WILLOW CREEK WATERSHED (LW12)

The Willow Creek Watershed covers 160.5 square miles in Richland County. The watershed is within the driftless, or unglaciated, part of Wisconsin and major water resources in the watershed are Willow Creek and the section of the Pine River from Brush Creek at Richland Center downstream to the Wisconsin River.

Overall population in the watershed was projected to be 7,142 in 2000. Richland Center is the main municipality in the watershed and has a population of 5,114 according to Census 2000 data. Land cover in the watershed is primarily broad-leaf deciduous forest and agriculture. There are few wetland complexes in the watershed away from the Wisconsin River floodplain. These are usually adjacent streams and suffer from the effects of grazing or cultivation. The are some locally important, relatively undisturbed wetlands at the junctures of some of the larger streams.

Table 1: Land Cover in the Watershed

Land Cover	*Percent of Watershed*
Forest (Total)	42.0%
Broad-Leaf Deciduous	*41.3%*
Coniferous	*0.7%*
Agriculture	40.1%
Grassland	12.6%
Wetland (Total)	3.7%
Emergent/Wet Meadow	*2.0%*
Forested	*1.3%*
Lowland Shrub	*0.4%*
Development (Total)	0.7%
High Intensity	*0.5%*
Low Intensity	*0.2%*
Barren	0.6%
Open Water	0.4%

Watershed At A Glance

Drainage Area (m^2): 160.5

Total Stream Miles: 152.3

Trout Stream Miles: 59.6

Sport Fishery Miles: 22.5

Lakes: Richland Center Mill Pond

Exceptional/Outstanding Resource Waters: Happy Hollow, Jacquish Hollow, Lost Hollow, Smith Hollow, Wheat Hollow, Willow Hollow

Municipalities: Richland Center

Major Public Lands:
- Willow Creek Fishery Area
- Pine River Public Hunting Ground

Concerns and Issues:
- Nonpoint source pollution
- Atrazine

Initiatives and Projects:
- Wild trout reintroduction
- Citizen stream monitoring on Brush Creek
- Pine River Study and Information Network (PRISTINE)

Nonpoint source pollution in the watershed is a problem. As a result of the threat of pollution from nonpoint sources, the watershed is considered a high priority for nonpoint source pollution reduction. Much of this nonpoint pollution is the result of intensive agriculture that results in soil loss and increased sedimentation in nearby streams. Another concern in the watershed is the use of the herbicide atrazine. Atrazine can leach through the soil and show up in the groundwater and in private water wells. As a result, there are several areas in the

watershed designated as atrazine prohibition areas. In addition, the portion of the watershed on the Wisconsin River floodplain is also in an atrazine management area. See Appendix B.

There are two permitted municipal discharges in the watershed. The City of Richland Center discharges to the Pine River. In addition, the Sextonville Sanitary District discharges to Willow Creek.

The Willow Creek Watershed has a variety of good quality habitats and rare plant communities that are listed on the state's Natural Heritage Inventory, (NHI), kept by the Bureau of Endangered Resources. These communities include:

- Dry cliff
- Dry prairie
- Hemlock relict
- Moist cliff
- Northern wet forest
- Pine barrens
- Pine relict
- Sand barrens
- Sand prairie
- Southern dry forest
- Southern dry-mesic forest
- Southern mesic forest
- Alder thicket
- Emergent aquatic
- Ephemeral pond
- Floodplain forest
- Oxbow Lake
- Shrub-carr
- Southern sedge meadow
- Wet-mesic prairie
- Wet prairie

In addition to these special communities, the watershed is also home for a variety of rare plant and animal species including; 1 species of beetle, 1 species of bird, 1 species of butterfly, 3 species of dragonflies, 9 species of fish, 1 species of mayfly, 12 species of mussels, 22 plant species, 1 species of snake, and 1 mammal species. These plants and animals are also listed on the state's Natural Heritage Inventory, (NHI).

The 300-acre Willow Creek Fishery Area located in the watershed is good for recreational trout fishing. Also, the Pine River Hunting Grounds is in the watershed. This area offers biking, hiking and snowmobiling.

STREAMS AND RIVERS IN THE WILLOW CREEK WATERSHED

Ash Creek

Ash Creek is a spring and seepage fed stream that is a Class I trout stream. Baseline monitoring was conducted in 2000. The stream supports some natural reproduction of brook and brown trout. Wisconsin WDNR South Central Region Fisheries Management Staff have developed a fisheries management plan to improve the health of the brook trout fishery of Ash Creek. Obstructions such as beaver dams and deadfalls have been removed to improve the upstream or downstream movement of trout. In addition, streambank habitat has been improved and lunker structures have been installed. Other in-stream habitat work, such as the creation of pools has been completed. Currently, a catch and release fishing regulation has been passed to aid in the establishment of a healthy trout population. The success of the fishery as a result of these actions will be assessed every 5 years through baseline monitoring.

Brush Creek
Brush Creek is a seepage fed stream that flows to the Richland Center Mill Pond. The stream supports a Class II trout fishery with some natural reproduction. Portions of the stream have been straightened which has had an effect on in-stream habitat in the creek. A cursory habitat evaluation was conducted on the creek in the summer of 2001. The survey found the habitat in the creek to be fair to good. The overall problem affecting habitat is nonpoint source pollution from the watershed.

Brush Creek is currently the focus of citizen monitoring efforts through the Pine River Study and Information Network (PRISTINE). One of the goals of the group is to identify sources of nonpoint pollution that affects streams and rivers in the Pine River system. The group also is developing a monitoring network to collect data on streams in Pine River watershed. Currently, volunteer monitors are surveying the stream's turbidity, temperature, and dissolved oxygen of Brush Creek. Monitors have also assessed the stream's biotic community and in-stream habitat. This group has been collecting data on Brush Creek since June 2000. To see data collected by this group, visit http://members.tripod.com/nohrchapter/monitor_home.htm.

Center Creek
Center Creek is a small spring fed tributary to the Pine River. The creek supports a cold water forage fish community. Center Creek has been hydrologically modified and experiences some problems as a result of nonpoint source pollution. Limited information is available on this stream.

Durst Hollow Creek
Durst Hollow Creek is a small spring fed tributary to School Section Hollow Creek and is located east of Ithaca. The creek supports a small forage fishery. The creek experiences some problems as a result of nonpoint source pollution and streambank pasturing. Limited information is available on this stream.

Happy Hollow Creek
Happy Hollow Creek is a small spring-fed stream tributary to Willow Creek. The stream is a Class I trout stream and an exceptional resource water (ERW). Baseline monitoring on the creek was conducted in 2000. In general, the stream has good water quality. Surveys have found some natural reproduction of brown trout. The majority of the steam's watershed has been cleared for agriculture and streambank pasturing and barnyards along the creek also potentially contribute nonpoint source pollution to the creek. As a result of its good water quality and the potential for nonpoint source pollution, the stream has been ranked as a high priority for nonpoint source pollution reduction.

Hell Hollow Creek
Limited information is available for this stream.

Jacquish Hollow Creek
Jacquish Hollow Creek is another small spring-fed Class II trout stream that is a tributary to Willow Creek. It has also been nominated for ERW status and may have the potential to be a Class I trout stream. A cursory habitat evaluation was conducted on the creek in the summer

of 2001. The evaluation found good habitat at the mouth of the creek, with fair habitat further upstream. Overall, the most negative effects on the creek are from nonpoint sources of pollution stemming from the watershed. Another problem impacting the stream is hydrologic modification. Nearly 2/3 of the watershed has been cleared for agriculture at one time or another and cattle grazing near the stream has caused problems with streambank erosion. At least one spring pond adjacent the creek has been dug. The stream is considered a high priority for nonpoint source pollution reduction.

Little Willow Creek
This stream is a spring and seepage-fed Class II trout stream. A cursory habitat evaluation was conducted on the creek in the summer of 2001. The evaluation found habitat in the Little Willow Creek to be of good quality. The creek does experience some slight to moderate erosion and also receives nonpoint sources of pollution, but overall, the creek has good bottom substrate, and a variety of riffles and pools.

Despite the adequate in-stream habitat in the creek, the stream is considered to have impaired water quality partially as a result of nonpoint problems. Specifically, there are some large farms in the in the drainage area that may be contributing nutrients to the creek. In addition, streambank grazing may be a problem. The stream has been hydrologically modified and portions of the stream were channelized. This modification has had a negative effect on in-stream habitat. Overall, the stream is considered a high priority for nonpoint source pollution reduction.

Lost Hollow Creek
A small spring and seepage fed tributary to Willow Creek, Lost Hollow is classified as a Class I trout stream. The stream is also classified ERW and has natural reproduction of brook and brown trout. Baseline monitoring was conducted in 2000. Water quality is considered to be excellent and the stream has good in-stream habitat. The stream is a high priority for nonpoint source pollution reduction.

Misslich Creek
Limited information is available for this stream.

Nebraska Hollow Creek
Nebraska Hollow Creek is a seepage and spring fed tributary to Willow Creek. The creek has a very low flow and is unable to support a fishery other than some small forage species. The creek has been hydrologically modified and experiences problems as a result of nonpoint source pollution.

Pier Spring Creek
Limited information is available for this stream.

Pine River
The Pine River is a spring fed river that begins in Vernon County and flows south to the Wisconsin River. The section of the river in this watershed is classified as a warm water sport fishery for the lower 17 miles. The upper two miles above County Highway AA are able to

support a Class II trout stream. A rare aquatic species has been found in the river. The river is threatened by nonpoint source pollution.

Robin Hollow Creek
Limited information is available for this stream.

Rocky Branch
Rocky Branch is a small tributary to the Pine River. The stream has a low flow and a lack of polls and is able to support only a forage fishery. The stream has been hydrologically modified. Limited information is available for this stream.

School Section Hollow
School Section Hollow is a tributary to Willow Creek. The creek supports a cold water forage fishery. The stream has been hydrologically modified.

Smith Hollow Creek
Smith Hollow Creek is a Class I trout stream tributary to Willow Creek. It is also classified as an exceptional resource water (ERW). Water quality is considered to be very good and the stream supports some natural reproduction of brook and brown trout. Nearly three fourths of the watershed has been cleared for agriculture and intensive grazing causes streambank erosion. In the early 1990's, fisheries management noted a decline in trout population in the stream, with nonpoint source water pollution being the suspected cause.

Snake Creek
Limited information is available for this stream.

Spring Creek
Spring Creek is a spring fed tributary to the Pine River. The stream historically has had severe problems with nonpoint source pollution from bank erosion, barnyards and pig pens. The stream has been heavily silted in and has little in-stream habitat. Today, the stream supports only a cold water forage fishery.

Wheat Hollow Creek
Wheat Hollow Creek is a spring and seepage fed tributary to Willow Creek. The creek is an exceptional resource water (ERW) and is a Class II trout fishery. The stream has some natural reproduction of brown trout. The stream has problems with nonpoint source pollution and is considered a high priority for nonpoint source pollution reduction.

Willow Creek
Willow Creek is a spring and drainage fed stream that enters the Pine River. The stream is classified as an exceptional resource water (ERW) from above the Ithaca dam upstream to the Richland-Sauk county line, a distance of about 16.9 miles. Downstream of the Ithaca dam the stream is a warm water sport fishery. The stream supports the natural reproduction of brook and brown trout and is considered a Class I trout stream above the Ithaca Dam. Baseline monitoring was conducted in 2000 and it is recommended that the trout stream portion of Willow Creek be increased to 21.8 miles of Class I trout water. There are a number of cattle

feedlots on or near the stream which might be affecting habitat and water quality and sedimentation is a problem in some areas of the stream. The creek is a high priority for nonpoint source pollution reduction. Habitat in the area surveyed is good although there are some areas of the stream that could use some habitat work. Overall, water quality is generally thought to be good.

Wisconsin River
This watershed is adjacent to a portion of the Wisconsin River. For more information on the Wisconsin River, see page 90.

RECOMMENDATIONS (LW12)

- The watershed should be considered as an EQIP project or some other nonpoint source pollution reduction project to control sources of nonpoint pollution. Specific targets for practices, such as through the Targeted Runoff Management program, (TRM), include **Happy Hollow, Jacquish Hollow, Little Willow, Lost Hollow, School Section Hollow** and **Wheat Hollow Creeks**.

- **Ash Creek** should continue to be monitored to evaluate the success of implementing the fishery management plan.

- Baseline or nonpoint source appraisal monitoring should be conducted on **Jacquish Hollow**, **Little Willow**, and **Wheat Hollow Creeks**.

- **School Section Hollow Creek** should be monitored to determine the its potential as a trout stream

- **Smith Hollow Creek** should be surveyed to determine cause of decline in fish population.

- The **Pine River** should be surveyed to determine if rare aquatic elements previously found in the stream are still present.

Watershed map

Streams in the Willow Creek Watershed (LW12) Richland & Sauk Counties Area: 160.5 sq miles

Stream Name	WBIC	Length (miles)	Existing Use	Projected Use	Supporting Potential Use	Codified Use and Trout Stream Classification	Proposed Codified Use	303(d) Status	Rare Aquatic Species	Use Impairment		NPS Rank	Monitored/ Evaluated/ Unassessed	Data Level	Trend	Ref.*
										Source	Impact					
Ash Creek	1224700	0-7.8	COLD I	same	Part	COLD II	COLD I/ERW	N	N	NPS,SB, HM	HAB	M	M (2000)	B4, H3	U	3, 6, 12, 15, 19
		7.8-9	U	U	U	DEF	same	N								
Brush Creek	1226200	3.3	COLD II	COLD I	Part	COLD II	same	N	N	NPS, PSB, HM	HAB	M	M (2001)	H2	U	2, 3, 6, 19
Center Creek	1225800	2	COLD	same	Part	DEF	same	N	N	HM, NPS	HAB	NR	U		U	6, 12, 16
Durst Hollow Cr.	1222000	2	COLD	same	Part	DEF	same	N	N	NPS, SB	HAB	M	U		U	6, 12, 16
Happy Hollow Cr.	1223800	3.4	COLD I	same	Full	COLD II/ERW	COLD I	N	N	NPS,HM	HAB, TEMP	H	M (2000)	B4, H3	U	3, 6, 7, 15, 19
Hell Hollow Cr	1221200	3	U	U	U	DEF	same	N	N			NR	U		U	
Jacquish Hollow Cr.	1222100	3.1	COLD II	COLD I	Part	COLD II/ERW	same	N	N	NPS,HM	HAB	H	M (2001)	H2	U	3, 6, 7, 19
Little Willow Cr.	1221300	0-7.5	COLD II	same	Part	COLD II	same	Y	N	NPS,HM	HAB	H	M (2001)	H2	U	3, 15, 16, 19
		7.5-10	U	U	U	DEF	same	N								
Lost Hollow Cr.	1222900	2.4	COLD I	same	Full	COLD I/ERW	same	N	N	NPS,BY	NUT	H	M (2000)	B4, H3	U	3, 15, 16, 19
Misslich Creek	1221400	1.6	COLD II	same	Part	DEF	COLD II	N	N	NPS, HM	HAB	M	E (1974)		U	3, 6, 12, 15
Nebraska Hollow Cr.	1221100	2	COLD	same	Part	DEF	same	N	N	HM	HAB	NR	U		U	12
Pier Spring Creek	1226500	1.1	COLD II	same	Part	COLD II	same	N	N	NPS, SM, HM, BY	HAB, MIG	M	E		U	3, 6, 15, 16, 19
Pine River	1220600	0-17	WWSF	same	Full	WWSF	same	N	Y	NPS,PSM	HAB	M	E	B2	U	3, 6, 15, 17, 19
		17-19	COLD II	same	Part	WWSF	COLD II	N								
Robin Hollow Cr.	1223100	2	COLD	same	Part	DEF	same	N	N			NR	U		U	12
Rocky Branch	1225700	2	COLD	same	Part	DEF	same	N	N	HM	HAB	NR	U		U	6, 12, 16
School Section Hollow	1221900	3	COLD	same	Part	DEF	same	N	N	HM	HAB	NR	U		U	3, 6, 12, 16, 19
Smith Hollow Cr.	1223000	0-3	COLD I	same	Full	COLD I/ERW	same	N	N	NPS	HAB	H	M (1997)	B2	U	3, 6, 7, 19
		3-4	COLD I	same	U	COLD II		N								
Snake Creek	1224800	3	COLD	same	Part	DEF	same	N	N			NR	U		U	12
Spring Creek	1225500	3	COLD	same	Part	DEF	same	N	N			NR	U		U	6, 12, 16
Wheat Hollow Cr.	1222800	2.6	COLD II	same	Full	COLD II/ERW	same	N	N	NPS, HM	HAB, FLOW	H	E (1974)		U	3, 6, 16, 19
Willow Creek	1220900	0-5.5	WWSF	same	Full	WWSF (0-8)	same	N	N	BY,CL,PSB,SB	HAB	M	M (2000)	B4, H3	U	3, 6, 7, 10, 12, 15, 16, 19
		5.5-26	COLD I	same	Full	COLD I/ERW (Ithaca Dam to Hwy D)	same	N				H				
		26-27.3	COLD I	same	Part	COLD II (Hwy D to headwaters)	COLD I/ERW (Above Hwy 58 at 10N2E S30)	N								
		27.3-28	U	U	U	DEF	same	N								
Unnamed Streams		42.5				DEF										

Total Stream Miles	152.3
COLD	19
COLD I	39.7
COLD II	21.2
WWSF	22.5
U	49.9

The numbers in this column refer to the References found in the corresponding Watershed Narrative.
See Appendix J: "How to Read the Stream Tables," in Chapter 7 of the State of the Lower Wisconsin River Basin Report.

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