

BLUE RIVER WATERSHED (LW09)

The Blue River Watershed, located in Grant and Iowa Counties, drains to the Wisconsin River from Military Ridge which is the feature that divides the Lower Wisconsin and the Grant-Platte river drainage basins. Many of the streams in the watershed are spring fed and have high gradients.

Population in the watershed for the year 2000 was estimated to be close to 6,554. These are several small municipalities in the watershed including Blue River, Muscoda, Highland, Montfort and Fennimore. Overall population growth in the communities is low.

Table 1: Growth in Municipalities in the Watershed

<i>Municipality</i>	<i>1990</i>	<i>2000</i>	<i>% Change</i>
Blue River	438	429	-2%
Fennimore	2,378	2,387	0.4%
Highland	799	855	7%
Montfort	580	663	14.3%
Muscoda	1,283	1,453	13.3%

The watershed is located in the driftless region of Wisconsin. Overall, land cover in the watershed is predominantly broad-leaf deciduous forest and agriculture although a large portion of the watershed is grassland.

Table 2: Land Cover in the Watershed

<i>Land Cover</i>	<i>Percent of Watershed</i>
Forest (Total)	48.8%
<i>Broad-Leaf Deciduous</i>	37.8%
<i>Coniferous</i>	1.1%
Agriculture	40.8%
Grassland	14.0%
Wetlands (Total)	4.3%
<i>Forested</i>	2.5%
<i>Emergent/Wet Meadow</i>	1.3%
<i>Lowland Shrub</i>	0.5%
Open Water	1.0%
Development	0.7%
Barren Land	0.4%

Watershed At A Glance

Drainage Area (m²): 195.5

Total Stream Miles: 172.5

Trout Stream Miles: 54.9

Sport Fishery Miles: 27.0

Lakes: Postel Lake, Rice Lake

Exceptional/Outstanding Resource Waters: Big Spring Branch, Blue River, Doc Smith Branch, Castle Rock Creek

Municipalities: Blue River, Muscoda, Highland, Montfort, Fennimore

Major Public Lands:

- ◆ Blue River Unit of the LWSR
- ◆ Muscoda Unit of the LWSR
- ◆ Big Spring State Fishery Area

Concerns and Issues:

- ◆ Nonpoint source pollution
- ◆ Atrazine
- ◆ Low dissolved oxygen in shallow waters
- ◆ Presence of iron precipitate

Initiatives and Projects:

- ◆ Wild trout reintroduction
- ◆ USGS Gauging station on Wisconsin River
- ◆ Castle Rock Creek Watershed Committee
- ◆ River Planning Grant for public outreach & stream monitoring on Castle Rock Creek
- ◆ Citizen stream monitoring on the Blue River, Big Spring, and Castle Rock Cr
- ◆ Targeted Runoff Management project on Castle Rock Creek
- ◆ Shallow Lakes Initiative

There are several permitted discharges in the watershed. The villages of Blue River, Highland and Montfort wastewater treatment plants discharge to the Blue River, Big Spring Branch and Blue River respectively. The Village of Highland's new facility was put into operation in January 1998. The Village of Muscoda lies on the sandy Wisconsin River outwash plain and discharges to groundwater via an aerated lagoon system and seepage cells. Muscoda placed a new treatment system into operation in October 1998. An industrial facility, Fennimore Branch Cheese Factory, also discharges to groundwater. This small cheese factory operates an inadequate land disposal system.

Overall, nonpoint source pollution is considered the primary cause of water quality problems in the watershed. The watershed has been ranked as a high priority for nonpoint source pollution reduction. In addition, a portion of the watershed on the Lower Wisconsin River Valley is in an atrazine prohibition area. These areas indicate that elevated levels of atrazine, an herbicide used on corn, has been found in some tested private water wells. Soils are permeable, which has allowed atrazine to reach groundwater in some locations. See Appendix B.

The Blue River 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:

- ◆ Cedar glade
- ◆ Dry cliff
- ◆ Dry prairie
- ◆ Dry-mesic prairie
- ◆ Moist cliff
- ◆ Oak barrens
- ◆ Pine barrens
- ◆ Pine relict
- ◆ Sand barrens
- ◆ Springs and spring runs
- ◆ Sand prairie
- ◆ Southern dry forest
- ◆ Southern dry-mesic forest
- ◆ Calcareous fen
- ◆ Emergent aquatic
- ◆ Ephemeral pond
- ◆ Floodplain forest
- ◆ Oxbow lake
- ◆ Southern sedge meadow
- ◆ Fast, hard and cold streams

In addition to these special communities, the watershed is also home for a variety of rare plant and animal species including; 2 bird species, 2 species of beetles, 6 species of butterflies, 4 species of dragonflies, 12 species of fish, 1 species of frog, 1 species of grasshopper, 2 species of mayflies, 2 species of moths, 12 species of mussels, 24 plant species, 1 species of snake and 1 species of turtle. These plants and animals are listed on the state's natural heritage inventory.

In the watershed, there are two stream flow gauging stations in operation. These stations are owned by the USGS and used to continually measure the flow in select streams and rivers throughout the United States. In the Blue River watershed, these stations are located on the Wisconsin River at Muscoda and on Fennimore Fork (or Castle Rock Creek) at Homer Road. For more information, see the USGS website at <http://wi.water.usgs.gov>.

The watershed contains public land that can be used for a variety of recreational purposes from fishing and boating to hiking and birdwatching. The Blue River and Muscoda Units of

the Lower Wisconsin Riverway are in this watershed. The Blue River Unit is 1,904 acres and has fishing and birdwatching. The Muscoda Unit is a bit larger and contains 2,291 acres that are primarily used for fishing and birdwatching. The Muscoda Unit has a boat launch located in Muscoda and contains trails for snowmobiles and horses. The Big Spring Fishery Area is also in the watershed. Trout fishing and hiking are the most common recreational uses on the 286 acres of state-owned land.

STREAMS AND RIVERS IN THE WATERSHED

Badger Hollow Creek

No information available for this stream.

Big Rock Branch

Big Rock Branch in Grant County is a Class II and Class I trout stream tributary to the Blue River. The Iowa County portion of the stream has some natural reproduction of brook trout while the Grant County portion has some natural reproduction of brown trout. Big Spring Branch has been ranked as a high priority for nonpoint source pollution reduction. Grazing and large barnyards along the stream are thought to be a major contributing source of nonpoint pollution to the stream.

Big Spring Branch

Big Spring Branch rises in western Iowa County and flows west to the Blue River. It is a Class II trout stream and an exceptional resource water, (ERW), with some natural reproduction of brook and brown trout. Due to monitoring conducted in 2000, it is recommended that the branch be upgraded to a Class I trout fishery. Overall, Big Spring Branch has very good water quality. The upper reaches of the stream flow through a fairly narrow valley with wooded hillsides. Some cattle grazing occurs in the upper reaches. Grazing increases further downstream, resulting in some bank erosion. A major problem with the stream may be the over-fishing of trout. Big Spring Branch has been ranked as a high priority for nonpoint source pollution reduction and receives discharge from the Village of Highland wastewater treatment plant. The state has easements along Big Spring Branch. A group of citizen monitors are conducting monitoring on this creek. To see data, visit their website at http://members.tripod.com/nohrchapter/monitor_home.htm.

Blue River

The Blue River rises in western Iowa County and flows west into Grant County before turning north and flowing to the Wisconsin River. The lower 18 miles of the river support a warm water sport fishery. Approximately 13.8 miles of the stream above the warm water sport fishery is a Class II trout fishery with some natural reproduction of brown trout. The trout waters reach of the Blue River is considered an exceptional resource water, (ERW), and is considered a high priority for nonpoint source pollution reduction. A cursory habitat evaluation was done on a tributary to the Blue River in the summer of 2001. This survey found fair habitat and overall problems resulted from erosion and nonpoint source pollution from the watershed.

The intensive agriculture in the watershed is a limiting factor. Barnyards and grazing may be causing in-stream habitat and water quality problems in the reach above the state fishery area. Eroding streambanks are also a problem in spots, and silt deposits in some pools and riffles are causing in-stream habitat problems. The headwaters of the Blue River have some problems with feedlots and are on the list of “impaired waters” due to nonpoint source pollution. The Blue River receives discharges from the villages of Blue River and Montfort. The state has easements along much of the river in the headwater area of the river.

Citizen monitors have been actively monitoring the Blue River since June 2000. A second monitoring site on the river was added in August 2001. Volunteers regularly monitor the turbidity, temperature, dissolved oxygen, and flow of the river. Additional monitoring items include an assessment of the biological aquatic bug community and the in-stream habitat of the river. To see the data that these monitors have collected, please visit their website at http://members.tripod.com/nohrchapter/monitor_home.htm.

Bronson Creek

No information available for this stream.

Coon Valley Creek

Coon Valley Creek is a spring-fed tributary to Fennimore Fork that supports some natural reproduction of brook trout. The lower 2.3 miles of the creek are considered Class II trout waters while the one mile above Homer Road is a Class I trout fishery. Nonpoint source pollution from streambank erosion and pasturing is a severe threat.

Doc Smith Branch

Doc Smith Branch is a spring-fed, Class II trout stream tributary to Fennimore Fork and is considered an exceptional resource water (ERW). Baseline monitoring was conducted on the stream in 2000. The trout population, which has significant population fluctuations, is possibly being limited by nonpoint source water pollution specifically from cropland erosion and poor manure storage and handling. Other potential sources of nonpoint pollution include heavy grazing, cattle access to the stream, and barnyards near the stream. As a result, the stream is considered a high priority for nonpoint source pollution reduction. The state has some easements on Doc Smith Branch where the stream meets Castle Rock Creek.

Fennimore Fork (Castle Rock Creek)

This stream is better known by its local name, *Castle Rock Creek*. About 6.5 miles of its 26-mile length are Class II trout waters and thought of as the best trout waters in Grant County. This section of the stream is also considered an outstanding resource water (ORW). Baseline monitoring was conducted in 2000, and the 5 miles above Church Road was determined to be a Class III trout stream. Downstream of the Class II trout water, the stream is a warm water sport fishery. There are some state easements on Castle Rock Creek where Doc Smith Branch enters the stream that were purchased through the state streambank easement program. This program allows the state to purchase easements along streams as a way of establishing buffers. Public access on these easements is not allowed.

The stream has been ranked as a high priority for nonpoint source pollution reduction. The Class III trout water and the headwaters of the stream are on the list of “impaired waters” due to nonpoint source pollution. Intensive agriculture occurs along the length of the stream and the threat of nonpoint source pollution comes from grazing, the trampling of streambanks, runoff from nearby barnyards and cultivated fields, and improper manure storage and handling. Some of the unnamed tributaries to Castle Rock Creek have nonpoint source water pollution problems as well, including barnyards adjacent to the stream and cattle access to the stream. The lower reaches of the stream have sedimentation problems. The stream also experiences heavy fishing pressure.

In 1999, water quality/fisheries monitoring surveys were conducted to document fish community health prior to a stream stabilization project just above Homer Road. In July, the survey found fish community health to be poor and few coldwater indicator species were present. Poor habitat was part of the reason. The banks were eroded due to heavy grazing and sediment deposition filled in pools and covered runs. Stream temperatures in the area were thought to be high. Little streambank vegetation existed. In August and September, water quality surveys found fluctuating dissolved oxygen and pH levels that are typically an indication of algal growth. Temperature levels were found to be not optimal for trout streams. A streambank rip-rap demonstration project was completed on the stream. No post-project monitoring has yet been conducted to determine if the project has had any noticeable positive impacts.

In an effort to further address water quality concerns, a group of local landowners and other interested individuals in the Castle Rock Creek area got together to form the Castle Rock Creek Watershed Committee. The Committee recently applied for and was granted a River Planning Grant from the WDNR. The grant has been used to help the Committee and others better understand the nature of the stream and the threats to the water quality and aquatic habitat in the creek. To see some of the data they have collected, visit their website at http://members.tripod.com/nohrchapter/monitor_home.htm.

In addition, with help from funding through the state’s Targeted Runoff Management program (TRM), there have been other efforts by Grant County and other partners to reduce nonpoint source pollution and improve water quality. Funding through this project has been used to reduce nonpoint source pollution through the installation of best management practices on the land. These practices include critical area stabilization, shoreline/streambank protection, barnyard runoff management, fencing, waterways, dams, and rotational grazing.

Partners in the Castle Rock Creek area have also received a grant from the EPA to conduct intensive chemical and flow monitoring on the creek. This data will be used to develop a Total Maximum Daily Load (TMDL) model for the stream. The model will help the state and all partners determine what reduction in nonpoint source pollution is needed to improve the stream and remove the impaired segment of the stream from the EPA’s impaired waters list. There is a USGS gauging station on the creek at Homer Road.

Pleasant Valley Creek

Pleasant Valley Creek is a spring-fed tributary to Fennimore Branch. It is classified as Class II trout water and has some natural reproduction of brook trout. The fish in the stream have problems with predation. Barnyard runoff and heavy grazing are the most serious nonpoint source pollution threats and the stream has been ranked as a high priority for nonpoint source pollution reduction.

Sand Branch

Sand Branch is a small, spring-fed tributary to the Blue River. The stream is considered a Class II trout fishery. A rare aquatic species has been found in this creek. The stream has a high bed-load of sand that affects the availability of in-stream habitat. Baseline monitoring was conducted in 2000. A cursory habitat evaluation was conducted on the stream during the summer of 2001. The survey found the habitat to be of fair quality. The creek experiences nonpoint source pollution from its watershed and also shows some evidence of bank erosion and sediment deposition.

Sixmile Branch

Sixmile Branch is a spring-fed tributary to the Blue River. The stream is considered a Class II trout stream. Bank erosion and scouring can be a problem due to narrow and steep grade. The state has a small number of easements in the middle of the creek. Data on the creek was last collected in 1993.

Wisconsin River

This watershed is adjacent to a portion of the Wisconsin River. There is a USGS gauging station on the river in this watershed. For more information on the Wisconsin River, see page 90.

LAKES IN THE WATERSHED

Fish Trap Lake

Fish Trap Lake is a man-made oxbow lake of the Wisconsin River. The lake drains into Jones Slough and serves as a waterfowl production area. The lake is adjacent to the Blue River Public Hunting and Fishing Grounds. Water resource biologists think that the discoloration of Jones Slough may be attributed to the anoxic conditions in Fish Trap Lake.

Goodwiler Lake

Goodwiler Lake is in the Wisconsin River bottoms and is fed by groundwater and flood water from the river. Much of the lake is located in public hunting and fishing grounds. The lake is about 20 acres but only has an average depth of 3 feet. The lake contains northern pike, largemouth bass and panfish. The lake was last surveyed in 1994.

Jones Slough

Jones Slough is a seepage fed oxbow lake located northeast of the Village of Blue River that receives water from the impounded Fish Trap Lake. The slough is approximately 12.5 acres with a maximum depth of 6 feet. The fishery of Jones Slough includes northern pike, large

and smallmouth bass and panfish. There is public access to the slough at a county maintained boat launch and through a small piece of public land.

The slough is part of a the “Shallow Lakes Initiative” project to monitor the fisheries and water quality in some of the Wisconsin River sloughs. There have been complaints as a result of a rusty orange tint to the water. According to water resource biologists, this discoloration is the result of anoxic conditions Fish Trap Lake, an artificially created waterfowl production pond. As the water in the pond becomes anoxic, it causes iron to mobilize from the soil and enter the water column. The pond’s outfall drains the water near the bottom into Jones Slough. As the water passes through the outfall, the water becomes more oxygenated and the iron precipitates out. This precipitate is thought to be the cause of the orange tint of the water. Monitoring has been conducted in 1998, 1999, and 2000 and is expected to continue into 2002. Results of this monitoring has found low oxygen levels and other long term water quality problems in the slough, most likely as the result of an upstream bottom discharge structure. Winterkill in the slough is an annual problem.

Postel Slough

Postel Slough is located between the Villages of Blue River and Muscoda. The slough is 10 acres with a maximum depth of 6 feet. The lake has a fishery that includes northern pike, large and smallmouth bass, and panfish. The slough is subject to flooding from the Wisconsin River and winterkill is an occasional problem. There is public access to the slough from a small parcel of publicly owned land. The lake was last surveyed in 1994.

Rice Lake

Rice Lake is a large oxbow lake of the Wisconsin River located northeast of the Village of Blue River that covers approximately 56 acres. Despite its large area, the maximum depth of Rice Lake is only about 5 feet. Northern pike, large and smallmouth bass and panfish are the dominant fish present in the lake, although carp can also be found in abundance. Winterkill on the lake is an annual problem. Public access is available to the lake at the Blue River Public Hunting and Fishing Grounds.

RECOMMENDATIONS (LW09)

- ◆ Partnering between the WDNR, agencies and other groups and organizations, such as local watershed groups, should continue to assist with stream monitoring in the Blue River Watershed.
- ◆ South Central Region must strive for cooperation between the development of the State Natural Area on the **Blue River** and the water quality and fish habitat needs in the river.
- ◆ Upland best management practices should be installed within the **Doc Smith Branch** and **Fennimore Fork** sub-watersheds to decrease the volume of cropland erosion that reaches the stream.
- ◆ In-stream habitat work should be conducted on **Sand Branch**.

- ◆ **Sand Branch** should be surveyed to determine if the rare aquatic element previously found in the stream is still present.
- ◆ The spring heads on **Doc Smith Branch** should be protected.
- ◆ The upper 1 mile of **Pleasant Valley Creek** should be designated a no-kill fishery to help establish a Class I fishery.
- ◆ Baseline monitoring on the **Blue River** is needed.
- ◆ **Big Spring Branch, Big Rock Branch, and Doc Smith Branch** should be considered for nonpoint source pollution reduction projects through programs such as the Targeted Runoff Management program (TRM).
- ◆ Educational materials should be developed for visitors to the **Castle Rock Creek** area.
- ◆ **Jones Slough and Fish Trap Lake**, an artificial waterfowl production pond, should be monitored to determine the cause of the orange tint to water. Specifically, **Fish Trap Lake's** temperature and dissolved oxygen profile, and iron concentration in bottom waters should be monitored.
- ◆ Modify or remove the existing water control structure on **Jones's Slough** to minimize the negative water quality impacts from the upstream impoundment.
- ◆ Conduct point source assessment monitoring on **Big Spring Branch** below the Village of Highland discharge to determine if there are any adverse water quality impacts on the stream.
- ◆ The Village of Highland should continue to provide attention to plant operation to insure compliance with permit limits.
- ◆ The Fennimore Branch Cheese Factory's facility should haul wastewater or construct an adequate waste system in a different location from the present system.
- ◆ **Castle Rock Creek** should be evaluated to determine if the current designations of ERW and impaired water need to be updated.

Watershed Map

Streams in the Blue River Watershed (LW09) Grant and Iowa Counties Area: 195.5 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					
Badger Hollow	1213900	2	COLD	COLD III	Part	DEF	same	N	N			NR	U		U	15
Big Rock Branch	1213200	0-3	COLD II	same	Part	COLD II	same	N	N	NPS, HM, BY	HAB	H	M (1996)	H1, B2	U	4, 5, 14, 16, 19, 23
		3-4.5	COLD I	same	Part	COLD II	COLD I/ERW	N							U	
		4.5-5.5	COLD I	same	Part	DEF	COLD I/ERW	N							U	
		5.5-7	U	U	U	U	DEF	same	N						U	
Big Spring Branch	1212900	0-5.5	COLD I	same	Full-thr	COLD II/ERW	same	N	N	NPS	HAB	H	M (2000)	B4, H3	U	4, 16, 21, 23
Blue River	1211000	0-18	WWSF	same	Full	WWSF	same	N	N	NPS, CL, BY, PSB	HAB	M	M (2001)	H2	U	1, 4, 5, 11, 14, 16, 20, 21
		18-31.8	COLD II	same	Full-thr	COLD II/ERW	same	N				H			U	
		31.8-36	U	U	U	DEF/ERW	same	Y							U	
Bronson Creek	1213600	1.7	COLD II	same	Part	COLD II	same	N	N	PSB, SB	HAB	NR	E		U	4, 16, 23
Coon Valley Creek	1211700	0-2.3	COLD II	same	Part	COLD II	same	N	N	HM, NPS, PSB, SB	HAB	NR	E (1976)		U	4, 20, 23
		2.3-3.3	COLD I	same	Part	COLD II	COLD I/ERW	N							U	
		3.3-5	U	U	U	DEF	same	N							U	
Doc Smith Branch (Cass Valley)	1212000	0-1.8	COLD II	same	Full	COLD II/ERW	same	N	N	NPS, CL	HAB	H	M (2000)	B4, H3	U	4, 5, 11, 14, 16, 20, 21, 23
		1.8-7	U	U	U	DEF	same	N							U	
Fennimore Fork (Castle Rock)	1211300	0-9	WWSF	same	Part	WWSF	same	N	N	NPS, CL	HAB, SE	M	M (2000 and 2001)	B4, H3	U	1, 4, 7, 8, 9, 16, 20, 23
		9-15.5	COLD II	same	Full-thr	COLD II (above Witek Rd)/ORW	same	N				H			U	
		15.5-20.5	COLD III	COLD II	Part	Part	DEF/ORW	COLD III	Y						U	
		20.5-26	COLD	same	Part	Part	DEF/ORW	same	Y						U	
Pleasant Valley	1211400	3	COLD II	same	Part	COLD II	same	N	N	NPS, HM	HAB	H	E		U	4, 5, 23
Sand Branch	1211200	0-3.3	COLD II	same	Part	COLD II	same	N	Y	HM, NPS	HAB	NR	M (2000, 2001)	B4, H3	U	1, 4, 20, 23
Sixmile Branch	1212800	0-4.5	COLD II	same	Part	COLD II	same	N	N	HM, NPS	HAB	M	E (1993)	P1	U	4, 5, 21, 23
Unnamed Trib to Blue River (Montford T6, R1W, S12)	1213700	0-2	WWFF	COLD	Not	WWFF	same	N	N	PS		L	M (2001)	H1	U	1, 21
		2-3	U	U	U	U	DEF	same	N						U	
Unnamed Trib to Big Rock (7N, 1E, 31-4)	1213400	0-1	COLD I	COLD	Full	DEF	COLD I/ERW	N	N			NR	E	U	U	16
		57.5														

57.5

Total Stream Miles	172.5	COLD III	5
COLD	7.5	WWSF	27
COLD I	10	WWFF	2
COLD II	39.9	U	72.6

***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 Blue River Watershed (LW09)

Grant and Iowa 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
Postel Slough	1214700	Grant	30	8	SE	N	NW							2	
Rice Lake	1214500	Grant	56	5	SE	Y	T							2	

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

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