

The Use of SPARROW and Other Tools to Help Prioritize Wisconsin Watersheds

Ashley Beranek, *Integrated Report Coordinator*

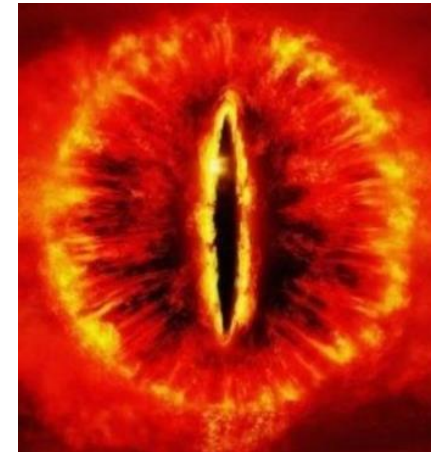
Kevin Kirsch, *TMDL Development Coordinator*

Wisconsin DNR - Water Quality Bureau

Wisconsin's Water Quality Restoration and Protection
Prioritization Framework

Final Draft

Clean Water Act Section 303(d) Long-Term Vision
Implementation of the Priority Goal for Total Maximum Daily
Load or Alternative Plan Development



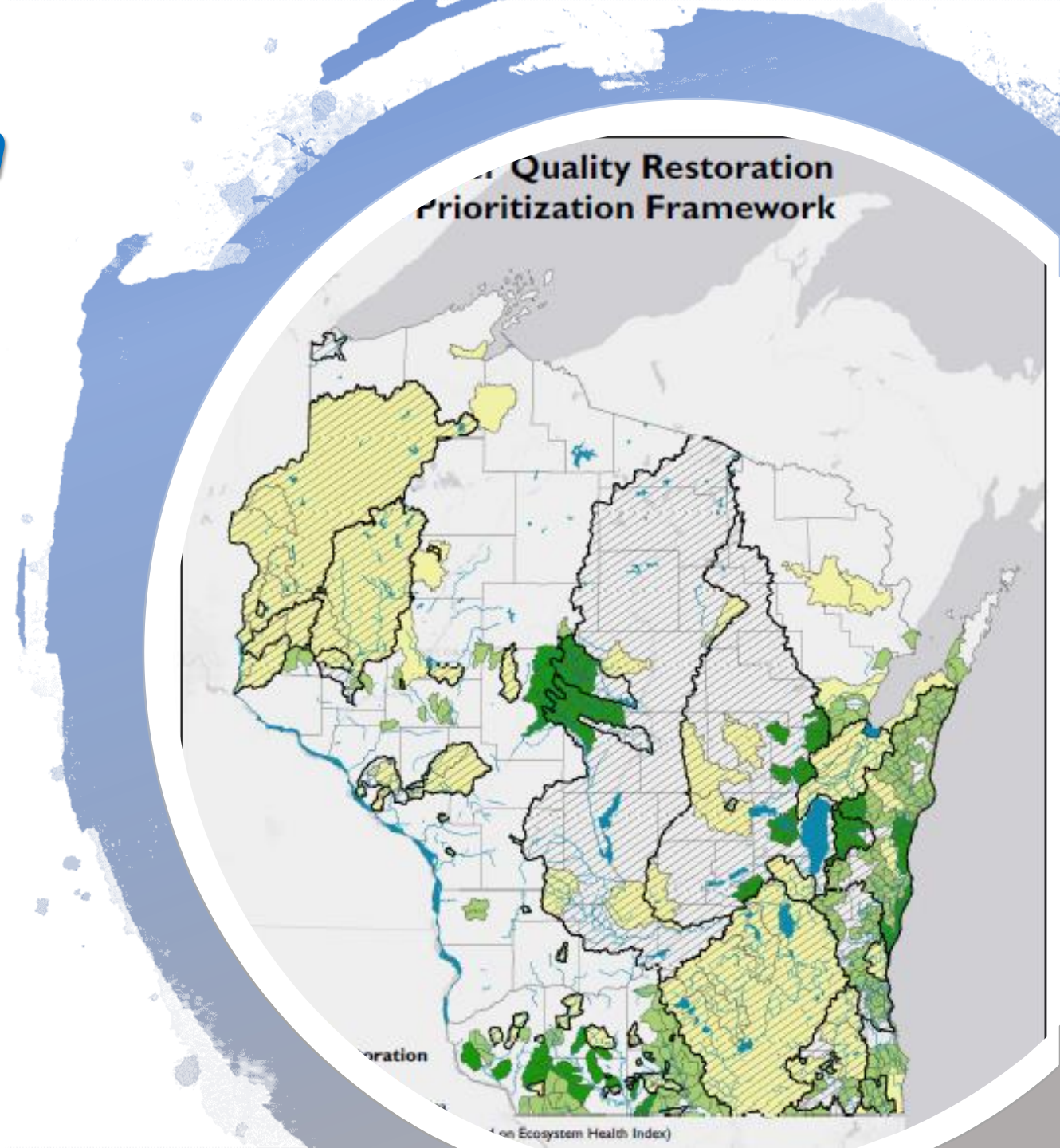
Wisconsin Department of Natural Resources
Water Quality and Watershed Management Bureau

July 27, 2015



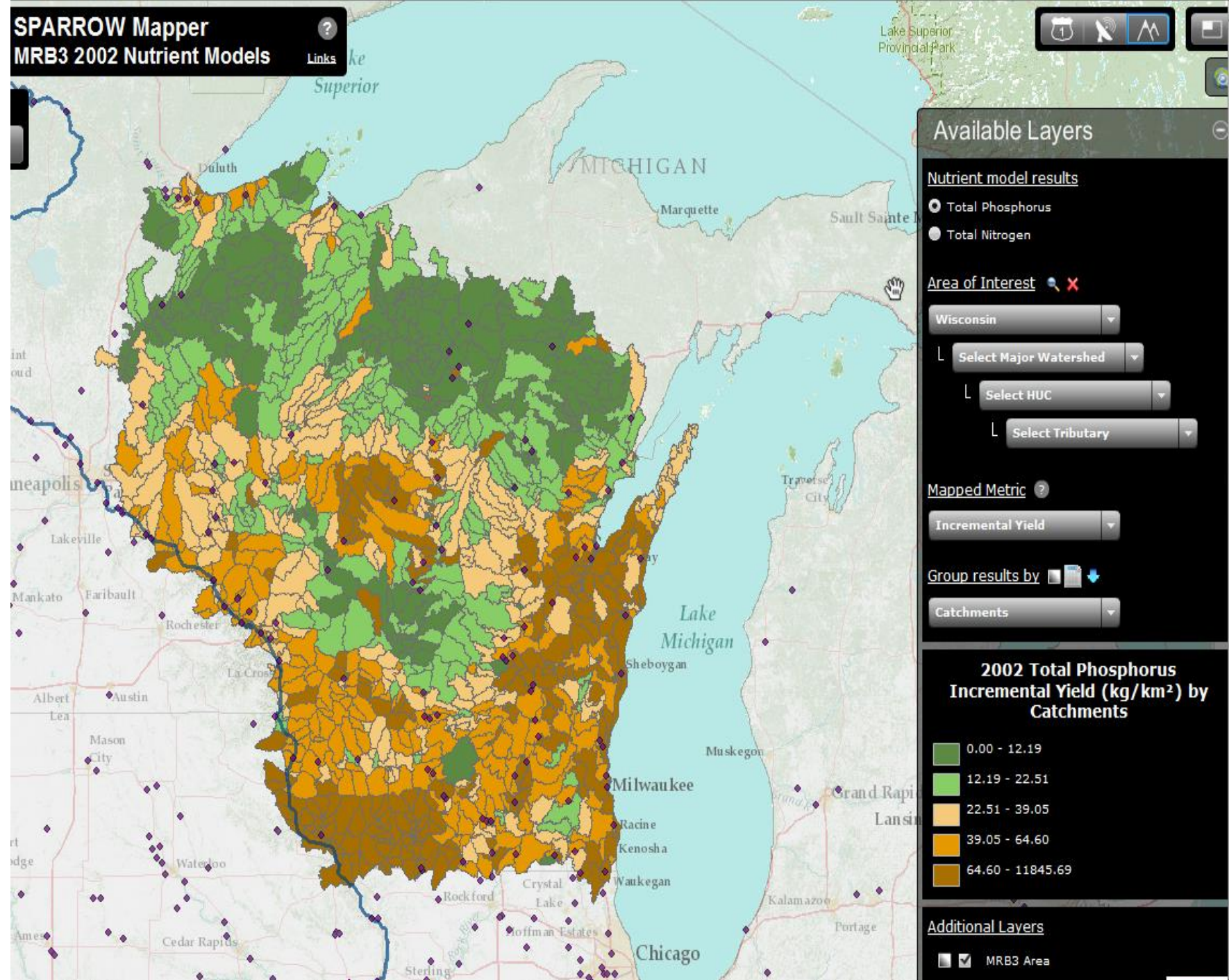
What We Ended up With

- Prioritization based on pollutant loadings and water quality.
- Prioritization based on aquatic health and vulnerability.
- Combined to produce a prioritization map.

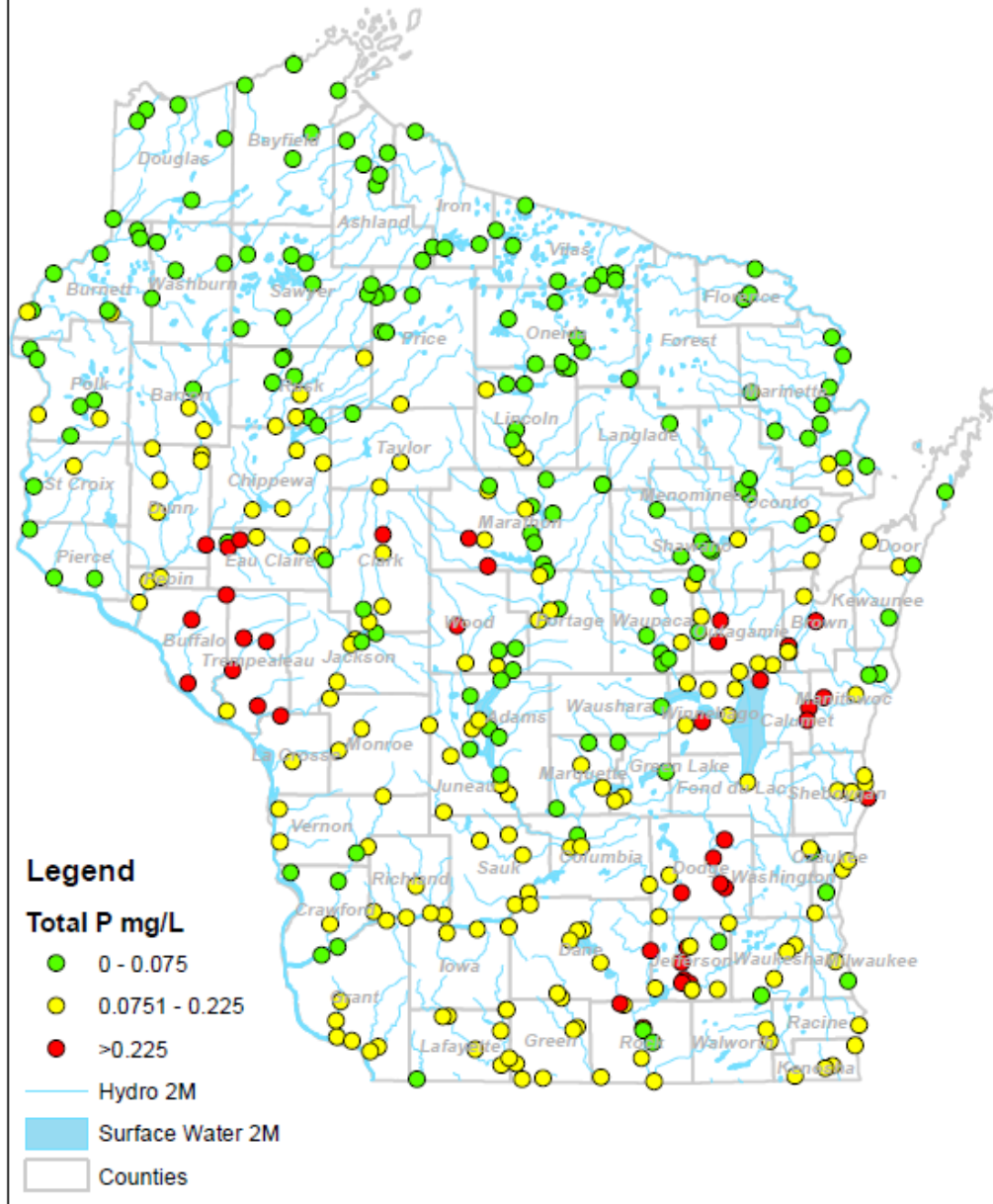


Phosphorus Incremental Yield

- Wisconsin's Nutrient Reduction Strategy used SPARROW.
- SPARROW (SPAtially Referenced Regression On Watershed attributes).
- TP, TN, and TSS

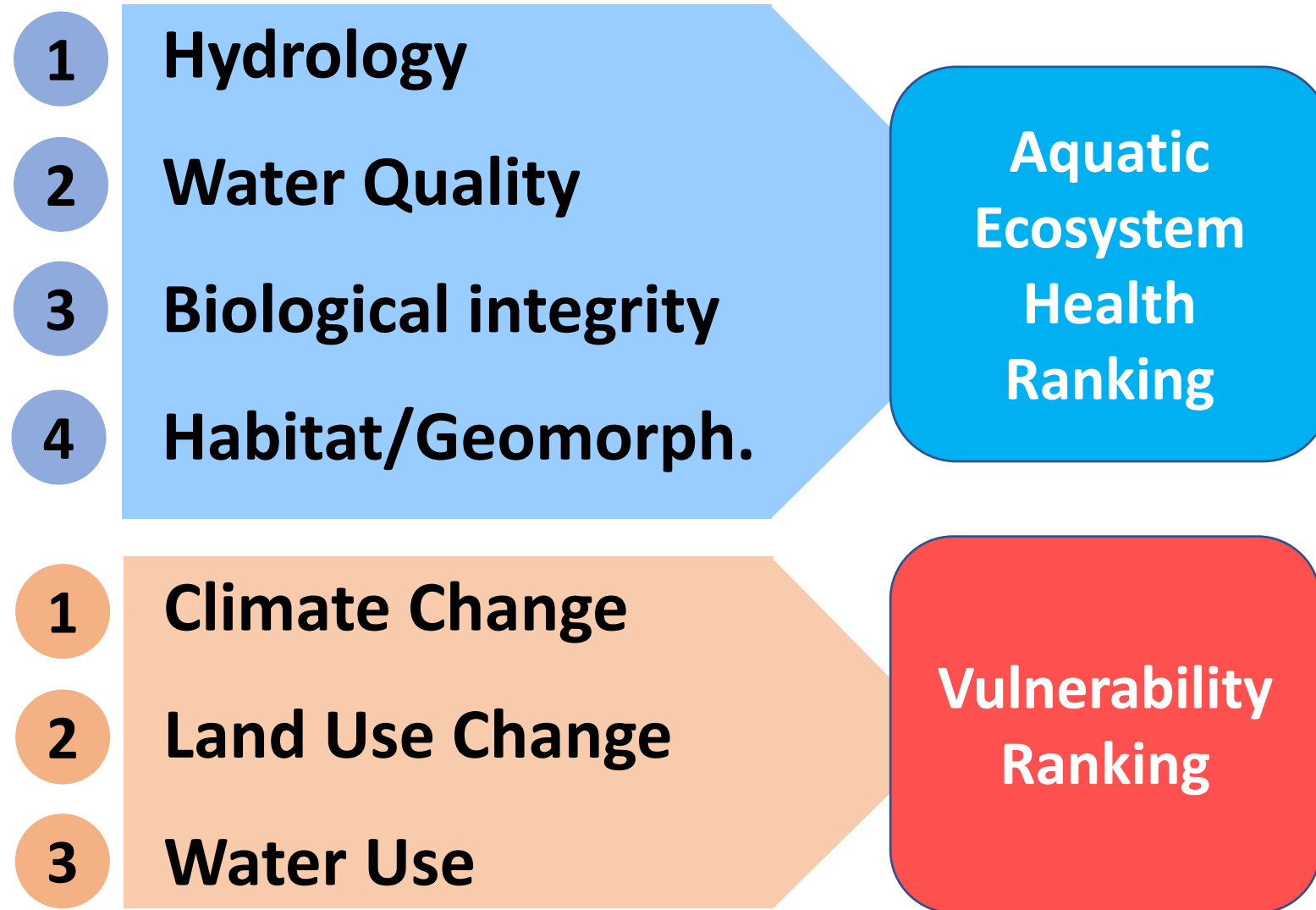


Supplemented with Water Quality Monitoring



- Wisconsin's Nutrient Strategy was used to help priority areas for development of phosphorus reduction plans.
- Watersheds were ranked based on SPARROW model incremental phosphorus yields and median stream concentrations of phosphorus monitored during the growing season.

EPA's Healthy Watersheds Framework



Aquatic Ecosystem Health

Hydrologic Condition

Change in
flow
regime

Habitat Condition/ Geomorphology

Dams

Road crossings

Stream Habitat
Rating*

% Reed canary
grass

Canals/ditches

Water Quality

Nitrogen*

TP*

TSS*

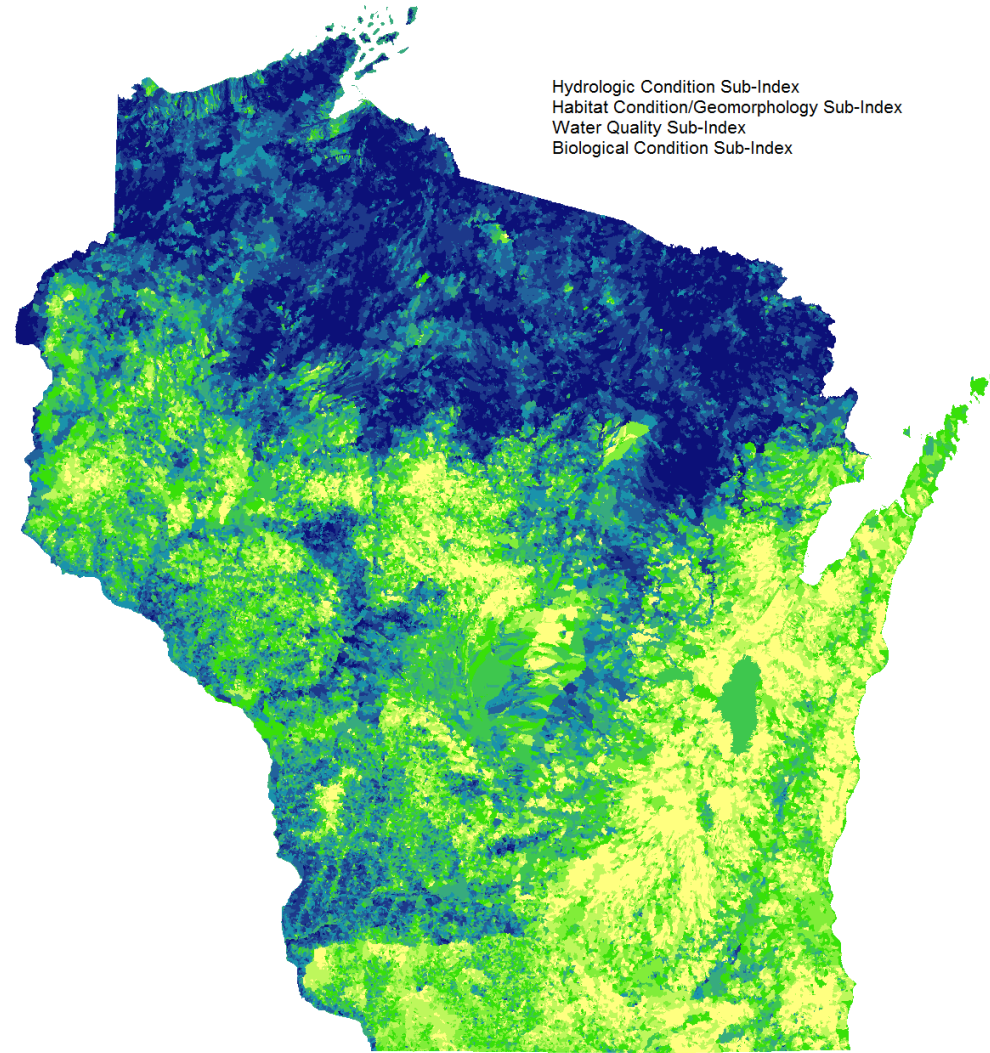
Lake
Clarity

Biological Condition

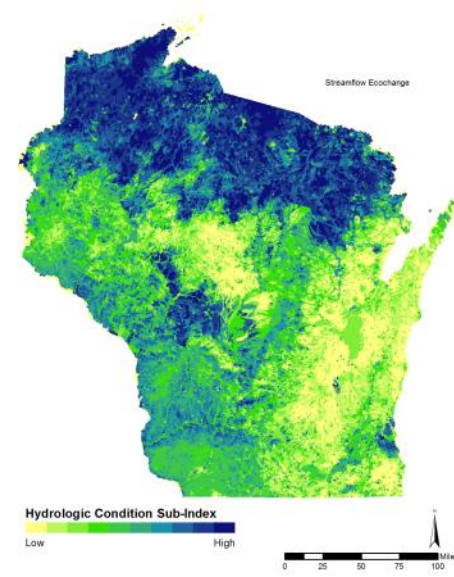
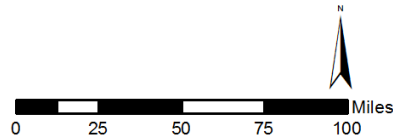
Aquatic
Insects *

Aquatic Ecosystem Health

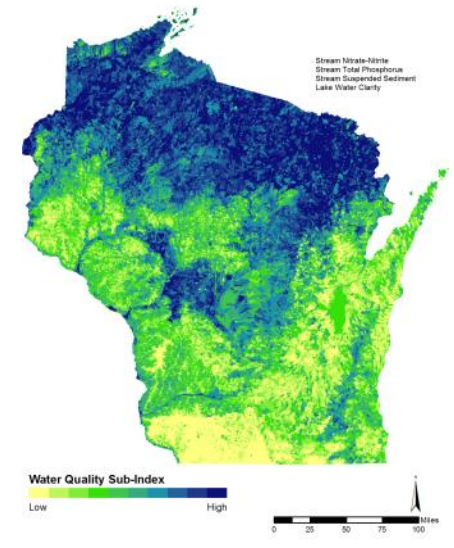
SUBINDICES



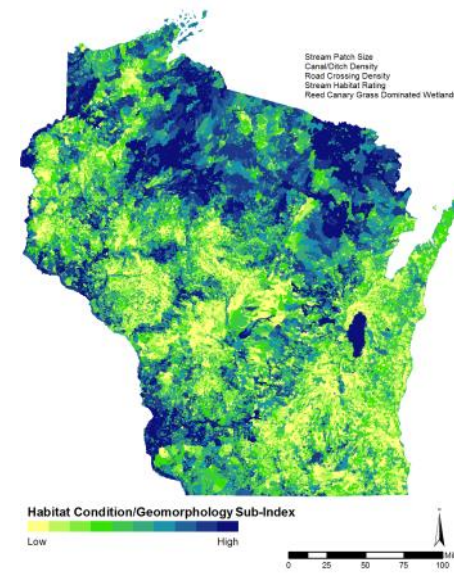
Aquatic Ecosystem Health Index
Low High



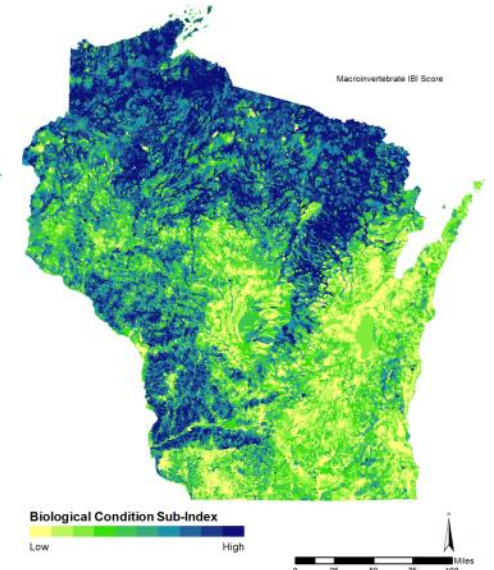
Hydrology



Water Quality



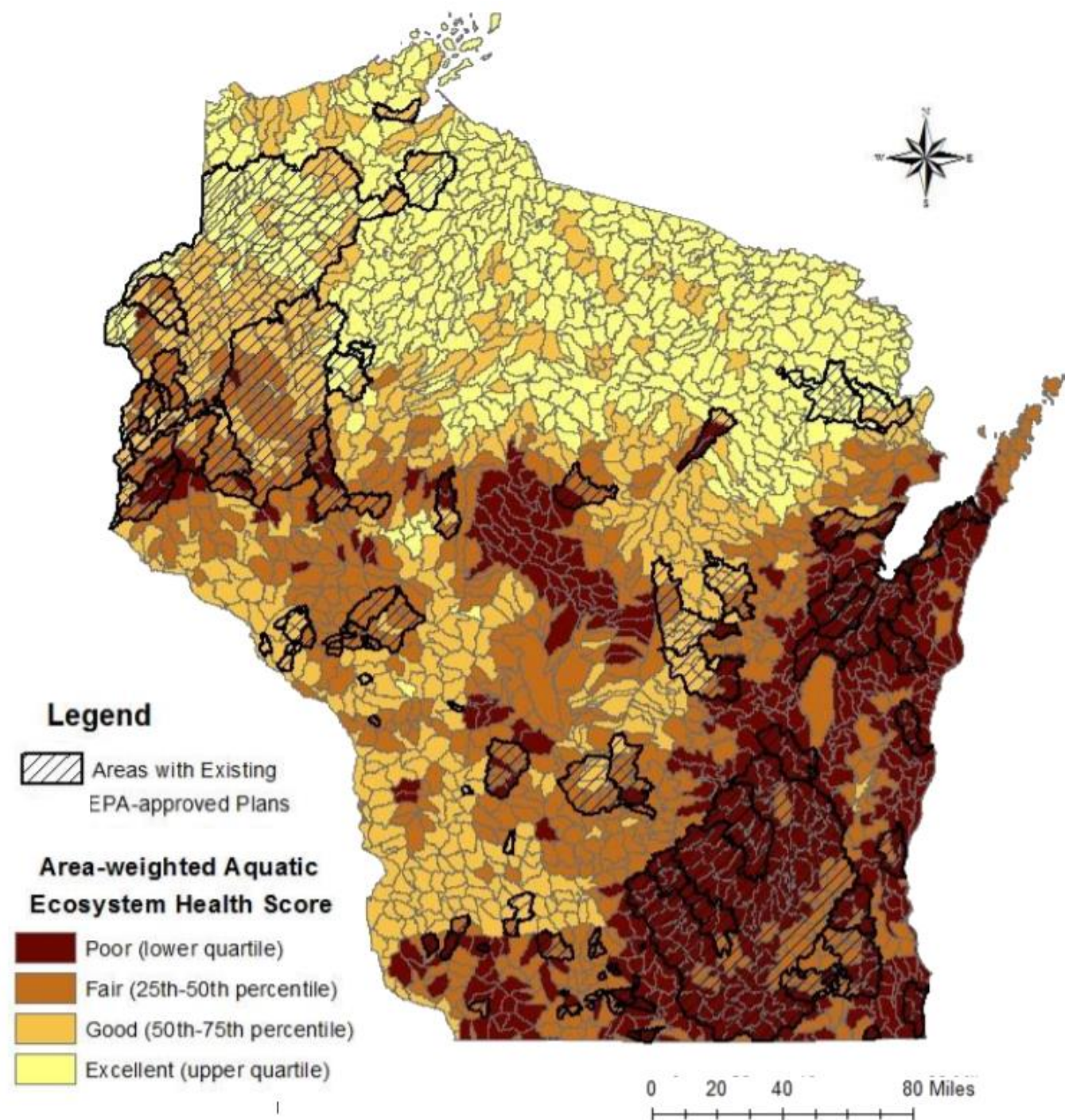
Habitat/Geomorphology



Biology

Restoration Prioritization Framework

- HUC-12 watersheds ranking in the lower quartile (25% of watersheds with lowest Ecosystem Health scores) were considered restoration plan priority areas.



Putting it all Together

- Approved Restoration Plans
- TMDLs
 - Approved
 - Under development
- Identification of Priority Watersheds.
- Coupled with other factors help DNR prioritize future TMDL and restoration initiatives.



Wisconsin's Water Quality Restoration & Protection Prioritization Framework

