessment Date (mm/dd/yyyy)	Additional Assessment Date(s):		
08/04/2004	05/04/2004	05/13/2003	

Stream Segment Physical/Chemical Data:

Length	100	☐ feet	☑ meters	☐ miles
Avg. Width	6	☑ feet	☐ meters	
Max. Width		☐ feet	☐ meters	
Avg. Depth	.3	☑ feet	☐ meters	
Max. Depth		☐ feet	☐ meters	

Gradient 20 Velocity _____

Substrate Material:

Silt	____%	Organic	____%
Rubble	____%	Gravel	____%
Sand	____%	Other	____%

Stream Flow .06 cfs ☑ Measured ☐ Estimated

At time of assessment, flow was: ☐ High ☐ Low ☑ Very Low

7Q2 Flow _____ cfs

7Q10 Flow _____ cfs

Stream Temperature _____ °C ☐ Instantaneous ☐ 24-Hr. Maximum ☐ 24-hr. Avg.

Dissolved Oxygen (Instantaneous) _____ mg/L Time of Day ____:____ ☐ am ☐ pm

Minimum Dissolved Oxygen Recorded _____ mg/L Time of Day ____:____ ☐ am ☐ pm

Maximum Dissolved Oxygen Recorded _____ mg/L Time of Day ____:____ ☐ am ☐ pm

Method of Analysis: ☐ Meter ☐ Modified Winkler Method

Effluent Flow:

Daily Average _____ cfs ☐ Measured ☐ Estimated

Design Flow _____ cfs (Convert MGD to cfs by multiplying by 1.55)

Chemical Data Collected: (STORET # _____)

☐ Ammonia	☐ Pesticides	☐ Other: _____
☐ Atrazine	☐ Phosphorus	☐ Other: _____
☐ Bacteria	☐ Metals	☐ Other: _____

Brief Interpretation/Comments:

Stream habitat data can be found in attached report. The ponds are operated as Fill and Draw and discharge two times a year. Discharge duration for past three years averaged 33 days.

Habitat – Use Attachment D, if necessary

Procedure:
☐ Guidelines For Evaluating Fish Habitat in Wisconsin Streams (Simonson, Lyons and Kanehl, 1994)
☐ Development and Evaluation of a Habitat Rating System For Low Gradient Wisconsin Streams
☑ Other – Describe: observations of habitat

Habitat Rating – Attach Habitat Rating Forms: ☐ Excellent ☐ Good ☐ Fair ☐ Poor

Significant Problems Affecting Use Attainment:
☐ Low-flow ☐ Sedimentation ☐ Bank Erosion ☐ Ditching ☐ Fish Cover ☐ Depth
☐ Other – Describe: _____

Observations About Habitat Quality:

Low streamflow likely from drought conditions for past two years limited water depth in riffles and runs. Stream in this reach maintained a minimal flow and most fish were found in pools. Natural stream channel with bends, runs, pools and riffles. Substrate composition was dominated by coarse substrate.

Water Body Name	WBIC #	Date
Little Bear Creek	1416900	04/21/2005

Biological Data – Fish data is required

Fish:

Sampling Date (mm/dd/yyyy) 08/04/2004

Species List and IBI Forms: ☑ Attached to Report ☐ Not Applicable

Survey Location(s) Upstream Rangeline Road

Distance Sampled 100 ☐ feet ☑ meters ☐ miles

Sampling Gear: ☑ Backpack Shocker ☐ Other – Describe: _____

Number of Species Collected 7 Total Number of Fish Collected 295

Number of Intolerant Species 1 % Intolerant Species _____

Endangered or Other Special Category Species Collected:

Species _____ No. of Individuals Collected _____

Species _____ No. of Individuals Collected _____

Species _____ No. of Individuals Collected _____

IBI Score _____ Rating _____

Macroinvertebrates:

Sampling Date (mm/dd/yyyy) _____ ☐ HBI ☐ FBI

Survey Location(s) _____

Sampling Procedure _____

☐ Less than 100 organisms were found – List Dominant Genera, etc.:

Genus _____ Number Found _____ HBI Score _____

Genus _____ Number Found _____ HBI Score _____

Genus _____ Number Found _____ HBI Score _____

☐ More than 100 organisms found – Attach taxonomy bench sheet or other analyses

Other Biological Data/Observations – Use Attachment E, if necessary

See attached report

Interpretations Based on Existing Fish and Aquatic Life Community – Use Attachment F, if necessary

see attached report

WATERSHED DATA AND OBSERVATIONS – Optional (Please answer to the best of your ability. Estimates are acceptable.)

Approximate Area _____ ☐ Acres ☐ Square Miles

Land Use: Crop Land _____% Pasture _____ % Forest _____%

Grass Land _____% Urban _____ % Wetland _____%

Number of Feedlots/Barn Yards Near Stream _____

Other Nonpoint Sources _____

Water Body Name	WBIC #	Date
Little Bear Creek	1416900	04/21/2005

WATERSHED DATA AND OBSERVATIONS (continued) – Use Attachment G, if necessary

Is this watershed currently or proposed to receive nonpoint source management under a State, Federal or local organization?

☑ No ☐ Yes List Date(s) (mm/dd/yyyy) _____ _____ _____

Explain _____

Discuss nonpoint source impacts and controllability, and nonpoint relationship to fish and aquatic life existing and attainable uses. Include factors such as bank erosion, land cover/use near stream, gully erosion, barnyards, etc. (attach additional sheets if required):

VTAL/TFAL Justification – Required – Use Attachment H, if necessary

Note: This section must be completed when the use designation is tolerant fish and aquatic life (formerly LFF) or very tolerant aquatic life (formerly LAL)

Recommended Attainable Use Designation: ☐ **TFAL** ☐ **VTAL**

Tolerant Fish and Aquatic Life and Very Tolerant Aquatic Life use designations (LFF & LAL) are not defined as full fish and aquatic life uses. However, these uses are in most cases the best use that can be attained by these resources due to habitat or water quality limitations. A designated use recommendation into one of these sub-categories must be based on one or more of the following factors (sec. 283.15, Stats.). Check all that apply to this use designation and provide a brief description of the situation:

☐ a. Naturally occurring pollutant concentrations prevent the attainment of a full fish and aquatic life community.

☐ b. Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of a full fish and aquatic life community, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating water conservation requirements.

☐ c. Human caused conditions or sources of pollution prevent the attainment of a full fish and aquatic life community and cannot be remedied or would cause more environmental damage to correct than to leave in place.

☐ d. Dams, diversions or other types of hydrologic modifications preclude the attainment of a full fish and aquatic life community, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of a full fish and aquatic life community.

☐ e. Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of a full fish and aquatic life community.

Description:

Prepared By

Preparer Signature	Printed Name	Date Prepared
	Mark Hazuga	04/21/2005

Water Body Name	WBIC #	Date
Little Bear Creek	1416900	04/21/2005

Author and Peer Review

The author should submit a peer-reviewed report to Watershed Program Coordinator for review and approval.

Submitted By	Date
Mark Hazuga	04/21/2005
Peer Reviewed By	Date
Paul La Liberte	04/21/2005

Approval Signatures

Review, approval, and signature by the Watershed Program Coordinator (Expert), Regional Water Leader (or designee) as well as the Water Quality Standards Section Chief (or designee) is required.

Printed Name of Watershed Program Coordinator (Expert)	Watershed Program Coordinator (Expert) Signature	Date
Paul La Liberte		
Printed Name of Regional Water Leader (or designee)	Regional Water Leader (or designee) Signature	Date
Dan Baumann		
Printed Name of Water Quality Standards Section Chief (or designee	Water Quality Standards Section Chief (or designee) Signature	Date

Final Report Distribution List

Once the Use Designation Report has been approved by the Water Quality Standards Section Chief (or designee), the report can be distributed to the appropriate individuals, as listed below. Please indicate below individuals who should be copied on final report distribution. It should be noted that the classification recommendation in the report does not become official until it is approved by the Natural Resources Board and adopted into Wisconsin Administrative Code.

Facility Contact _____

Basin Engineer Pete Pfefferkorn

Basin Planner _____

Effluent Limits Calculator Pat Oldenburg

Endangered Resources _____
(when T&E Species Present)

Other Interested Parties:

_____

_____

_____

CORRESPONDENCE/MEMORANDUM

DATE: January 24, 2005 FILE REF: [Click **here** and type file ref.]

TO: Pat Oldenburg – Eau Claire
Paul Laliberte – Eau Claire
Pete Pfefferkorn – Wisconsin Rapids
Laura Bub – Madison
Auburndale File

FROM: Mark Hazuga - Wausau

SUBJECT: Auburndale Stream Classification

Background

The Village of Auburndale operates a two-cell stabilization pond for treatment of domestic wastewater. The design flow of the plant is 0.123 mgd or 0.19 cfs. The facility is currently operated as a fill and draw system with an average effluent flow under this operation of 0.4 mgd or 0.62 cfs. Based on review of SWAMP, the facility has discharged two times a year for the past three years. The duration of each discharge averaged 33 days.

The 1976 classification report indicates the discharge initially entered a wetland area from the southeast corner of the lagoon. The effluent then traveled approximately 200 yards through the wetland before reaching the unnamed tributary of Little Bear Creek. During a field visit in 2003, the outfall structure now exits the north side of the lagoon and discharges directly into the stream. According to the Watershed Map Viewer this unnamed tributary is actually the upper headwaters of Little Bear Creek.

Little Bear Creek is currently classified in NR 104 as Limited Aquatic Life or Very Tolerant Aquatic Life from the Auburndale WWTP downstream to a tributary in T25N R4E Sec 24 NW SW. From this point downstream to CTH H, Little Bear Creek is classified as a Limited Forage Fishery or Tolerant Fish and Aquatic Life. The stream receives the default classification of Full Fish and Aquatic Life or Diverse Fish and Aquatic Life downstream from CTH H (Figure 1).

Little Bear Creek is an eight mile long warm water stream and is a tributary to Bear Creek. These streams are located in the Little Eau Pleine River Watershed (UW14) in Wood County. According to the USGS 7.5 minute QUAD, the upper two miles of Little Bear Creek are intermittent and the lower six miles have perennial flow.

Stream Classification Surveys

Stream observations and surveys were completed on Little Bear Creek during three separate visits. Stream observations were completed on two occasions including visits in May 2003 and

May 2004. Stream surveys and observations were also completed in August 2004 following baseline wadable stream fish protocol.

Stream Observations May 2003

On May 19,2003, stream observations were collected on Little Bear Creek at CTH K and from the WWTP outfall downstream. During the 2003 visit, no discharge was observed from the treatment plant. Based on information from SWAMP, the facility completed their seasonal discharge six days prior to these observations. The stream is very small but streamflow appeared elevated likely a result of recent rainfall. A school of minnows were observed in the stream approximately 40 yards downstream from the outfall. Channelized streamflow was observed through the riparian wetland except for a trampled cattail area where flow spread out for 20 feet in a distance of 25 yards. Channelized flow was observed below the cattail area. During the winter, this area appears to serve as a snow mobile trail crossing based on trail markers and the trampled nature of cattails.

Little Bear Creek was observed at the CTH K crossing ~ 0.3 miles downstream from the outfall. Streamflow was elevated from recent rainfall and a defined channel was present through the riparian wetland. No fish were observed in the large bridge pool.

Stream Observations May 2004

On May 4, 2004 Little Bear Creek was observed at three locations including North Road, CTH K and Range line Road.

Little Bear Creek at North Road is ~ one mile upstream from the discharge. Water was present in a large bridge pool but no visible flow was observed. Very little water was present in the channel except for shallow stagnant water. Filamentous algae growth was abundant throughout much of the stream.

Little Bear Creek at CTH K is approximately 0.3 miles downstream from the discharge. Streamflow was observed flowing in the channel through the riparian wetland. No riffles or coarse substrate were observed at this location. According to SWAMP, the facility was discharging at this time. Instantaneous dissolved oxygen and temperature readings were 5.4 mg/L and 10.3 degrees Celsius, respectively. Filamentous algae growth was abundant.

Little Bear Creek at Range Line Road is approximately 1.3 miles downstream from the discharge. The stream was larger and appeared to have higher gradient than found upstream. Riffles and coarse substrate was observed at this location. The instantaneous dissolved oxygen reading was 13.09 mg/L. No filamentous algae growth was observed from the bridge. The stream upstream from the road is mostly shaded by riparian forest.

Stream Surveys August 2004 on Little Bear Creek

Surveys were completed at three sites on Little Bear Creek following baseline wadable fish protocol. The sites were located at North Road (upstream discharge), CTH K (0.3 miles below outfall) and Range Line Road (1.3 miles below outfall). The Auburndale WWTP was not discharging at the time of these surveys. The last day of discharge was May 30, 2004.


Little Bear Cr. Upstream North Road

Little Bear Creek at North Road

A fishery survey could not be completed at North Road due to the lack of water. The entire stream channel was dry with reed canary grass growing over and across much of the channel. Water was only found in the bridge pool, which supported abundant filamentous algae growth. Some aquatic plants were also observed in the pool. The dry stream channel was small and was difficult to find within the reed canary grass.

Riffle areas were not observed and substrate composition generally consisted of fine sediment. Stream gradient measured at the site was 14 feet/mile indicating this reach would be considered low gradient.


Little Bear Creek at CTH K

Little Bear Creek at CTH K

A fishery survey could not be completed at CTH K due to the lack of water. The entire stream channel was dry with reed canary grass growing over the channel. Water was only found in the bridge pool, which supported abundant filamentous algae growth. The dry stream channel was small and was difficult to find within the reed canary grass.

Channel width was estimated as two feet and depth approximately six to eight inches. No riffles areas were observed and substrate consisted mostly of fine sediment. Stream gradient measured at the site was 16 feet/mile indicating this reach would be considered low gradient. The stream at this location flows through a wetland area that is dominated by reed canary grass. A defined stream channel has been observed through the wetland when the

treatment plant is discharging. Based on air photo maps, the stream channel appears ditched from near the treatment plant outfall downstream 0.5 miles to the confluence with an unnamed tributary.

Little Bear Creek at Range Line Road

Surveys on Little Bear Creek started approximately 15 meters upstream from the bridge. A fish survey found 295 total fish per 100 meters represented by seven species. The percent of fish tolerant to low dissolved oxygen was 21%. Dominant fish species found included white sucker, pearl dace, brook stickleback and creek chub (Appendix 1).

The stream channel was naturally meandering with riffles, runs and shallow pools. Substrate consisted mostly of gravel and cobble with some sand and boulder. Average stream width in runs and riffles was approximately six feet. Fish were captured in pools that were four to five inches in depth. Water depth in riffles was shallow with flow between rocks. Measured streamflow at the site was 0.06 cfs. Filamentous algae growth was minimal likely a result of abundant canopy shading at the site. Stream gradient calculated at the site was 20 feet/mile indicating this site is not low gradient.


Little Bear Creek at Range Line Road

Continuous Dissolved Oxygen Monitoring at Range Line Road

Continuous dissolved oxygen monitoring was completed on Little Bear Creek upstream of Range Line Road. Due to very low streamflow conditions, the sonde was deployed in a run habitat with minimal streamflow. Deployment in riffle areas was not possible due to shallow water depth.

Dissolved oxygen saturation values fluctuated from 33 to 130% indicating photosynthetic activity of algae or aquatic plants was influencing oxygen levels in the stream (Figure 2). Filamentous algae growth was minimal at the site likely due to abundant canopy shading. Photosynthetic activity may been occurring upstream where the stream was not observed. Dissolved oxygen concentrations spent 24% of the time below the water quality standard of 5 mg/L (Appendix 2). The very low streamflow conditions likely contributed to low dissolved oxygen concentrations in the stream. Minimal streamflow and the lack of surface turbulence likely limited natural aeration of the stream. Respiration of aquatic life in the stream likely contributed to the lower oxygen levels.

Baseline Reference Sites

Baseline wadable surveys completed on streams in the Wisconsin Rapids Watershed provided reference sites for the Auburndale stream classification survey. The reference sites provide an opportunity to evaluate the fishery potential of Little Bear Creek without the presence of effluent. Survey results for Little Bear Creek and the reference sites are found in Table 1.

Reference Sites for Little Bear Creek at North Road and CTH K

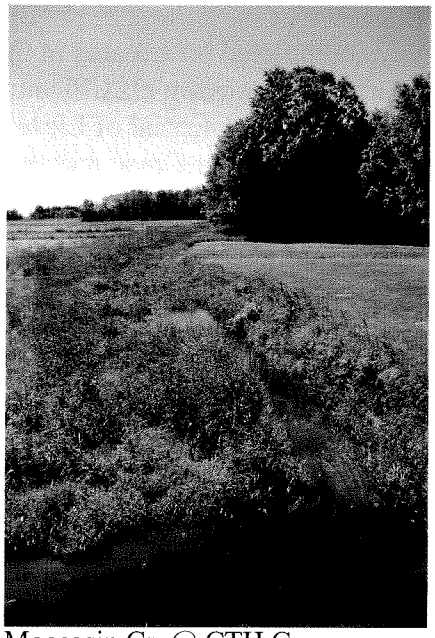
Two small unnamed streams in the Wisconsin Rapids Watershed were similar to Little Bear Creek at CTH K in drainage area, channel modification, surrounding landuse and low baseflow conditions. Both streams were also dry during most of the summer similar to Little Bear Creek at North Road and CTH K indicating the existing use of VTAL.

The Rudolph tributary at Plum Road is located near the two small streams mentioned above and receives a continuous discharge from Rudolph WWTP and Wisconsin State Dairy Cheese. The upper reaches of the Rudolph tributary is similar to Little Bear Creek upstream from CTH K and would have been dry without effluent discharged by the WWTP's. Effluent discharged by the treatment plants raised the potential fishery use of the Rudolph tributary from Very Tolerant Aquatic Life to a Tolerant Fish and Aquatic Life fishery. Likewise, a continuous discharge to Little Bear Creek should support a Tolerant Fish and Aquatic Life community in the upper reaches of stream where habitat and baseflow conditions are limiting.

Moccasin Creek at CTH C is similar to Little Bear Creek at CTH K in regards to channel modification and low baseflow conditions but is slightly larger in size and drainage area. Moccasin Creek also had more diverse substrate composition with the presence of gravel and cobble and was higher in gradient. This site represents a headwater reach without effluent discharged from a treatment plant. A fishery survey was completed in early July when streamflow was present. Streamflow at this time was likely augmented from a non-permitted de-watering activity from an upstream gravel operation. Fishery survey results found 27 total individuals per 100 meters represented by 5 species. The percent of fish tolerant to low dissolved oxygen conditions was 85%. Moccasin Creek had no flow from the headwaters downstream eight miles by middle to late summer. According to local residents, it is not unusual to see this reach intermittent during the summer months. Below STH 13, the stream steadily increased streamflow from groundwater inputs, which supported a brook trout fishery below George Road.

Fishery results from Moccasin Creek and the Rudolph tributary suggests that a Tolerant Fish and Aquatic Life fishery would exist in the upper reaches of Little Bear Creek when water is present. Minnows have been observed in the stream near the outfall when streamflow was present. Stream observations and surveys were completed during in a two year period of drought conditions. During a normal or above normal precipitation year streamflow may be present for a longer time period in the summer, which would likely support a tolerant fishery.

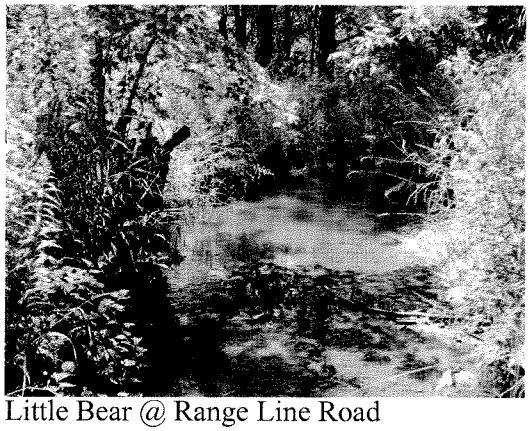
Little Bear Cr. @ CTH K with Effluent – dry above outfall



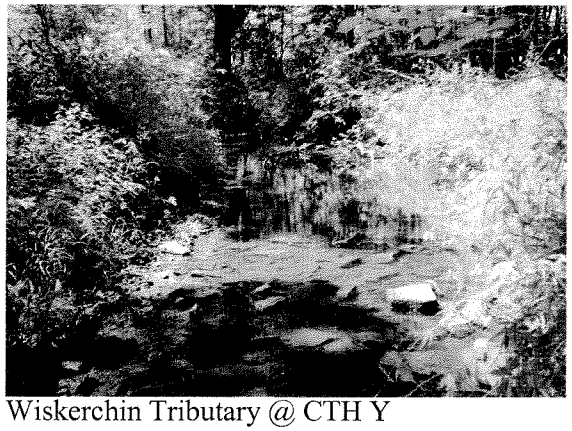
Moccasin Cr. @ CTH C >Baseflow Conditions

Reference Site for Little Bear Creek at Range Line Road

Wiskerchin Cheese Inc. requested limits for a new discharge to an unnamed creek that is also a tributary to the Little Eau Pleine River. The unnamed creek is located approximately two miles due north of Little Bear Creek. Surveys were completed on this stream to determine the appropriate use classification. The survey completed at CTH Y provides a very good reference site for Little Bear Creek at Range Line Road. This site was very similar to Little Bear Creek at Range Line Road in watershed area, gradient, baseflow, channel morphology and substrate composition.



Little Bear @ Range Line Road



Wiskerchin Tributary @ CTH Y

Fishery results found 167 total fish per 100 meters represented by nine species. The percent of fish tolerant to low dissolved oxygen was 8%. Dominant fish species collected include creek chub, blacknose dace and white sucker. Two young of the year burbot and northern pike were also found at the site. Survey data at this site represents a Diverse Fish and Aquatic Life forage fishery.

Data collected on Little Bear Creek at Range Line Road and on the Wiskerchin tributary at CTH Y clearly represents a Diverse Fish and Aquatic Life Forage fishery according to the Use Designation Guidance. The data indicates that minimal streamflow and suitable habitat found at both sites support a somewhat diverse forage fishery even during extreme low flow periods.

Discussion

Little Bear Creek is currently classified in NR 104 as Very Tolerant Aquatic Life from the Auburndale WWTP downstream to a tributary in T25N R4E Sec 24 NW SW. From this point downstream to CTH H, Little Bear Creek is classified as a Tolerant Fish and Aquatic Life fishery. The stream receives the default classification of Diverse Fish and Aquatic Life downstream from CTH H.

Little Bear Creek should be re-classified based on observations and surveys completed in 2003 and 2004. According to the Use Designation Guidance, a Diverse Fish and Aquatic Life (DFAL) stream is one that has the potential to contain a fishery represented by several species, fewer than 75% of the individuals are tolerant of low dissolved oxygen or a least two gamefish are found per 100 meters. The fish survey on Little Bear Creek at Range Line Road found an existing fishery use that represents a DFAL fishery. The percent of low dissolved oxygen tolerant fish was 21%, which is well below the 75% threshold listed in guidance. The number of species collected was seven indicating a relatively diverse community, especially for a small stream. Of the seven species collected, only two are considered tolerant of low dissolved oxygen conditions. The Use Designation Guidance also describes a subclass of Cool Water Fish species (CC) that would be appropriate to describe the fishery at Range Line Road. According to the document, the cool water subclass is appropriate if more that 5% of the individuals collected are representatives of cool/cold water indicator species. The survey completed at Range Line Road found cool water species that represented 29% of the individuals. The cool water subclass of DFAL would be an appropriate classification of the stream reach near Range Line Road. Little Bear Creek was observed downstream at Brookside Road. The stream was larger in size and visibly had more streamflow indicating groundwater inputs increased downstream. Therefore, the DFAL classification should extend downstream from Range Line Road. Without specific fishery data the downstream extent of the cool water sub-classification is not known.

The existing use classification of Little Bear Creek from CTH K upstream to the headwaters would best be described as Very Tolerant Aquatic Life (VTAL). This reach had no permanent streamflow when observations and surveys were completed in 2003 and 2004. These observations were collected during a period of drought that likely had an influence on streamflow conditions. Baseflow conditions may improve following a normal to above normal precipitation year, which should increase groundwater inputs to the stream. When streamflow

was present during these observations it was a result of recent rainfall and seasonal discharge from the treatment plant. On one occasion, some minnows were observed in the stream following a rain event near the treatment plant. The seasonal discharge from the treatment plant maintained flow in the stream downstream from the outfall. On average, the treatment plant discharges for 33 days.

The existing habitat conditions and lack of permanent streamflow of this reach limits the potential of the stream. Past ditching, low gradient, lack of coarse substrate, weak baseflow and overall small nature of the stream likely limits a diverse fishery from developing in this reach. Therefore, when streamflow is present from either groundwater input or discharge from the treatment plant, the potential use classification of Little Bear Creek upstream from CTH K would be Tolerant Fish and Aquatic Life (TFAL).

The reach of Little Bear Creek between CTH K downstream to Range Line Road was not observed in the field. The change from a potential TFAL fishery at CTH K to an existing DFAL fishery at Range Line Road is likely a function of groundwater input, in-stream habitat conditions and gradient. Minimal streamflow found in Little Bear Creek at Range Line Road indicates groundwater input to the stream upstream from the road. The confluence with the unnamed tributary in T25N R4E Sec 24 NW SW is a likely location of groundwater inputs entering the stream since the stream was dry at CTH K. Based on an air photo map, Little Bear Creek is mostly channelized from the headwaters downstream to the confluence with the tributary in T25N R4E Sec 24 NW SW. The stream channel appears natural and mostly meandering below the confluence with the tributary. Little Bear Creek near CTH K is low gradient but has a higher gradient downstream at Range Line Road. Stream gradient increases in the middle of section 24 based on the USGS 7.5 minute topographic map. The DFAL classification should extend upstream from Range Line Road to the confluence with the tributary in T25N R4E Sec 24 NW SW. The suggested classification of this reach is based on the potential for increased groundwater inputs, especially during normal to above normal precipitation years, and improved habitat in the natural stream channel below the confluence with the unnamed tributary (Figure 3).

Recommended Classifications for Little Bear Creek

Little Bear Creek from the Auburndale treatment plant outfall downstream to the confluence with the unnamed tributary in T25N R4E Sec 24 NW SW "Tolerant Fish and Aquatic Life".

Little Bear Creek from the confluence with the tributary in T25N R4E Sec 24 NW SW downstream "Diverse Fish and Aquatic Life".

Bibliography

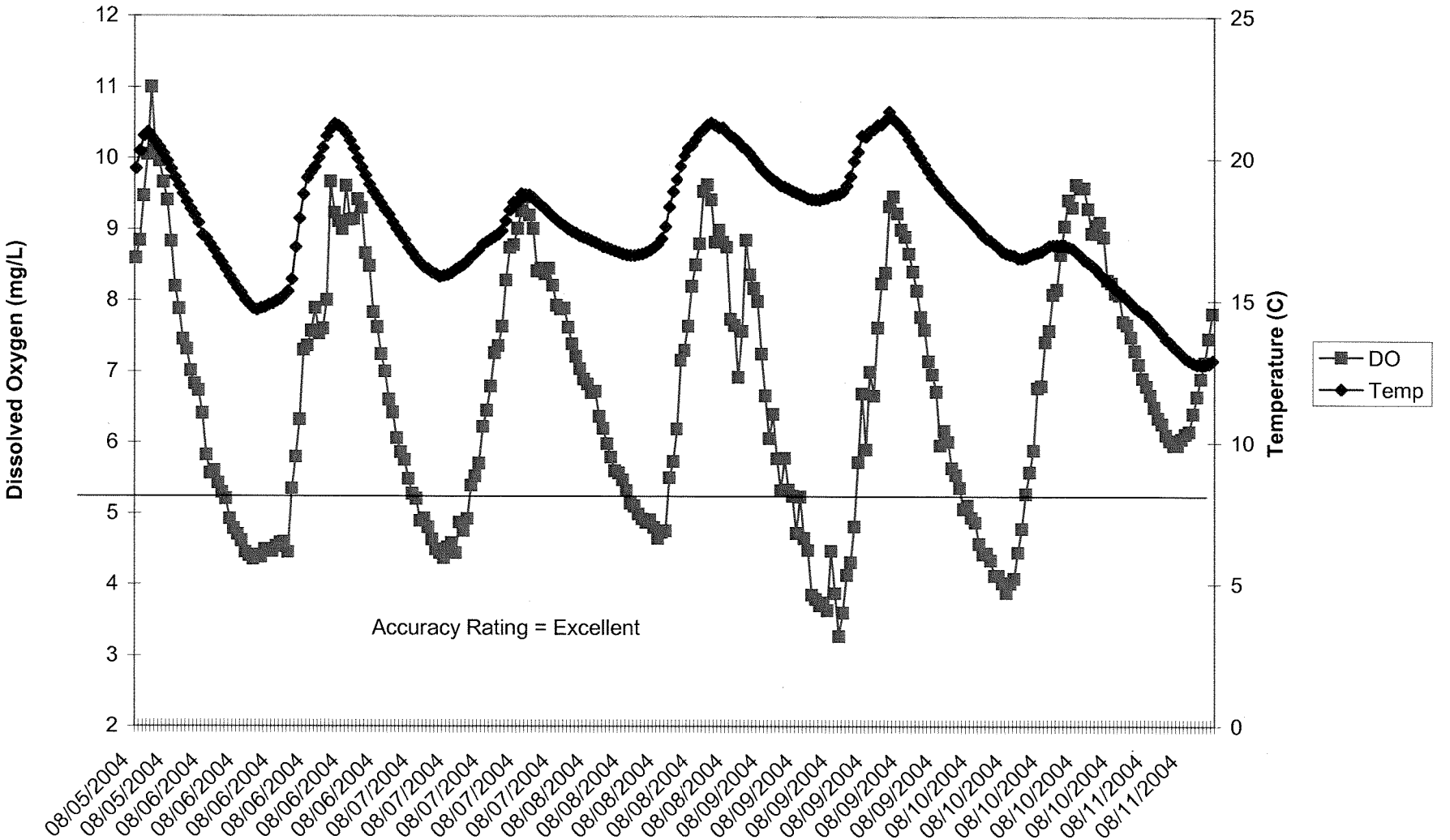
WDNR. 2004. Guidelines for Designating Fish and Aquatic Life Uses for Wisconsin Surface Water. Publ-WT-807-04.

WDNR. 2004 SWAMP Database.

Table 1. Monitoring Results for Little Bear Creek and Reference Sites

Stream	Location	# Fish per 100 m	# Fish Species	% fish tolerant low D.O.	# of low D.O. tolerant Species	Max. D.O. mg/L	Min. D.O. mg/L	Ave. D.O. mg/L	Min. Ave. Daily D.O. mg/L	% Time below 5 mg/L	% fish tolerant disturbed Habitat	# of fish species tolerant to disturbed Habitat	Station Gradient feet/mile	Drainage Area Sq./Miles
Little Bear Creek	Range Line	295	7	21	2	11	3.27	6.7	6.2	24	47	2	20	2.5
Little Bear Creek	CTH K												14	0.94
Little Bear Creek	North Road												14	0.46
Moccasin Creek	CTH C	27	5	85	3						15	2	20	1.8
Rudolph Trib	Plum Rd.	80	2	100	2	10.4	3.33	6.23	4.8	25	0	0	12	1.9
Wiskerchin Trib	CTH Y	167	9	8	3	7.5	2.53	5.58	4.68	18	89	3	20	2.5

Figure 2. Little Bear Creek Continuous Dissolved Oxygen Monitoring Range Line Road (August 5 - 11, 2004)



Appendix 2. Summary of Continous Dissolved Oxygen Monitoring on Little Bear Creek at Range Line Road
Deployment Period: 8/5 - 8/11, 2004

Takedown	08/11/2004				
	Temp	**DO**	**Degee Fouling**	**Degree sensor drif**	**Total Drift**
Before Cleaning	12.91	8.02	-0.1		
After Cleaning	12.91	8.12			
Precal Reading Cup	11.77	10.21		-0.21	
Cal Value					
PostCal Reading Cup	11.73	10.4			-0.31

Stream Readings

Accuracy Rating Excellent

DO	8.55
Temp	12.7
Date	08/11/2004
Time	10:33
pH	7.3
sp. Cond	177

DO Summary

Max	11
Min	3.27
Average	6.70
Min Ave Daily DO	6.2
% below 5 mg/L	24

Appendix 1. Fishery Results for Little Bear Creek at Range Line Road

IBI Calculator for Central and Southern WI (Lyons 1992) and Use Designation Guideliens (August 2003 draft) (REV. 2/3/2004)

Sample Date	08/04/2004
SITE	Little Bear Creek upstream of Range Line Road
PERSONNEL	Hazuga, LaLiberte

MATRIX	VALUE	SCORE
total # of fish	295	n/a
total # of native spp.	7	0
total # of darter spp.	1	2
total # of sucker spp.	1	2
total # of sunfish spp. < 8km from lake	0	0
total # of sunfish spp. >8km from lake	0	0
total # of intolerant spp.	1	2
total # of tolerant fish	142	5
total # of omnivores	117	2
total # of insectivores	149	5
total # of top carnivores	0	0
total # of simple lithophils	115	5
subtotal		23
Correction Factors		23
total # of DELT fish	0	23
Total after correction factors =		23
IBI SCORE =		**23**

Equipment Type =	Back Pack
Stream width (m) =	2.5
Ln stream width (m) =	0.92
Distance shocked (m)=	100
Is your sample site greater than 8 km from a lake?	y

% of tolerant spp.	48
% of omnivorous spp.	40
% of insevtivores	51
% of carnivores	0
% of simple lithophilous	39
Correction Factors	
# of nontolerant fish per 300m	459
% DELT	0

Biotic Integrity Rating **POOR**

Notes

# of fish	Fish species
115	**White Sucker**
81	**Pearl Dace**
61	**Brook Stickleback**
25	**Creek Chub**
7	**Iowa Darter**
4	**Northern Redbelly Dace**
2	**Fathead Minnow**

Stream Class Guidance (8/2003) Tolerance Summary Data		
Total # of game-fish species with more than 2 individuals per 100m	0	
Total # of DO tolerant fish	63	
Total # of DO tolerant fish per 100 meter stream length	63	
% forage fish belonging to spp. that are tolerant to low DO	21	%
Total # of fish tolerant to disturbed habitat	140	
Total # of fish tolerant to disturbed habitat per 100m. stream length	140	
% of fish species that are tolerant to disturbed habitats	47	%
% of DO fish AND tolerant to disturbed habitat fish spp.	68	%
Total # of DO tolerant species =	2	
Total # of Disturbed habitat species =	2	
Total # of fish species collected =	7	
Total # of fish collected =	295	
Steam length shocked (m) =	100	
Macroinvertebrates collected (mm/dd/yyyy)		
Overall sample HBI score and rating		
Toal # of macroinvcrtebrates with HBI tolerance values <=5.00 =		
Toal # of macroinvcrtebrates with HBI tolerance values >5.00 =		
% of macroinvertebrates with HBI Tol. Values >5.00 =	#DIV/0!	%

Fish and Aquatic Life Minimum Expectations Evaluation	
% forage fish belonging to spp. that are tolerant to low DO	**DFAL**
% of macroinvertebrates with HBI Tol. Values >5.00 =	

Stenothermal Coolwater Fish Species		
Total # of coolwater fish species	2	
Total # of coolwater fish	85	
% of coolwater fish =	29	%

Stenothermal Coldwater Fish Species		
Total # of coldwater fish species	0	
Total # of coldwater fish	0	
% of coldwater fish =	0	%

Figure 1. Little Bear Creek Current NR 104 Classifications

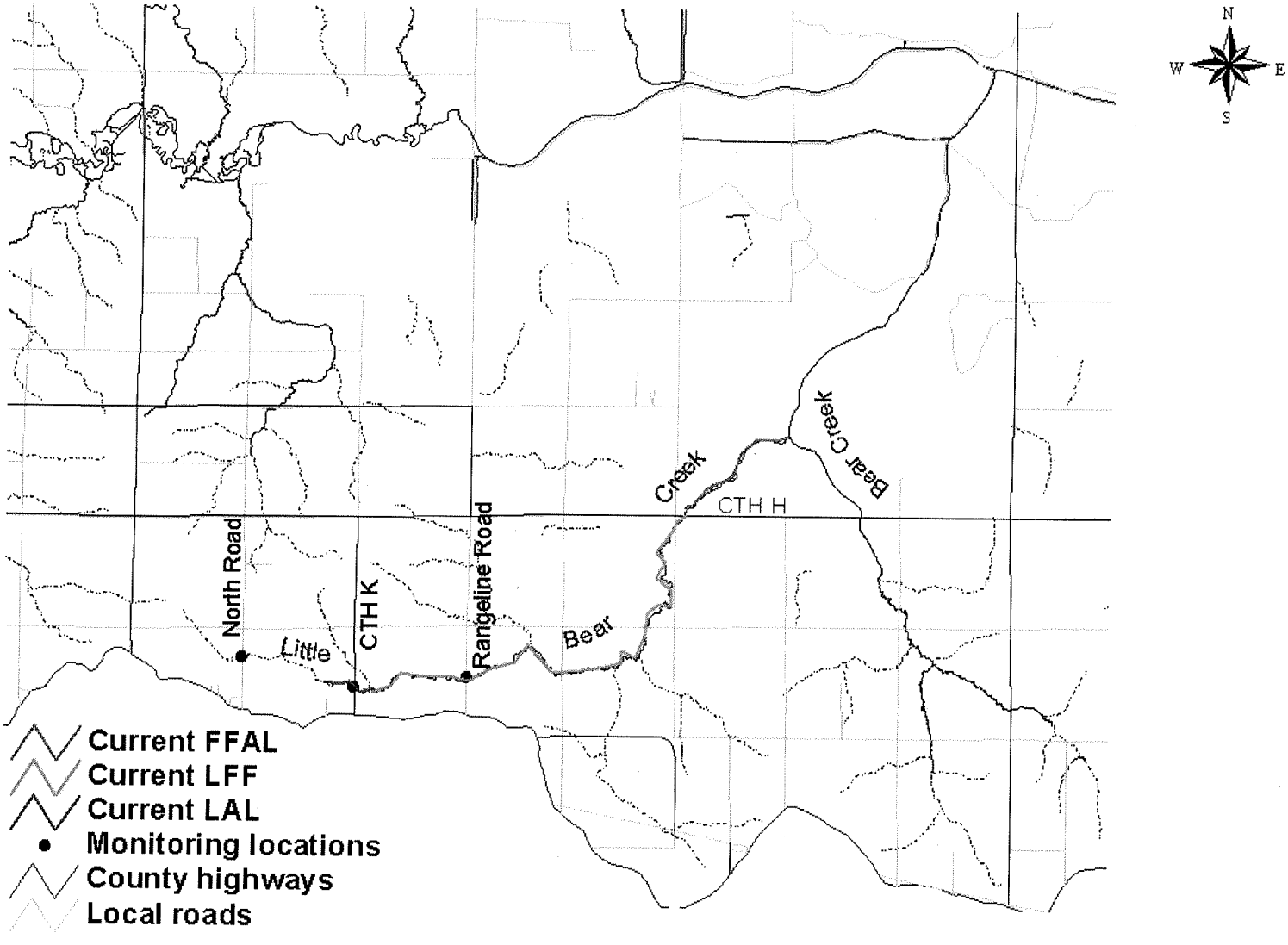
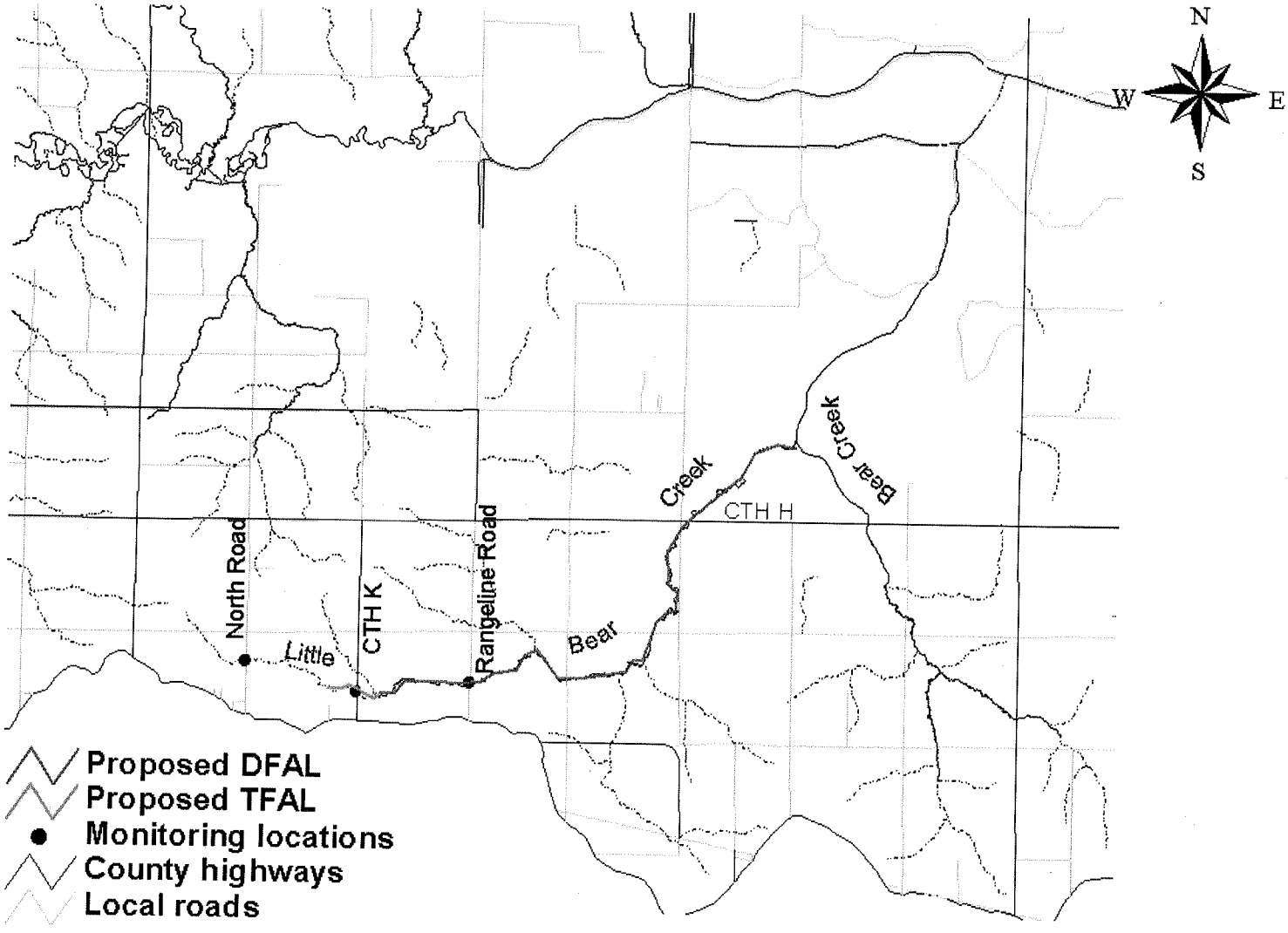


Figure 3. Little Bear Creek Proposed NR 104 Classifications



Reviewed by CBub Date 2/2004

Region WCR **County** Wood **Report Date** 10/1976 **Classification** LAL/LFF

Water Body: Little Bear Creek, Trib to.

Discharger: Auburndale 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:

_____ 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

Historical Reports in file:

10/7/76 - Ken Schreiber

11/22/76 - Ken Schreiber

Additional Comments/How to improve report:

- UR = wetland default.
- no justification for LFF claim
- check w/ region on this site

Department of Natural Resources

INTRA-DEPARTMENT

MEMORANDUM

Wisconsin Rapids
Station

Date October 7, 1976

IN REPLY REFER TO: 3410

TO: File

FROM: Kenneth W. Schreiber

SUBJECT: Tributary of Little Bear Creek With Source Near Auburndale

On September 28, 1976, the writer conducted a survey of the subject area.

The stream bed was completely dry at County Trunk "K" bridge. Small pools of standing water were noted at downstream bridges, however, no flow was indicated. Minnows and aquatic plants were present in some of the pools.

A long narrow pool of water was present in Little Bear Creek at County Trunk "H", however, no flow was noted.

Kenneth Schreiber

Kenneth W. Schreiber

KWS:dls

NOTED:

_____ _____

Date

Auburndale, Wood County

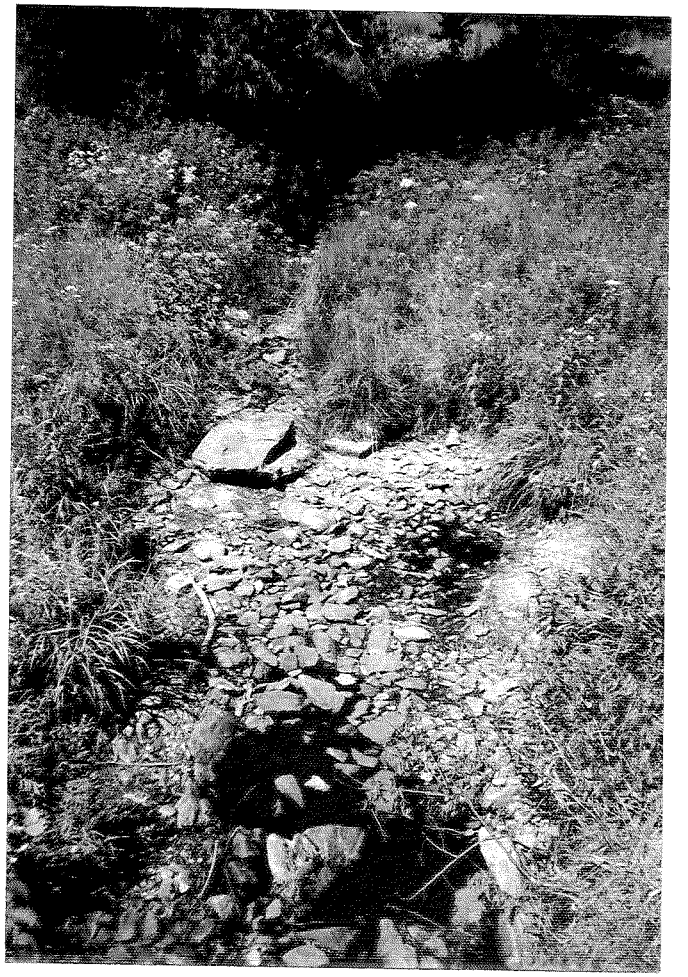
Wastewater Receiving Stream Classification

The Auburndale wastewater treatment system consists of a two cell lagoon that discharges to a small marsh which drains to a tributary of Little Bear Creek. The distance from the outfall to the stream is approximately 200 yards. The 7 day Q_{10} of the receiving stream is 0 cfs and there was no flow the day of the survey. The tributary that receives the discharge is very small and is occasionally lost in marshy areas until it meets another tributary about ½ mile below the lagoons. Thereafter the channel is well defined and it courses through pasture and woodland. On the day of the survey there was no water flow from the lagoons down to CTH "H". The stream is interspersed with a number of pools that contain water even during very dry periods. Near the crossing of CTH "H" the stream is channelized and is influenced by water level controls on the Mead Wildlife Area.

The fishery of Little Bear Creek is largely unknown. Many minnows were seen in a pool at the first bridge below CTH "K" and were noted in all pools below. Northern pike are likely to make spawning runs up Little Bear in the spring.

Recommendations: The marsh that the sewage treatment lagoons discharge to should be classified wetland and, therefore, has the "marginal" water quality classification. The tributary to Little Bear Creek and Little Bear Creek itself down to CTH "H" should have the noncontinuous hydrologic classification. From the lagoon to where it joins the tributary in the northwest quarter of the southwest quarter of Section 24 should have the "marginal" water quality classification. From that point to CTH "H" it should be classified "not supporting a balanced aquatic community."

Little Bear Creek at CTH "K".

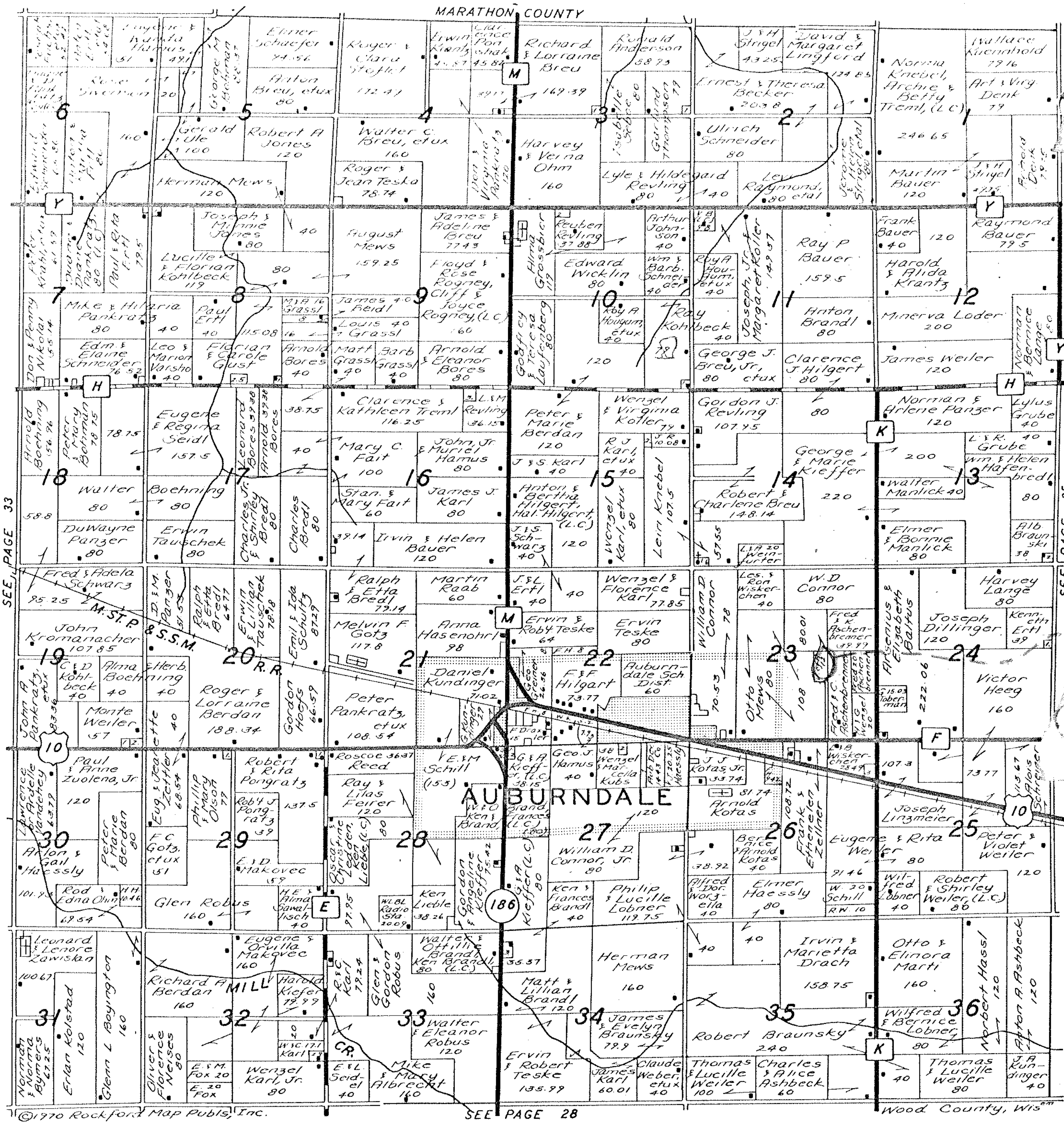


Little Bear Creek at first Town road below CTH "K".

Little Bear Creek at third Town Road below CTH "K".

Little Bear Creek at CTH "H".

AUBURNDALE T. 25 N.-R.4 E.



Auburndale, Wood County

Wastewater Receiving Stream Classification

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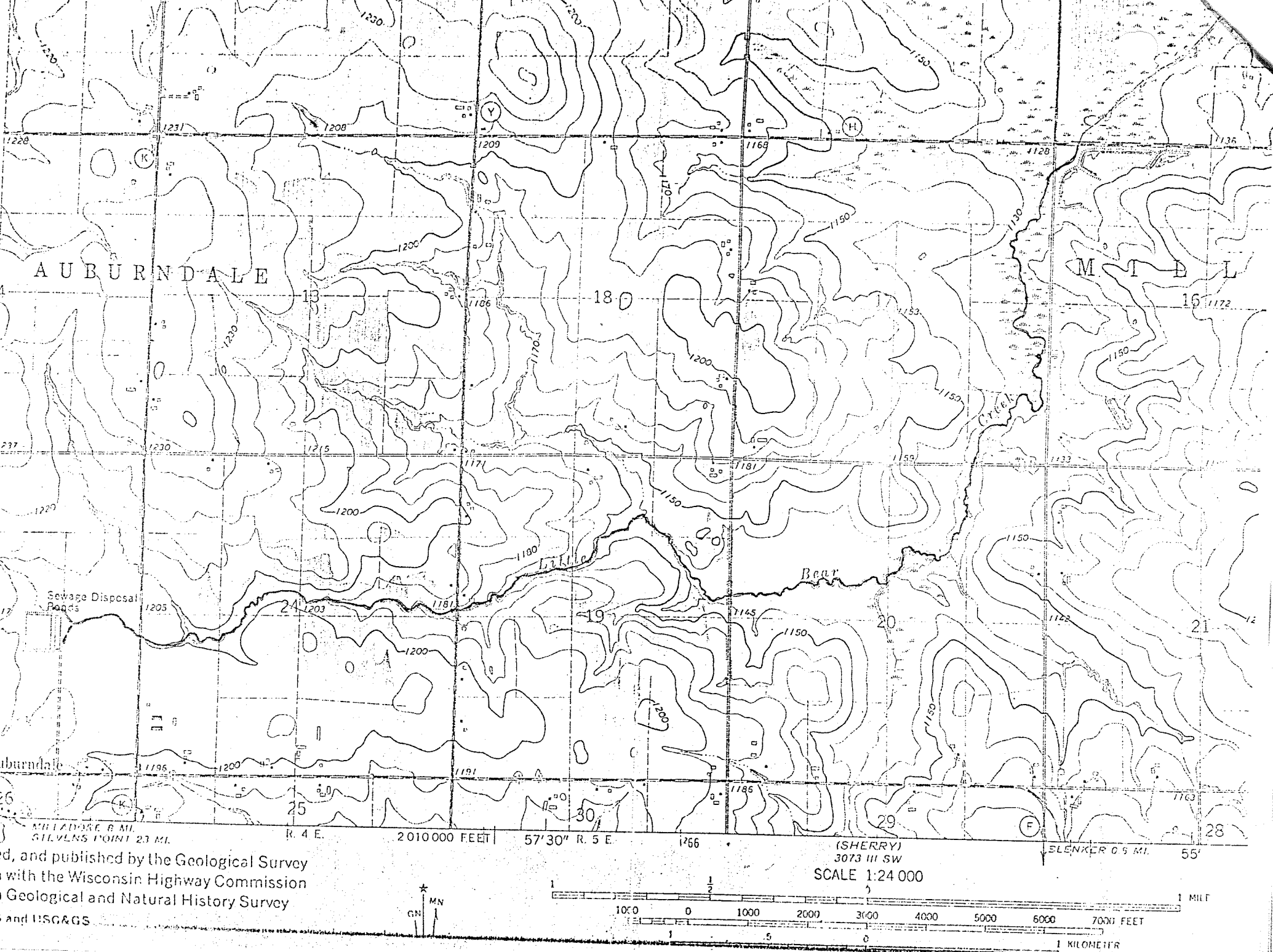
Field Surveys: 7/27/76
10/6/76



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