

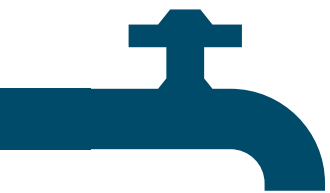
Clean Water Ambassador Meeting



October 27, 2022

While you wait for the meeting to begin, please take a few minutes to
fill out the Clean Water Ambassador survey

(link is in the chat)



Agenda



EGLE Updates

Emily Posthumus, EGLE



EGLE Source Water Protection

Sara Pearson, EGLE



Ambassador Updates & Discussion



Wrap-Up & Reminders

Emily Posthumus, EGLE

EGLE Updates

Emily Posthumus, EGLE



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Office of the Clean
Water Public Advocate

EGLE Updates

- Filter First legislation passed the Senate (Bills 184 & 185), now in the House
 - Direct schools and childcare centers to develop a drinking water safety plan, install filtered bottle-filling stations and faucets, etc.
- November 1st deadline for DWSRF and CWSRF Intent to Apply forms



Source Water Protection

Sara Pearson, EGLE

Source Water Unit

517-420-3219 | pearsons@michigan.gov



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Office of the Clean
Water Public Advocate

What is source water?



Lakes

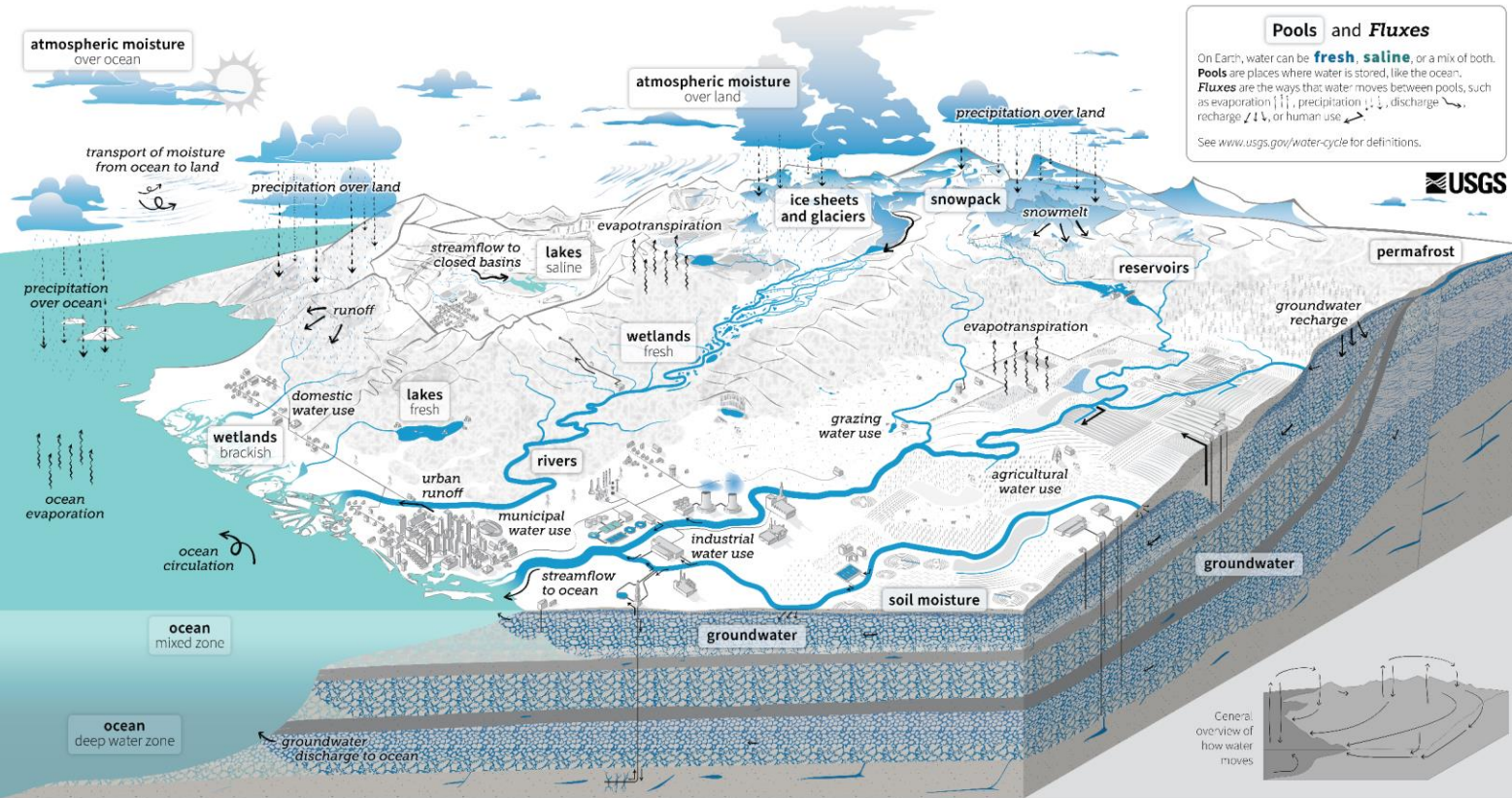


Rivers



Groundwater

Hydrologic Cycle



Pools and Fluxes

On Earth, water can be **fresh**, **saline**, or a mix of both. **Pools** are places where water is stored, like the ocean. **Fluxes** are the ways that water moves between pools, such as evaporation ↑↑↑, precipitation ↓↓, discharge ↘, recharge ↙, or human use ↘.

See www.usgs.gov/water-cycle for definitions.



The Water Cycle

The water cycle describes where water is on Earth and how it moves. Water is stored in the atmosphere, on the land surface, and below the ground. It can be a liquid, a solid, or a gas. Liquid water can be fresh, saline (salty), or a mix (brackish). Water moves between the places it is stored. Water moves at large scales and at very small scales. Water moves naturally and because of human actions. Human water use affects where water is stored, how it moves, and how clean it is.

Pools store water. 96% of all water is stored in **oceans** and is saline. On land, saline water is stored in **saline lakes**. Fresh water is stored in liquid form in **freshwater lakes**, artificial **reservoirs**, **rivers**, and **wetlands**. Water is stored in solid, frozen form in **ice sheets and glaciers**, and in **snowpack** at high elevations or near the Earth's poles. Water vapor is a gas and is stored as **atmospheric moisture** over the ocean and land. In the soil, frozen water is stored as **permafrost** and liquid water is stored as **soil moisture**. Deeper below ground, liquid water is stored as **groundwater** in aquifers, within cracks and pores in the rock.

Fluxes move water between pools. As it moves, water can change form between liquid, solid, and gas. **Circulation** mixes water in the oceans and transports water vapor in the atmosphere. Water moves between the atmosphere and the surface through **evaporation**, **evapotranspiration**, and **precipitation**. Water moves across the surface through **snowmelt**, **runoff**, and **streamflow**. Water moves into the ground through infiltration and **groundwater recharge**. Underground, groundwater flows within aquifers. It can return to the surface through natural **groundwater discharge** into rivers, the ocean, and from **springs**.

We alter the water cycle. We redirect rivers. We build dams to store water. We drain water from wetlands for development. We use water from rivers, lakes, reservoirs, and groundwater aquifers. We use that water to supply our **homes and communities**. We use it for **agricultural irrigation** and **grazing livestock**. We use it in **industrial** activities like thermoelectric power generation, mining, and aquaculture. The amount of water that is available depends on how much water is in each pool (water quantity). It also depends on when and how fast water moves (water timing), how much water we use (water use), and how clean the water is (water quality).

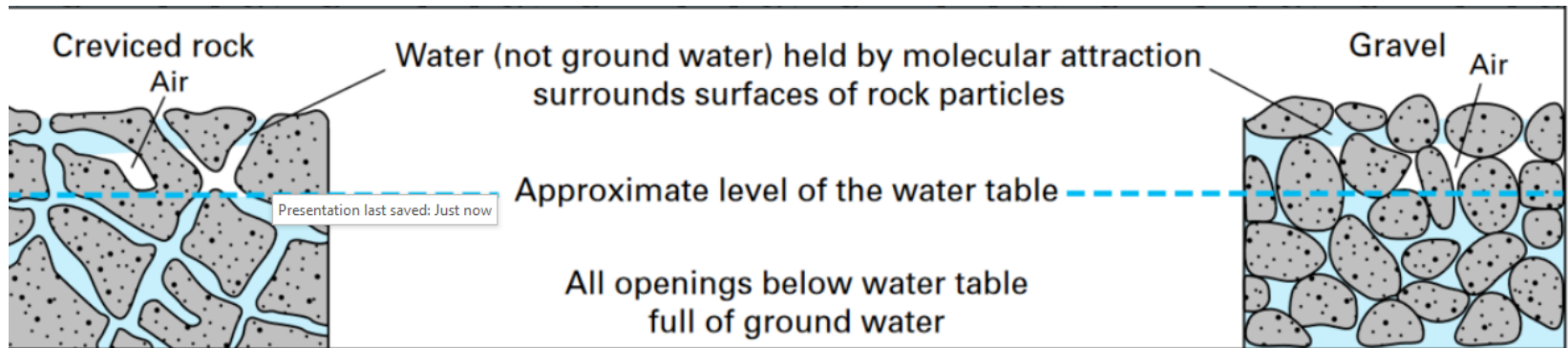
We affect **water quality**. In agricultural and urban areas, irrigation and precipitation wash fertilizers and pesticides into rivers and groundwater. Power plants and factories return heated and contaminated water to rivers. Runoff carries chemicals, sediment, and sewage into rivers and lakes. Downstream from these sources, contaminated water can cause harmful algal blooms, spread diseases, and harm habitats. **Climate change** is affecting the water cycle. It is affecting water quality, quantity, timing, and use. It is causing ocean acidification, sea level rise, and more extreme weather. By understanding these impacts, we can work toward using water sustainably.

Image source: USGS

Groundwater Myth #1

Groundwater is a large
underground river or lake.

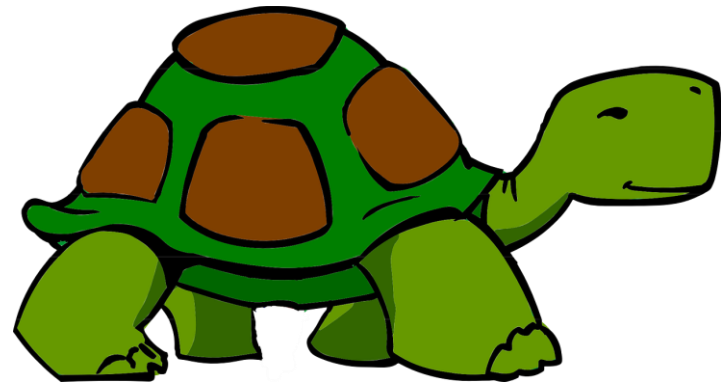
Reality: *Groundwater is stored in
small spaces between rock and
soil particles.*



Groundwater
Myth #2

Groundwater does not move or
moves very fast.

Reality: *Groundwater moves very slowly from a few inches to a few feet per day.*



Groundwater
Myth #3

There is a lot of groundwater.

Reality: *Groundwater is about 0.7% of all water on earth, and not all of that is good for or available for drinking water.*



It is all the same water.

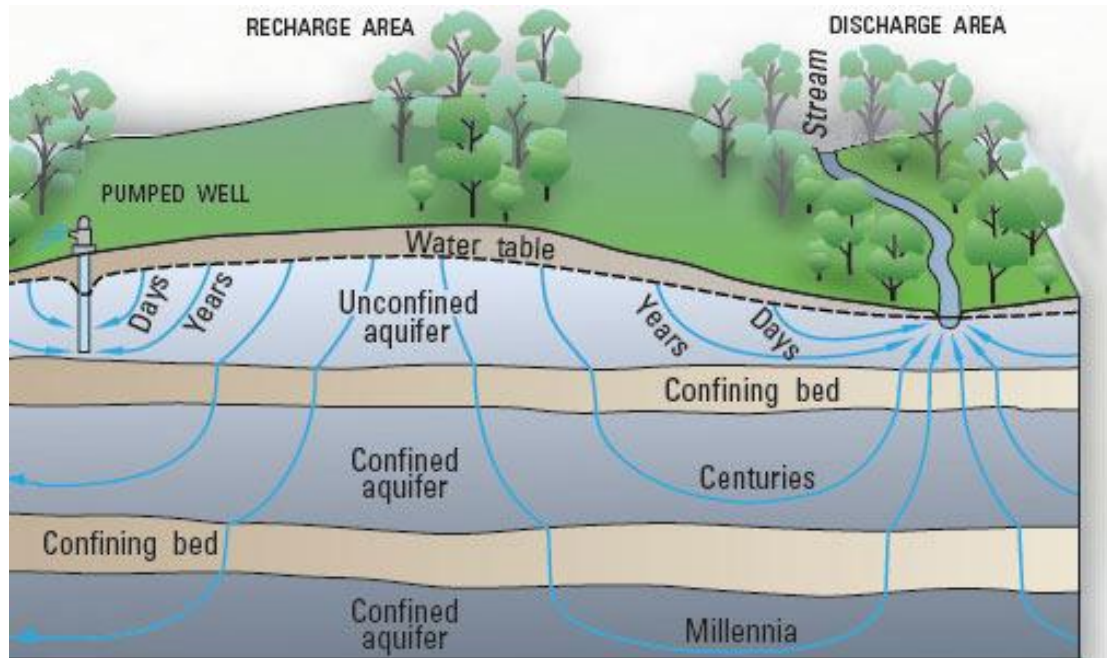


Image source: USGS

Where does my water come from?

Where does your drinking water come from?

For more information about each water supply type, choose "learn more."



How do I find my Well Record?



[Wellog Home \(state.mi.us\)](http://state.mi.us)

Log In

User ID:
Password:

[Log In](#)

[Request an Account](#)
[Forgot User ID](#)
[Forgot Password](#)

Links

[EGLE Well Construction Program](#)
[Download Wellog Data by Region w/ Lithology](#)
[EGLE Scanned Well Records \(01-2020\)](#)
[EGLE Environmental Mapper](#)
[EGLE GeoWebFacs](#)
[Download Wellog Data by County with Lithology](#)
[EGLE Water Well Viewer](#)

Documents

[Wellog FAQ](#)
[Water Wells Drilled by County & Year](#)

Welcome

Welcome to Wellog, the State of Michigan's statewide groundwater database! If you have any questions or experience problems using Wellog, please email the Wellog Help (wellog@michigan.gov). You only need an account if you are submitting or modifying data. Use the search screen below to search for records.

Search Water Wells

Basic Information

Search Type:

Well ID:

Permit No: Import ID:

Well Address

Street Address:

For best match, enter street name only

Well Owner

Owner Name:

For best match, enter last name only

Database

Created Between: and

Created By User ID:

Created By Group:

Well Location

County:

Township:

Town/Range: Section:

Contractor

Registration Number:

Well Details

Well Type:

Well Use:

Constructed Between: and

Well Depth (ft.):

Source ID/Well No: WSEN:

Pump Capacity (GPM):

Plugged Between: and

[Search](#) [Reset](#)

Water Well Viewer

- <https://www.mcgi.state.mi.us/waterwellviewer/>

EGLE Water Well Viewer
Department of Environment, Great Lakes, and Energy

Identify Results

Location

County	Gratiot County
Townships	Emerson Township
Town, Range	T11N, R02W
Section	28
Latitude	43.30859
Longitude	-84.36516
Elevation	2425 feet (739 meters)

Welllogic Wells - Record 1

County:	Gratiot	Welllogic ID:
Township:	Emerson	25000204202
Township/Range:	T11N, R02W	Link to Scanned Well Logs
Section:	29	
Owner:	MATT ZIMMERMAN	
Well Address:	1156 N BAGLEY RD ITHACA 48847	
Well Depth (feet):	177	
Completion Date:	2016-07-01	

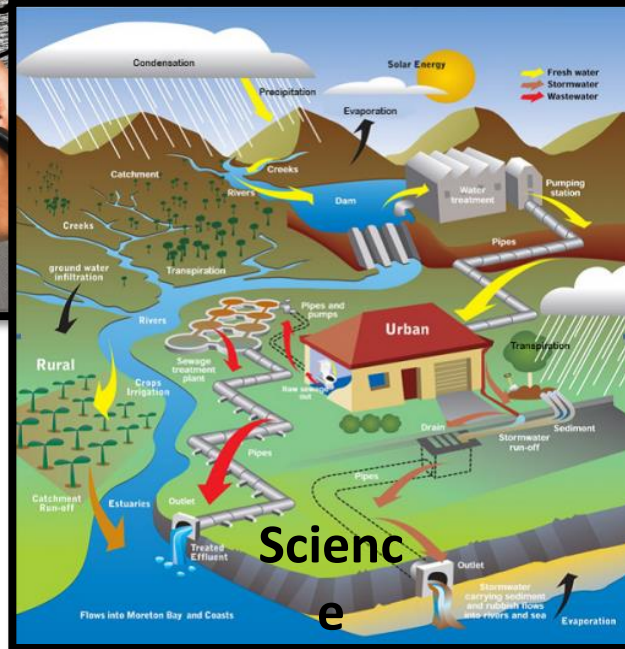
How do we protect source water?



Laws and Rules



Programs & Partnerships



Science

Image source: Eco Education Service

Regulations

- Clean Water Act
- Safe Drinking Water Act
- Public Health Code
- Michigan Well Construction Code
- Environmental Remediation



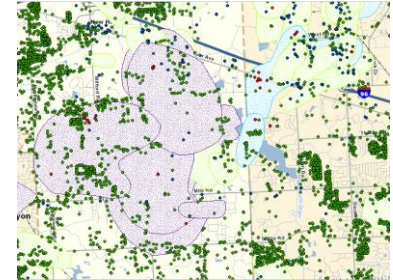
Programs & Partnerships

- Source Water Protection Plans
- Grants to Community Water Supplies
- Promoting Stewardship
- “Forests to MI Faucet” – MDNR

WELLHEAD PROTECTION PLAN
CITY OF BATTLE CREEK
FOR THE VERONA AND COLUMBIA WELL
FIELDS



(UPDATE VERSION 3)

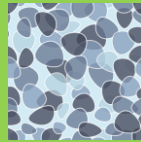


Source Water Protection Grants



[Home](#) > [About Us](#) > [Divisions and Offices](#) > [Drinking Water and Environmental Health](#) > [Source Water Protection](#) > [Source Water Protection Grants](#)

Source Water Protection Plans



Groundwater sources =
Wellhead Protection Plan



Surface Water sources =
Surface Water Intake Protection
Plans



Some public water supplies use a
combination of groundwater and
surface water.

Is a plan required?

Plans are voluntary.

EGLE highly encourages community water supplies to develop, follow, and maintain the plans.

Plans must be renewed every 6 years to be considered current.

1

Plans Have 7 Required Elements

Source Water Protect Team Members:

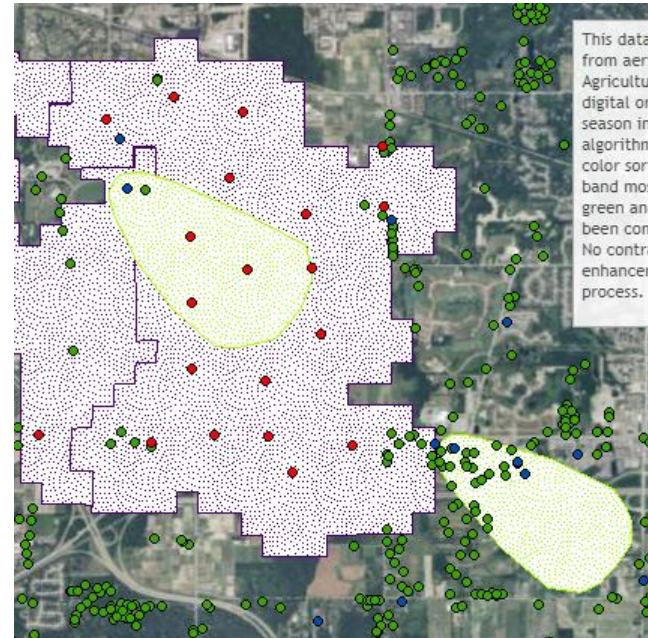
- Local Manager
- Water Superintendent
- Fire Department
- Health Department
- Planning Department
- Business and Industry
- Agriculture
- Education
- Environmental Organization
- General Public

Identify Roles and Responsibilities

2

Plans Have 7 Required Elements

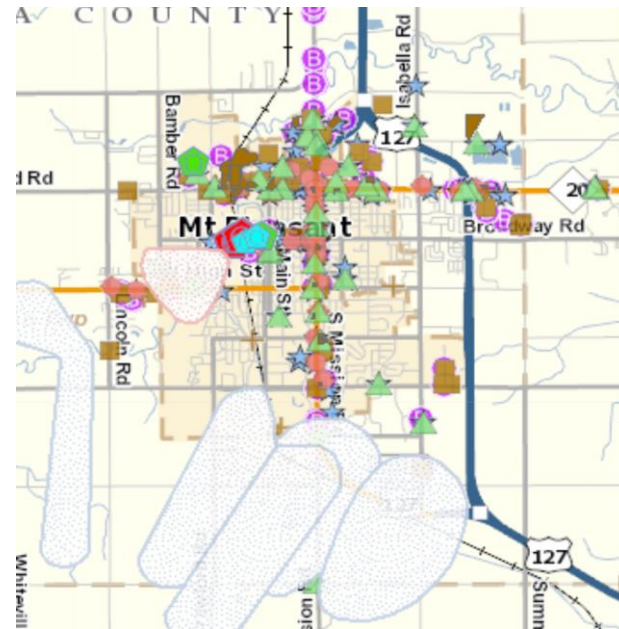
Determine wellhead protection area



3

Contaminant Source Inventory

Plans Have
7 Required
Elements



4

Wellhead Protection Area Management

Plans Have
7 Required
Elements



5

Contingency Plan

Plans Have
7 Required
Elements



6

Plans Have
7 Required
Elements

New Wells



7

Public Education & Outreach

Plans Have
7 Required
Elements



Examples of Public Participation



City of Grand Rapids



Independence Township



Great Lakes Water Authority



City of Kalamazoo

Does My Community have a Source Water Protection Plan?

Check your community's website for information.

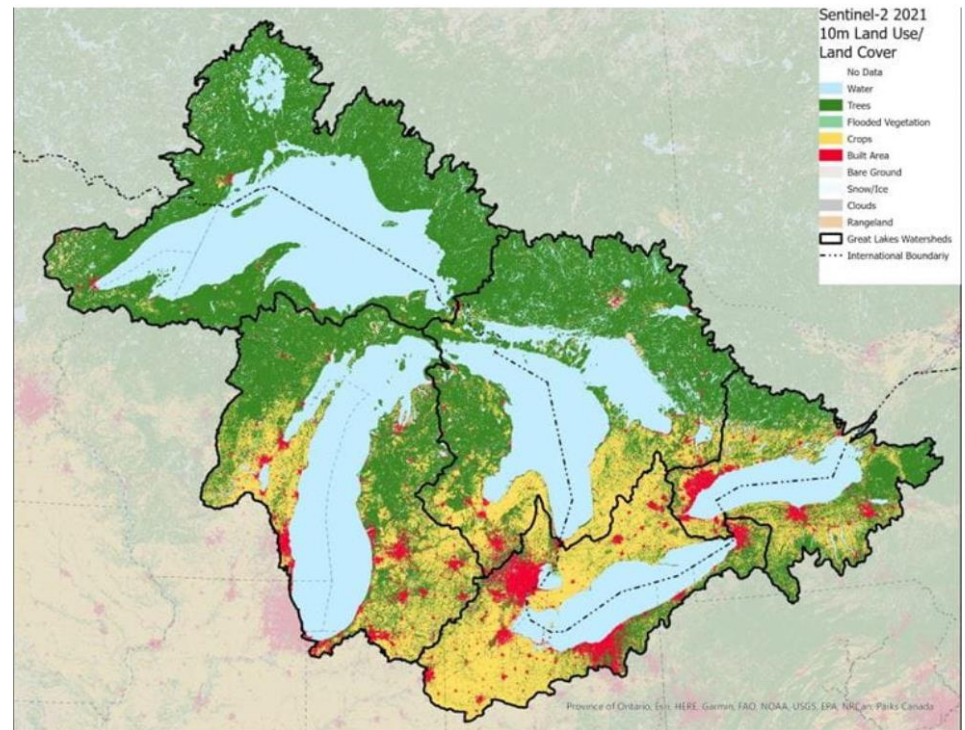
https://www.villageofmilford.org/government/departments/dps/wellhead_protection.php

The screenshot shows the Village of Milford website. At the top, the logo "Village of Milford" is on the left, and navigation links "HOME", "DISCOVER", "RESIDENTS", "BUSINESSES", "GOVERNMENT", and "ONLINE SERVICES" are on the right. Below the navigation is a banner image of a street scene with the text "Wellhead Protection Program" in large white letters. Underneath the banner is a breadcrumb trail: "HOME > GOVERNMENT > DEPARTMENTS > DEPARTMENT OF PUBLIC SERVICES > WELLHEAD PROTECTION". Below the banner is a blue sidebar menu with the following items: "Department of Public Services", "Parks & Recreation", "Street Maintenance", "Parking on Village Streets", "Snow Removal", "Yard Waste Collection", and "Water Department". To the right of the sidebar is a map titled "VILLAGE OF MILFORD: WELLHEAD PROTECTION AREA" showing the village boundaries and surrounding areas like Highland Township and Milford Township.

Forests to Mi Faucets

Michigan Department of Natural Resources Program

- Help municipal water utilities implement their source water protection plans.
- Inspire and empower landowners to manage and conserve their woodlands to protect drinking water.
- Plant 60,000 trees in riparian zones of urban and rural forests for water quality and reduced runoff.
- Educate people about connections between forests and their drinking water.
- The DNR will plant 750,000 trees on state forests to match USDA Forest Service investments.



<https://www.michigan.gov/dnr/managing-resources/forestry/management/foresttomifaucet>

Comparison of Water Quality to Forest Cover

The project builds on the national [Forests to Faucets 2.0](#) analysis identifying priority watersheds for protecting surface drinking water in the United States.

Great Lake	U.S. EPA condition	Forest Cover	Agricultural Use	Urban Area
Lake Superior	Good	91%	1%	2%
Lake Huron	Good	67%	22%	6%
Lake Michigan	Fair	49%	32%	10%
Lake Erie	Poor	19%	61%	18%

Geology & Hydrogeology

- Water Cycle is key
- Geology
- Aquifers – quantity & quality
- Water budget

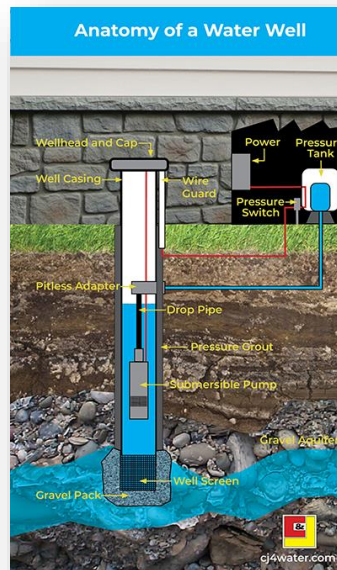
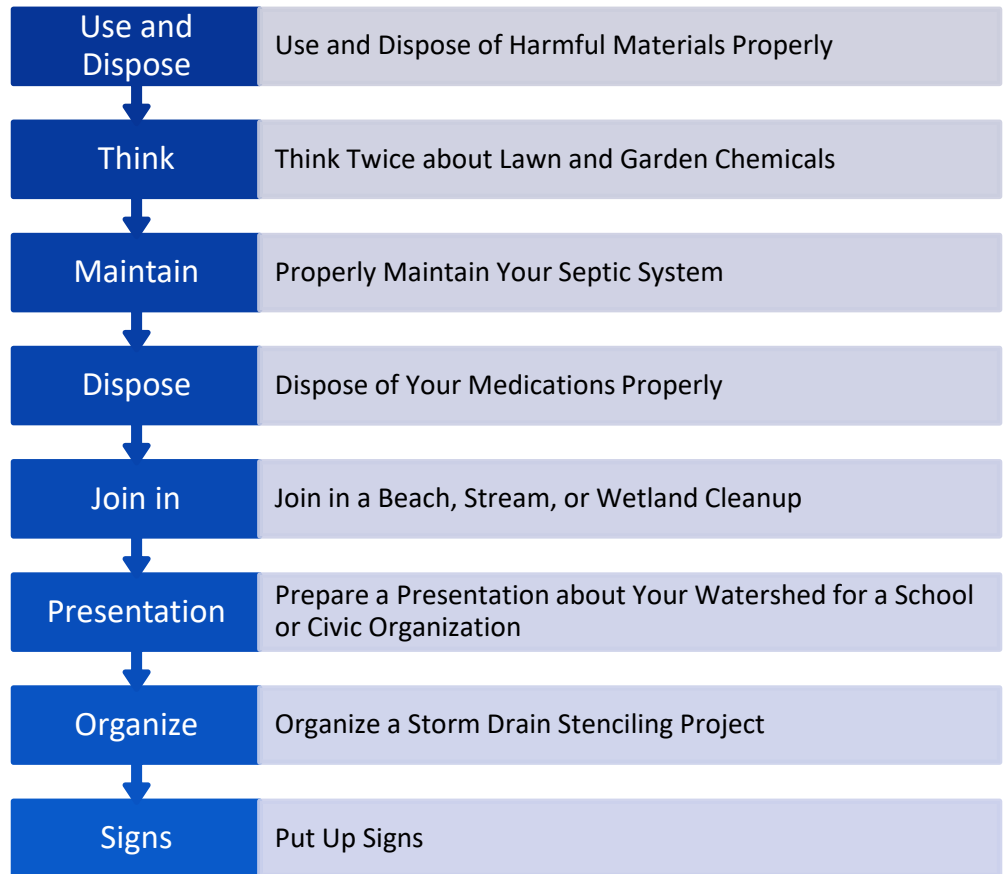


Image source: C&J Well Company

What can I do to help protect my source water?



Where to learn more...

- <https://www.michigan.gov/mdhhs/safety-injury-prev/environmental-health/topics/care-for-mi-drinking-water/mi-well>
- <https://www.epa.gov/sourcewaterprotection/how-can-you-help-protect-source-water>
- <https://protectyourwater.net/>
- <https://www.awwa.org/Resources-Tools/Resource-Topics/Source-Water-Protection>
- <https://www.usgs.gov/mission-areas/water-resources/science/drinking-water-and-source-water-research>
- <https://www.michigan.gov/mdhhs/safety-injury-prev/environmental-health/topics/care-for-mi-drinking-water/stepping-up>
- <https://miwaterstewardship.org/take-action/>



Water is the ultimate example of recycling, let's do our best to protect it.

Michigan Department of
Environment, Great Lakes, and Energy

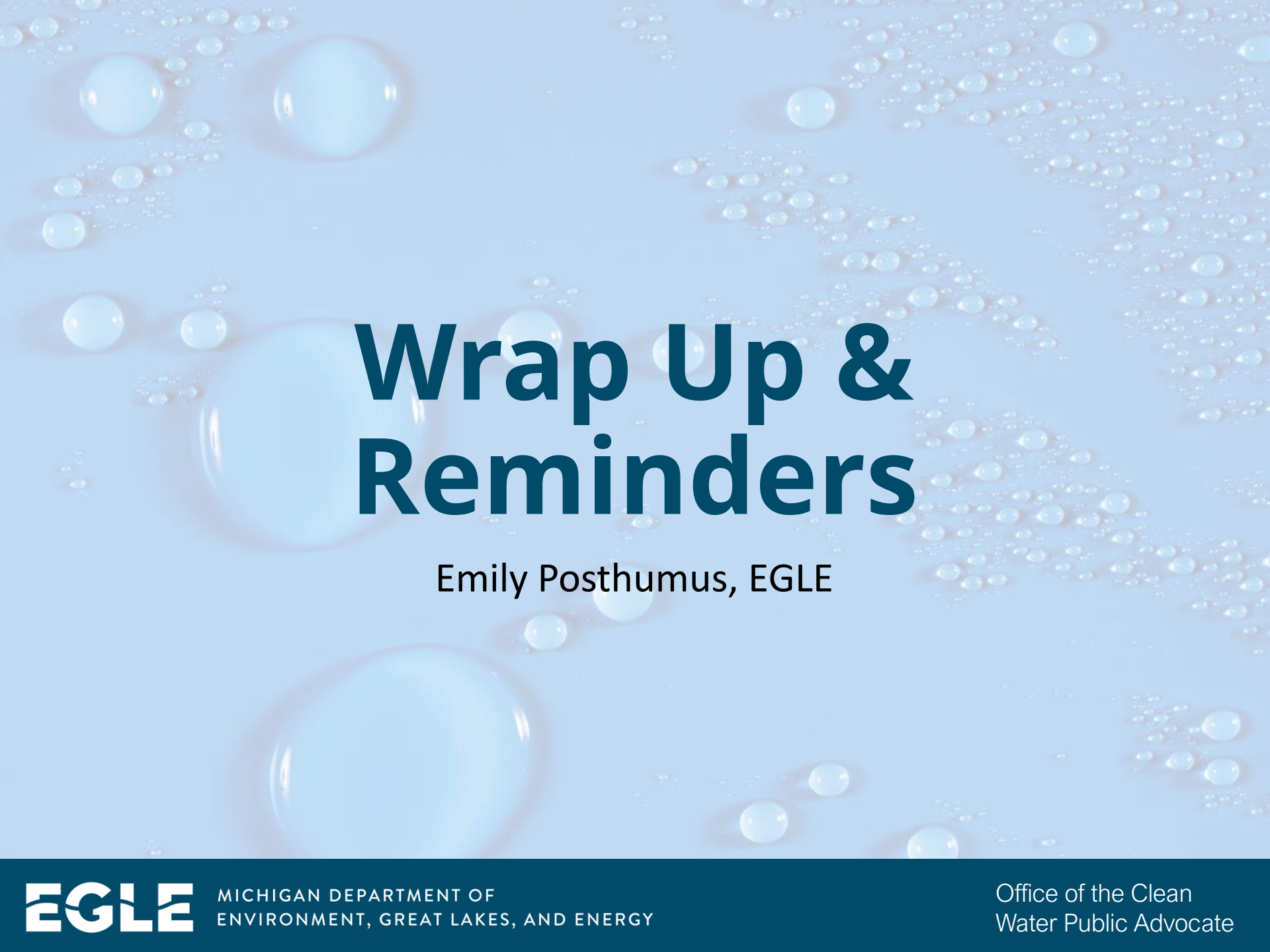
800-662-9278
Michigan.gov/egle



Follow us at: Michigan.gov/egleConnect



Open Discussion & Updates from Ambassadors



Wrap Up & Reminders

Emily Posthumus, EGLE

Reminders

- Fill out the Clean Water Ambassador survey!
- Next Clean Water Ambassador meetings:
 - December – Opportunity to attend the Virtual PFAS Summit. More information to come
 - January 26 – Environmental Education