

Adaptive Management & Wetland Restoration

Rock River Basin TMDL



Mike Vollrath

NPS Coordinator & Rock River Basin TMDL Coordinator
WDNR, Southern District

michael.vollrath@wisconsin.gov

Sarah MacFarland

Rock River TMDL Coordination Assistant
WDNR, Southern District

sarah.macfarland@wisconsin.gov

Rock River Basin

Total Daily Maximum Load (TMDL)

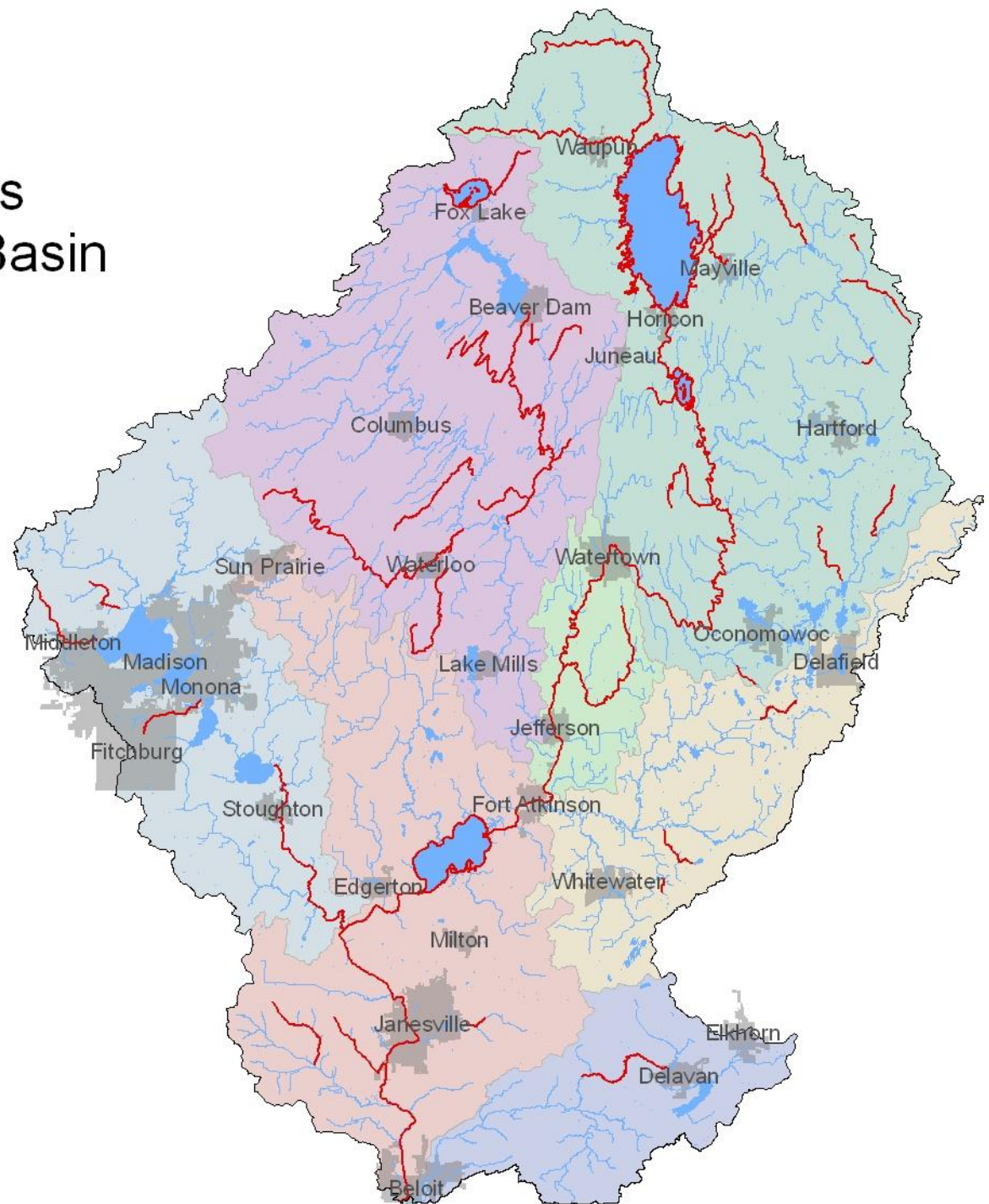
Overview

Mike Vollrath

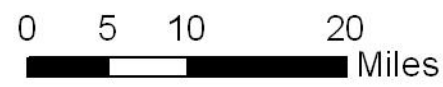
NPS Coordinator & Rock River Basin TMDL Coordinator
WDNR Southern District

michael.vollrath@wisconsin.gov

Impaired Waters in the Rock River Basin



 Impaired Waters

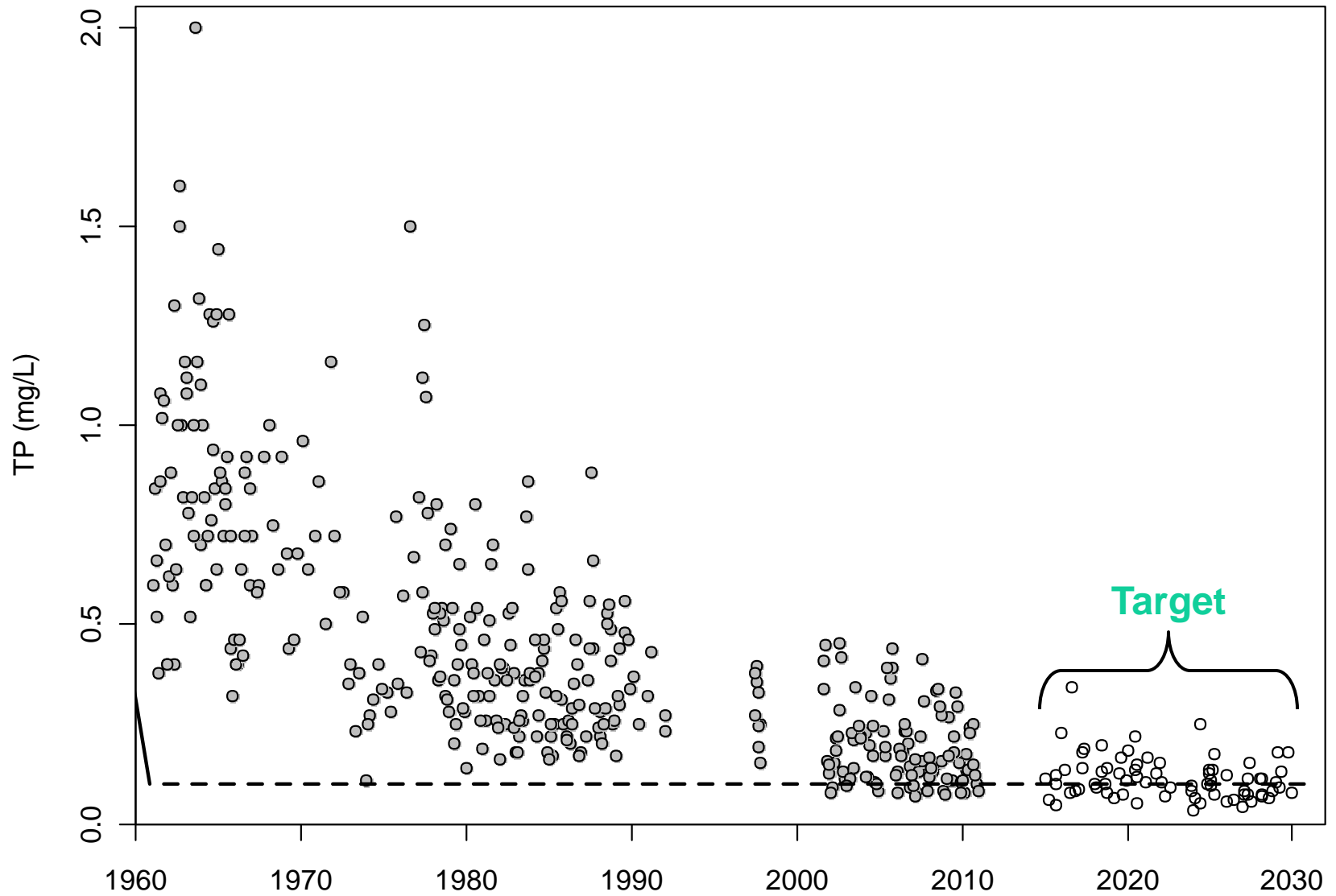


Pollutants of Concern

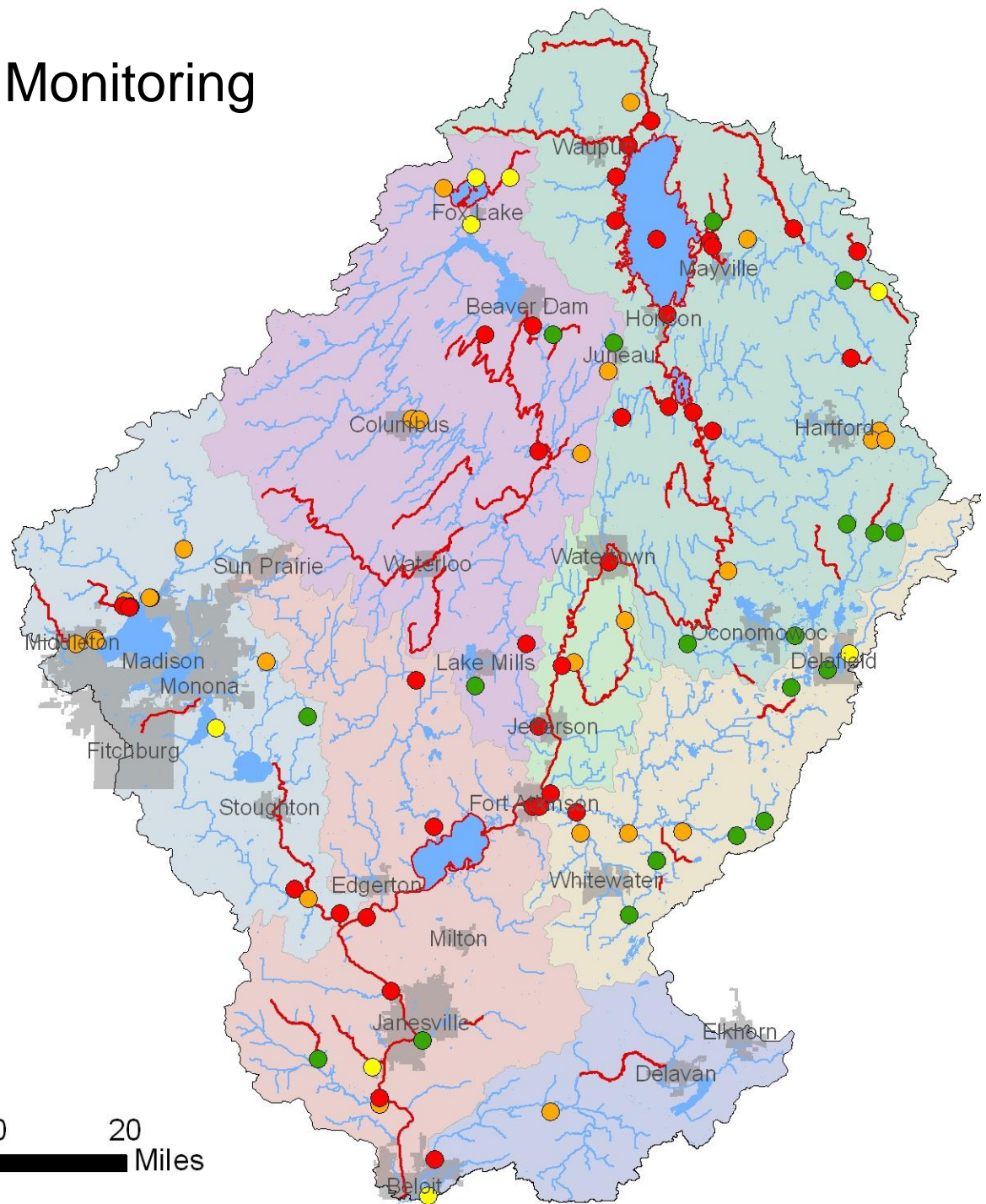
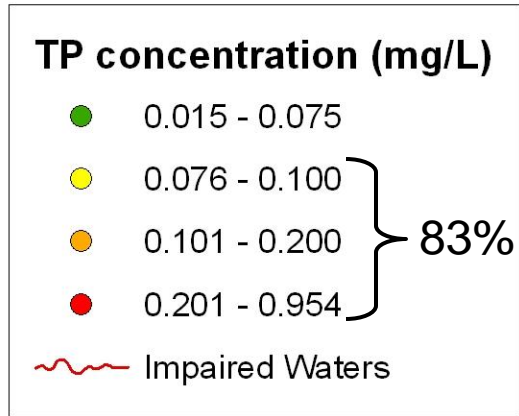
The Rock River TMDL addresses 62 impaired waters

- 20 impaired by sediment only
- 3 impaired by phosphorus only
- 39 impaired by both sediment and phosphorus

Rock River at Afton, WI



Water Quality Monitoring



What are TMDLs?

The amount of a pollutant a waterbody can receive and still meet water quality standards

(Essentially, a water pollution budget)

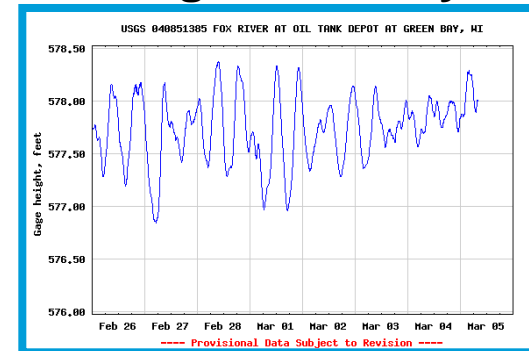
Load Allocation



Waste Load Allocation



Margin of Safety



TMDL Allocations

Waste Load Allocation

- WWTPs / POTWs
- Industries
- MS4s
- Non-Metallic Mines
- Construction Sites
- CAFOs

Load Allocation

- Agricultural
- Non-permitted Urban
- Background

Phosphorus Water Quality Targets

NR 102 Phosphorus Criteria

- 0.100 mg/L for rivers named in statute
- 0.075 mg/L for all other streams and rivers
- 0.100 mg/L for impoundments (*Koshkonong & Sinissippi*)
- 0.040 mg/L for shallow lakes (*Fox*)

Poll and Q&A

Adaptive Management

One of two alternative compliance options

Mike Vollrath

NPS Coordinator & Rock River Basin TMDL Coordinator
WDNR Southern District

michael.vollrath@wisconsin.gov

AM as a compliance tool

- Between a permittee or group of permittees and the community – ag or urban stormwater
 - Must meet certain eligibility criteria:
 - Receiving waterbody must exceed water quality criterion
 - Non-point source P loading must be at least 50%
 - Permittee must require filtration to meet discharge limit

Adaptive Management

- Aspects of AM plan must be placed in permit
 - Time frame
 - Proposed practices
 - Identified Action Area
- Generally require less information from agriculture than trades
- Success based on meeting in-stream WQ criteria at reach discharge point
 - Monitoring, not accounting

Phosphorus Water Quality Targets

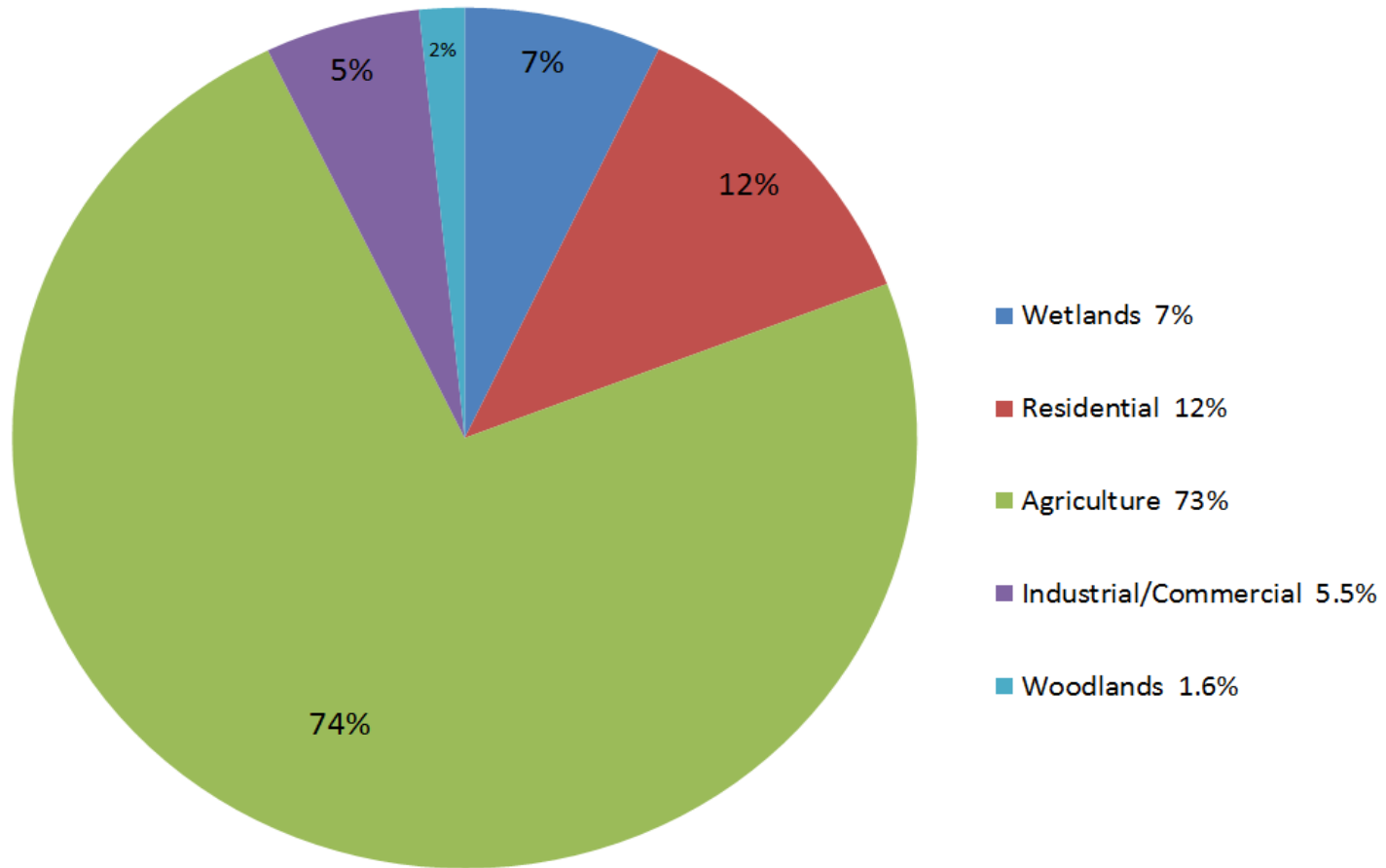
NR 102 Phosphorus Criteria

- 0.100 mg/L for rivers named in statute
- 0.075 mg/L for all other streams and rivers
- 0.100 mg/L for impoundments (*Koshkonong & Sinissippi*)
- 0.040 mg/L for shallow lakes (*Fox*)

Likely Practices

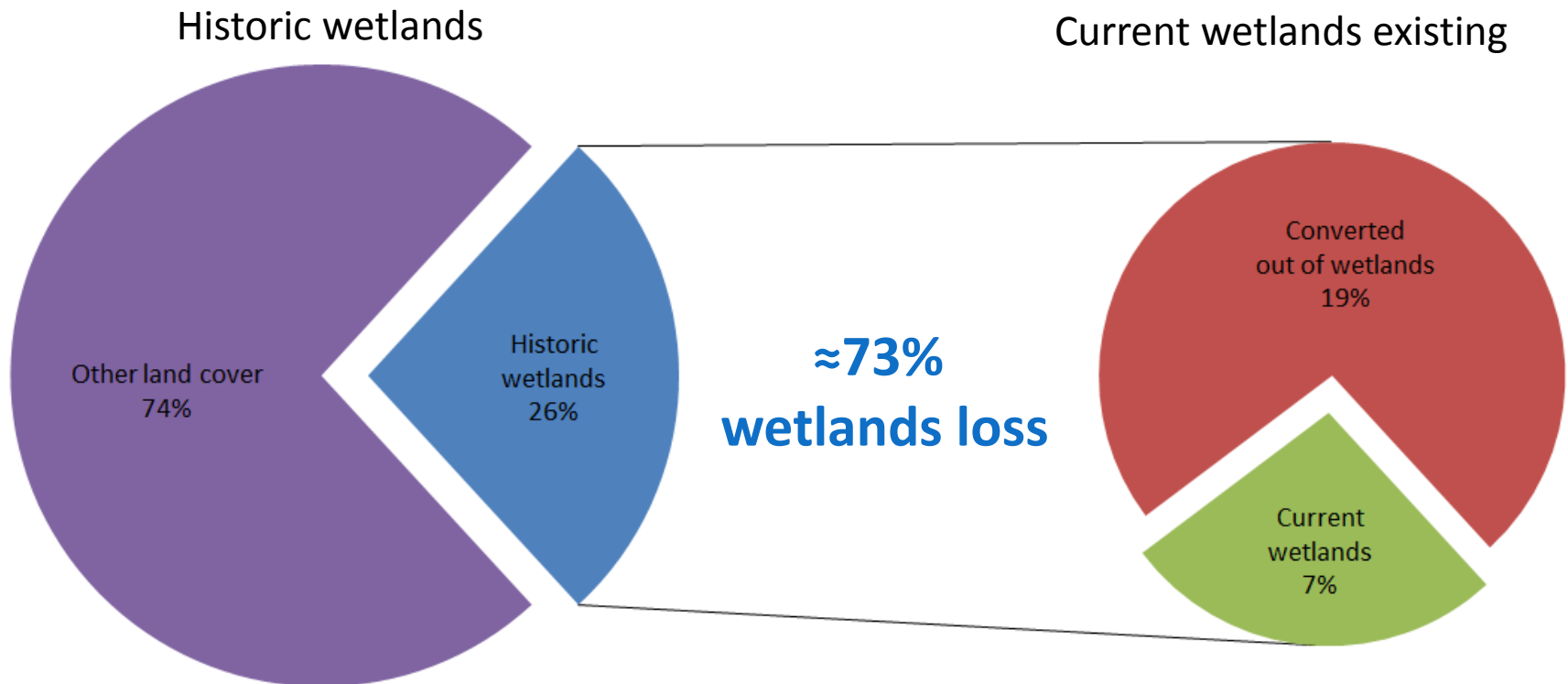
- Nutrient management
- Conservation tillage
- Cover crops
- Buffers
- Barnyard controls
- Streambank restoration
- ***Wetland restoration***
- Many others...

Current Land Use in the Rock River Basin



**Data from Rock River TMDL (2011)*

Wetland Area in the Rock River Basin



**Data from Rock River TMDL (2011)*

Poll and Q&A

Using WDNR Surface Water Data Viewer

A method for identifying potential wetland restoration projects

Sarah MacFarland

Rock River TMDL Coordination Assistant
WDNR, Southern District

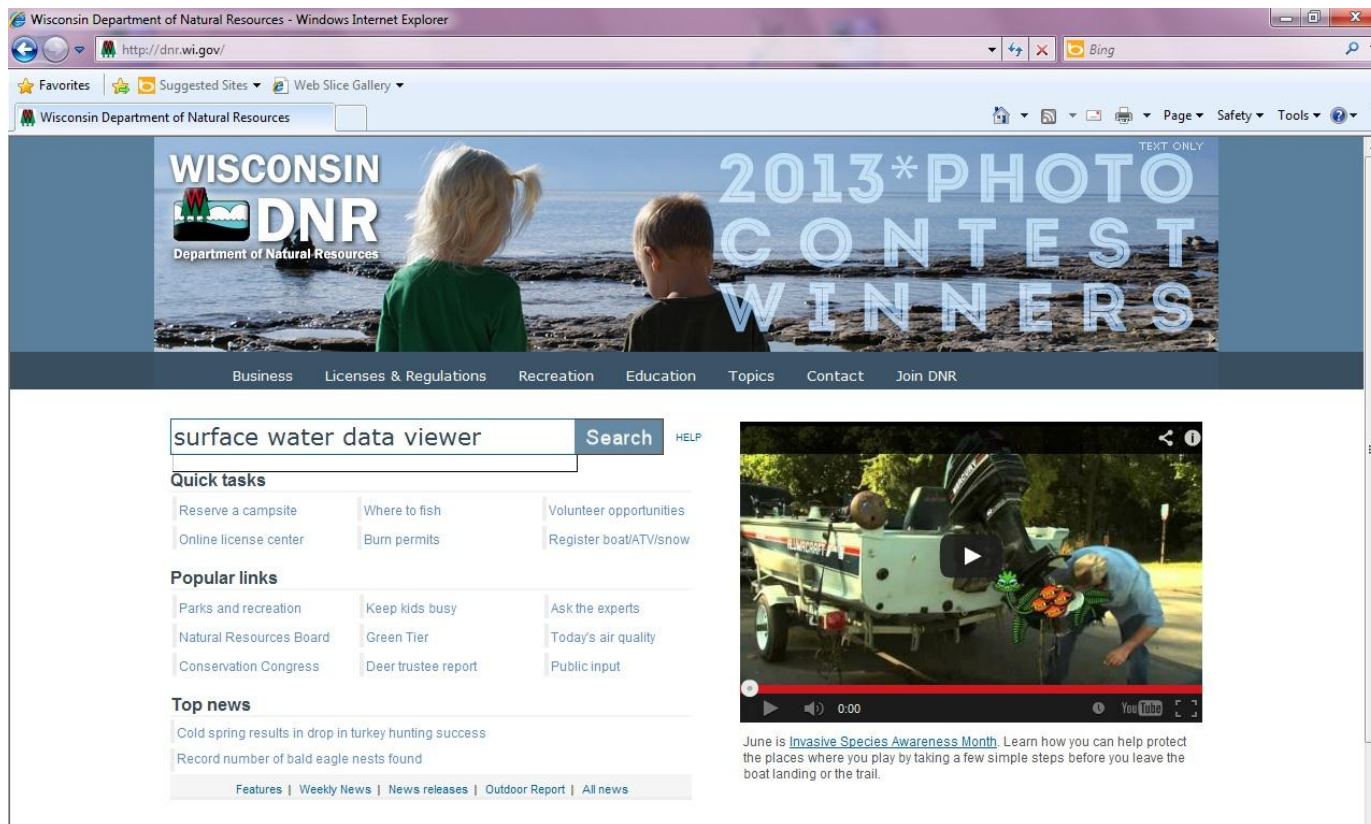
sarah.macfarland@wisconsin.gov

What is it?

- A WDNR interactive web-mapping tool
- Provides primarily statewide water-related datasets, including:
 - Chemistry data (water, sediment)
 - Physical data
 - Biological data (macroinvertebrate, aquatic invasives)

Step 1: Navigate to the SWDV

Go to <http://dnr.wi.gov> and type in “Surface water data viewer” into the search bar



The screenshot shows a Windows Internet Explorer browser window displaying the Wisconsin Department of Natural Resources website. The address bar shows <http://dnr.wi.gov/>. The page features a banner for the "2013* PHOTO CONTEST WINNERS" with the DNR logo and a background image of two children looking at a lake. Below the banner is a navigation menu with links for Business, Licenses & Regulations, Recreation, Education, Topics, Contact, and Join DNR. A search bar contains the text "surface water data viewer" and a "Search" button. Below the search bar are sections for "Quick tasks" (Reserve a campsite, Online license center, Where to fish, Burn permits, Volunteer opportunities, Register boat/ATV/snow), "Popular links" (Parks and recreation, Natural Resources Board, Conservation Congress, Keep kids busy, Green Tier, Deer trustee report, Ask the experts, Today's air quality, Public input), and "Top news" (Cold spring results in drop in turkey hunting success, Record number of bald eagle nests found). A video player on the right shows a person working on a boat, with a caption: "June is [Invasive Species Awareness Month](#). Learn how you can help protect the places where you play by taking a few simple steps before you leave the boat landing or the trail." The footer includes links for Features, Weekly News, News releases, Outdoor Report, and All news.

Click the first link

Wisconsin Department of Natural Resources Search Results: surface water data viewer - Windows Internet Explorer

http://search.dnr.wi.gov/search?q=surface%20water%20data%20viewer&btnG=Search&site=default_collection&client=DNR_frontend&output=xml_nc

Wisconsin Department of Natural Resources

Home News Topics About

surface water data viewer [Advanced Search](#) Find what you need?
[Search Tips](#) Please provide your [Feedback](#)

Search Results 1 - 10 of about 260 for surface water data viewer. Search took 0.11 seconds.
[Sort by date](#) / Sort by relevance

Wisconsin's Surface Waters KeyMatch
<http://dnr.wi.gov/topic/surfacewater/>

Surface Water Data Viewer(SWDV) - WDNR

Surface Water Data Viewer (SWDV) provides interactive webmapping tools for water quality, sediment, biological data, aquatic invasives species ...
dnr.wi.gov/topic/surfacewater/swdv/ - 40k

[PDF] [SWDV User Survey 1. How often do you use the Wisconsin ...](#)
... 1. How often do you use the Wisconsin DNR's Surface Water Data Viewer (SWDV)? ... WDNR Site: Search for Surface Water Data Viewer 41.3% 85 ...
dnr.wi.gov/topic/surfacewater/swdv/documents/swdv%20user%20surveysummary_12072010.pdf - 126k - 2010-12-08
[[More results from dnr.wi.gov/topic/surfacewater/swdv](#)]

[Surface Water Data Viewer Help Page](#)
Surface Water Data Viewer Help Page
dnr.wi.gov/topic/surfacewater/datasets/swdv_help/index.html - 6k

[PDF] [Directions on using the Surface Water Data Viewer to find ...](#)
Page 1. Directions on using the Surface Water Data Viewer to find ORW/ERW Wisconsin Dept. ... To use the Surface Water Data Viewer: ...
dnr.wi.gov/topic/surfacewater/oerw/swdvdirectionsoerw.pdf - 5k - 2009-05-11


Narrow your search
[surface water data](#)
[water data viewer](#)
[water resources](#)
[water quality](#)
[surface water data viewer](#)
[swdv](#)
[drinking water fisheries](#)
[view map](#)
[viewer launch](#)
[water management](#)
[resources topics](#)
[dnr surface water data viewer](#)

This will take you to the Surface Water Data Viewer webpage. Click the “launch application” link

Business Licenses & Regulations Recreation Education Topics Contact Join DNR Search or Keywords Share

Surface Water Data Viewer (SWDV)

Welcome to the Surface Water Data Viewer (SWDV), a Wisconsin DNR data delivery system that provides interactive webmapping tools for a wide variety of datasets including chemistry (water, sediment), physical, and biological (macroinvertebrate, aquatic invasives) data.



Little St. Germain Lake, L. Helmuth

Overview Wetlands Dams Floodplains Designated Waters Condition Fisheries Invasives

Overview

Welcome to the Surface Water Data Viewer (SWDV), an interactive mapping tool providing primarily statewide water-related data. The SWDV has five different "themes" or versions, all of which are available through links below. The first is the general theme in which you manually select the datalayers you would like to view. The other themes are wetlands, dam safety, floodplain and designated waters.

Launch application: [Surface Water Data Viewer Web Mapping Application](#)

Handy Links

- [SWDV Updates & Help Documents](#)
- [Data Layer Inventory](#)
- [SWDV Feedback Survey Results](#)

SWDV

- SWIMS help guides**
About the SWIMS database.
- SWIMS data model**
Projects, monitoring stations, fieldwork events, finding data.
- Surface water viewer**
Launch Application: [Click Here](#)
- Great Lakes data**
Beach stations, projects, grants, and data.
- River & stream data**
Stations, projects, results.
- Wetlands data**
Wetlands data in SWIMS.
- Aquatic invasives**
Aquatic invasives in Wisconsin.
- Citizen lake data**
Explore citizen lake monitoring datasets.
- Citizen stream data**
Volunteer stream monitoring.
- Wisconsin Data Exchange**
Water Quality Exchange (WQX)

This will open the Surface Water Data Viewer application

Wisconsin DNR Surface Water Data Viewer - Windows Internet Explorer

http://dnrmaps.wi.gov/imf/imf.jsp?site=SurfaceWaterViewer

Wisconsin DNR Surface Water Data Viewer

Surface Water Data Viewer

Layers · Legend · Find Location · Themes · Designated Waters · Select · Help · Print

Full State **Zoom In** **Zoom Out** **Move** **Zoom Last** **Zoom to...** **Identify** **Download** **Advanced Tools**

Surface Water Data Viewer

The Surface Water mapping application provides water resources and management data for viewing and analysis.

Tips & Navigation:

- View [Help Guides](#).
- Use **Layers** to add or delete data.
- Use **Legend** to see how data is represented in the map.
- Use **Find Location** to zoom to a specific geographic area.
- Use **Select** to select a datalayer for analyzing the layer and/or attribute data.
- Use **Help** to read online information on how to use the tools in the Surface Water Data Viewer.
- Use **Zoom In**, **Zoom Out**, and **Zoom To** buttons to navigate the map.
- Click **Advanced Tools** to access more map functions.
- Use **Print** to generate maps of your online information.

Click on layer names highlighted in blue for additional data information and disclaimers.

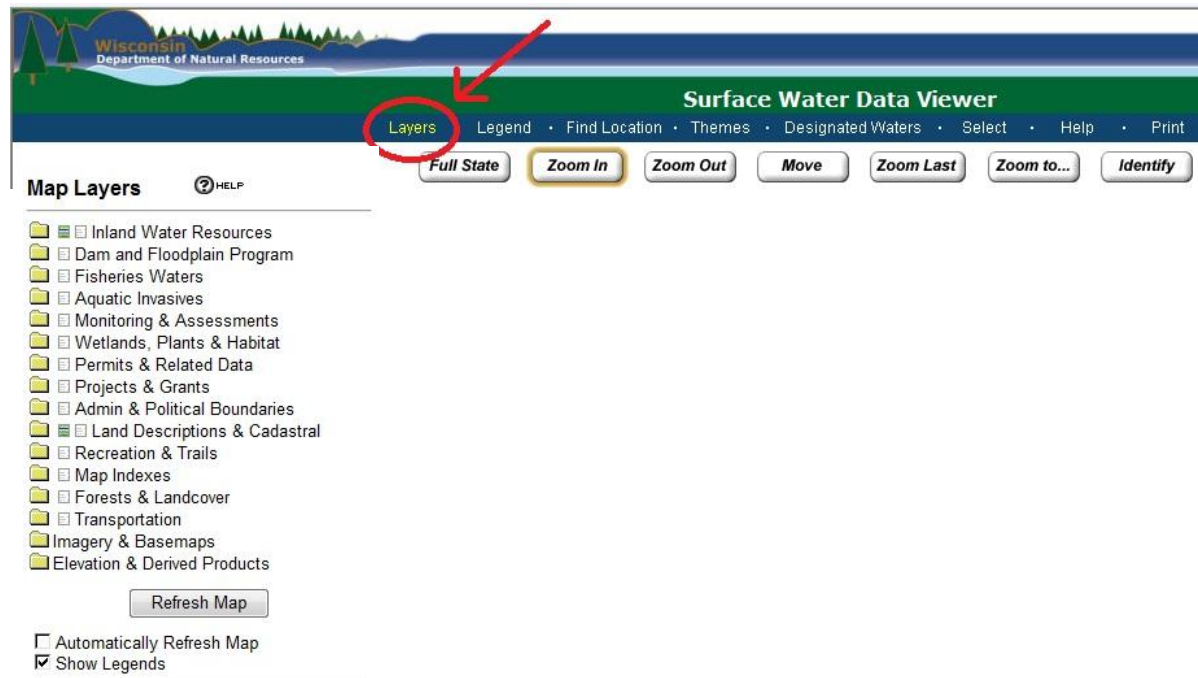
Visit DNR Maps and Aerial Photography (<http://dnr.wi.gov/maps/>) for additional maps and information.

Scale: 1:3,409,216 **go** Quick View: Select a location Selected Map Tool: **Zoom In** Zoom In

Division of Water | Remediation Sites | Comments |

Step 2: Activate layers

First, click on the “Layers” tab. To activate a layer, click on the box next to the layer name. When the layer has loaded, you will see a check mark appear in the box.



Wisconsin Department of Natural Resources

Surface Water Data Viewer

Layers Legend Find Location Themes Designated Waters Select Help Print

Full State Zoom In Zoom Out Move Zoom Last Zoom to... Identify

Map Layers HELP

- Inland Water Resources
- Dam and Floodplain Program
- Fisheries Waters
- Aquatic Invasives
- Monitoring & Assessments
- Wetlands, Plants & Habitat
- Permits & Related Data
- Projects & Grants
- Admin & Political Boundaries
- Land Descriptions & Cadastral
- Recreation & Trails
- Map Indexes
- Forests & Landcover
- Transportation
- Imagery & Basemaps
- Elevation & Derived Products

Refresh Map

Automatically Refresh Map
 Show Legends

Useful Layers – Geographic markers

Aerial landscape view

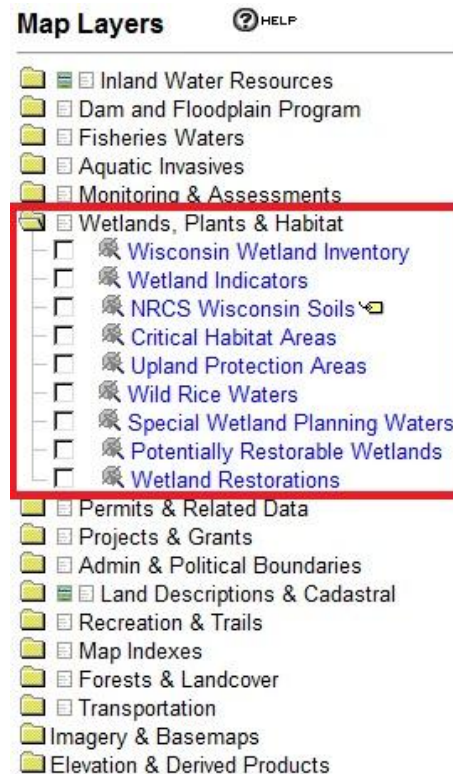


Roads



Useful Layers - Wetlands

For identifying potential wetland restoration areas, the most useful set of layers is in the “Wetlands, Plant & Habitat” folder



Useful Layers – Wetlands

WI Wetland Inventory

- Maps likely existing wetlands

Wetland indicators

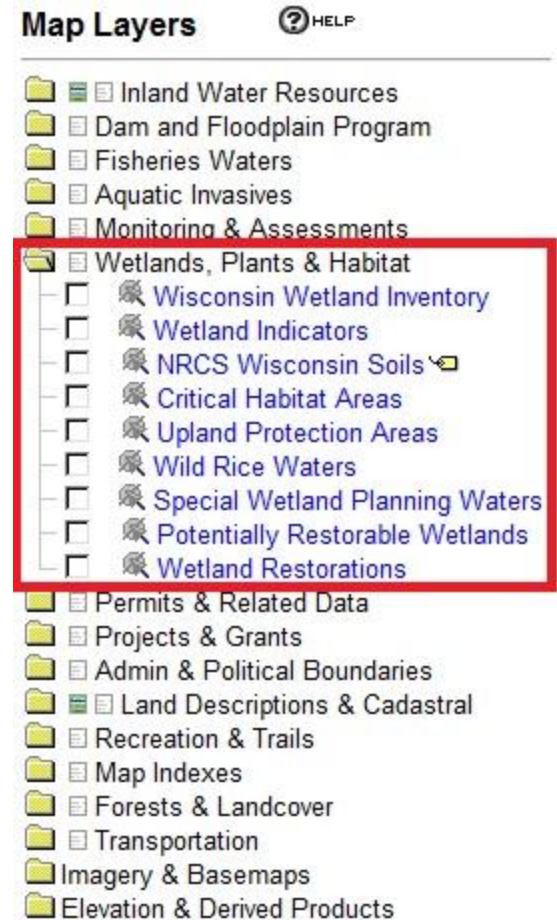
- Uses soil type to estimate historic wetlands

Critical Habitat Areas

- Areas of aquatic vegetation identified as offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the body of water

Potentially Restorable Wetlands

- Areas identified as likely historic wetland and not currently mapped as a wetland.



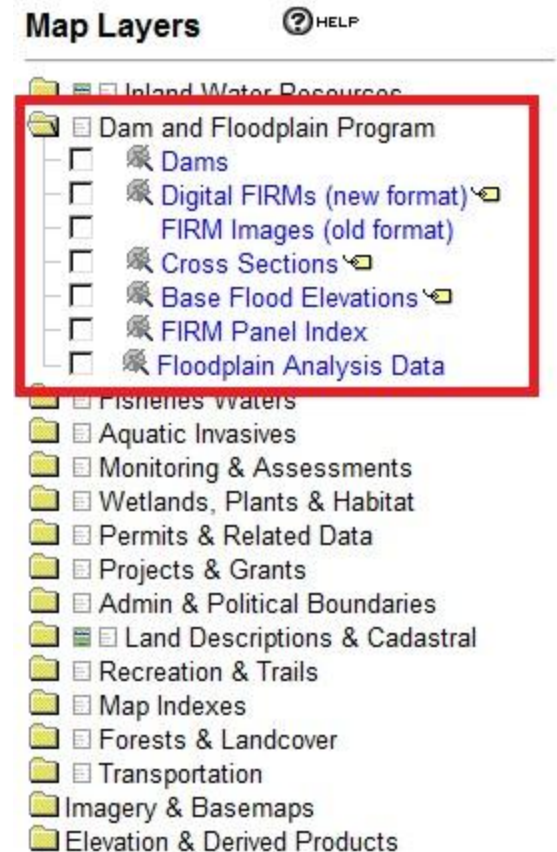
Useful Layers – Floodplain

FIRMs – Digital Flood Insurance Rate Maps

- Data from FEMA
- Delineated of special hazard areas and risk premium zones

Two formats

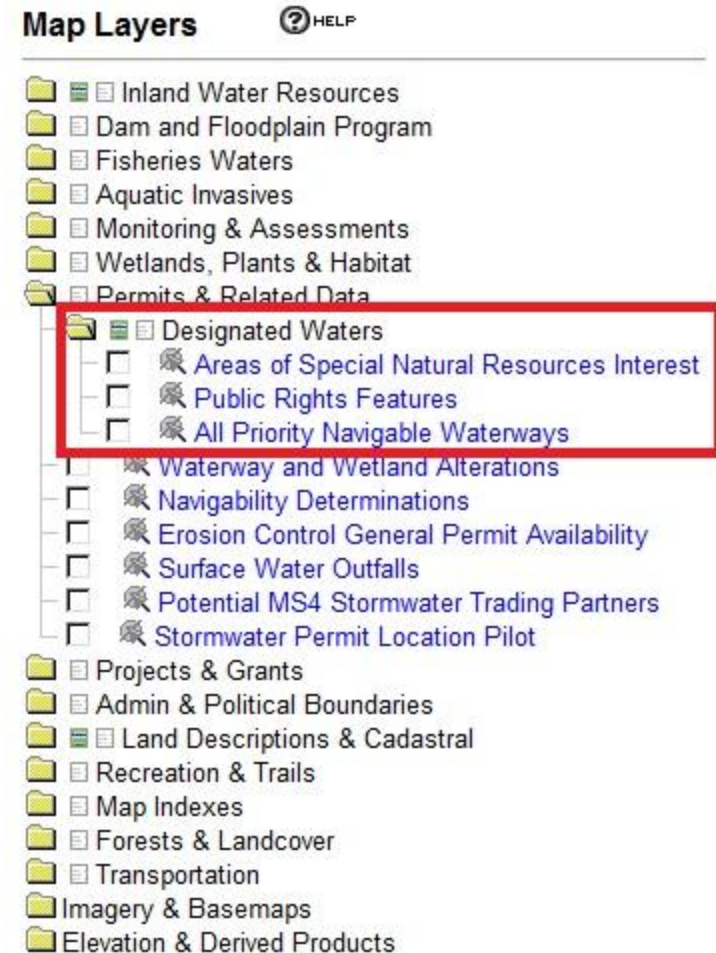
- In the process of converting from old to new, county by county basis



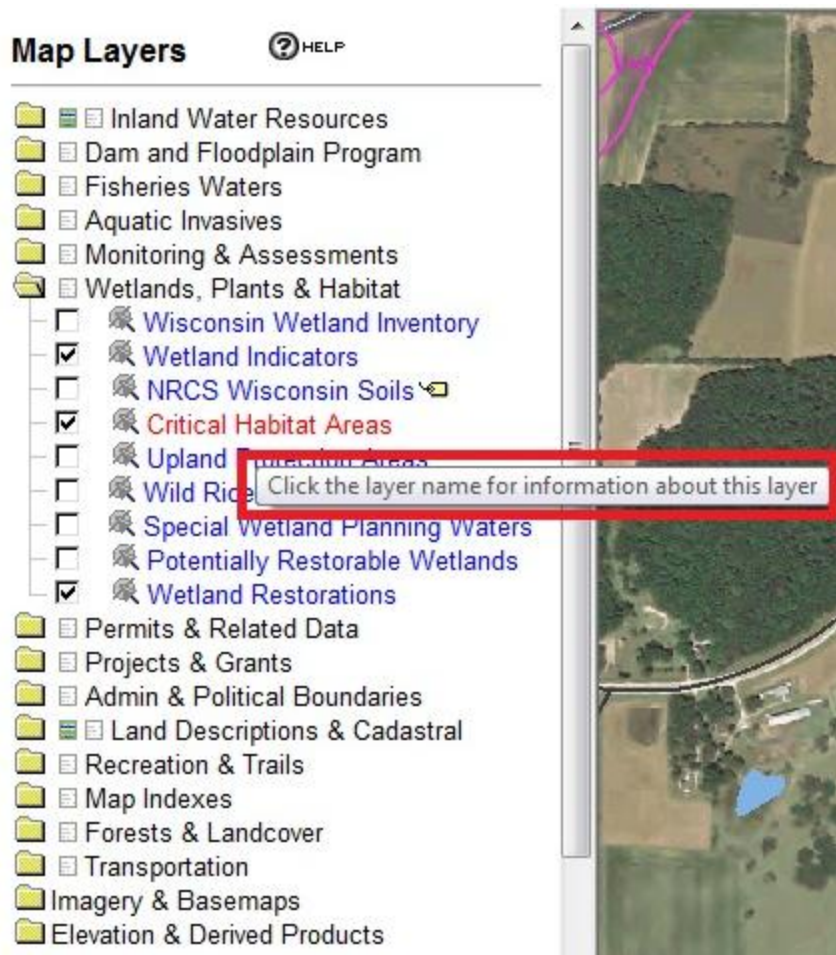
Useful Layers – Designated Waters

Subfolder under “Permits & Related Data”

- Areas of Special Natural Resource Interest (ASNARI)
- Public Rights Features
- All Priority Navigable Waterways



If you would like a description of a layer, click on the layer name and a description box will pop up.



Critical Habitat Areas

Source: Wisconsin Department of Natural Resources

Description: As stated in – Chapter NR107.05 (3)(1)(1.): Critical Habitat Areas, also known as Sensitive Areas, are areas of aquatic vegetation identified by the Department as offering critical or unique fish and wildlife habitat, including seasonal or lifestage requirements, or offering water quality or erosion control benefits to the body of water.

Related or Program Links:

If it is not clear what colors and symbols represent each layer, click on the “Legend” tab

Wisconsin Department of Natural Resources

Surface Water Data Viewer

Layers • **Legend** • Find Location • Themes • Designated Waters • Select • Help • Print

Full State | **Zoom In** | Zoom Out | Move | Zoom Last | Zoom to... | Identify | Download | Advanced Tools

Map Legend

Settings

- Major Highways
 - Interstate
 - State Highway
 - U.S. Highways
 - County Roads
 - Local Roads
- 24K County Boundaries
- Civil Towns
 - Civil Town
- Wetland Restoration Areas
- Critical Habitat Areas
- Sensitive Area Designation
- Other Public Rights Feature
- USDA Wetspots
- DNR Wetland Points
 - Excavated Pond
 - Dammed Pond
 - Wetland Too Small to Delineate
 - Filled Excavated Pond
 - Filled Dammed Pond
 - Filled Wetland Too Small to Delineate
 - Filled or Drained Wetland
- DNR Wetland Areas
 - Upland
 - Wetland
 - Filled or Drained Wetland
 - Wetland Indicator Soils
- 24K Open Water
- 24K Rivers and Shorelines
 - Intermittent
 - Fluctuating
 - Perennial
- Cities and Villages
- Village

Scale: 1:9,600 | go | Quick View: Select a location | Selected Map Tool: **Zoom In** | Zoom In

There is also an “Identify” tool that allows you to see the active data layers at a giving location

Wisconsin Department of Natural Resources

Surface Water Data Viewer

Layers · Legend · Find Location · Themes · Designated Waters · Select · Help · Print

Full State Zoom In Zoom Out Move Zoom Last Zoom to... **Identify** Download Advanced Tools

Identify Results

Coordinate Position
Lat/Lon: 43° 31' 59" N, 88° 56' 23" W
Decimal Lon/Lat: -88.939725, 43.533177
UTM 16N: 343269, 4821854
WTM91 (x,y): 605670, 340571

24K Open Water
Feature Name: Beaver Dam Lake
ROW Name: Beaver Dam Lake
Water Body ID Code (WBIC): 835100
Feature Description: Lake/Pond, Perennial

Feature Type: Lake/Pond
Hydro Geodatabase ID: 600069408
Surface Hydro Area ID (SHAID): 20001288
Source Data Year: 1993

Digital FIRMs (new format)
Flood Zone: AE
Static BFE: 874
Vertical Datum: NAVD88
Depth: -9999
Length Units: FEET
Velocity: -9999

Civil Towns
MCD Fips Code: 85650
Name: Westford
City Class Code: 0
Area (Sq. Miles): 34.82855587
MCD Type Code: T

PLSS Q-Q Sections
PLSS DTRSQQ Code: 412130334
PLSS Range Direction Code: 4
PLSS Township: 12
PLSS Range: 13
PLSS Section: 3
PLSS Q1 Section Code: 3
PLSS Q2 Section Code: 4
State Fips Code: 55
PLSS Description: SESW0312N13E

Step 3: Identify potential sites

A good method for identifying areas for wetland restoration is by using the “Potentially Restorable Wetlands” layer.

- Currently, this data only exists for the Rock River Basin
- This layer identifies areas that were likely to have been historic wetland (because of the occurrence of hydric soil) but are not currently mapped as a wetland. If the area is in agricultural use, it may be a potential site for wetland restoration

If you already know a location

If you already have a location in mind, you can look up and zoom to it using the “Find Location” tab



Wisconsin Department of Natural Resources

Surface Water Data Viewer

Layers · Legend · **Find Location** · Themes · Designated Waters · Select · Help · Print

Full State · Zoom In · Zoom Out · Move · Zoom Last · Zoom to... · Identify · Download · Advanced Tools

Find Location

What would you like to find?:

- City or Village
- Township/Range/Section
- County
- Civil Town
- Personal Bookmark
- Latitude / Longitude Coordinate (DMS)
- Latitude / Longitude Coordinate (DD)
- UTM Coordinate
- WTM Coordinate
- GNIS Name
- Monitoring Station
- Assessed Waters
- Impaired Waters
- Waterway and Wetland Alteration Permit
- Waterbody Name and County
- 24K Open Water
- 24K Rivers and Streams

This menu is used to set the extent of the map using query tools. Select one of the previous options, and the map extent will change to show the area that you have selected.

Map showing Wisconsin counties: DOUGLAS, BAYFIELD, ASHLAND, IRON, VILAS, FLORENCE, BURNETT, WASHBURN, SAWYER, PRICE, ONEIDA, FOREST, POLK, BARRON, RUSK, LINCOLN, MARINETTE, SAINT CROIX, CHIPPewa, TAYLOR, LANGLADE, MENOMINEE, OCONTO, DOOR, PIERCE, PEPIN, EAU CLAIRE, CLARK, MARATHON, SHAWANOG, WAUPACA, KEWAUNEE, BUFFALO, JACKSON, WOOD, PORTAGE, BROWN, TREMPPEALEAU, JUNEAU, WAUSHARA, OUTAGAMIE, CALUMET, MANITOWOC, LA CROSSE, MONROE, ADAMS, GREEN LAKE, WINNEBAGO, MARQUETTE, FOND DU LAC, SHEBOYGAN.

Look up locations using:

Waterbody Name and County

Find a Waterbody

1. Search Type:

Rivers and streams
 Lakes and other open water

2. County at Mouth or Outlet:

Any County ▾

3. Enter a full or partial waterbody name:

Township, Range, Section

Find Location

Select a PLSS Township, Range, and Direction:

Township	Range	Direction
1 ▾	1 ▾	East ▾

Section (optional)

None ▾

City or Village

Find Location

Enter a city or village name:

Step 4: Prioritizing sites

It is possible to identify areas with “intersecting interests” which provide additional potential benefits

- Examples:
- Fisheries or waterfowl potential
 - Flood mitigation potential
 - Areas near designated waters

Why prioritize sites?

Although the main priority for the project may be wetland restoration and phosphorus reduction, it can be beneficial to consider other criteria:

- Grants
- Other additional funding sources
- Additional partners
- Maximize beneficial impact of project per \$

Example 1: Fisheries Potential

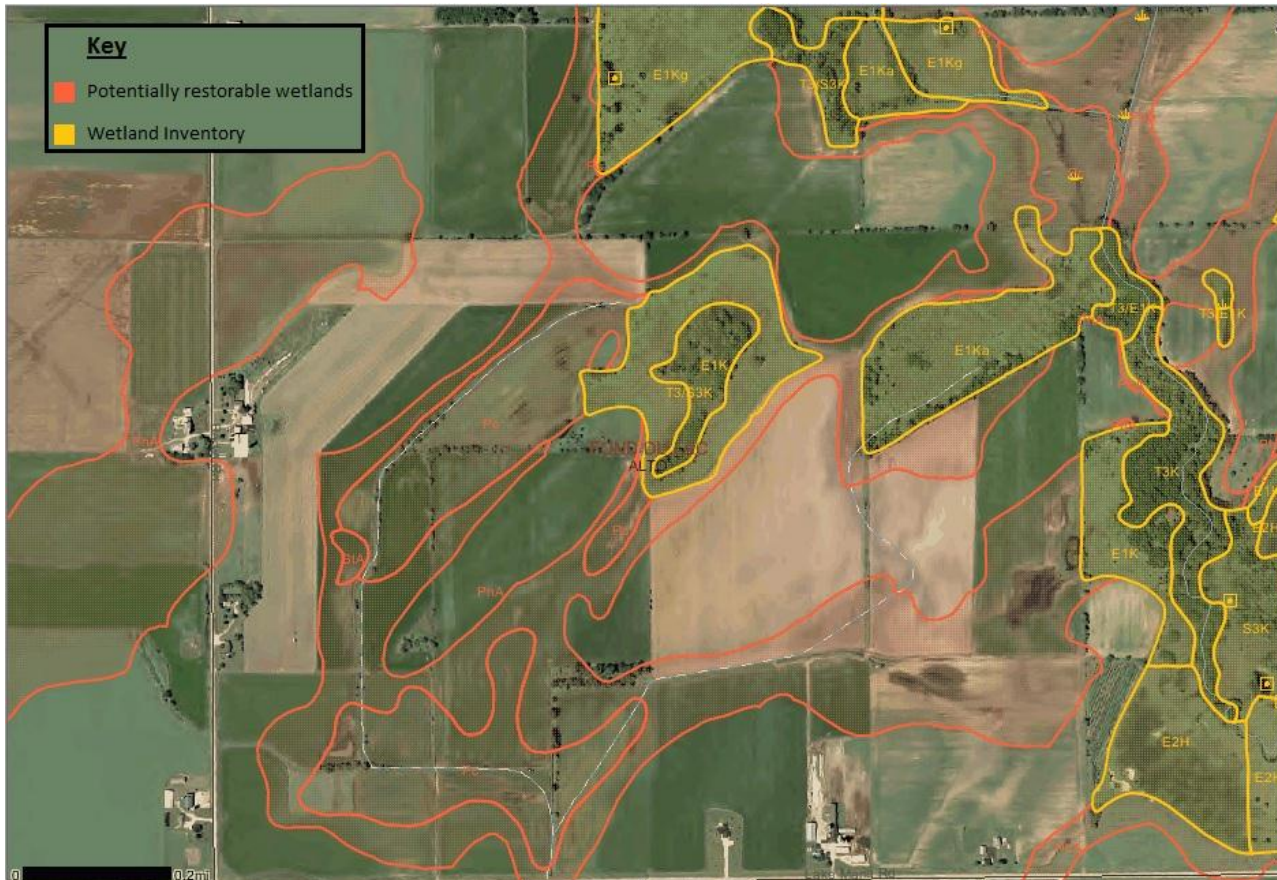


Location: Town of Lake Mills, Jefferson Co. (SW, NE, Sec10, T7N, R13E)





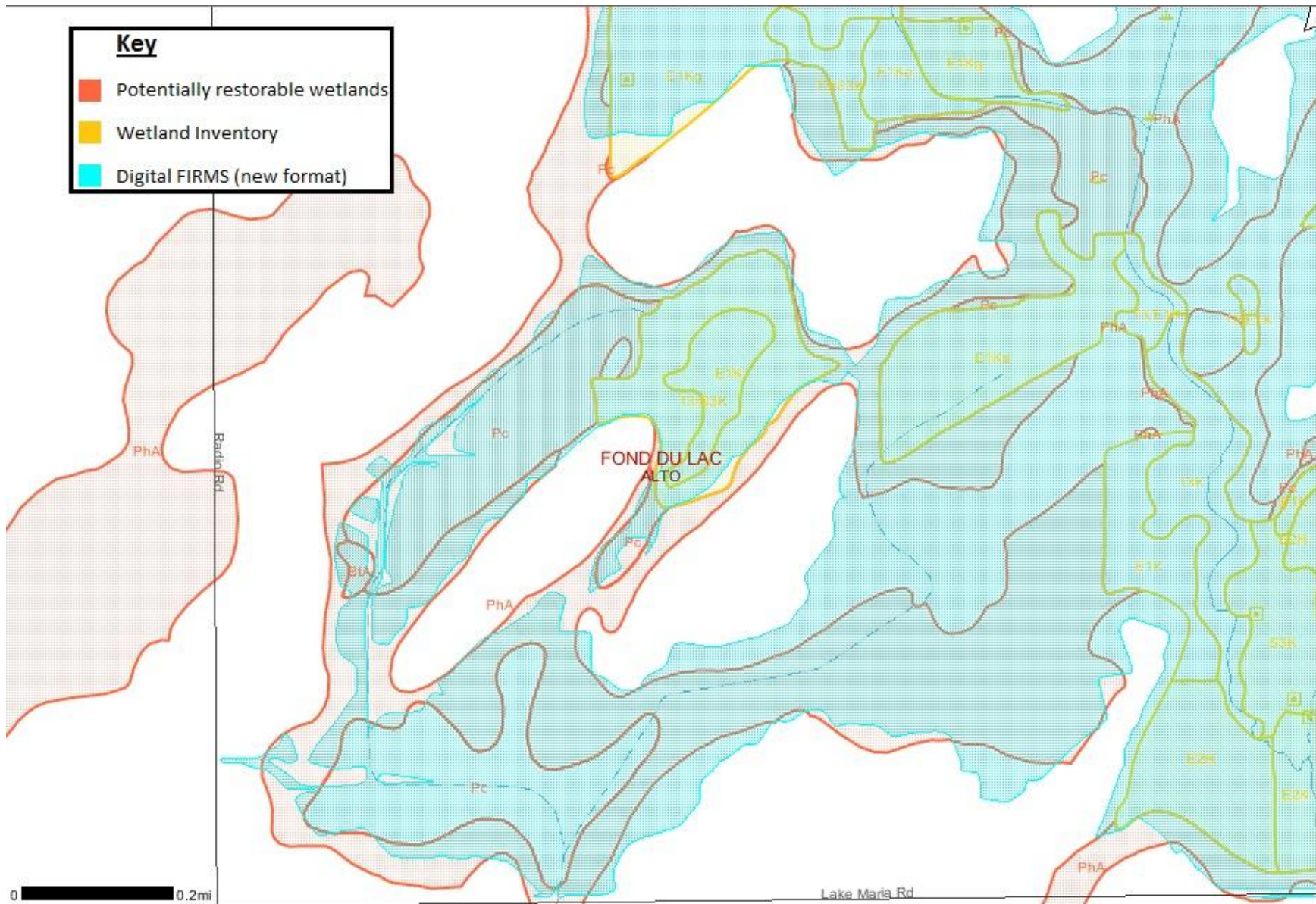
Example 2: Flood Mitigation Potential






Location: Town of Alto, Fond du Lac Co. (NE, SE, Sec21, 14N, 14E)

Key

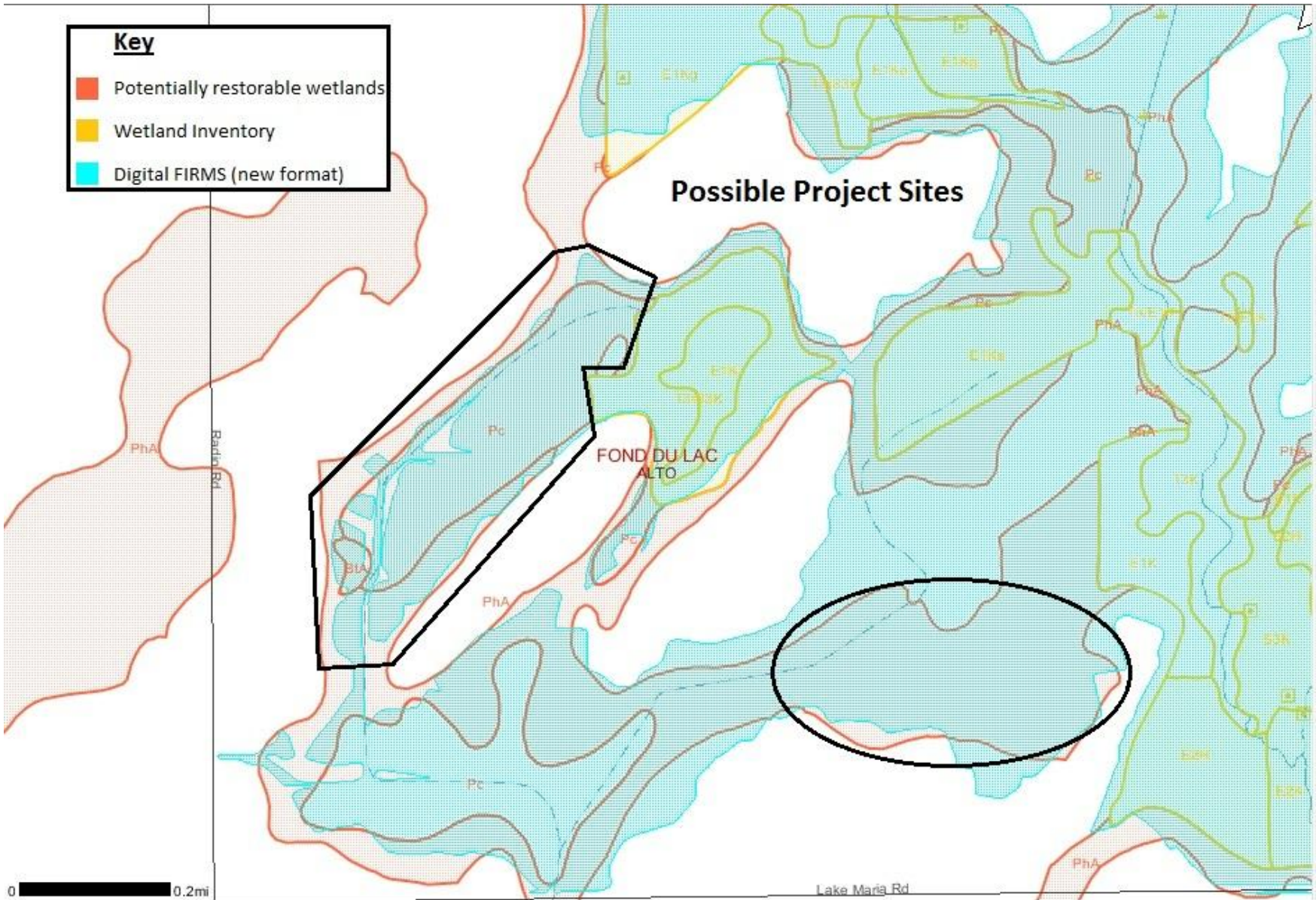
- Potentially restorable wetlands
- Wetland Inventory
- Digital FIRMS (new format)



Key

-  Potentially restorable wetlands
-  Wetland Inventory
-  Digital FIRMS (new format)

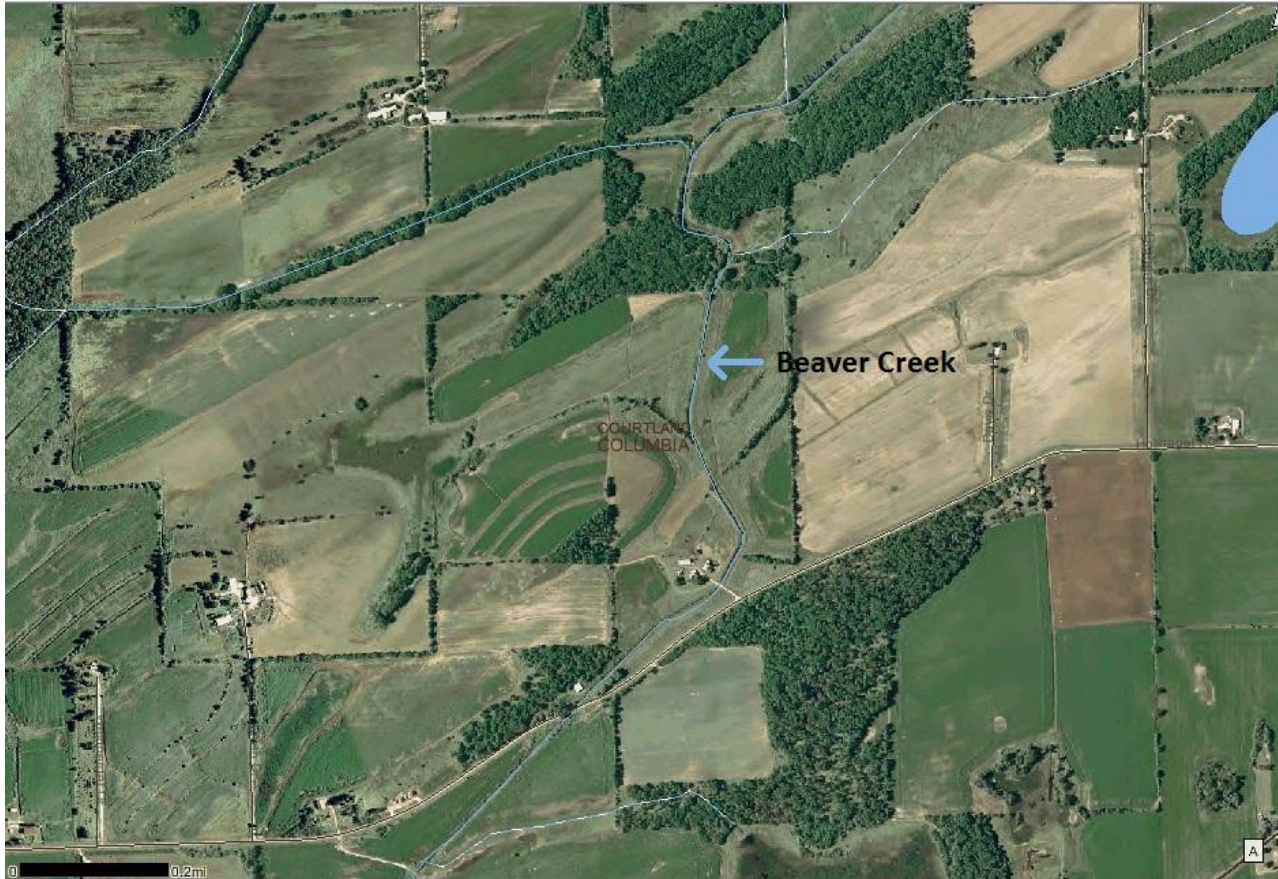
Possible Project Sites



0 0.2mi

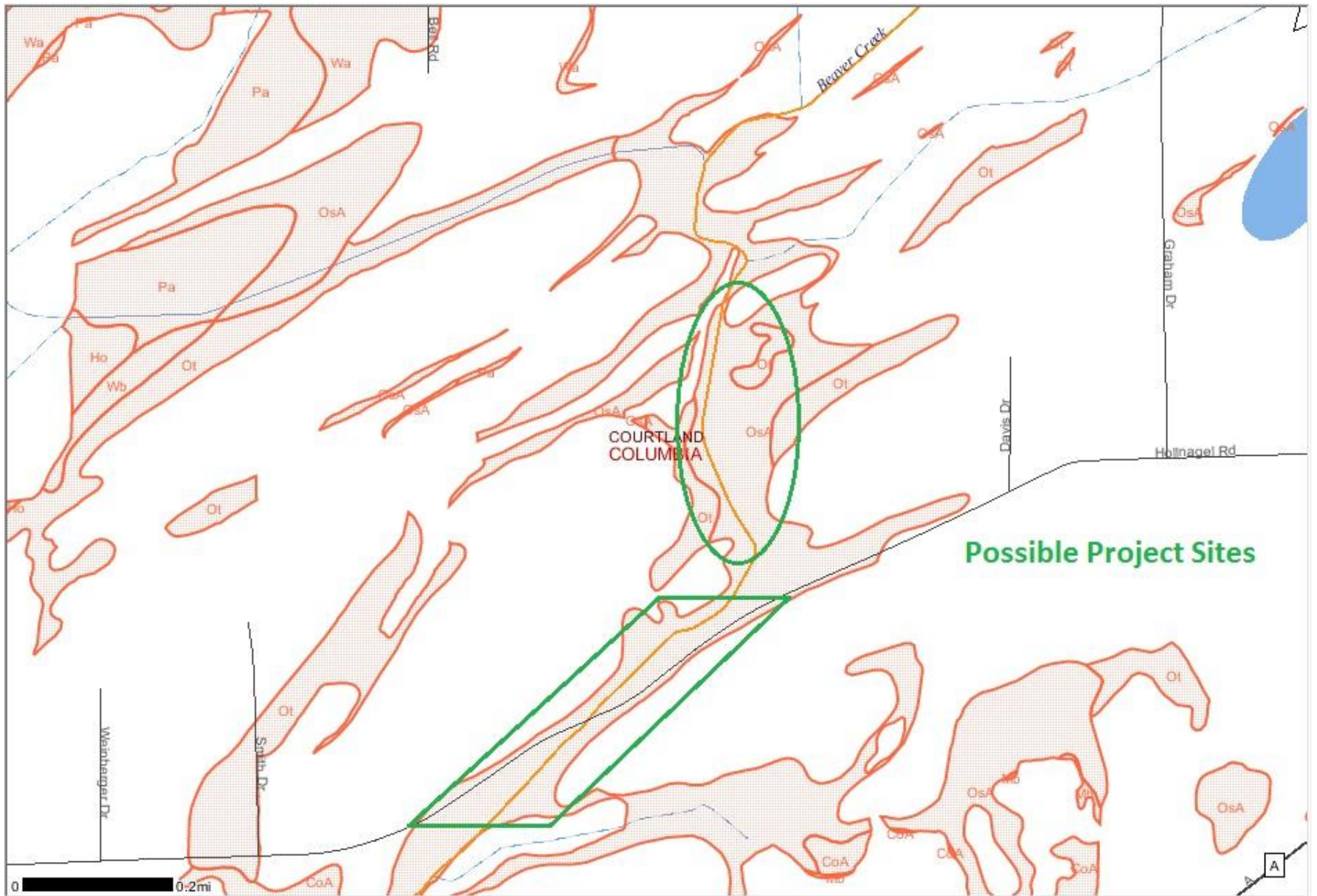
Lake Maria Rd

Example 3: Designated Waters Potential



Location: Town of Courtland, Columbia Co. (SE, SE, Sec9, 12N, 12E)





Questions?