
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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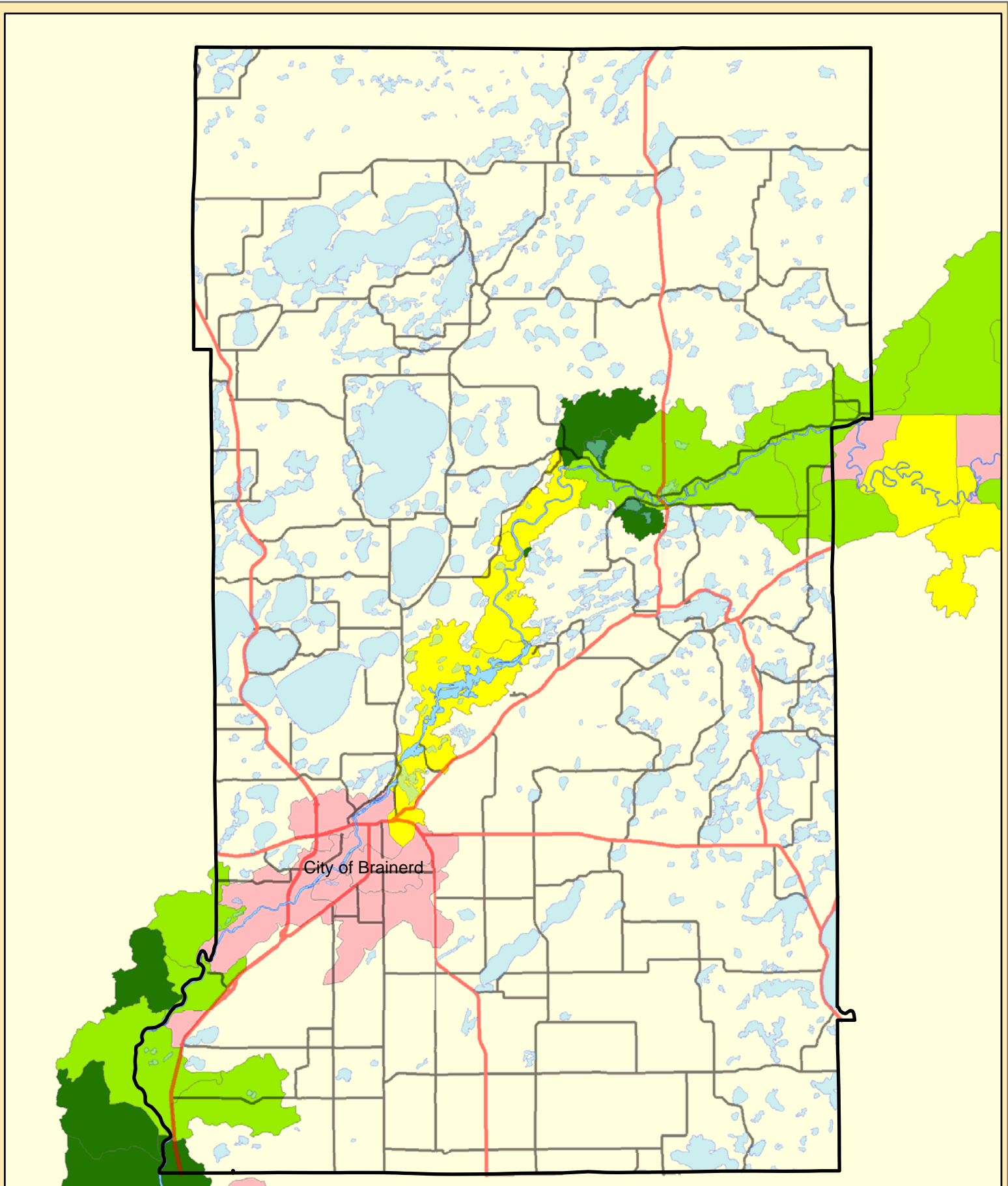


Figure 50: Risk Classification

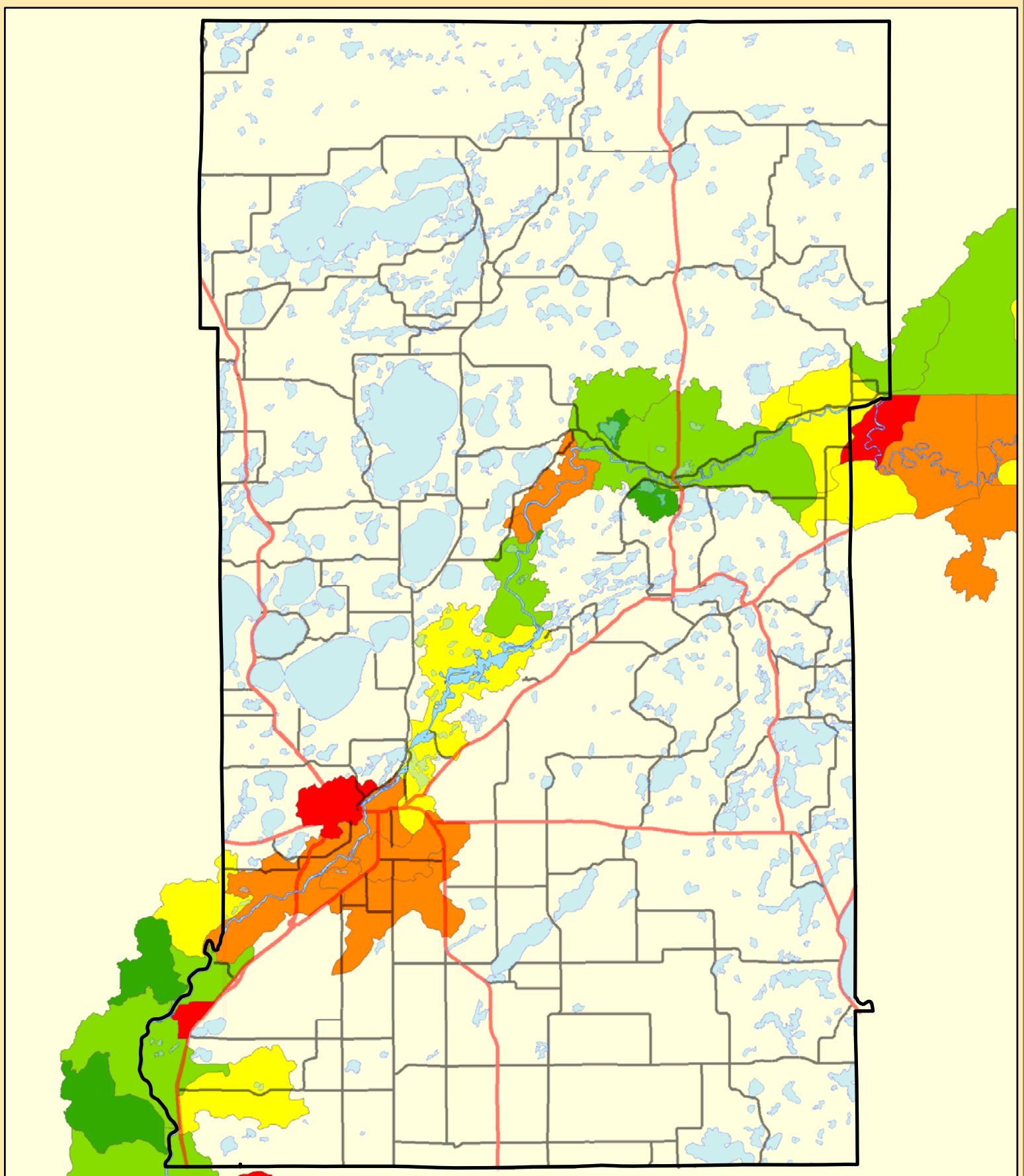


Figure 51: % Protected

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

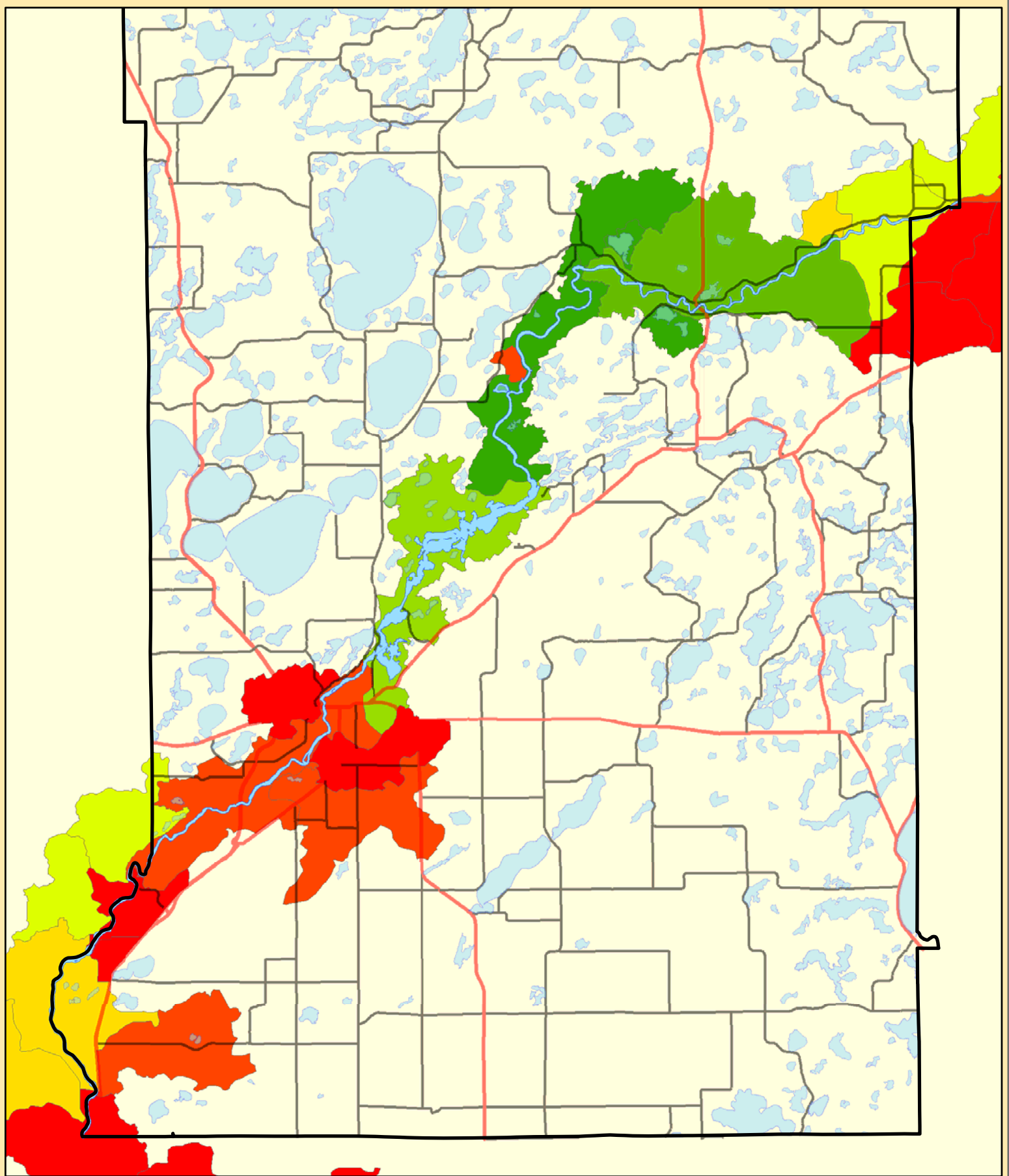







Figure 52: Land Use Disturbance

Disturbed = Developed, Cultivated, Pasture, & Grassland



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

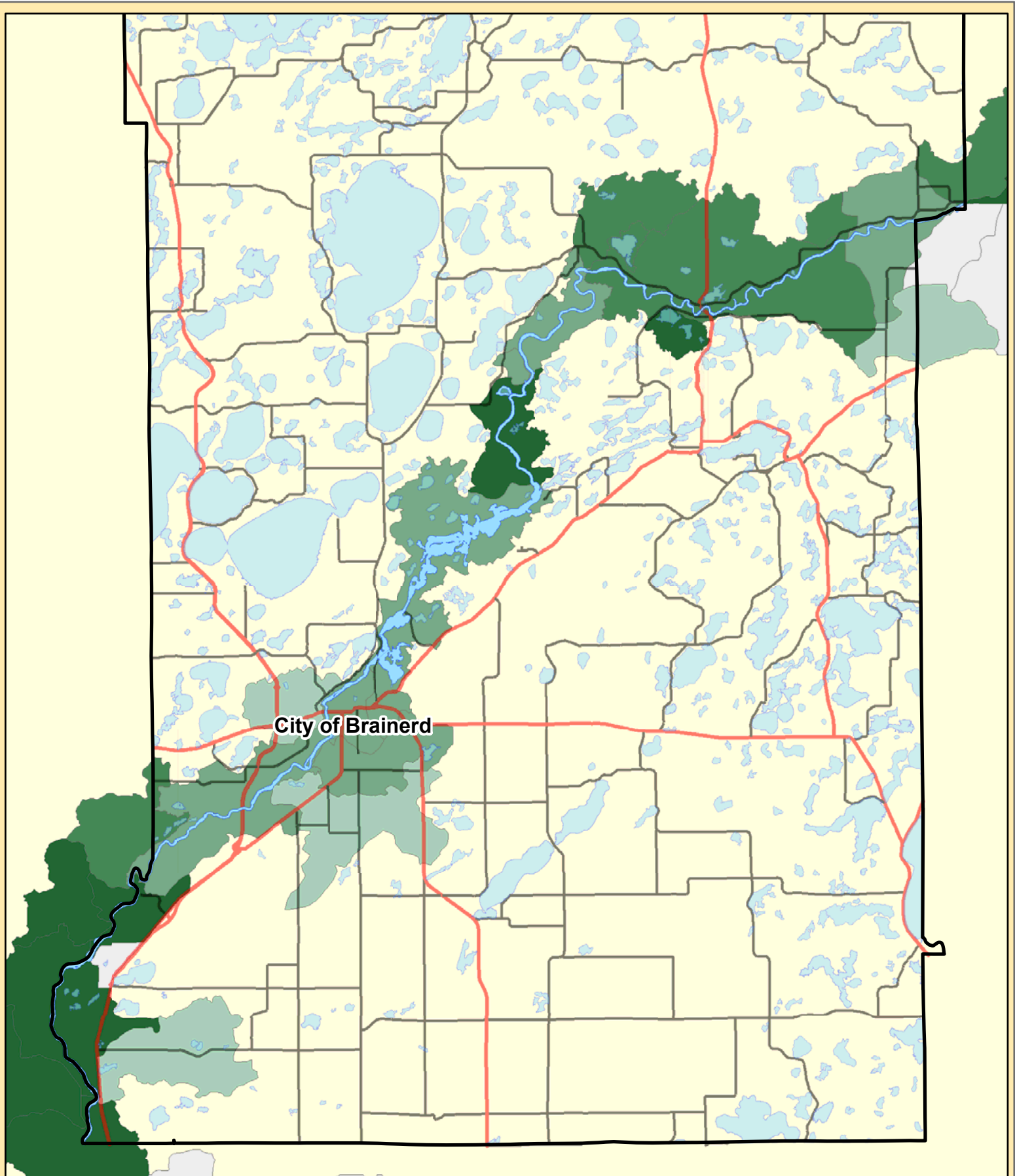


Figure 53: % Public Ownership

Public Ownership (by catchment)

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

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

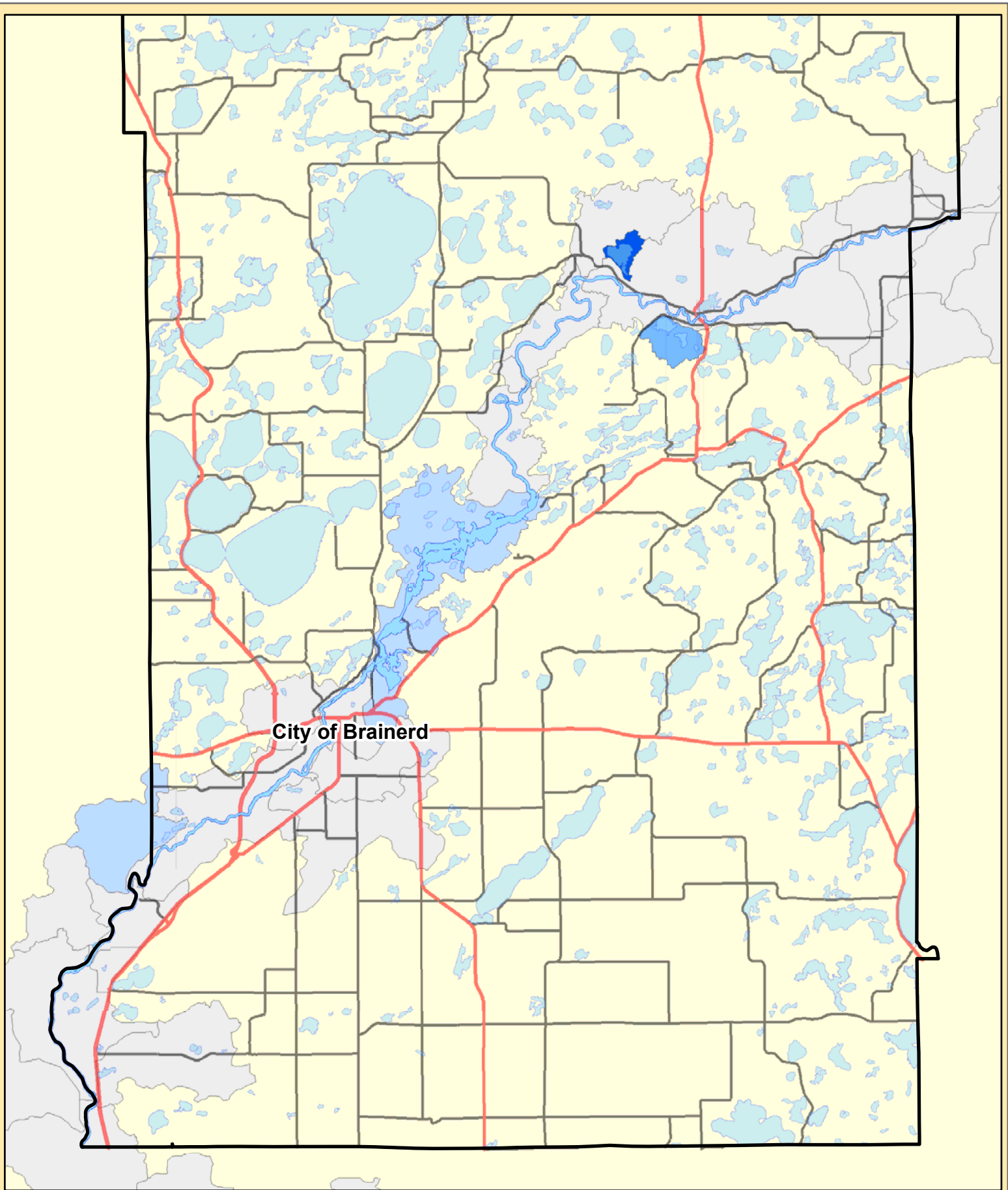


Figure 54: % Lakes

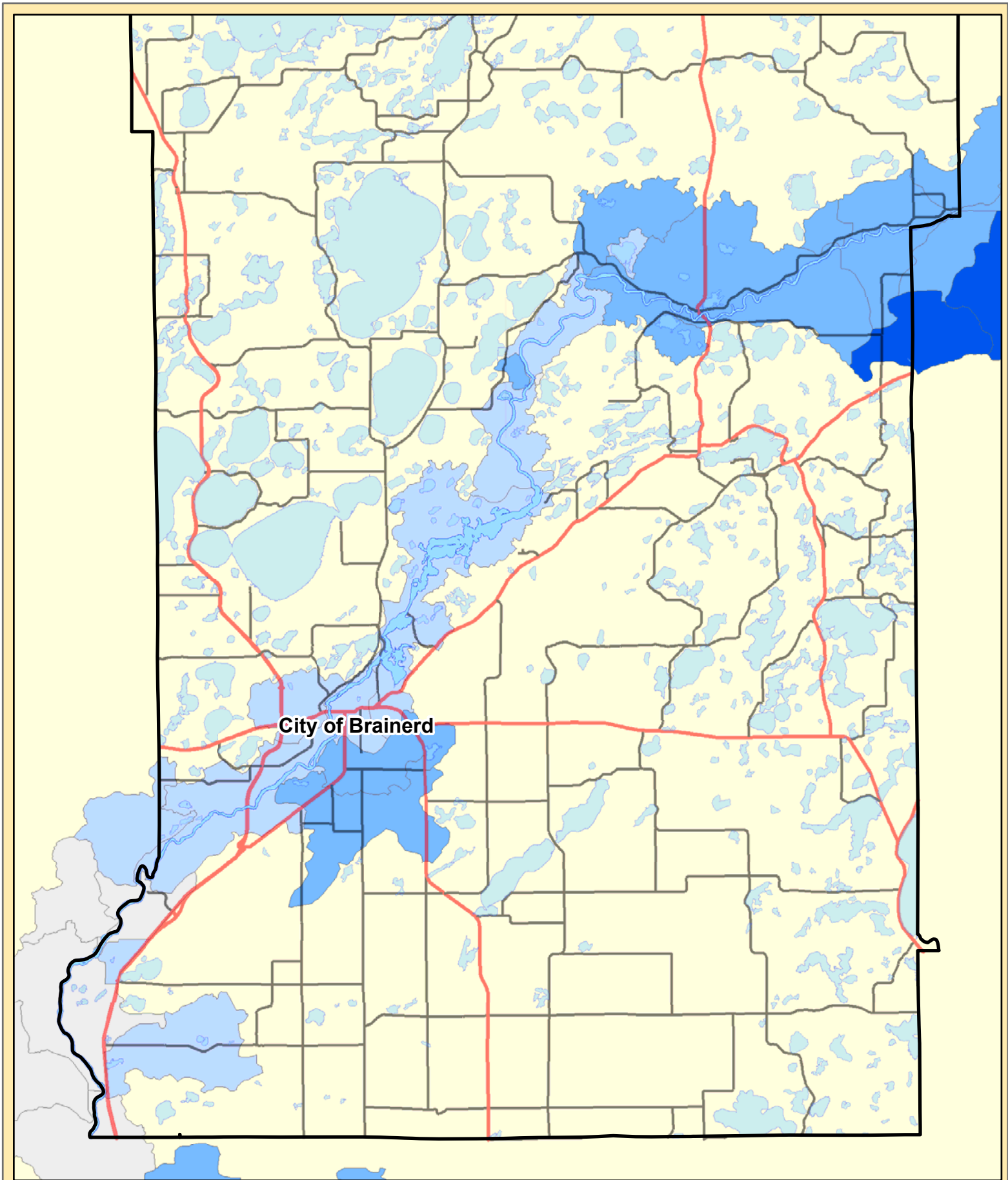


Figure 55: % Wetlands

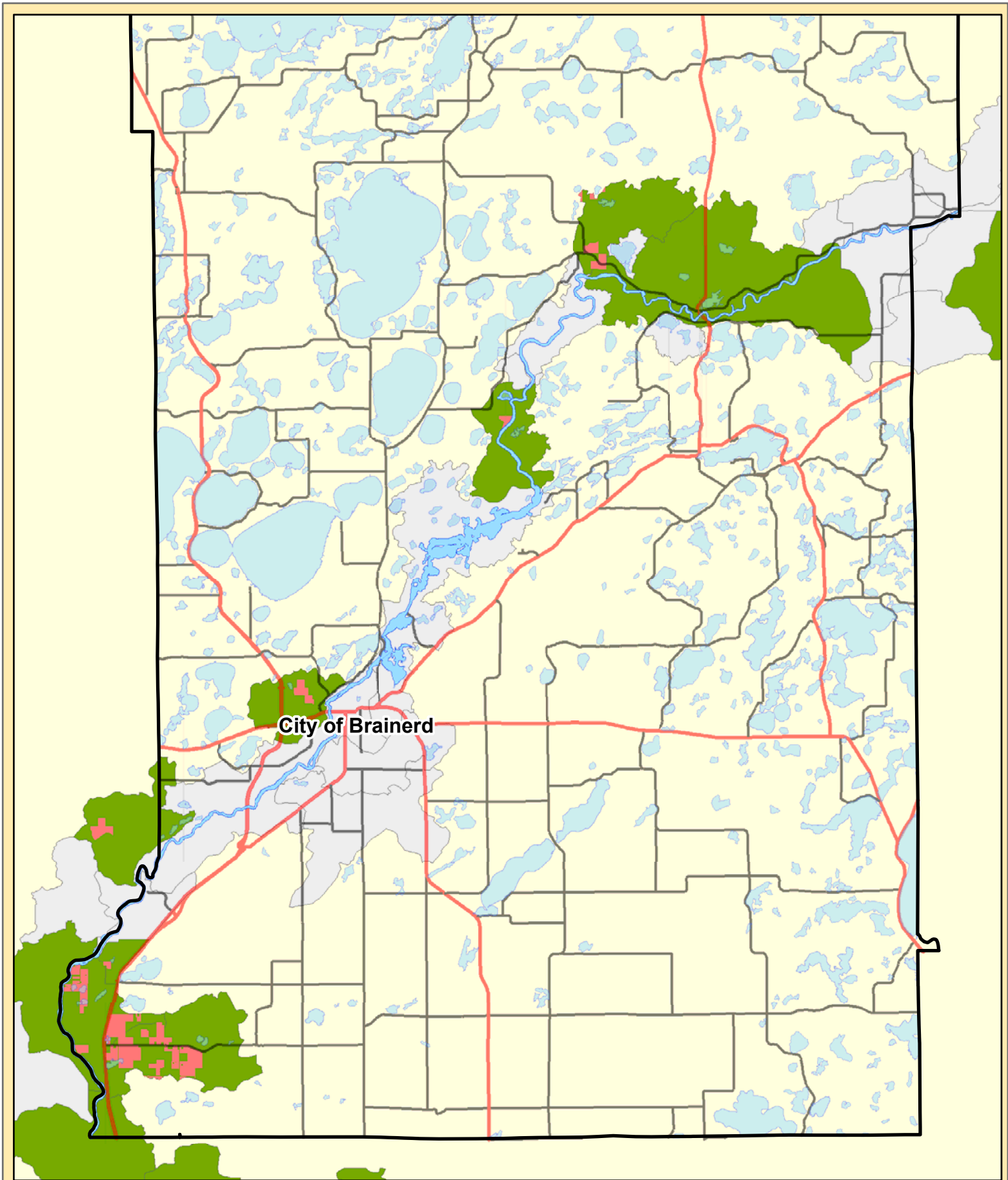


Figure 56: Easements

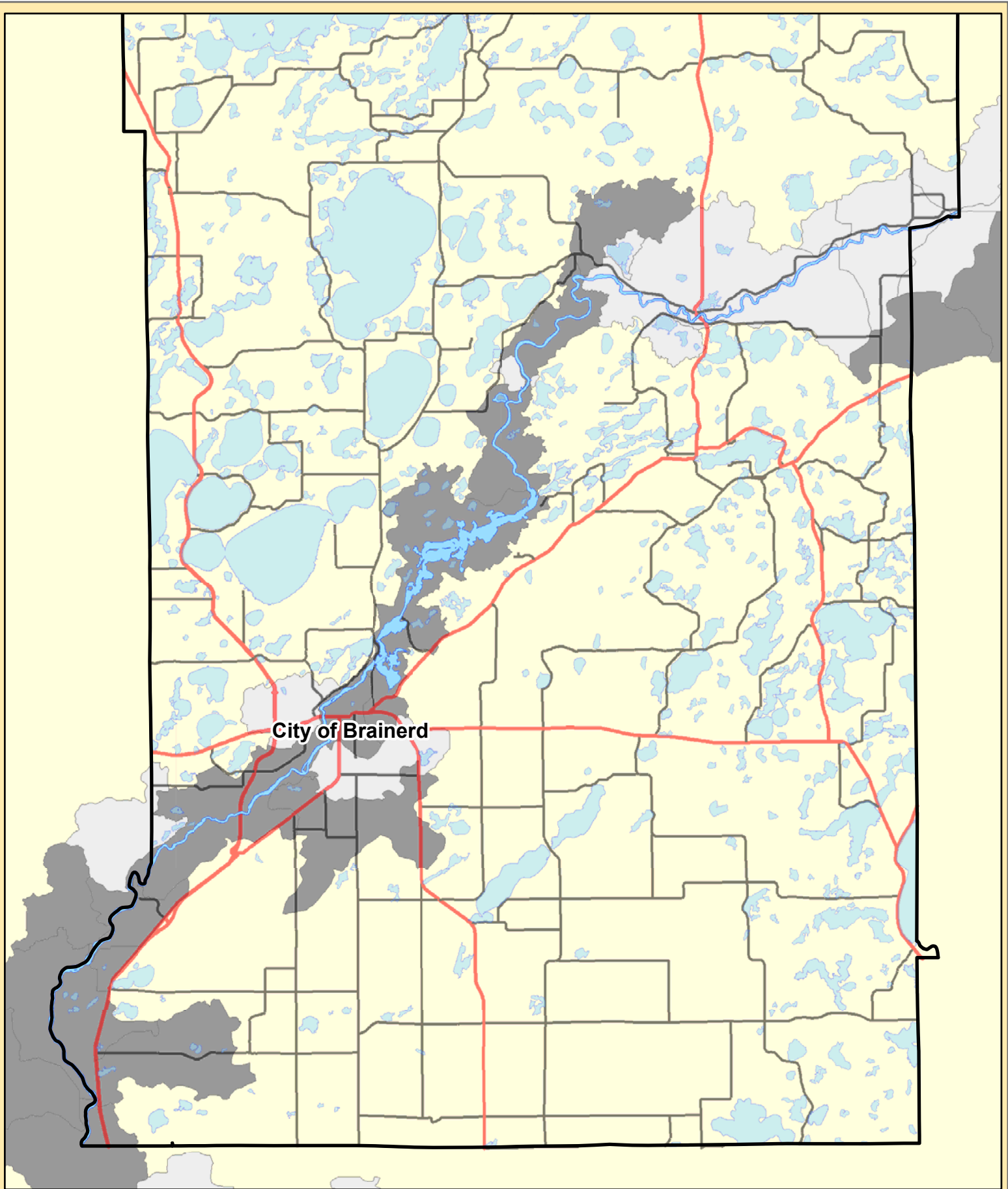







Figure 57: Implementation Priority = AIS

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



Environmental Services

CROW WING COUNTY

BRainerd, MINNESOTA 56401

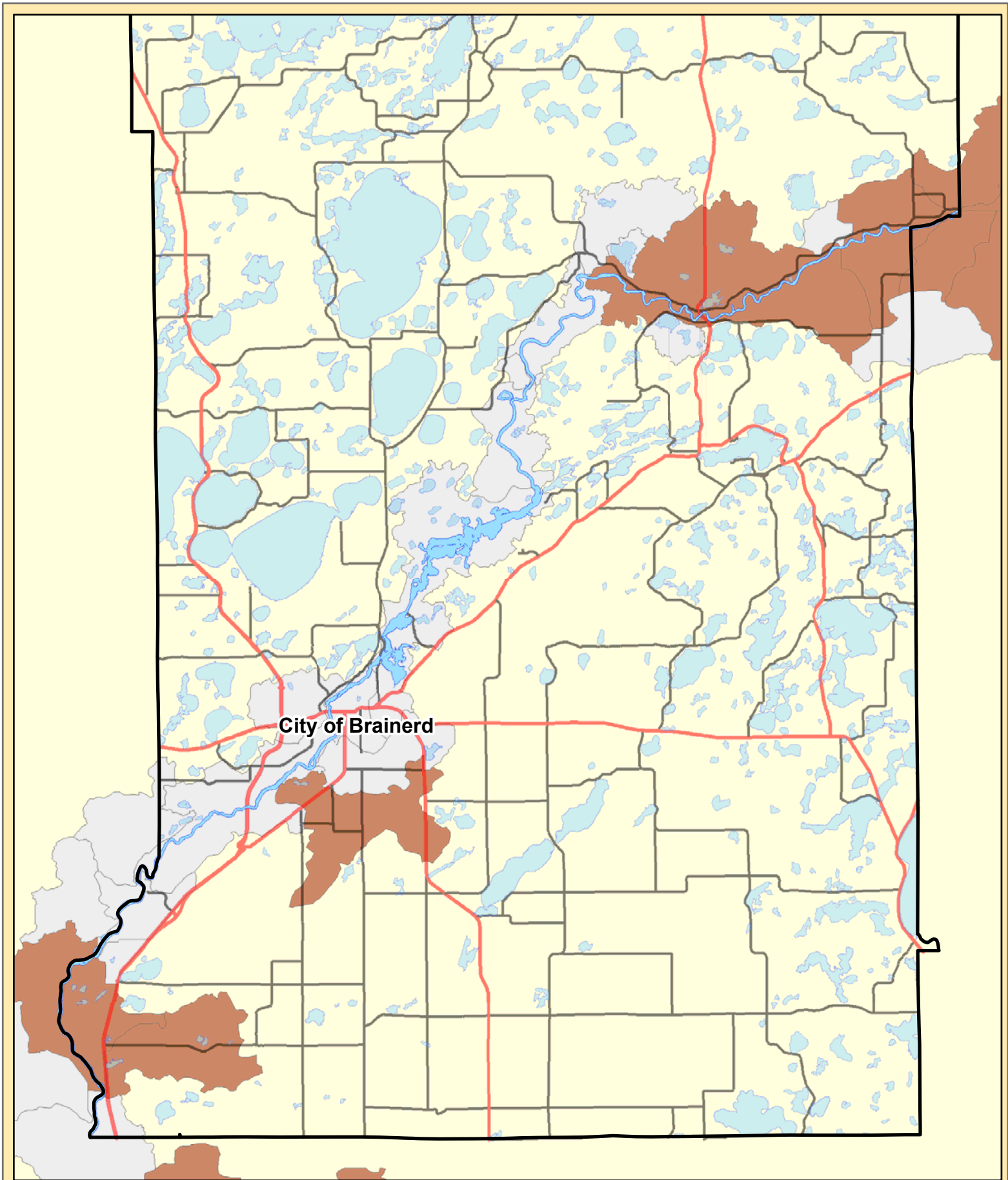









Figure 58: Implementation Priority = Agricultural BMPs

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



Environmental Services

CROW WING COUNTY

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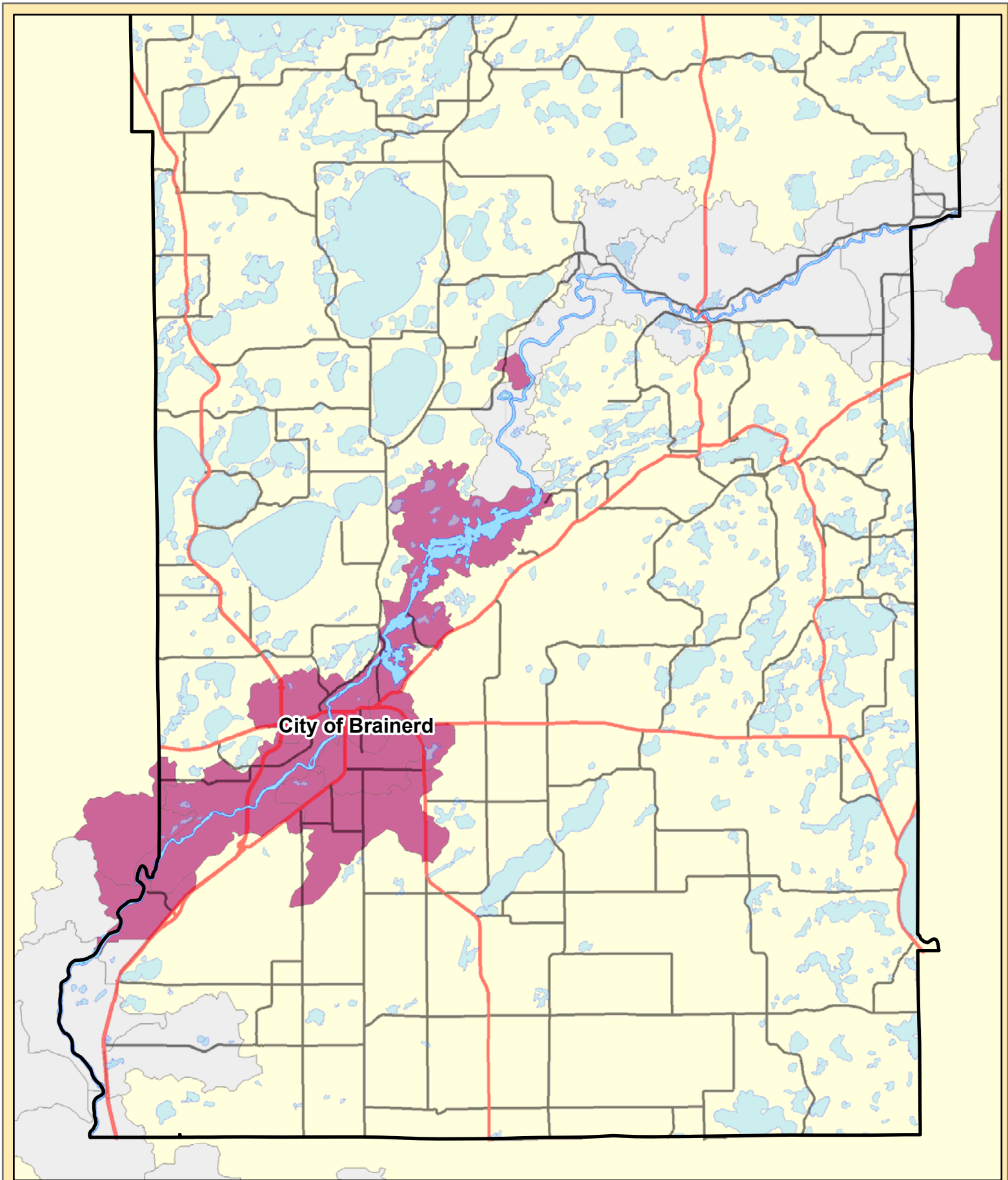


Figure 59: Implementation Priority = Growth & Development

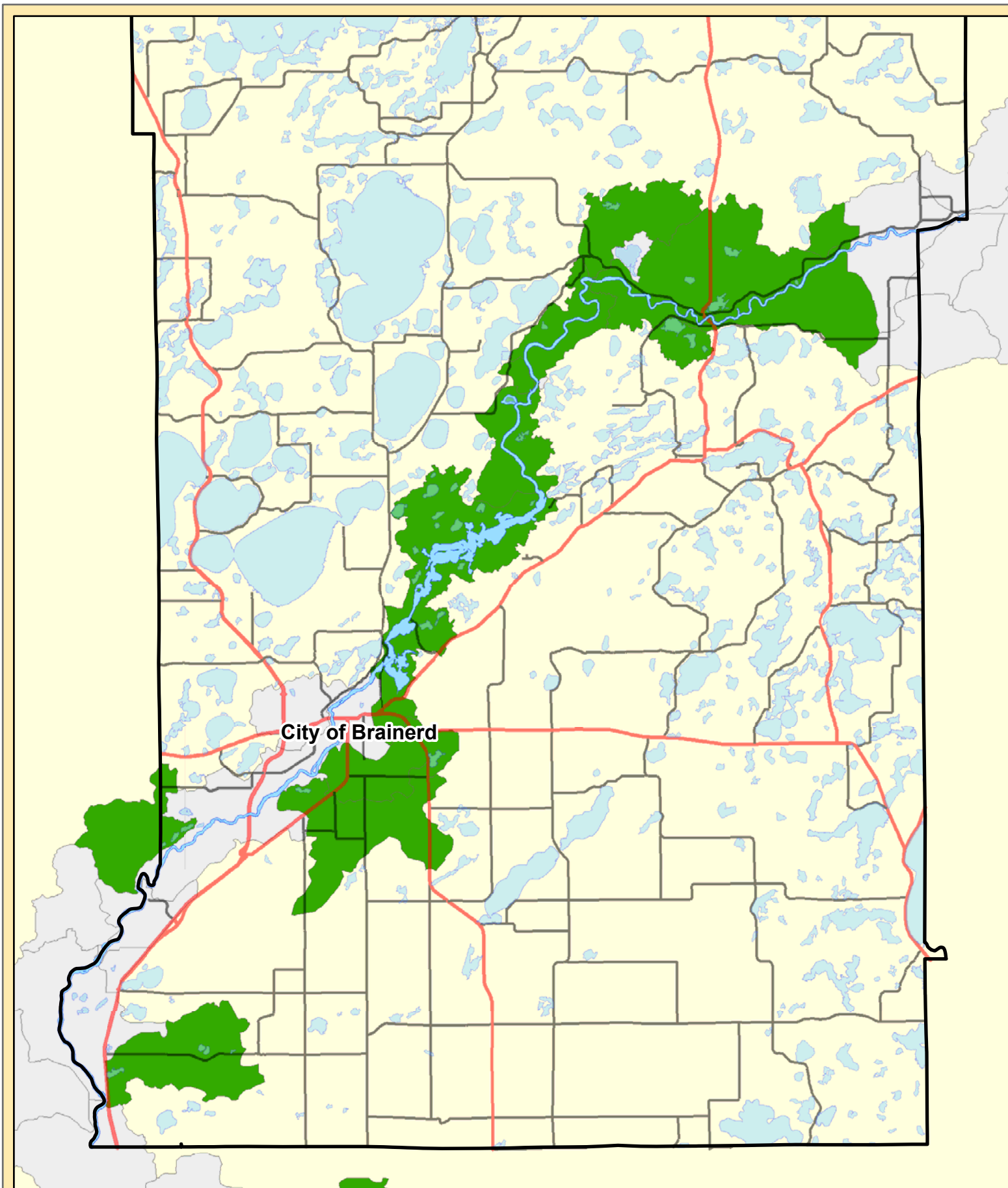


Figure 60: Implementation Priority = Private Forest Management

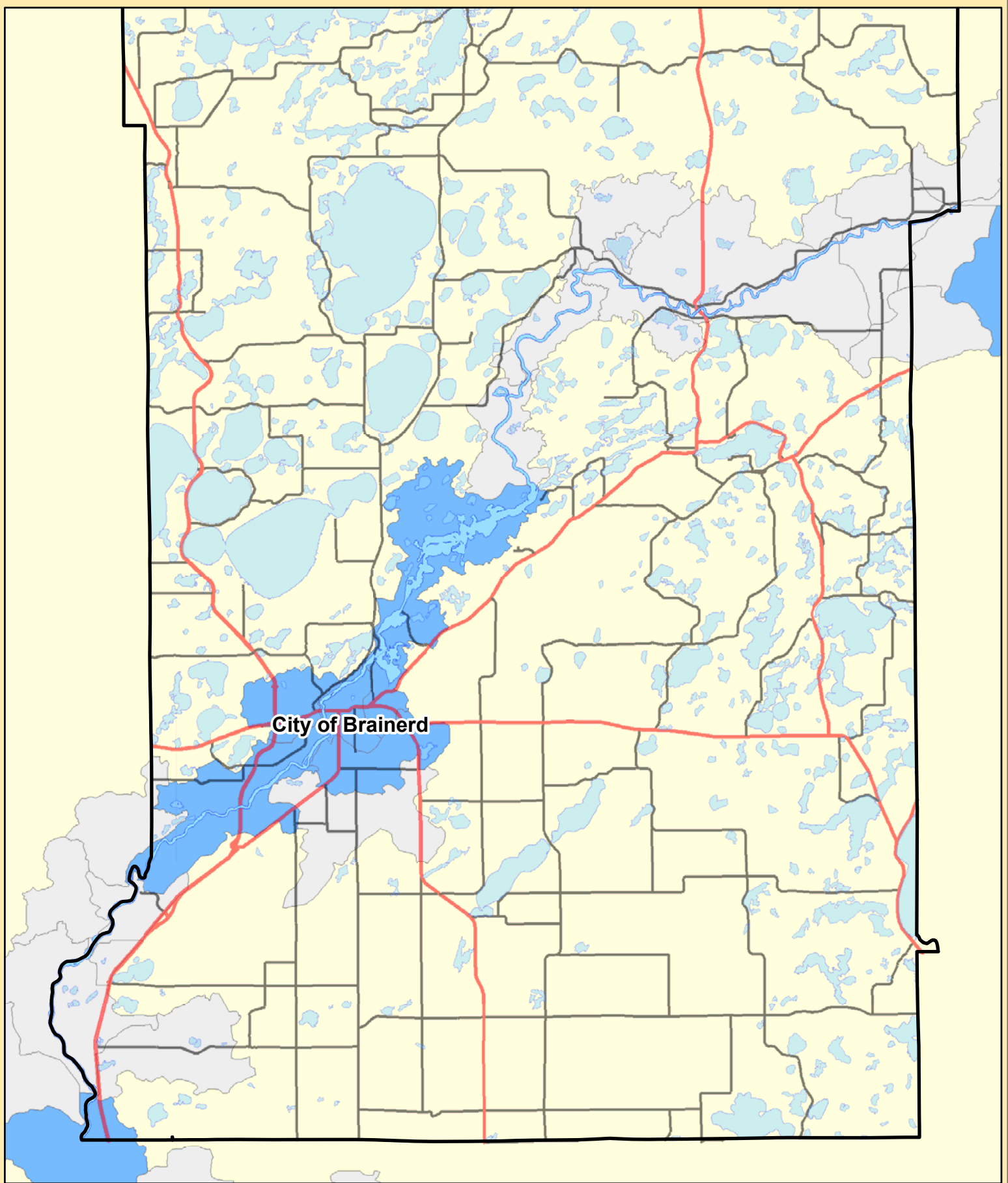


Figure 61: Implementation Priority = Drinking Water Protection

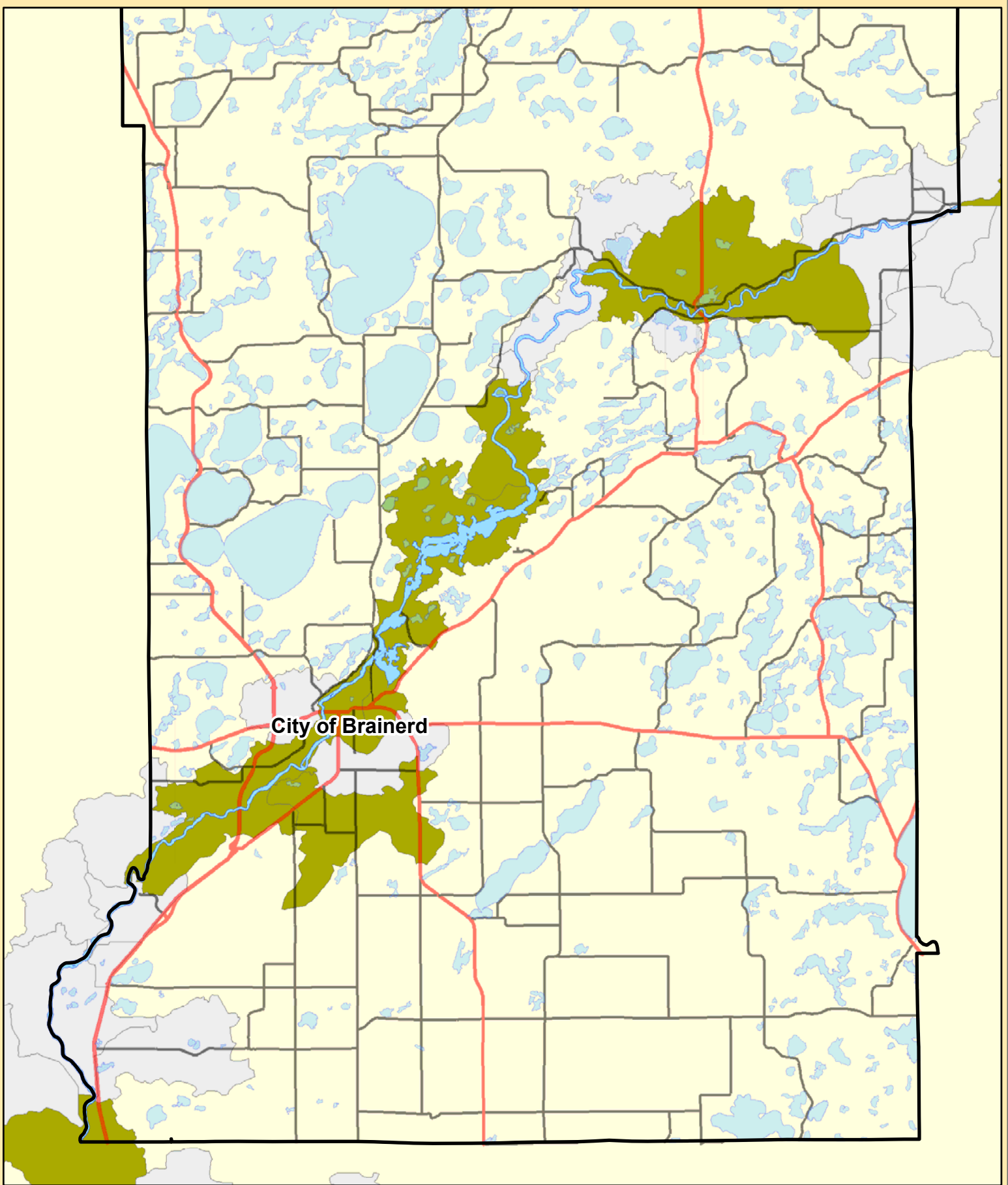


Figure 62: Implementation Priority = Wild Rice

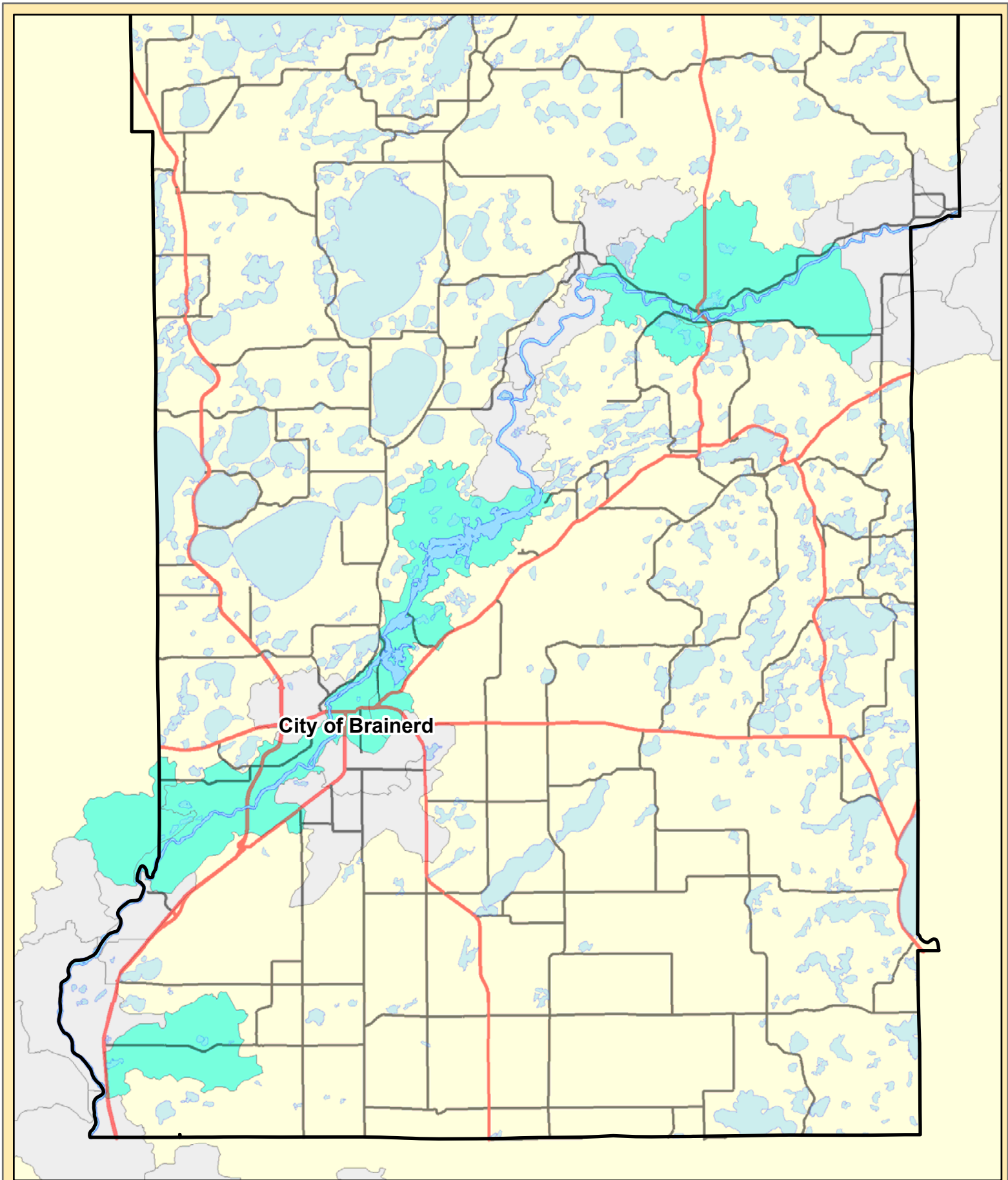


Figure 63: Implementation Priority = Shallow Lakes



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Shallow, Wildlife Lakes

Other catchments

Lakes

Mississippi River

US Highways

State Highways

County Roads

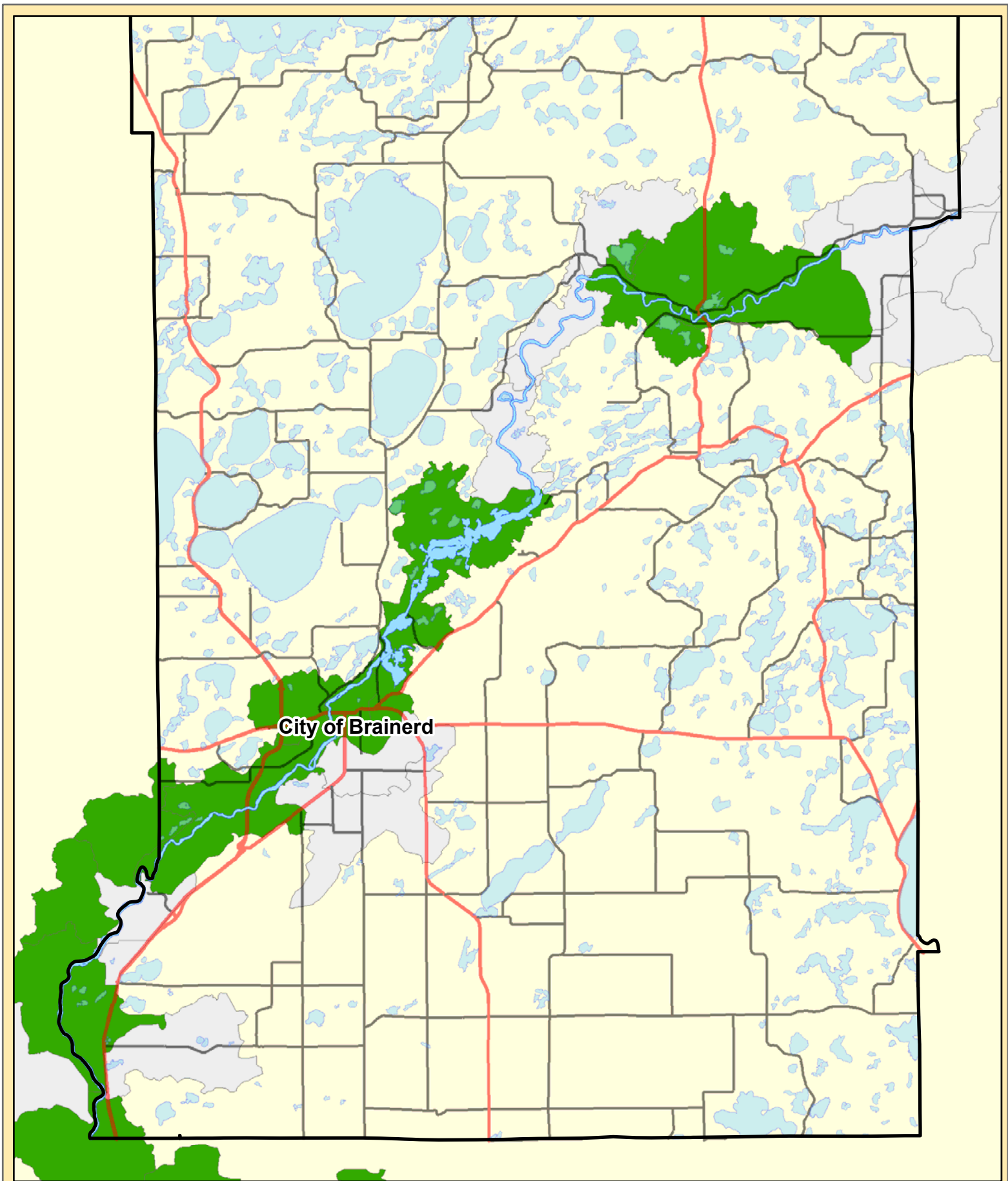


Figure 64: Implementation Priority = Unique & Native Plant Communities

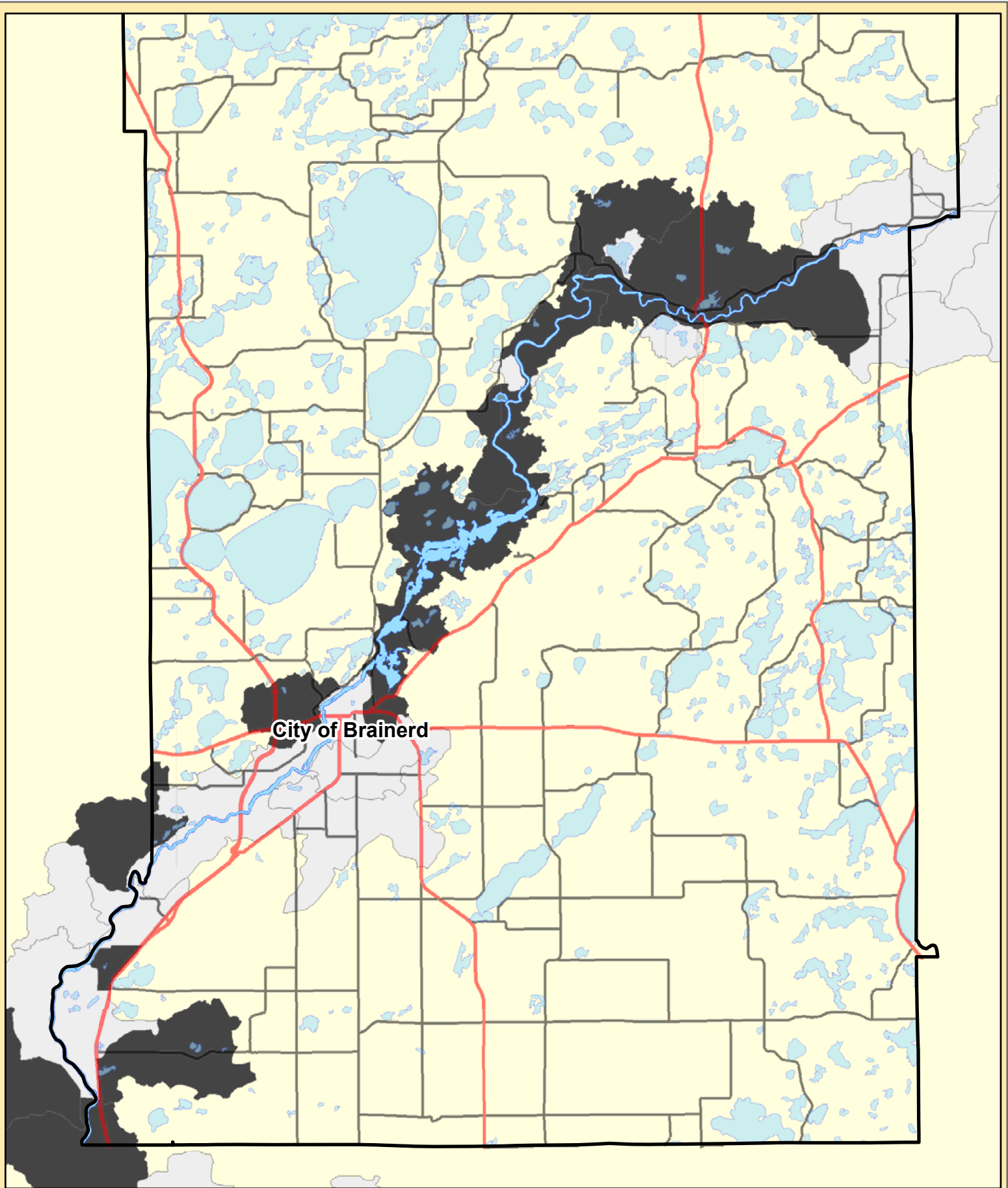


Figure 65: Implementation Priority = Bald Eagle Areas

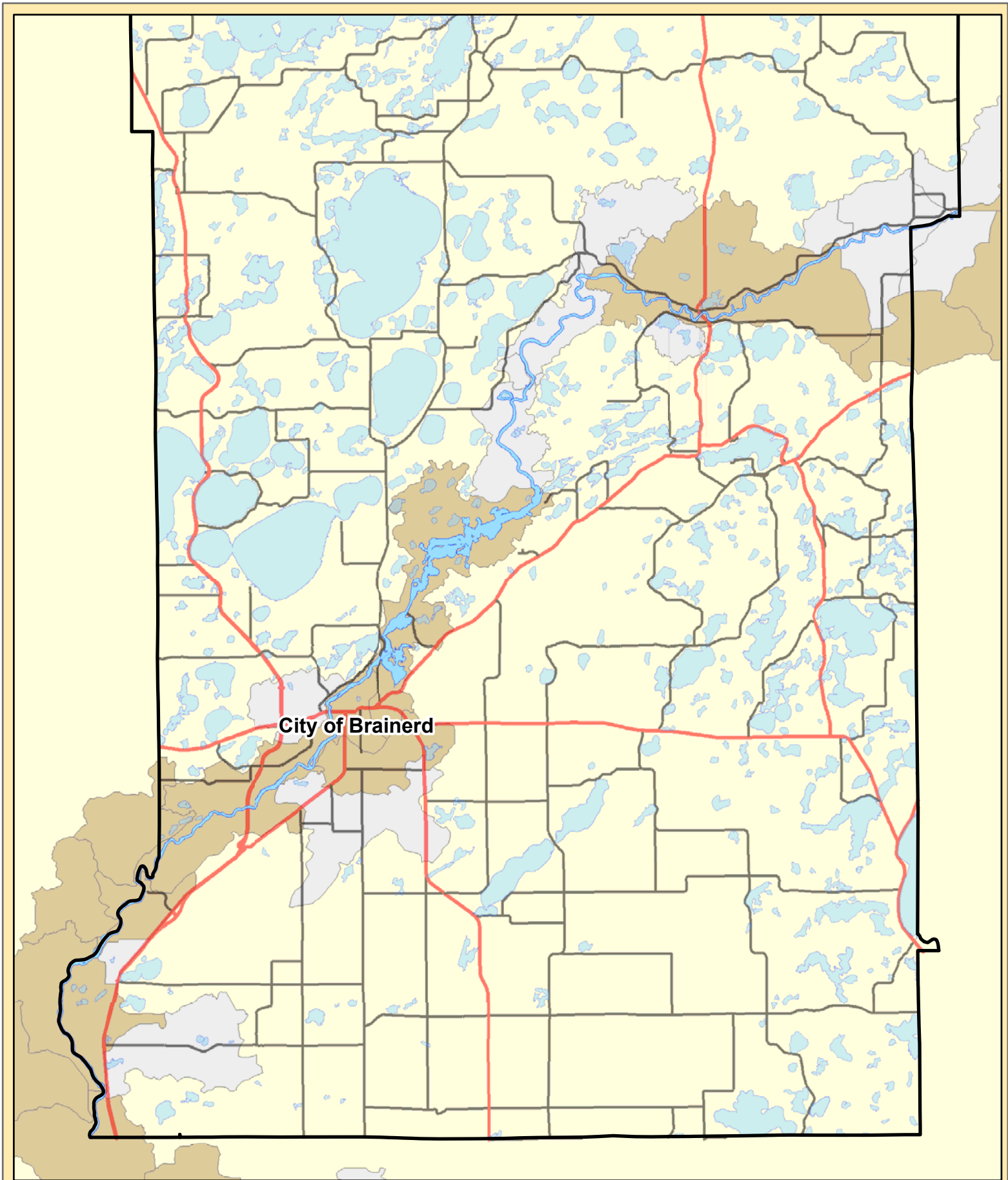


Figure 66: Implementation Priority = Bird Habitat

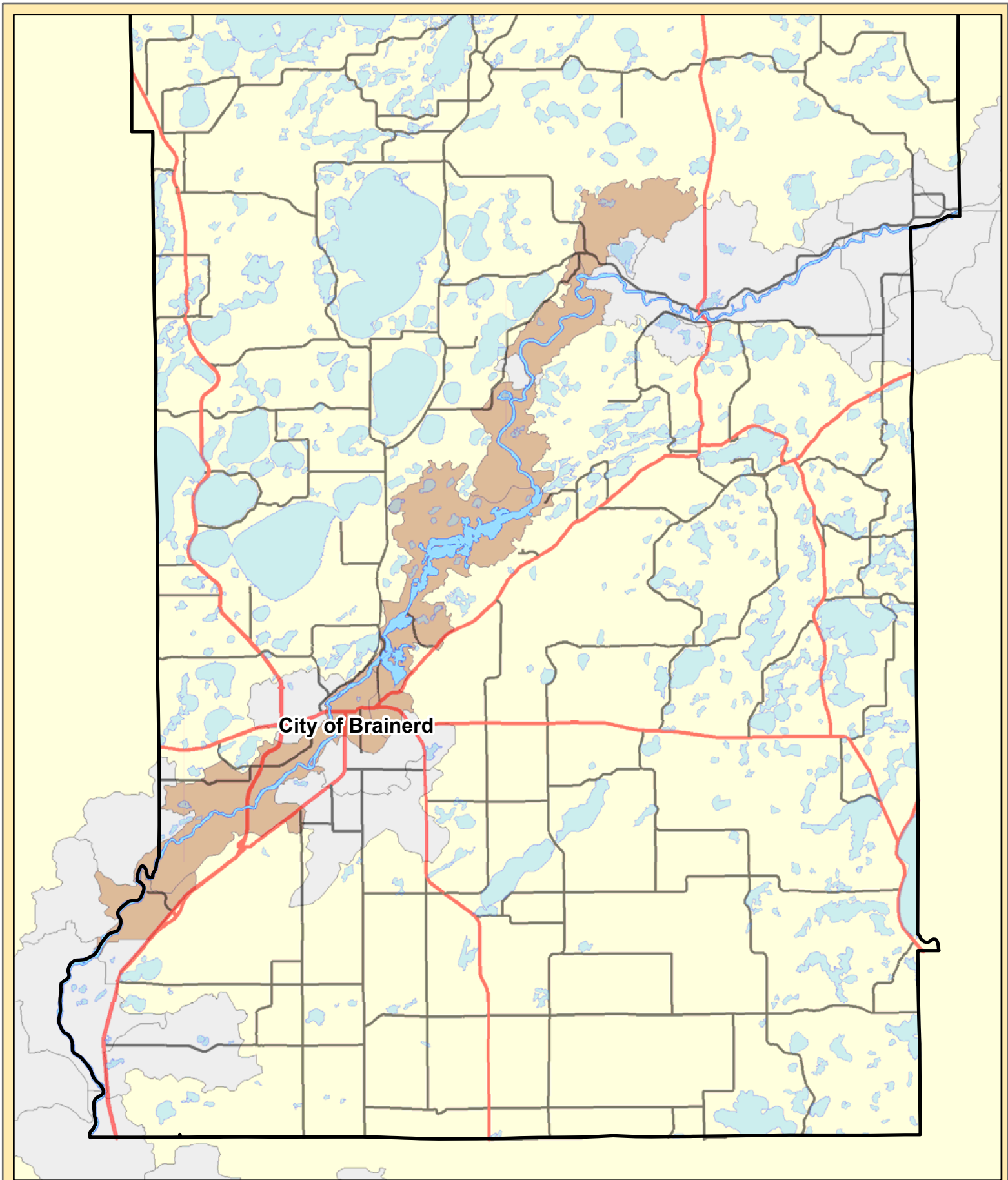


Figure 67: Implementation Priority = Mussel Habitat

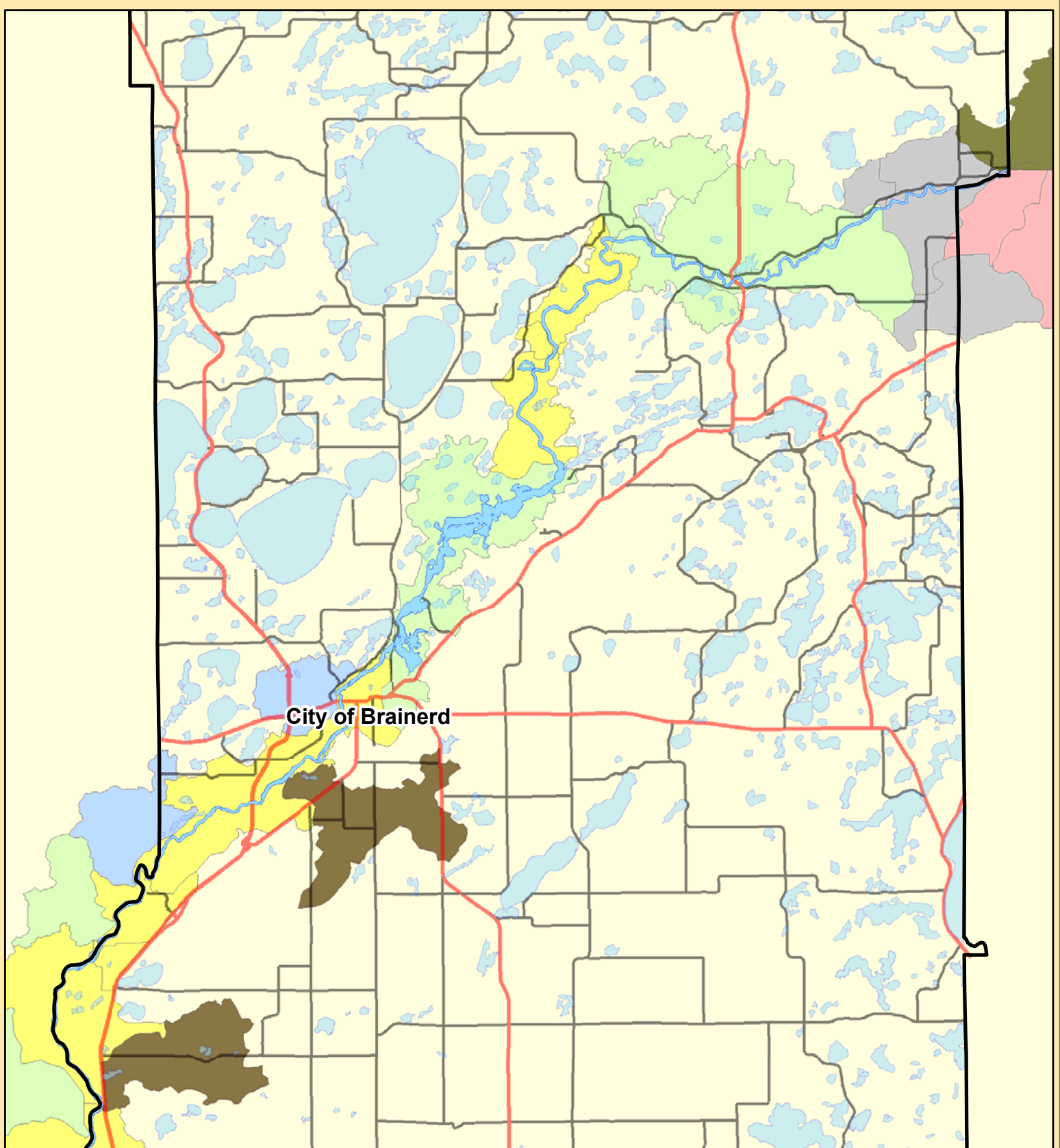


Figure 68: Surficial Geology

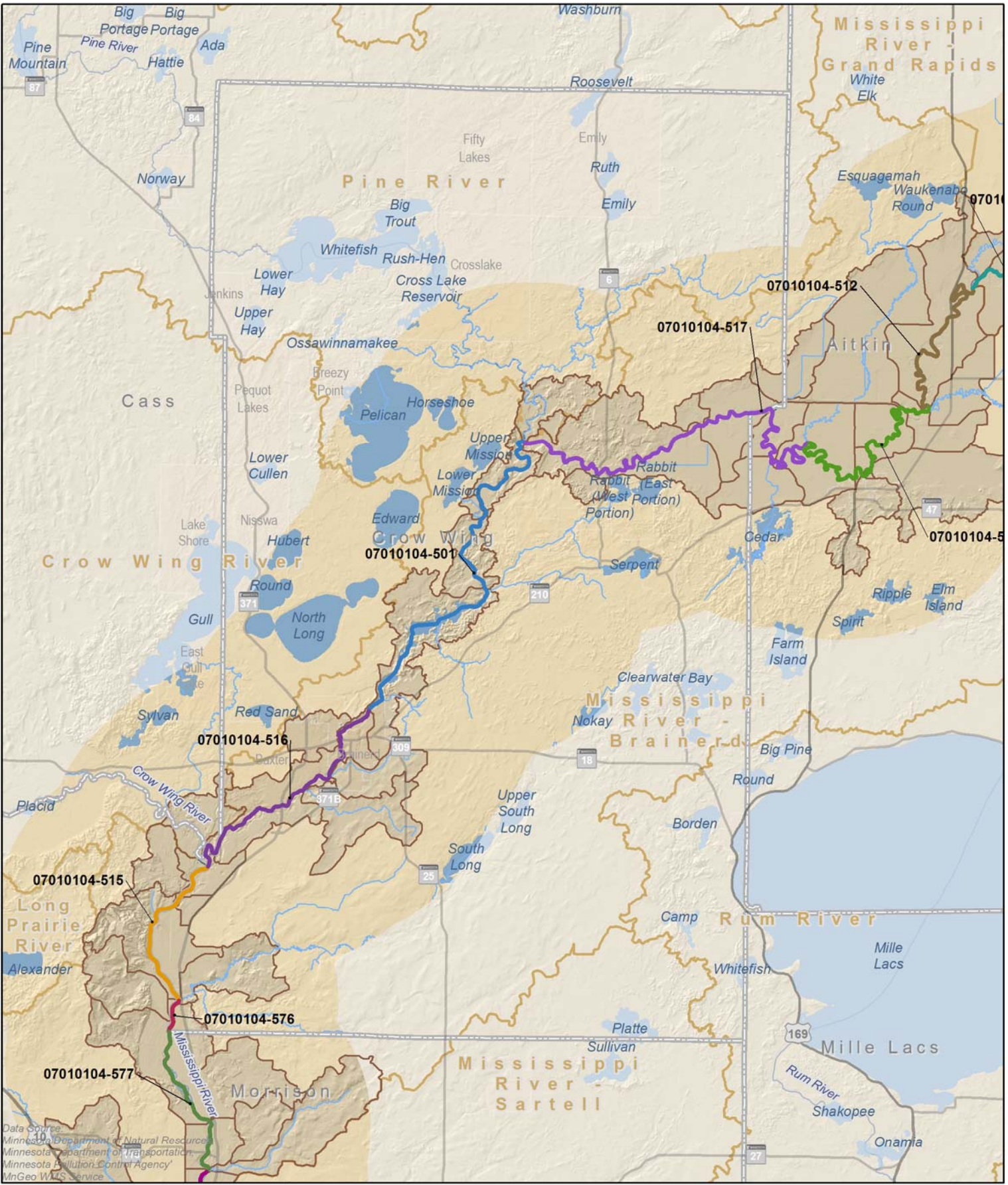


Environmental Services

CROW WING COUNTY

BRainerd, MINNESOTA 56401

Date: 5/14/2013 Time: 3:32:20 PM Author: ejensen
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Legend

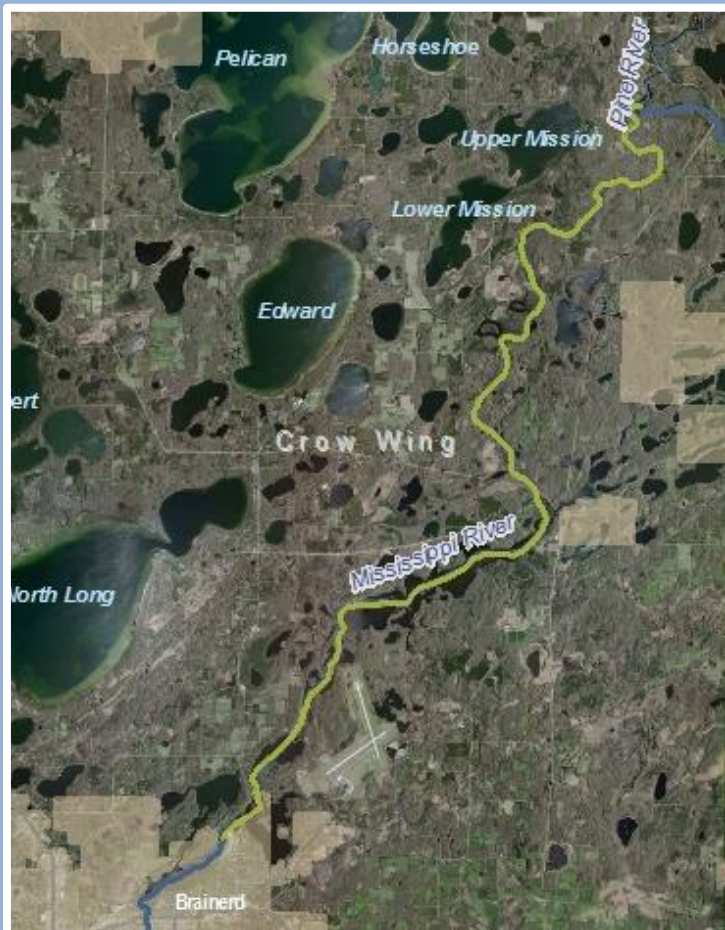
- DNR HUC 12 Watershed
- Major Watershed



**Water Quality Analysis for
Mississippi Headwaters Board**

Crow Wing County

0 3 6 9 Miles



- 20.32 miles
- Municipalities: None

WATER QUALITY

- 6 monitoring stations
- Data collected 2010-2012

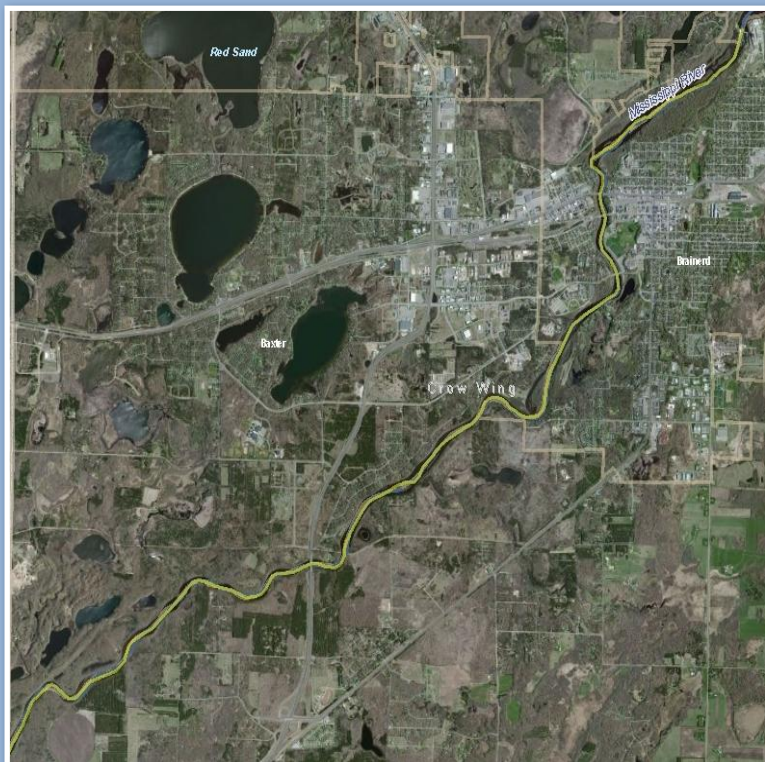
POLLUTANT	N	MEAN	SD	MIN	MAX
Ammonia (mg/L)	1	0.0005			
Chloride (mg/L)	2	3.75	0.22	3.59	3.90
Dissolved Oxygen (mg/L)	33	7.70	1.11	4.80	9.66
Inorganic Nitrogen (mg/L)	14	0.36	0.11	0.05	0.40
Phosphorus (mg/L)	13	0.05	0.02	0.03	0.08
Sulfate (mg/L)	2	3.34	0.29	3.13	3.54

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

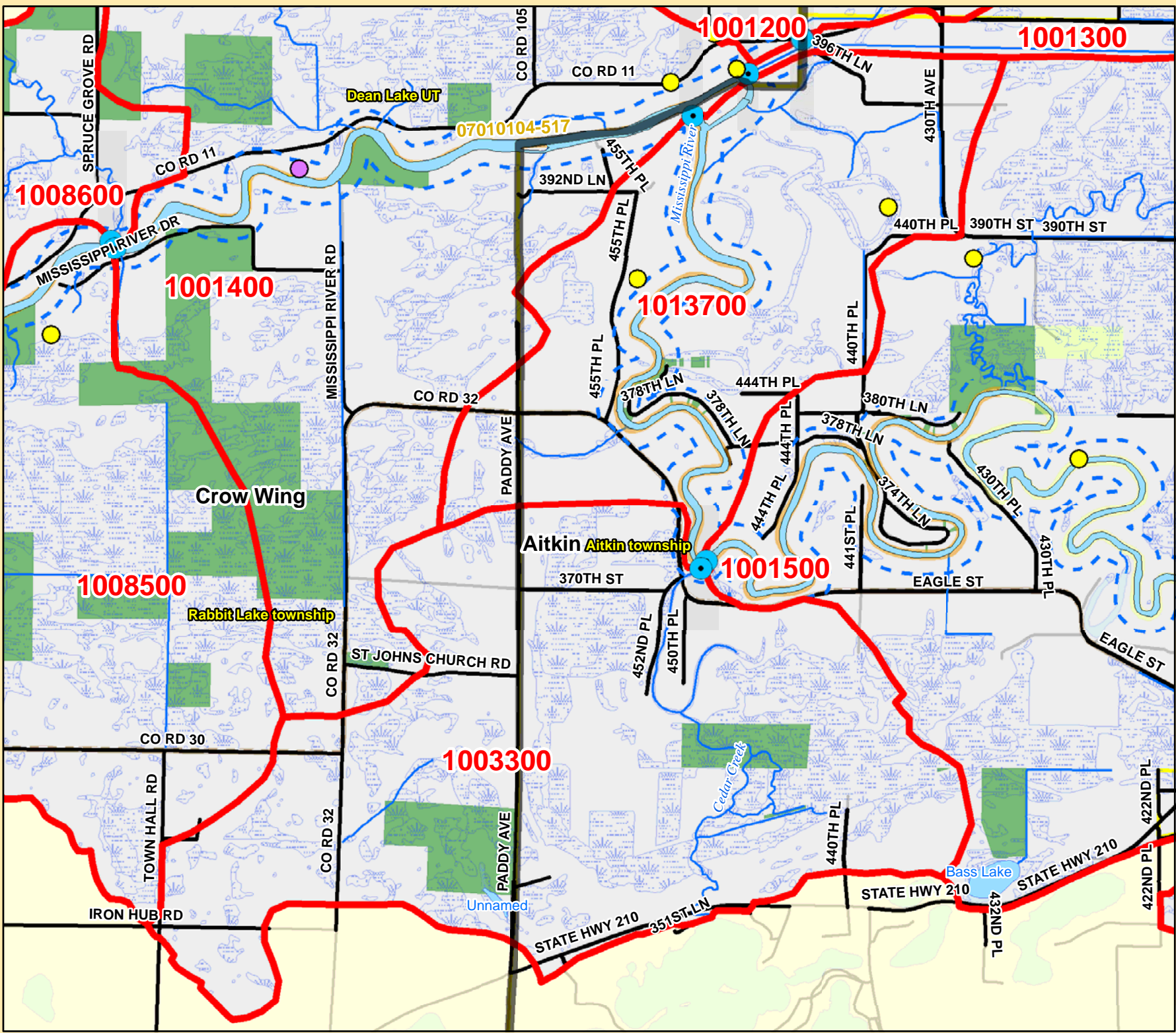
BIOLOGY

- 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

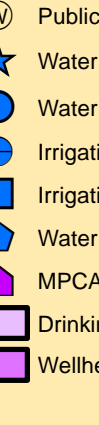
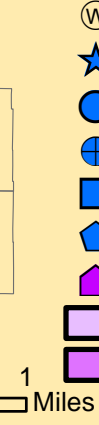
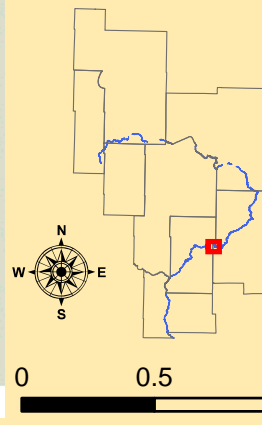

NAME	PERMIT NO.	CITY
BNSF RR - Former Tie Treating Plant	MN0055387	Baxter
Wausau Paper Mills LLC	MN0001422	Brainerd
Wausau Paper Mills LLC - ISW	MNR0534ZH	Brainerd





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	
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	
Native Mussel Habitat	
Ground Water	
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	
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	
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.)


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

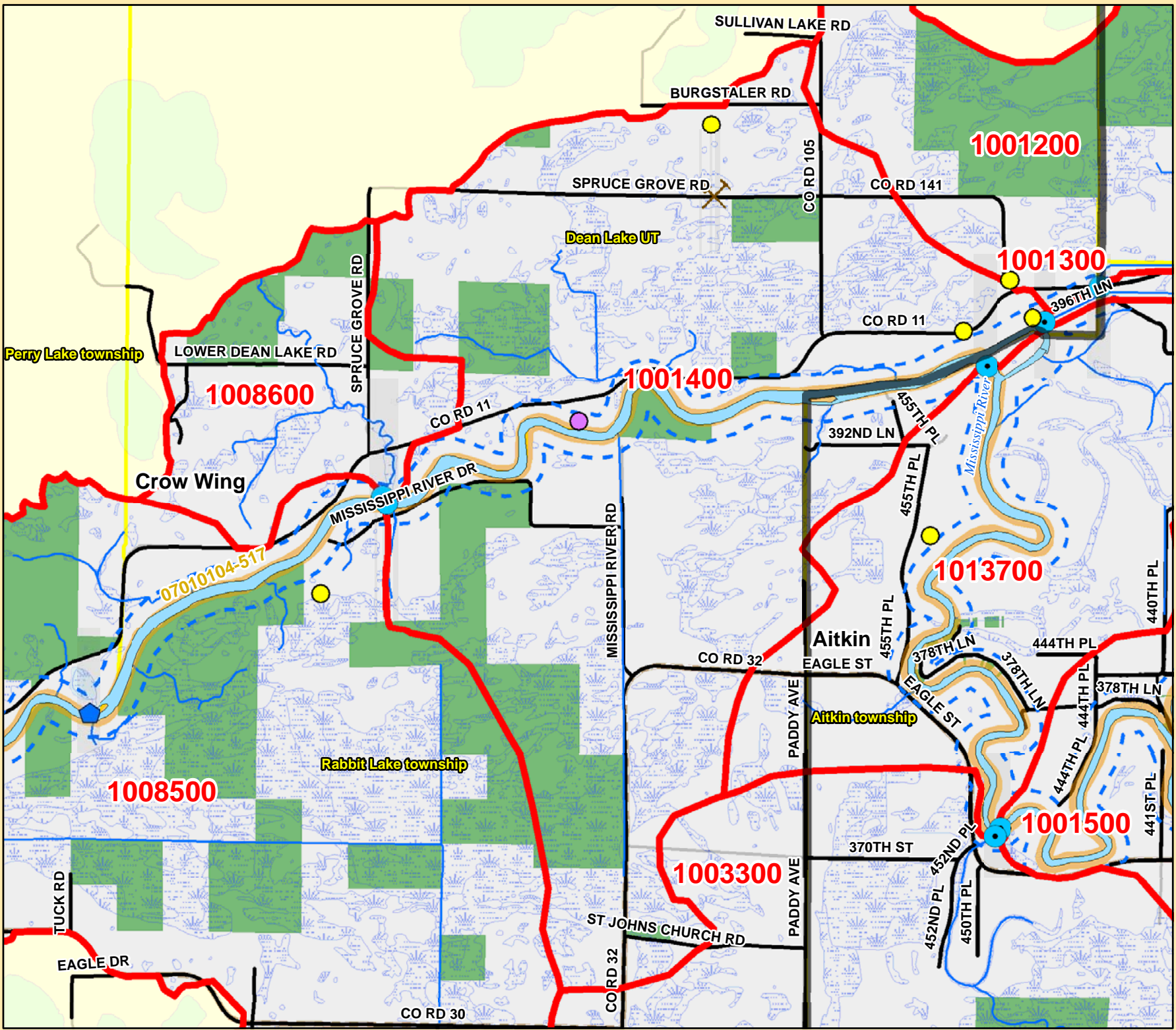
State Park Boundaries

State Recreation Area Boundaries

Scientific and Natural Areas

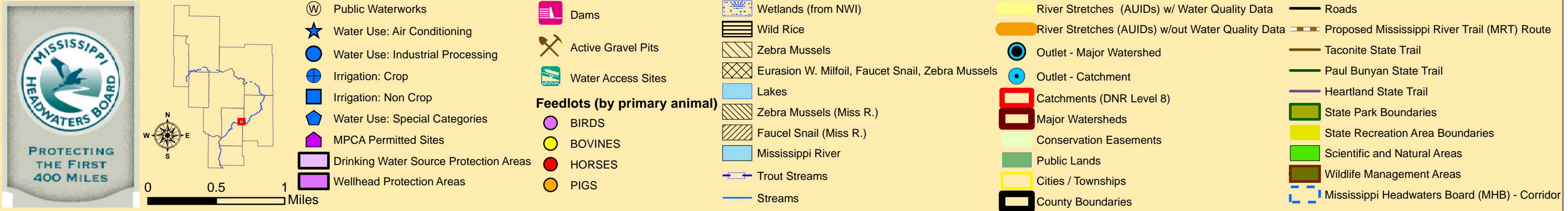
Wildlife Management Areas

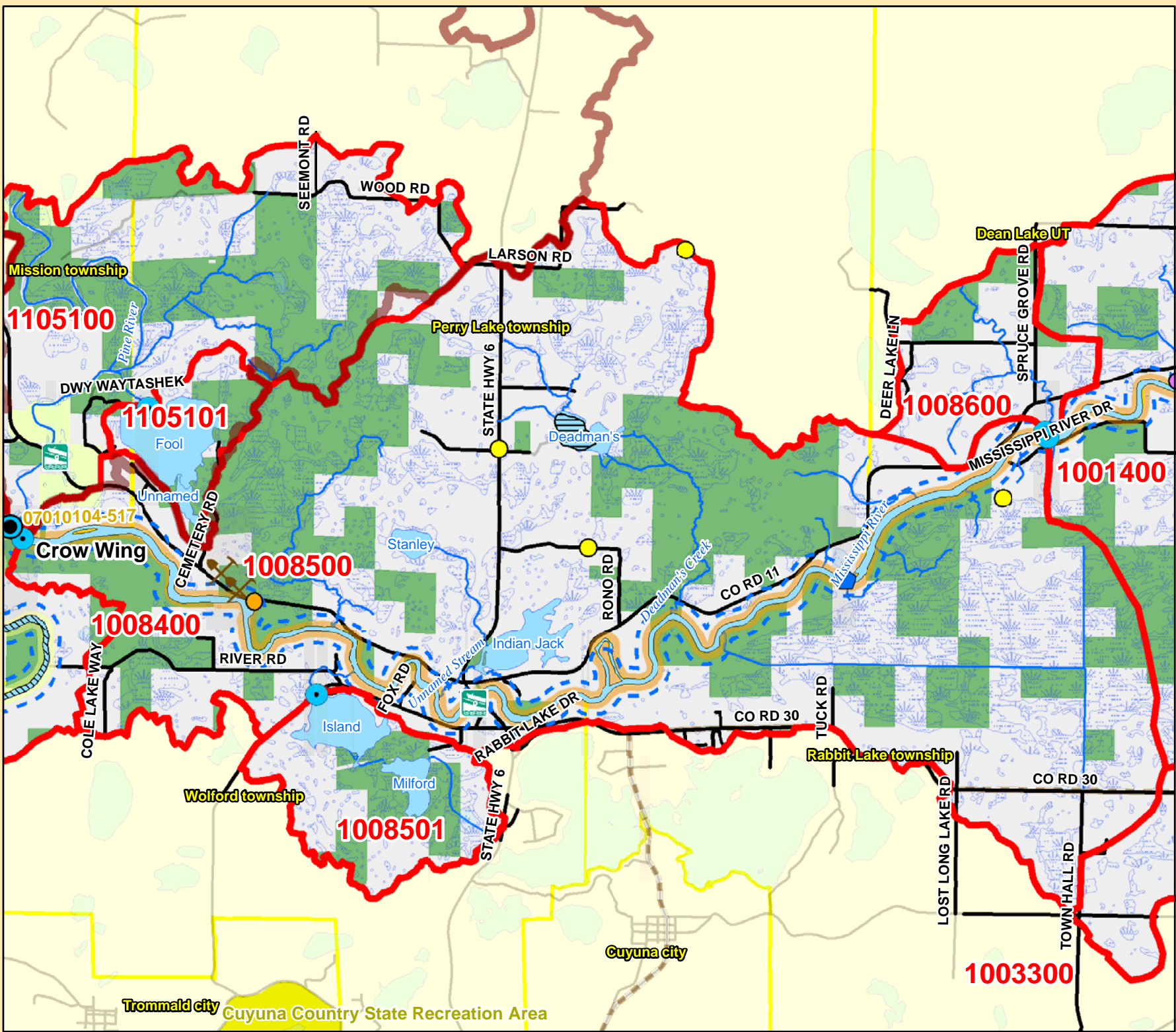
Mississippi Headwaters Board (MHB) - Corridor



Mississippi R. Catchment Map: Spruce Grove Rd

Catchment #	1001400	Catchment #	1008600
River Stretch(es) (AUIDs)	07010104-517	River Stretch(es) (AUIDs)	07010104-517
Area (sq. miles)	10	Area (sq. miles)	2
Population 2010 (persons per sq. mile)	8	Population 2010 (persons per sq. mile)	6
Population Change 2000 to 2010 (persons per sq. mile)	0	Population Change 2000 to 2010 (persons per sq. mile)	2
Surficial Geology	Undifferentiated	Surficial Geology	Undifferentiated
Topography	Level	Topography	Level
% Slope (avg.)	3	% Slope (avg.)	3
% Forested (private)	23	% Forested (private)	27
% Disturbed Land Cover	21	% Disturbed Land Cover	29
% Developed	3	% Developed	4
# of Animal Units	631	# of Animal Units	0
% Public Land	16	% Public Land	39
% Easements	0	% Easements	0
% Lakes	0	% Lakes	0
% Mississippi River	2	% Mississippi River	0
% Wetlands (private)	24	% Wetlands (private)	16
% Protected	43	% Protected	55
Risk Classification	Protection	Risk Classification	Protection
Implementation Priorities		Implementation Priorities	
Surface Water		Surface Water	
Aquatic Invasive Species		Aquatic Invasive Species	
Development (existing and potential)		Development (existing and potential)	
Agricultural BMPs	x	Agricultural BMPs	
Lake Focus:		Lake Focus:	
Lake Focus: Wild Rice		Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife		Lake Focus: Shallow /Wildlife	
Private Forest Stewardship		Private Forest Stewardship	x
Bluffs & Steep Slopes		Bluffs & Steep Slopes	
Bald Eagle Territory		Bald Eagle Territory	
Critical Bird Habitat		Critical Bird Habitat	
Rare Native Plants / Communities		Rare Native Plants / Communities	
Native Mussel Habitat		Native Mussel Habitat	
Ground Water		Ground Water	
Wellhead Protection		Wellhead Protection	





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
---------------------	------------

Implementation Priorities

Surface Water	
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	

Ground Water	
Wellhead Protection	

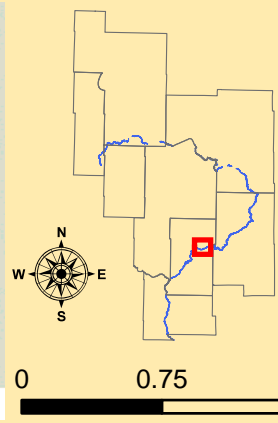
Catchment #	1008501
River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	2
Population 2010 (persons per sq. mile)	13
Population Change 2000 to 2010 (persons per sq. mile)	2
Surficial Geology	Supraglacial Drift Complex
Topography	Steep
% Slope (avg.)	16
% Forested (private)	43
% Disturbed Land Cover	2
% Developed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

Risk Classification	Vigilance
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Implementation Priorities

Surface Water	
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	

Ground Water	
Wellhead Protection	



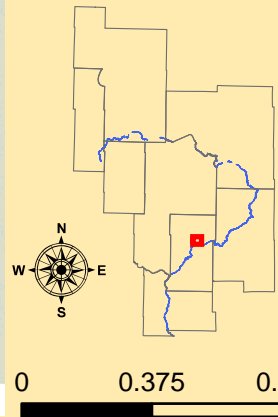
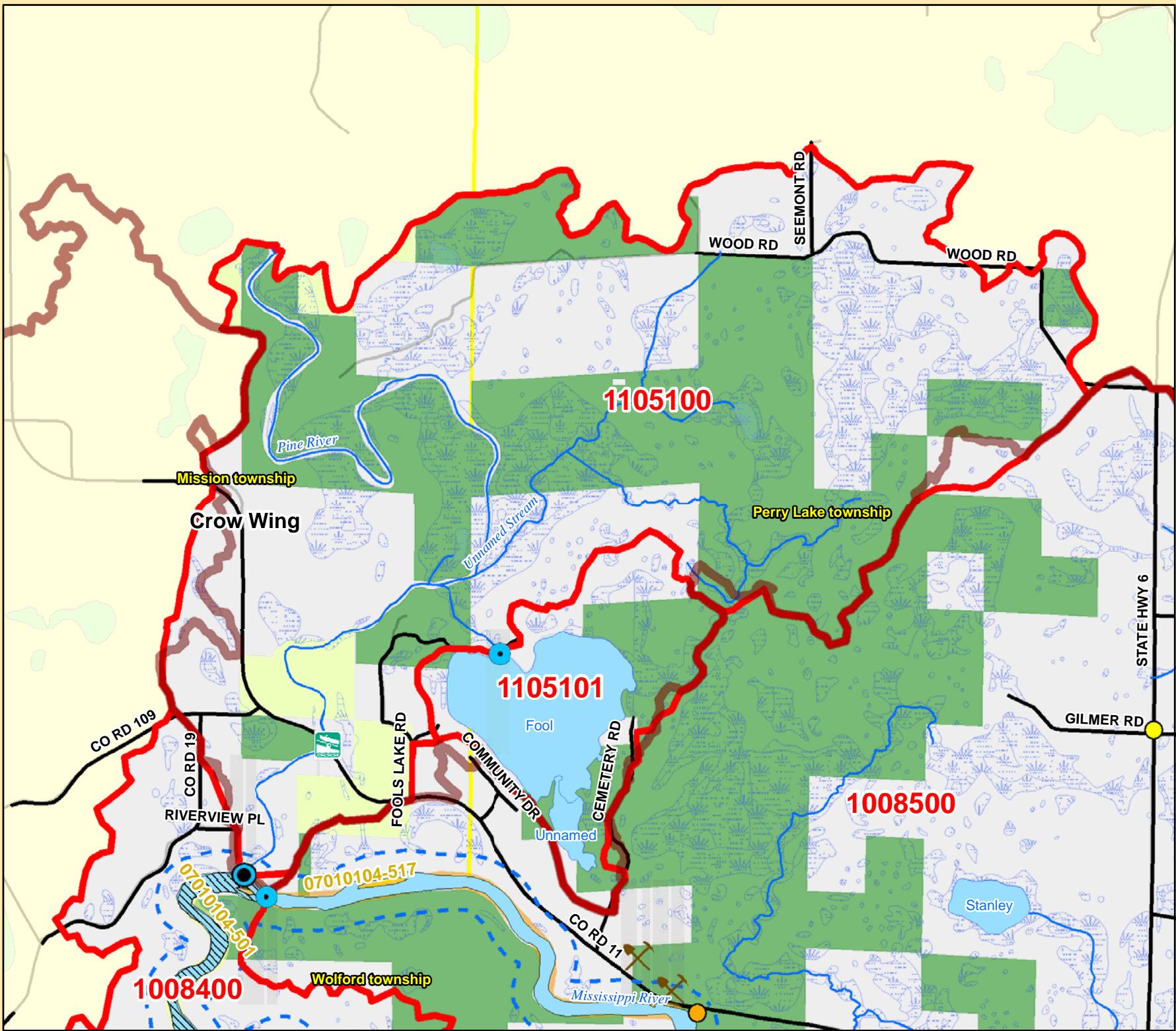
- (W) Public Waterworks
- ★ Water Use: Air Conditioning
- Water Use: Industrial Processing
- ⊕ Irrigation: Crop
- Irrigation: Non Crop
- ⬠ Water Use: Special Categories
- ⬠ MPCA Permitted Sites
- ⬠ Drinking Water Source Protection Areas
- ⬠ Wellhead Protection Areas

- 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
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- Paul Bunyan State Trail
- Heartland State Trail
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- Wildlife Management Areas
- Mississippi Headwaters Board (MHB) - Corridor



- (W) 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

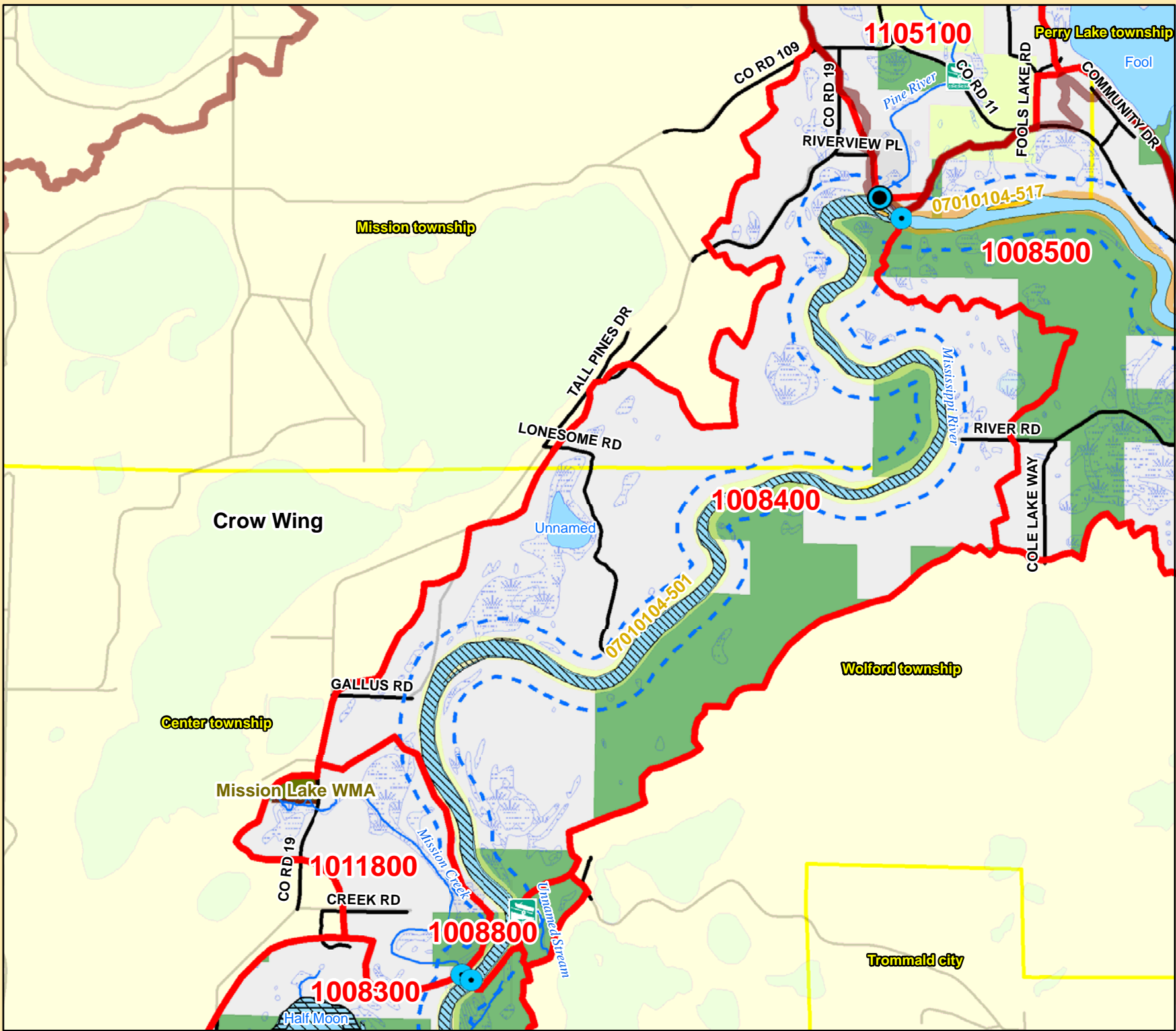
- ⬠ Wetlands (from NWI)
- ⬠ Wild Rice
- ⬠ Zebra Mussels
- ⬠ Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
- ⬠ Lakes
- ⬠ Zebra Mussels (Miss R.)
- ⬠ Faucel Snail (Miss R.)
- ⬠ Mississippi River
- ⬠ Trout Streams
- ⬠ Streams

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	

- ⬠ 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
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- ⬠ Heartland State Trail
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- ⬠ State Recreation Area Boundaries
- ⬠ Scientific and Natural Areas
- ⬠ 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

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 #	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	
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	
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.)

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

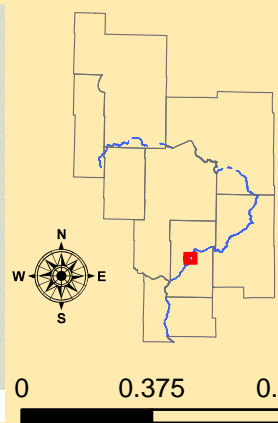
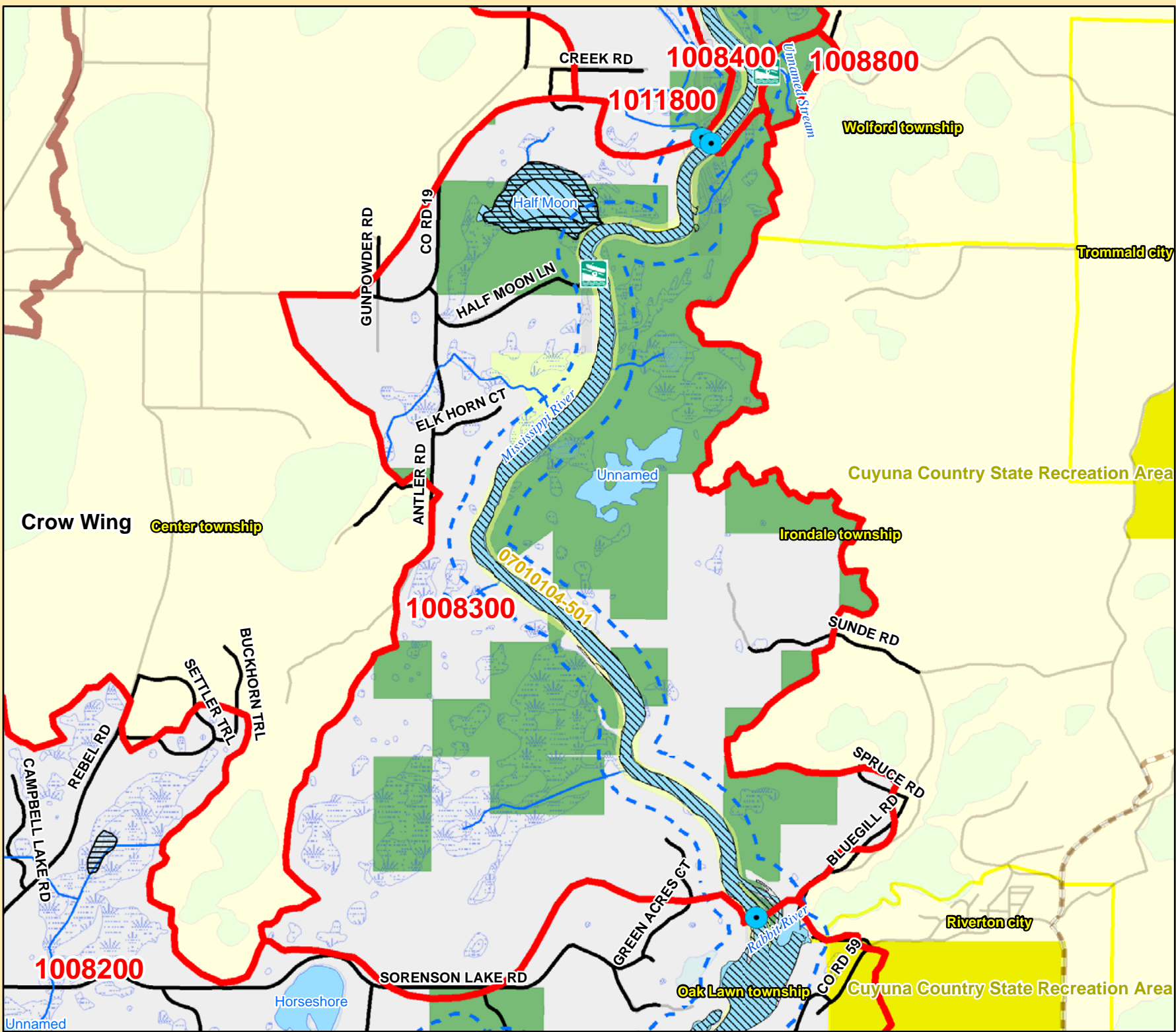
State Recreation Area Boundaries

Scientific and Natural Areas

Wildlife Management Areas

Mississippi Headwaters Board (MHB) - Corridor

0 0.4 0.8 Miles



- 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

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- Mississippi Headwaters Board (MHB) - Corridor

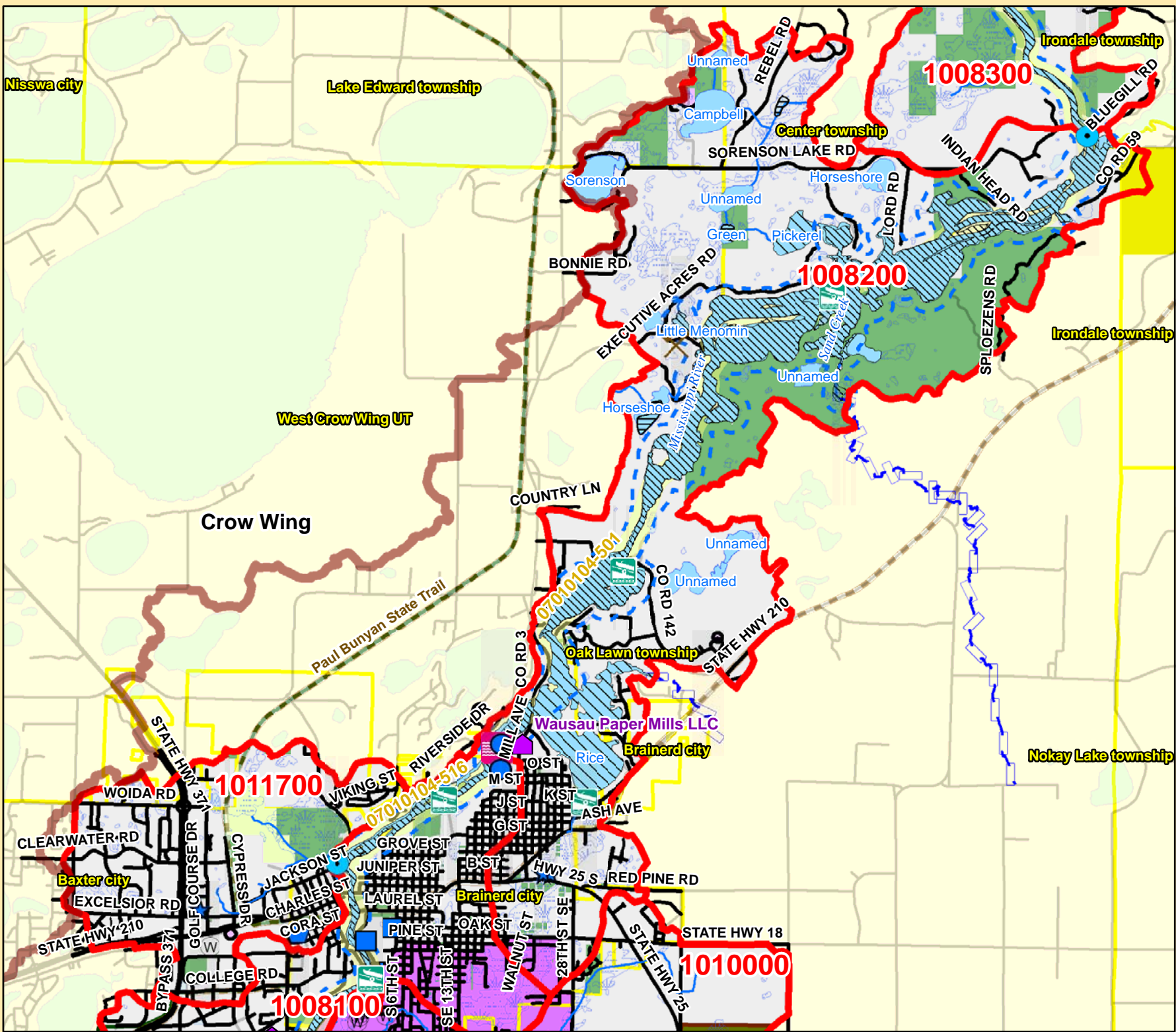
Mississippi R. Catchment Map: Half Moon Lake / Landing

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

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	

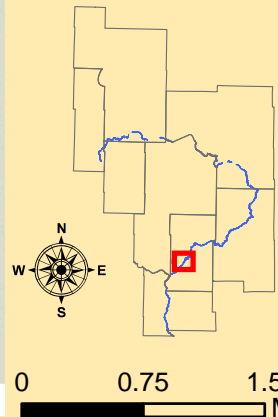
Catchment #	1008800
River Stretch(es) (AUIDs)	07010104-501
Area (sq. miles)	0
Population 2010 (persons per sq. mile)	1
Population Change 2000 to 2010 (persons per sq. mile)	-3
Surficial Geology	Outwash
Topography	Rolling to Undulating
% Slope (avg.)	13
% Forested (private)	2
% Disturbed Land Cover	3
% 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	
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	



Mississippi R. Catchment Map: Rice Lake / Whiskey Creek

Catchment #	1008200	Catchment #	1011700
River Stretch(es) (AUIDs)	07010104-501	River Stretch(es) (AUIDs)	N/A
Area (sq. miles)	19	Area (sq. miles)	5
Population 2010 (persons per sq. mile)	177	Population 2010 (persons per sq. mile)	512
Population Change 2000 to 2010 (persons per sq. mile)	-12	Population Change 2000 to 2010 (persons per sq. mile)	208
Surficial Geology	Supraglacial Drift Complex	Surficial Geology	Lacustrine
Topography	Steep	Topography	Level
% Slope (avg.)	13	% Slope (avg.)	6
% Forested (private)	29	% Forested (private)	14
% Disturbed Land Cover	19	% Disturbed Land Cover	62
% Developed	11	% Developed	50
# of Animal Units	0	# of Animal Units	0
% Public Land	23	% Public Land	8
% Easements	0	% Easements	5
% Lakes	8	% Lakes	0
% Mississippi River	14	% Mississippi River	0
% Wetlands (private)	9	% Wetlands (private)	6
% Protected	54	% Protected	18
Risk Classification	Protection	Risk Classification	Enhance
Implementation Priorities		Implementation Priorities	
Surface Water		Surface Water	
Aquatic Invasive Species	x	Aquatic Invasive Species	
Development (existing and potential)	x	Development (existing and potential)	x
Agricultural BMPs		Agricultural BMPs	
Lake Focus:	x	Lake Focus:	
Lake Focus: Wild Rice	x	Lake Focus: Wild Rice	
Lake Focus: Shallow /Wildlife	x	Lake Focus: Shallow /Wildlife	
Private Forest Stewardship	x	Private Forest Stewardship	
Bluffs & Steep Slopes	x	Bluffs & Steep Slopes	
Bald Eagle Territory	x	Bald Eagle Territory	x
Critical Bird Habitat	x	Critical Bird Habitat	
Rare Native Plants / Communities	x	Rare Native Plants / Communities	x
Native Mussel Habitat	x	Native Mussel Habitat	
Ground Water		Ground Water	
Wellhead Protection	x	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.)

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

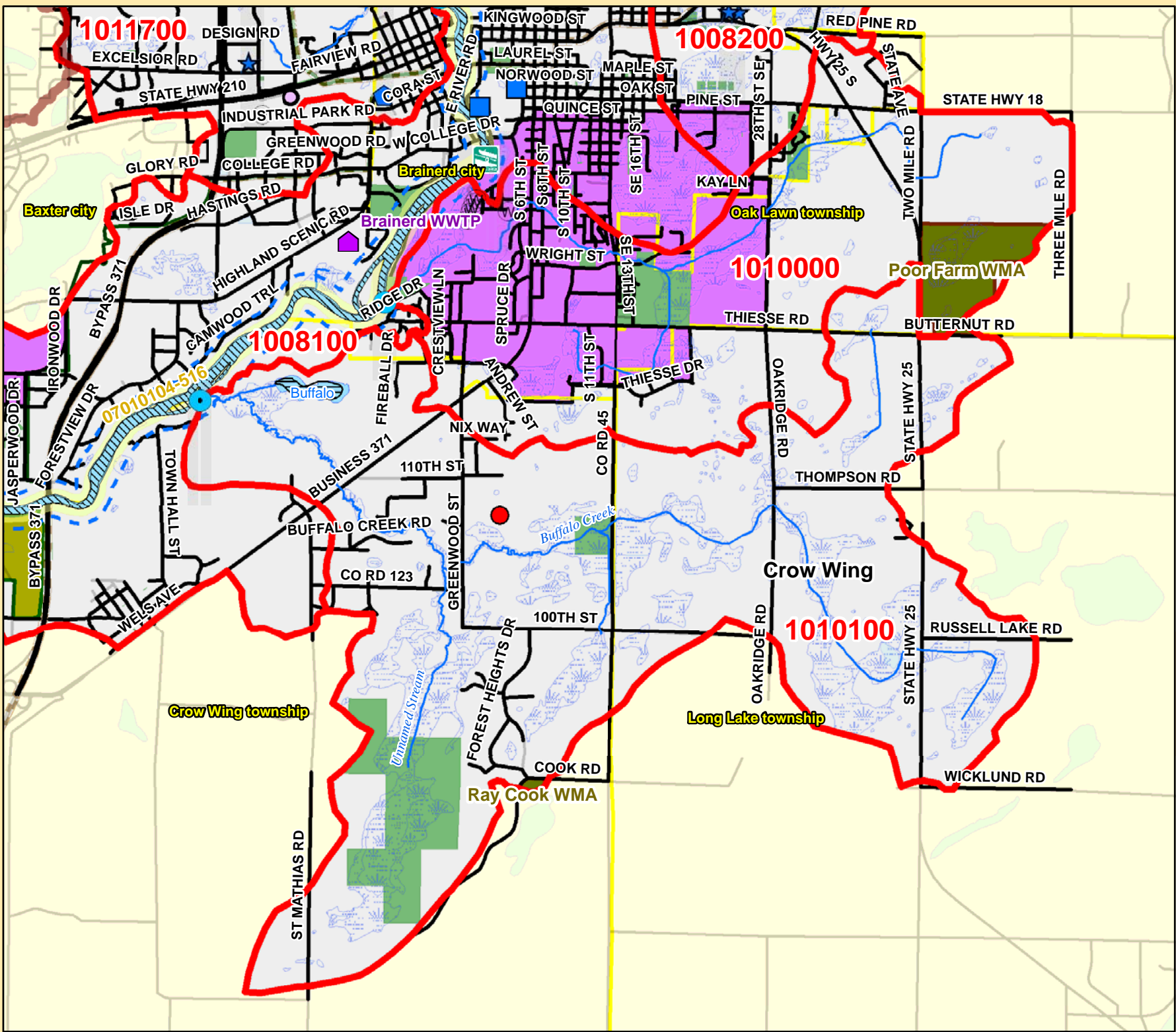
State Park Boundaries

State Recreation Area Boundaries

Scientific and Natural Areas

Wildlife Management Areas

Mississippi Headwaters Board (MHB) - Corridor



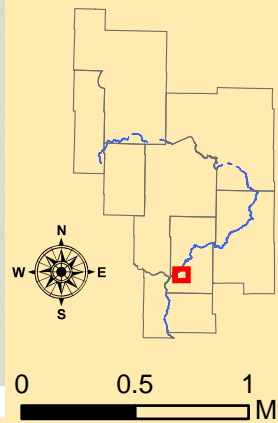
Mississippi R. Catchment Map: Brainerd SE

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

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

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	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	

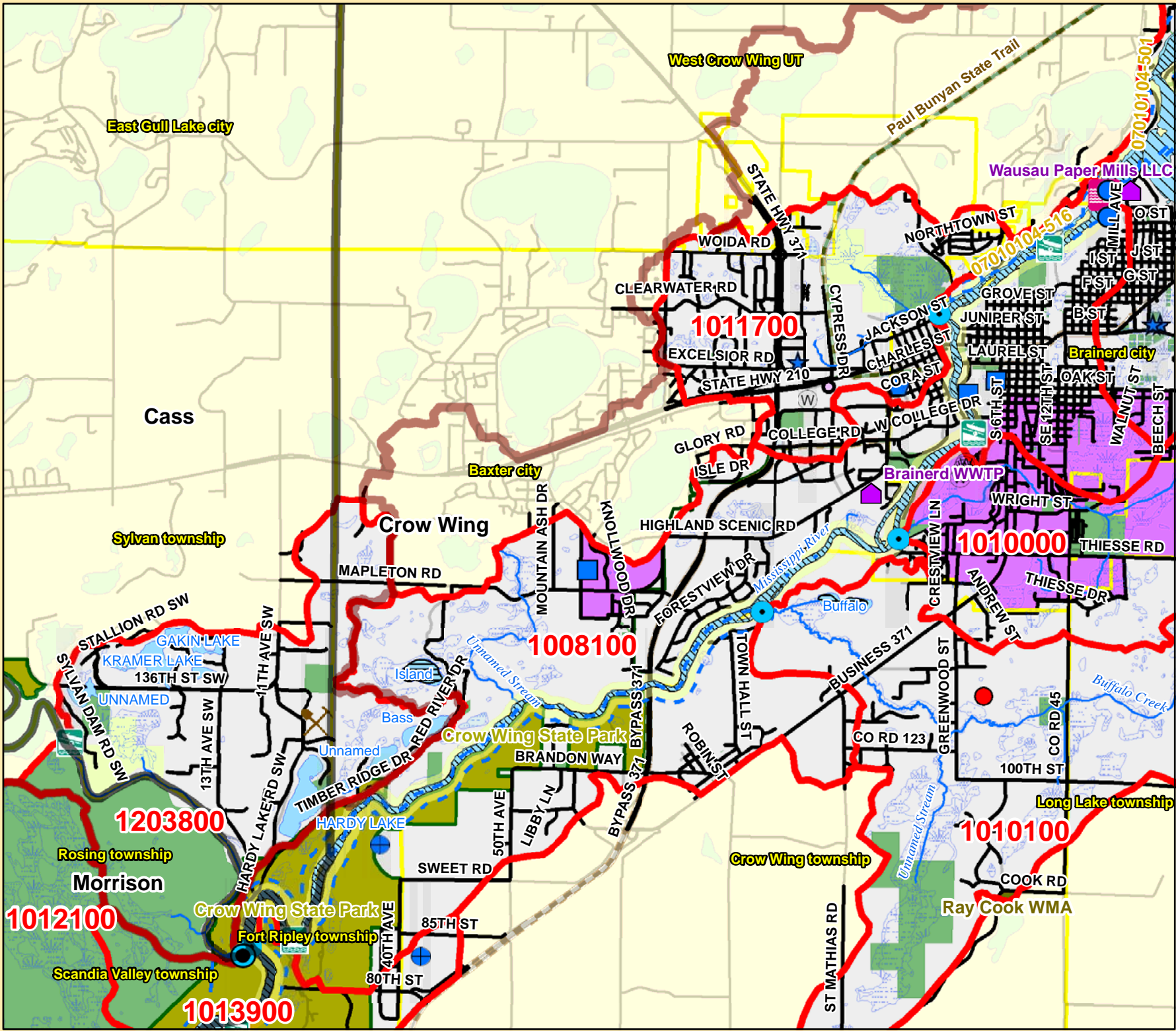


- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas

- Dams
- 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.)
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- Streams

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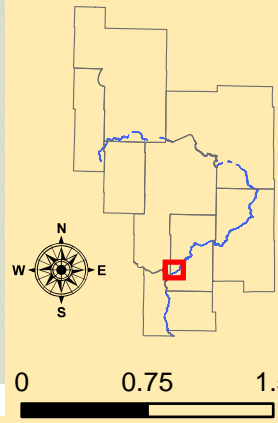
Mississippi R. Catchment Map: Brainerd & Baxter

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

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

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	
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	

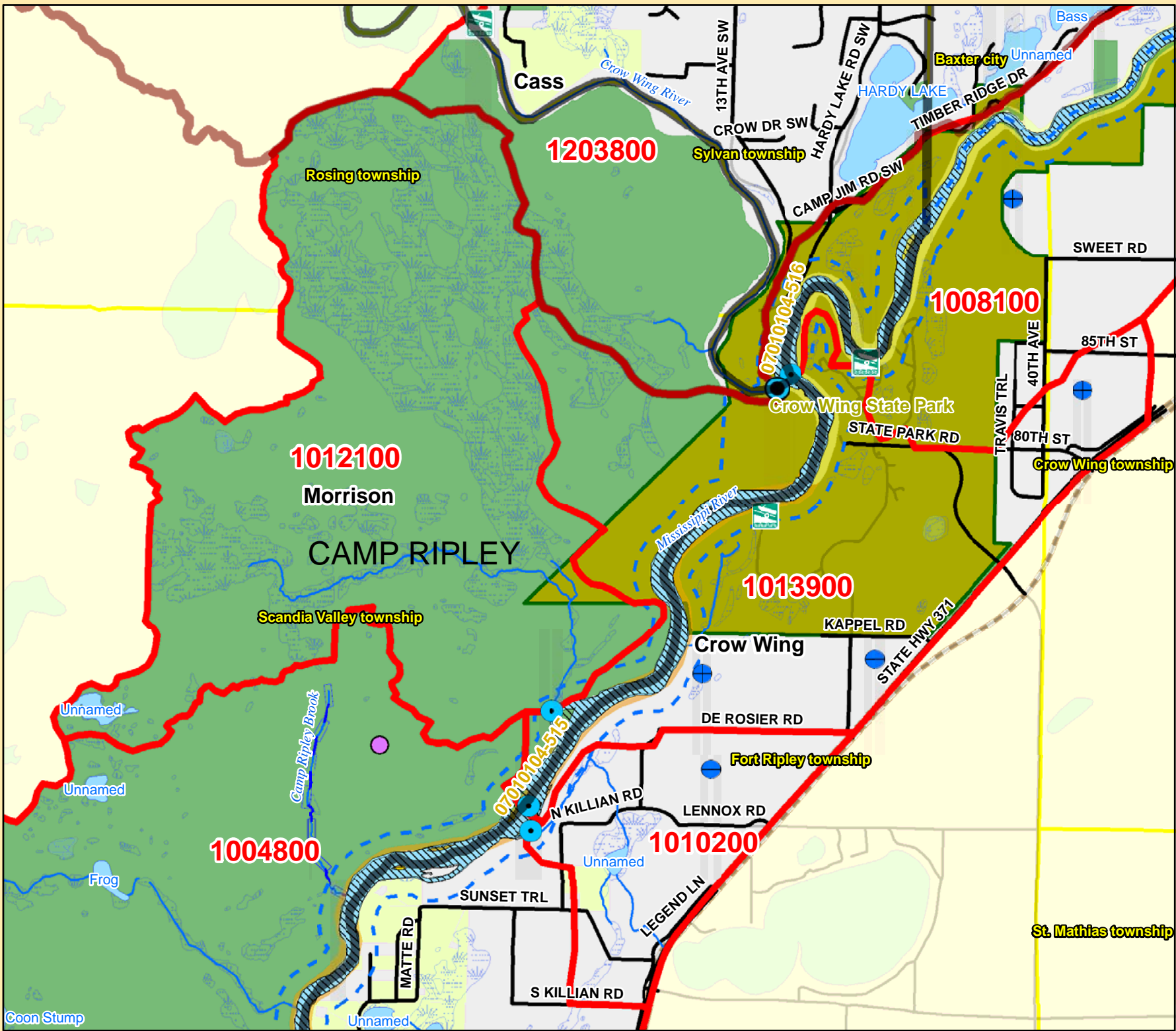


- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas

- 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
- Trout Streams
- Streams

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- Wildlife Management Areas
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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
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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	

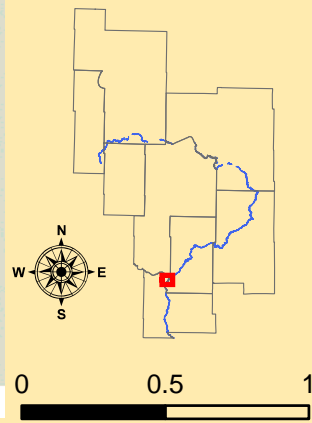
Catchment #	1013900
River Stretch(es) (AUIDs)	07010104-515
Area (sq. miles)	4
Population 2010 (persons per sq. mile)	32
Population Change 2000 to 2010 (persons per sq. mile)	22
Surficial Geology	Outwash
Topography	Level
% Slope (avg.)	6
% Forested (private)	3
% Disturbed Land Cover	41
% Developed	5
#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

Risk Classification	Protection
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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	



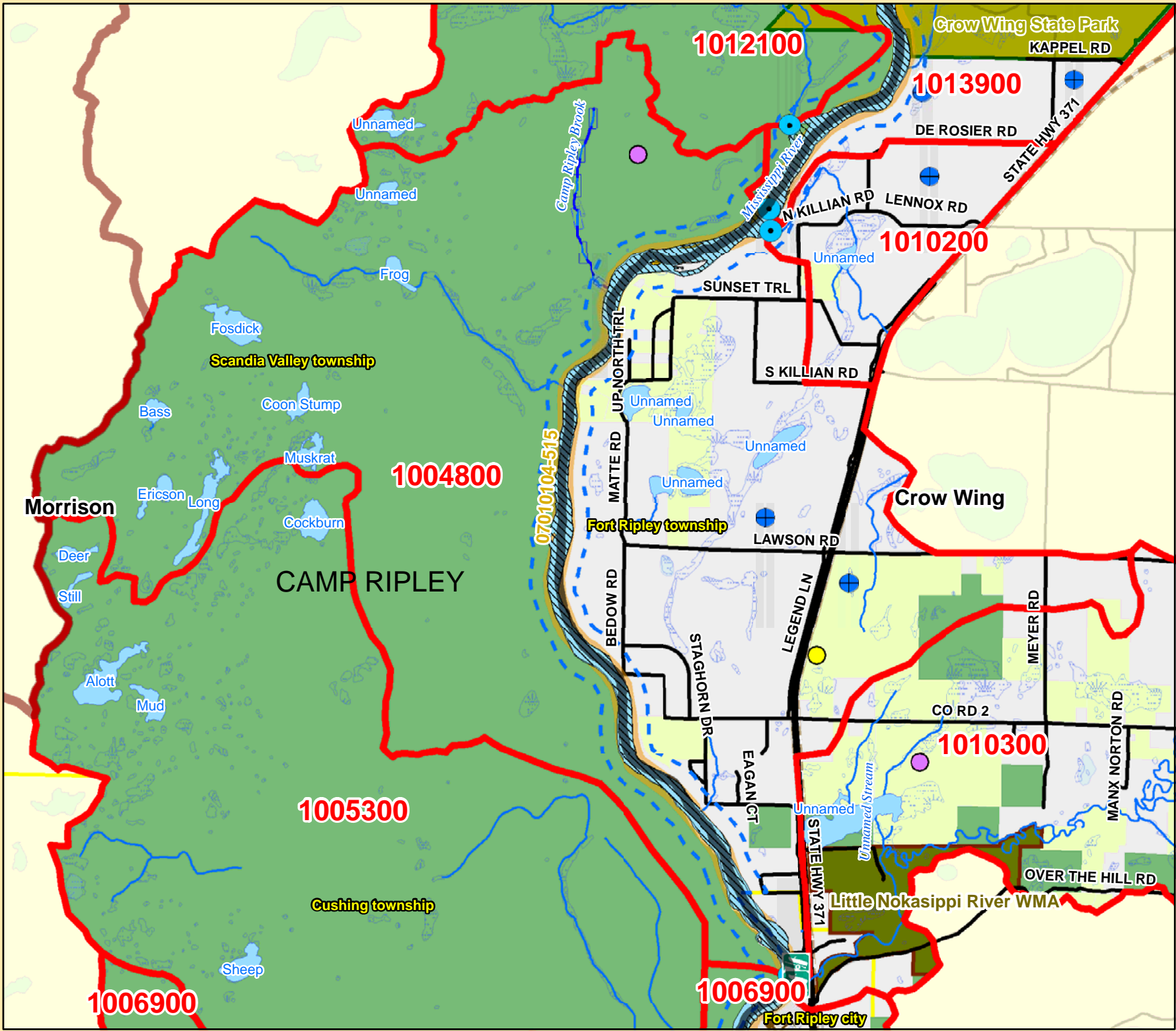
- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas

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

- Wetlands (from NWI)
- Wild Rice
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- Eurasian W. Milfoil, Faucet Snail, Zebra Mussels
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- River Stretches (AUIDs) w/ Water Quality Data
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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	

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	

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

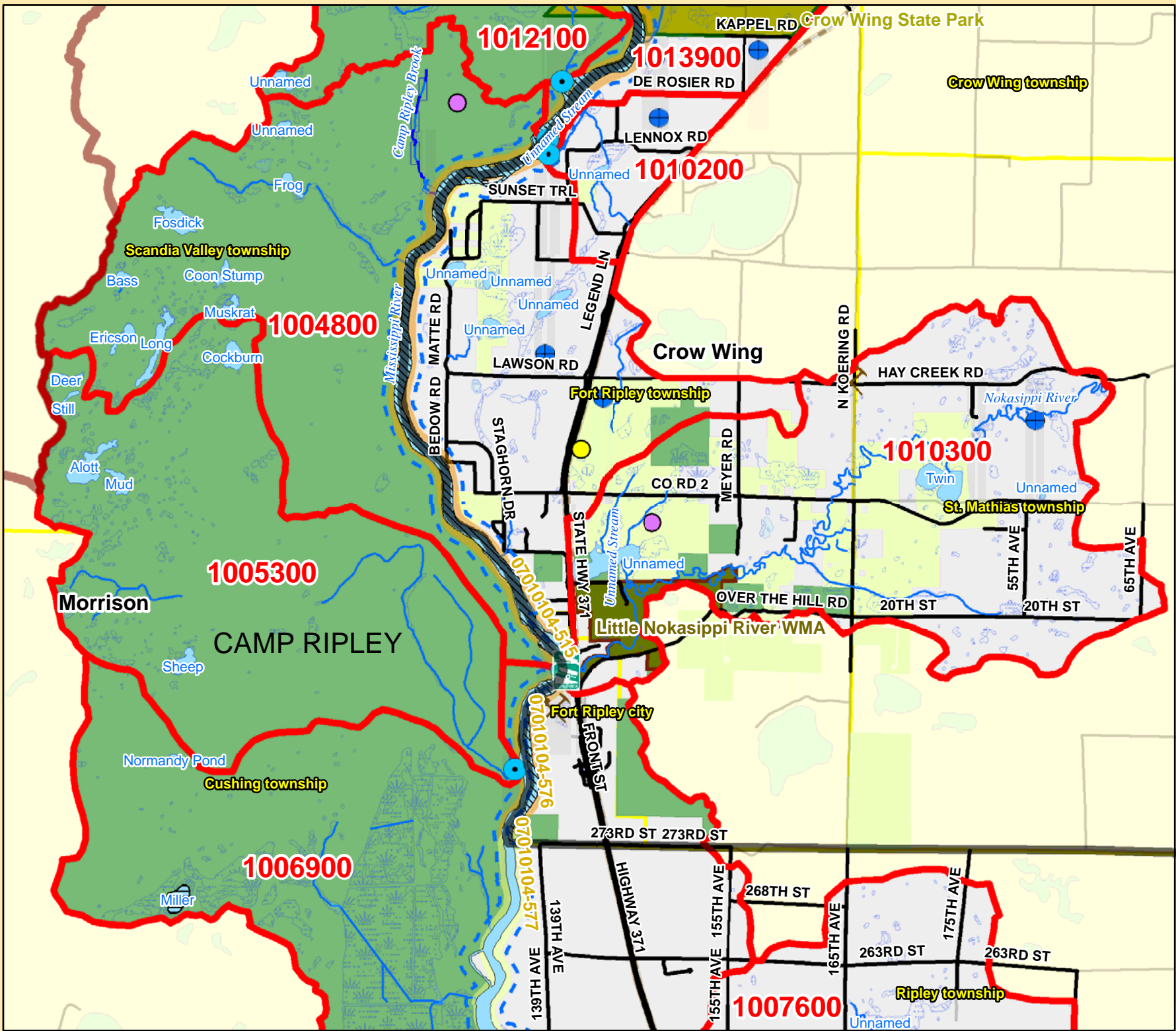
State Park Boundaries

State Recreation Area Boundaries

Scientific and Natural Areas

Wildlife Management Areas

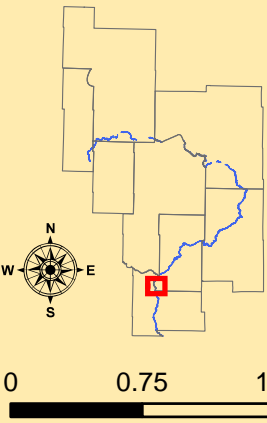
Mississippi Headwaters Board (MHB) - Corridor



Mississippi R. Catchment Map: 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	
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	x
Bald Eagle Territory	x
Critical Bird Habitat	x
Rare Native Plants / Communities	
Native Mussel Habitat	
Ground Water	
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	
Surface Water	
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	
Ground Water	
Wellhead Protection	

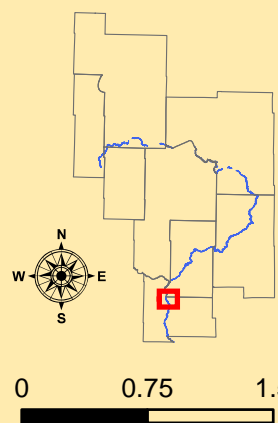
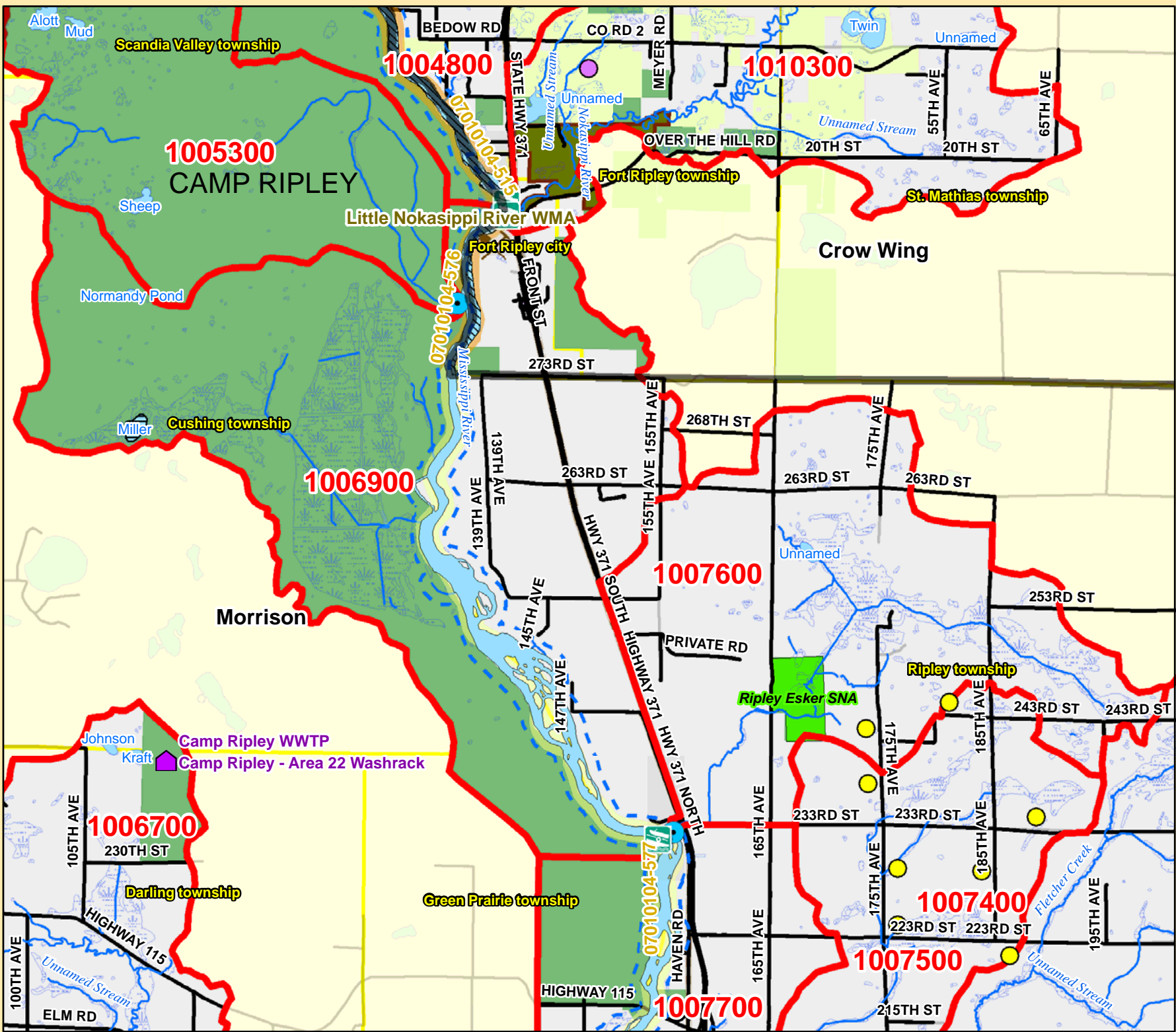


- Public Waterworks
- Water Use: Air Conditioning
- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
- MPCA Permitted Sites
- Drinking Water Source Protection Areas
- Wellhead Protection Areas

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

- Wetlands (from NWI)
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- Public Waterworks
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- Water Use: Industrial Processing
- Irrigation: Crop
- Irrigation: Non Crop
- Water Use: Special Categories
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- Dams
- Active Gravel Pits
- Water Access Sites
- Feedlots (by primary animal)**
 - BIRDS
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 - PIGS

- Wetlands (from NWI)
- Wild Rice
- Zebra Mussels
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- Lakes
- Zebra Mussels (Miss R.)
- Faucel Snail (Miss R.)
- Mississippi River
- Trout Streams
- Streams

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	

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