

IMPLEMENTATION: MISSISSIPPI RIVER

The Mississippi River begins as a trickle flowing out of Lake Itasca in northern Minnesota. From there the river flows 2,348 miles until it pours into the Gulf of Mexico below New Orleans. The Mississippi River drains 33 states and its watershed covers one-half of the United States. It fosters cities and commerce, transports people and goods, provides habitat for fish, plants, and wildlife, and enriches human life with natural and recreational opportunities.

North America's longest river percolates out of a mixed hardwood and conifer forest as it begins its descent to the Gulf of Mexico. It is a humble stream fed by underground springs, the moist climate and countless lakes, marshes, bogs. The Mississippi River at its source bears little resemblance to the mighty river it becomes. It is nonetheless the defining feature of northern Minnesota.

The Mississippi River is protected from its headwaters at Lake Itasca in Clearwater County, to the southern boundary of Morrison County, near Little Falls by the Mississippi Headwaters Board (MHB). Formed in 1980 as an alternative to designation of the river into the National Wild and Scenic River System, the Mississippi Headwaters Board (MHB) is a joint powers board of Clearwater, Beltrami, Cass, Hubbard, Itasca, Aitkin, Crow Wing and Morrison Counties that is mandated by Minnesota Statutes 103F.361-377 to enhance and protect the natural, cultural, historic, scientific and recreational values of the headwaters region.

MHB achieves its goal of river protection through cooperative land use planning in the eight counties, in conjunction with the Chippewa National Forest and the Leech Lake Indian Reservation. The MHB also promotes water quality monitoring, education and stewardship activities among its partners along the corridor.

The MHB is currently coordinating a water planning effort along the entire 400+ mile corridor to prioritize conservation implementation projects by minor watershed (DNR Level 8 Catchment). By analyzing the available GIS and water quality information, the MHB and the member counties can coordinate funding strategies for targeted, effective implementation of conservation practices that take advantage of future Clean Water Land and Legacy funding opportunities as well as providing greater coordination among the counties.

The DNR Level 8 Catchment was the level chosen because it is a slightly more focused watershed unit than the DNR Level 7 watershed.

Conservation priorities were again summarized by catchment along the corridor for the level of existing protection and land use disturbance and were also prioritized by various implementation focuses and summarized by catchment. The *vigilance*, *protection*, and *enhance* risk classification were again applied and mapped. Figures 45 - 63 highlight the implementation priorities by catchment along the river in Crow Wing County. Figures 64 - 66 are more detailed maps of these catchments. Water quality and DNR survey data for the Mississippi River is included as Appendix 5 of this report.

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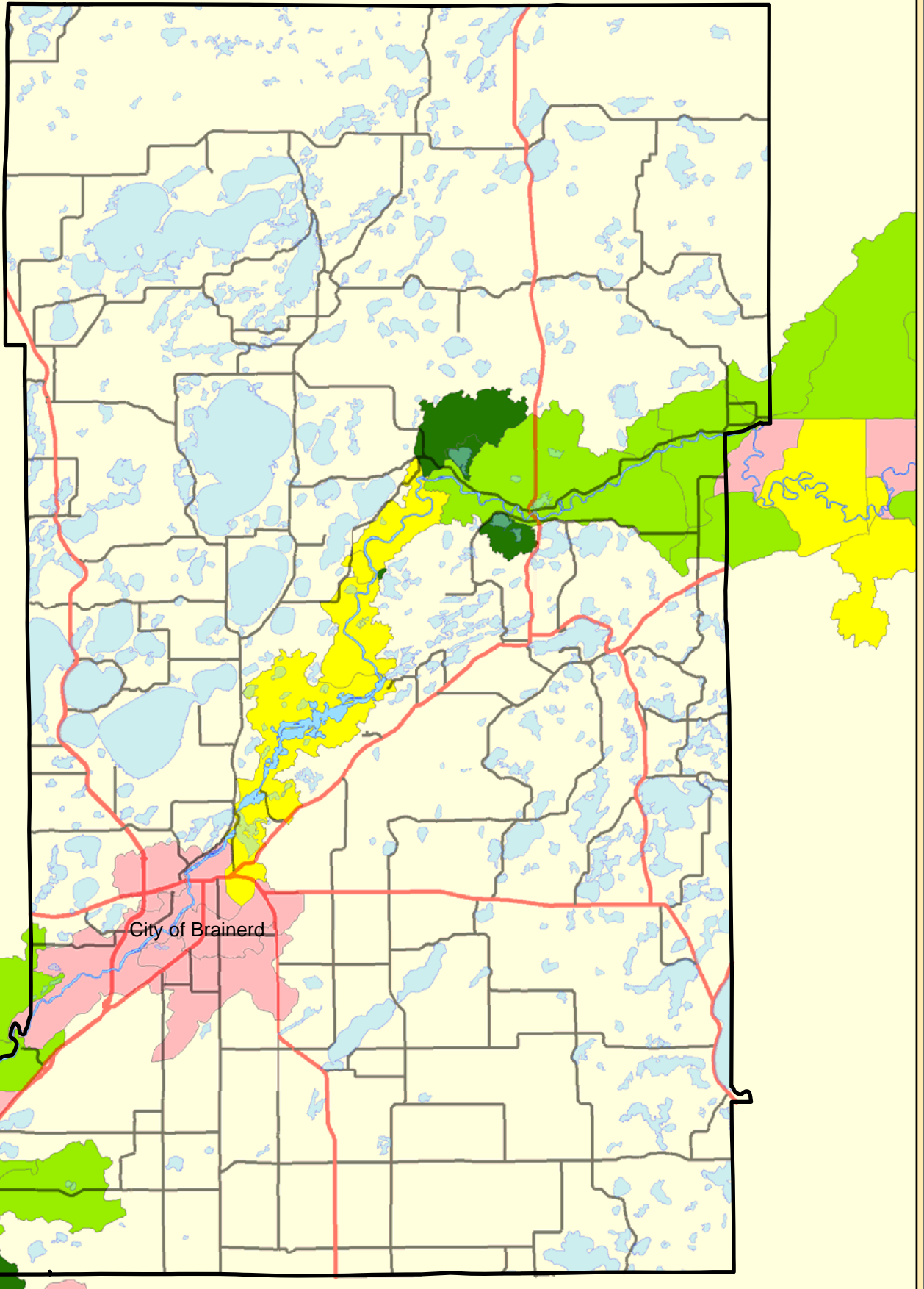


Figure 50: Risk Classification



Risk Classification (by catchment)	
 Vigilance	 Lakes
 Protection	 Mississippi River
 Enhance / Protection	 US Highways
 Enhance	 State Highways
	 County Roads

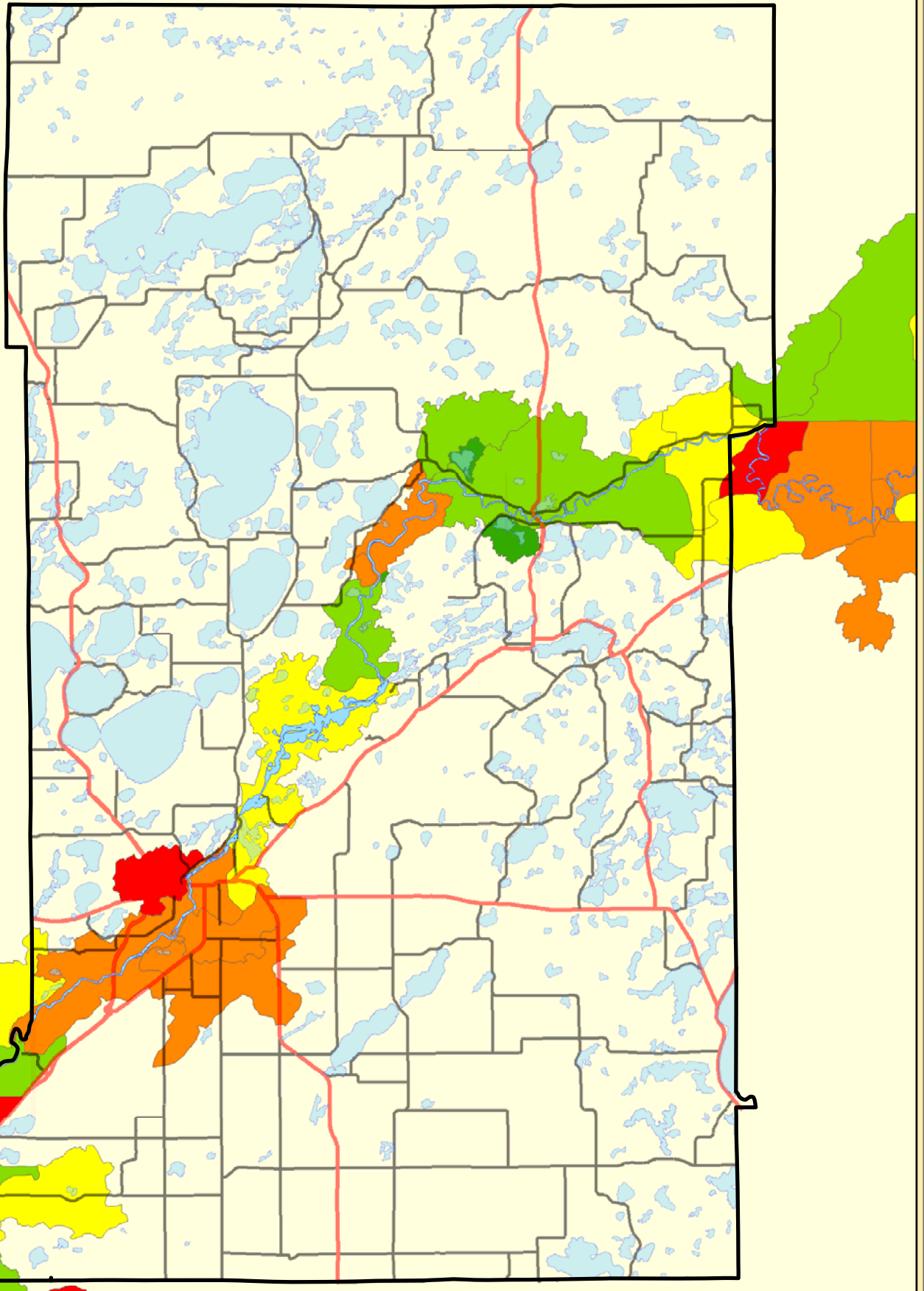


Figure 51: % Protected

Protected = Public Land, Lakes, Rivers, Wetlands (private) & Easements

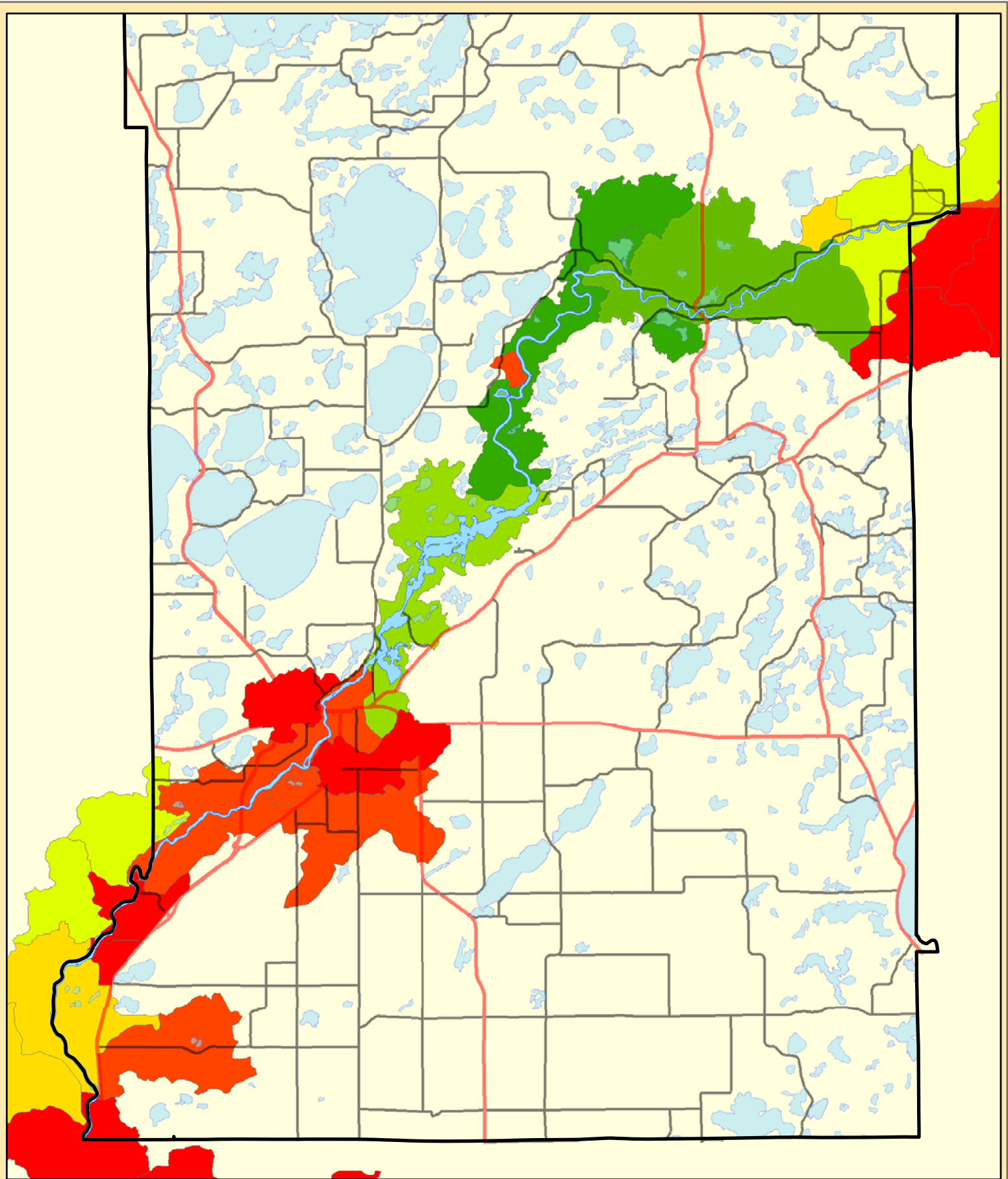


Figure 52: Land Use Disturbance

Disturbed = Developed, Cultivated, Pasture, & Grassland



- Lakes
- Mississippi River
- US Highways
- State Highways
- County Roads

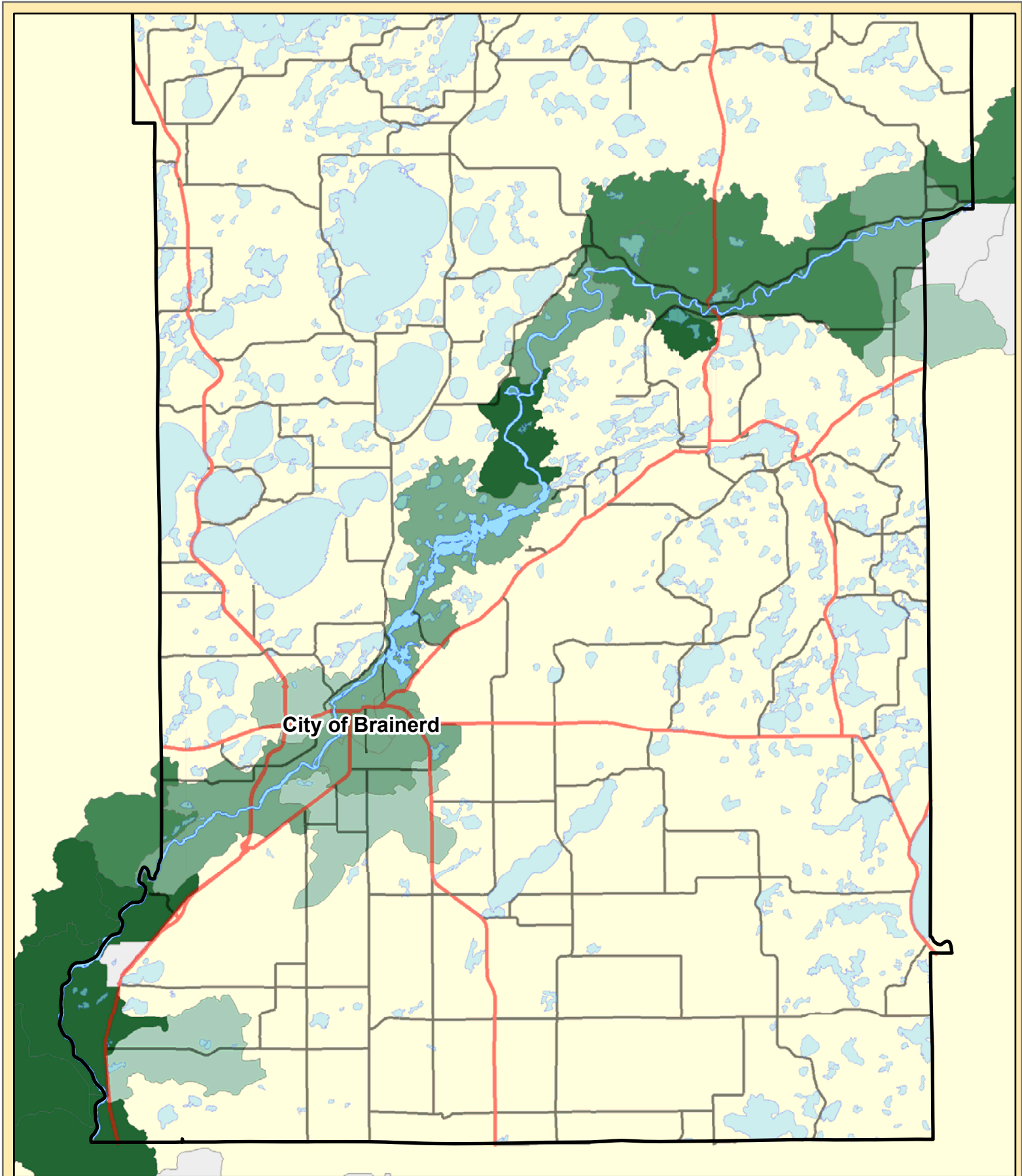
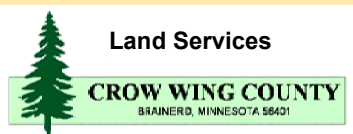


Figure 53: % Public Ownership



Public Ownership (by catchment)

- 50+ %
- 25 - 50 %
- 10 - 25 %
- 5 - 10 %
- 0 - 5 %

- Lakes
- Mississippi River
- US Highways
- State Highways
- County Roads

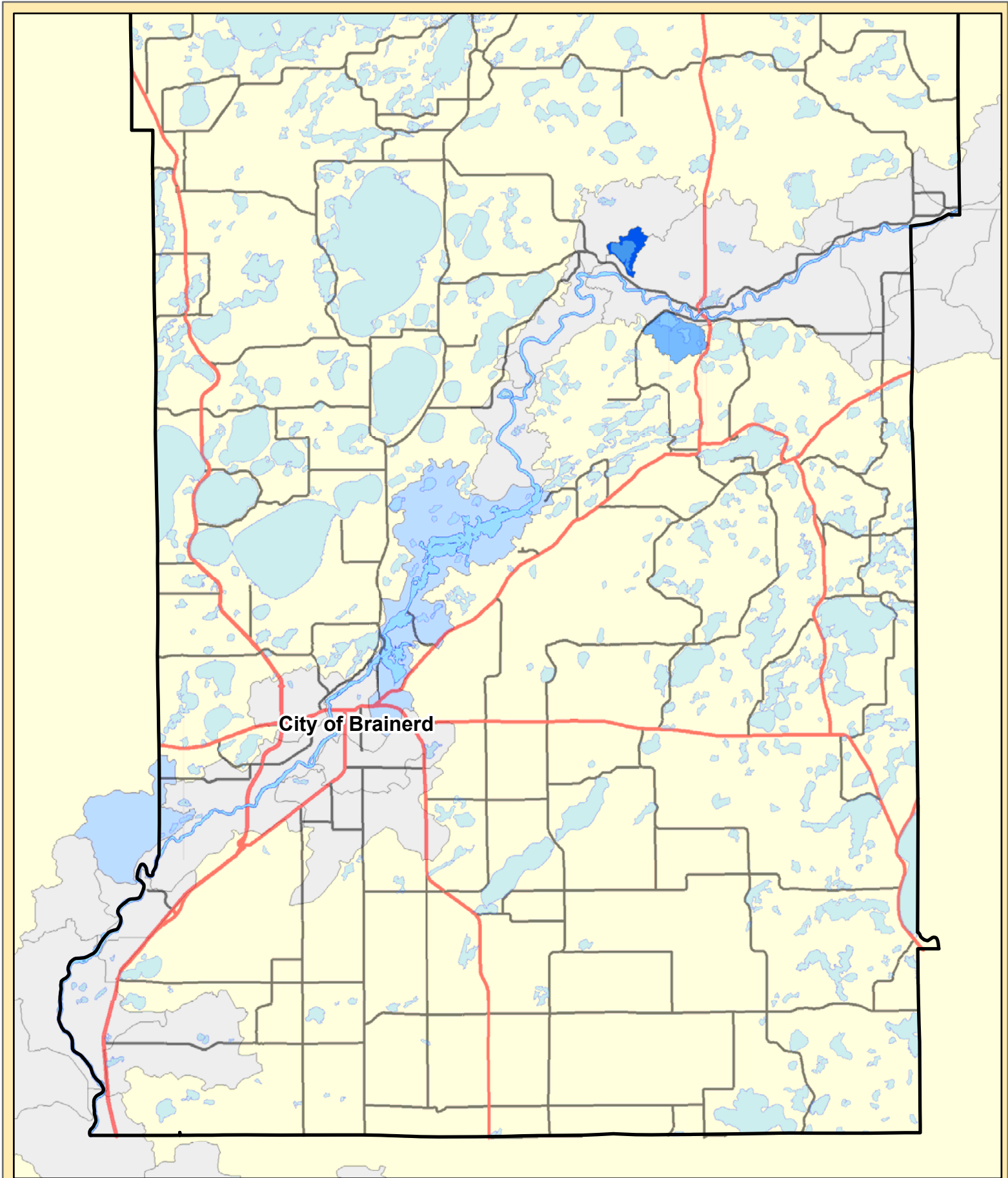
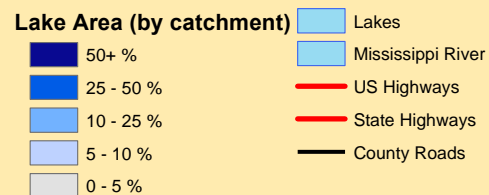


Figure 54: % Lakes



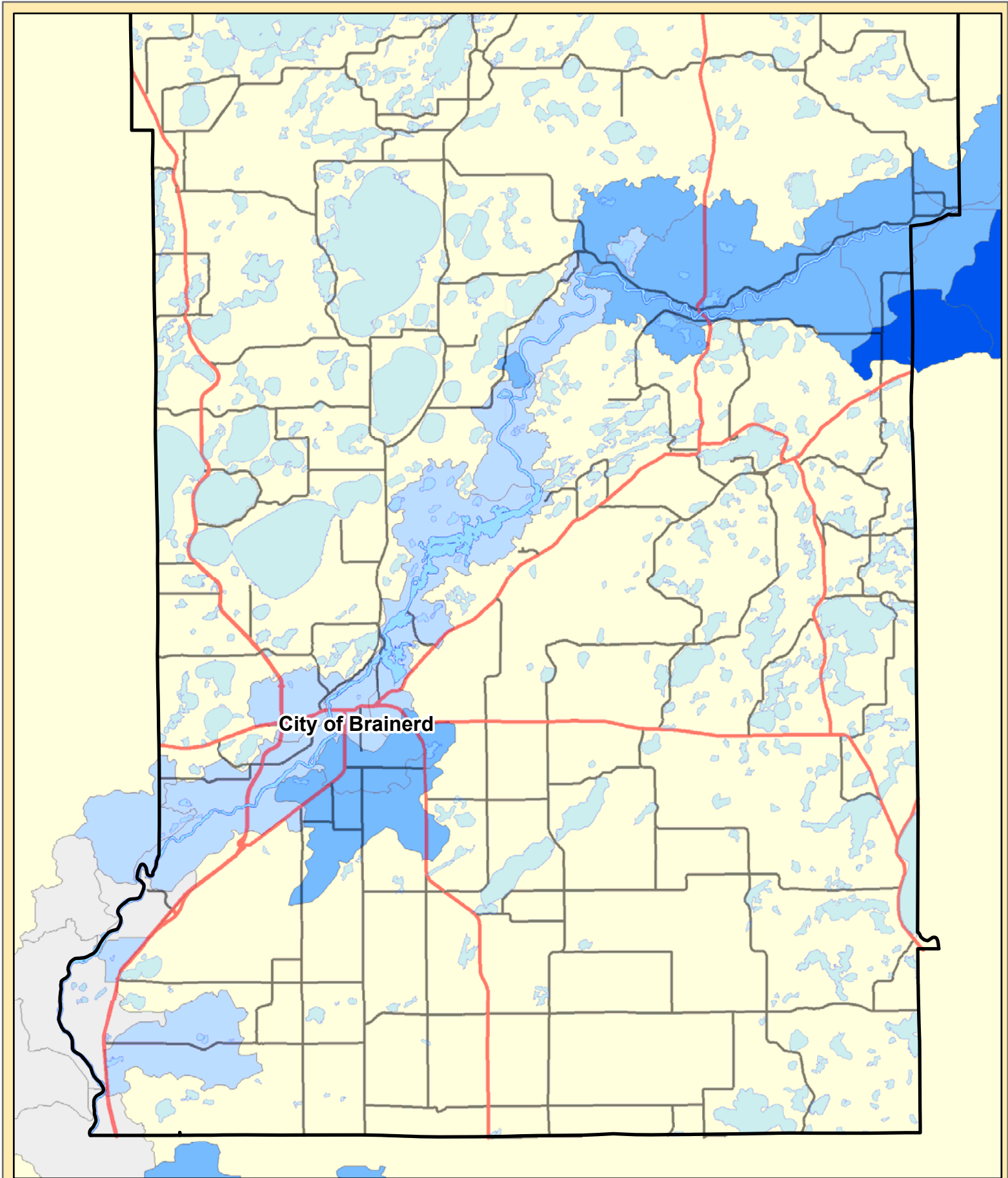
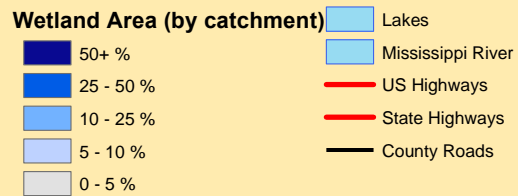


Figure 55: % Wetlands



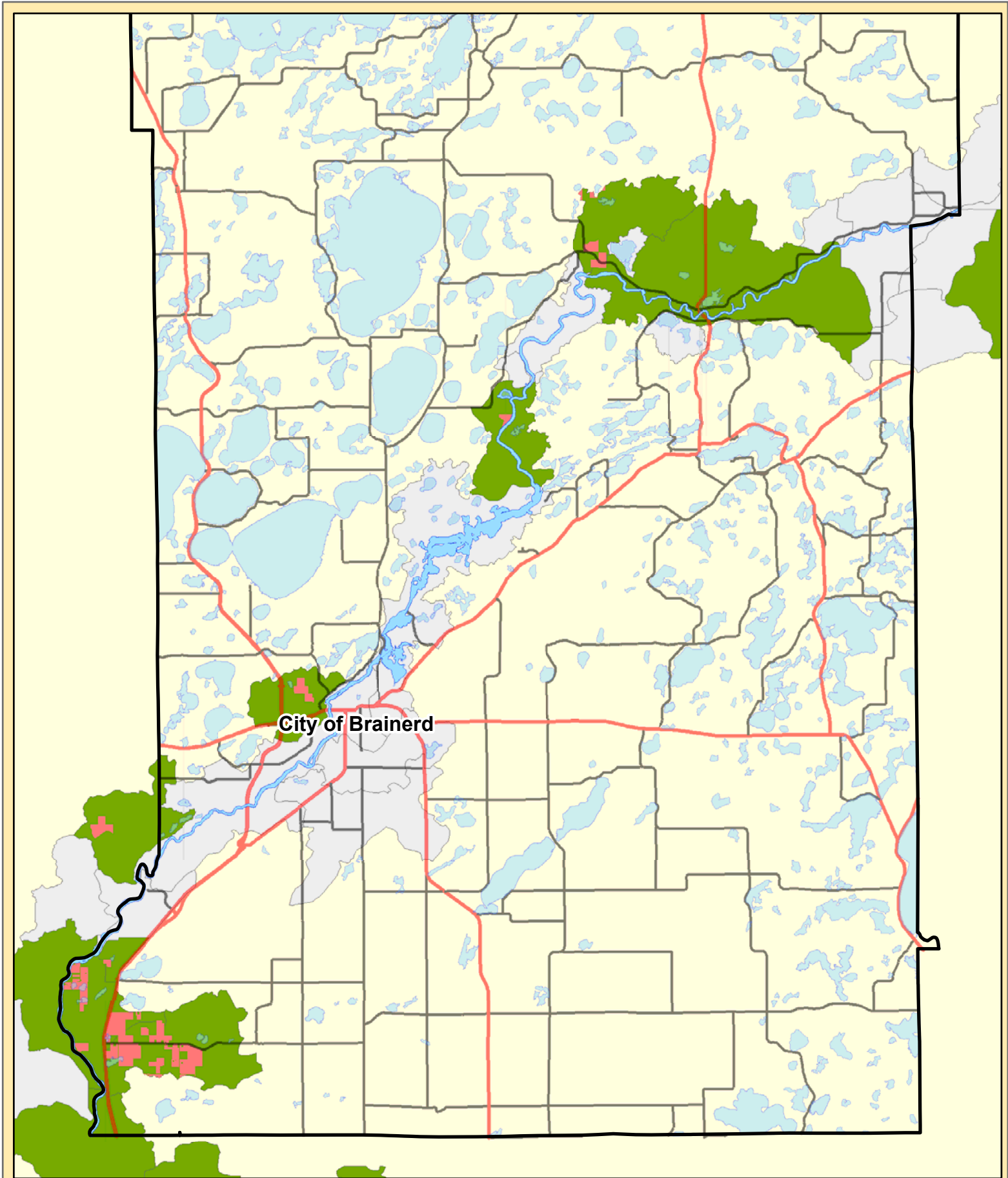
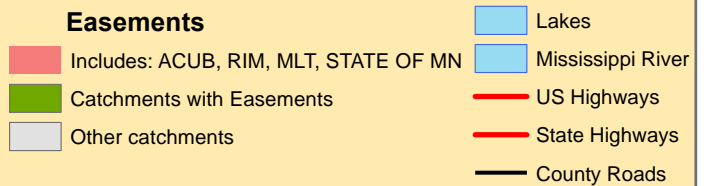


Figure 56: Easements



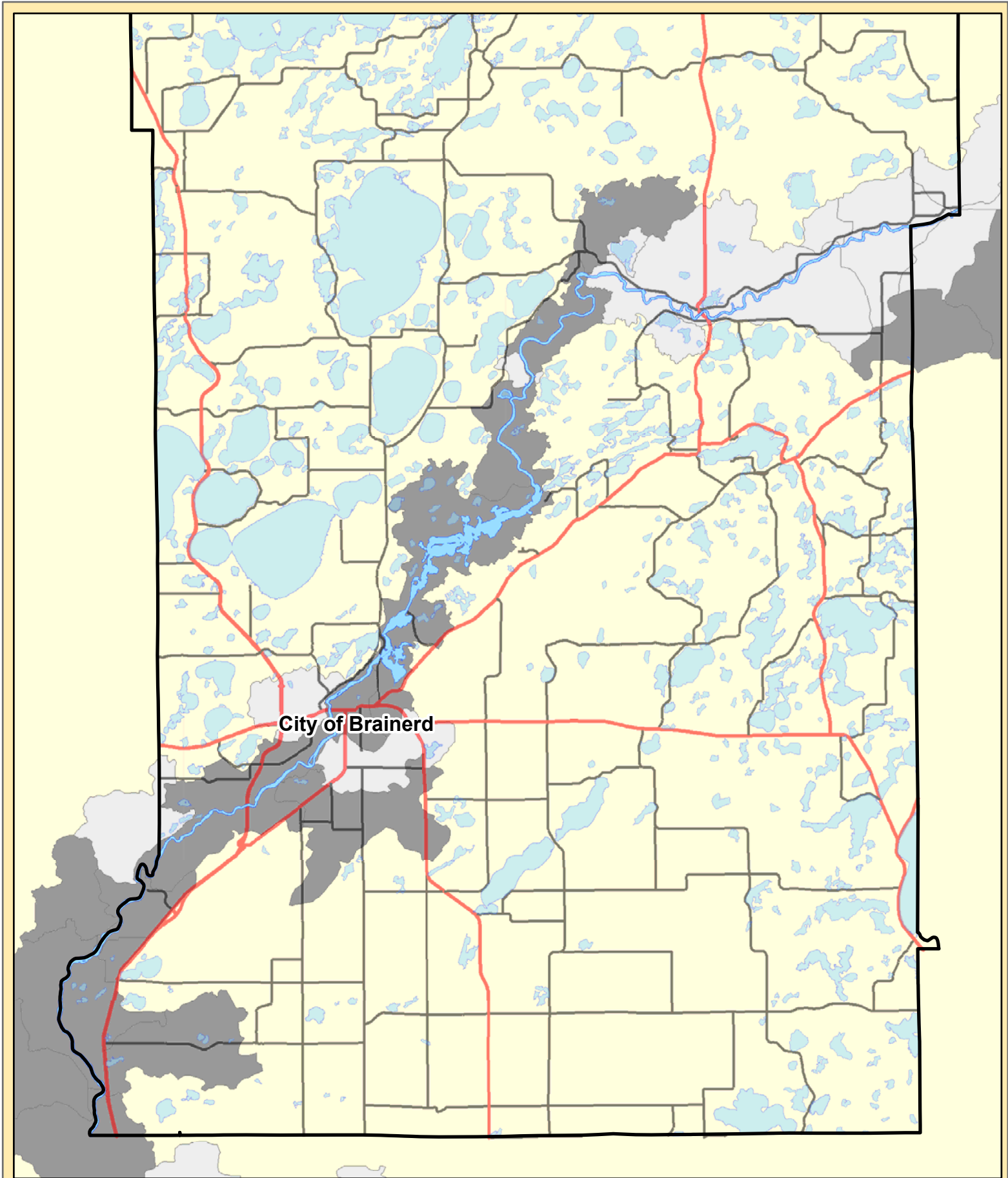






Figure 57: Implementation Priority = AIS

- | | | | |
|---|---------------------|---|-------------------|
|  | Catchments with AIS |  | Lakes |
|  | Other catchments |  | Mississippi River |
| | |  | US Highways |
| | |  | State Highways |
| | |  | County Roads |

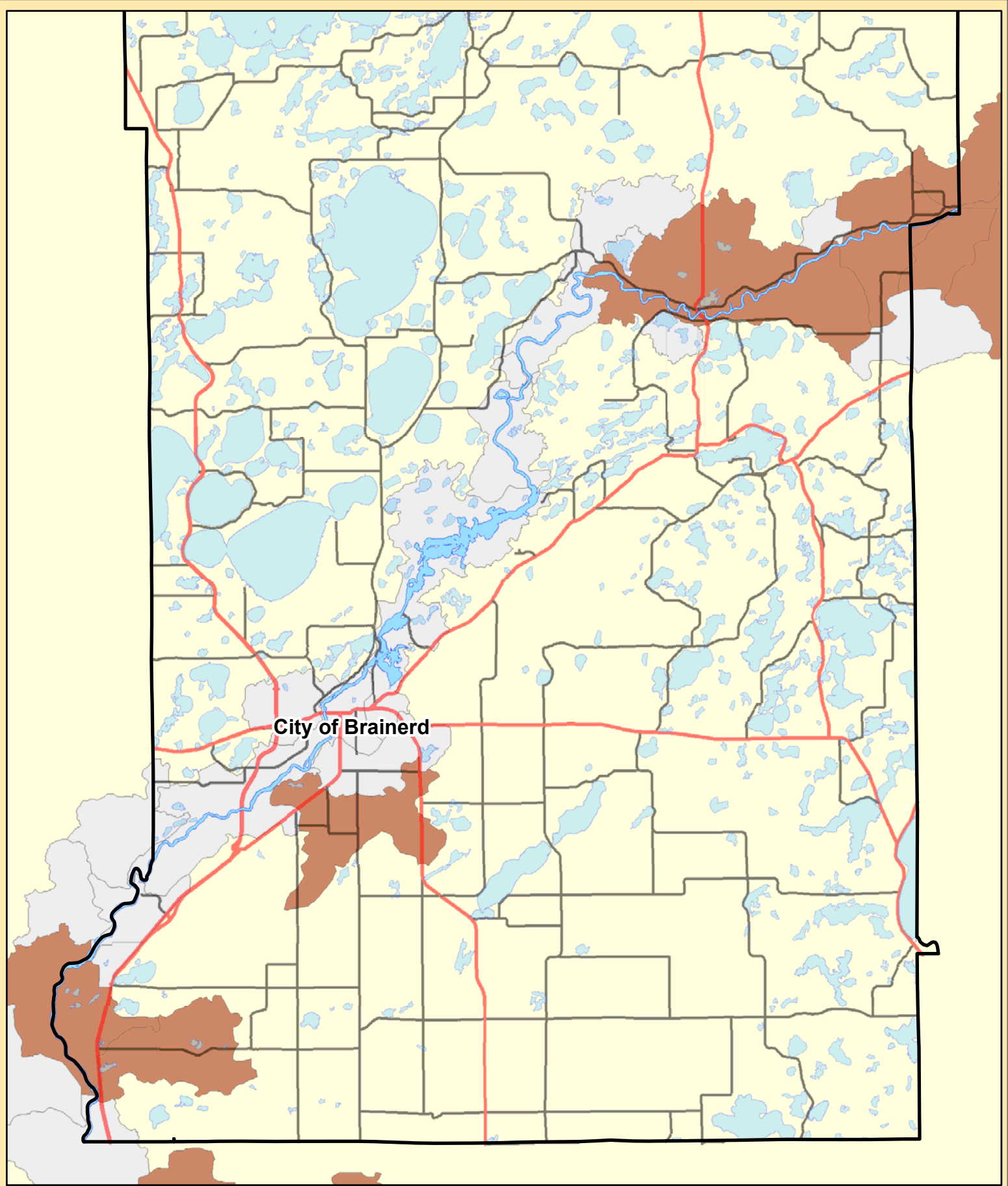


Figure 58: Implementation Priority = Agricultural BMPs

- Catchments with Agriculture
 - Other catchments
- Lakes
 - Mississippi River
 - US Highways
 - State Highways
 - County Roads

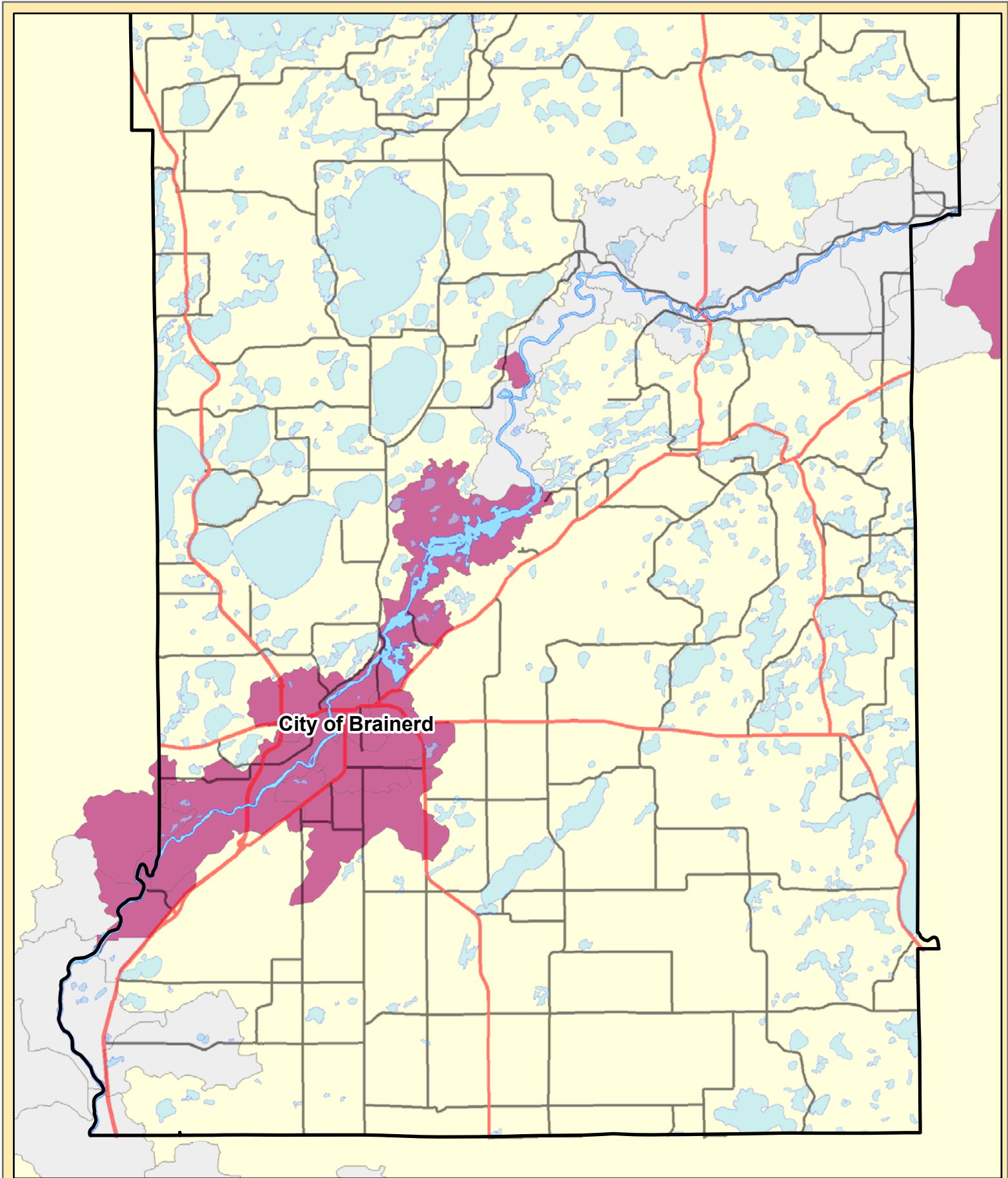









Figure 59: Implementation Priority = Growth & Development



- | | | | | | |
|---|--------------------------------|---|-------------------|---|----------------|
|  | Populated and Developing Areas |  | Lakes |  | US Highways |
|  | Other catchments |  | Mississippi River |  | State Highways |
| | | | |  | County Roads |

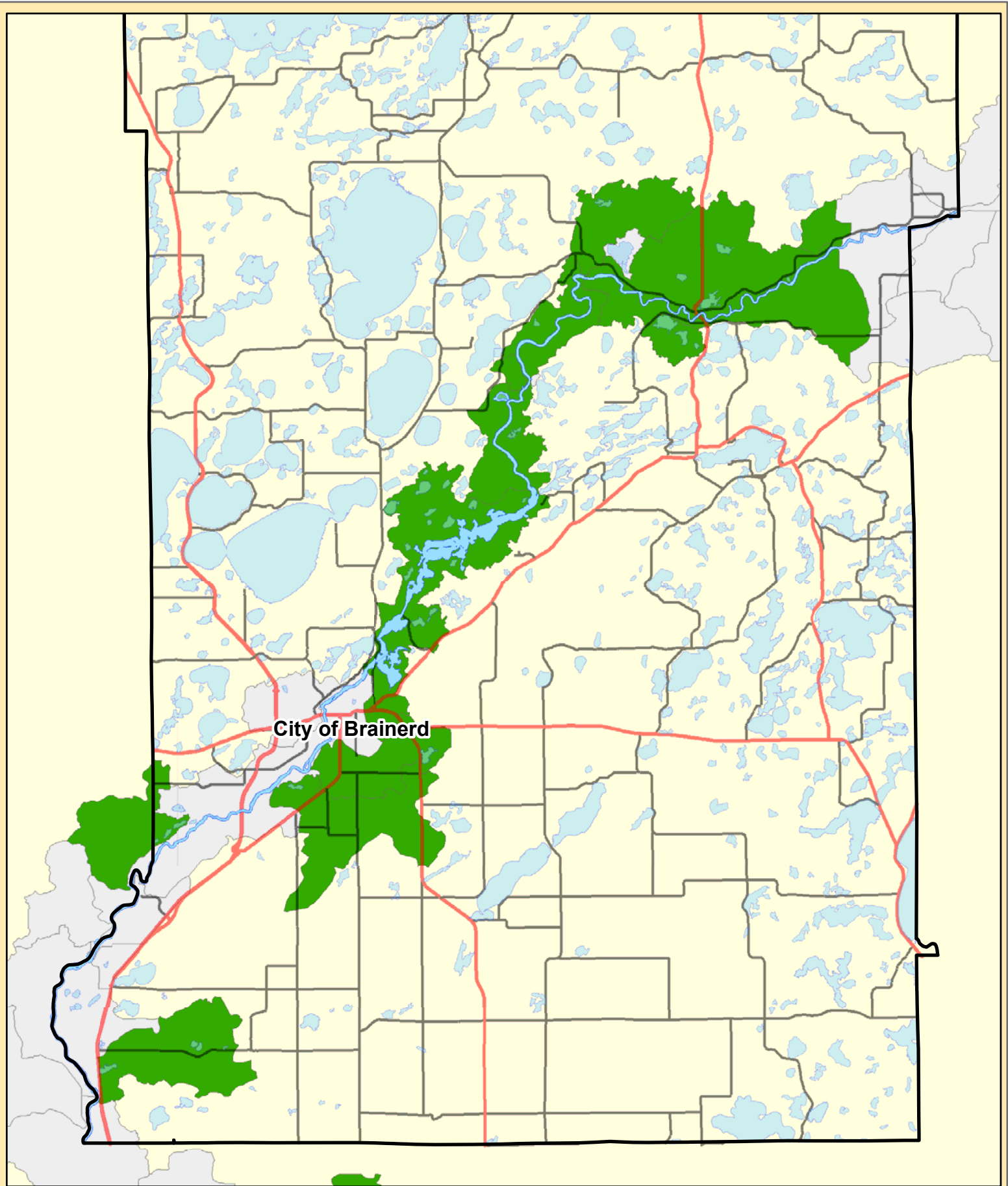


Figure 60: Implementation Priority = Private Forest Management



- Catchments with > 25% Private Forest Lands
- Lakes
- US Highways
- Other catchments
- Mississippi River
- State Highways
- County Roads

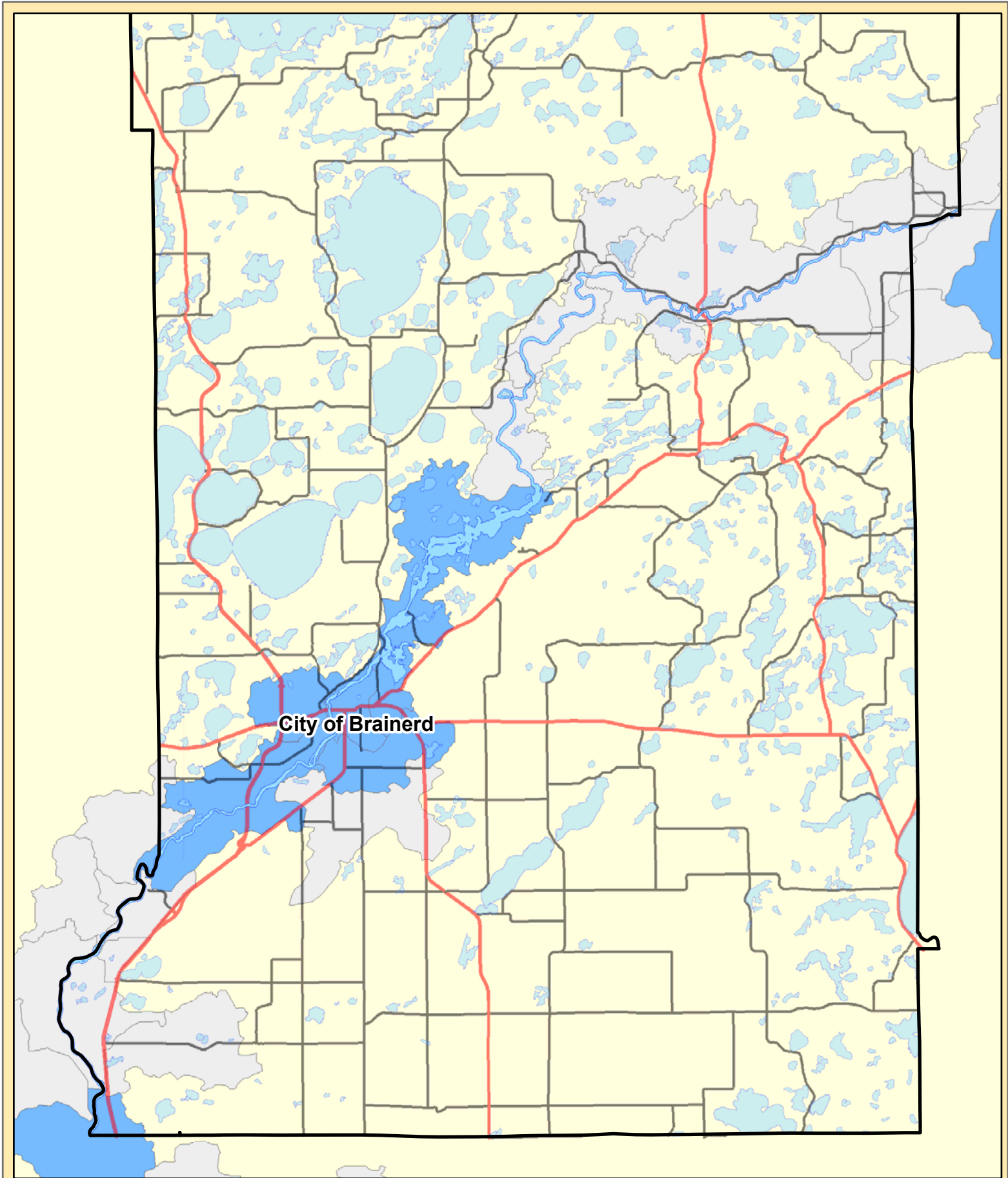


Figure 61: Implementation Priority = Drinking Water Protection



- Wellhead and Source Water Protection Areas
- Lakes
- Mississippi River
- Other catchments
- US Highways
- State Highways
- County Roads

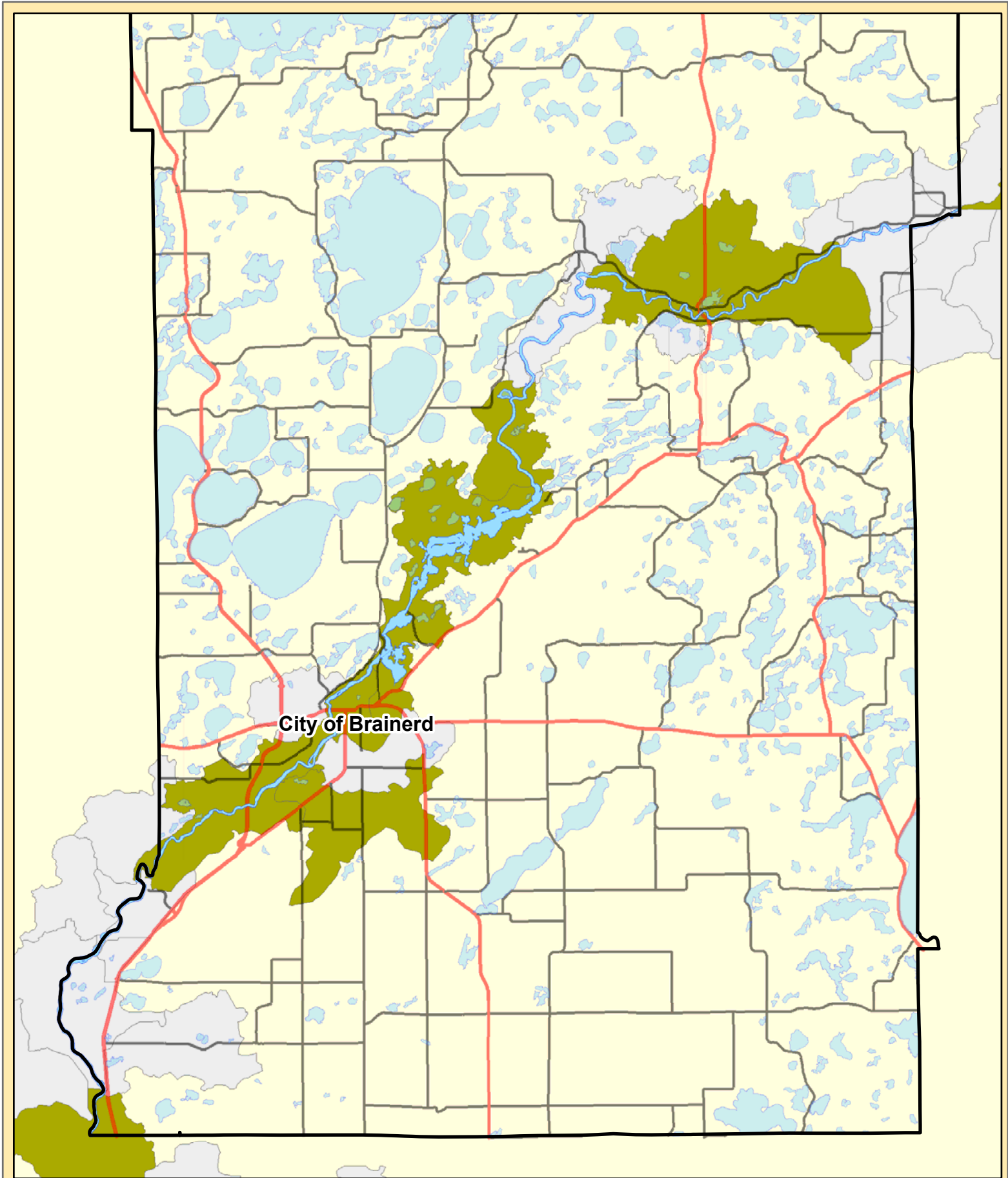


Figure 62: Implementation Priority = Wild Rice



- Catchments with Wild Rice
- Lakes
- US Highways
- Other Catchments
- Mississippi River
- State Highways
- County Roads

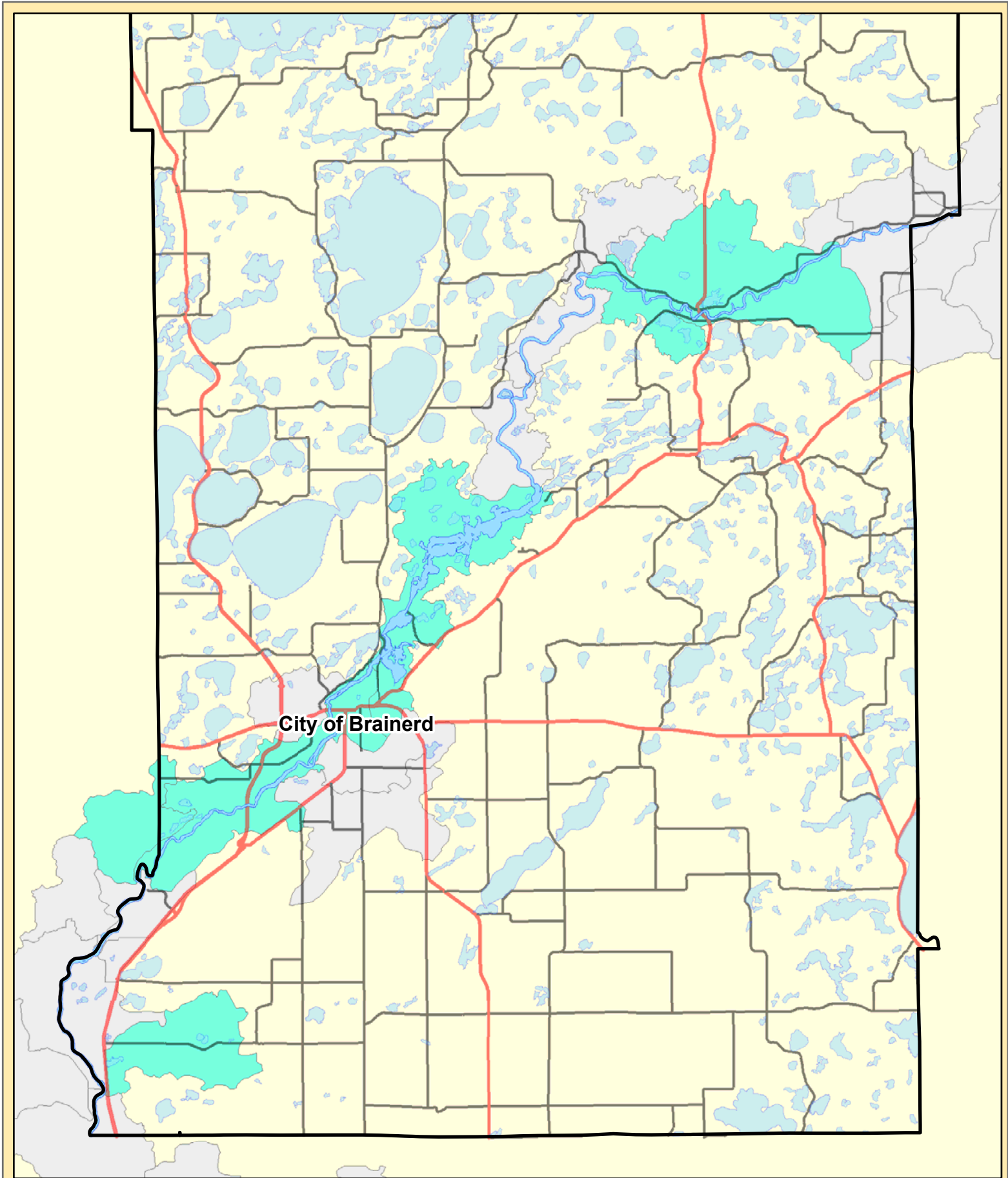









Figure 63: Implementation Priority = Shallow Lakes



- | | | | | | |
|---|-------------------------|---|-------------------|---|----------------|
|  | Shallow, Wildlife Lakes |  | Lakes |  | US Highways |
|  | Other catchments |  | Mississippi River |  | State Highways |
| | | | |  | County Roads |

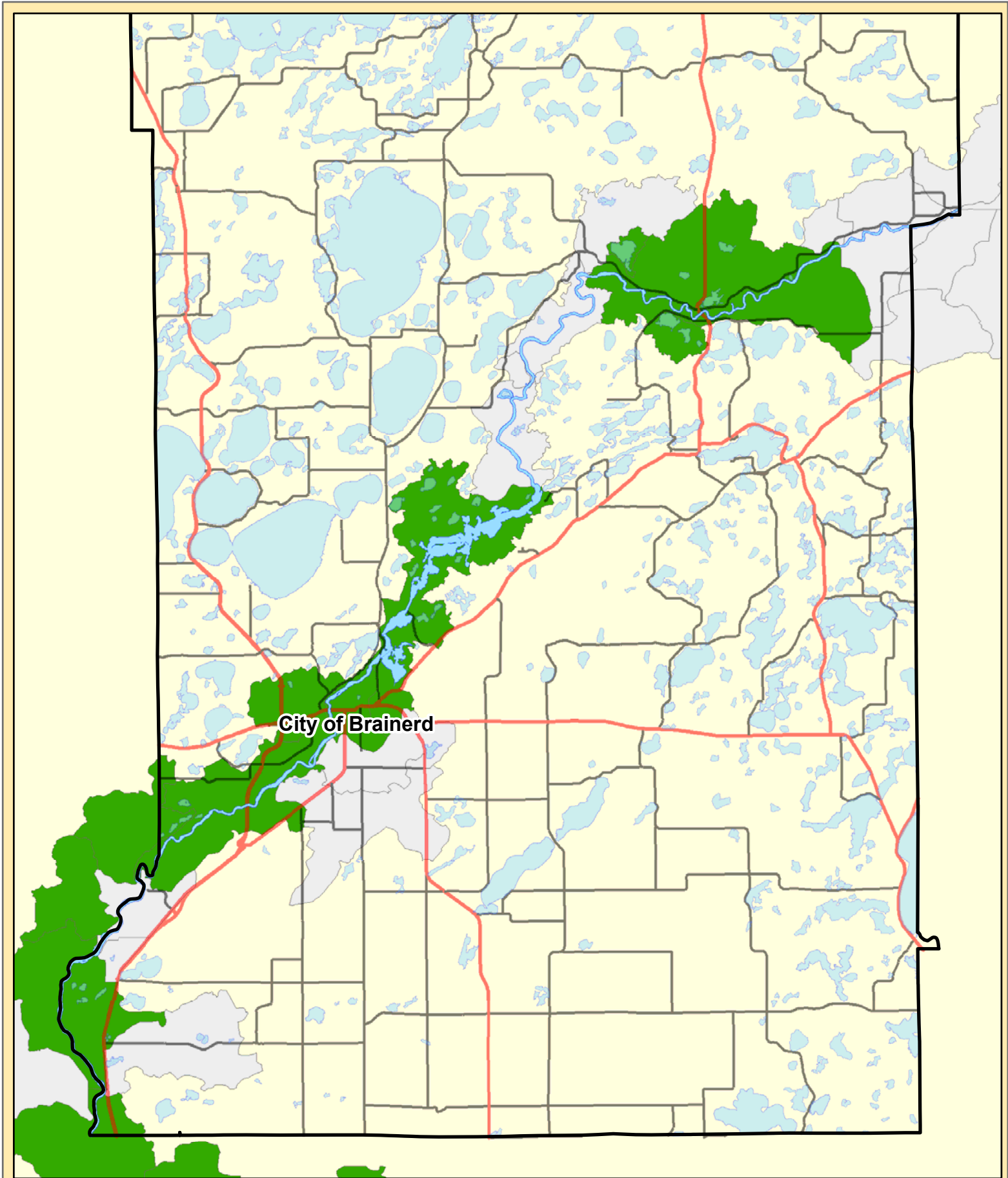


Figure 64: Implementation Priority = Unique & Native Plant Communities



- Unique Plant Species
- Lakes
- US Highways
- Other catchments
- Mississippi River
- State Highways
- County Roads

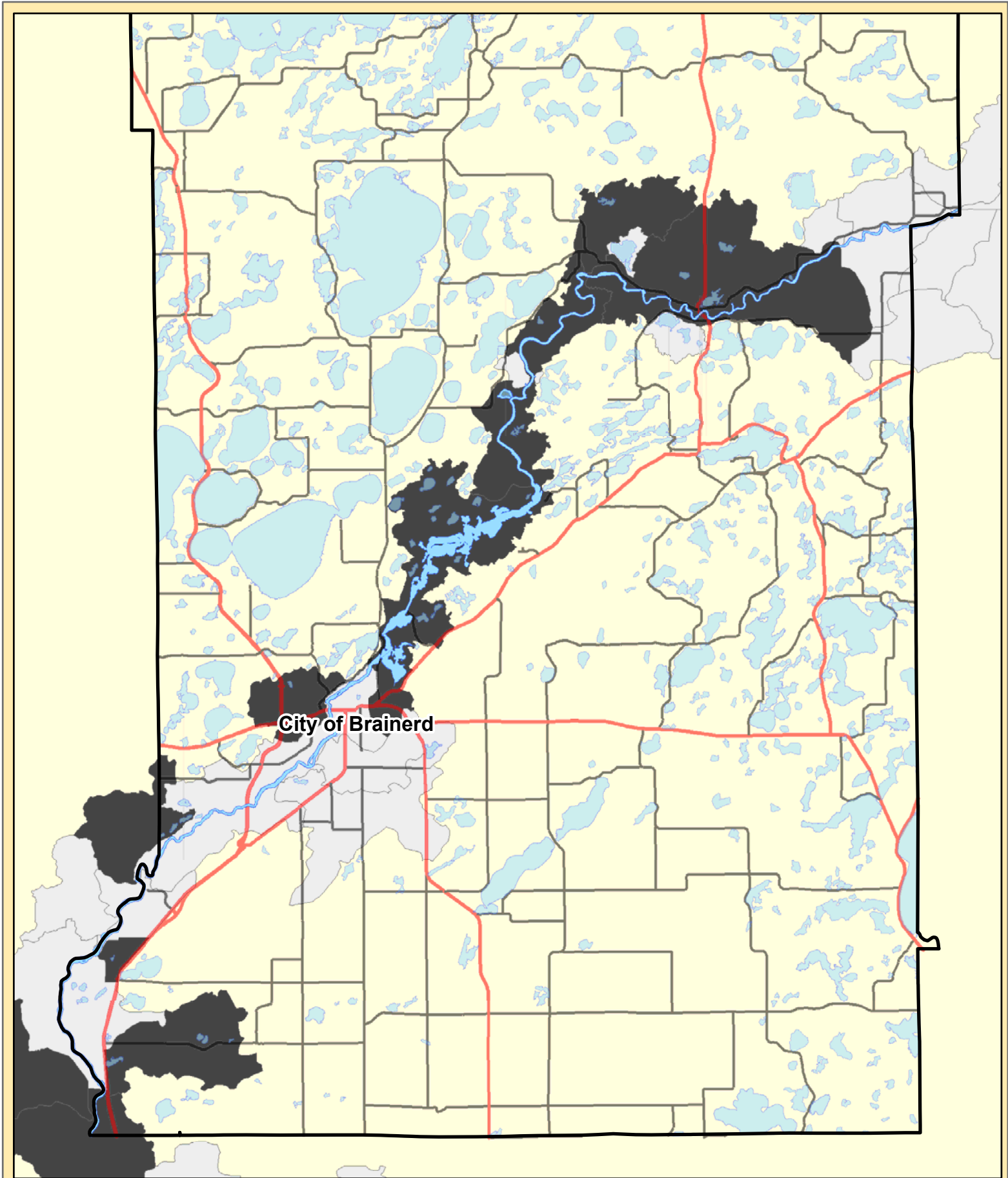


Figure 65: Implementation Priority = Bald Eagle Areas

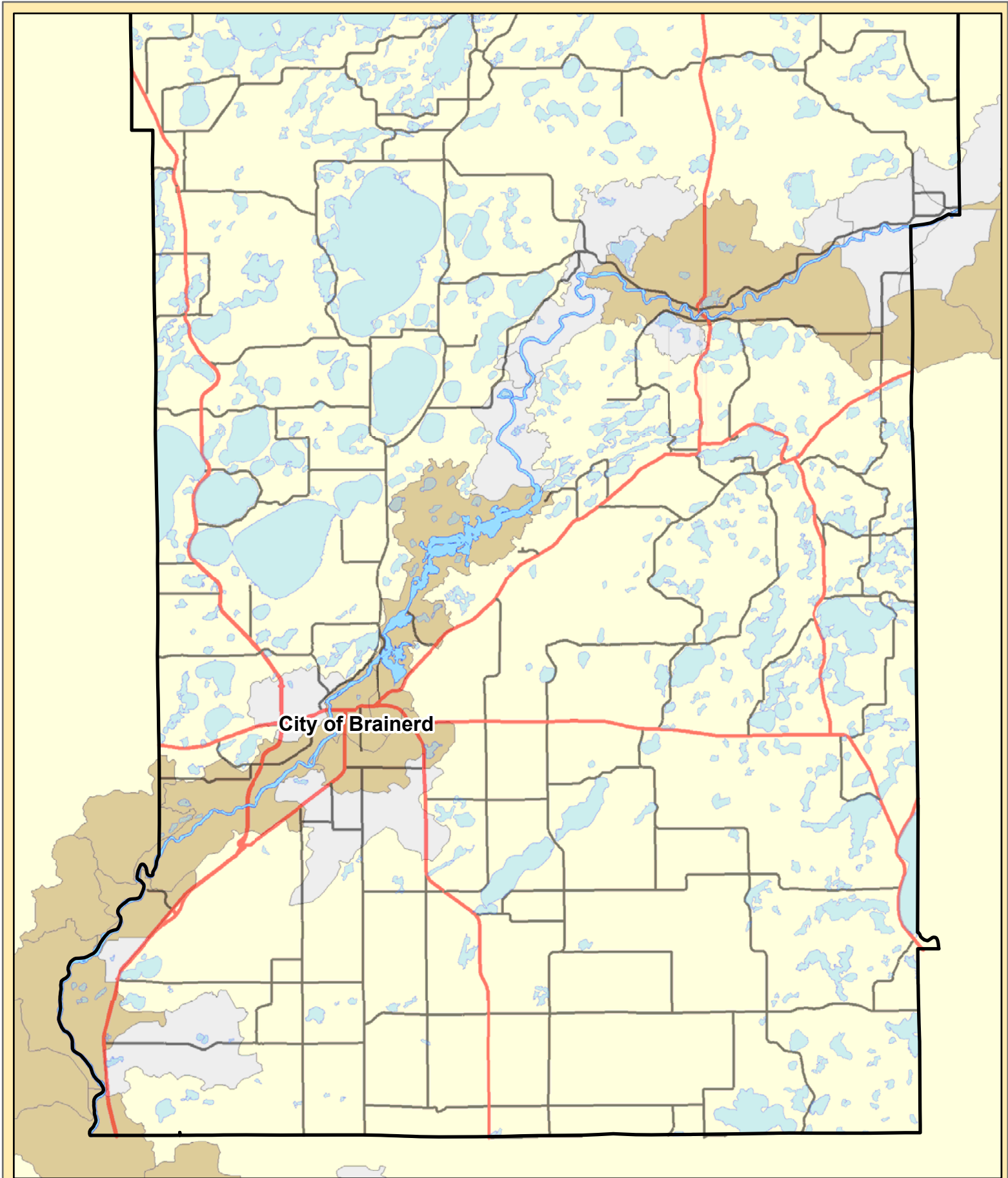


Figure 66: Implementation Priority = Bird Habitat

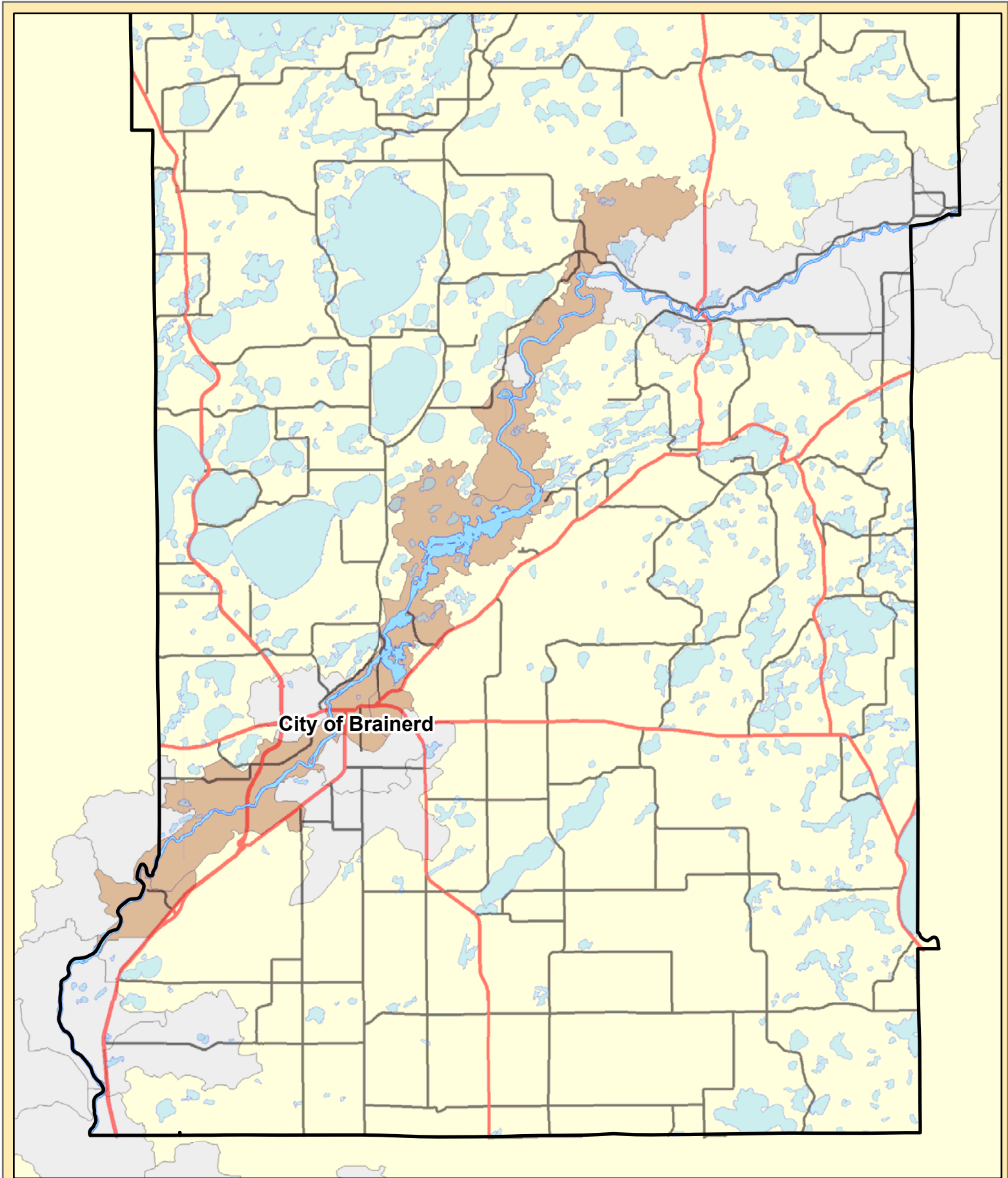









Figure 67: Implementation Priority = Mussel Habitat



- | | | |
|--|---|--|
|  Unique and Native Mussel Areas |  Lakes |  US Highways |
|  Other catchments |  Mississippi River |  State Highways |
| | |  County Roads |

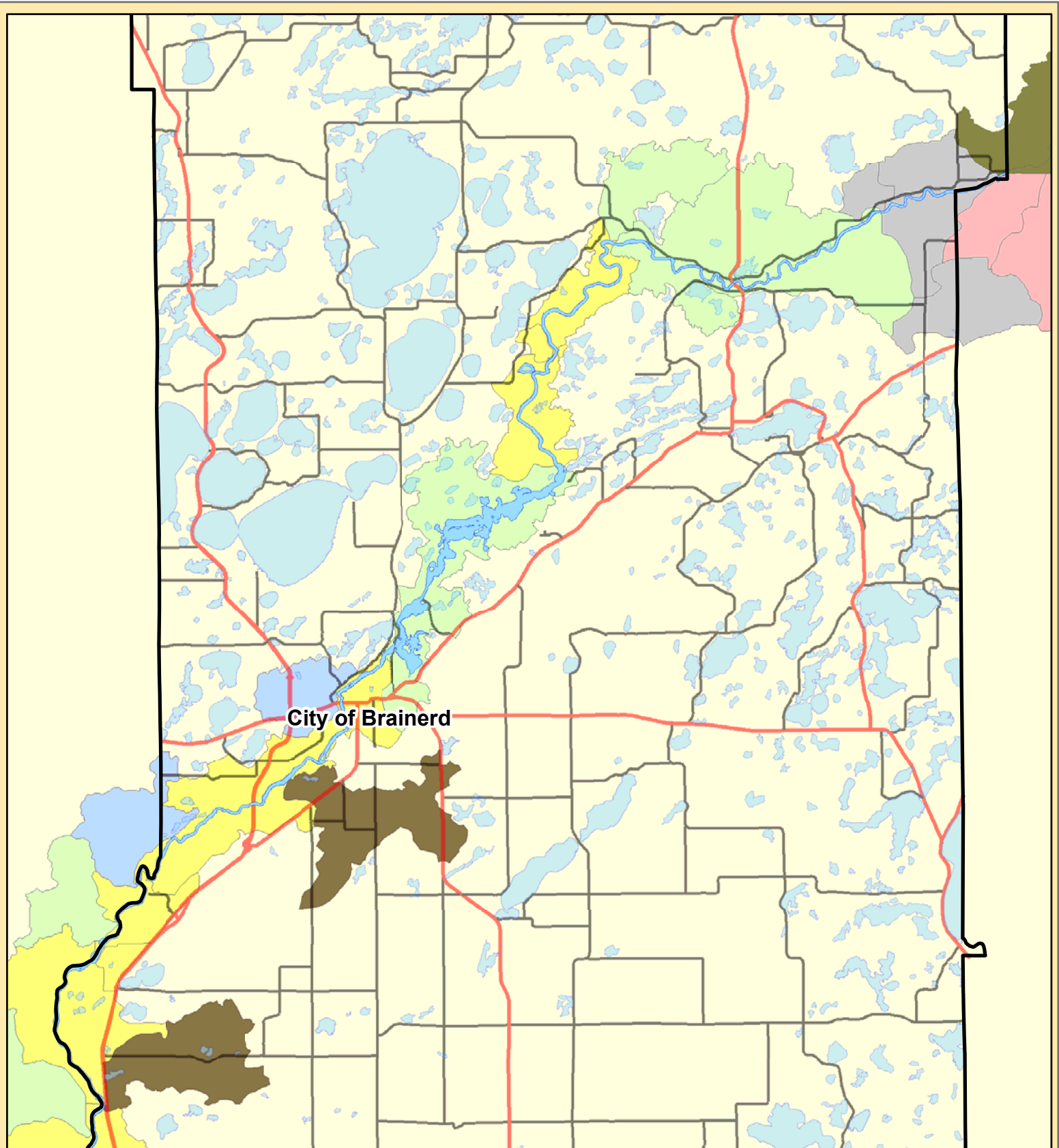
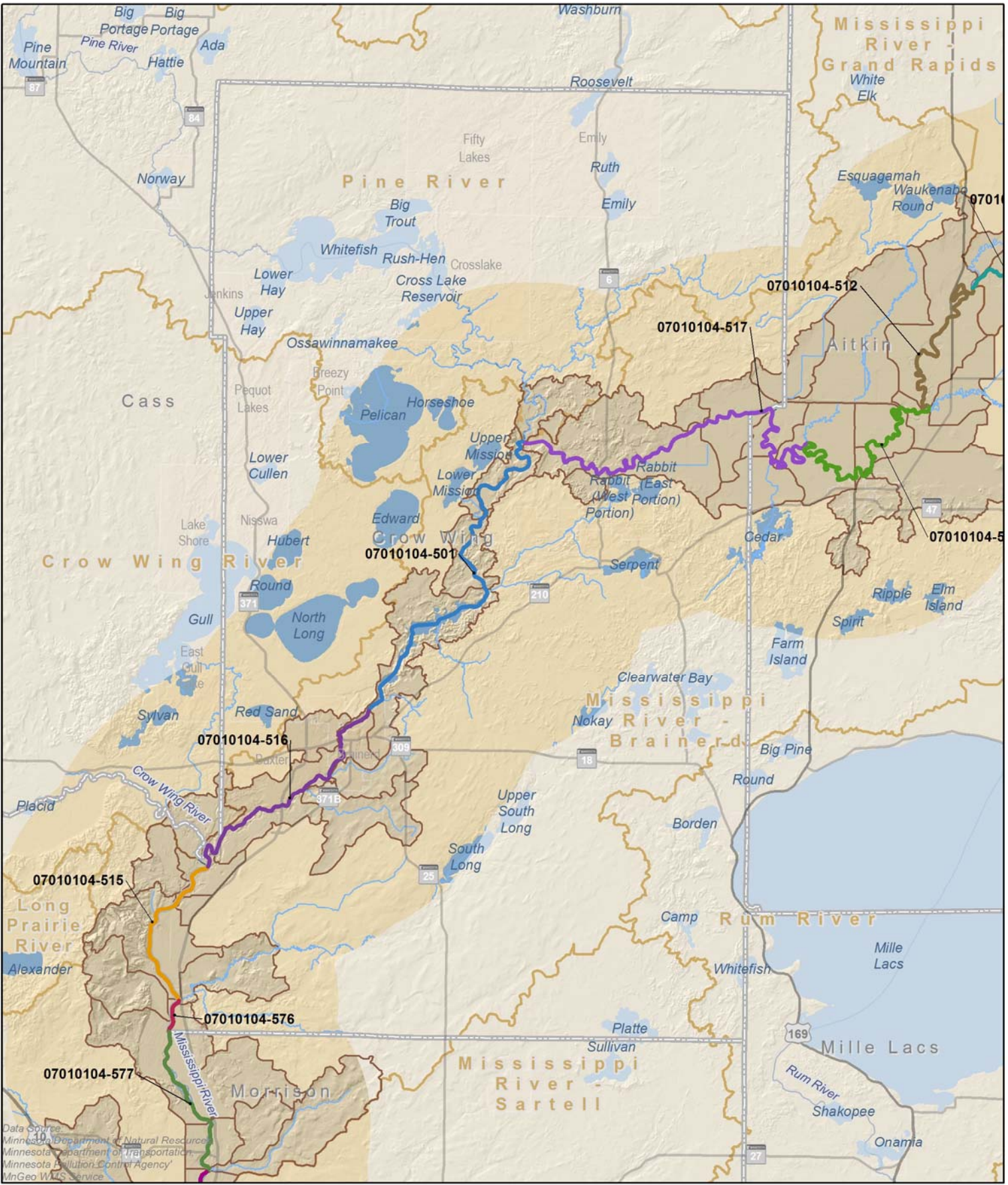


Figure 68: Surficial Geology



Date: 5/14/2013 Time: 3:32:20 PM Author: ejensen
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Data Source:
 Minnesota Department of Natural Resources
 Minnesota Department of Transportation
 Minnesota Pollution Control Agency
 MGeo WQIS Service

Legend

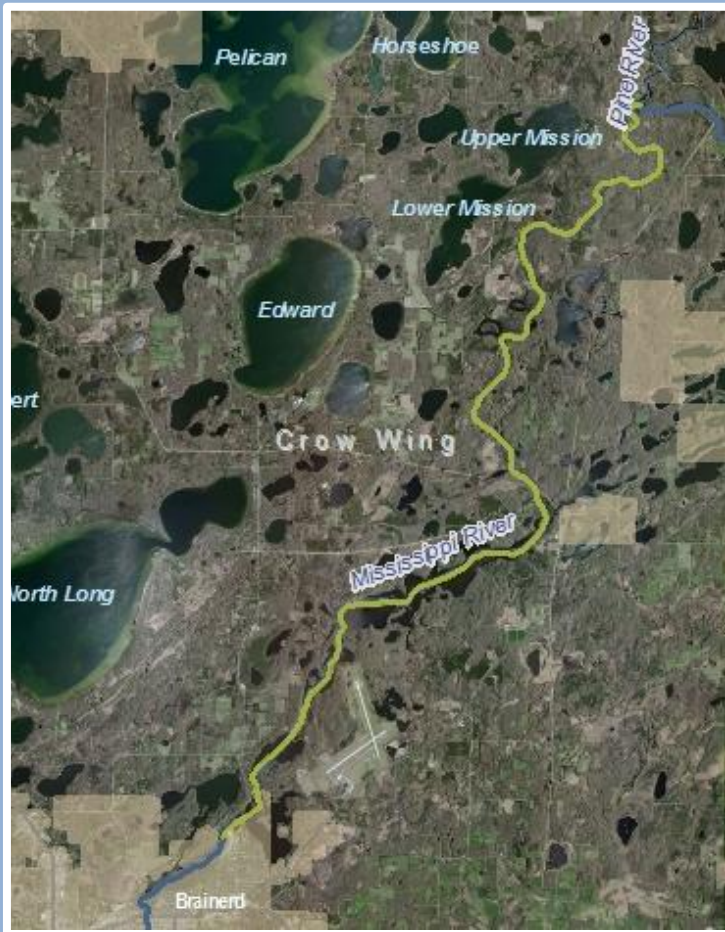
- DNR HUC 12 Watershed
- Major Watershed



**Water Quality Analysis for
 Mississippi Headwaters Board**

Crow Wing County

Miles 0 3 6 9



- 20.32 miles
- Municipalities: None

WATER QUALITY

- 6 monitoring stations
- Data collected 2010-2012

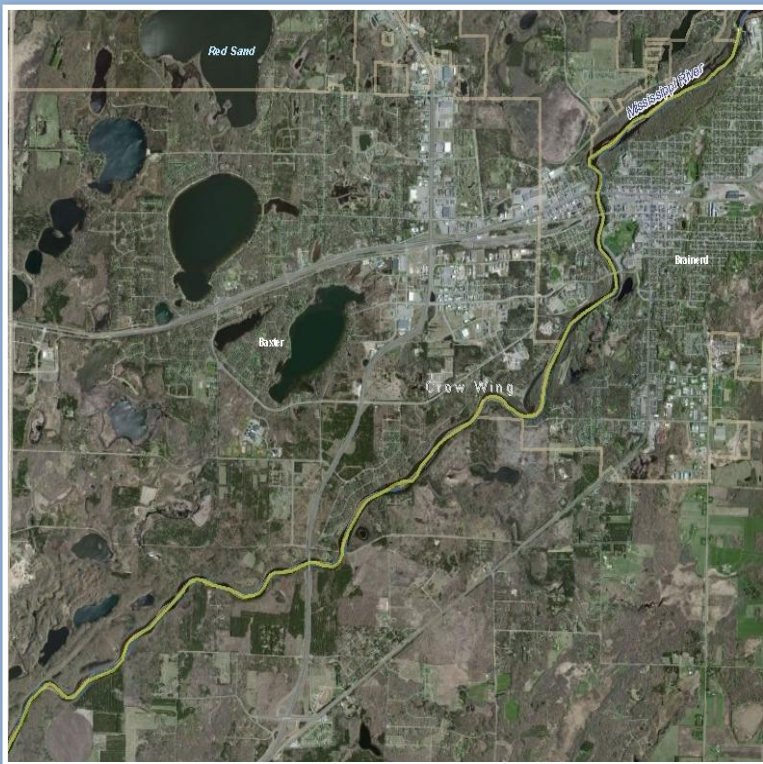
POLLUTANT	N	MEAN	SD	MIN	MAX
Ammonia (mg/L)	1	0.0005			
Chloride (mg/L)	2	3.75	0.22	3.59	3.90
Dissolved Oxygen (mg/L)	33	7.70	1.11	4.80	9.66
Inorganic Nitrogen (mg/L)	14	0.36	0.11	0.05	0.40
Phosphorus (mg/L)	13	0.05	0.02	0.03	0.08
Sulfate (mg/L)	2	3.34	0.29	3.13	3.54

BIOLOGY

- Fish survey completed in 2007 by MN DNR Fisheries Brainerd Office
- 564 individuals caught at 3 sites
- 24 species
- Fish IBI Score varies between 54 and 68

PERMITTED SOURCES

- None



- 13.49 miles
- Municipalities: City of Brainerd

WATER QUALITY

- 6 monitoring stations
- Data collected 2010-2012

POLLUTANT	N	MEAN	SD	MIN	MAX
Ammonia (ug/L)	14	2.48	1.4	0.92	5.06
DO (mg/L)	19	8.07	1.74	3.53	11.03
Inorganic N (mg/L)	31	0.05	0.01	0.05	0.09
Phosphorus (mg/L)	31	0.05	0.01	0.03	0.08
TSS (mg/L)	31	10.67	7.06	1.60	30.00

BIOLOGY

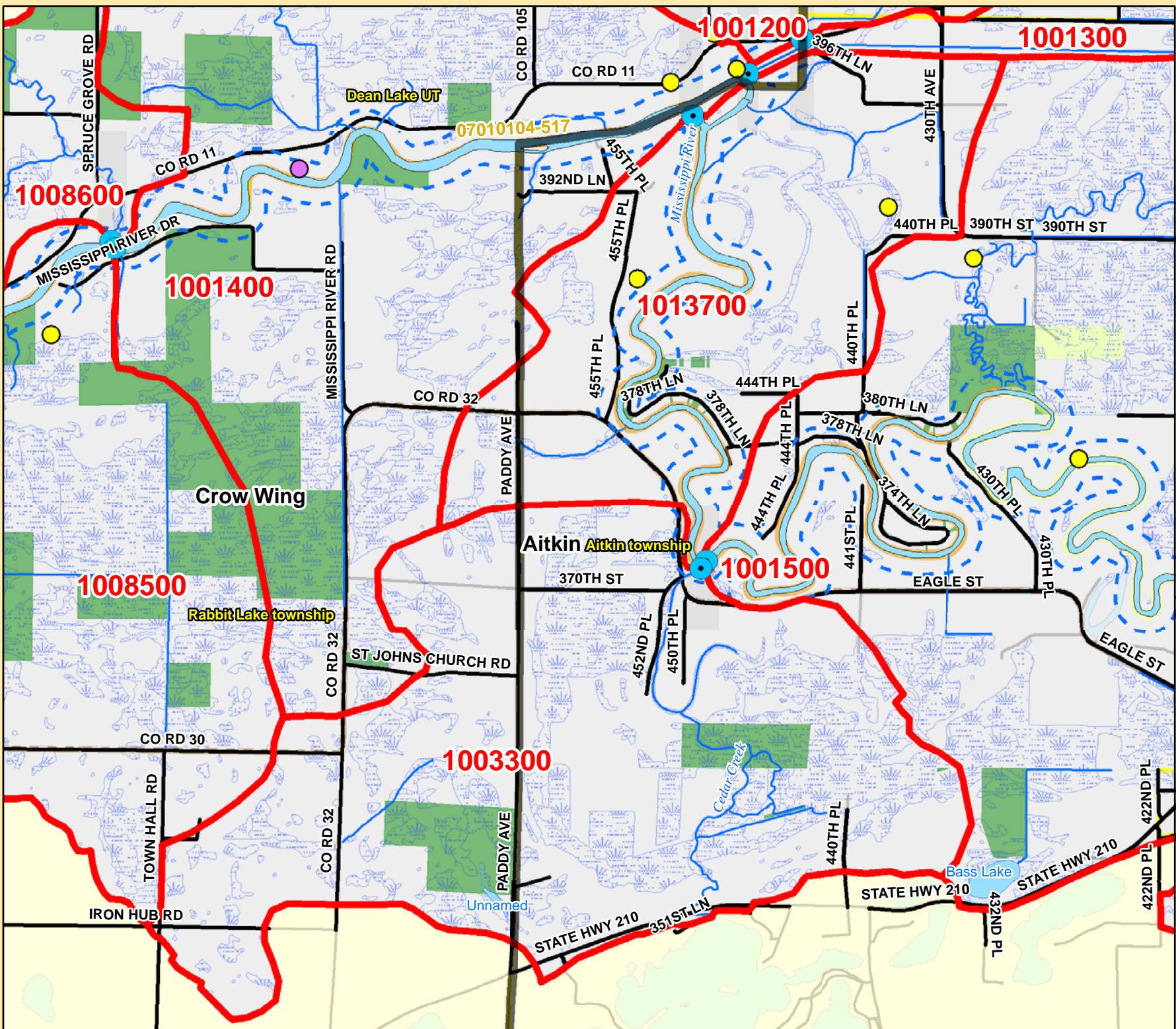
- Fish survey completed in 2007 by MN DNR Fisheries Brainerd Office
- 893 individuals caught at 6 sites
- 30 species
- Fish IBI Score varies between 57 and 76; lowest near Brainerd Dam

PERMITTED SOURCES

- 3 sources with NPDES permits

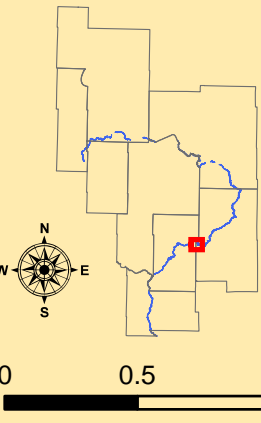
NAME	PERMIT NO.	CITY
BNSF RR - Former Tie Treating Plant	MN0055387	Baxter
Wausau Paper Mills LLC	MN0001422	Brainerd
Wausau Paper Mills LLC - ISW	MNR0534ZH	Brainerd

Mississippi R. Catchment Map: Aitkin / CWC Bndy



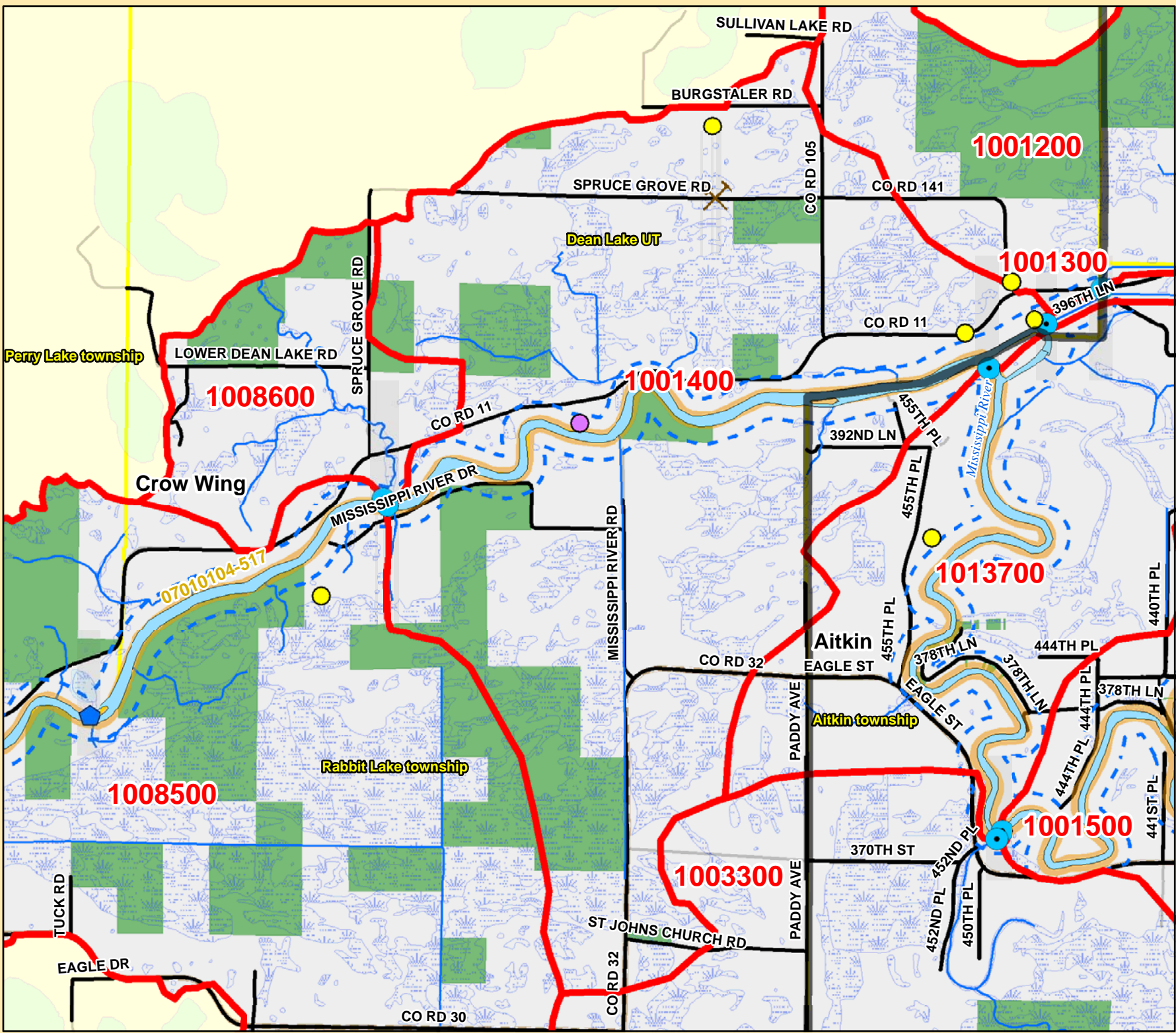
Catchment #	1003300
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	8
Population 2010 (persons per sq. mile)	12
Population Change 2000 to 2010 (persons per sq. mile)	-1
Surficial Geology	Undifferentiated
Topography	Level
% Slope (avg.)	2
% Forested (private)	11
% Disturbed Land Cover	42
% Developed	5
# of Animal Units	0
% Public Land	7
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	34
% Protected	40
Risk Classification	Protection
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	

Catchment #	1013700
River Stretch(es) (AUIDs)	07010104-517
Area (sq. miles)	5
Population 2010 (persons per sq. mile)	11
Population Change 2000 to 2010 (persons per sq. mile)	0
Surficial Geology	Alluvium
Topography	Level
% Slope (avg.)	2
% Forested (private)	19
% Disturbed Land Cover	48
% Developed	4
# of Animal Units	165
% Public Land	1
% Easements	0
% Lakes	0
% Mississippi River	4
% Wetlands (private)	10
% Protected	15
Risk Classification	Enhance
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	



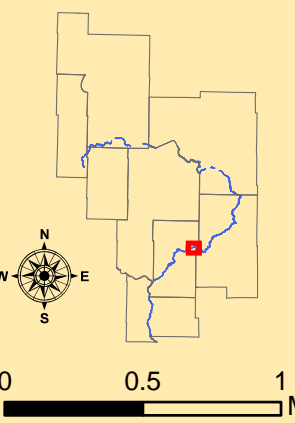
- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucet Snail (Miss R.)
- Mississippi River
- Trout Streams
- Streams
- River Stretches (AUIDs) w/ Water Quality Data
- River Stretches (AUIDs) w/out Water Quality Data
- Outlet - Major Watershed
- Outlet - Catchment
- Catchments (DNR Level 8)
- Major Watersheds
- Conservation Easements
- Public Lands
- Cities / Townships
- County Boundaries
- Roads
- Proposed Mississippi River Trail (MRT) Route
- Taconite State Trail
- Paul Bunyan State Trail
- Heartland State Trail
- State Park Boundaries
- State Recreation Area Boundaries
- Scientific and Natural Areas
- Wildlife Management Areas
- Mississippi Headwaters Board (MHB) - Corridor

Mississippi R. Catchment Map: Spruce Grove Rd



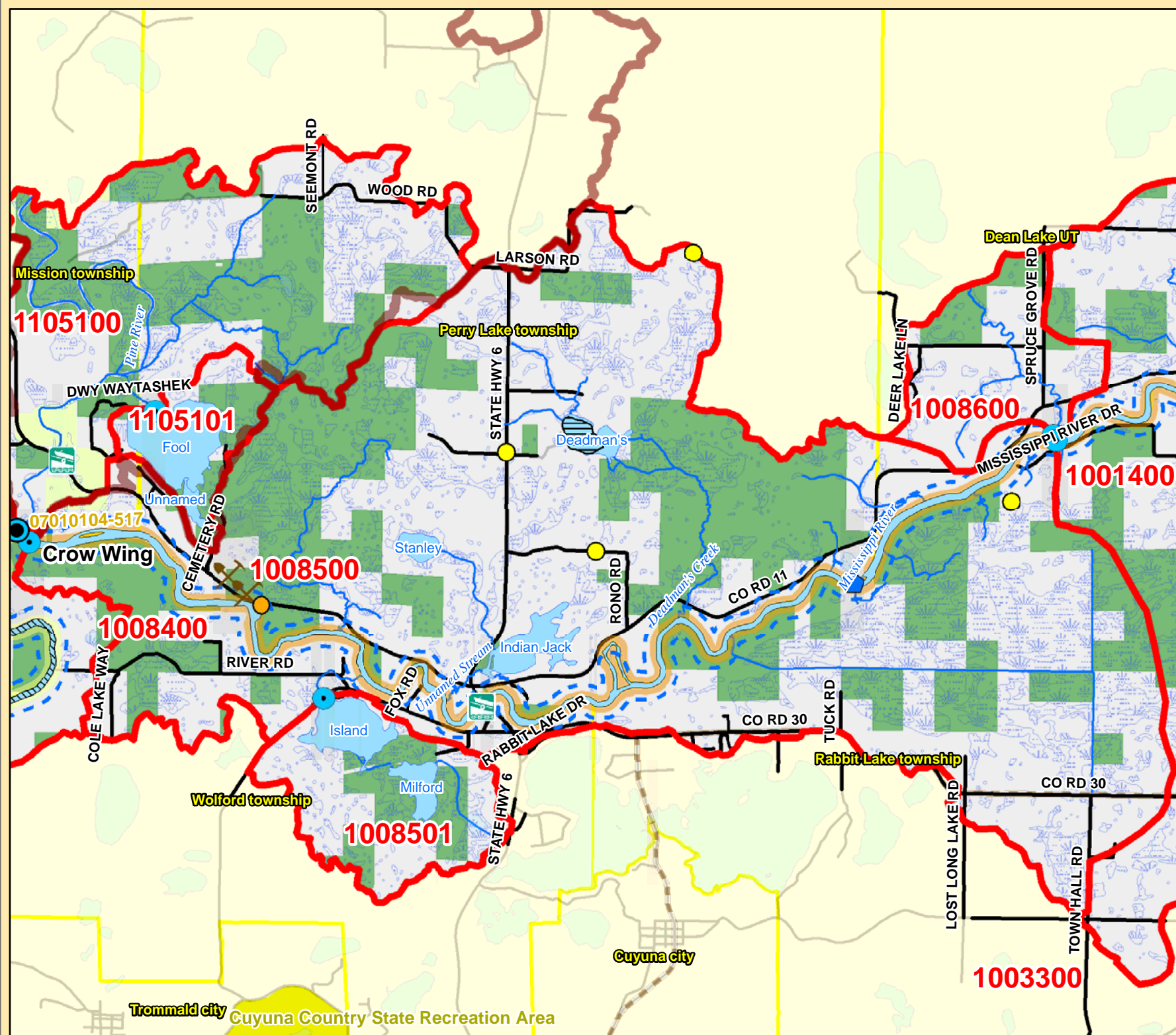
Catchment #	1001400
River Stretch(es) (AUIDs)	07010104-517
Area (sq. miles)	10
Population 2010 (persons per sq. mile)	8
Population Change 2000 to 2010 (persons per sq. mile)	0
Surficial Geology	Undifferentiated
Topography	Level
% Slope (avg.)	3
% Forested (private)	23
% Disturbed Land Cover	21
% Developed	3
# of Animal Units	631
% Public Land	16
% Easements	0
% Lakes	0
% Mississippi River	2
% Wetlands (private)	24
% Protected	43
Risk Classification	Protection
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	

Catchment #	1008600
River Stretch(es) (AUIDs)	07010104-517
Area (sq. miles)	2
Population 2010 (persons per sq. mile)	6
Population Change 2000 to 2010 (persons per sq. mile)	2
Surficial Geology	Undifferentiated
Topography	Level
% Slope (avg.)	3
% Forested (private)	27
% Disturbed Land Cover	29
% Developed	4
# of Animal Units	0
% Public Land	39
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	16
% Protected	55
Risk Classification	Protection
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	



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- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
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Mississippi R. Catchment Map: Highway 6 / County Rd 11

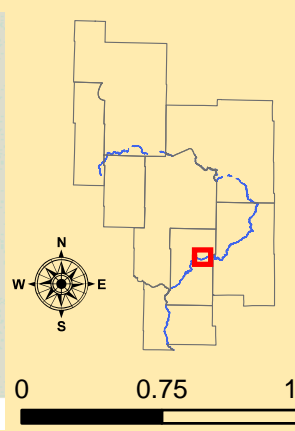


Catchment #	1008500
River Stretch(es) (AUIDs)	07010104-517
Area (sq. miles)	25
Population 2010 (persons per sq. mile)	13
Population Change 2000 to 2010 (persons per sq. mile)	1
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	8
% Forested (private)	28
% Disturbed Land Cover	14
% Developed	3
# of Animal Units	880
% Public Land	41
% Easements	0
% Lakes	1
% Mississippi River	2
% Wetlands (private)	18
% Protected	63
Risk Classification	Protection

Catchment #	1008501
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	2
Population 2010 (persons per sq. mile)	13
Population Change 2000 to 2010 (persons per sq. mile)	2
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	16
% Forested (private)	43
% Disturbed Land Cover	2
% Developed	2
# of Animal Units	0
% Public Land	100
% Easements	0
% Lakes	16
% Mississippi River	0
% Wetlands (private)	12
% Protected	100
Risk Classification	Vigilance

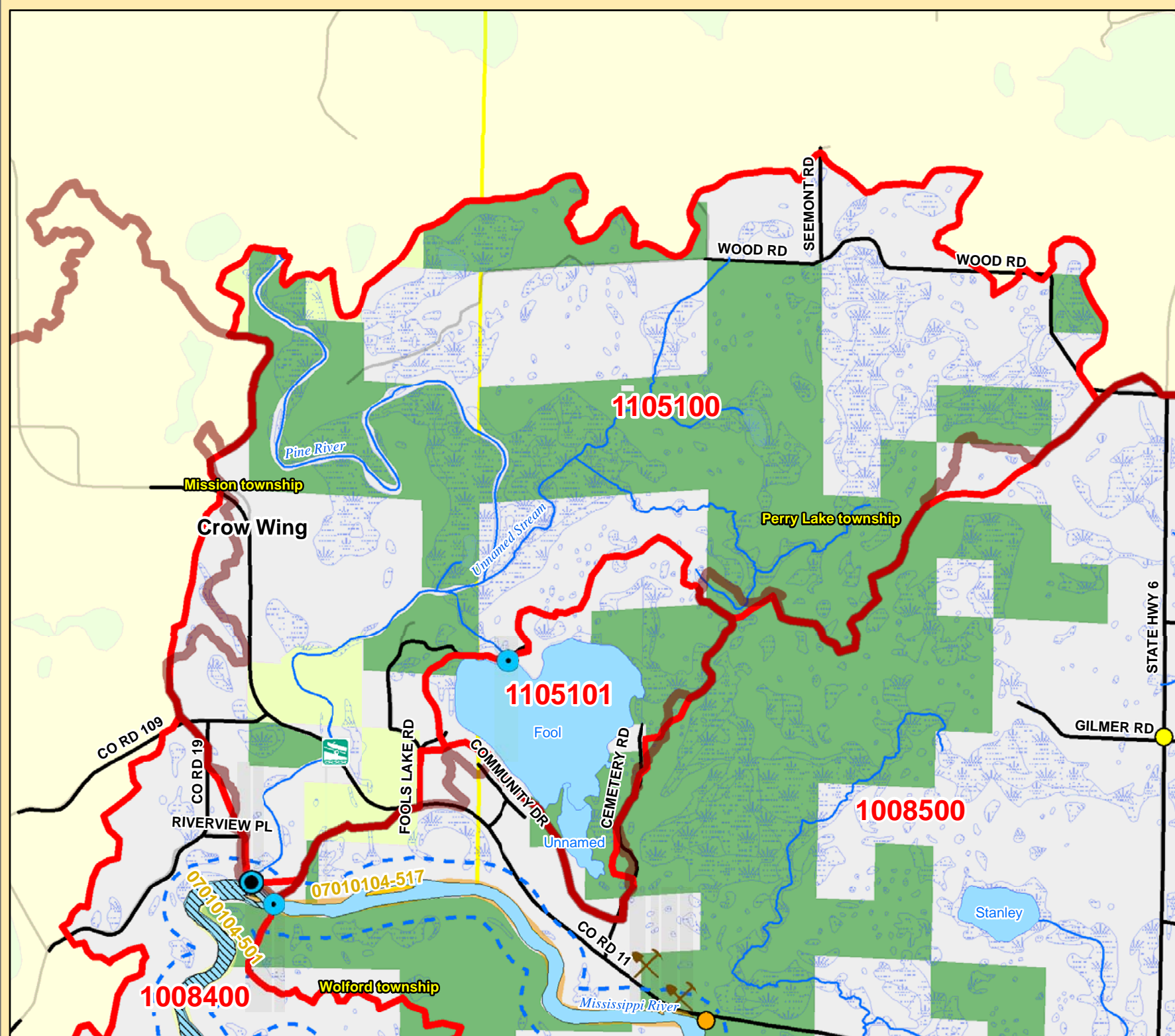
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	x
Lake Focus: Shallow /Wildlife	x
Private Forest Stewardship	x
Bluffs & Steep Slopes	
Bald Eagle Territory	x
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	

Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	x
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	x
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	x
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucel Snail (Miss R.)
- Mississippi River
- Trout Streams
- Streams
- River Stretches (AUIDs) w/ Water Quality Data
- River Stretches (AUIDs) w/out Water Quality Data
- Outlet - Major Watershed
- Outlet - Catchment
- Catchments (DNR Level 8)
- Major Watersheds
- Conservation Easements
- Public Lands
- Cities / Townships
- County Boundaries
- Roads
- Proposed Mississippi River Trail (MRT) Route
- Taconite State Trail
- Paul Bunyan State Trail
- Heartland State Trail
- State Park Boundaries
- State Recreation Area Boundaries
- Scientific and Natural Areas
- Wildlife Management Areas
- Mississippi Headwaters Board (MHB) - Corridor

Mississippi R. Catchment Map: Pine River / Fool Lake



Catchment #	1105100
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	7
Population 2010 (persons per sq. mile)	8
Population Change 2000 to 2010 (persons per sq. mile)	0
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	12
% Forested (private)	33
% Disturbed Land Cover	6
% Developed	1
# of Animal Units	0
% Public Land	41
% Easements	6
% Lakes	0
% Mississippi River	0
% Wetlands (private)	15
% Protected	61

Risk Classification: Vigilance

Implementation Priorities

Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	x

Ground Water	
Wellhead Protection	

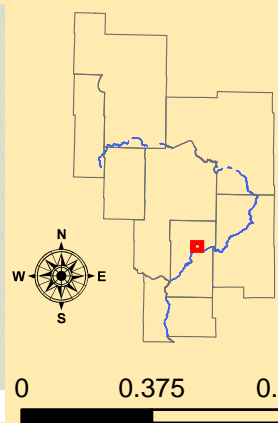
Catchment #	1105101
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	1
Population 2010 (persons per sq. mile)	6
Population Change 2000 to 2010 (persons per sq. mile)	1
Surficial Geology	
Topography	
% Slope (avg.)	6
% Forested (private)	18
% Disturbed Land Cover	1
% Developed	0
# of Animal Units	0
% Public Land	35
% Easements	0
% Lakes	42
% Mississippi River	0
% Wetlands (private)	5
% Protected	83

Risk Classification: Vigilance

Implementation Priorities

Surface Water	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	x
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	x
Native Mussel Habitat	

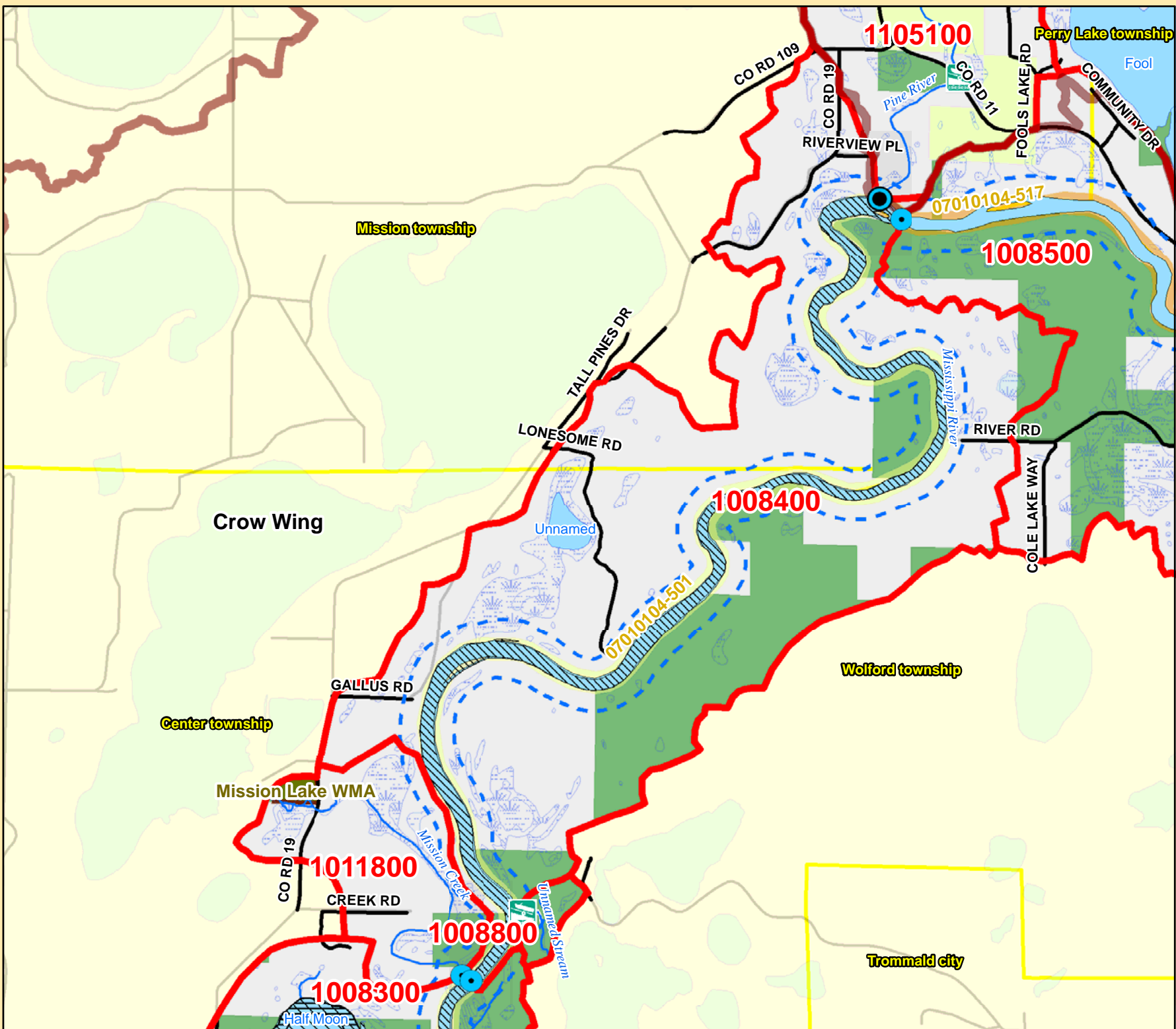
Ground Water	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucel Snail (Miss R.)
- Mississippi River
- Trout Streams
- Streams
- River Stretches (AUIDs) w/ Water Quality Data
- River Stretches (AUIDs) w/out Water Quality Data
- Outlet - Major Watershed
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- Wildlife Management Areas
- Mississippi Headwaters Board (MHB) - Corridor



Mississippi R. Catchment Map: South of Pine River Confluence

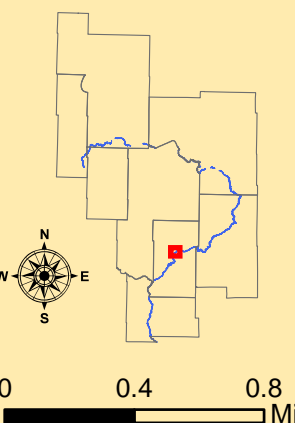


Catchment #	1008400
River Stretch(es) (AUIDs)	07010104-501
Area (sq. miles)	5
Population 2010 (persons per sq. mile)	11
Population Change 2000 to 2010 (persons per sq. mile)	-3
Surficial Geology	Outwash
Topography	Rolling to Undulating
% Slope (avg.)	13
% Forested (private)	52
% Disturbed Land Cover	4
% Developed	1
# of Animal Units	0
% Public Land	21
% Easements	0
% Lakes	1
% Mississippi River	8
% Wetlands (private)	8
% Protected	38
Risk Classification	Enhance/Protection

Catchment #	1011800
River Stretch(es) (AUIDs)	07010104-501
Area (sq. miles)	1
Population 2010 (persons per sq. mile)	23
Population Change 2000 to 2010 (persons per sq. mile)	8
Surficial Geology	Outwash
Topography	Steep
% Slope (avg.)	6
% Forested (private)	27
% Disturbed Land Cover	37
% Developed	2
# of Animal Units	0
% Public Land	12
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	19
% Protected	31
Risk Classification	Enhance / Protection

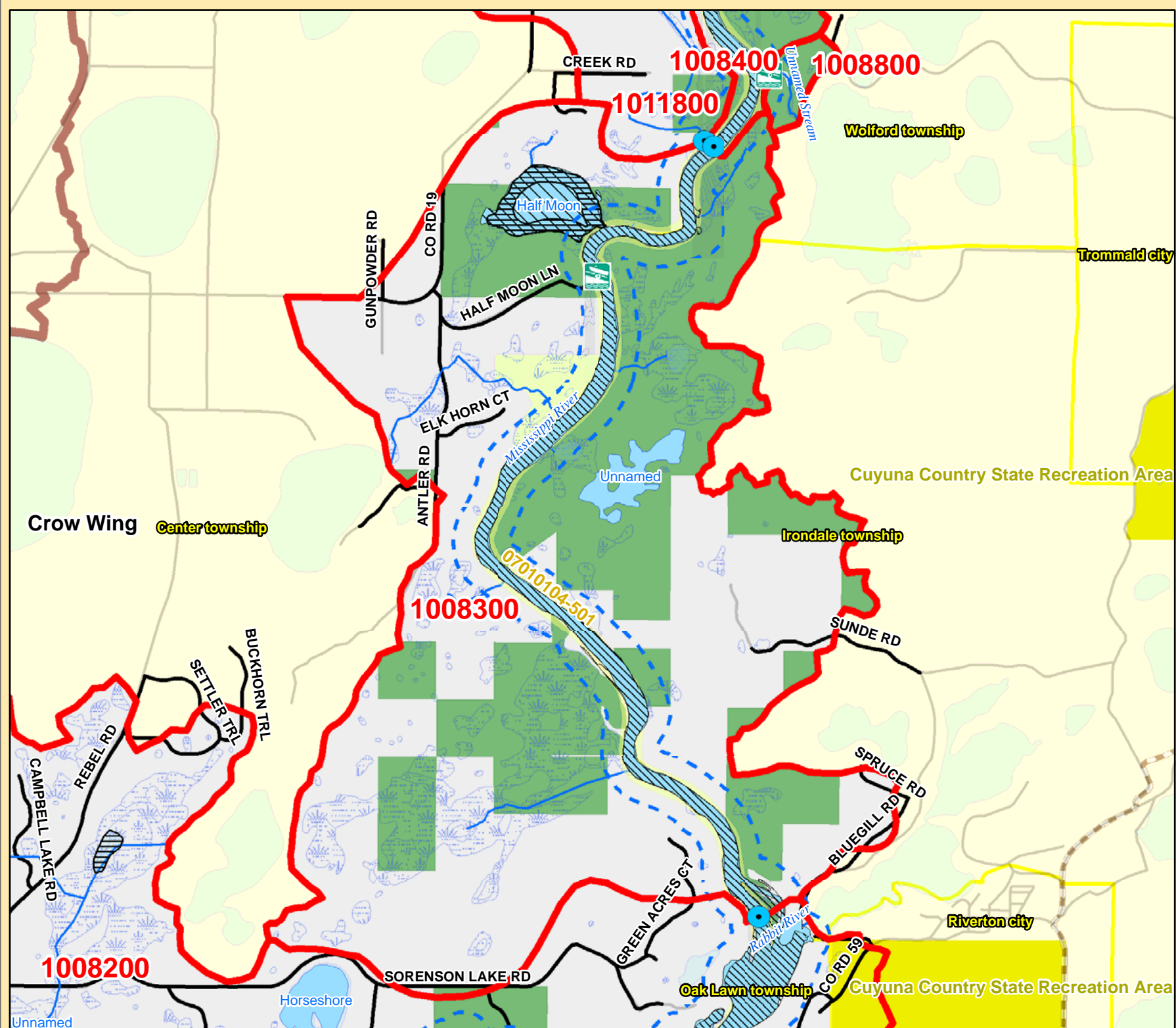
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	x
<i>Ground Water</i>	
Wellhead Protection	

Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucel Snail (Miss R.)
- Mississippi River
- Trout Streams
- Streams
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- River Stretches (AUIDs) w/out Water Quality Data
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- Outlet - Catchment
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- Wildlife Management Areas
- Mississippi Headwaters Board (MHB) - Corridor

Mississippi R. Catchment Map: Half Moon Lake / Landing

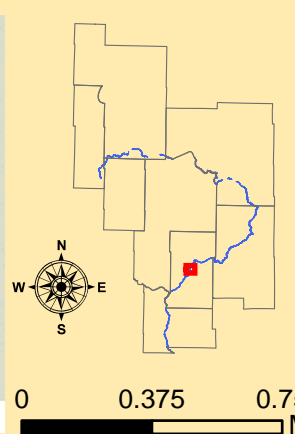


Catchment #	1008300
River Stretch(es) (AUIDs)	07010104-501
Area (sq. miles)	7
Population 2010 (persons per sq. mile)	11
Population Change 2000 to 2010 (persons per sq. mile)	2
Surficial Geology	Outwash
Topography	Steep
% Slope (avg.)	13
% Forested (private)	35
% Disturbed Land Cover	8
% Developed	1
# of Animal Units	0
% Public Land	55
% Easements	2
% Lakes	3
% Mississippi River	4
% Wetlands (private)	6
% Protected	70
Risk Classification	Enhance / Protection

Catchment #	1008800
River Stretch(es) (AUIDs)	07010104-501
Area (sq. miles)	0
Population 2010 (persons per sq. mile)	1
Population Change 2000 to 2010 (persons per sq. mile)	-3
Surficial Geology	Outwash
Topography	Rolling to Undulating
% Slope (avg.)	13
% Forested (private)	2
% Disturbed Land Cover	3
% Developed	0
# of Animal Units	0
% Public Land	96
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	0
% Protected	96
Risk Classification	Vigilance

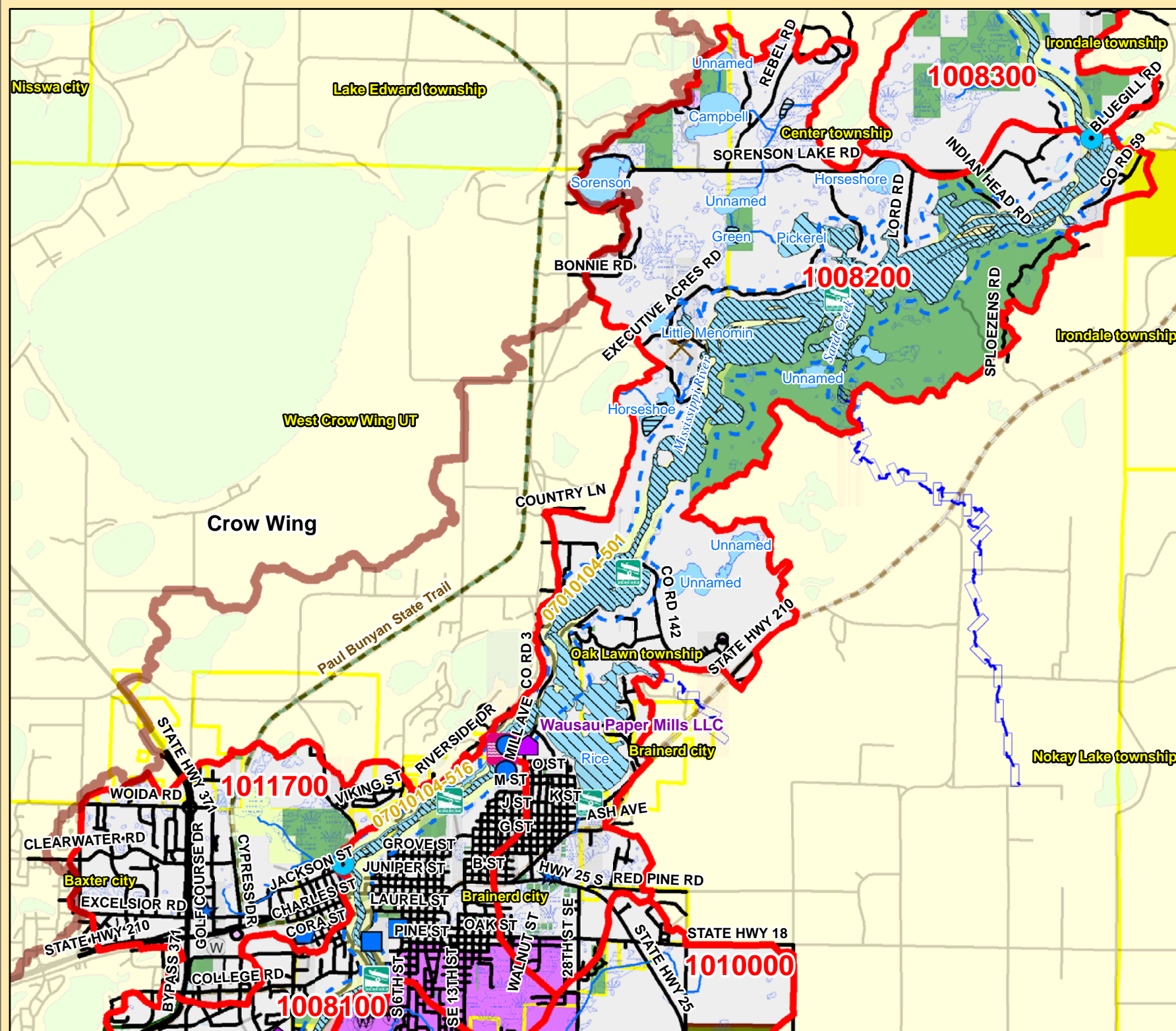
Implementation Priorities	
Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	x
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	x
Ground Water	
Wellhead Protection	

Implementation Priorities	
Surface Water	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	x
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
Ground Water	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucet Snail (Miss R.)
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- Scientific and Natural Areas
- Wildlife Management Areas
- Mississippi Headwaters Board (MHB) - Corridor
- Roads

Mississippi R. Catchment Map: Rice Lake / Whiskey Creek

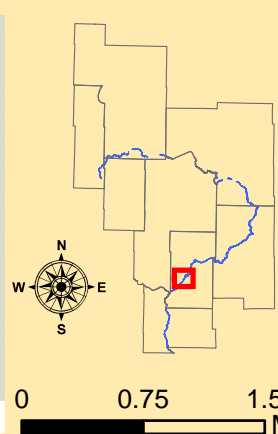


Catchment #	1008200
River Stretch(es) (AUIDs)	07010104-501
Area (sq. miles)	19
Population 2010 (persons per sq. mile)	177
Population Change 2000 to 2010 (persons per sq. mile)	-12
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	13
% Forested (private)	29
% Disturbed Land Cover	19
% Developed	11
# of Animal Units	0
% Public Land	23
% Easements	0
% Lakes	8
% Mississippi River	14
% Wetlands (private)	9
% Protected	54
Risk Classification	Protection

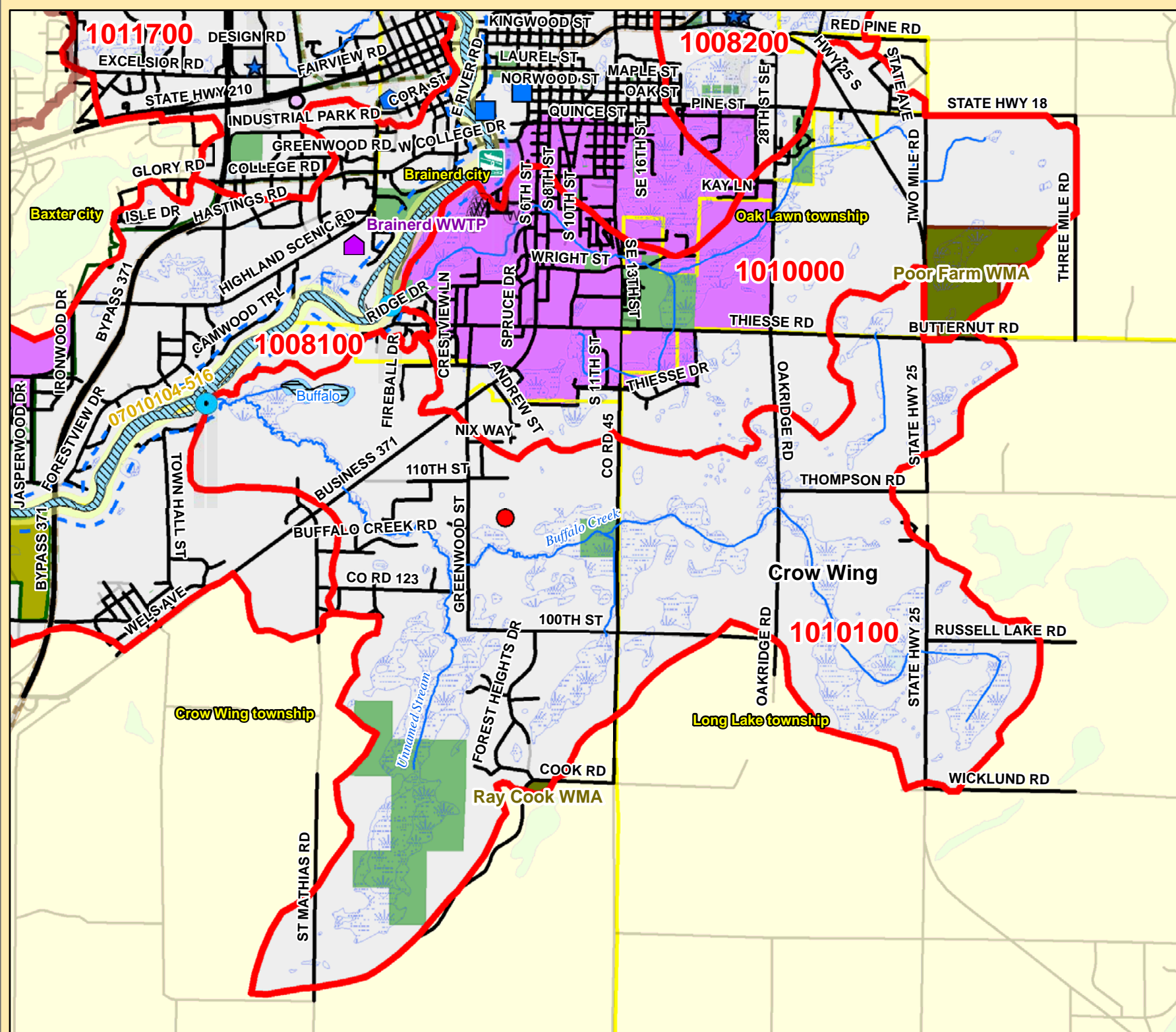
Catchment #	1011700
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	5
Population 2010 (persons per sq. mile)	512
Population Change 2000 to 2010 (persons per sq. mile)	208
Surficial Geology	Lacustrine
Topography	Level
% Slope (avg.)	6
% Forested (private)	14
% Disturbed Land Cover	62
% Developed	50
# of Animal Units	0
% Public Land	8
% Easements	5
% Lakes	0
% Mississippi River	0
% Wetlands (private)	6
% Protected	18
Risk Classification	Enhance

Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	x
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	x
Lake Focus: Wild Rice	x
Lake Focus: Shallow /Wildlife	x
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	x
<i>Ground Water</i>	
Wellhead Protection	x

Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	x
Critical Bird Habitat	
Rare Native Plants / Communities	x
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	x



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
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- River Stretches (AUIDs) w/out Water Quality Data
- Outlet - Major Watershed
- Outlet - Catchment
- Catchments (DNR Level 8)
- Major Watersheds
- Conservation Easements
- Public Lands
- Cities / Townships
- County Boundaries



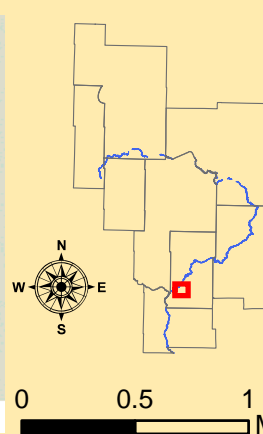
Mississippi R. Catchment Map: Brainerd SE

Catchment #	1010000
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	7
Population 2010 (persons per sq. mile)	384
Population Change 2000 to 2010 (persons per sq. mile)	9
Surficial Geology	Till Plain
Topography	Gently Rolling
% Slope (avg.)	6
% Forested (private)	26
% Disturbed Land Cover	53
% Developed	24
# of Animal Units	0
% Public Land	10
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	10
% Protected	21
Risk Classification	Enhance

Catchment #	1010100
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	12
Population 2010 (persons per sq. mile)	72
Population Change 2000 to 2010 (persons per sq. mile)	29
Surficial Geology	Till Plain
Topography	Gently Rolling
% Slope (avg.)	6
% Forested (private)	29
% Disturbed Land Cover	36
% Developed	3
# of Animal Units	40
% Public Land	6
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	18
% Protected	25
Risk Classification	Enhance

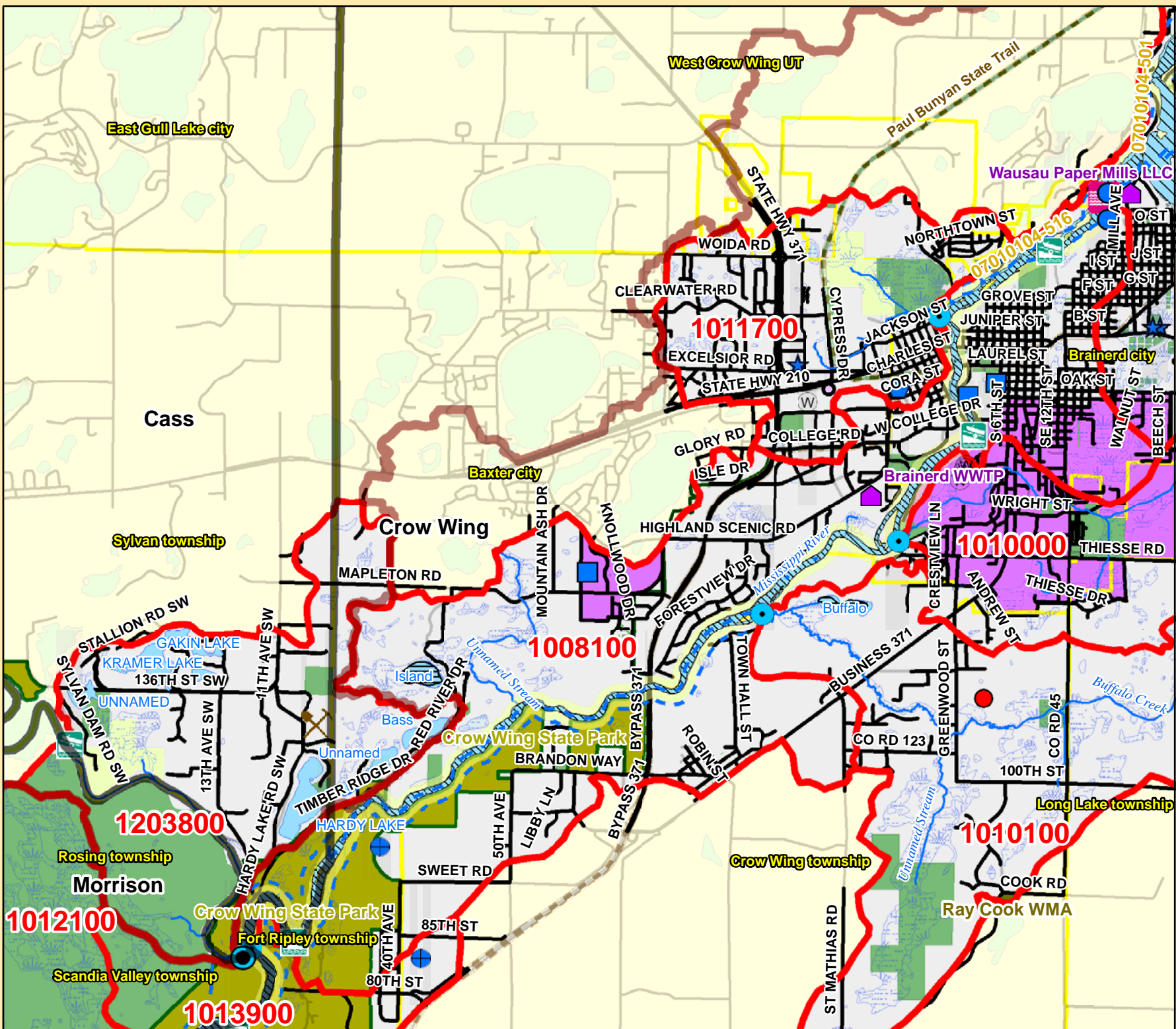
Implementation Priorities	
Surface Water	
Aquatic Invasive Species	
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	
Native Mussel Habitat	
Ground Water	
Wellhead Protection	x

Implementation Priorities	
Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	x
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	x
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
Ground Water	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
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- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
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- Zebra Mussels (Miss R.)
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- Catchments (DNR Level 8)
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Mississippi R. Catchment Map: Brainerd & Baxter

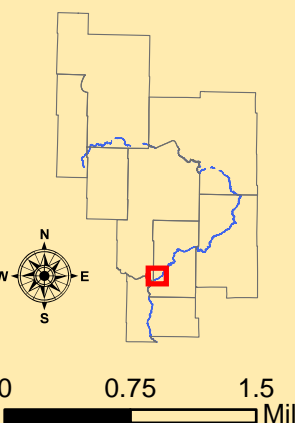


Catchment #	1008100
River Stretch(es) (AUIDs)	07010104-516
Area (sq. miles)	17
Population 2010 (persons per sq. mile)	572
Population Change 2000 to 2010 (persons per sq. mile)	25
Surficial Geology	Outwash
Topography	Level
% Slope (avg.)	11
% Forested (private)	21
% Disturbed Land Cover	37
% Developed	22
# of Animal Units	0
% Public Land	13
% Easements	0
% Lakes	0
% Mississippi River	5
% Wetlands (private)	6
% Protected	25
Risk Classification	Enhance

Catchment #	1203800
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	7
Population 2010 (persons per sq. mile)	89
Population Change 2000 to 2010 (persons per sq. mile)	34
Surficial Geology	Lacustrine
Topography	Steep
% Slope (avg.)	10
% Forested (private)	31
% Disturbed Land Cover	21
% Developed	3
# of Animal Units	0
% Public Land	26
% Easements	4
% Lakes	6
% Mississippi River	0
% Wetlands (private)	5
% Protected	41
Risk Classification	Protection

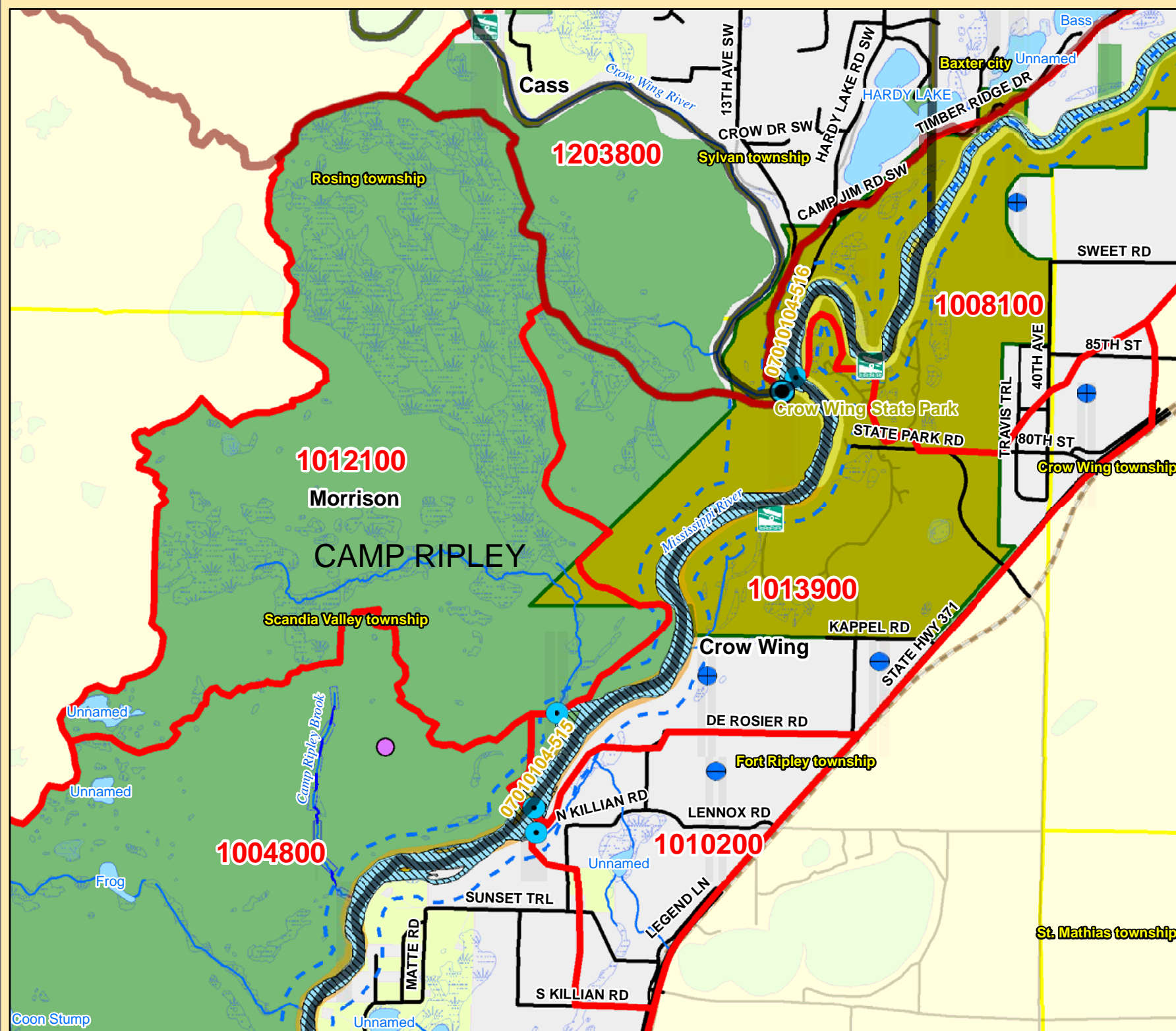
Implementation Priorities	
Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	x
Lake Focus: Shallow /Wildlife	x
Private Forest Stewardship	
Bluffs & Steep Slopes	x
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	x
Ground Water	
Wellhead Protection	x

Implementation Priorities	
Surface Water	
Aquatic Invasive Species	
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	x
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	x
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	
Ground Water	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucel Snail (Miss R.)
- Mississippi River
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- Streams
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Mississippi R. Catchment Map: Crow Wing State Park

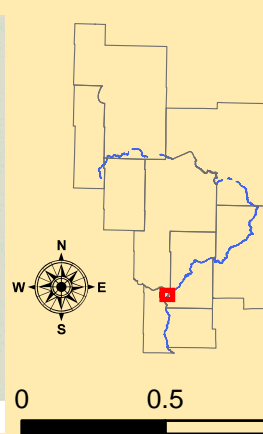


Catchment #	1012100
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	6
Population 2010 (persons per sq. mile)	0
Population Change 2000 to 2010 (persons per sq. mile)	0
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	8
% Forested (private)	0
% Disturbed Land Cover	21
% Developed	2
# of Animal Units	0
% Public Land	100
% Easements	0
% Lakes	0
% Mississippi River	0
% Wetlands (private)	0
% Protected	100
Risk Classification	Vigilance

Catchment #	1013900
River Stretch(es) (AUIDs)	07010104-515
Area (sq. miles)	4
Population 2010 (persons per sq. mile)	32
Population Change 2000 to 2010 (persons per sq. mile)	22
Surficial Geology	Outwash
Topography	Level
% Slope (avg.)	6
% Forested (private)	3
% Disturbed Land Cover	41
% Developed	5
# of Animal Units	0
% Public Land	64
% Easements	0
% Lakes	0
% Mississippi River	7
% Wetlands (private)	0
% Protected	72
Risk Classification	Protection

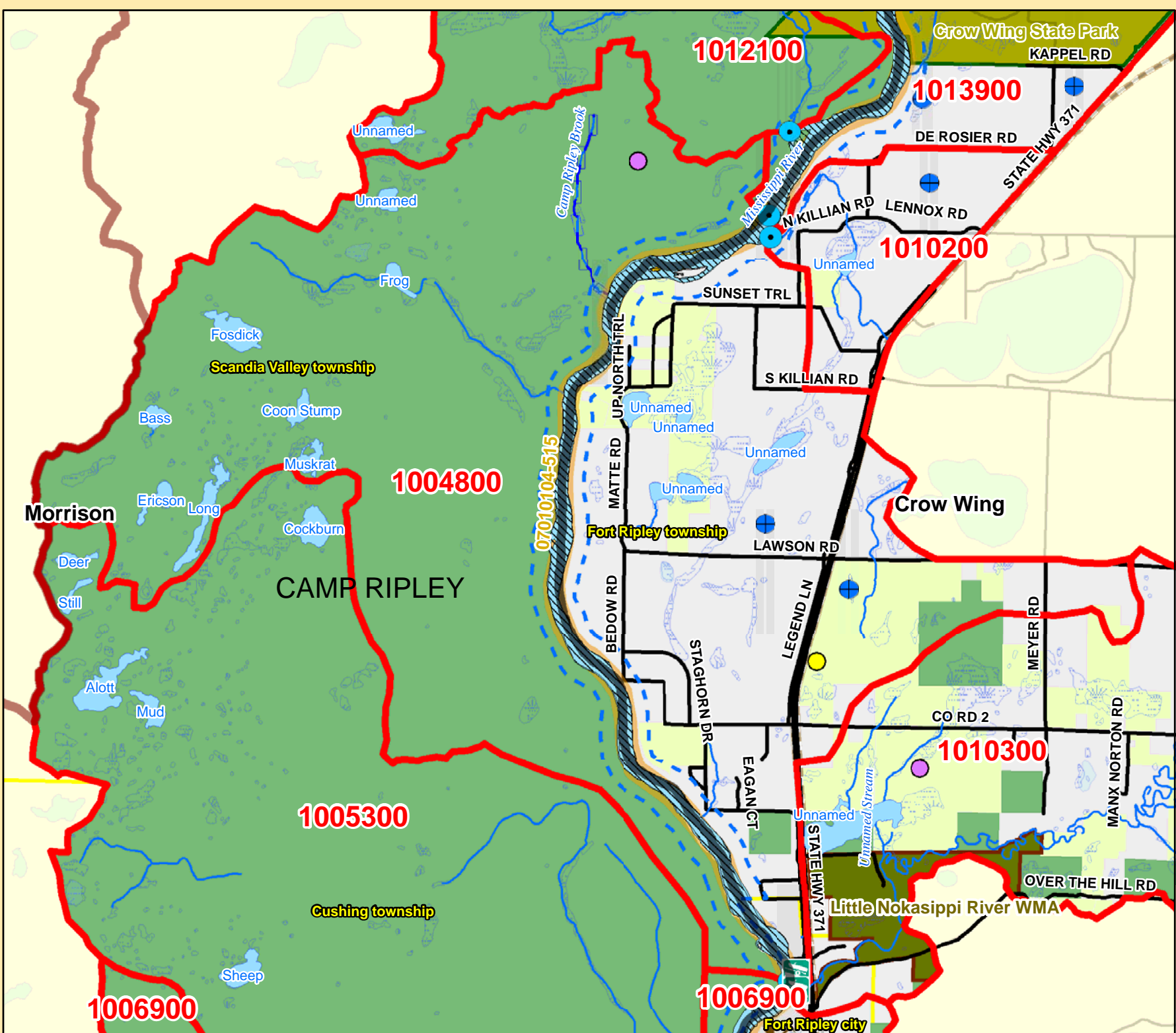
Implementation Priorities	
Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	
Ground Water	
Wellhead Protection	

Implementation Priorities	
Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	x
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	
Native Mussel Habitat	x
Ground Water	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS
- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
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Mississippi R. Catchment Map: South of Crow Wing State Park



Catchment #	1004800
River Stretch(es) (AUIDs)	07010104-515
Area (sq. miles)	15
Population 2010 (persons per sq. mile)	15
Population Change 2000 to 2010 (persons per sq. mile)	3
Surficial Geology	Outwash
Topography	Level
% Slope (avg.)	14
% Forested (private)	15
% Disturbed Land Cover	27
% Developed	5
# of Animal Units	708
% Public Land	59
% Easements	9
% Lakes	2
% Mississippi River	4
% Wetlands (private)	3
% Protected	76

Risk Classification Protection

Implementation Priorities

Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	x
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	

Ground Water

Wellhead Protection	
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Catchment #	1010200
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	1
Population 2010 (persons per sq. mile)	38
Population Change 2000 to 2010 (persons per sq. mile)	1
Surficial Geology	Outwash
Topography	Level
% Slope (avg.)	3
% Forested (private)	25
% Disturbed Land Cover	61
% Developed	8
# of Animal Units	0
% Public Land	0
% Easements	3
% Lakes	1
% Mississippi River	0
% Wetlands (private)	8
% Protected	12

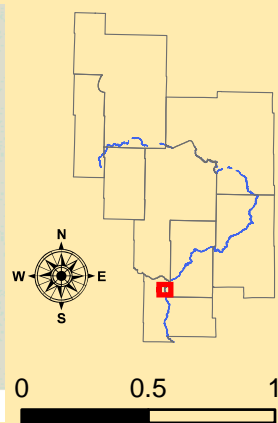
Risk Classification Enhance

Implementation Priorities

Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	x
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	

Ground Water

Wellhead Protection	
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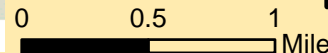
- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas

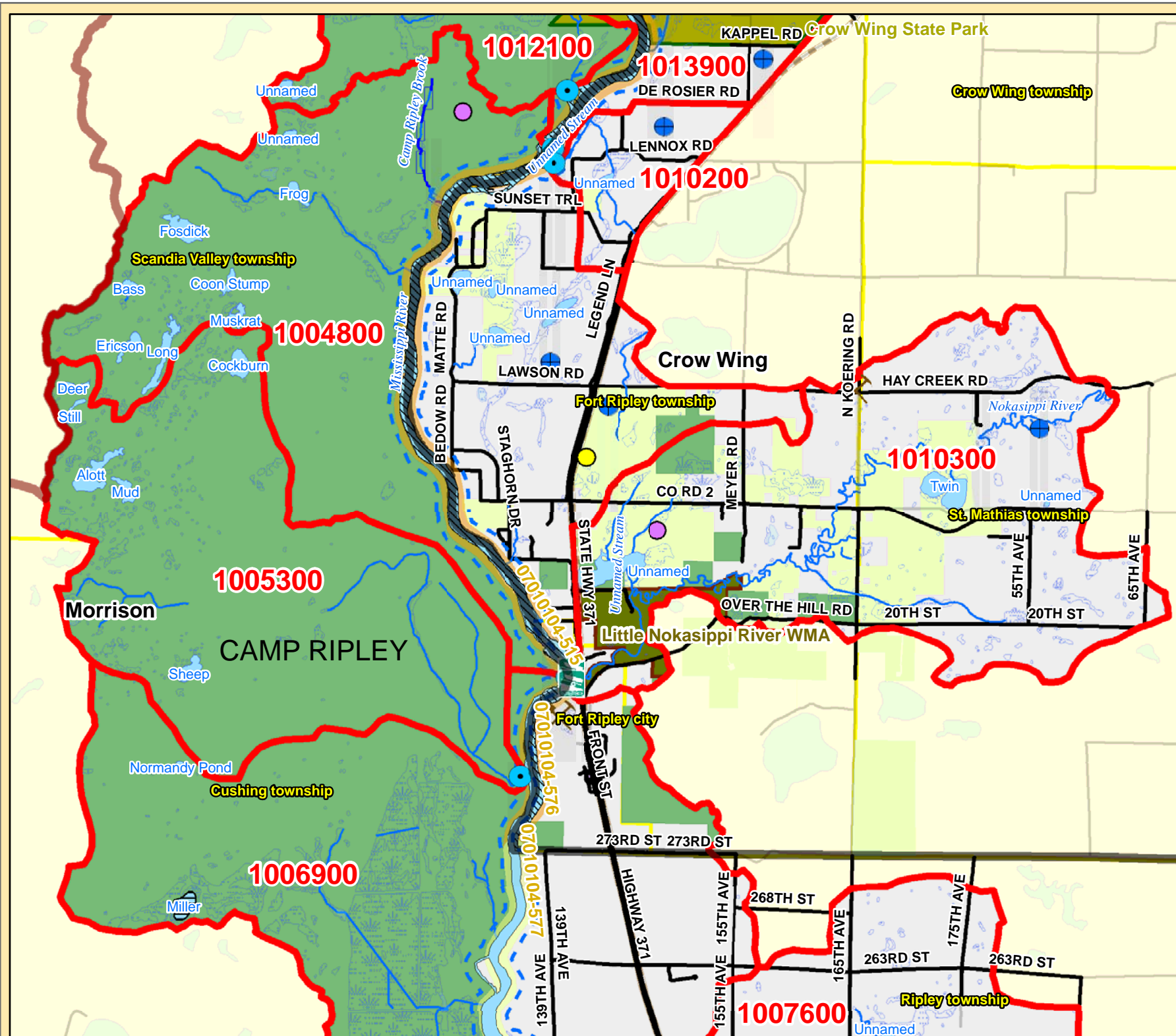
- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
- BIRDS
- BOVINES
- HORSES
- PIGS

- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- Lakes
- Zebra Mussels (Miss R.)
- Faucet Snail (Miss R.)
- Mississippi River
- Trout Streams
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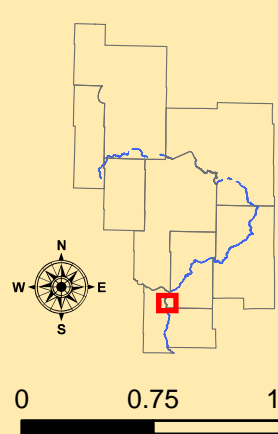




Mississippi R. Catchment Map: Nokasippi Confluence

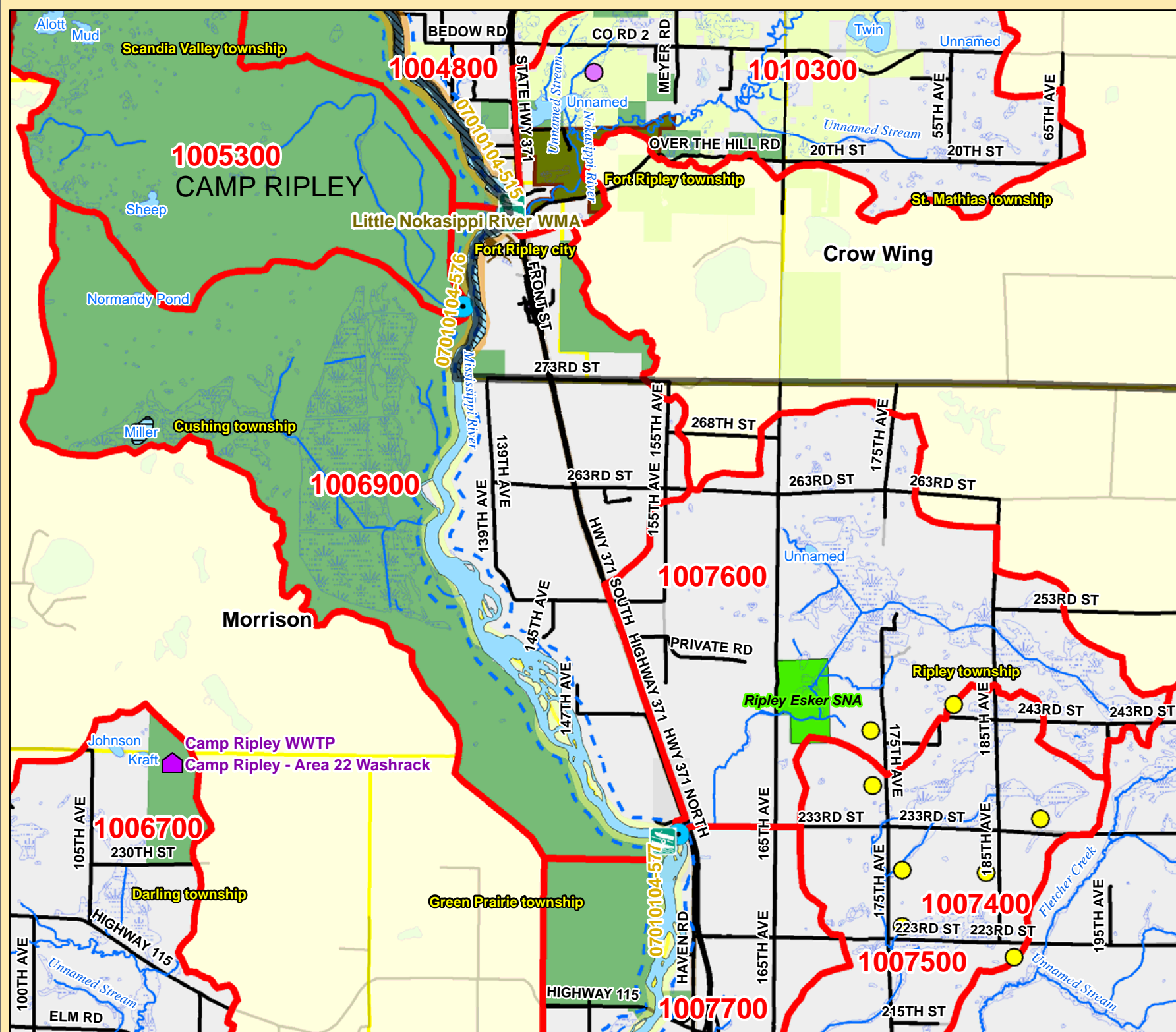
Catchment #	1005300
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	9
Population 2010 (persons per sq. mile)	0
Population Change 2000 to 2010 (persons per sq. mile)	0
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	14
% Forested (private)	0
% Disturbed Land Cover	26
% Developed	4
# of Animal Units	0
% Public Land	100
% Easements	0
% Lakes	2
% Mississippi River	0
% Wetlands (private)	0
% Protected	100
Risk Classification	Vigilance
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	x
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	

Catchment #	1010300
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	10
Population 2010 (persons per sq. mile)	21
Population Change 2000 to 2010 (persons per sq. mile)	3
Surficial Geology	Till Plain
Topography	Gently Rolling
% Slope (avg.)	10
% Forested (private)	39
% Disturbed Land Cover	39
% Developed	4
# of Animal Units	156
% Public Land	8
% Easements	29
% Lakes	2
% Mississippi River	0
% Wetlands (private)	7
% Protected	46
Risk Classification	Protection
Implementation Priorities	
<i>Surface Water</i>	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	x
Private Forest Stewardship	x
Bluffs & Steep Slopes	x
Bald Eagle Territory	x
Critical Bird Habitat	
Rare Native Plants / Communities	
Native Mussel Habitat	
<i>Ground Water</i>	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
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Mississippi R. Catchment Map: Fort Ripley



Catchment #	1006900
River Stretch(es) (AUIDs)	07010104-515
Area (sq. miles)	18
Population 2010 (persons per sq. mile)	7
Population Change 2000 to 2010 (persons per sq. mile)	-1
Surficial Geology	Outwash
Topography	Level
% Slope (avg.)	9
% Forested (private)	6
% Disturbed Land Cover	54
% Developed	9
# of Animal Units	0
% Public Land	60
% Easements	1
% Lakes	0
% Mississippi River	5
% Wetlands (private)	0
% Protected	66

Risk Classification: Vigilance

Implementation Priorities

Surface Water	
Aquatic Invasive Species	x
Development (existing and potential)	
Agricultural BMPs	
Lake Focus:	
Lake Focus: Wild Rice	x
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	x
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	

Ground Water	
Wellhead Protection	x

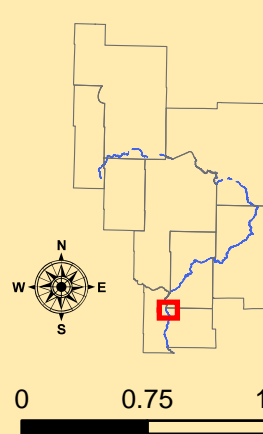
Catchment #	1007600
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	10
Population 2010 (persons per sq. mile)	13
Population Change 2000 to 2010 (persons per sq. mile)	2
Surficial Geology	Till Plain
Topography	Gently Rolling
% Slope (avg.)	7
% Forested (private)	10
% Disturbed Land Cover	83
% Developed	3
# of Animal Units	49
% Public Land	3
% Easements	1
% Lakes	0
% Mississippi River	0
% Wetlands (private)	12
% Protected	16

Risk Classification: Enhance

Implementation Priorities

Surface Water	
Aquatic Invasive Species	
Development (existing and potential)	
Agricultural BMPs	x
Lake Focus:	
Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	
Bluffs & Steep Slopes	
Bald Eagle Territory	
Critical Bird Habitat	x
Rare Native Plants / Communities	x
Native Mussel Habitat	

Ground Water	
Wellhead Protection	



- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
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