

# **Mapping Hydrologic Connectivity in the Bad River Watershed**

**Great Lakes Indian Fish & Wildlife  
Commission**

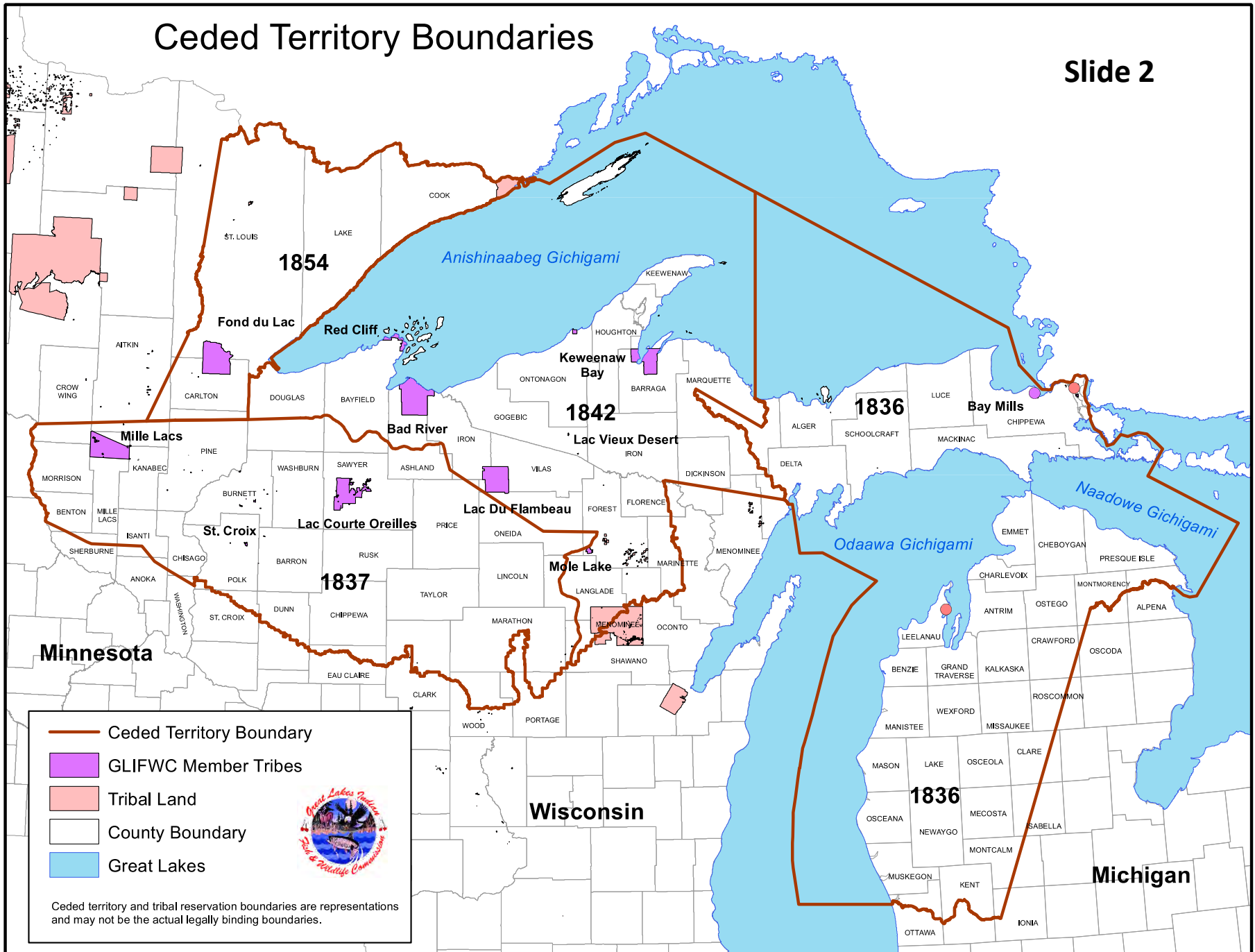
**May 13, 2025**

**Esteban Chiriboga**





## Slide 2



## Purpose of Mapping:

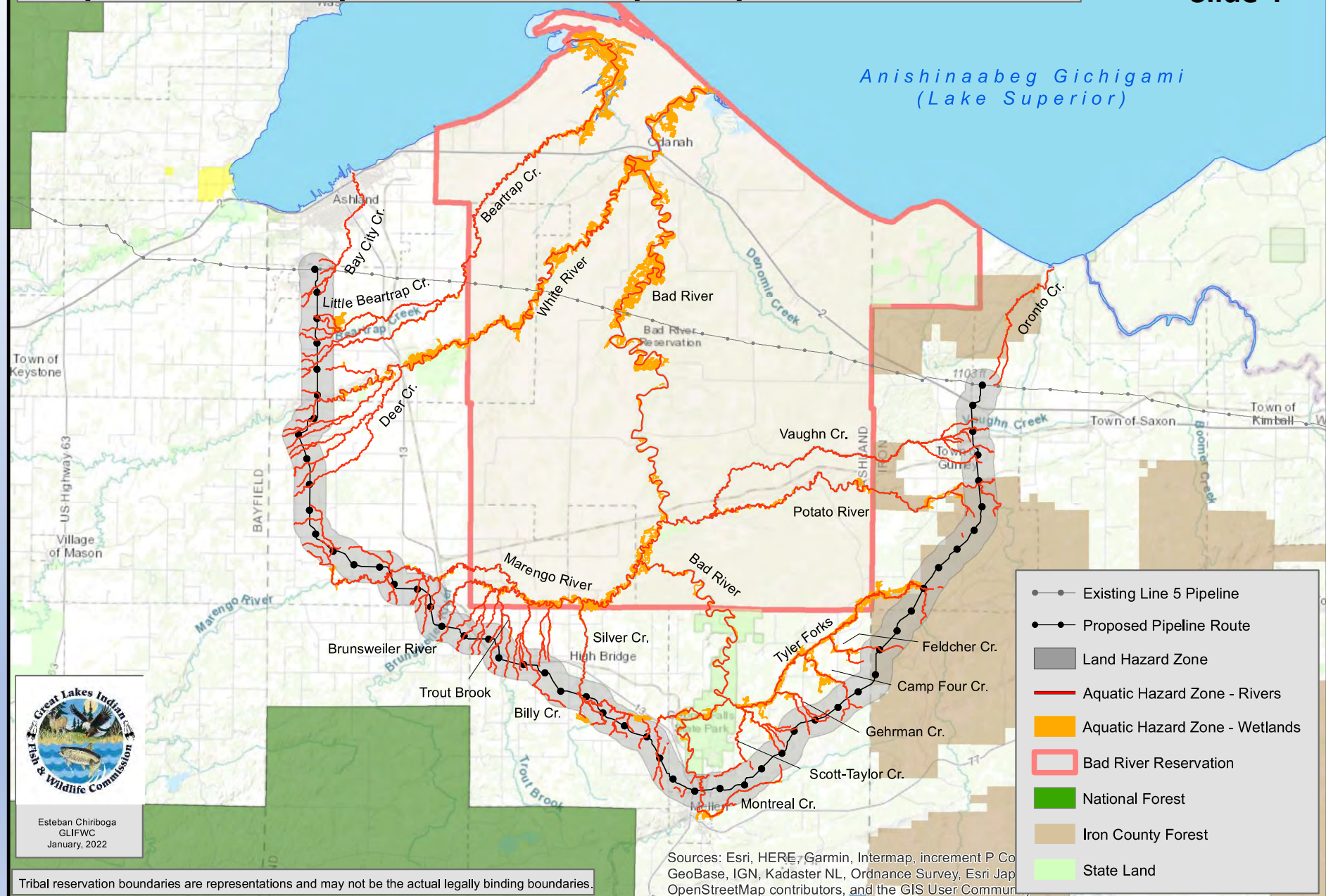
1. Illustrate the hydrologic connections between the Bad River Reservation and the proposed Line 5 reroute footprint.
2. Characterize the adequacy of hydrologic data used in impact analysis.

## Data:

- All wetland and hydrography data used in the hydrologic connectivity mapping is maintained by, the State of Wisconsin, U.S. Geological Service, the U.S. Fish & Wildlife Service, etc.

# Proposed Line 5 Pipeline Reroute - Spill/Explosion Hazard Zone

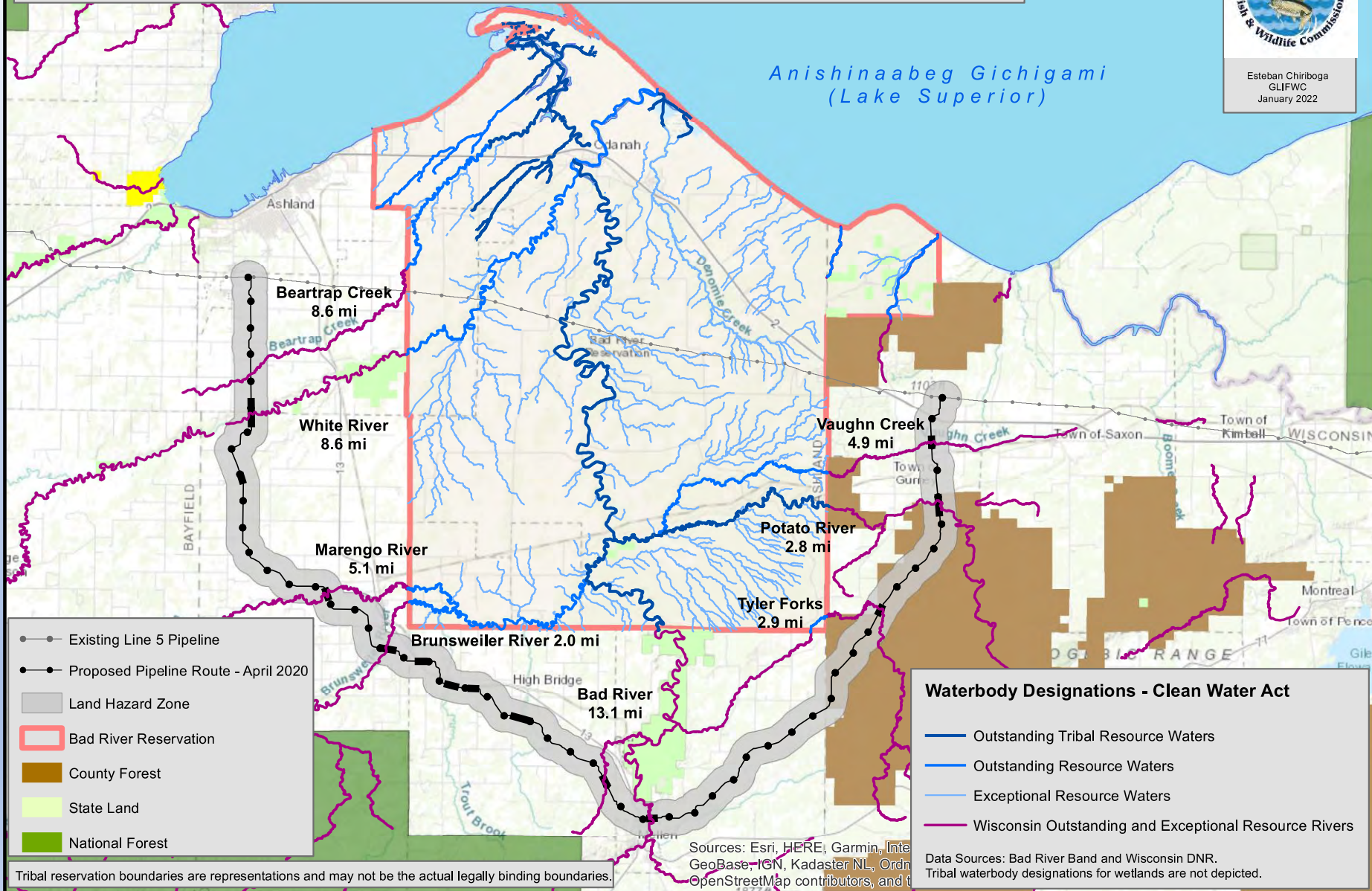
Slide 4



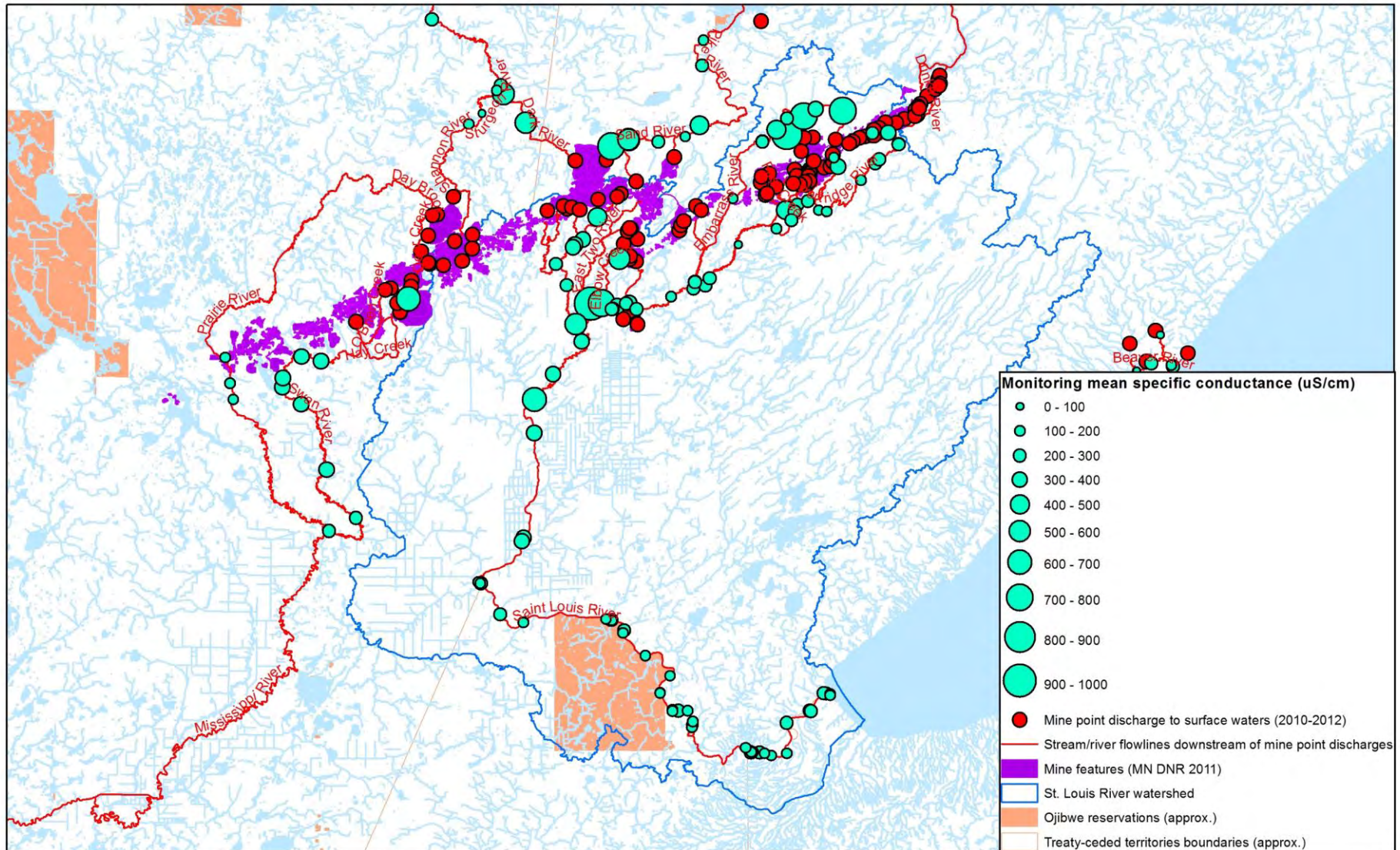


# Proposed Line 5 Pipeline Reroute - Distance From the Proposed Pipeline to the Reservation Boundary in River Miles

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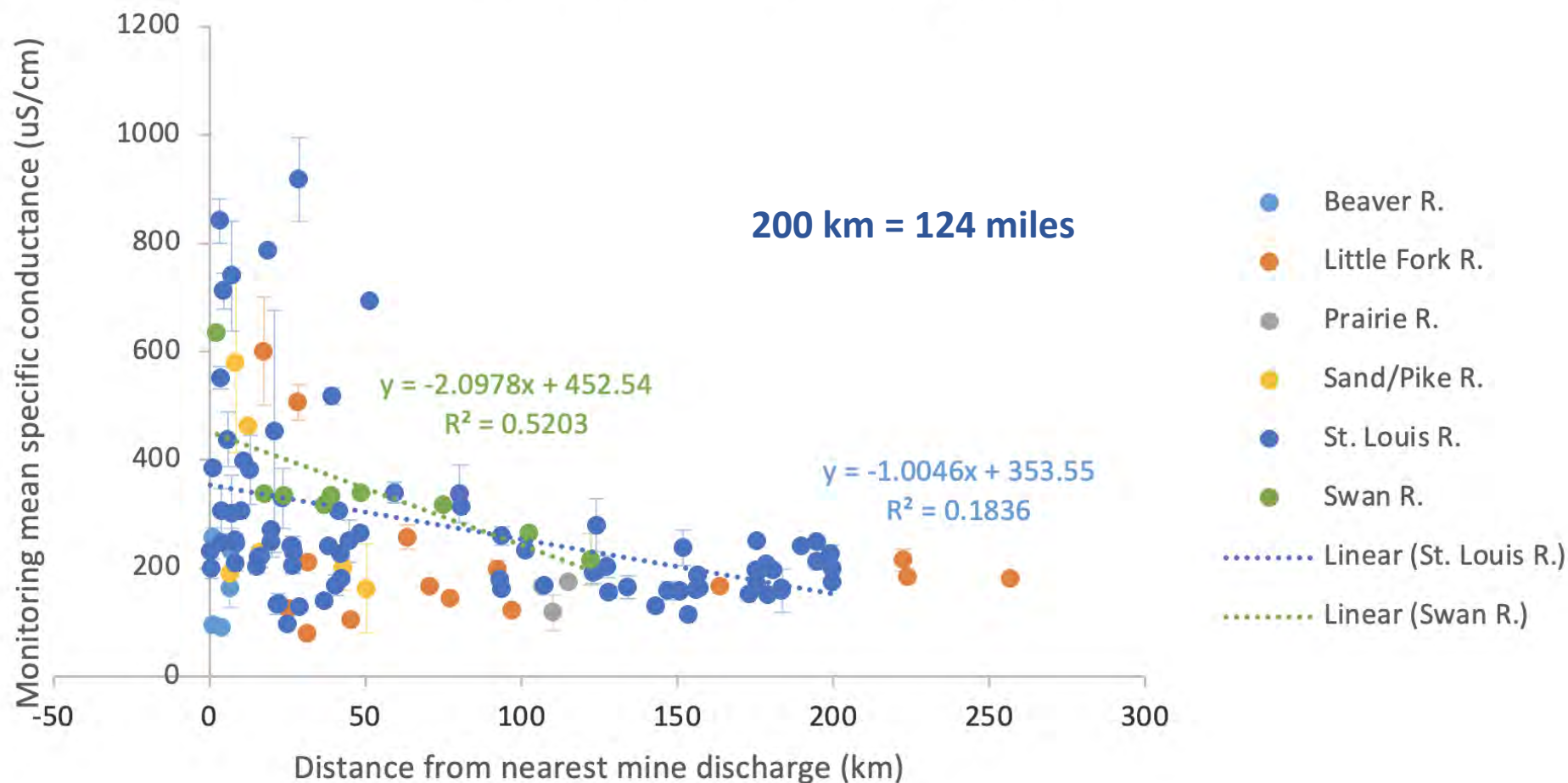
Tribal reservation and ceded territory boundaries are representations and may not be the actual legally binding boundaries.

0 5 10 20 30 40 Kilometers  
 0 2.5 5 10 15 20 Miles



S. Cardiff / GLIFWC  
 Sept. 2013  
 NAD 83 UTM zone 15N

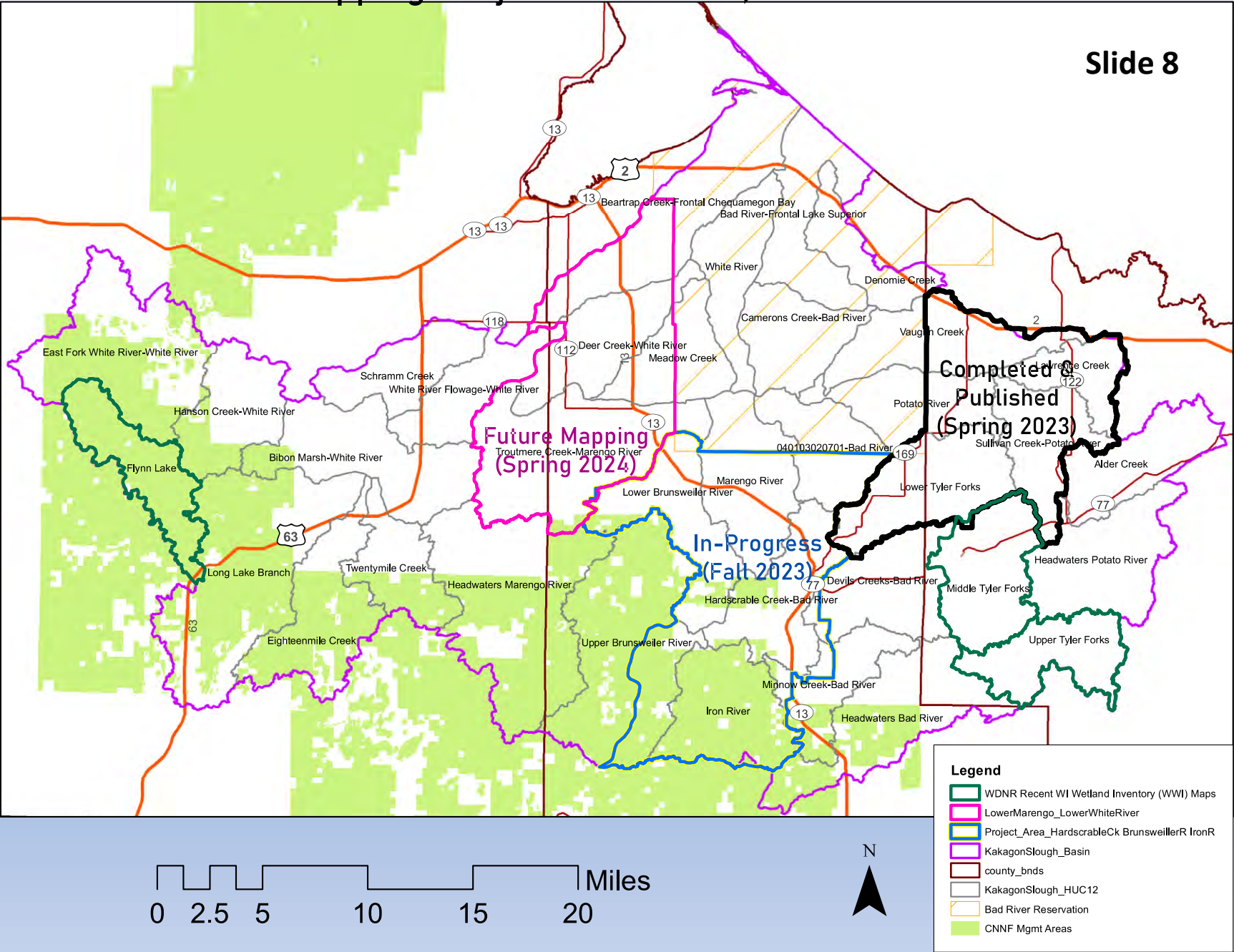
## Persistence of high specific conductance downstream of mine sites in different river systems





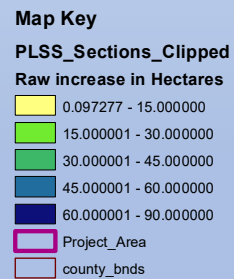
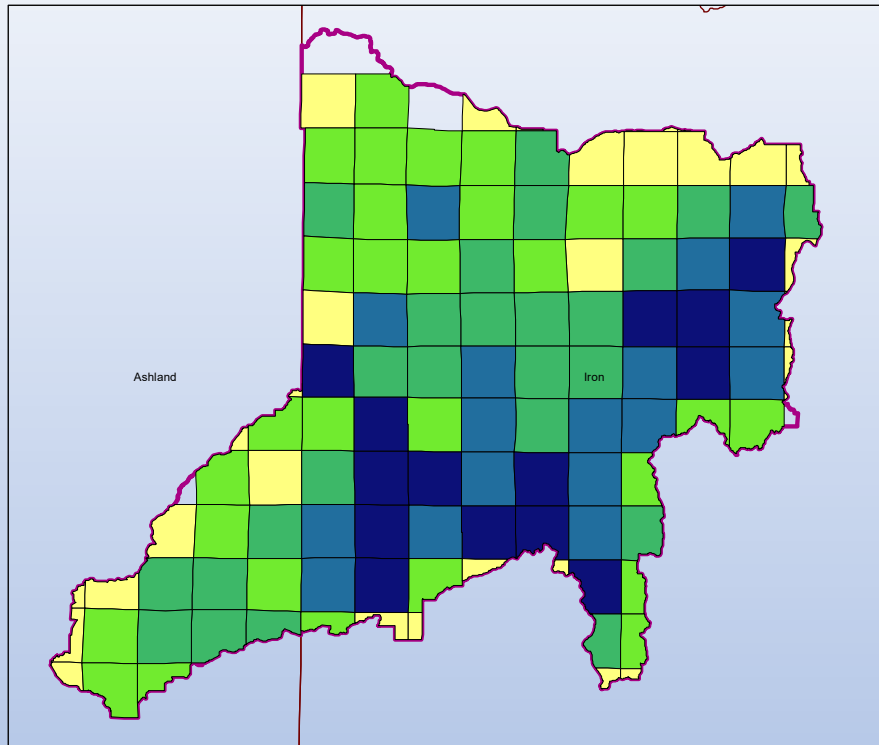
# GLIFWC Wetland Mapping Projects Overview, June 2023

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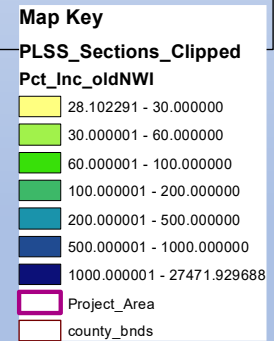
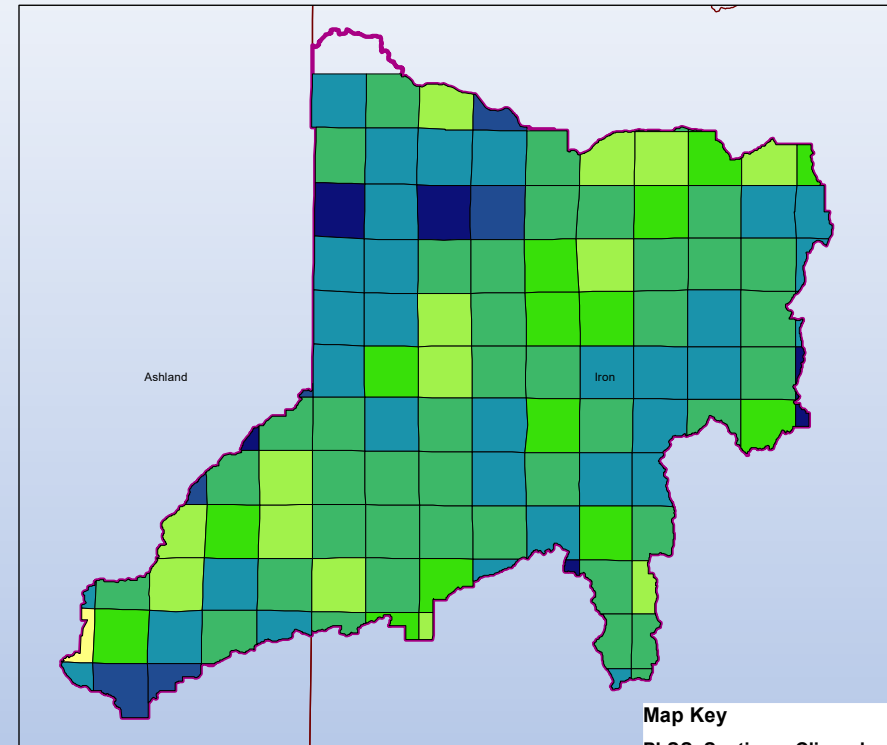




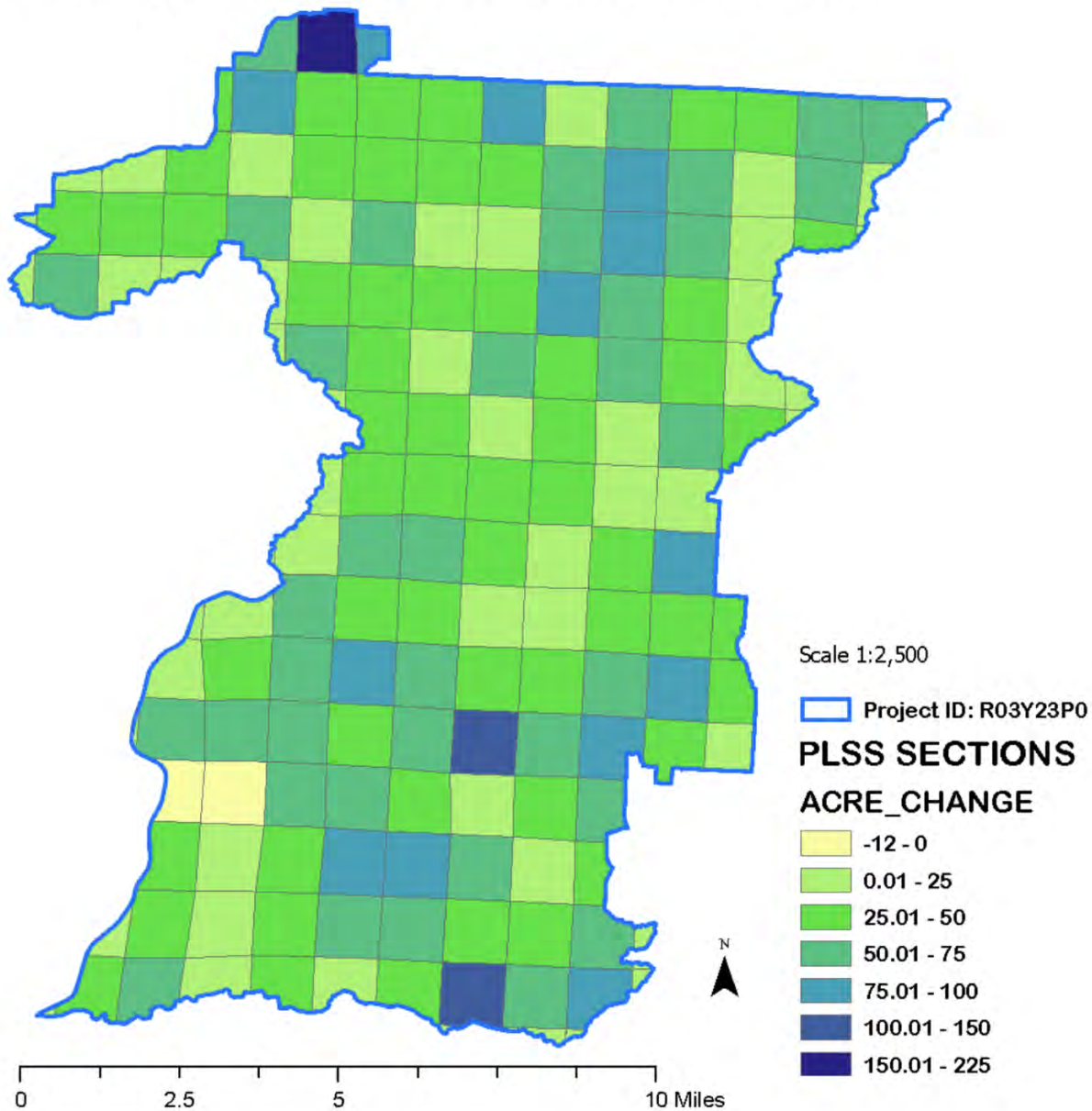
## Hectare Increase: old WWI vs 1:1,000 NWI Update



## Percent Increase: old NWI vs. 1:1000 NWI Update



## Change in Mapped Wetland Acres Per Section

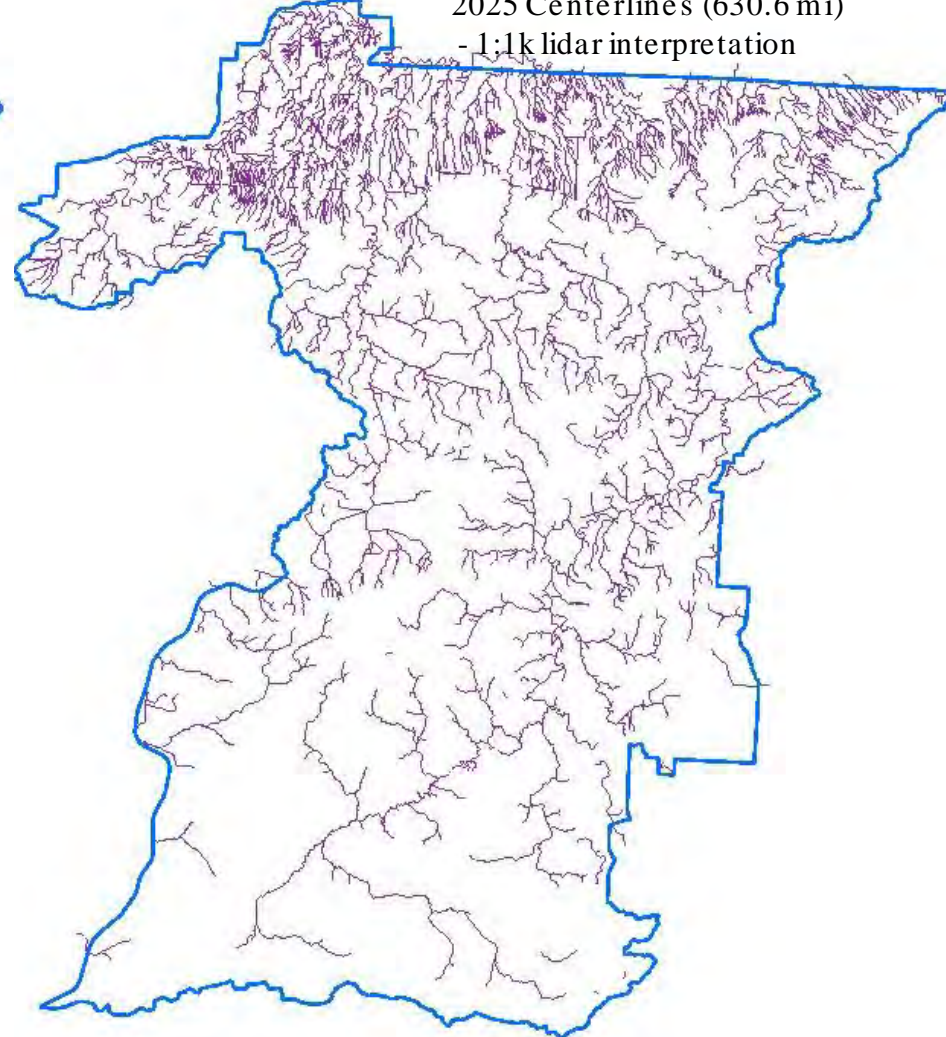
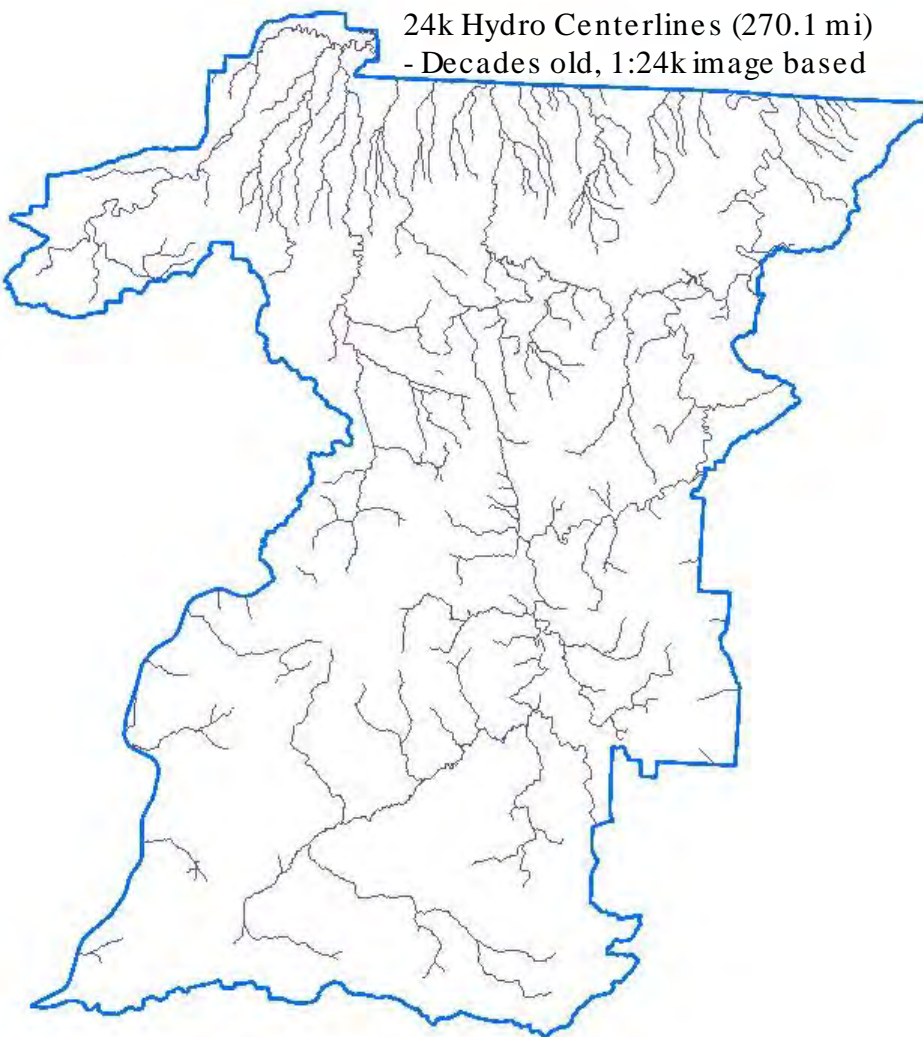


**Above:** All sections in this project area except for two saw an increase in mapped wetland acres. Most sections (68.5%) saw an increase of 25 acres or more per 640-acre PLSS section. Sections with very large increases (>100 acre) reflect corrected omissions of large swamps & floodplains.



24k Hydro Centerlines (270.1 mi)  
- Decades old, 1:24k image based

2025 Centerlines (630.6 mi)  
- 1:1k lidar interpretation



## Change in Riverine Miles:

DNR 1:24000 scale Hydrography - 270.1

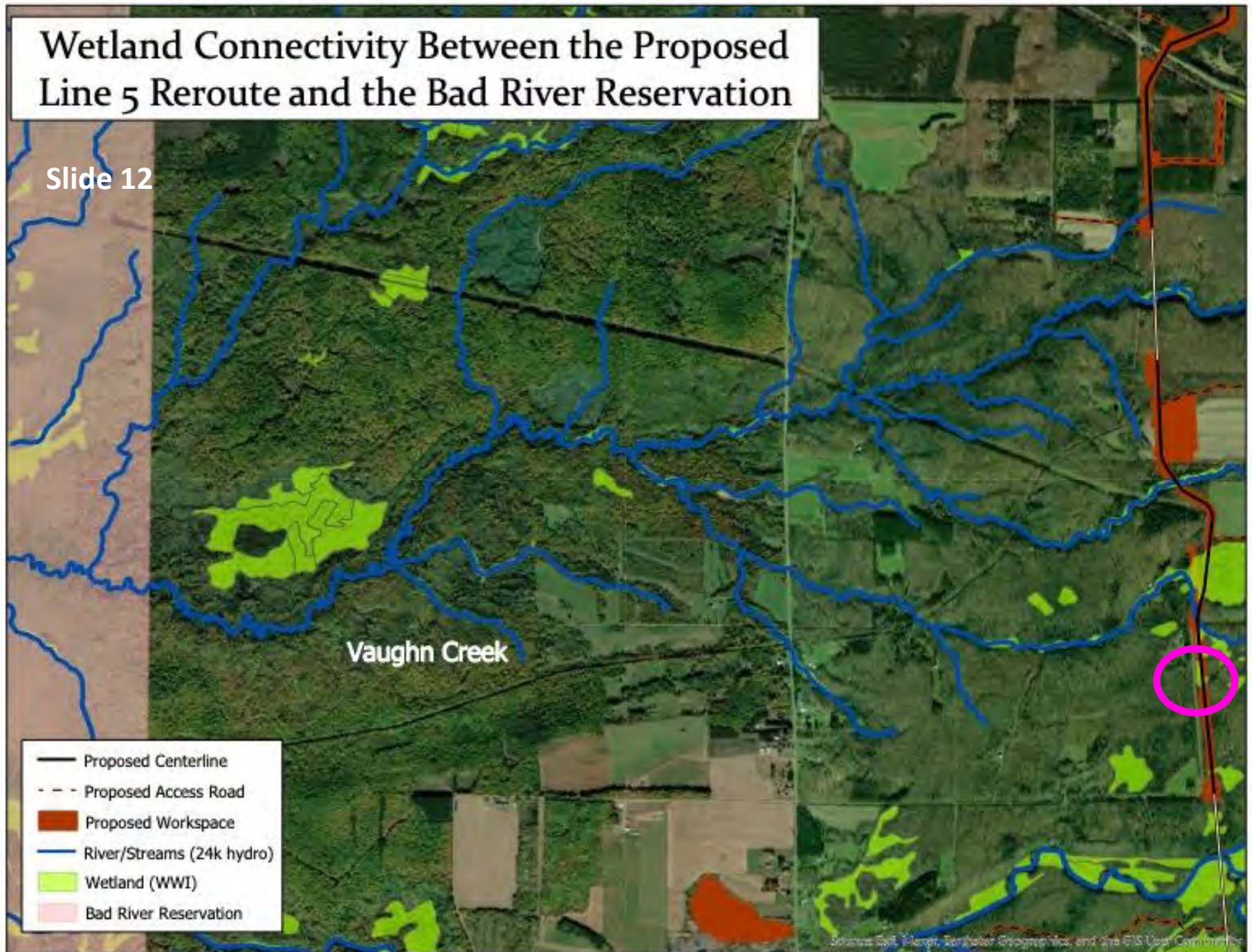
NWI 1:1000 scale Data - 630.6

% Increase - 233.5



# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

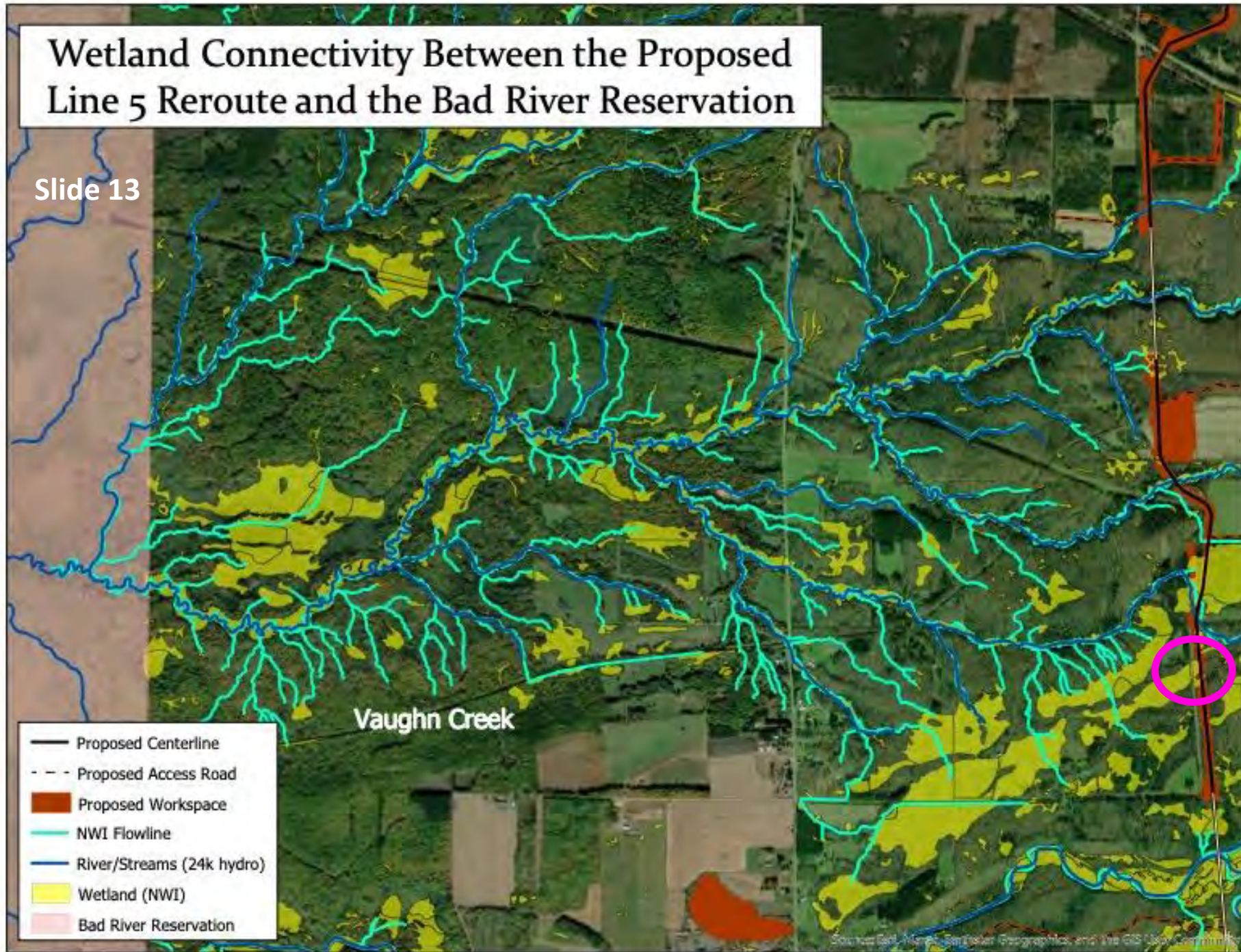
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# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

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# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

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The map displays the Potato River and surrounding wetlands (WWI). A proposed centerline and access road are shown, along with a proposed workspace. A pink circle highlights a specific area of interest. The map includes a legend with the following items:

- Proposed Centerline
- Proposed Access Road
- Proposed Workspace
- Rivers / Streams (24k Hydro)
- Wetland (WWI)
- Bad River Reservation

# Slide 14

## Potato River

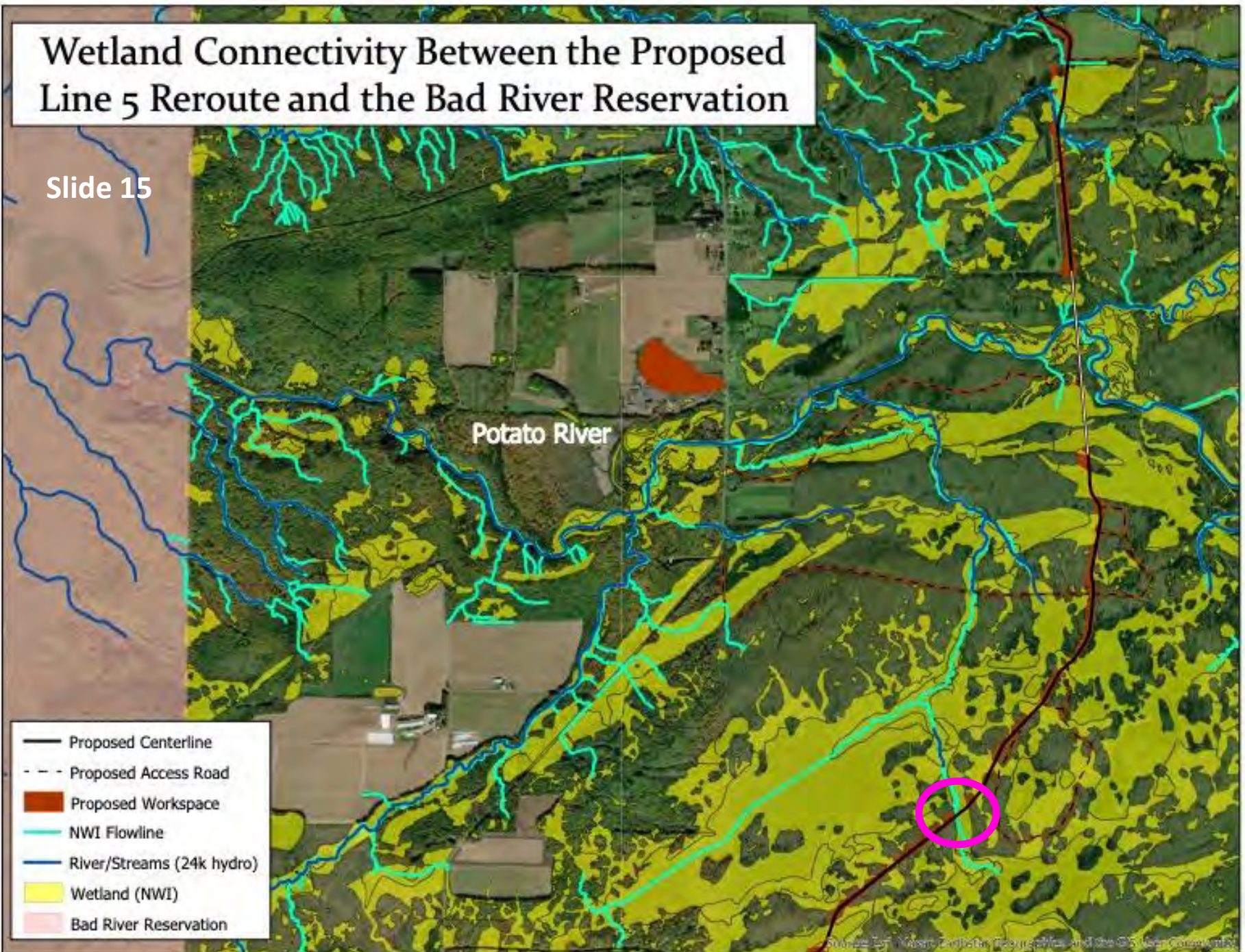
- Proposed Centerline
- - - Proposed Access Road
- Proposed Workspace
- Rivers / Streams (24k Hydro)
- Wetland (WWI)
- Bad River Reservation

Source: Jan. 1994. <http://www.fishbase.org/1994/1994.html> and the fishbase community.



# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

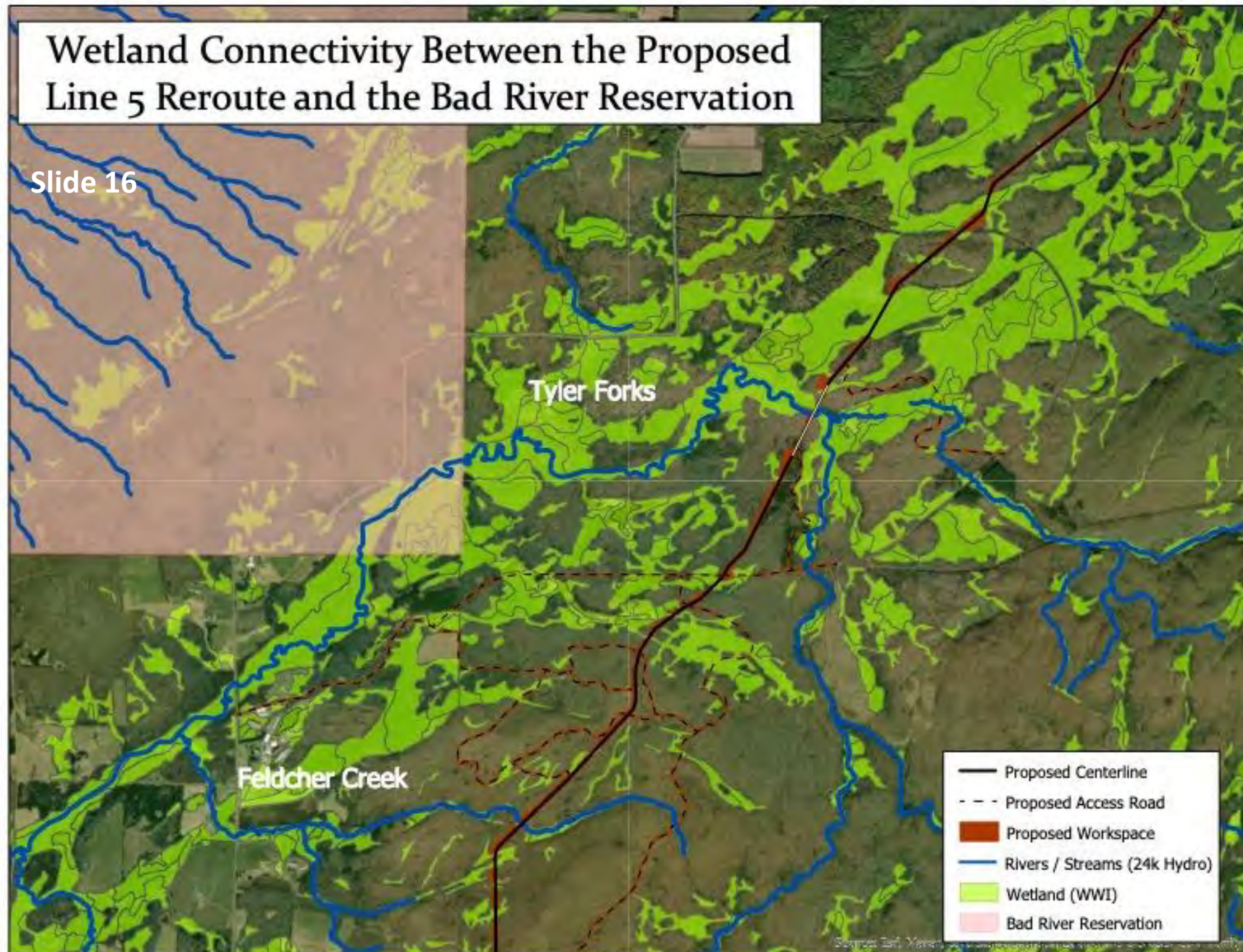
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# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

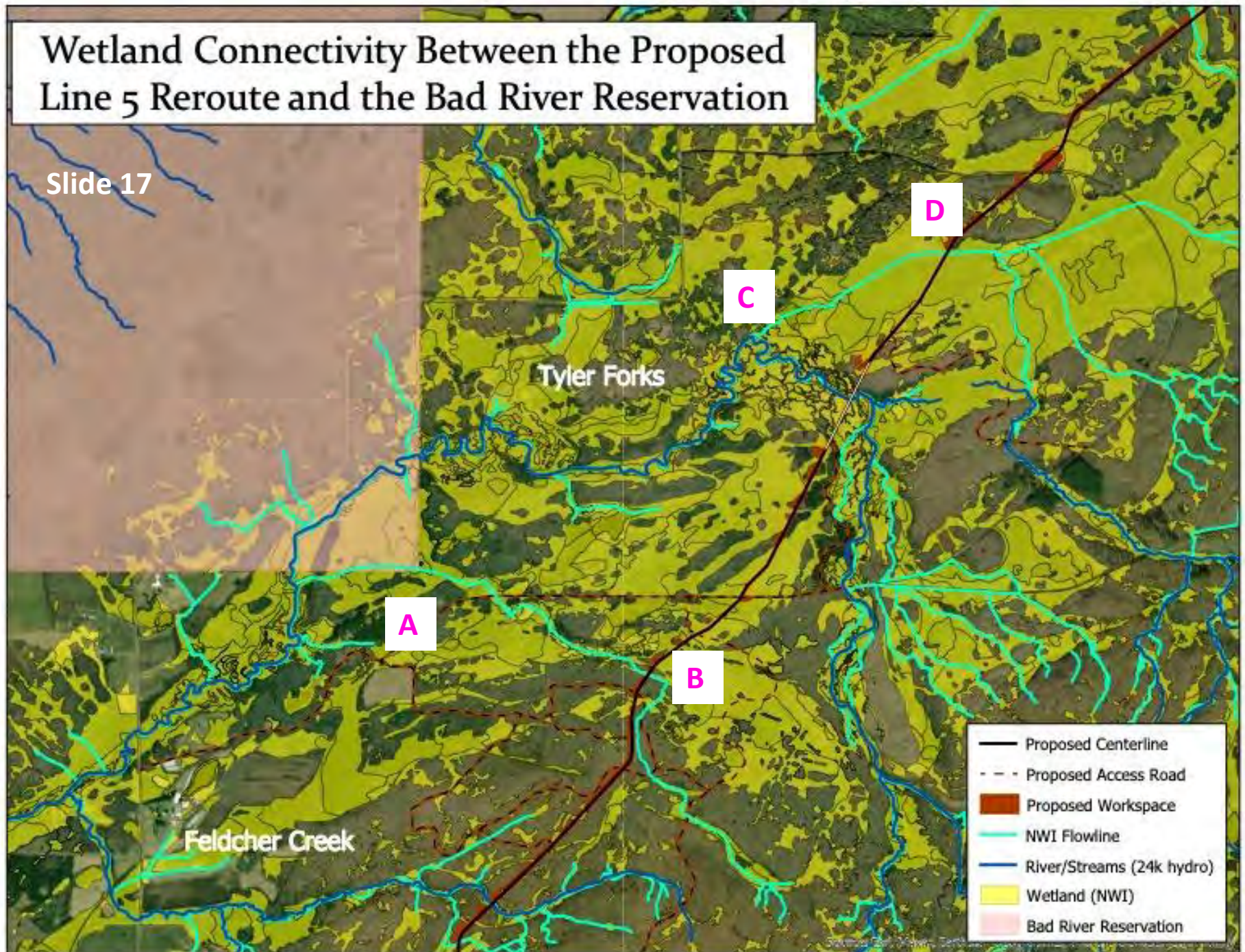
Slide 16





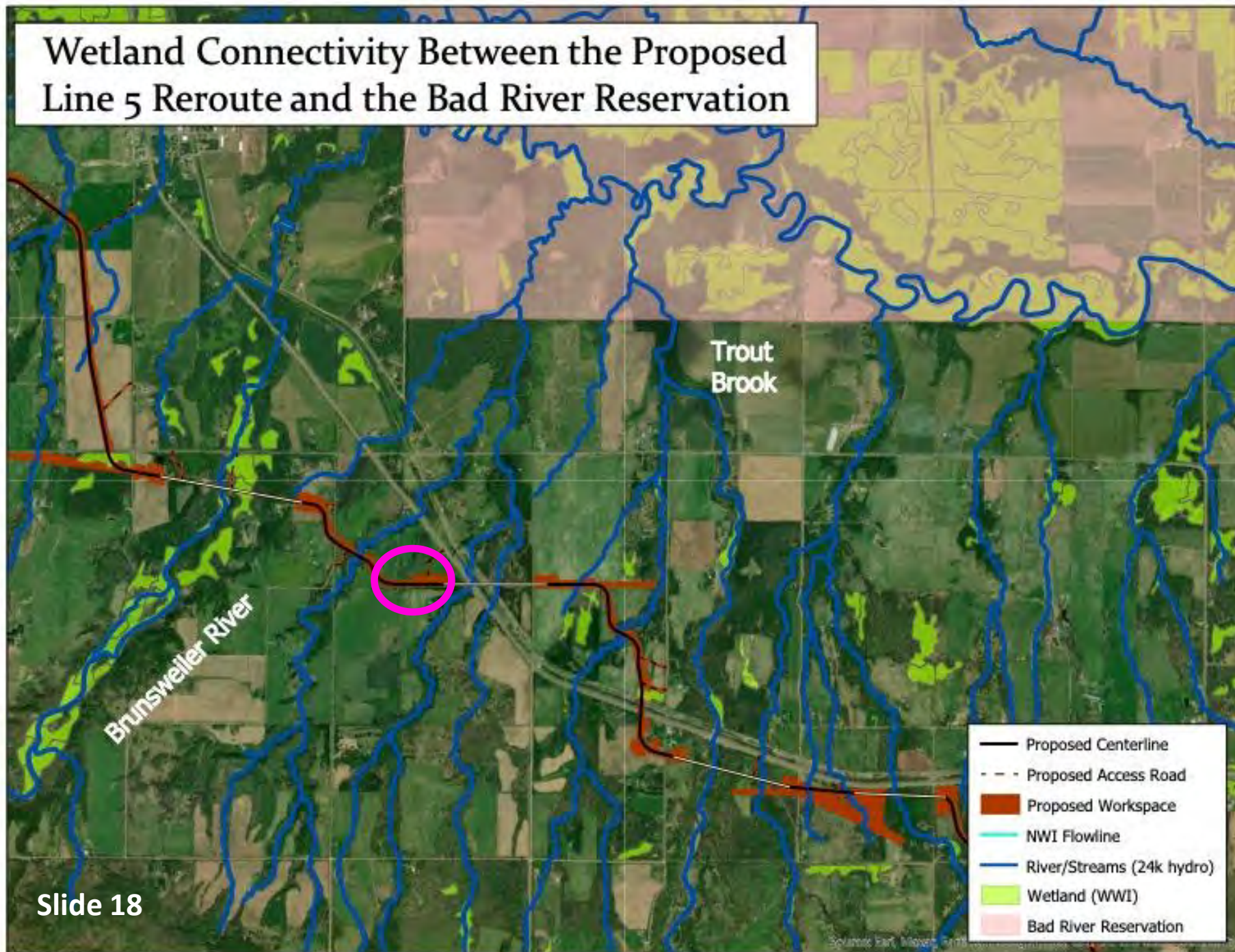
# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

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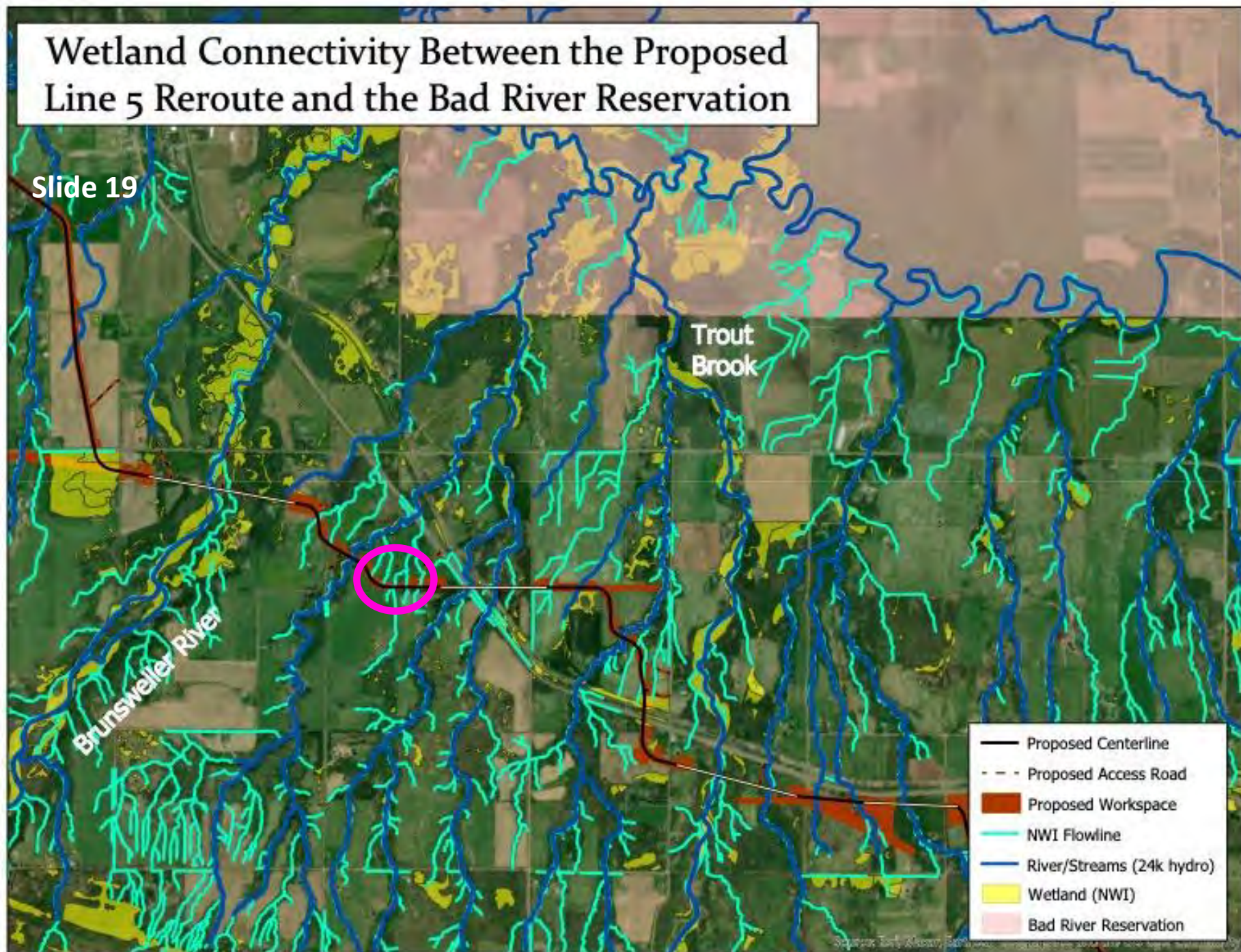
# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation





# Wetland Connectivity Between the Proposed Line 5 Reroute and the Bad River Reservation

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Thanks.



## Concluding Statement

- Far greater hydrologic connectivity between the proposed reroute and the Reservation boundary is apparent when using more accurate data.
- Without accurate hydrologic connectivity data, the magnitude of transport of contaminants from the proposed Line 5 reroute to the reservation boundary is underestimated.
- The impact analysis to date has a high level of uncertainty.
- Conclusions drawn by regulatory agencies that the project will not violate Bad River water quality standards are not supportable.