

MICHIGAN'S



POLLUTION AND
SOLUTION MAP

SUPPORTING THE STATEWIDE
E. COLI TMDL

INTRODUCTION

- This map is part of Michigan's Statewide *E. coli* Total Maximum Daily Load
 - TMDL will provide framework for defining, understanding and working to restore waters impaired by *E. coli*
 - Addresses all impaired waters
 - Includes a story map



INTRODUCTION

The purpose of this map is to...

- Provide local detail in an otherwise statewide process
- Educate citizens on the many sources of E. coli
- Empower citizens to become active



Michigan E. coli Pollution and Solution Mapper

Introduction

E. coli Monitoring and Impaired Waters

Potential Sources

Point Sources



Nonpoint Sources

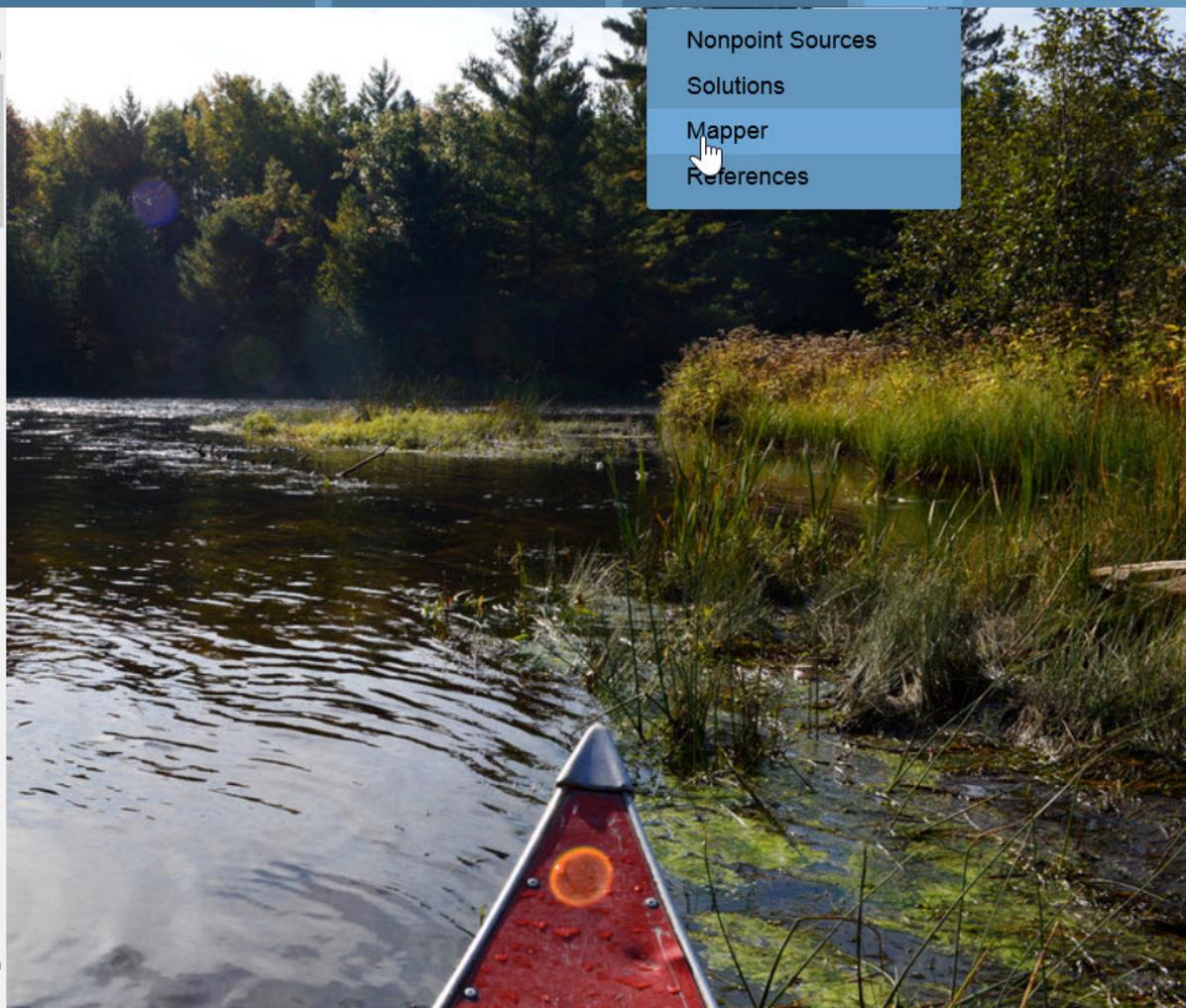
Solutions

Mapper

References

Introduction:

Michigan residents and our visitors want and deserve safe and clean waters for swimming, boating, wading, and fishing. The Michigan Department of Environmental Quality (MDEQ) has developed a statewide *E. coli* Total Maximum Daily Load (TMDL) to address the problem of *E. coli* in rivers, lakes and at our beaches, in an effective and efficient manner. The *E. coli* Water Quality Standard (WQS) is intended to ensure that all streams, rivers, lakes, and beaches are safe for recreation from a human health standpoint. *E. coli* is a type of bacteria used as an indicator of fecal pollution; it also indicates the potential for other pathogens to be present. Approximately 50 percent of the rivers and streams in Michigan exceed the WQS for *E. coli*, and about 20 percent of monitored beaches have had closures recently



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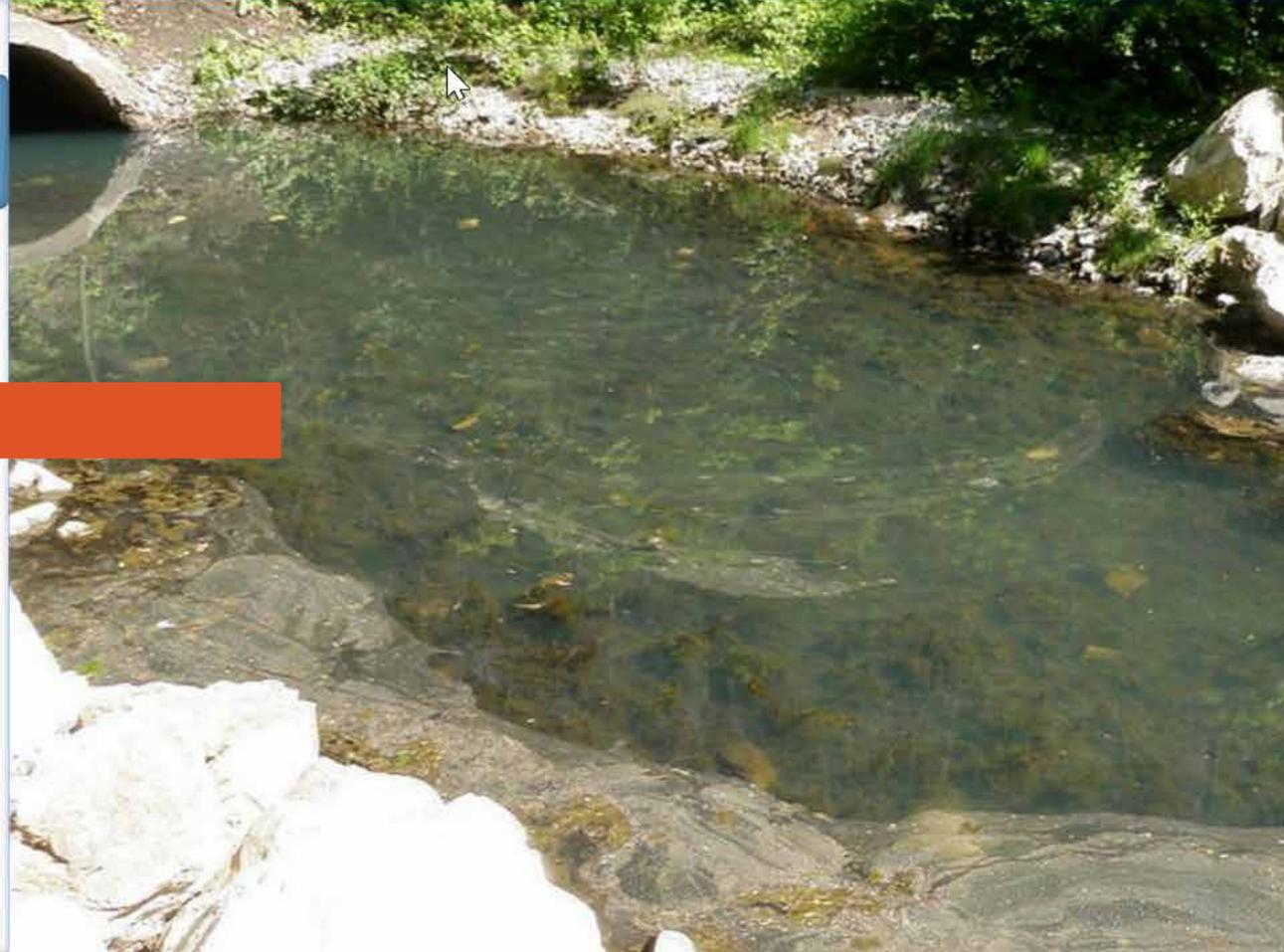
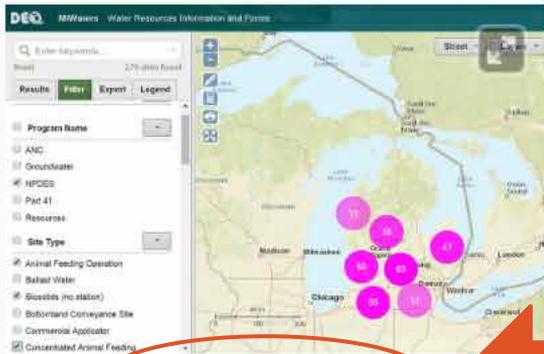


Image of MiWaters Site Explorer interface showing mapping. The MiWaters system can give you more site specific information on NPDES permits.

Click on a symbol on the map to the right and a pop-up will give you the name of the facility and the permit number. More information on each permit, including compliance and permit requirements, can be obtained from [MiWaters Site Explorer](https://miwaters.deq.state.mi.us/miwaters/) (<https://miwaters.deq.state.mi.us/miwaters/>).

NPDES Permitted Discharges and Sites Coverages

This layer contains the locations, facility

Michigan E. coli Pollution and Solution Mapper

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Watershed Councils and Environmental Organizations

Watershed councils and environmental organizations have a variety of missions and provide many services. Some are specific to one lake and focus only on very local issues, while some cover the entire watershed in the state. The MDEQ provides information as a service to the public, and the information has been gathered from a variety of public resources. Not all watershed organizations are represented here, but the MDEQ makes every effort to improve the accuracy of the information. If you would like for an organization to be added or removed from this layer, or have updated contact information, please submit the information to rippkem@michigan.gov.

To learn more, see the Statewide *E. coli* TMDL, Section 7.1 (Knowing Your Watershed).



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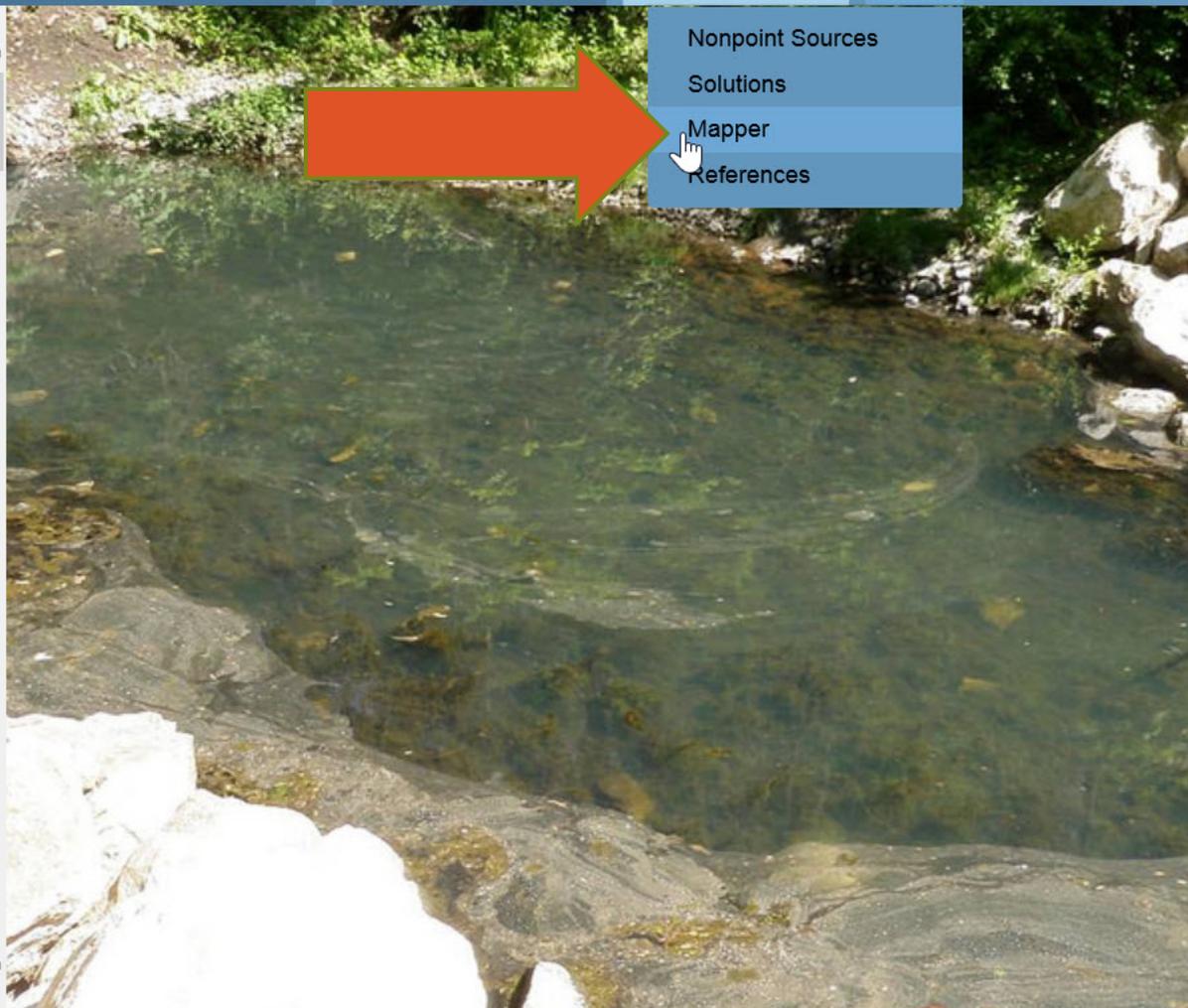
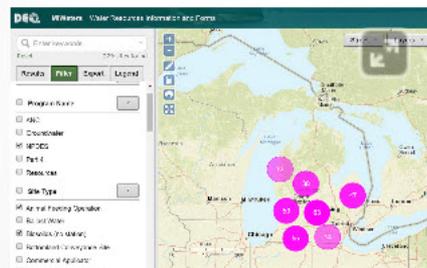
Potential Sources

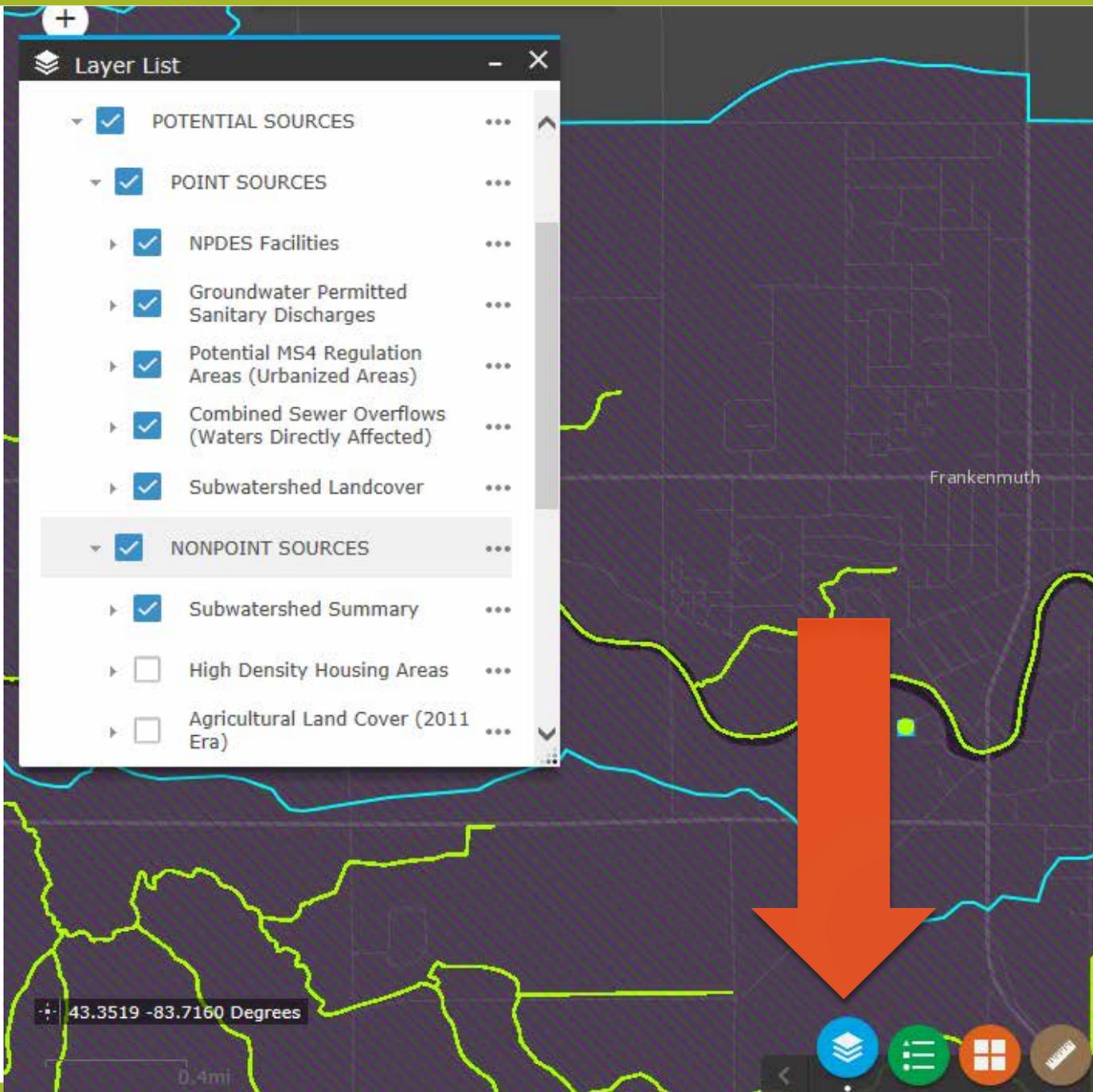
Point Sources



Point Sources

The map shows the approximate locations of point sources in Michigan. Point sources, for the purpose of discussion in this TMDL, are sources that are regulated by National Pollutant Discharge Elimination System (NPDES) permits and are discussed in Section 7.3 of the Statewide *E. coli* TMDL. Although they are considered potential sources of *E. coli*, these facilities are regulated by the MDEQ and each permit contains provisions to protect surface water from *E. coli* contamination.





Legend

MI E.coli Pollution and Solution Mapper

POTENTIAL SOURCES

POINT SOURCES

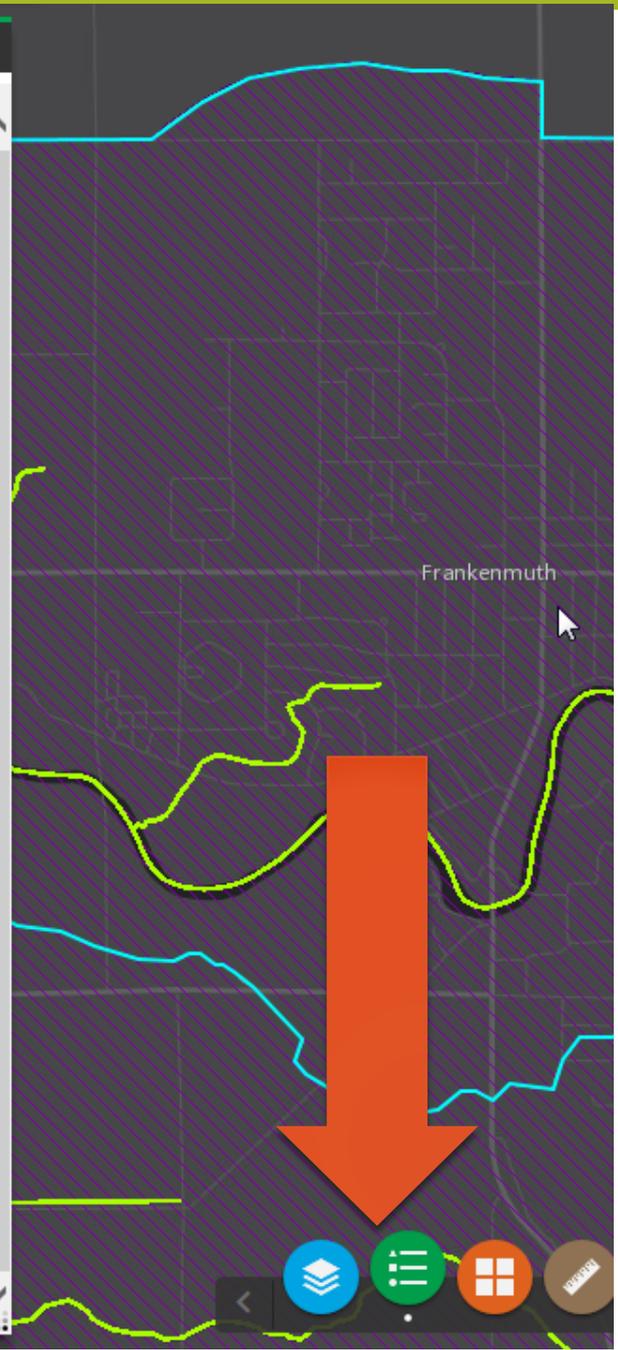
- NPDES Facilities
 - Biosolids
 - CAFO
 - Ind. Stormwater
 - Industrial Storm Water Only
 - WWTP/WWSL
- Groundwater Permitted Sanitary Discharges
- Potential MS4 Regulation Areas (Urbanized Areas)
- Combined Sewer Overflows (Waters Directly Affected)
- Subwatershed Landcover

NONPOINT SOURCES

- Subwatershed Summary

TMDL LAYERS

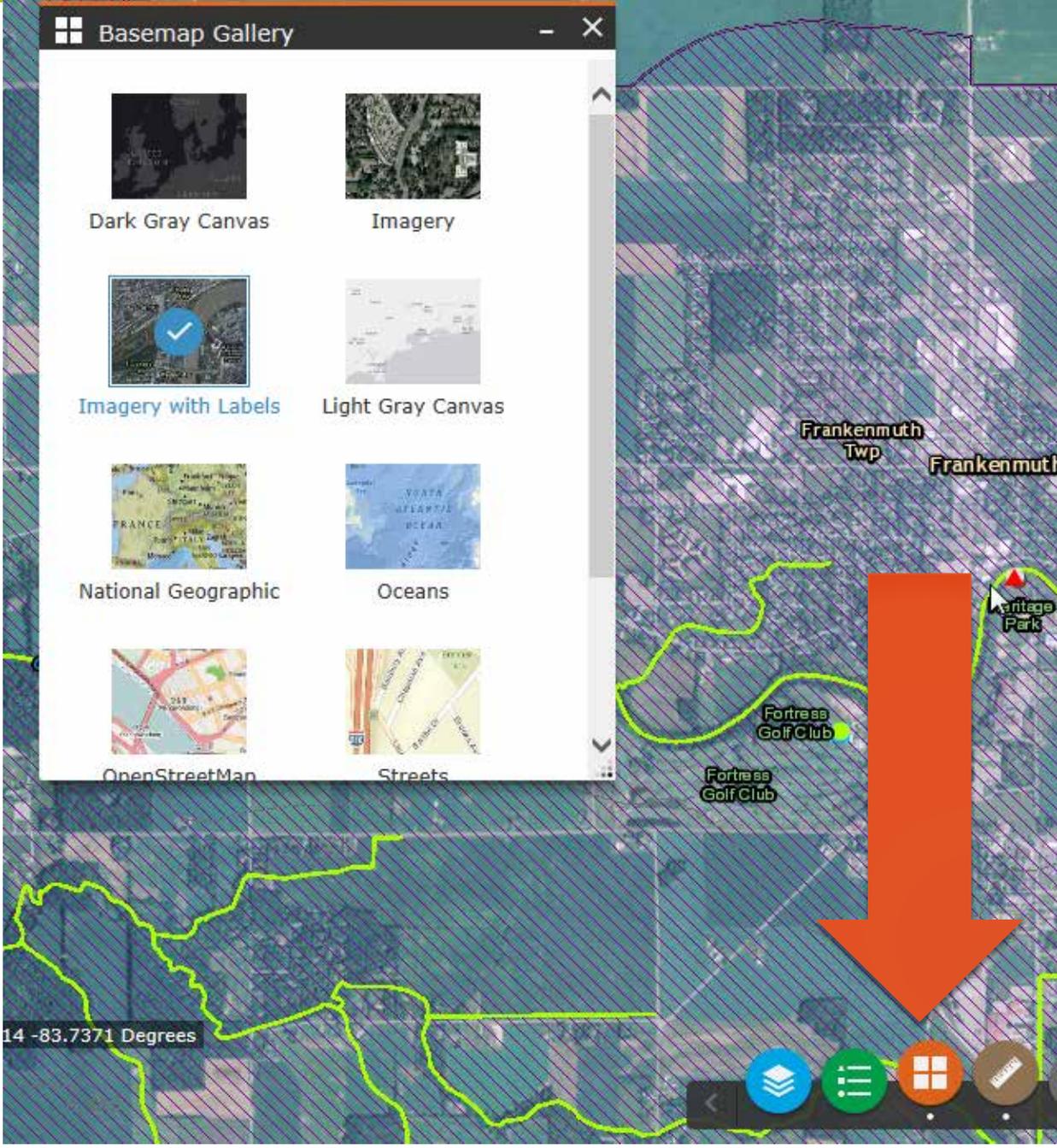
- TMDL Streams
- Statewide E. coli TMDL Area



The toolbar at the bottom of the map includes several icons: a back arrow, a blue circular icon with a white map, a green circular icon with a white list, an orange square icon with a white grid, and a brown circular icon with a white pencil.

Basemap Gallery - X

 Dark Gray Canvas	 Imagery
 Imagery with Labels	 Light Gray Canvas
 National Geographic	 Oceans
 OpenStreetMap	 Streets



Navigation bar with icons: layers, list, gallery, search.

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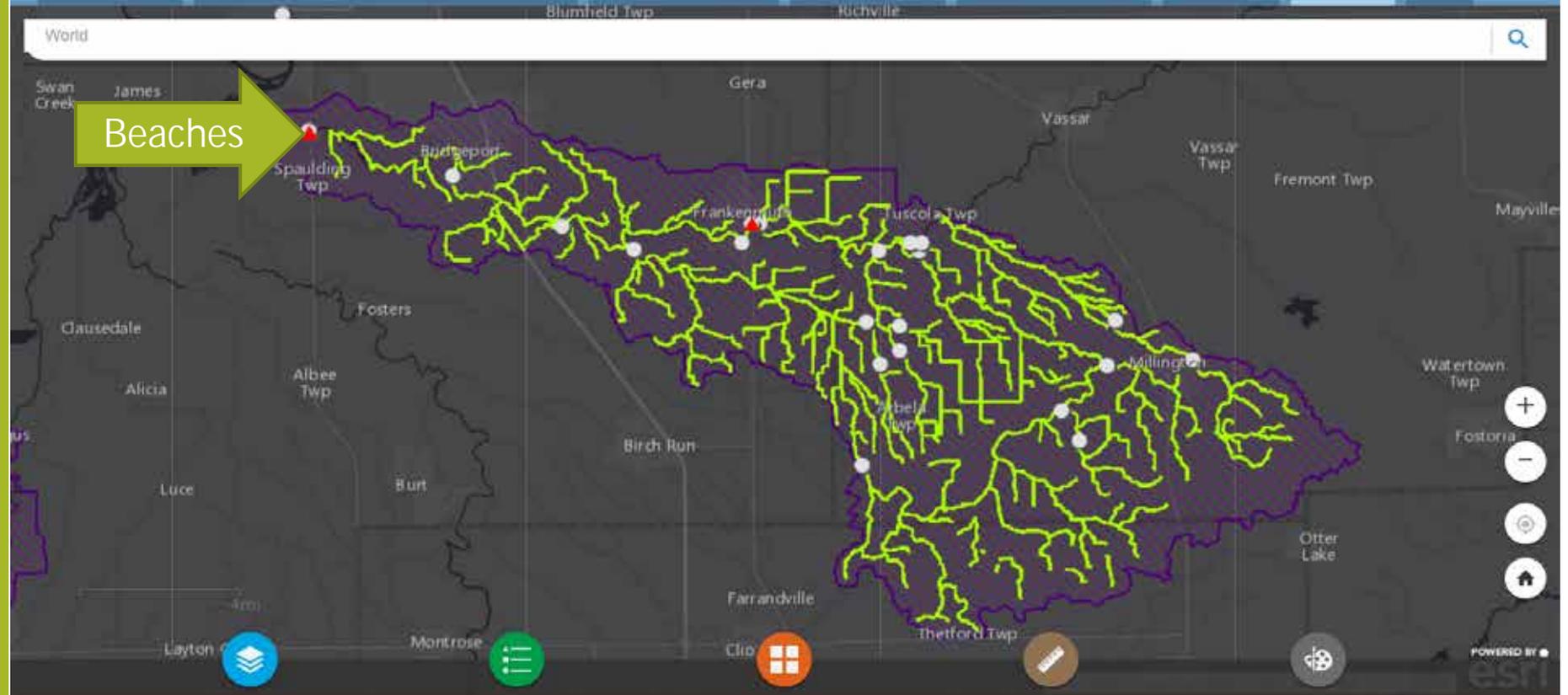
Mapper



World



Beaches



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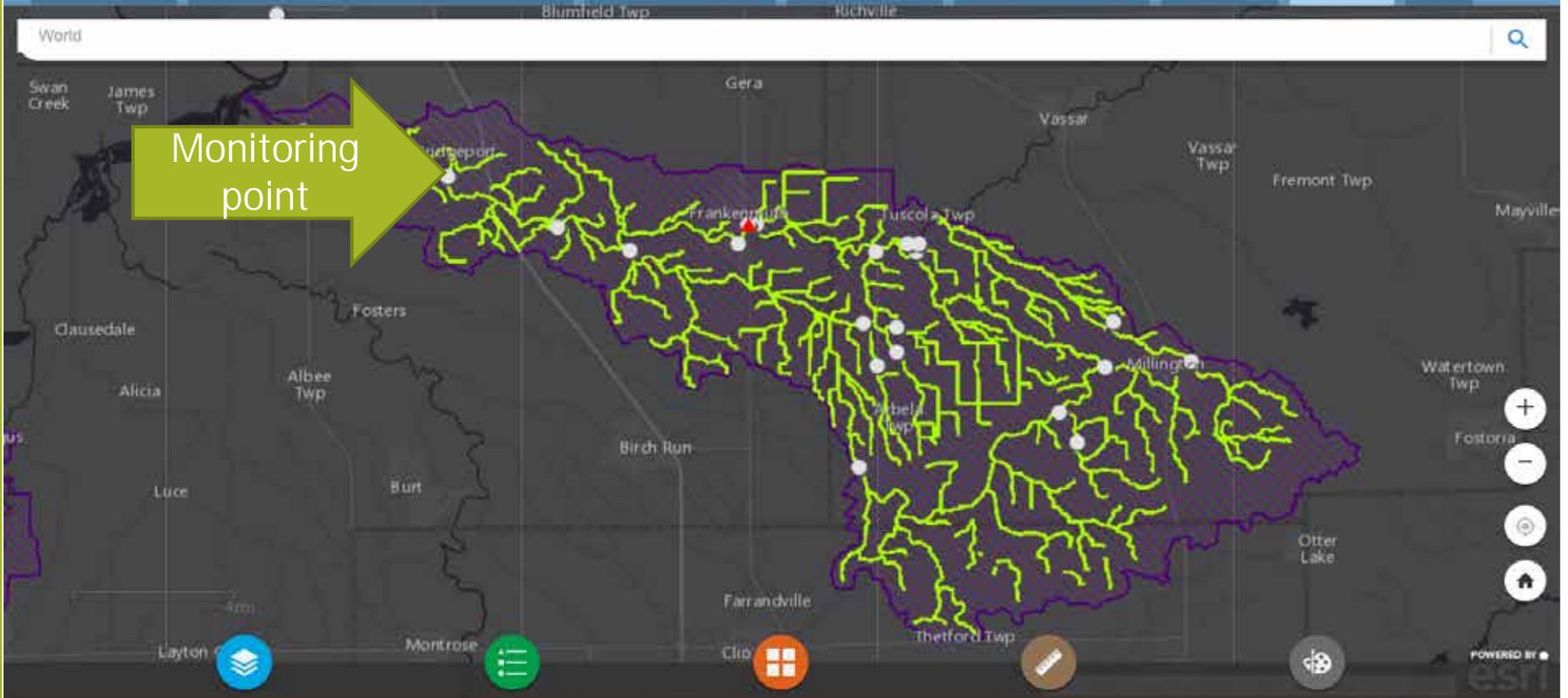
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World



Monitoring point



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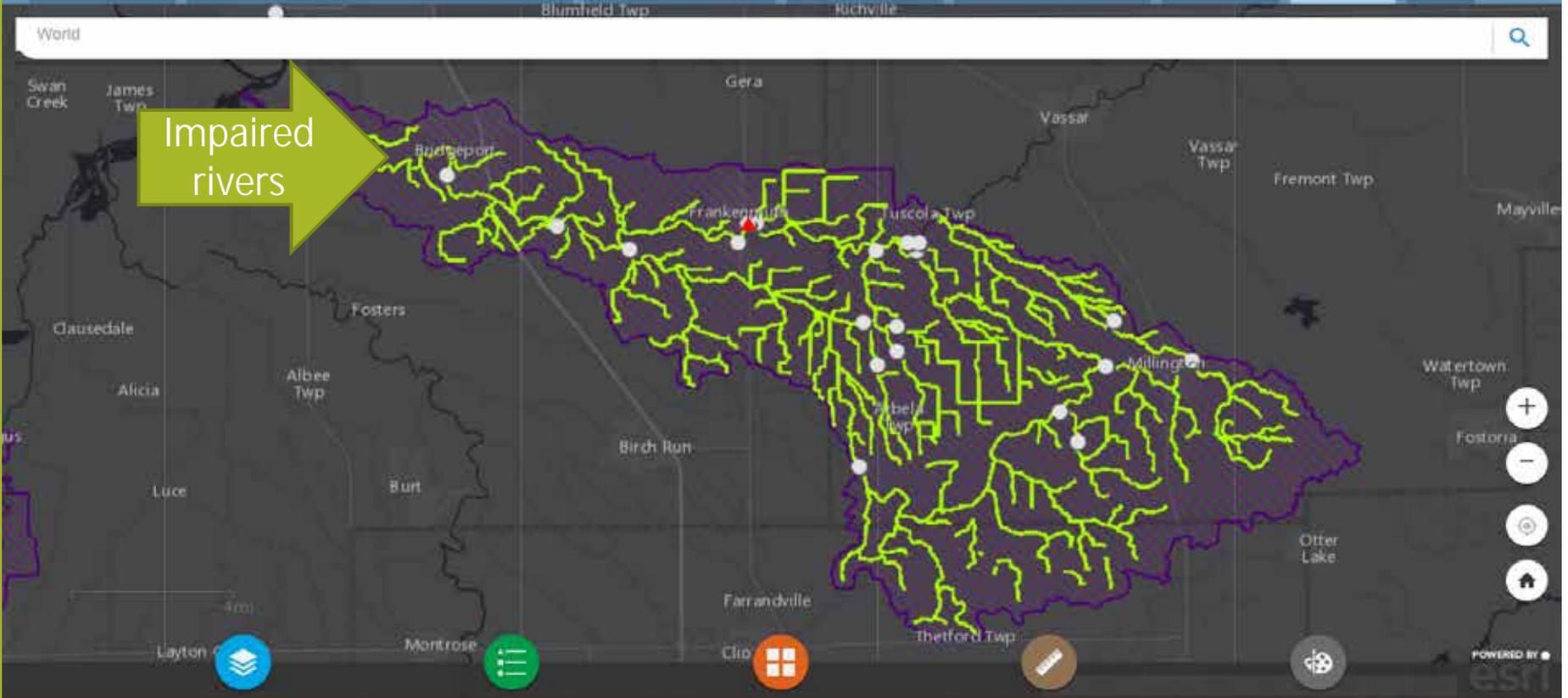
Mapper



World



Impaired rivers



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World



POINT SOURCES

- What in the world are they?
 - Facilities with a surface water discharge that have permits under the National Pollutant Discharge Elimination System



POINT SOURCES

- Story map will contain
 - Only *E. coli* related permits/discharges
 - Does NOT show compliance info or have a direct link to the permit documents. You will need MiWaters Site Explorer for that.
 - Eventually we will add CAFO manure land-application areas (she says with optimism)



TMD World



Legend

MI E.coli Pollution and Solution Mapper

POTENTIAL SOURCES

POINT SOURCES

NPDES Facilities

- Biosolids
- CAFO
- Ind. Stormwater
- Industrial Storm Water Only
- WWTP/WWSL

Groundwater Permitted Sanitary Discharges



Potential MS4 Regulation Areas (Urbanized Areas)



Combined Sewer Overflows (Waters Directly Affected)



Subwatershed Landcover



Frankenmuth

(2 of 4)

NPDES Facilities

Facility	Frankenmuth WWTP
Facility Type	WWTP/WWSL

[Zoom to](#)



NONPOINT SOURCES

- Potential sources that do not have an NPDES permit
 - Livestock (non-CAFO)
 - Septic systems
 - Septage land-application areas (regulated but not through NPDES)
 - Pets and wildlife



NONPOINT SOURCES



- Where in the world are they?
 - Aww, geez. Who knows!!?? But we can estimate...

NONPOINT SOURCES



- Subwatershed summary:
 - Agricultural census estimates (# of hogs/cows)
 - Land cover summary information
 - Impervious cover estimates
 - Estimated number of septic systems
- High density housing areas
- Approved septage land-application areas

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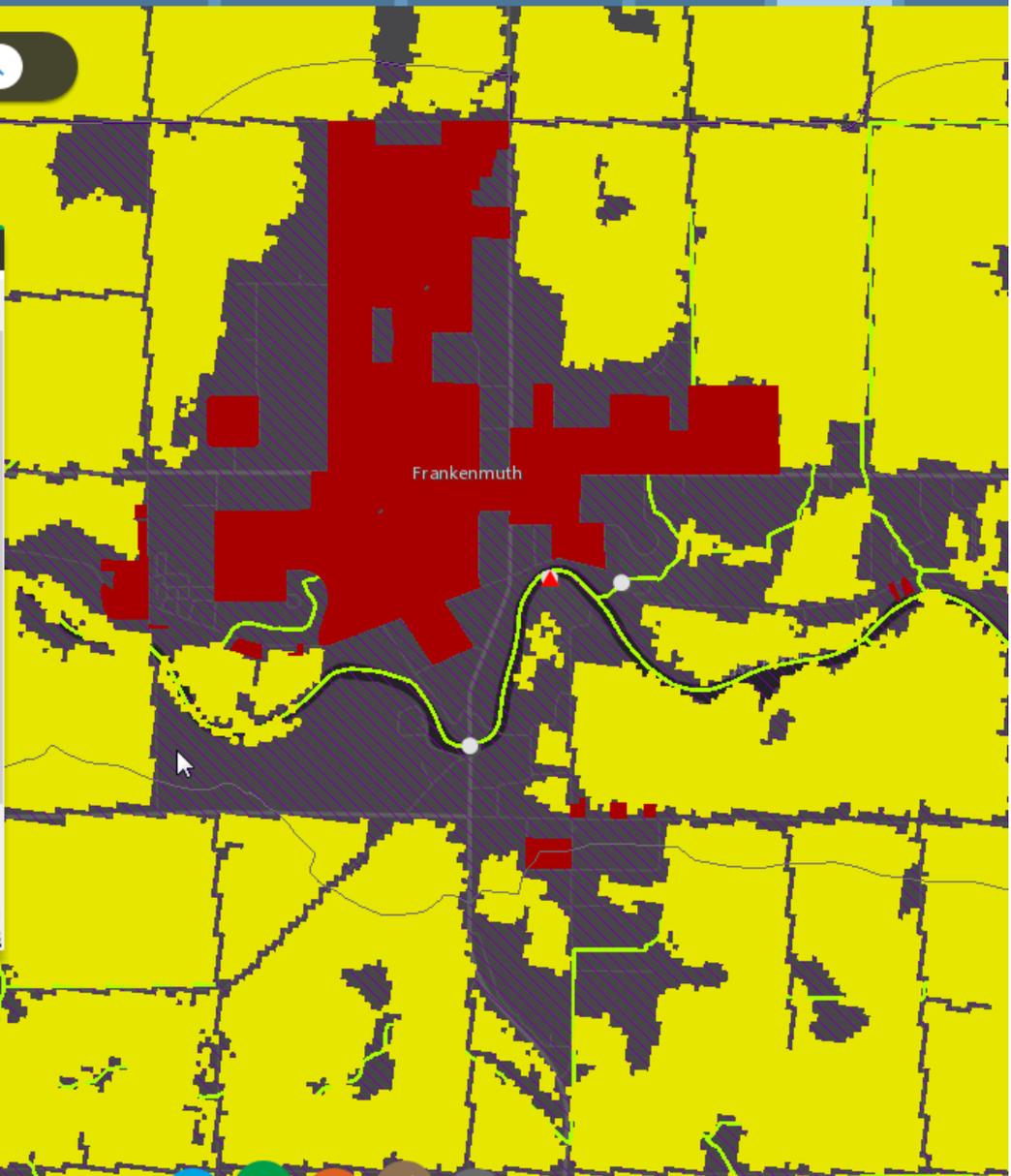
POTENTIAL SOURCES

NONPOINT SOURCES

- Subwatershed Summary
- High Density Housing Areas
- Agricultural Land Cover (2011 Era)
- Approved Septage Land-Application Areas

TMDL LAYERS

- TMDL Beaches
- River E. coli Monitoring Sites (Not all beaches are included)
- TMDL Streams



43.3244 -83.7569 Degrees

0.4mi



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TMD World



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- Subwatershed Landcover

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TMDL LAYERS

- TMDL Beaches

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Subwatershed Landcover

12-digit HUC	040802050305
12-digit HUC Name	Cole Creek-Cass River
Area (sq miles)	24.8

Landcover

% Developed: 17.9

[Zoom to](#)

43.3304 -83.7468 Degrees

0.4mi



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POTENTIAL SOURCES

NONPOINT SOURCES

Subwatershed Summary



High Density Housing Areas



Agricultural Land Cover (2011 Era)



Approved Septage Land-Application Areas



TMDL LAYERS

TMDL Beaches



River E. coli Monitoring Sites (Not all beaches are included)



TMDL Streams

(1 of 2)

Subwatershed Summary

12-digit HUC	040802050305
12-digit HUC Name	Cole Creek-Cass River
% Lost Wetland	7.3
% Natural Buffer	22.8
% Impervious	5.2
Number of Hogs	354
Number of Cattle	472
Population	6525
Housing Units	3019
Manure Area (sq miles)	0.7
Number of Septic Systems	681

[Zoom to](#)



43.3293 -83.7654 Degrees

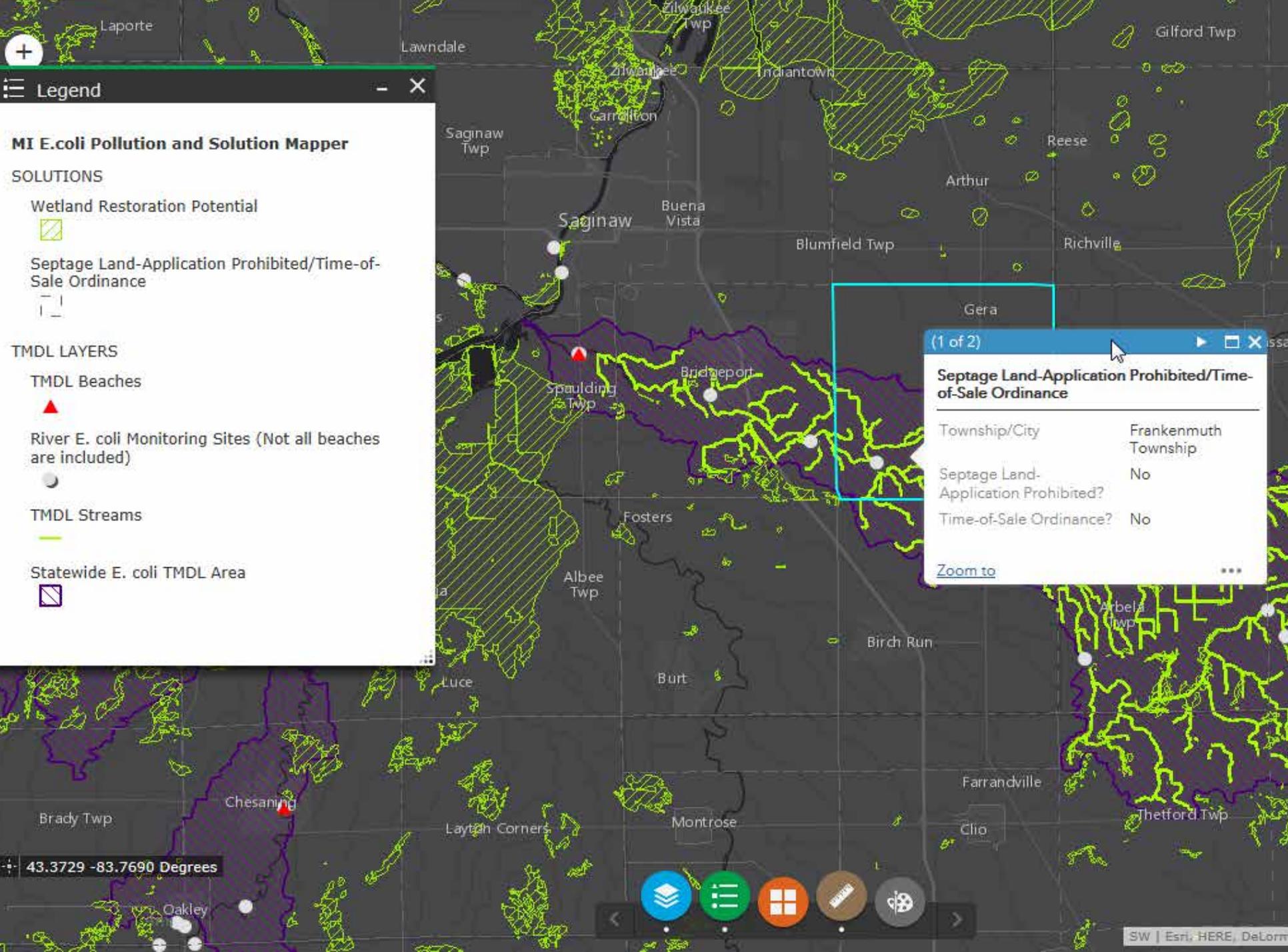
0.4mi



SOLUTIONS



- Local Ordinance information
 - Time of sale or point of transfer ordinances for septics
 - Areas with prohibitions on septage land-application
- Watershed Councils and Environmental Organizations
- Wetland Restoration Potential





Legend

MI E.coli Pollution and Solution Mapper

SOLUTIONS

Wetland Restoration Potential



Septage Land-Application Prohibited/Time-of-Sale Ordinance



TMDL LAYERS

TMDL Beaches



River E. coli Monitoring Sites (Not all beaches are included)



TMDL Streams



Statewide E. coli TMDL Area



(9 of 11)

Watershed Councils and Environmental Organizations

Name	Saginaw Bay Watershed Initiative Network
City	Bay City
Email	info@saginawbaywin.org
Website	More info
Phone	989-892-9171

[Zoom to](#)



43.3729 -83.7690 Degrees



Stay in touch –
join our “TMDLs...”
GovDelivery topic

go to www.michigan.gov and
click on any red envelope

