



DJ Shook

Biologist/Senior Project Manager

Conservation Resource Alliance

dj@rivercare.org or 231-492-7587



Conservation
Resource Alliance



WILD ROOTS™

More info at [Michigan.gov/ForestToMiFaucet](https://www.michigan.gov/ForestToMiFaucet), [YouTube.com/@MichiganSAF](https://www.youtube.com/@MichiganSAF), and
<https://www.rivercare.org/wildroots/>

Forest to Mi Faucet: big picture ideas

- Where does your drinking water come from?
- How does land use impact water quality?
- Forests are best land use to protect drinking water
- Forest to Mi Faucet - partners and 3 main actions
- What can YOU do to protect drinking water?
- *Getting Michigan's forestry & logging community to pay attention to WATER.*



An aerial photograph of a Michigan coastline. The water is a deep blue-green, with a lighter greenish-yellow area near the shore. A dense line of green trees runs along the right side of the image, meeting the water. The sky is blue with some white clouds.

KEEP IT
FRESH®

PURE *M*ICHIGAN®

Is our freshwater infinite, free and pure?

Is Michigan taking good care of its land and water?

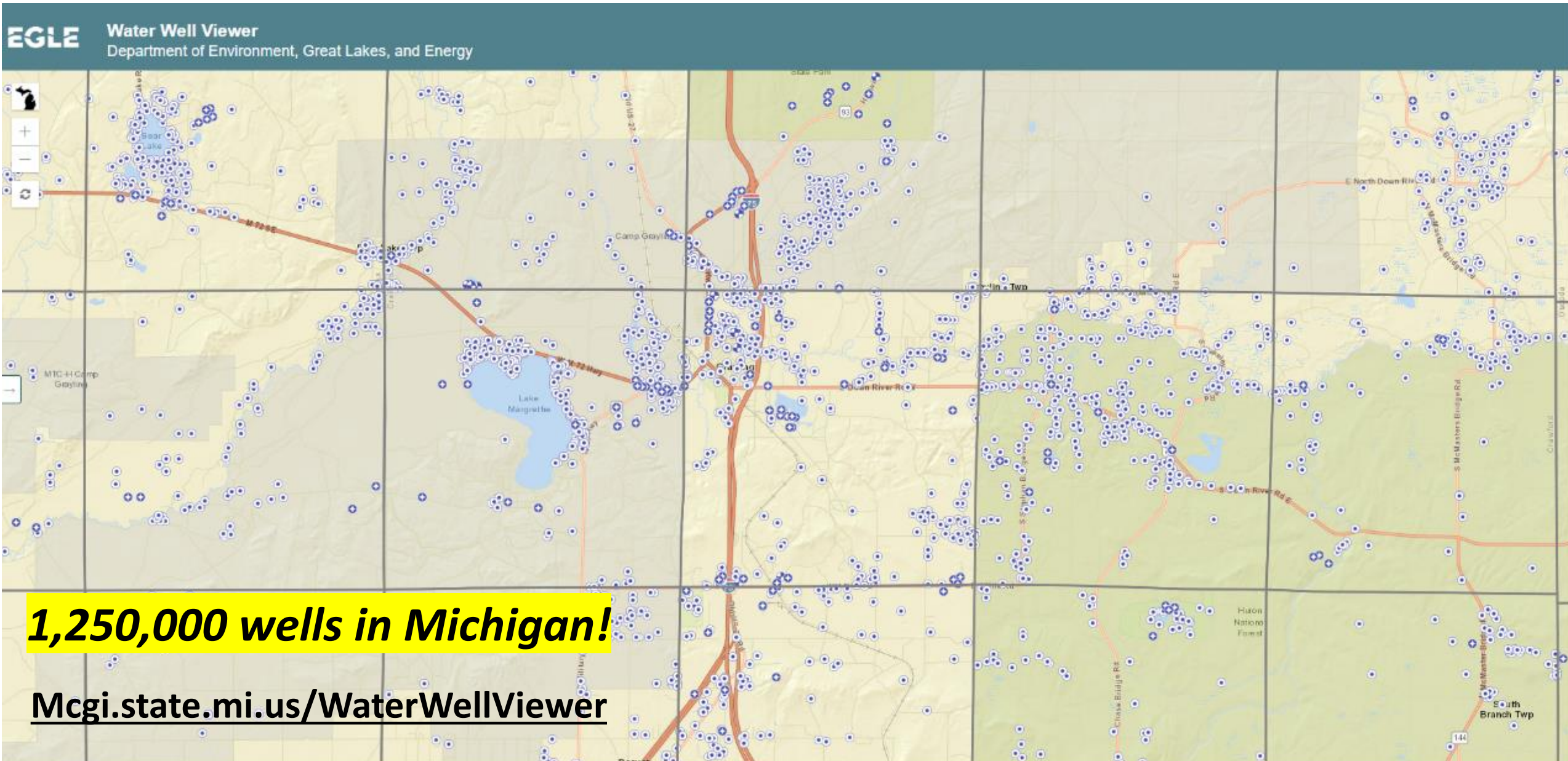
Forests

- 20 million acres (includes 4.5 m wetlands)
- 56% of our land area
- Other land uses
 - 10 m acres agriculture (28%)
 - 2 m wetlands [non-forest] (8%)
 - 2 m acres urban (6%)
- \$21 billion forest products industry
 - *are we taking good care of forests?*

Water

- 26 million acres
 - 25 m Great Lakes
 - 1 m inland lakes
- 10,889 lakes > 5 acres
- 52,053 miles of rivers
- 3,049 miles Great Lakes shoreline
- MI has 9% of world's fresh water!
- Water is a PUBLIC GOOD - \$\$\$???
 - *are we taking good care of water?*

RURAL *drinking water* for 2.5 million Michiganders




URBAN *drinking water* for 7.5 million Michiganders


- Groundwater Wells (1.8 million people in Michigan)
 - Kalamazoo, Lansing, Jackson, Gaylord, Cadillac ...
- Rivers (~150k people in Michigan)
 - Ann Arbor – Huron River (128k people)
 - Adrian – Wolf Creek (20k people)
 - *Flint – Flint River (*now back to GLWA*)*
- Great Lakes (5.7 million people in Michigan)
 - Marquette, Traverse City, Alpena, Grand Rapids ...
 - Detroit: Great Lakes Water Authority (GLWA)
 - 3.8 million people, 112 communities, 8 counties

MICHIGAN'S DRINKING WATER TOOLKIT
Use this resource to help you learn the basics about your drinking water system, how to troubleshoot problems with your water, and the questions to ask about water safety and affordability in your home and hometown.


[USE THE TOOLKIT](#)



[USE THE TOOLKIT >](#)




[ANALYZE MY WATER >](#)




[THREATS TO WATER >](#)

START THE DRINKING WATER TOOLKIT
The Drinking Water Toolkit can help to answer questions about your drinking water. The first thing you need to know is where your water comes from!

First: Choose Your Source
Your water either comes from a public utility or from a private well.

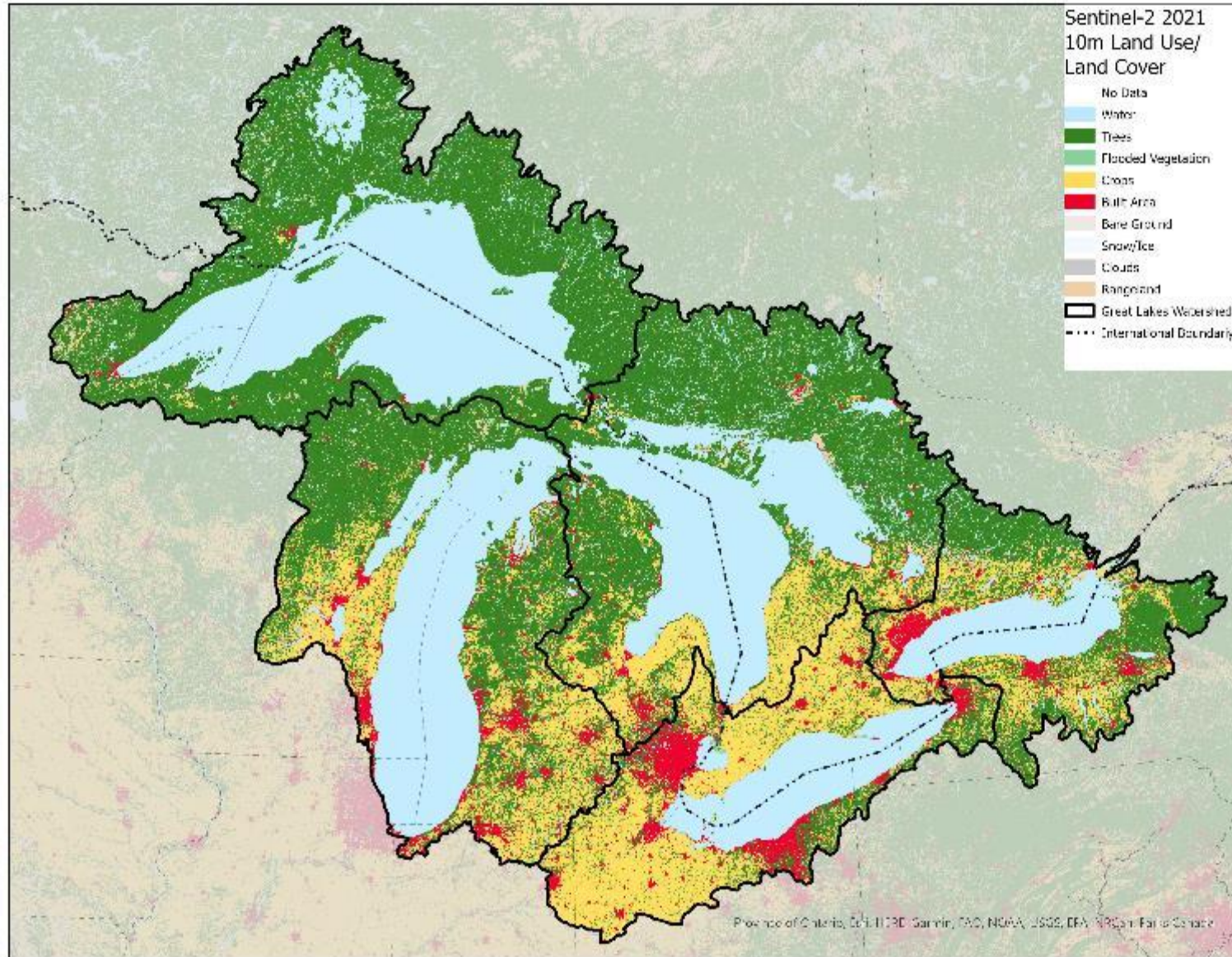


PUBLIC UTILITY



PRIVATE WELL

Which Great Lake do you want to drink?



Great Lakes Land Cover

Lake Superior

91% forest, 1% ag, 2% urban

Lake Huron

67% forest, 22% ag, 6% urban

Lake Michigan

49% forest, 32% ag, 10% urban

Lake Ontario

49% forest, 34% ag, 12% urban

Lake Erie

19% forest, 61% ag, 18% urban

Map produced by John Esch (EGLE) EschJ@Michigan.gov on 8/25/22.

Source: EPA 2022 State of Great Lakes
Technical Report (forest & forested wetland)

What Is the Status of Each Lake?



Lake Superior's forested watershed and coastal wetlands help maintain water quality and a healthy aquatic ecosystem – Lake Superior is assessed as **Good** and **Unchanging**.

Lake Michigan's habitats support a diverse array of plant and animal species and its waters continue to provide opportunities for swimming and recreational use. However, invasive species and other stressors continue to affect both water quality and the lake's food web – Lake Michigan is assessed as **Fair** and **Unchanging**.



Lake Huron remains healthy despite nearshore algal blooms and a reduction in offshore nutrients by invasive filter-feeding mussels – Lake Huron is assessed as **Good** and **Unchanging**.

Lake Erie supports a productive Walleye fishery, but elevated nutrient concentrations and algal blooms are persistent problems – Lake Erie is assessed as **Poor** and **Unchanging**.



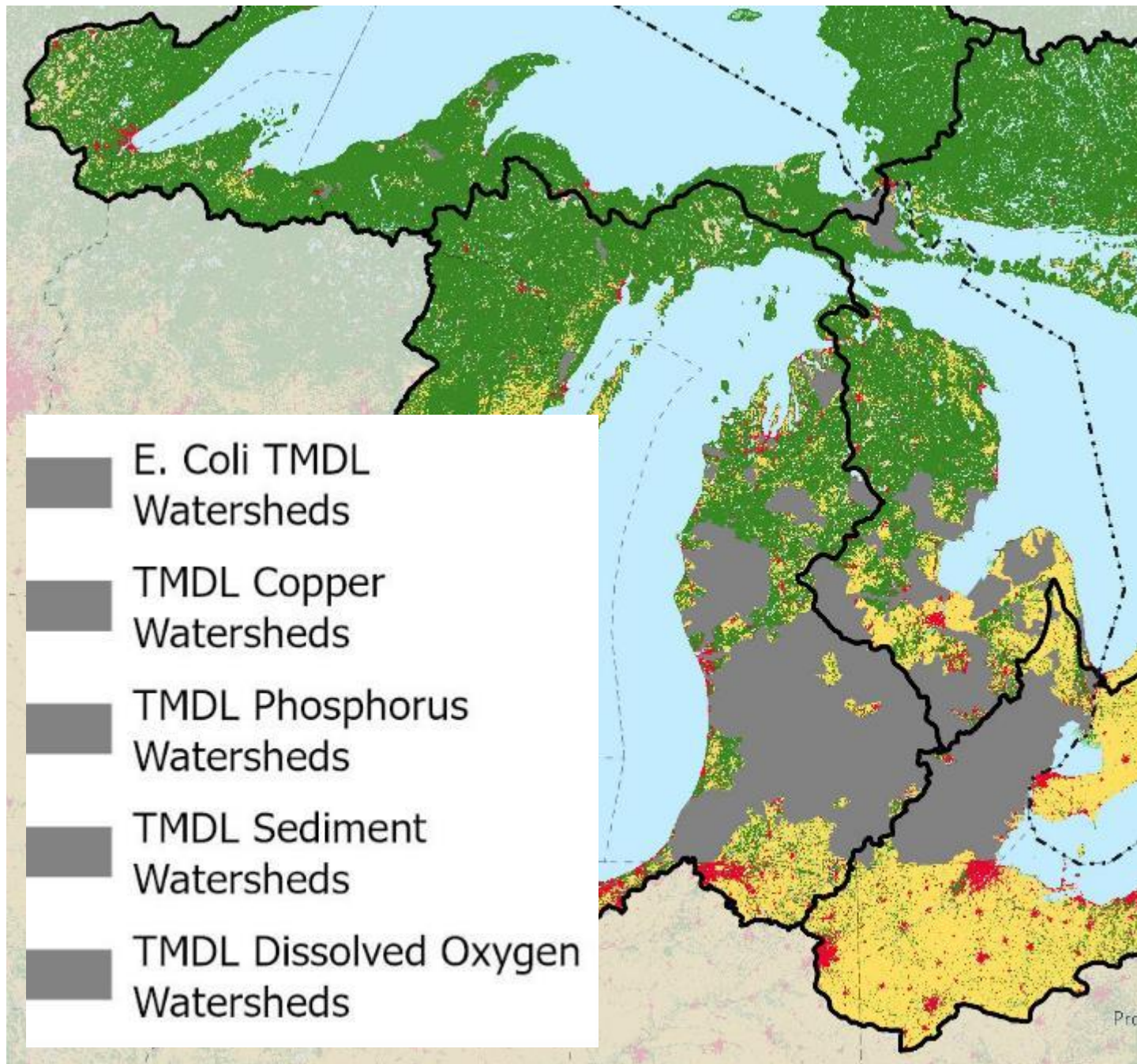
Lake Ontario shows improvements with fewer beach closings and declines in contaminant concentrations in fish – Lake Ontario is assessed as **Fair** and **Unchanging to Improving**.

As forest cover declines, so does lake quality.

City	Municipal Water Source	EPA's Lake Status	Forest Cover in Watershed
Marquette	Lake Superior	Good	91%
Detroit	Lake Huron	Good	67%
Toronto	Lake Ontario	Fair	49%
Grand Rapids	Lake Michigan	Fair	49%
Monroe	Lake Erie	Poor	19%



Photo:
[GreatLakesNow.org/2022/07/2022-forecast-harmful-algal-blooms-forecast-lake-erie](https://www.greatlakesnow.org/2022/07/2022-forecast-harmful-algal-blooms-forecast-lake-erie)



**As forest cover declines,
pollution increases.**

“Total Maximum Daily Load”

Maximum amount of pollution
allowed by Clean Water Act.

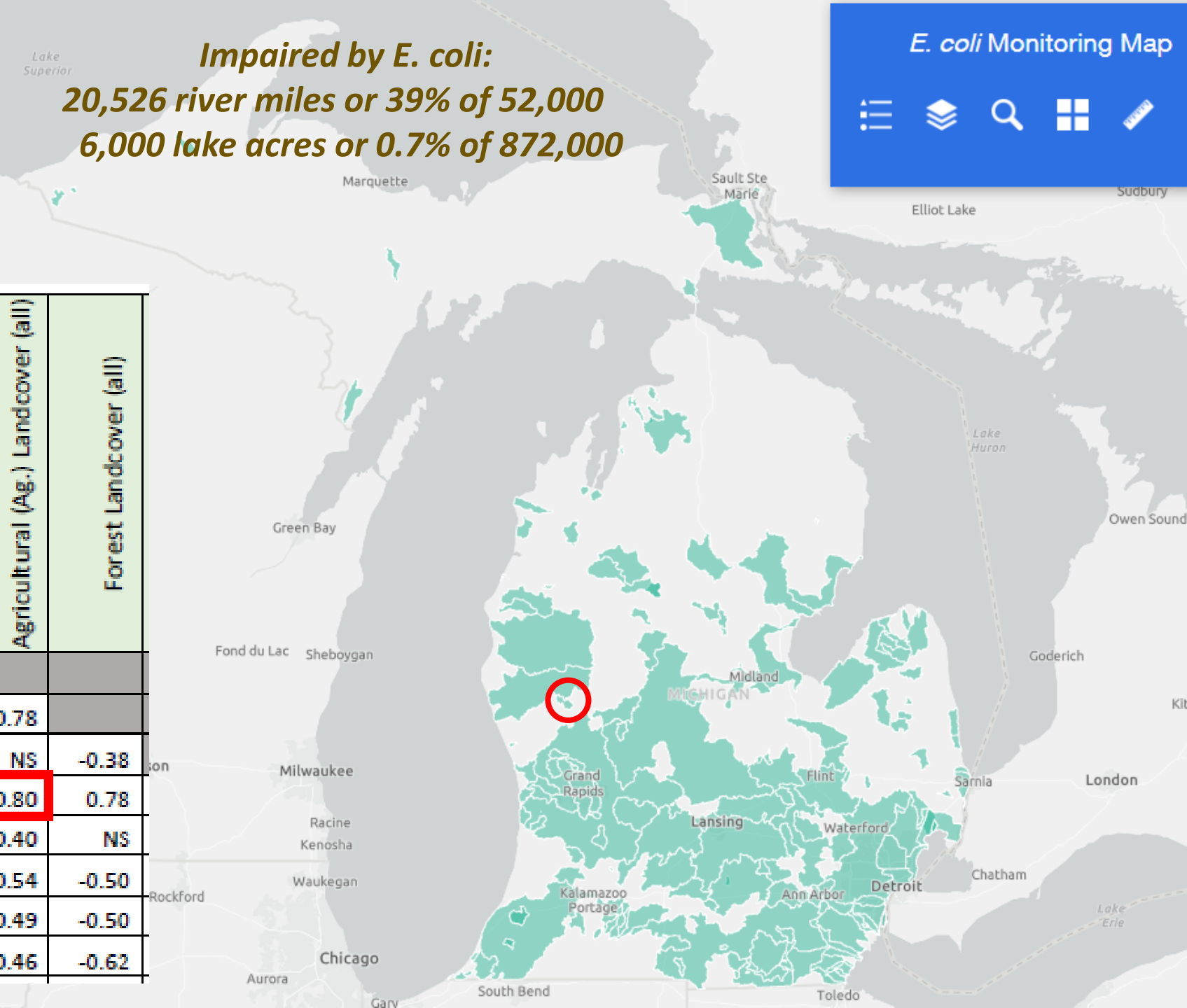
Michigan.gov/TMDL

Excludes TMDLs for PCBs & mercury
(cover most of MI, industrial source)

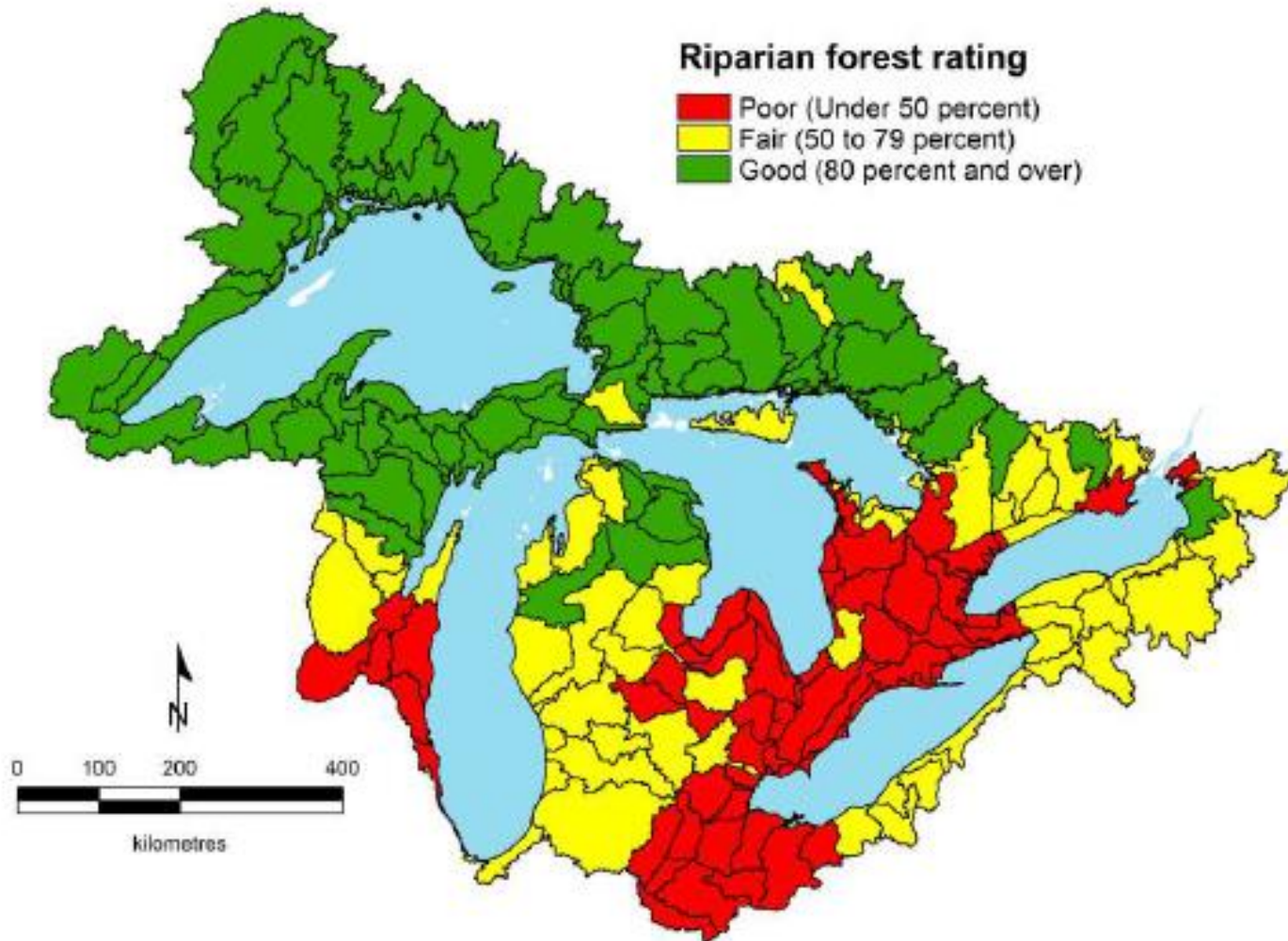
Land cover correlation with E. coli TMDL

E. coli live in intestinal tract of warm-blooded animals

WCMP Watershed Variables and Characteristics	E. coli (geomean)	Agricultural (Ag.) Landcover (all)	Forest Landcover (all)
Agricultural (Ag.) Landcover (all)	0.58		
Forest Landcover (all)	-0.63	-0.78	
Developed Landcover (all)	0.29	NS	-0.38
Natural Riparian Buffer	-0.52	-0.80	0.78
Wetland Landcover (all)	-0.18	-0.40	NS
Lost Wetland (% of original)	0.31	0.54	-0.50
Septic System Density	0.46	0.49	-0.50
Population Density	0.53	0.46	-0.62



Forest Cover inside 30m Riparian Zone



- Superior – 96%
- Huron – 78%
- Michigan – 66%
- Ontario – 65%
- Erie – 35%

Source: EPA's State of the Great Lakes 2022 Technical Report

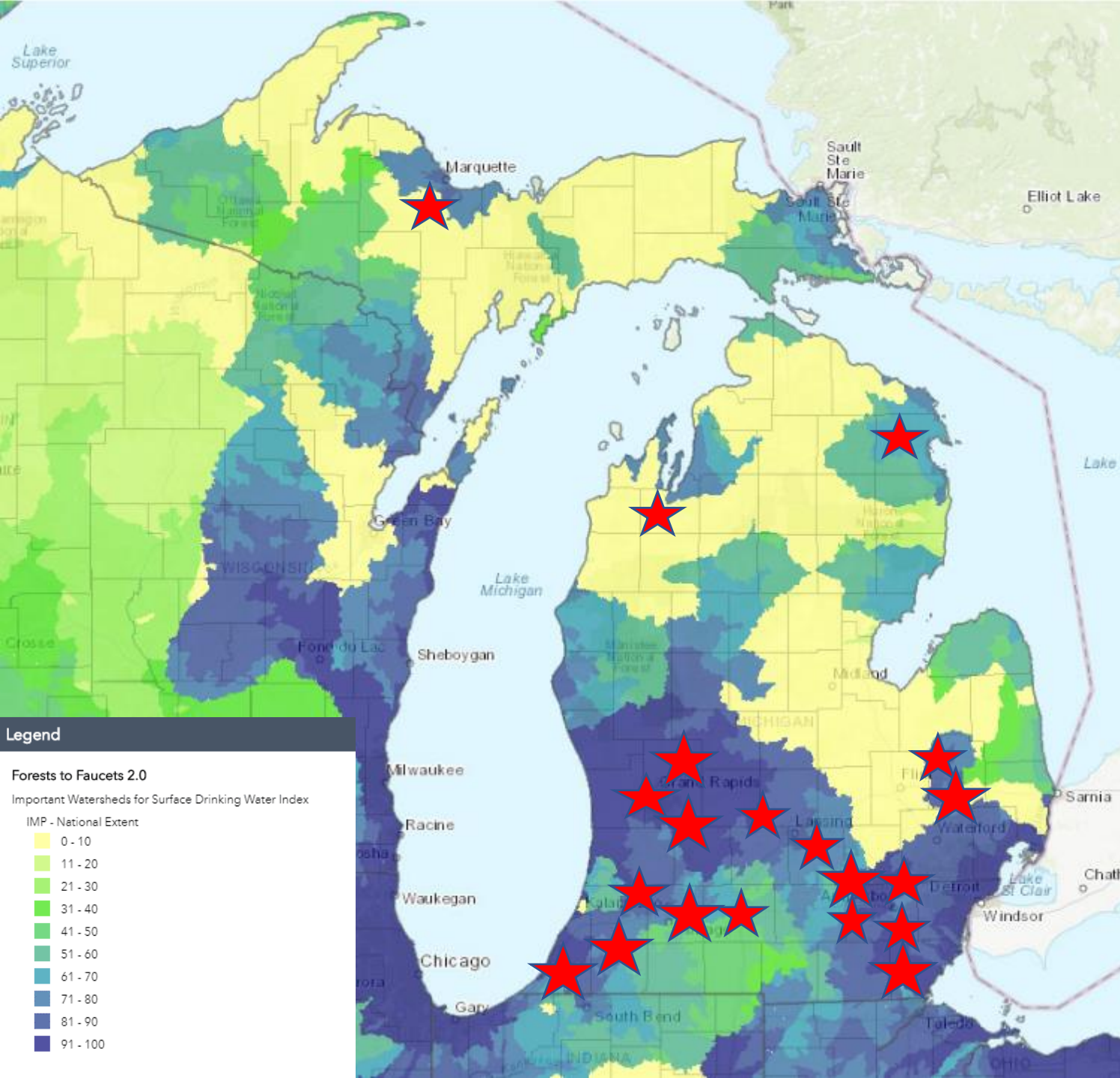
What must Michigan do to protect its land and water?

Transform our Culture

- Consumers
 - Consume less...stuff, beef, gasoline, etc.
 - Pay more for quality & less pollution
- Corporations (economy *and* ecology)
 - Forest certification & better managing
 - Right to Farm/Forest is **NOT** right to pollute
- Culture
 - Land & water are not infinite, free or *ours*
 - Responsibility, not just individual rights
 - PUBLIC TRUST, not just personal property

Improve our Policy

- Local
 - Land use, [zoning](#), protection (30% by 2030)
 - Water users pay for better upstream land use
- State
 - [Statewide septic code](#) & separate CSOs
 - *Best Man. Practices mandatory in forest & ag*
 - Invest in infrastructure ([Michigan is D+](#))
- Federal
 - Clean Water Act should include nonpoint
 - End perverse subsidies that harm water



Forests to Faucets 2.0

What forests should we protect and enhance for surface drinking water?

Connecting Forests, Water & Communities

USDA Forest Service, 2011

★ = 20 Project Partners on
Forest to Mi Faucet

Forest to Mi Faucet Team

5 Watershed Councils

- Huron River Watershed Council
- Flint River Watershed Coalition
- Kalamazoo River Watershed Council
- Lower Grand River Org. of Watersheds
- River Raisin Watershed Council

5 Land Conservancies

- Legacy Land Conservancy
- SE Michigan Land Conservancy
- Mid Michigan Land Conservancy
- Land Conservancy of West Michigan
- Southwest Michigan Land Conservancy

3 Regional Conservation Groups

- Superior Watershed Partnership
- Conservation Resource Alliance
- Huron Pines

3 Conservation Districts

- Kent Conservation District
- Genesee Conservation District
- Washtenaw Conservation District

3 Statewide Associations

- Michigan Forest Association
- Michigan Association of Timbermen
- Michigan Prescribed Fire Council

1 National Nonprofit

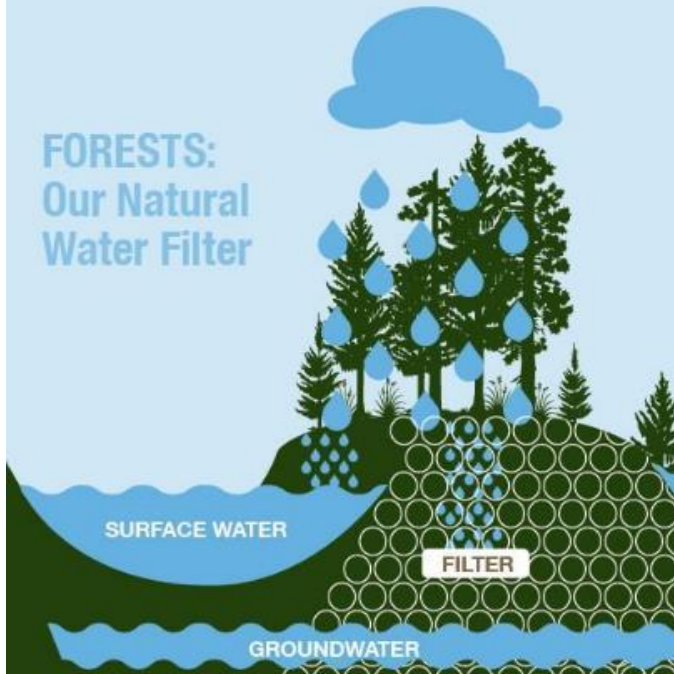
- Old Growth Forest Network

Project administered by DNR Forest Stewardship Program and funded by USDA Forest Service

How do forests protect clean water?

Forests act as a natural filter, resulting in high-quality source water that requires minimal treatment.

FORESTS:
Our Natural
Water Filter

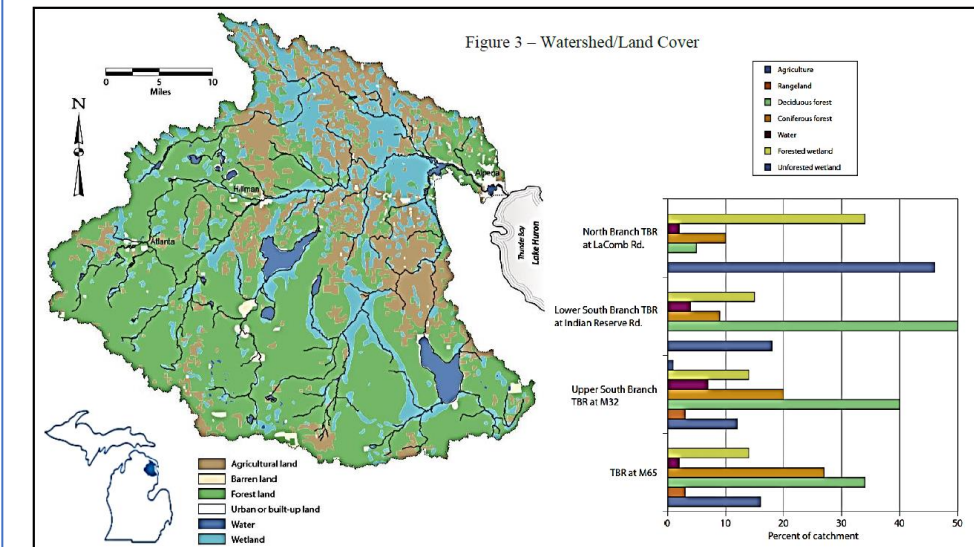


Source: Oregon Forest Resources Institute

- Vegetation slows water velocity (vertical & horizontal)
- Undisturbed soils and leaf layer reduce runoff & erosion
- Soil and vegetation filter pollutants
- Minimal infrastructure and impermeable surfaces
- Infrequent and small chemical spills
- Forests regulate timing and magnitude of stream flow

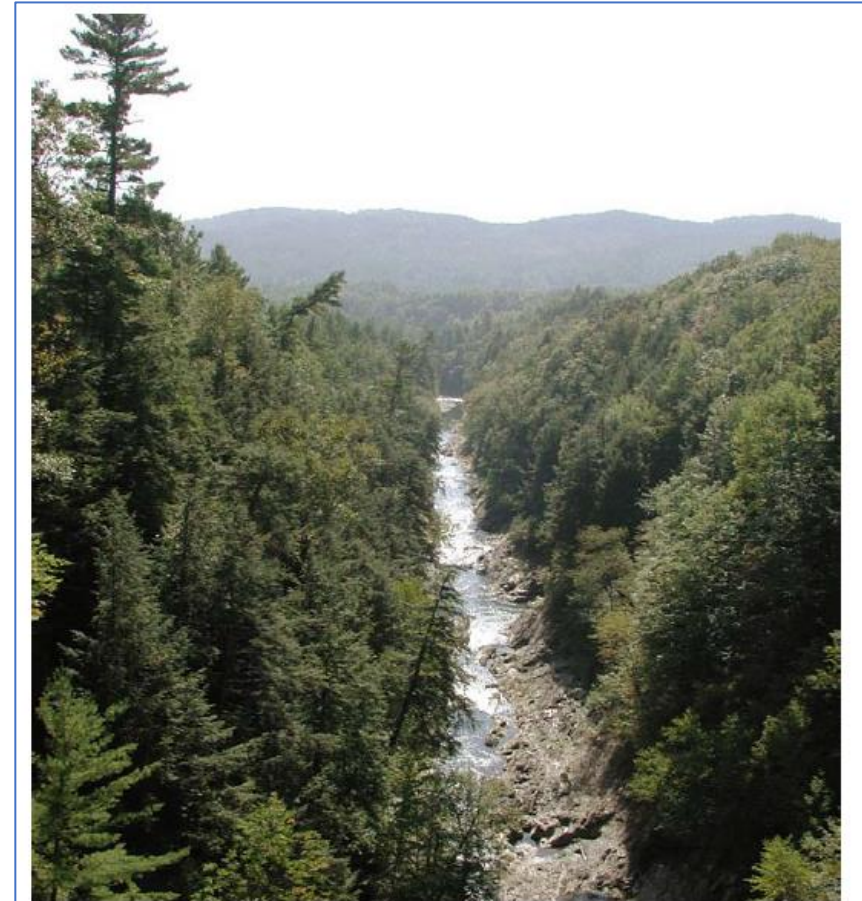
- Establishing new partnerships with 15+ utilities
 - *How can we help reduce treatment costs?*
- Implement Source Water Protection Plans
 - Source water protection area
 - Pollution: point source & nonpoint (land use)
 - Management options to protect water
- Outreach & education to customers and public
 - Urban residents and rural landowners upstream
- Establish groundwork for a future payment for ecosystem service market

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Three Forestry Solutions

- PROTECT important forests
 - Public ownership (38% of MI forests) for Public Trust
 - Private: conservation easements, preserves, zoning
 - 6% of Michigan forests legally restrict timber harvesting
- MANAGE all forests better
 - Logger training and forestry Best Management Practices
 - Forest certification (SFI, FSC, Tree Farm)
 - Empower landowners (plans, peers, people, programs)
- EXPAND forests in strategic places
 - Riparian buffers & agroforestry
 - Urban forests & green infrastructure
 - Afforestation (convert important land back to forest)



Forests, Water and People: Drinking water supply and forest lands in the Northeast and Midwest United States

Martina C. Barnes, Albert H. Todd, Rebecca Whitney Lilja, and Paul K. Barten



United States Department of Agriculture
Forest Service
Northeastern Area State and Private Forestry
Newtown Square, PA 19073
NA-FR-01-08
June 2009



PROTECT

Watershed Councils

- How can we help water utilities?
- Protected watersheds
- Education for public
- mi-wea.org/watershed_groups.php

Land Conservancies

- Conservation easements & nature preserves
- Outreach to landowners
- HeartOfTheLakes.org

United Nations Convention on Biological Diversity

- UNCBD suggests 30% of land & water protected
- USGS PAD-US database inaccurate and incomplete

BEST MANAGEMENT PRACTICES

Loggers Use to Protect Water and Provide Downstream Benefits



ROADS

Loggers design roads to minimize erosion so fish can live in clean water.



WETLANDS

Loggers use mats to tread lightly in wetlands which are nature's water filter.



STREAM CROSSINGS

Loggers install the right size bridge to allow fish to swim upstream.



SPILL

Loggers clean up spills to keep chemicals out of our drinking water.



RIPARIAN MANAGEMENT ZONES

Loggers leave lots of trees near water to keep it cool and provide food for fish.



RUTS

Loggers minimize ruts in soil to protect roots and keep our water clear.

Forests filter and clean our water which is essential for people, fish and wildlife. We all benefit when loggers use **Best Management Practices** in the forest.

ForestsForFish.org



MANAGE WELL

Foresters

- Forest certification for better management
- Consulting Foresters – MichiganACF.org

Landowners

- 250 new [Michigan Forest Association](http://MichiganForestAssociation.org) members
- 29% of landowners use forester for timber sale (2018 National Woodland Owner Survey)

Loggers are key to improved management

- 25 new [Michigan Master Loggers](http://MichiganMasterLoggers.org) in southern LP
- Help SFI train 1,000 loggers statewide on BMPs

Arbor Day

NOVEMBER/DECEMBER 2021 • ARBORDAY.ORG



TREE CAMPUS® K-12
Engaging Students and Protecting
Waterways in Michigan

Arbor Day Foundation

EXPAND

Planting Trees EMPOWERS People

Partners to plant 80,000 trees

- *Rural and urban riparian areas*

DNR plants 5 million trees annually

- 750,000 in Forest to Mi Faucet priority areas

Tree Planting Organizations

- ReLeaf Michigan, American Forests
- Arbor Day Foundation, One Tree Planted
- Greening of Detroit, Friends of GR Parks
- MACD.org and PlantMichiganGreen.com

What can YOU do?

- To help protect forests?
- To help manage forests better?
- To plant more trees in urban and rural areas?
- Something else to protect drinking water?
 - Become a [Clean Water Ambassador](#)
 - Collect data with [Michigan Clean Water Corps](#)
 - [Maintain SepticSmart](#), wildflowers instead of lawn ...
 - Grow a garden, eat less meat, **better policy**, urban rain gardens ...
 - Natural shorelines, buy certified lumber, shop at local farmers markets ...





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<https://www.rivercare.org/wildroots/>