

# LAKE WISCONSIN WATERSHED (LW19)

The Lake Wisconsin Watershed is located mostly in Sauk and Columbia Counties although the southernmost tip extends into Dane County. The watershed is named for Lake Wisconsin, an impoundment of the Wisconsin River created by the Wisconsin Power & Light dam at Prairie du Sac. Overall population in the Lake Wisconsin Watershed for 2000 was estimated to be around 14,300. Main municipalities include the villages of Dane, Merrimac and Poynette and the City of Lodi. Population growth in the watershed is high, most likely as a result of the watershed's proximity to the City of Madison.

**Table 1: Growth in Municipalities in the Watershed**

<i>Municipality</i>	<i>1990</i>	<i>2000</i>	<i>% Change</i>
Dane	621	799	28.7%
Lodi	2,093	2,882	37.7%
Merrimac	392	416	6.1%
Poynette	1,662	2,266	36.3%

As with virtually all the other watersheds in the basin, agriculture predominates. Other land cover in the watershed consists of broad-leaf deciduous forest, and grassland. Lake Wisconsin is also a major feature and covers 6.5% of the watershed's area.

**Table 2: Land Cover in the Watershed**

<i>Land Cover</i>	<i>Percent of Watershed</i>
Agriculture	45.9%
Forest (Total)	26.6%
<i>Broad-Leaf Deciduous</i>	<i>23.5%</i>
<i>Coniferous</i>	<i>1.6%</i>
<i>Mixed Deciduous/ Coniferous</i>	<i>1.5%</i>
Grassland	14.3%
Open Water	6.6%
Wetland (Total)	4.8%
<i>Forested</i>	<i>1.8%</i>
<i>Emergent/Wet Meadow</i>	<i>1.6%</i>
<i>Lowland Shrub</i>	<i>1.4%</i>
Other	1.1%
Development	0.7%

## Watershed At A Glance

**Drainage Area (m<sup>2</sup>):** 199.5

**Total Stream Miles:** 95.5

**Trout Stream Miles:** 39.6

**Sport Fishery Miles:** 8.9

**Lakes:** Lake Wisconsin

**Exceptional/Outstanding Resource Waters:** Parfrey's Glen, Prentice (Durward) Rowan, Spring (Lodi)

**Municipalities:** Poynette, Lodi, Merrimac

### Major Public Lands:

- ◆ Dekorra Public Hunting Grounds
- ◆ Hinkson and Rowan Creek State Fishery Areas
- ◆ Lodi State Wildlife Marsh
- ◆ Parfrey's Glen State Natural Area

### Concerns and Issues:

- ◆ Development pressure
- ◆ Nonpoint source pollution
- ◆ Stream channelization
- ◆ Lack of shoreline fishing
- ◆ Atrazine
- ◆ Nutrient loading

### Initiatives and Projects:

- ◆ Friends of Rowan Creek
- ◆ River Planning Grant for education and planning on Rowan Creek
- ◆ River Planning Grant to assess the Rowan Creek Watershed
- ◆ The Riverland Conservancy - land management and habitat restoration
- ◆ Wetland restoration
- ◆ Wild trout restoration
- ◆ Cold water habitat work
- ◆ Badger Army Ammunition Plant restoration
- ◆ Harmony Grove Lake Protection and Restoration District sediment study
- ◆ River Planning Grant on Spring Creek
- ◆ Aquatic habitat restoration in Gruber's Grove Bay

The watershed is developing at a high rate. This development pressure may impact natural plant communities and habitat and cause water quality problems if not controlled. There is also significant development around the lake that has a potential impact to Lake Wisconsin and its shoreline. As with all watersheds in the basin, the watershed does experience problems as a result of nonpoint sources of pollution and has been ranked as a medium priority with respect to nonpoint source pollution reduction. Portions of this watershed east of Poynette and along the county border are atrazine prohibition areas. See Appendix B. Point source discharges in the watershed have the potential to negatively impact surface water resources. The potential for groundwater contamination as a result of the former activities at the old plant is also an issue. Currently, drinking water concerns have been addressed and the Army is taking aggressive steps to ensure safe water. For more information, see the “Groundwater Contamination” section on page 42.

There are numerous permitted point source discharges in the watershed. Industrial discharges include Chiquita Inc., Lodi Canning and the U.S. Army Badger Ammunition Plant. Lodi Canning operates a vegetable canning operation in Lodi in Columbia County. It discharges noncontact cooling water to Spring Creek. Process wastewater is discharged to groundwater via spray irrigation. A break in the pipe carrying process wastewater to the spray irrigation field resulted in thousands of gallons of wastewater discharged to Spring Creek in 1991. This process wastewater pipe was completely replaced during 2000. U.S. Army Badger Ammunition Plant presently discharges wastewater to groundwater, but at one time it discharged to Lake Wisconsin at Grubers Grove Bay. The surface water discharge to Grubers Bay resulted in the contamination of lake bottom sediments. The US Army initiated a project to remove these contaminated sediments from Gruber’s Grove Bay during 2001. The Army has installed a groundwater pumping and treatment facility to collect and treat contaminated groundwater on BAAP grounds. Approximately 4-5 million gallons per day are collected and treated prior to being discharge to Lake Wisconsin. Chiquita Inc. discharges to Hinkson Creek.

There are also several municipal discharges. Three of them, including Devil’s Head Lodge, Harmony Grove and the Merrimac WWTP discharge to groundwater. The Lodi WWTP discharges to Spring Creek, and Poynette discharges to Rowan Creek.

There are two USGS stream flow gauging stations in the watershed on tributaries to Lake Wisconsin. The stations measure the stream's flow, the stage and the rainfall and are located near Prairie du Sac. For more information see the USGS website at <http://wi.water.usgs.gov>.

The Lake Wisconsin 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. The south slopes of the Baraboo (South) Range, a Precambrian inlier set of hills, is partially within the watershed. These hills are heavily wooded and contain unique sub-ecosystems with rare plant species. Some of these communities and others throughout the watershed include:

- ◆ Bedrock glade
- ◆ Cedar glade
- ◆ Dry cliff
- ◆ Dry prairie
- ◆ Dry-mesic prairie
- ◆ Moist cliff
- ◆ Northern dry forest
- ◆ Northern dry-mesic forest
- ◆ Oak opening
- ◆ Sand barrens
- ◆ Southern dry forest
- ◆ Southern dry-mesic forest
- ◆ Southern mesic forest
- ◆ Emergent aquatic
- ◆ Floodplain forest
- ◆ Northern sedge meadow
- ◆ Northern wet forest
- ◆ Open bog
- ◆ Shrub-carr
- ◆ Southern sedge meadow
- ◆ Springs and spring runs, hard
- ◆ Stream, fast, soft and warm
- ◆ Stream, fast, hard, and cold

In addition to these special communities, the watershed is also home for a variety of rare plant and animal species including; 7 species of beetle, 14 species of birds, 3 species of butterflies, 7 species of dragonflies, 11 species of fish, 2 species of mayflies, 2 species of moths, 9 species of mussels, 33 plant species, 4 species of snakes, 1 species of mammal, 2 species of leafhoppers, 1 species of caddisfly, and 1 species of lizard. These plants and animals are also listed on the state's Natural Heritage Inventory (NHI).

There are several publicly owned recreation areas in the watershed. The Dekorra Public Hunting Grounds has 242 acres of land open for hunting and other activities such as birdwatching and berry picking. The Hinkson Creek Fishery Area is 160 acres that offers opportunities for trout fishing. The Rowan Creek Fishery Area is larger, covering 629 acres and offers opportunities for birdwatching, hiking, cross-country skiing, and trout fishing. The Lodi Marsh State Wildlife Area also lies within the watershed's boundaries. The marsh is home to pheasants, ducks and other wildlife. Visitors to the marsh can enjoy hiking, berry picking, and birdwatching. A portion of Devil's Lake State Park can also be found in the watershed. The 488 acre Parfrey's Glen State Natural Area is also located in the watershed.

*Note: The Dane County portion of this watershed is also discussed in the Dane County Regional Planning Commission (DCRPC) Dane County Water Quality Plan. The DCRPC plan should also be consulted for additional information, priorities and recommendations.*

## **STREAMS IN THE LAKE WISCONSIN WATERSHED**

### **Hinkson Creek**

Hinkson Creek is a small, low gradient, coldwater, Class II, tributary to Rowan Creek. Despite impoundments and a heated discharge from a canning factory in the headwaters, the stream is capable of supporting brook trout. Natural reproduction occurs in the upper stream while the lower half depends on stocking. Surrounding wetlands buffer the stream from adjacent land uses. Some cattle are present in the stream corridor on the lower end. Dense tag alder growth along some sections and beaver dams are the biggest management problems. Surveys conducted in 1998 found the fish community to be of good condition. Habitat quality was determined to be from fair to good.

### **Manley Creek**

Manley Creek is a small tributary to the Wisconsin River. The stream supports some natural reproduction of brook trout and is considered a Class I trout stream. The stream has experienced some problems as a result of beaver activity on the creek.

A lot of habitat work has been done on the stream to help support this population of trout. Much of this work was completed on the portion of the stream that runs through property owned by Alliant Energy's Riverland Conservancy and has proven to be successful. This work was a cooperative project between the state, the Riverland Conservancy, and the Wisconsin Conservation Corp. Other projects currently underway on the Conservancy property in addition to streambank restoration includes wetland and prairie restoration.

### **Parfrey's Glen Creek**

Parfrey's Glen Creek is a very small stream. The stream flows through a deep rocky canyon and the stream and glen possess scenic and scientific values. The stream supports a Class I population of brook trout in the upper 1.1 miles and is considered an outstanding resource water (ORW). The area around the creek has been designated as a State Natural Area. A rare aquatic species has been found in the creek in past surveys. Parfrey's Glen was last monitored in 1993.

### **Prentice Creek (Durward's Glen)**

This stream is a tributary to the Wisconsin River. The stream supports a Class I trout stream above Highway 78. Below, the stream is designated as a Class III stream, although with some work a small portion of that stream could support a Class II trout stream. The upper 5 miles of the creek have been designated an exceptional water resource (ERW). The stream experiences some problems as a result of nonpoint sources of pollution.

### **Rowan Creek**

Rowan Creek is classified as a trout stream for 12 miles of its length with some natural reproduction of brown trout. About four miles are Class I trout waters and designated as an exceptional water resource (ERW), while eight are Class II. Approximately 8 miles of the trout stream portion of the stream has been listed on the state's list of impaired waters. Despite this, the stream has been known as one of the best trout streams in Columbia County. Surveys conducted in 1998 found the stream to have fair to good fish community health and good to excellent habitat quality. There are nonpoint source pollution problems in its upper end due to cattle access, bank erosion, and cropland erosion. In addition, new housing developments are springing up, which has resulted in problems with stormwater runoff. A River Planning Grant, sponsored by Columbia County, has been granted to help examine current and potential stormwater issues along Rowan Creek. The grant will help with future stormwater planning and management to control this potential source of pollution.

As a result of the threat from nonpoint sources and the streams potential to support a healthy and fishable population of trout, the stream has been ranked as a high priority for nonpoint source pollution and would benefit as a nonpoint source pollution reduction project.

The Friends of Rowan Creek have also received a River Planning Grant. The grant will be used to facilitate educational and outreach activities in the watershed. The grant will also help the group to address problems and issues that affect the overall health of the watershed.

### **Spring Creek (Lodi Creek)**

Spring Creek flows into Lake Wisconsin in Columbia County. It is Class II trout stream and the four miles of Class II in Dane County are considered an exceptional resource water (ERW). The stream flows through the Lodi Marsh State Wildlife Area above Lodi and is well buffered from agricultural impacts. Downstream of Lodi, the stream has experienced a decline in the natural reproduction of trout, which has been a cause of concern. Although significant spawning does occur in the riffles within the city limits, the stream has been straightened and lacks suitable hiding cover for fingerling fish. The WDNR has made efforts to address this problem and have completed a total of about one mile of stream habitat improvement work on different sections. In addition, a 15" minimum size limit has increased the number of 12" to 14" and 15" fish on the lower section of the stream. Additional habitat improvement along the stream on village park lands would help to improve this problem. Soil loss in the town of Lodi has been estimated at 6.1 tons per acre per year. This addition of soil to the stream, combined with sedimentation due to bank erosion and inputs from nearby barnyards can potential cause more problems in the stream. One further threat to the creek is the result of the tremendous growth in the Town and City of Lodi. Housing and industrial development has increased in the past 5 years. This development contributes a large volume of stormwater to the stream and is a major source of nonpoint source pollution. Spring Creek receives point source discharge from both a municipal and industrial source. The City of Lodi has recently renovated their treatment plant.

The Friends of Scenic Lodi Valley are interested in protecting the stream and have proposed a citizen stream monitoring program. Monitoring was conducted in 1999 and 2000 to collect some baseline data for this project. Fisheries surveys found several cold water indicator species in the creek and a few pollution intolerant species, but overall, there were more pollution tolerant species (white suckers and creek chubs) than other species. Similarly, macroinvertebrates collected were indicative of good quality water, yet below the city, the macroinvertebrates collected were indicative of stream disturbance, which could potentially be attributed to urban stormwater runoff from the City of Lodi.

To assist them with their efforts to protect and improve Spring Creek, the Friends of the Scenic Lodi Valley have received a River Planning Grant. The grant will help them to organize a stream monitoring network. The monitors will gather valuable information that will help to evaluate the overall health of the stream. The Friends plan on using the grant to conduct a watershed assessment to identify potential pollution sources and inventory land use near the stream. The grant is a cooperative project between the City of Lodi, the WDNR, Trout Unlimited, Lodi Canning and the Friends of the Scenic Lodi Valley.

### **Wisconsin River**

The portion of the Wisconsin River that includes Lake Wisconsin flows through this watershed. For more information on the Wisconsin River, see page 90.

## LAKES IN THE LAKE WISCONSIN WATERSHED

### **Lake Wisconsin**

Lake Wisconsin is a large impoundment of the Wisconsin River created by the hydroelectric dam at Prairie du Sac. It has a good sport fishery and is used extensively for recreation. Because it is an impoundment, sedimentation and nutrient loading to the lake, and toxic substance accumulation in bottom sediments, are concerns. The nutrient loading impacts the lake by fostering algae blooms and affecting dissolved oxygen levels. Low levels of mercury, and high levels of PCBs have been detected in sturgeon from the lake. A fish consumption advisory for PCBs has been issued for the lake's sturgeon. Contaminated sediment sites exist in Grubers Grove Bay, an arm of the lake near the Badger Army Ammunition Plant (BAAP). Grubers Grove Bay received process waste water from the BAAP wastewater treatment facility in the past. Sediment samples were found to have extremely high mercury concentrations as well as high levels of lead and ammonia. In response to this, a major dredging project was conducted to remove the contaminated sediment. There are plans to restore the aquatic habitat in the Bay through the planting of rooted aquatic plants and shoreline trees as well as fish crib deployment.

The Harmony Grove Lake Protection and Rehabilitation District recently received a Lake Planning Grant to conduct a sediment study on the sediment in the bay. Harmony Grove Bay is located on the Columbia County side of Lake Wisconsin north of Pine Bluff.

Wisconsin Power & Light Company, owner of the Prairie Du Sac Dam, as part of the Federal Energy Regulatory Commission (FERC) relicensing process conducted water quality, algal, fisheries and sediment contaminant studies during 1992. Continuous dissolved oxygen monitoring at the dam tailrace showed the water quality standard of 5 mg/l was violated more than half of July, a good portion of August and a few days in September, 1992. The worst two-day period occurred July 27-28, when the maximum dissolved oxygen was 3.6 mg/l, the minimum 1.7 mg/l. The suggested cause of the problem is a combination of the existence of the dam and the high nutrient loads in the river. This leads to excessive algae growth in Lake Wisconsin. When the algae die off, they deplete oxygen near the dam. Nutrient loading can come from barnyard runoff and other forms of nonpoint source pollution. One dairy farmer has been found to have multiple manure discharges to the lake. These sources of pollution need to be addressed and curtailed to help improve the health of Lake Wisconsin. In addition, fluctuating water levels below the Dells and Prairie du Sac dams remain a major concern on the Wisconsin River. Fish passage at all dams on the Wisconsin River is important to the fish communities and the river ecosystem as a whole.

In addition, long term database studies are in progress to look at walleye and sturgeon reproduction. A no harvest 20-28" slot regulation is proposed to improve fishing for larger size walleye. Sturgeon harvest has been curtailed by implementing an alternating season size limit of 50" and 70". The lake sturgeon resource in the lake and river both up and downstream needs to be carefully managed. This is a rare and long lived fish of which there are few remaining fisheries in North America. Efforts are underway to expand the fishery upstream to its original home range. Pollution had eliminated it upstream from the Kilbourn Dam at Wisconsin Dells. A significant shovelnose sturgeon fishery also can be found in the lower Wisconsin River below the Prairie du Sac dam. In addition, it is imperative to continue to monitor the walleye population.

## RECOMMENDATIONS (LW19)

- ◆ The development of a single lake management district or lake association to address all environmental issues related to **Lake Wisconsin** should be encouraged. This association could apply for grants to address the lake's water quality condition and the impacts of continued intense development around the lake.
- ◆ The Federal Energy Regulatory Commission license for the Prairie du Sac, Castle Rock and Pentenwell dams need to be completed.
- ◆ As part of the Federal Energy Regulatory Commission relicensing process that Wisconsin Power & Light Company conducts, it is recommended that additional monitoring be conducted to better define the extent of low dissolved oxygen levels upstream and downstream of the **Prairie du Sac dam**.
- ◆ As part of the Federal Energy Regulatory Commission relicensing process, Wisconsin Power & Light Company should develop and implement methods to raise the levels of dissolved oxygen in the vicinity of the **Prairie du Sac dam** during critical times.
- ◆ An assessment should be conducted to determine the impacts of the Poynette wastewater treatment plant on the water quality of **Rowan Creek**.
- ◆ Condition monitoring on **Hinkson, Rowan and Spring creeks** should be conducted as a part of the baseline monitoring effort.
- ◆ WRM should continue to conduct monitoring for the presence of toxic substances in fish in **Lake Wisconsin**.
- ◆ The **Rowan Creek** sub-watershed should be considered for possible selection as a Targeted Runoff Management project, (TRM), or other nonpoint source pollution reduction project.
- ◆ Stormwater management problems in the watershed should be assessed. Those municipalities in the watershed that do not currently have a stormwater control management plan and ordinance should develop and enact one.
- ◆ Municipalities in the watershed should examine the possibility of enacting new zoning laws to prohibit excessive development along **Spring Creek, Rowan Creek** and the **Lake Wisconsin** shoreline.
- ◆ The City of Lodi and the Wisconsin WDNR should conduct further habitat work along **Spring Creek** on Village park lands.
- ◆ Wisconsin Power & Light and the WDNR should conduct a study to examine fluctuating water levels below the Dells and Prairie du Sac dams.
- ◆ Walleye and sturgeon reproduction on **Lake Wisconsin** should continue to be monitored.

- ◆ A no harvest 20-28" slot regulation on **Lake Wisconsin** should be considered to improve fishing for larger size walleye.
- ◆ Devils Head Lodge and Merrimac should consider constructing new WWTP's.
- ◆ **Parfrey's Glen Creek** should be surveyed to determine if rare aquatic elements previously found in the streams are still present.
- ◆ Chemical sampling at the Wisconsin Dells Dam should be done to determine the phosphorus loading to the **Lower Wisconsin River**.
- ◆ Aquatic habitat in Gruber's Grove Bay, **Lake Wisconsin**, should be restored.
- ◆ Continue instream habitat work on Manley and Lodi Creeks.

**Recommendations adapted from the Dane County Water Quality Plan 1995**

- ◆ Adopt erosion/runoff control ordinance consistent with Chapter 14 of Dane County Code of Ordinances. Incorporate requirement or revise building ordinances, to require roof drainage to grassed areas, where feasible, for new development.
- ◆ Develop a wellhead protection program for municipal wells.
- ◆ Evaluate use of deicers for potential groundwater quality impacts. Adopt written salt use management policy.



Watershed map

Streams in the Lake Wisconsin Watershed (LW19)										Columbia, Dane and Sauk Counties					Area: 199.5 sq miles	
Stream Name	WBIC	Length (miles)	Existing Use	Potential 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					
Hinkson Creek	1263900	4	COLD II	same	Part	COLD II	same	N	N	PSI, BDAM	HAB, TEMP	NR	M (1998)	B2, H2	U	5, 7, 23
Manley Creek	1261200	2.5	COLD I	same	Full	DEF	COLD I/ERW	N	N	BDAM	HAB, TEMP	NR	M	B2	I	6, 18, 23
Parfrey's Glen Cr.	1261100	0-4.9	WWSF	same	Part	DEF	same	N	Y	HM, BDAM	HAB, TEMP	NR	M (1993)	P1, B2	U	7, 23
		4.9-6	COLD I	same	Full	COLD I/ORW	same	N								U
Prentice Creek (Durward's Glen)	1262600	0-4	COLD III	COLD II (0-7)	Part	COLD III	same	N	N	PSB, SB, CL	HAB	NR	E		U	5, 7, 23
		4-9	COLD I	same	Full	COLD I/ERW	same	N								U
Rowan Creek	1263700	0-4	WWSF	same	Full	DEF	same	N	N	NPS, PSM	HAB	NR	M (1998)	B2, H2	U	5, 7, 14, 23
		4-12	COLD II	same	Full	COLD II	same	Y		PSM, BDAM, DEV, URB	HAB, TEMP				U	
		12-16	COLD I	same	Full-thr	COLD I/ERW	same	N		CL, BY	HAB				U	
Spring Creek (Lodi Creek)	1261900	0-7	COLD II	same	Part	COLD II (1-7)	COLD II (0-7)	N	N	NPS, PSI, PSM, URB, HM, BDAM, PSB, CL	HAB, TEMP	NR	M (2000)	B2, H2	U	5, 7, 8, 18, 19, 20, 23
		7-11	COLD II	same	Full-thr	COLD I/ERW	same	N								U
Unnamed streams		47				DEF										

Total Stream Miles 95.5  
 COLD I 12.6  
 COLD II 23  
 COLD III 4  
 WWSF 8.9  
 U 47

**\*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.**

**Lakes in the Lake Wisconsin Watershed (LW19)**

**Columbia, Dane and Sauk Counties**

Lake Name	WBIC	County	Surface Area (Acres)	Max Depth	Lake Type	Winterkill	Access	SH	Hg	MAC	LMO	TSI	Lake Plan or Prot	P Sens	Comments
Pickereel Lake	1011600	Columbia	25	5										2	
Wisconsin Lake	1260600	Columbia	9,000	39	DG	N	BF, BR, P	C	M	EWM	DIST		PLAN	2	

**See Appendix K: "How to Read the Lake Tables," in Chapter 7 of the Lower Wisconsin State of the Basin Report.**

## REFERENCES

1. Ball, Joseph R. , Tom Smith, C.W. Threinen. Surface Water Resources of Sauk County. Department of Natural Resources. 1971.
2. Dane County Regional Planning Commission. Dane County Water Quality Plan. Summary Plan. 1995.
3. Enterprise Information, Technology and Applications, Bureau of. Wisconsin DNR. The WISCLAND Land Cover Data. Data from 1991 to 1993. Published in 1998.
4. Enterprise Information, Technology and Applications, Bureau of. Wisconsin DNR. User's Guide to WISCLAND Land Cover Data. 1998.
5. Fix, Steve. Lower Wisconsin River Basin Water Quality Management Plan. Wisconsin Department of Natural Resources. PUBL-WR-001-94-REV. 1994.
6. Harpt, Tom. Personal Communications. Wisconsin Department of Natural Resources. 2000 - 2001.
7. Larson, Tim. Personal Communications. Wisconsin Department of Natural Resources. 2000 - 2001.
8. Marshall, Dave, Aquatic Biologist. Cold Water Habitat Evaluation Final Report. Lower Wisconsin & Grant-Platte-Sugar-Pecatonica River Basins. Wisconsin Department of Natural Resources. April, 2001.
9. Marshall, Dave. Personal Communications. Wisconsin Department of Natural Resources. 2000 - 2001.
10. Marshall, Dave. Aquatic Biologist, Wisconsin DNR. Lower Wisconsin River: Water Resources Issues and Objectives. Water Resources Section of Proposed Lower Wisconsin River Fisheries Plan. 1999.
11. Morton, Andy. Personal Communications. Wisconsin Department of Natural Resources. 2000 - 2001.
12. North Central Wisconsin Regional Planning Commission. Watershed Population Estimates for the State of Wisconsin. May 2000.
13. Osipoff, George. Personal Communications. Wisconsin Department of Natural Resources. 2000.
14. Sasing, Mark. Personal Communications. Wisconsin Department of Natural Resources. 1991.
15. Vollrath, Michael. Personal Communications. Wisconsin Department of Natural Resources. 2001.
16. Wisconsin Department of Administration. Population Projections and Census 2000 websites, [Http://www.doa.state.wi.us/dhir/boir/demographic/pop\\_proj.asp](Http://www.doa.state.wi.us/dhir/boir/demographic/pop_proj.asp). Last updated August 2000.
17. Wisconsin Department of Agriculture, Trade and Consumer Protection (WDATCP). Atrazine Prohibition Web site, <http://datcp.state.wi.us/arm/agriculture/pest-fert/atrazine/> and ATCP 30, Wisconsin Administrative Code. 2001.
18. Wisconsin Department of Natural Resources. Fish Management Files. Southcentral Region. Through 2000.
19. Wisconsin Department of Natural Resources. Water Resources Management Files – South Central Region. 2001.
20. Wisconsin Department of Natural Resources. Wastewater Management Files. South Central Region.
21. Wisconsin Department of Natural Resources. Wisconsin DNR's Public Wildlife Recreation Land. PUBL-WM-001-98. 1998.
22. Wisconsin DNR. Wisconsin Lakes. Bureau of Water Resources Management and Bureau of Fisheries Management. 1995.
23. Wisconsin Department of Natural Resources. Fisheries Management, Bureau of. Wisconsin Trout Streams. 1980.