Rapid Watershed Assessment
Bad-Montreal River

Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals.

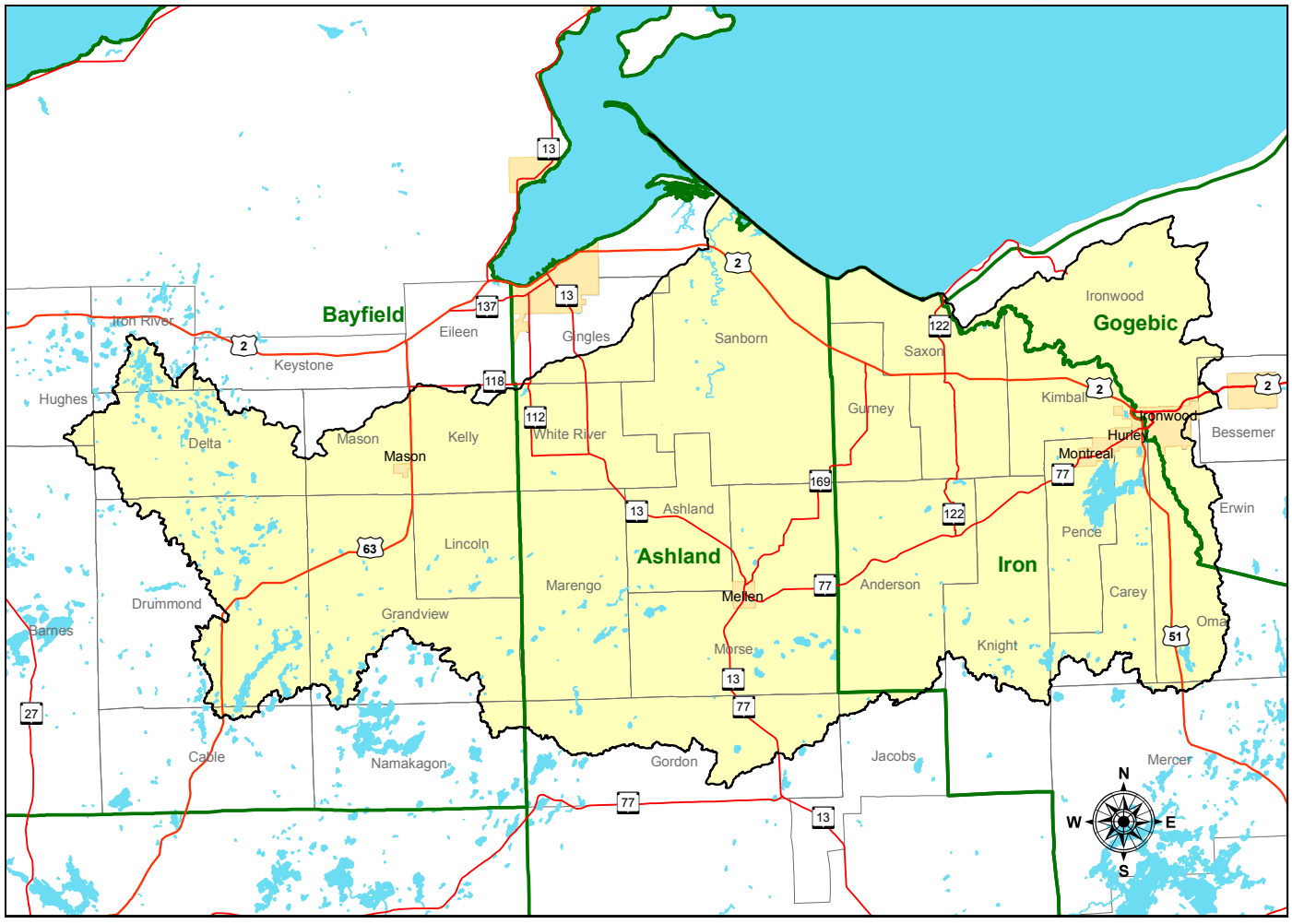
Contents

Wisconsin Watershed Map

INTRODUCTION[1]

The Bad River and the Montreal River are located in far northern Wisconsin the western tip of the Upper Peninsula of Michigan with both draining to Lake Superior to the north. The Bad River watershed is located entirely within Wisconsin in Bayfield, Ashland, and Iron Counties. The Montreal River Watershed is located in Iron County, Wisconsin and Gogebic County, Michigan and actually forms the border between the two states for thirty miles upstream of Lake Superior.

Large areas of the watershed are tribal and public lands. The majority of the 124,655 acre Bad River Band of Lake Chippewa Indians' Reservation is in the Bad River watershed as are portions of the Chequamegon National Forest. A portion of the Ottawa National Forest is located within the Montreal River watershed in Michigan.



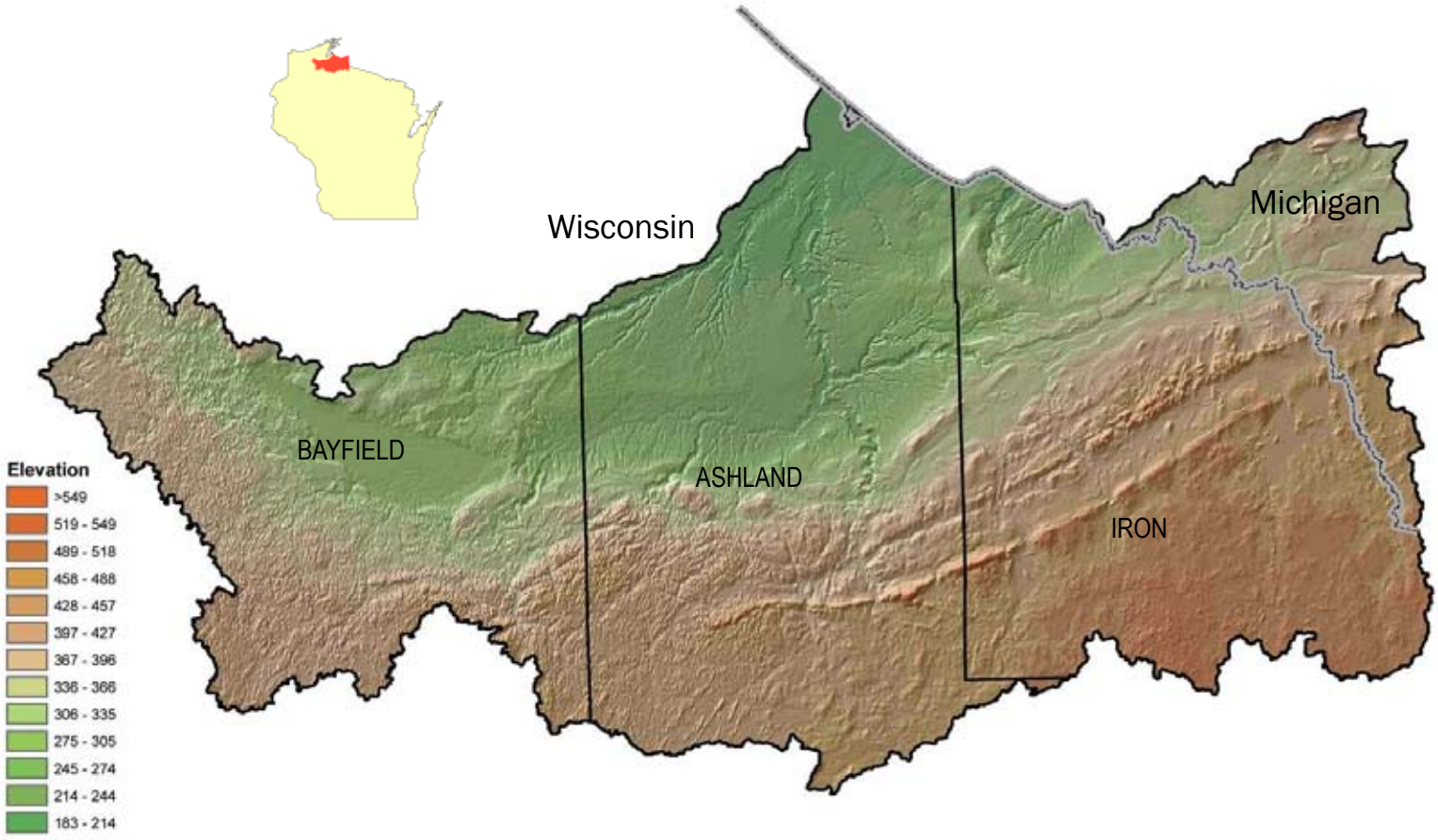
Location Map

ACREAGE IN THE BAD MONTREAL RIVER WATERSHED

COUNTY	COUNTY ACRES	ACRES IN HUC	% OF HUC FROM COUNTY	% OF COUNTY IN HUC
IRON	513200	254300	31	49.6
ASHLAND	673277	301158	36	44.7
BAYFIELD	967023	214377	26	22.2
GOGEBIC	722305	62534	8	8.7

Much of the watershed is forested, mainly a boreal conifer-hardwood mix and areas of aspen, which is commonly harvested for pulpwood. The balance of the watershed is comprised primarily of wetlands and farms. The agricultural areas consist of smaller beef and dairy operations with much of the cropland devoted to hay production. Small vegetable operations for local markets have increased in number in recent years.

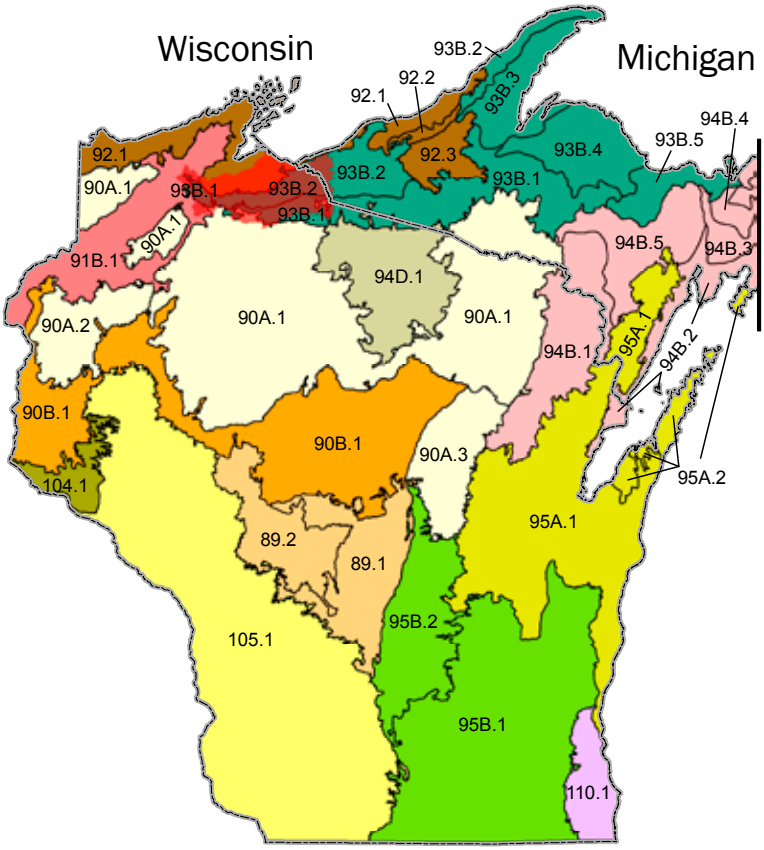
The watershed has many designated trout streams and the rivers and streams are also important to Lake Superior fish species that migrate upstream to spawn, such as sturgeon, Coaster brook trout, and introduced salmon. The Bad River Slough is a freshwater estuary on the Bad River Reservation, at the mouth of the Bad River in Lake Superior, the largest freshwater lake in the world by area. The estuary is one of the largest of its kind in the world, supports a very diverse ecosystem, and is an important fish spawning area for the lake.



Elevation Map[3].

COMMON RESOURCE AREAS [2]

Common Resource Area delineations are defined as a geographical areas where resource concerns, problems and treatment needs are similar. Common Resource areas are a subdivision of an existing Major Land Resource Area (MLRA). Landscape conditions, soil, climate and human considerations are used to determine the boundary of Common Resource Areas.



90A.1 LOAMY TILL GROUND MORAINES AND DRUMLINS

Nearly level to moderately steep, loamy, sandy, and organic soils. Mixed deciduous and coniferous forest is the primary land use with some glacial lakes and wetlands. Scattered cropland and grazing land are present. Cropland productivity is limited by the short length of the growing season. Primary resource concerns are timber management, wildlife habitat, recreation and agricultural forage production. Surface water quality is a localized concern.

91B.1 ANOKA SAND PLAIN AND NORTHWEST WISCONSIN OUTWASH

Gently sloping to moderately steep outwash plains and moraines. Soils are mostly excessively drained sandy soils with areas of loamy or very poorly drained organic soils. Mostly deciduous and coniferous forestland with many lakes, and pasture and cropland mostly in the western part. The primary resource concerns are forestland productivity, erosion control on cropland and timbered areas during harvest, surface water quality, upland wildlife habitat management and recreation.

92.1 LAKE SUPERIOR CLAY PLAIN

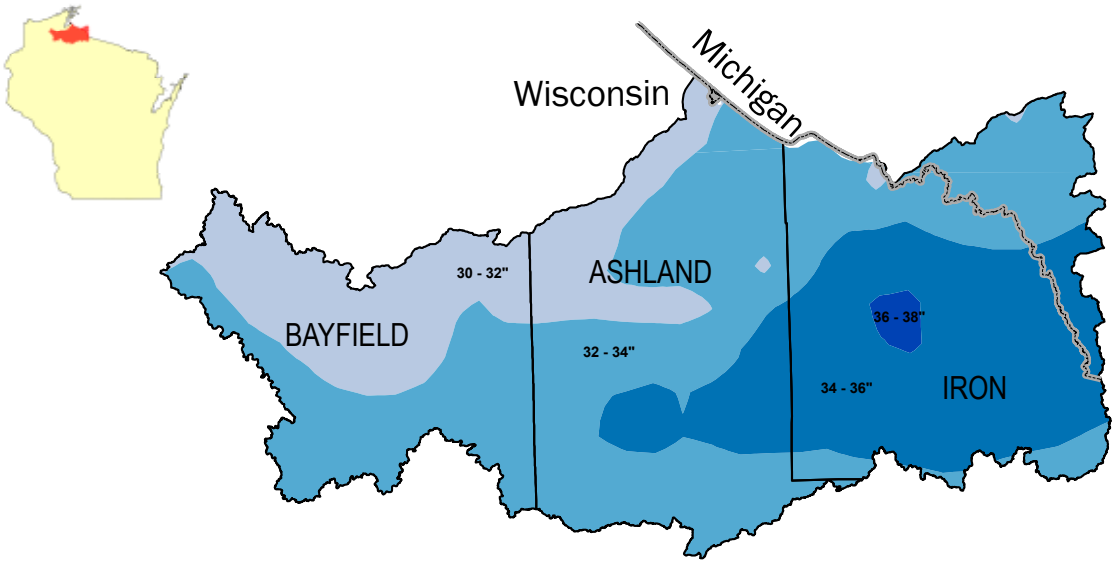
Gently sloping to steep, clayey and loamy lakebed deposits with deep v-shaped ravines. Well drained to somewhat poorly drained clayey soils with some organic soils. Boreal forest and mixed deciduous and coniferous forest predominate, with significant areas of forage based cropland and grazing land. Primary resource concerns are forestland and cropland productivity, wetland habitat restoration, erosion control on deeply incised streams along with urban expansion.

93B.1, WINGAR AND MORSE MORAINES

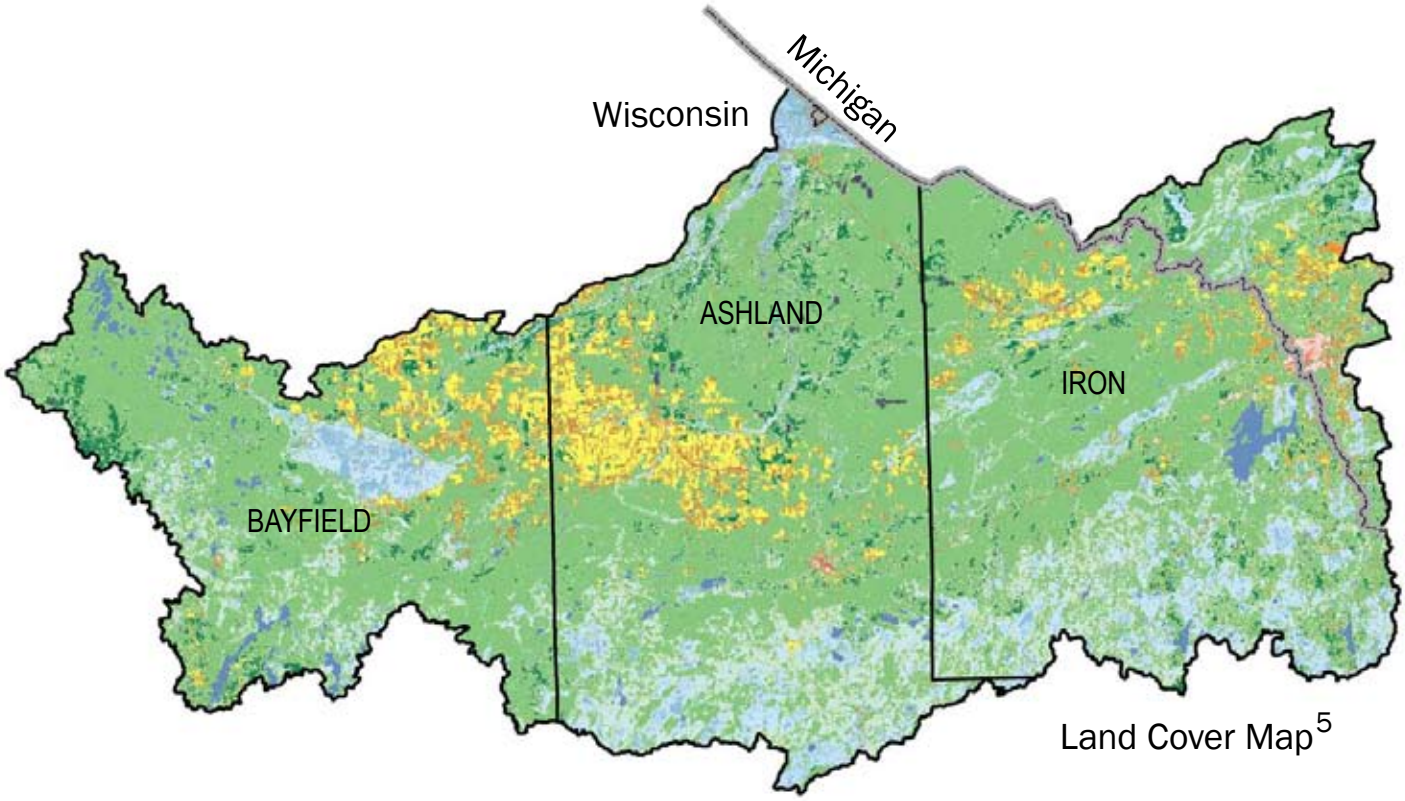
Gently sloping loamy and organic soils over acid sandy loam till and outwash. Mostly deciduous and coniferous forest, with common lakes and wetlands. Dominant land use is forestland and recreation. The primary resource concerns are soil erosion, groundwater quality, surface water quality, forestland productivity and wildlife habitat.

93B.2 IRON RANGES

Steep, loamy, moderately well drained soils over hard bedrock, and gently sloping, well drained, loamy soils on outwash plains. Mostly deciduous and coniferous forest with scattered wetlands and grazing land. Primary resource concerns are forestland productivity, erosion during timber harvest, upland wildlife habitat management, and recreation.



Average Annual Precipitation Map (inches)[4]

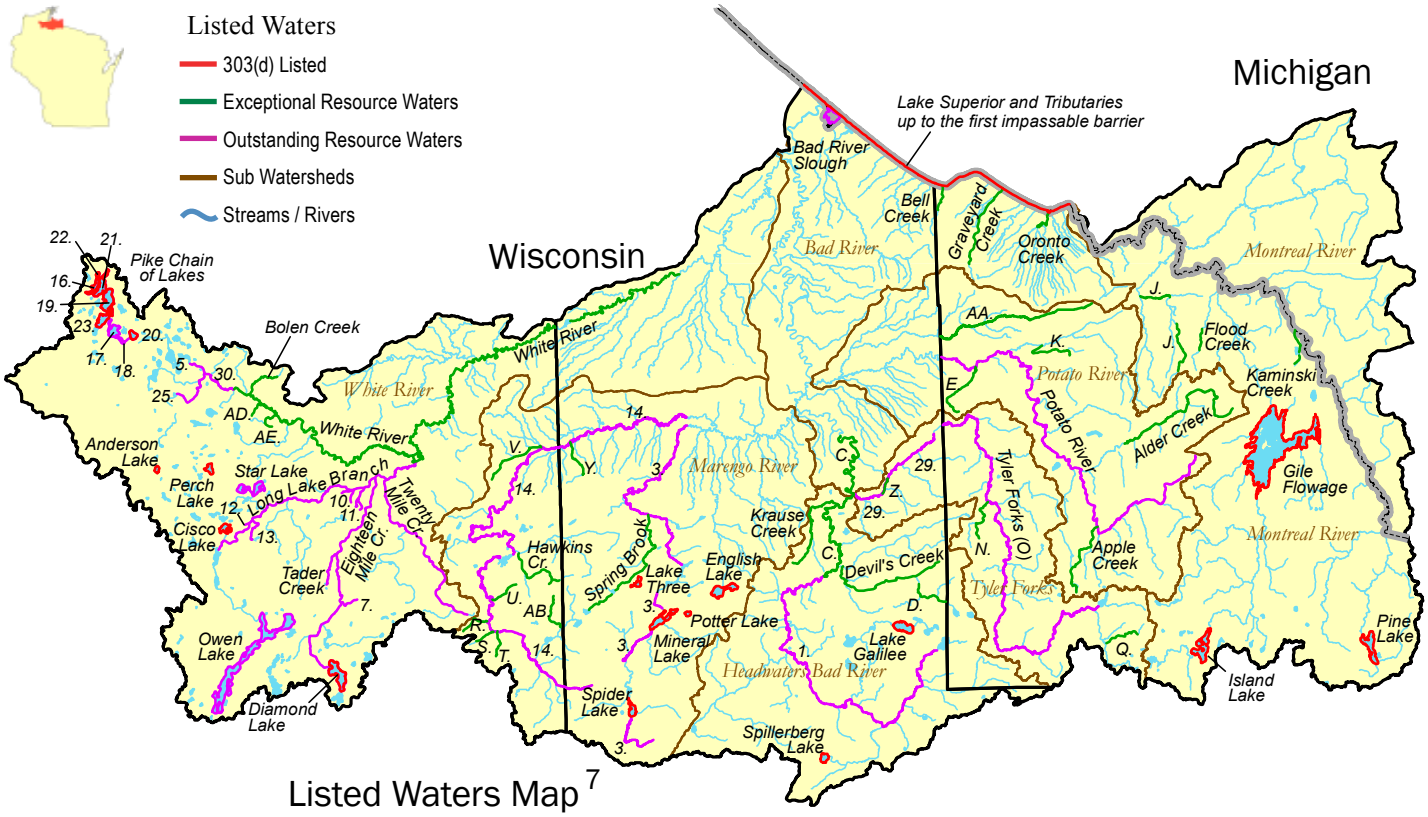


Land Cover Map[5]

	Acres	Percent		Acres	Percent
Pasture Hay	44,935	5.39	Low Intensity Residential	1.238	0.15
Deciduous Forest	450,142	54.04	High Intensity Residential	521	0.06
Row Crops	35,483	4.26	Evergreen Forest	53,820	6.46
Open Water	17,228	2.07	Mixed Forest	105,412	12.65
Woody Wetlands	94,677	11.37	Transitional	1,429	0.17
Emergent Herbaceous Wetlands	21,491	2.58	Urban / Recreational Grasses	956	0.11
Commercial/Industrial / Transport	2,066	0.25	Quarries / Strip Mines, Gravel Pits	112	0.01
Grasslands / Herbaceous	3,430	0.41	Bare Rock / Sand / Clay	109	0.01
			Total Acres	833,048	

ASSESSMENT OF WATERS [6]

Section 303(d) of the Clean Water Act states that water bodies that are not meeting their designated uses (fishing, swimming), due to pollutants, must be placed on this list. The 303(d) impaired Waters List is updated every two years. Wisconsin is required to develop TMDLs, Total Maximum Daily Loads, for water bodies on this list. Exceptional Resource Waters (ERW) provide valuable fisheries, hydrologically or geologically unique features, outstanding recreational opportunities, unique environmental settings, and which are not significantly impacted by human activities may be classified as exceptional resource waters. Outstanding Resource waters (ORW) and ERW differ in that ORW do not have an associated point source discharge, where ERWs do.



Listed Waters Map [7]

1. Bad River (O)3. Brunsweiler River
5. East Fork White River
7. Eighteen Mile Creek Tributary
10. Long Lake Branch Tributary S16
11. Long Lake Branch Tributary S17
12. Long Lake Branch Tributary S22
13. Long Lake Branch Tributary S27
14. Marengo River
16. Pike Chain of Lakes-Buskey Bay
17. Pike Chain of Lakes-Eagle
18. Pike Chain of Lakes-Flynn
19. Pike Chain of Lakes-Hart
20. Pike Chain of Lakes-Hildur
21. Pike Chain of Lakes-Millicent
22. Pike Chain of Lakes-Pike Lake
23. Pike Chain of Lakes-Twin Bear
25. South Fork White River
29. Tyler Forks (O)
30. White River (down to Pike's Bridge)

C. Bad River
D. Ballou Creek
E. Barr Creek
J. Fourche Creek
K. Frieberg Creek
N. Javorsky Creek
Q. Le Clair Creek
R. Marengo River Tributary S17
S. Marengo River Tributary S20
T. Marengo River Tributary S21
U. Marengo River Tributary S3
V. Marengo River Tributary S9
Y. Troutmere Creek
Z. Tyler Forks (E)AA. Vaughn Creek
AB. Whiskey Creek Tributary S12
AD. White River Tributary S26 NWNE
AD. White River Tributary S26 SWNE

For information on specific subwatersheds, 303(d) or Exceptional/ Outstanding Resource Waters (ERW/ORW): http://dnr.wi.gov/org/water/wm/wqs/303d/faqs.html and http://dnr.wi.gov/org/gmu/gpsp/gpbasin/

303(d) Waters	Mercury	PCBs
Anderson Lake	X	
Cisco Lake	X	
Diamond Lake	X	
English Lake	X	
Lake Galilee	X	
Gile Flowage	X	
Island Lake T44 R1E S25	X	
Lake Superior & Tributaries up to the first impassable barrier		X
Lake Three	X	
Mineral Lake	X	
Perch Lake T45 R7W S5	X	
Pike Chain of Lakes	X	
Pine Lake	X	
Potter Lake	X	
Spider Lake	X	
Spillerberg Lake	X	

OUTSTANDING RESOURCE WATERS LIST

1. Bad River
2. Bad River Slough
3. Brunsweiler River
4. Diamond Lake
5. East Fork White River
6. Eighteen Mile Creek
7. Eighteen Mile Creek Tributary
8. Gile Flowage
9. Long Lake Branch
10. Long Lake Branch Tributary S16
11. Long Lake Branch Tributary S17
12. Long Lake Branch Tributary S22
13. Long Lake Branch Tributary S27
14. Marengo River
15. Owen Lake
16. Pike Chain of Lakes-Buskey Bay
17. Pike Chain of Lakes-Eagle
18. Pike Chain of Lakes-Flynn
19. Pike Chain of Lakes-Hart
20. Pike Chain of Lakes-Hildur
21. Pike Chain of Lakes-Millicent
22. Pike Chain of Lakes-Pike Lake
23. Pike Chain of Lakes-Twin Bear
24. Potato River
25. South Fork White River
26. Star Lake
27. Tader Creek
28. Twenty Mile Creek
29. Tyler Forks
30. White River (down to Pike's Bridge)

EXCEPTIONAL RESOURCE WATERS LIST

A. Alder Creek
B. Apple Creek
C. Bad River
D. Ballou Creek
E. Barr Creek
F. Bell Creek
G. Bolen Creek
H. Devil's Creek
I. Flood Creek
J. Fourche Creek
K. Frieberg Creek
L. Graveyard Creek
M. Hawkin's Creek
N. Javorsky Creek
O. Kaminski Creek
P. Krause Creek
Q. Le Clair Creek
R. Marengo River Tributary S17
S. Marengo River Tributary S20
T. Marengo River Tributary S21
U. Marengo River Tributary S3
V. Marengo River Tributary S9
W. Oronto Creek
X. Spring Brook
Y. Troutmere Creek
Z. Tyler Forks
AA. Vaughn Creek
AB. Whiskey Creek Tributary S12
AC. White River (above Bad-Montreal Res.)
AD. White River Tributary S26 NWNE
AE. White River Tributary S26 SWNE

SOILS [7]

The soils in this watershed have formed on a variety of different landforms and from a variety of different parent materials.

The upper part of the watershed (southwestern and eastern two-thirds) is a rolling to hilly moraine of the Copper Falls Formation (Ontonagon and Chippewa Lobes) deposited during the Late Wisconsinan Glaciation. Much of the landscape is bedrock-controlled with Precambrian gabbro, anorthosite, granite, basaltic or rhyolithic lava flows, gneiss, amphibolite, metavolcanic rocks, argillite, siltstone, quartzite, greywacke, and iron formation. Significant rock exposures are very common. The soils in this area formed in reddish-brown non-calcareous sandy loam or loam till and typically have a fragipan. These soils have a mantle of sandy loam alluvium or mudflow sediments, but in some areas they have a mantle of silty lacustrine or windblown material (loess). These soils are generally moderately well drained with perched water tables above the fragipan, but range to somewhat poorly drained on lower slopes. They have moderate to slow permeability and low to moderate available water capacity. Intermingled among the till, especially along drainageways, are areas with soils that formed in loamy alluvium with sandy loam surface textures over acid sand or gravel outwash. These outwash soils range from well drained to somewhat poorly drained with apparent water tables, and have moderate to very rapid permeability and low to moderate available water capacity. Dotted throughout the landscape are poorly and very poorly drained soils in small closed depressions, in drainageways, and in large swamps that formed in loamy till or outwash, in non-acid muck, or in acid peat.

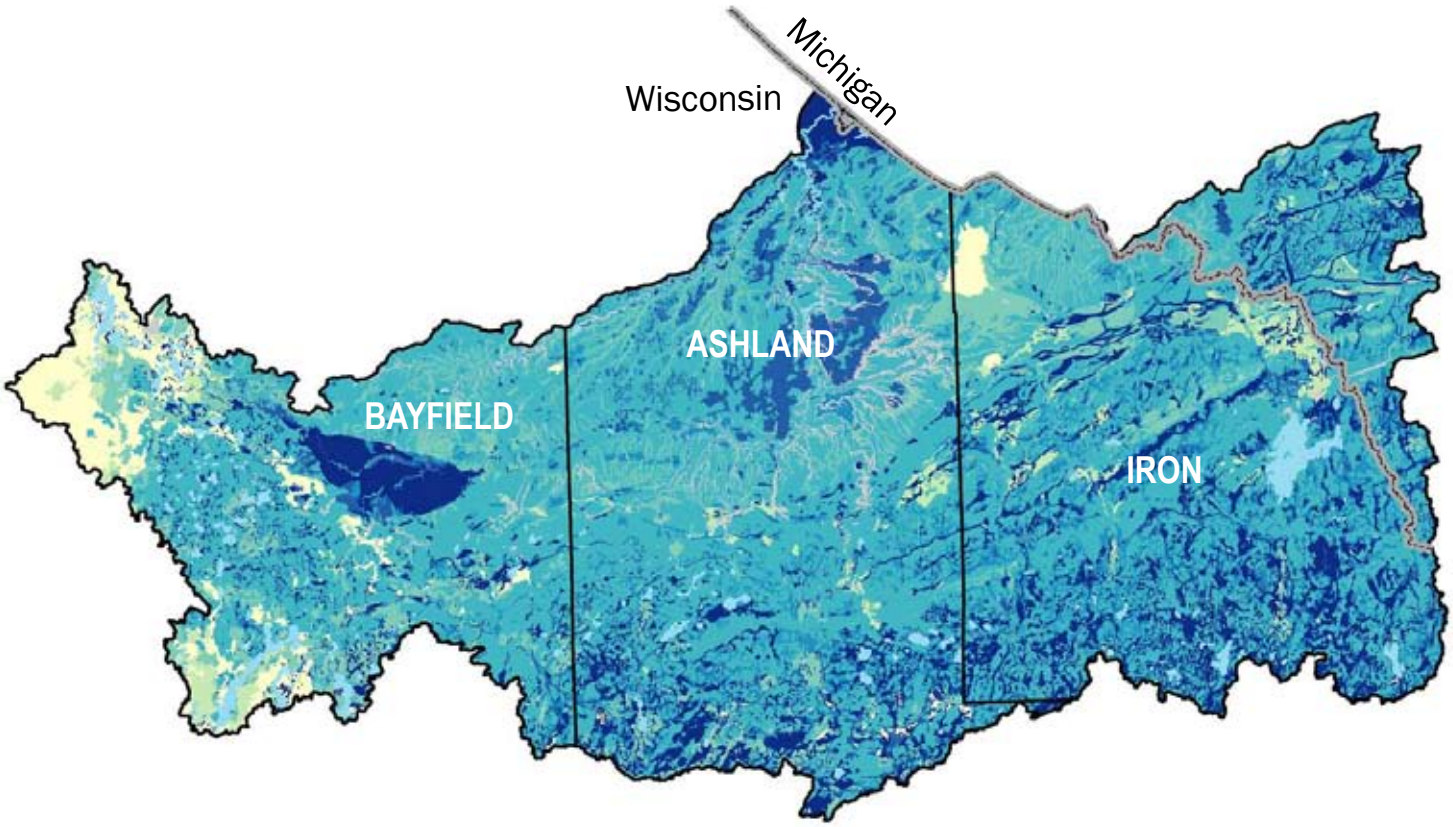
The lower part of the watershed (northwestern third) is an undulating to nearly level lake-modified till plain of the Miller Creek Formation (Chippewa Lobe) deposited during the Late Wisconsinan Glaciation. The soils formed in red calcareous clay or silty clay loam till with silt loam to silty clay loam surface textures. These soils are generally moderately well drained or somewhat poorly drained with seasonal saturation perched in the upper two feet of the clay, but range to very poorly drained in depressions. They have very slow to moderately slow permeability and moderate to very high available water capacity. In many areas, glacial lake wave action deposited varying thicknesses of nearshore sand over the till and formed a wave-planed topography. Cutting through the landscape along drainageways are strongly sloping to steep ravines with well drained clay soils on ravine sides and moderately well drained to very poorly drained sandy to loamy alluvium on ravine bottoms. Swamps, sloughs, and marshes, especially at the mouth of the Bad River and in the Bibbon Marsh, have very poorly drained soils formed in non-acid muck or mucky-peat.

A small portion of the far western part of the watershed is a pitted outwash plain that formed in acid sandy outwash with sand surface textures. These soils are generally excessively drained, have rapid to very rapid permeability, and have low available water capacity.

Visit the online Web Soil Survey at http://websoilsurvey.nrcs.usda.gov for official and current USDA soil information as viewable maps and tables.
Visit the Soil Data Mart at http://soildatamart.usda.gov to download SSURGO certified soil tabular and spatial data.

DRAINAGE CLASSIFICATION

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized–excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."



Drainage Classification Map

Drainage Classification	% Area
Excessively drained	3.9
Somewhat excessively drained	2.2
Well drained	9.7
Moderately well drained	54.7
Somewhat poorly drained	7.0
Poorly drained	6.5
Very poorly drained	11.8
Unclassified	4.3

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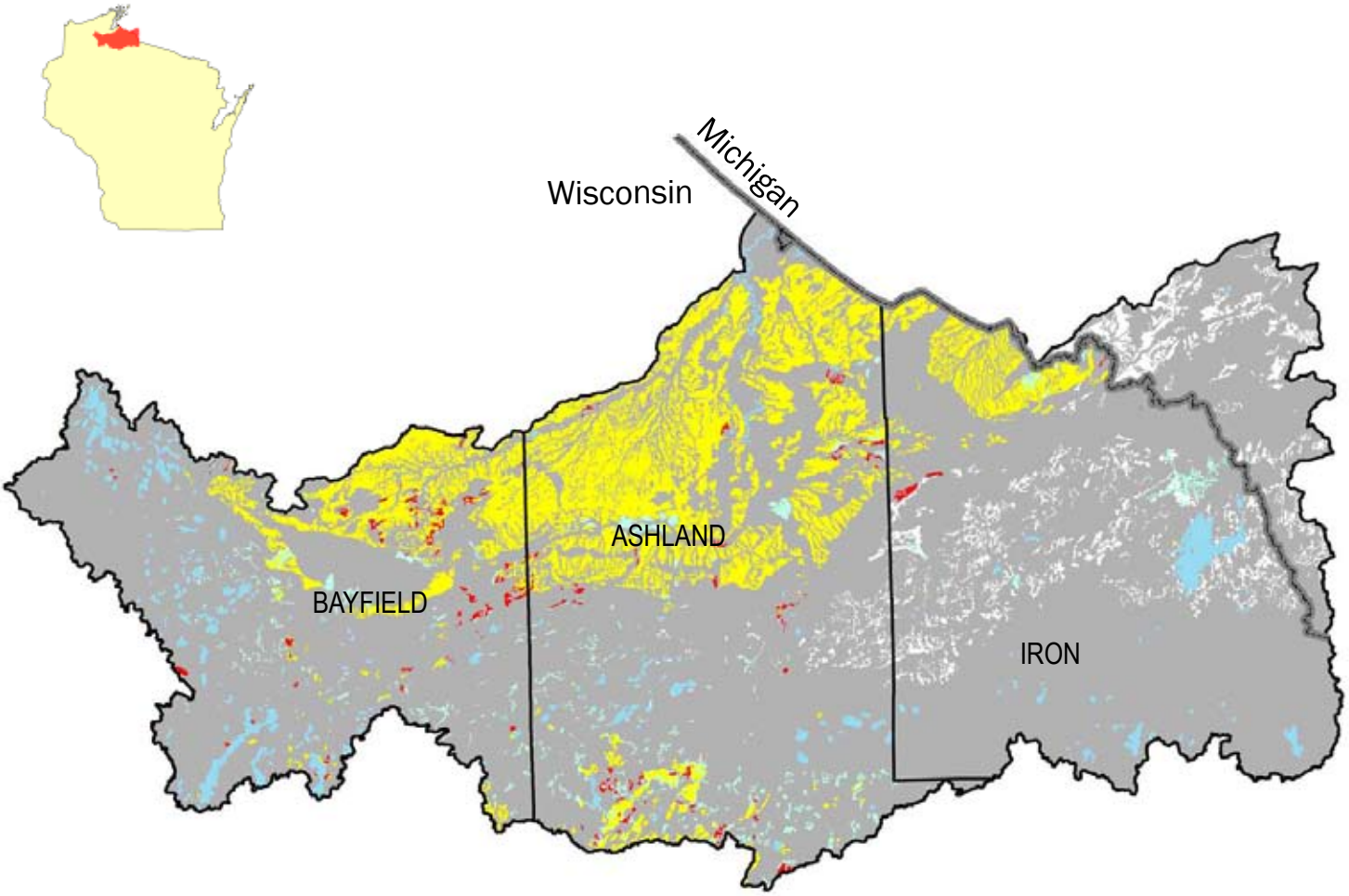
FARMLAND CLASSIFICATION

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.



Farmland Classification Map

	Acres	Percent
All areas are prime farmland	4,800	0.6
Farmland of statewide importance	112,034	13.5
Prime farmland if drained	11,704	1.4
Not Prime farmland	675,002	19
Water		

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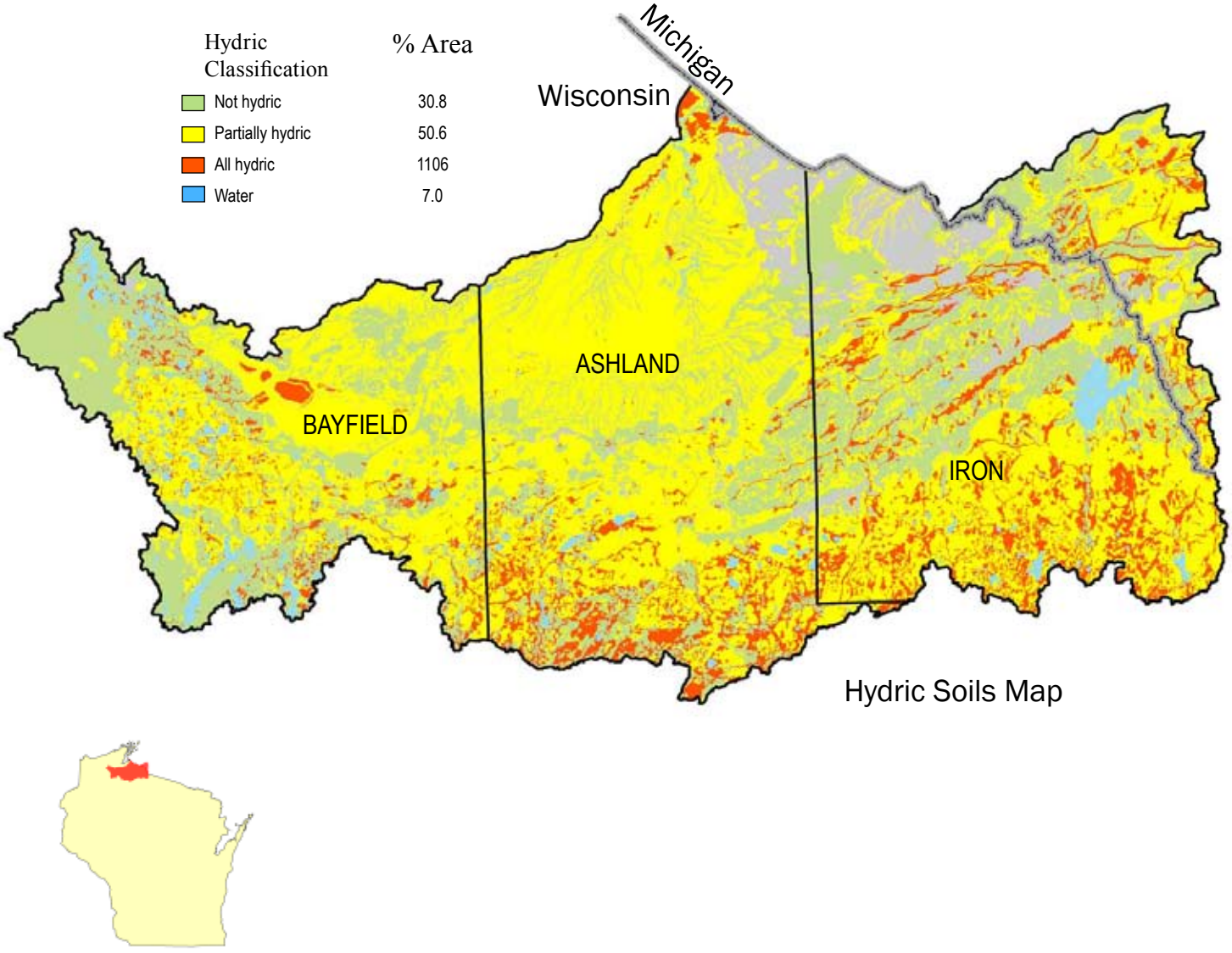
HYDRIC SOILS

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of non-hydric soils in the higher positions on the landform, and map units dominantly made up of non–hydric soils may have inclusions of hydric soils in the lower positions on the landform.

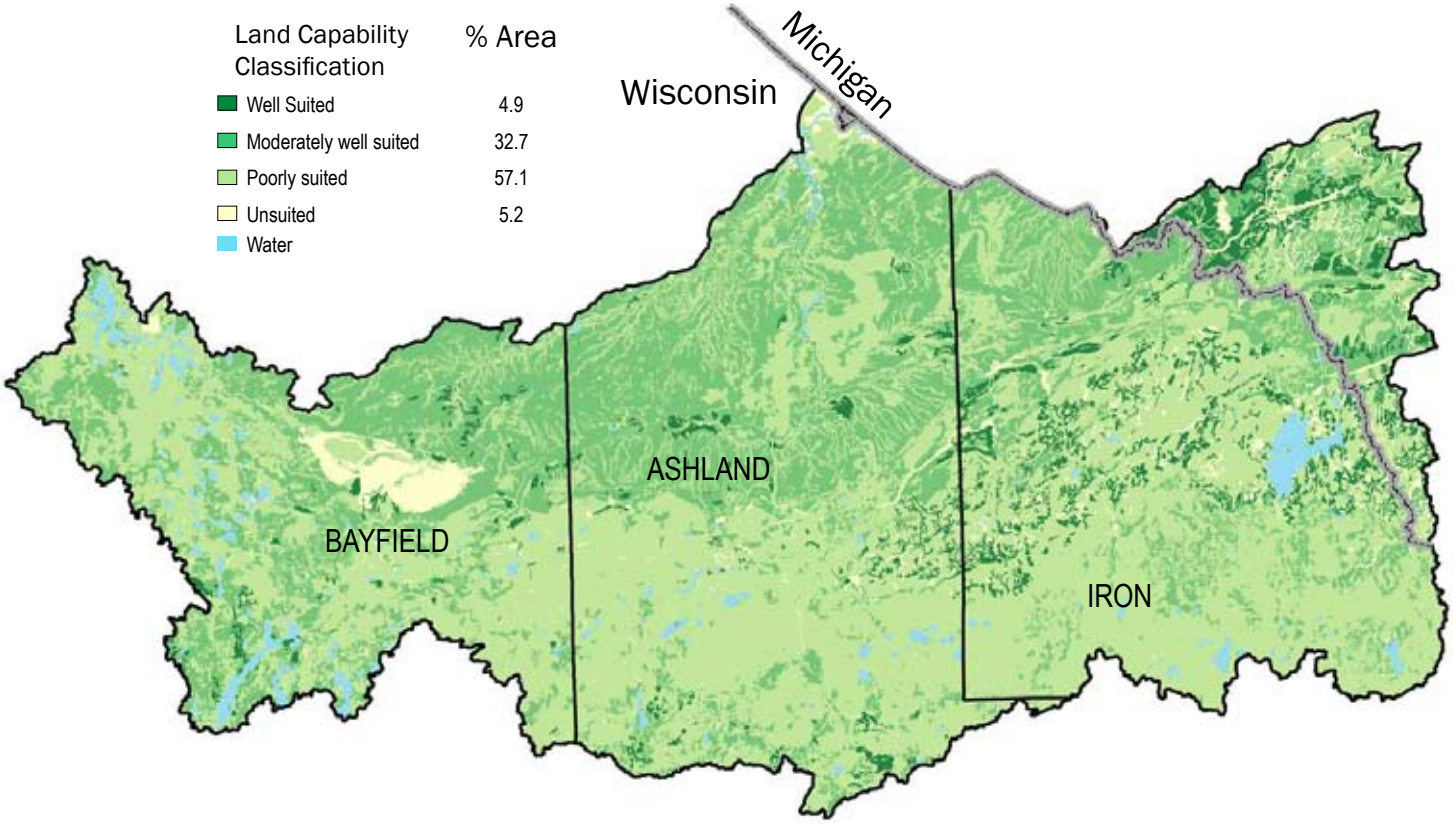
Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make on site determinations of hydric soils are specified in “Field Indicators of Hydric Soils in the United States” (Hurt and others, 2002).



Hydric Soils Map

LAND CAPABILITY CLASSIFICATION

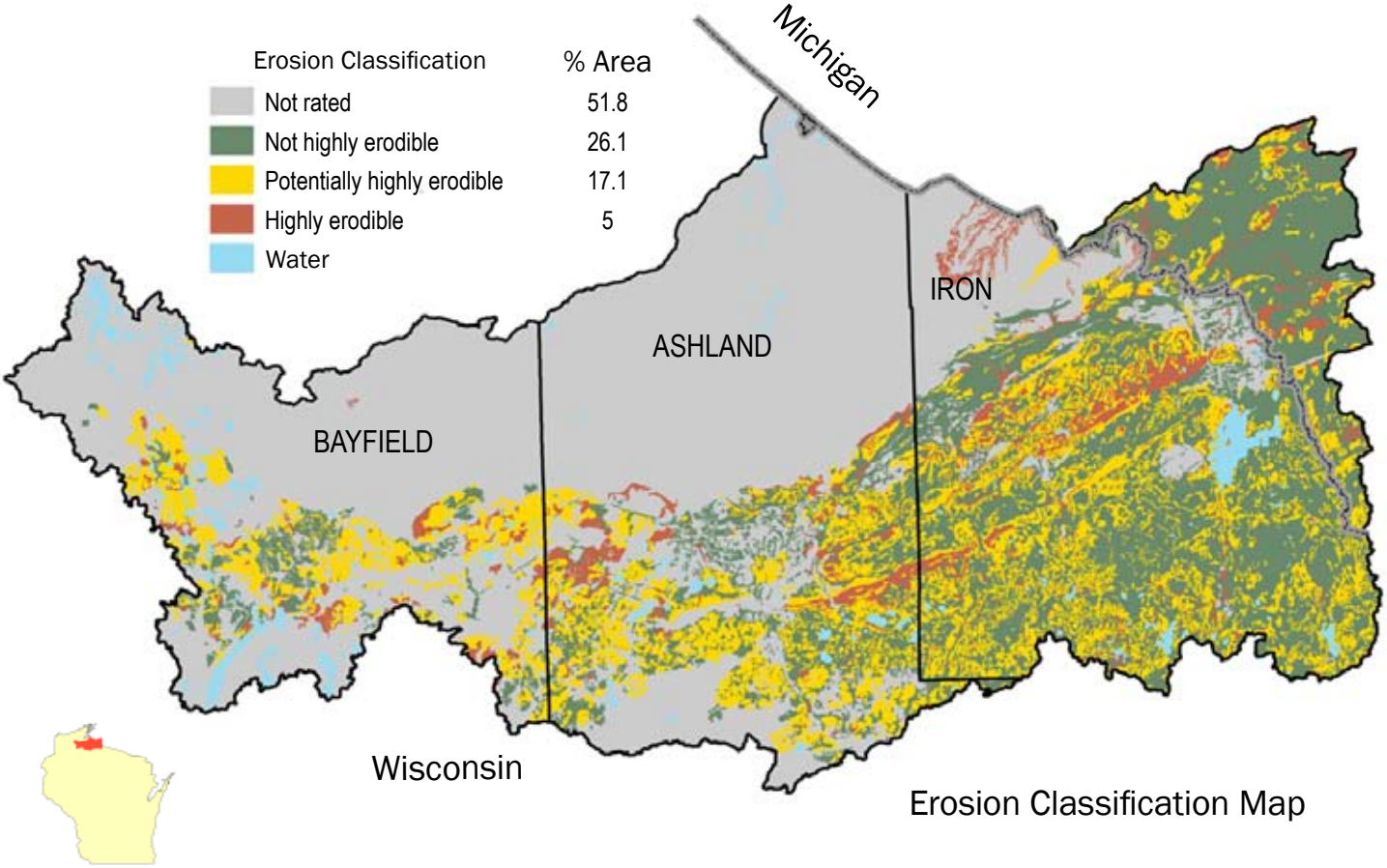
Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



Land Capability Classification Map

EROSION CLASSIFICATION

A soil map unit with an erodibility index (EI) of 8 or greater is considered to be highly erodible land (HEL). The EI for a soil map unit is determined by dividing the potential erodibility for the soil map unit by the soil loss
tolerance (T) value established for the soil in the FOTG as of January 1, 1990. Potential erodibility is based on default values for rainfall amount and intensity, percent and length of slope, surface texture and organic matter, permeability, and plant cover. Actual erodibility and EI for any specific map unit depends on the actual values for these properties.



Erosion Classification Map

RESOURCE CONCERNS

The largest nonpoint resource concern in the watershed is sediment from eroding and slumping streambanks, channels, and gullies. Natural factors contributing to this problem include the thick Lake Superior lake plain red, lacustrine clay soil interspersed with lenses of sand and deeply entrenched water courses with bank heights of seventy feet or more in some locations. The conversion of native, climax forests to grass and aspen cover has resulted in less stable slopes and streambanks. Overgrazing in some areas also contributes to the problem. The large amount of sediment has a negative effect on aquatic habitats and fish movement in streams and Lake Superior itself, particularly fish spawning sites.

Nutrient losses from private septic systems and barnyards are also a concern. The Gile Flowage on the Montreal River is managed for the production of hydroelectric power, including winter drawdowns, that may have a negative impact on the fishery.

PRS AND OTHER DATA[8]

The following table is a product of the NRCS Performance Results System (PRS) and reflects progress made over the past several years on several key areas of conservation. The PRS provides support for reporting the development and delivery of conservation programs, analyzing and reporting progress, and management applications by NRCS and conservation partners. The public can generate additional reports by visiting the following link: http://ias.sc.egov.usda.gov/prsreport2006/

PRS PERFORMANCE MEASURES

PRS PERFORMANCE MEASURES	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	TOTAL
TOTAL CONSERVATION SYSTEMS PLANNED (ACRES)	0	546	620	4,123	17,624	N/A	23,671	3,783	50,367
TOTAL CONSERVATION SYSTEMS APPLIED (ACRES)	0	686	768	4,128	2,906	N/A	3,869	4,723	17,080
CONSERVATION PRACTICES									
TOTAL WASTE MANAGEMENT (313) (NUMBERS)	0	1	1	1	0	0	0	0	3
RIPARIAN FOREST BUFFERS (391) (ACRES)	0	1,496	0	2,000	2,080	85	0	0	5,661
EROSION CONTROL TOTAL SOIL SAVED (TONS/YEAR)	0	1,865	538	1,543	1,793	N/A	N/A	N/A	5,739
TOTAL NUTRIENT MANAGEMENT (590) (ACRES)	0	0	0	337	0	919	637	1,244	3,137
PEST MANAGEMENT SYSTEMS APPLIED (595/595A) (ACRES)	0	0	0	0	32	0	0	0	32
PRESCRIBED GRAZING 528/528A (ACRES)	0	0	0	227	0	162	340	44	773
TREE & SHRUB ESTABLISHMENT (612) (ACRES)	0	72	0	2	0	0	7	0	81
RESIDUE MANAGEMENT (329, 329A-C, 344, 345, 346) (ACRES)	0	0	0	337	0	0	0	253	590
TOTAL WILDLIFE HABITAT (644 - 645) (ACRES)	0	216	216	1,750	2,439	1,548	2,047	1,704	9,920
TOTAL WETLANDS CREATED, RESTORED, OR ENHANCED (ACRES)	0	0	6	16	32	0	93	23	170
ACRES ENROLLED IN FARMBILL PROGRAMS									
CONSERVATION RESERVE PROGRAM	0	0	0	0	0	N/A	0	0	0
WETLANDS RESERVE PROGRAM	0	0	30	0	0	N/A	52	52	134
ENVIRONMENTAL QUALITY INCENTIVES PROGRAM	0	0	160	0	32	N/A	982	1,634	2,808
WILDLIFE HABITAT INCENTIVE PROGRAM	0	0	0	0	0	N/A	0	0	0
FARMLAND PROTECTION PROGRAM	0	0	0	0	0	N/A	0	0	0

CENSUS AND SOCIAL DATA (RELEVANT) [9]

There are 240 farms in the watershed, covering a total of 57,760 acres. Average farm size in the watershed is 241 acres compared to a statewide average of 201 acres in Wisconsin. Please refer to the tables below for more detailed information or visit the web site of the Wisconsin Office of the National Agricultural Statistics Service at: http:// www.nass.usda.gov/Statistics_by_State/Wisconsin/index.asp

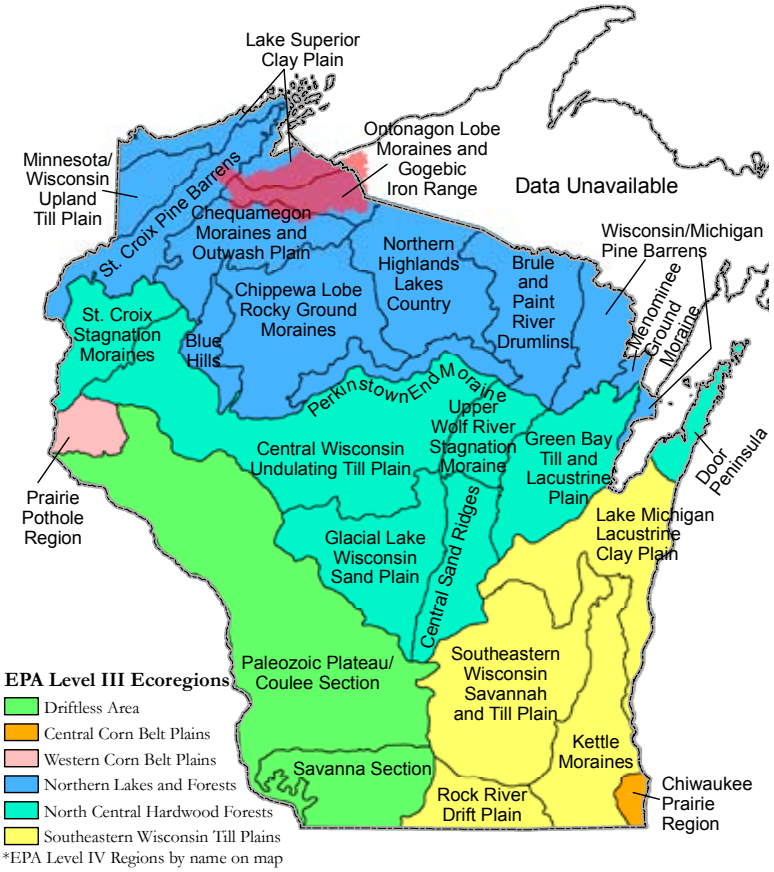
	2002 AG CENSUS DATA	ASHLAND	BAYFIELD	IRON	GOGEBIC, MI	TOTAL
	FARMS (NUMBER)	101	104	31	4	240
	LAND IN FARMS (ACRES)	26259	24831	6320	350	57,760
	TOTAL CROPLAND (ACRES)	13121	13295	2928	173	29,517
	IRRIGATED LAND (ACRES)	6	22	0	0	28
	PRINCIPAL OPERATOR BY PRIMARY OCCUPATION - FARMING (NUMBER)	49	48	16	2	114
FARM BY SIZE	FARMS BY SIZE - 1 TO 10 ACRES	2	2	0	1	4
	FARMS BY SIZE - 11 TO 49 ACRES	10	16	4	1	31
	FARMS BY SIZE - 50 TO 179 ACRES	42	44	18	3	107
	FARMS BY SIZE - 180 TO 499 ACRES	35	31	5	0	72
	FARMS BY SIZE - 500 TO 999 ACRES	9	8	2	0	20
	FARMS BY SIZE - 1,000 ACRES OR MORE	3	3	1	0	7
LIVESTOCK AND POULTRY	LIVESTOCK AND POULTRY - CATTLE AND CALVES INVENTORY (FARMS)	58	48	14	1	121
	LIVESTOCK AND POULTRY - CATTLE AND CALVES INVENTORY - BEEF COWS (FARMS)	45	29	9	1	83
	LIVESTOCK AND POULTRY - CATTLE AND CALVES INVENTORY - MILK COWS (FARMS)	9	11	2	0	23
	LIVESTOCK AND POULTRY - HOGS AND PIGS INVENTORY (FARMS)	2	3	1	0	7
	LIVESTOCK AND POULTRY - SHEEP AND LAMBS INVENTORY (FARMS)	1	6	1	0	9
	LIVESTOCK AND POULTRY - LAYERS 20 WEEKS OLD AND OLDER INVENTORY (FARMS)	6	6	3	0	15
	LIVESTOCK AND POULTRY - BROILERS AND OTHER MEAT-TYPE CHICKENS SOLD (FARMS)	1	1	0	0	3
SELECTED CROPS HARVESTED	SELECTED CROPS HARVESTED - CORN FOR GRAIN (ACRES)	343	464	0	0	808
	SELECTED CROPS HARVESTED - CORN FOR SILAGE OR GREENCHOP (ACRES)	415	196	0	0	611
	SELECTED CROPS HARVESTED - WHEAT FOR GRAIN, ALL (ACRES)	0	57	0	0	57
	SELECTED CROPS HARVESTED - WHEAT FOR GRAIN, ALL - WINTER WHEAT FOR GRAIN (ACRES)	0	57	0	0	57
	SELECTED CROPS HARVESTED - WHEAT FOR GRAIN, ALL - SPRING WHEAT FOR GRAIN (ACRES)	0	0	0	0	0
	SELECTED CROPS HARVESTED - OATS FOR GRAIN (ACRES)	191	326	52	0	569
	SELECTED CROPS HARVESTED - BARLEY FOR GRAIN (ACRES)	199	136	0	0	335
	SELECTED CROPS HARVESTED - SOYBEANS FOR BEANS (ACRES)	0	43	0	0	43
	SELECTED CROPS HARVESTED - FORAGE - LAND USED FOR ALL HAY AND ALL HAYLAGE, GRASS SILAGE, AND GREENCHOP (SEE TEXT) (ACRES)	8858	7695	1703	89	18,345
	SELECTED CROPS HARVESTED - VEGETABLES HARVESTED FOR SALE (SEE TEXT) (ACRES)	7	2	0	0	9
	SELECTED CROPS HARVESTED - LAND IN ORCHARDS (ACRES)	5	84	0	0	89

URBAN POPULATION [11]

NAME	1990	2000	2004	MEDIAN INCOME*
IRONWOOD, MI	6,849	6,293	5,809	41,994
MASON, WI	102	72	72	32,917
MELLEN, WI	935	845	808	31,917
MONTREAL, WI	838	838	778	29,219
HURLEY, WI	1,782	1,818	1,678	24,821

POPULATION ETHNICITY [10]

Total Population = 20,756
Urban population = 10,771
Rural Population = 9,985
White alone = 19,078
Hispanic or Latino = 514
Two or more races = 473
Black or African American alone = 16
Some other race alone = 145
American Indian and Alaska Native alone = 884
Asian Alone = 151
Native Hawaiian and Other Pacific Islander alone = 6



ECOLOGICAL LANDSCAPES [12] GENERAL DESCRIPTIONS

LAKE SUPERIOR CLAY PLAIN

The Lake Superior Clay Plain is a flat to undulating lake plain and outwash lowland. The soils are generally calcareous red clays with organic deposits in swampy areas. A dearth of lakes, along with a somewhat milder climate and longer growing season due to the climate amelioration by Lake Superior, differentiates this region from surrounding ecoregions. Land use is predominantly woodland with some limited agriculture of hay, small grains, and apples on Bayfield Peninsula, distinguishing it from most other level IV ecoregions in Northern Lakes and Forests where the land use/land cover is predominantly forest and woodland. This Ecoregion has a potential natural vegetation of boreal forest (although somewhat different than boreal forests to the north), unlike the pine barrens and pine forests of the St Croix Pine Barrens the mosaic of pine and birch in Minnesota/Wisconsin Upland Till Plain and the northern mesic forest of Chequamegon Moraine and Outwash Plain.

ONTONAGON LOBE MORAINES AND GOGEBIC IRON RANGE

The rolling to hilly, bedrock-controlled and collapsed moraines consisting of loamy till, much of it shallow over igneous and metamorphic rock, distinguish the Ontonagon Lobe Moraines and Gogebic Iron Range ecoregion from surrounding regions. Rock outcrops increase from very few in the southern portion of this ecoregion to abundant in the north. Likewise, the topography changes from rolling in the southern portion to hilly in the north. Perennial streams are common, and there are fewer lakes than in ecoregions to the south, but more than

adjacent Lake Superior Clay Plain ecoregion. The potential natural vegetation of this region is a mosaic of hemlock/sugar-maple/pine forests, swamp conifers, and cedar/hemlock forests. This represents a transition from the boreal forests of the Lake Superior Clay Plain to the mix of hardwoods and conifer forests of the Chequamegon Moraine and Outwash Plain region. Historic mining of iron and copper occurred along the northern and northwestern edge of this region.

CHEQUAMEGON MORAINES AND OUTWASH PLAIN

Irregular plains and stagnation moraines, broad areas of hummocky topography, pitted glacial outwash, numerous kettle lakes, and abundant swamps and bogs characterize the Chequamegon Moraine and Outwash Plain ecoregion. This region has more poorly developed drainage than ecoregions to the west. The soils are coarse, acid, loamy, and sandy-loam mixed--different from the pink sandy soils of the St. Croix Pine Barrens and the more rocky and silty soils the Chippewa Lobe Rocky Ground Moraines.

ST. CROIX PINE BARRENS

The St. Croix Pine Barrens ecoregion is characterized by jack pine, concentrations of red and white pine forests and barrens, and well-drained, pink sandy soils. This ecoregion has a greater concentration of lakes, a higher percentage of clear lakes, and lakes with a lower trophic state than in surrounding ecoregions. The sandy soils and pine barren vegetation distinguishes this ecoregion from the silty lake plain and boreal forests of the Lake Superior Clay Plain and the till plain and more deciduous forest mosaic of Minnesota\Wisconsin Upland Till Plain.

WATERSHED ASSESSMENT

To assess a watershed's agricultural nonpoint pollution potential, a model was used to generate a watershed assessment score relative to other 8-digit watersheds in Wisconsin. Factors used in the model include acres of cropland, acres of highly erodible land (HEL), and the number of animal units in the watershed. Scores ranged from 0.0 (lowest conservation need) to 24.2 (highest conservation need). The scores may be useful in determining funding allocations on a watershed basis for agricultural nonpoint pollution control initiatives. The model does not attempt to measure pollution levels and does not reflect pollution potential from point sources of pollution or other nonpoint pollution sources beyond the above criteria.

The watershed assessment score for the Bad-Montreal Watershed is 1.6.

WATERSHED PROJECTS, STUDIES, MONITORING, ETC.

A large portion of the watershed, in northern Bayfield, Ashland, and Iron Counties, is a riparian project area for the Conservation Reserve Enhancement Program (CREP). CREP is local, state, and federal partnership effort that builds upon the USDA Conservation Reserve Program (CRP). Practices such as filter strips, riparian buffers, and grassed waterways are available to landowners to agree to a fifteen year agreement that involve installation, practice, and annual payments with the option of perpetual easement.

There have not been any Wisconsin Department of Natural Resources (WDNR) Priority Watershed projects in this watershed.

The WDNR conducts water quality monitoring in many streams and lakes within the watershed each year. The Michigan Department of Environmental Quality is responsible for water quality monitoring in the Michigan portion of the watershed.

PARTNER GROUPS

- Ashland-Bayfield-Douglas-Iron County Land and Water Conservation Department http://www.bayfieldcounty.org/abdi/
- ad River Band of Lake Superior Tribe of Chippewa Indians http://www.badriver.com/about.html
- Bad River Watershed Association http://ephemeralsolutions.net/brwa/index.php?option=com_content&task=section&id=1&Itemid=2
- Gogebic-Ontonagon Soil and Water Conservation District, 900 River St., Ontonagon, MI 49953,
- MIchigan Department of Agriculture http://www.michigan.gov/mda
- Michigan Department of Environmental Quality http://www.michigan.gov/deq
- Michigan Department of Natural Resources http://www.michigan.gov/dnr/
- Michigan River Alliance http://www.michiganrivers.org/index.htm
- Michigan State University Extension http://www.msue.msu.edu/portal/
- River Alliance of Wisconsin http://www.wisconsinrivers.org/
- Trout Unlimited- www.wisconsintu.org
- USDA Farm Service Agency (WI) http://www.fsa.usda.gov/wi/news/default.asp, (MI) http://www.fsa.usda.gov/mi/news/default.asp
- US Fish and Wildlife Service http://www.fws.gov/midwest
- USDA-Natural Resources Conservation Service (Michigan) http://www.mi.nrcs.usda.gov/
- University of Wisconsin Cooperative Extension http://www.uwex.edu/ces/ and http://basineducation.uwex.edu
- Wisconsin Department of Agriculture, Trade, and Consumer Protection http://www.datcp.state.wi.us
- Wisconsin Department of Natural Resources http://dnr.wi.gov/

FOOTNOTES/BIBLIOGRAPHY

All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

1. Introduction and the description of resource concerns of the Bad Montreal Watershed were derived from a report issued by the Wisconsin Department of Natural Resources titled "Lake Superior" Basin http://www.dnr.state.wi.us/org/gmu/superior", 8/2006, WDNR.

2. Common Resource Area (CRA) Map delineations are defined as geographical areas where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area. Online linkage: http://soils.usda.gov/survey/geography/cra.html.

3. The relief map was created using the National Elevation Dataset (NED) 1 arc second, approximately 30 meters, digital elevation model (DEM) raster product assembled by the U.S. Geological Survey (USGS). A hillshade grid was derived from the 30m DEM and draped over the DEM to symbolize the map and create a 3-D effect. The data was downloaded from the NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/. For more information about NED visit http://ned.usgs.gov/.

4. Average Annual Precipitation data was originated by Chris Daly of Oregon State University and George Taylor of the Oregon Climate Service at Oregon State University and published by the Water and Climate Center of the Natural Resources Conservation Service in 1998. Annual precipitation data was derived from the climatological period of 1961-1990. Parameter-elevation Regressions on Independent Slopes Model (PRISM) derived raster data is the underlying data set from which the polygons and vectors were created. For more information about PRISM visit http://www.ocs.orst.edu/prism/prism_new.html. Precipitation data was downloaded from the NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/.

5 The Land Use/Land Cover data was generated from the National Land Cover Dataset (NLCD) compiled from Landsat satellite TM imagery (circa 1992) with a spatial resolution of 30 meters and supplemented by various ancillary data (where available). The data was assembled by the USGS and published in June of 1999. The analysis and interpretation of the satellite imagery was conducted using very large, sometimes multi-state image mosaics. For more information about NLCD visit http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html. The data was downloaded from the NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/.

6. 303(d) listed streams were derived from the Water Quality Standards Section of the Wisconsin Department of Natural Resources (WIDNR) website: http://dnr.wi.gov/org/water/wm/wqs/303d/Lists303d/Approved_2004_303(d)_list.pdf. For more information about the individual sub-watersheds visit http://dnr.wi.gov/org/gmu/gpsp/gpbasin/index.htm. For a list and explanation of Outstanding and Exceptional Resource Waters visit: http://dnr.wi.gov/org/water/wm/wqs/orwerw/.

7. Soil Survey Geographic Database (SSURGO) tabular and spatial data were downloaded for the following surveys:

Ashland Co., WI (WI001) Published 2006.10.19
Bayfield Co., WI (WI007) Published 2006. 09.29
Iron, Co. WI (WI051) Published 2006.10.18
Gogebic Co., MI (MI053) Published 2007.09.24

Metadata and SSURGO data for the aforementioned surveys were downloaded from the NRCS Soil Data Mart at http://soildatamart.nrcs.usda.gov. Component and layer tables from the tabular data were linked to the spatial data to derive the soil classifications found in this section. Visit the online Web Soil Survey at http://websoilsurvey.nrcs.usda.gov for official and current USDA soil information as viewable maps and tables.

8. Performance Results System (PRS) data was extracted from the PRS homepage by year, conservation systems and practices and Hydrologic Unit Code (HUC) level. HUC level reporting was not available where N/A is listed. For more information on these and other performance reports visit http://ias.sc.egov.usda.gov/prshome/.

9. Ag Census data were downloaded from the National Agricultural Statistics Service (NASS) Website and the data were adjusted by percent of HUC in the county. For more information on individual census queries visit the NASS website at http://www.nass.usda.gov/.

10. Population ethnicity data were extracted from the Census 2000 Summary File 3 compiled by the U.S. Census Bureau. The data were adjusted by Block Group percentage in the HUC. Population items were selected from the SF30001 table. For more information on census data and definitions visit http://www.census.gov/Press-Release/www/2002/sumfile3.html.

11. Urban population and median household income data were derived from the American FactFinder assembled by the U.S. Census Bureau. American FactFinder is a quick source for population, housing, income and geographic data. For other census items and trends visit http://factfinder.census.gov/home/saff/main.html?_lan

12. Level III and IV Ecoregions Regions of Wisconsin map and descriptions were derived from electronic coverages available from Wisconsin DNR, Bureau of Integrated Science Services Branch in cooperation with the U.S Environmental Protection Agency.
For more information visit ftp://ftp.epa.gov/wed/ecoregions/wi/wi_eco_pg.pdf