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

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

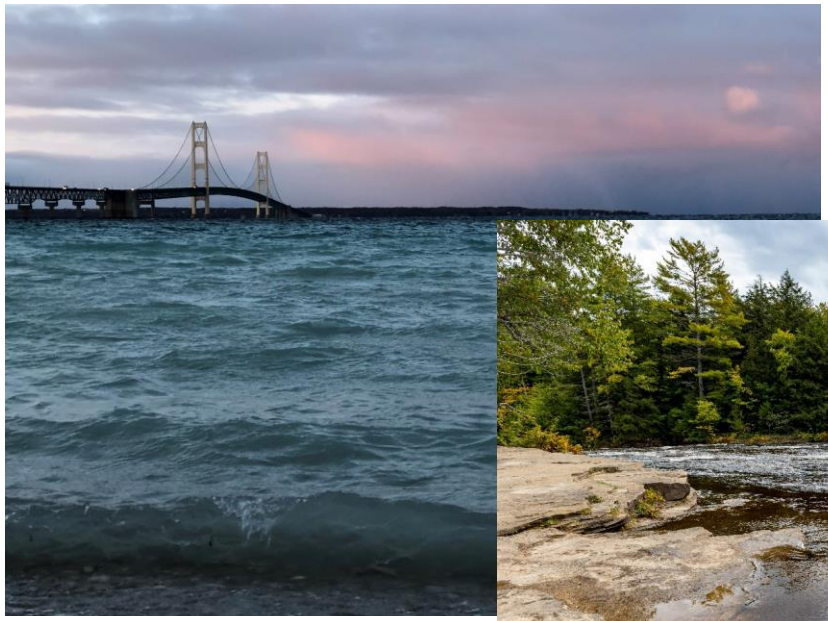
Source Water Protection

Sara Pearson, EGLE

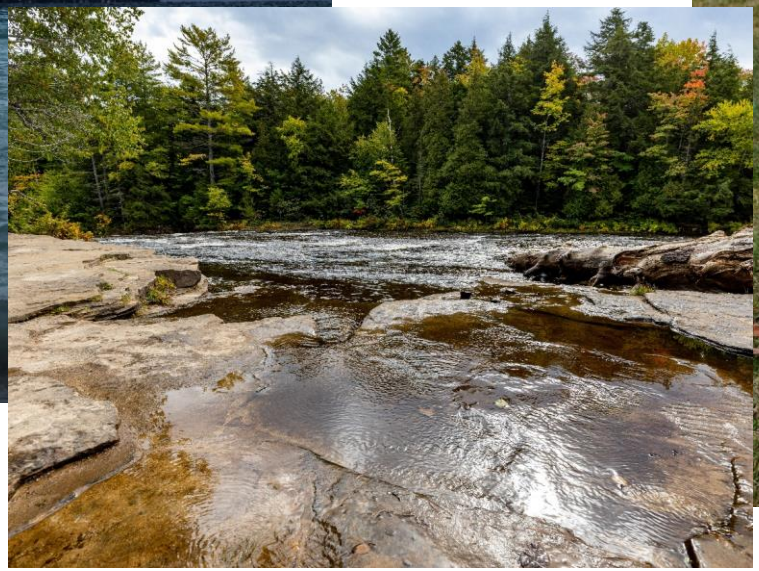
Source Water Unit

517-420-3219 | pearsons@michigan.gov

What is source water?



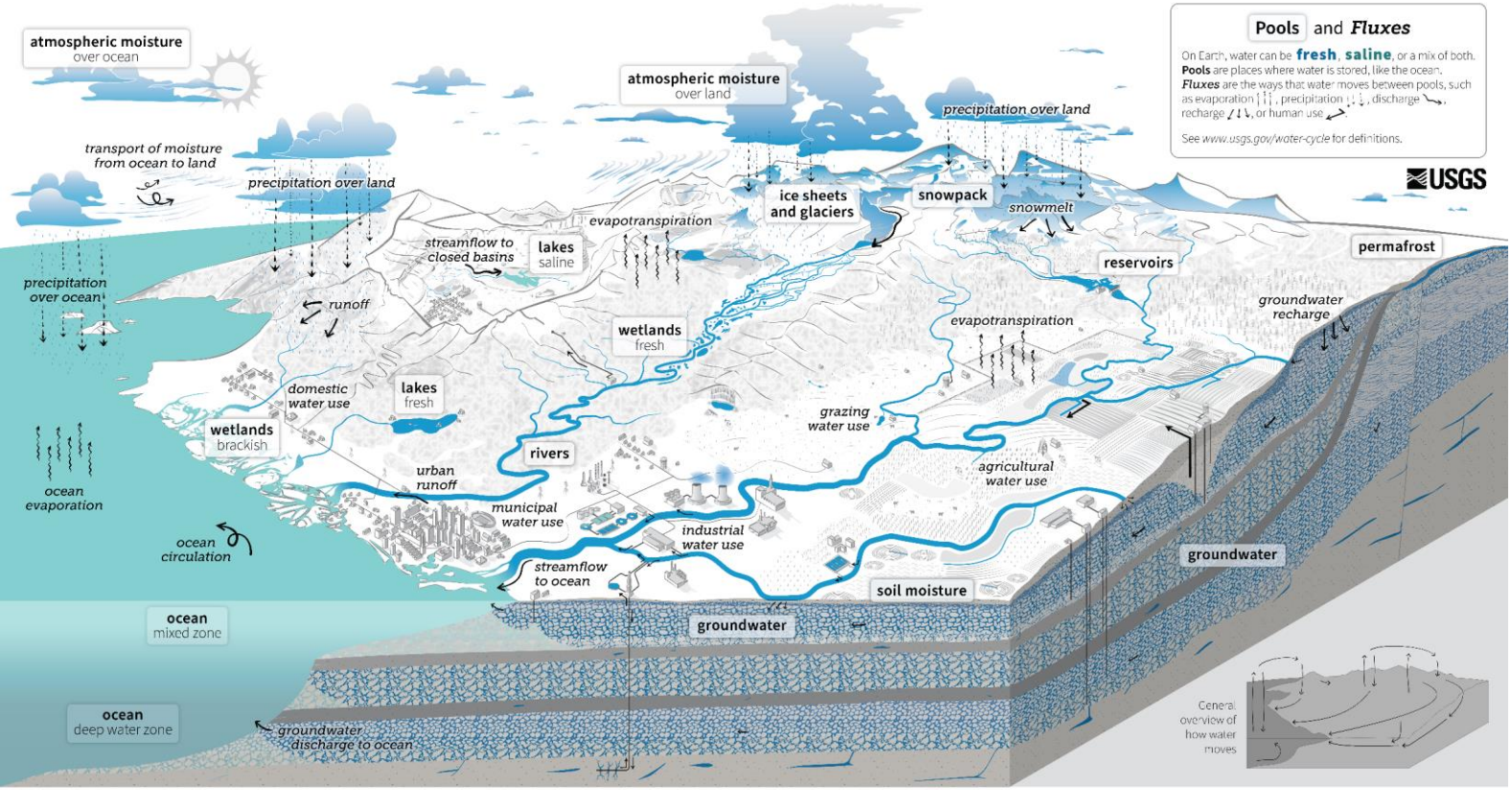
Lakes



Rivers

Groundwater

Hydrologic Cycle



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).

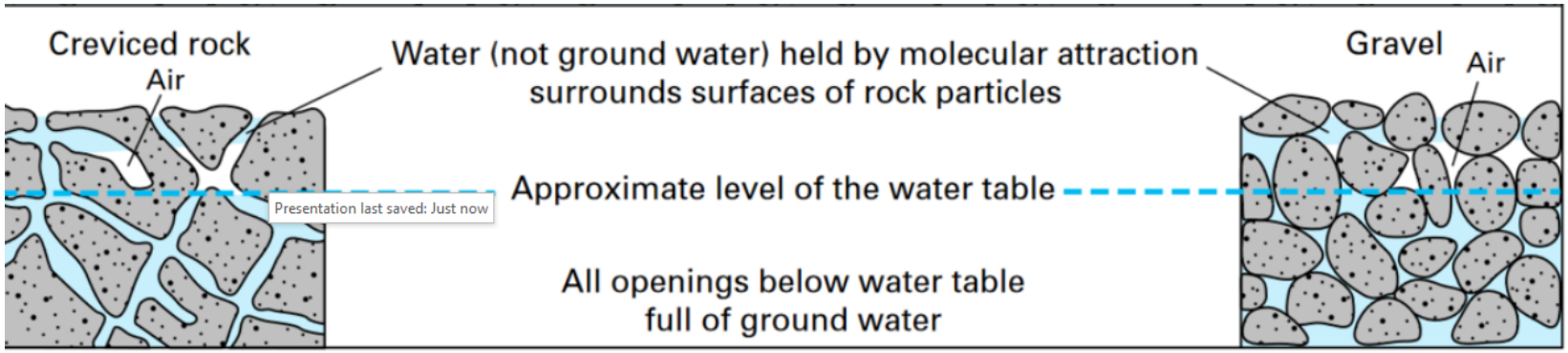
We affect **water quality**. In agricultural and urban areas, irrigation and precipitation wash fertilizers and pesticides into rivers and groundwater. Power plants and factories return heated and contaminated water to rivers. Runoff carries chemicals, sediment, and sewage into rivers and lakes. Downstream 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.

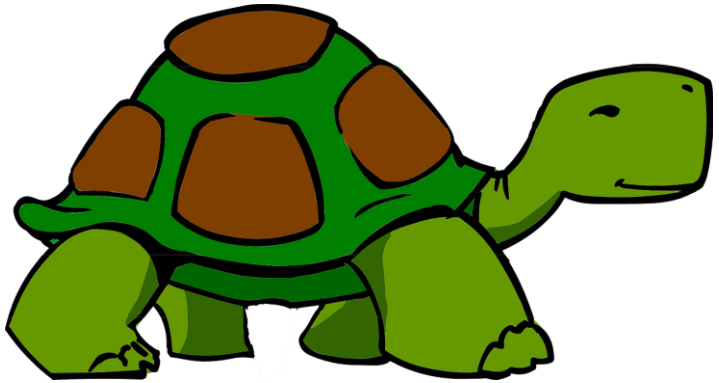
Reality: *Groundwater is stored in small spaces between rock and soil particles.*



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.

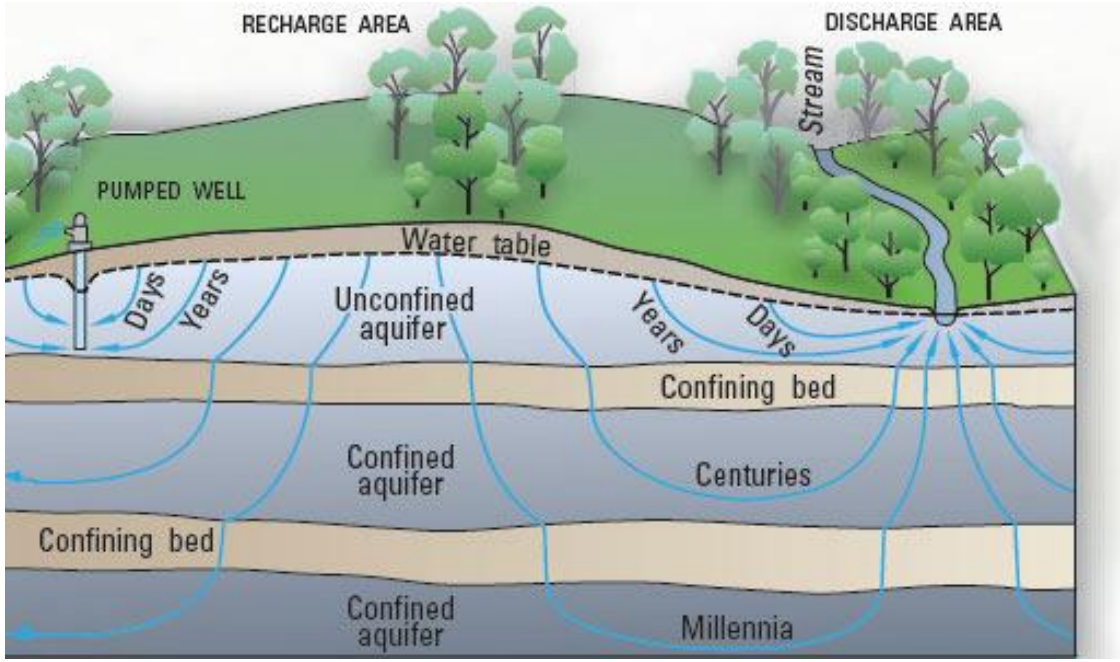
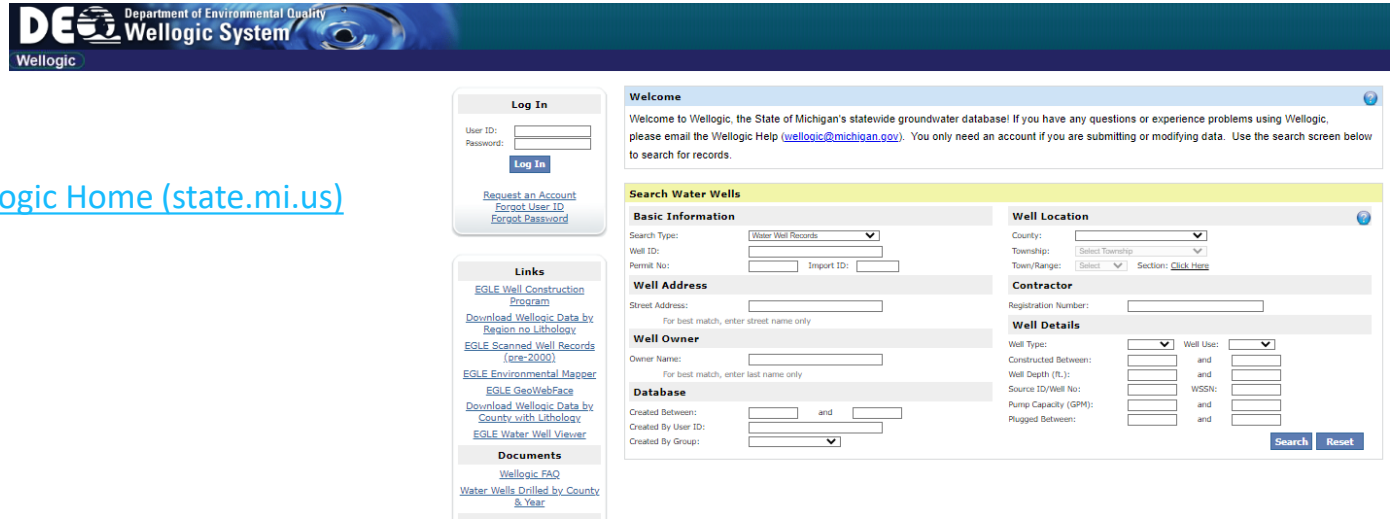


Image source: USGS

Where does my water come from?

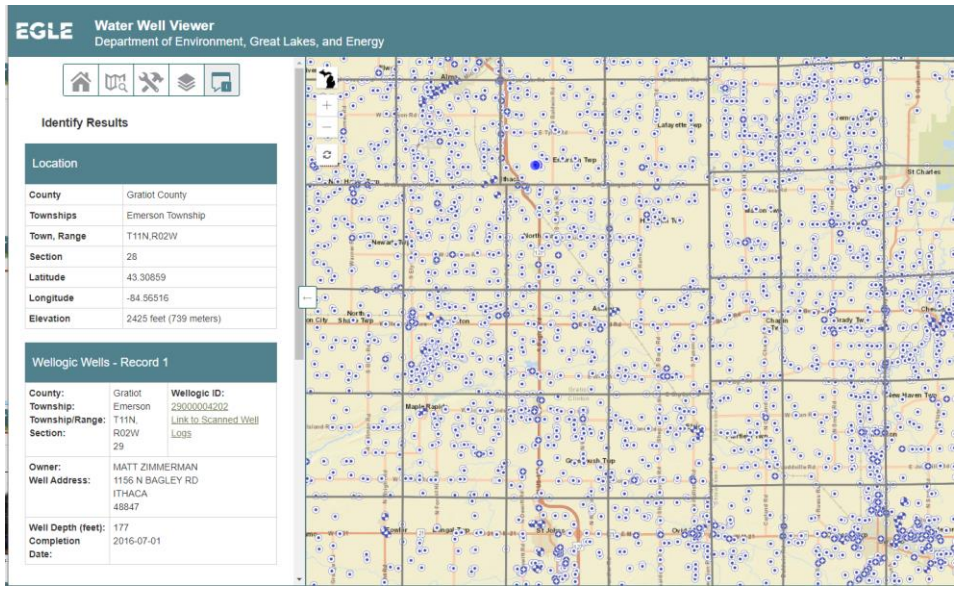
How do I find my Well Record?

[Wellogic Home (state.mi.us)]



Water Well Viewer

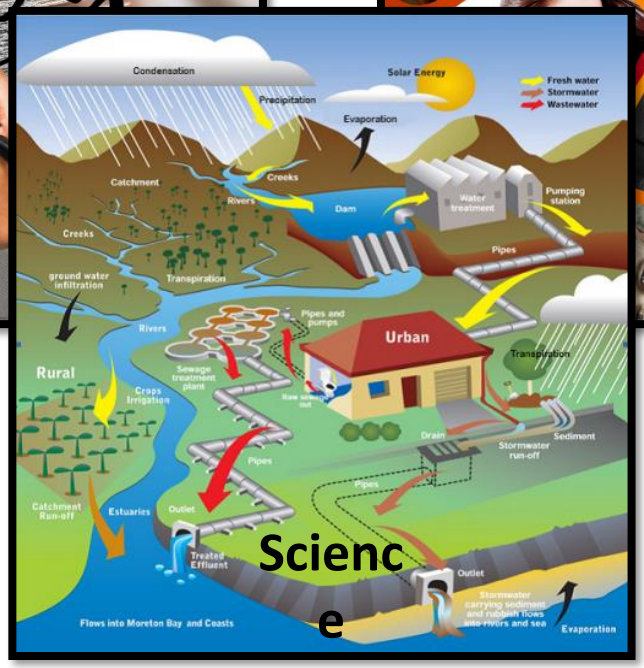
- https://www.mcgi.state.mi.us/waterwellviewer/



How do we protect source water?

Laws and Rules

Programs & Partnerships



Science

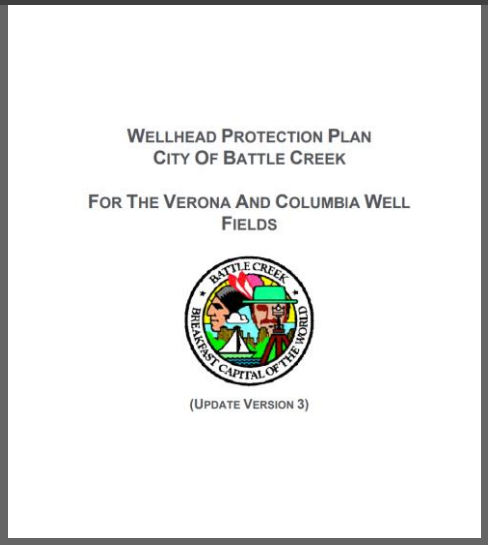
Image source: Eco Education Service

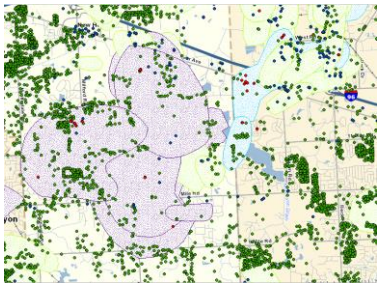
Regulations

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

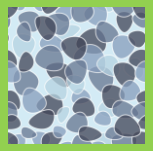
Programs & Partnerships

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





Source Water Protection Plans



Groundwater sources = Wellhead Protection Plan

Surface Water sources = Surface Water Intake Protection Plans

Some public water supplies use a combination or 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.

Plans Have 7 Required Elements

1

Source Water Protect Team Members:

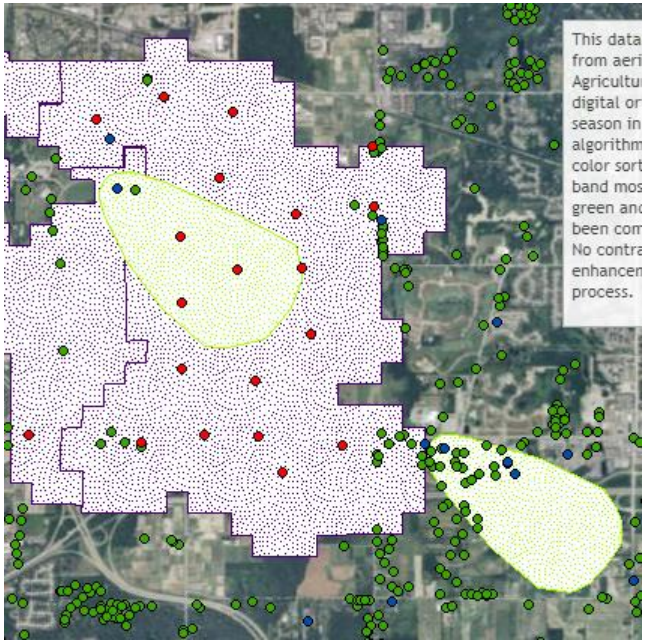
- Local Manager
- Water Superintendent
- Fire Department
- Health Department
- Planning Department
- Business and Industry
- Agriculture
- Education
- Environmental Organization
- General Public

Identify Roles and Responsibilities

Plans Have 7 Required Elements

2

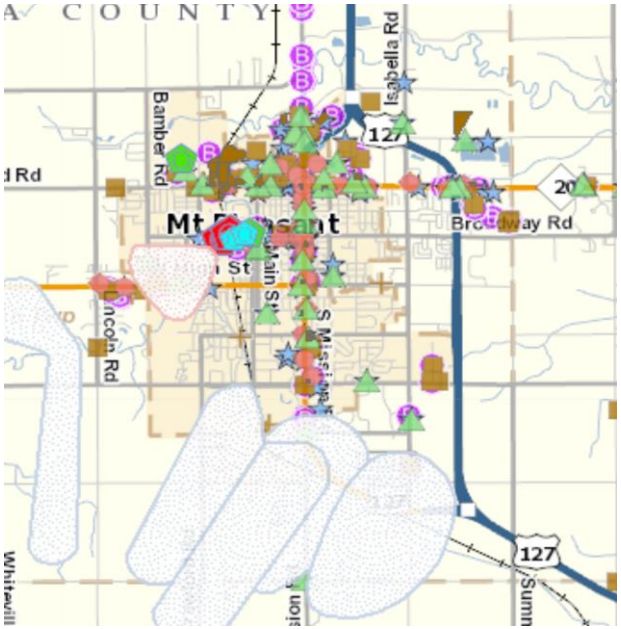
Determine wellhead protection area



3

Plans Have 7 Required Elements

Contaminant Source Inventory



Plans Have 7 Required Elements

4

Wellhead Protection Area Management

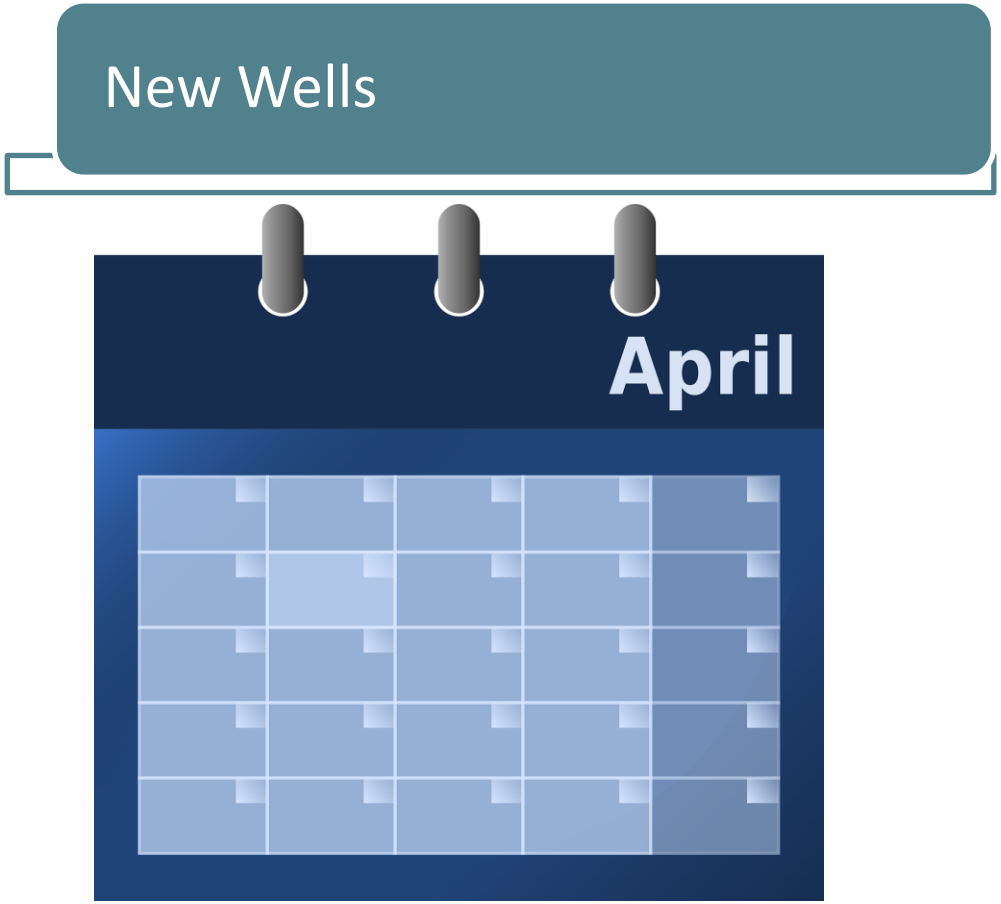
5

Plans Have 7 Required Elements

Contingency Plan

6

Plans Have 7 Required Elements



Plans Have 7 Required Elements

7

Public Education & Outreach

Examples of Public Participation

City of Grand Rapids

Independence Township

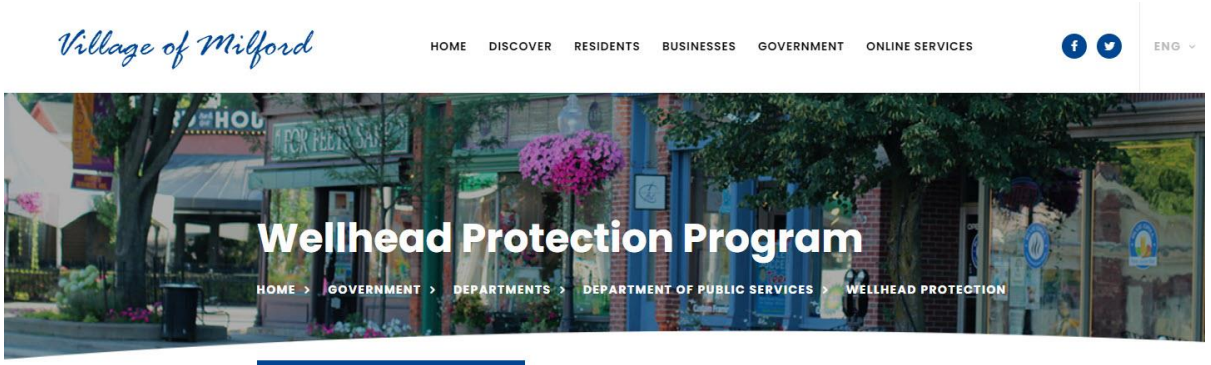
Great Lakes Water Authority

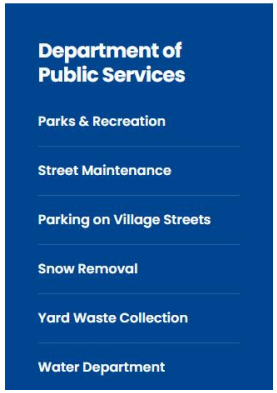
City of Kalamazoo

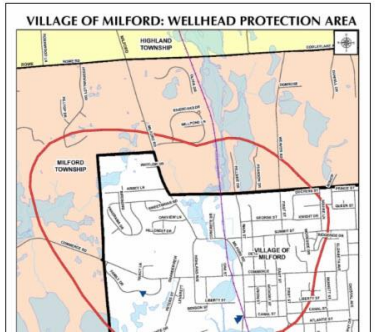
Does My Community have a Source Water Protection Plan?

Check your community's website for information.

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



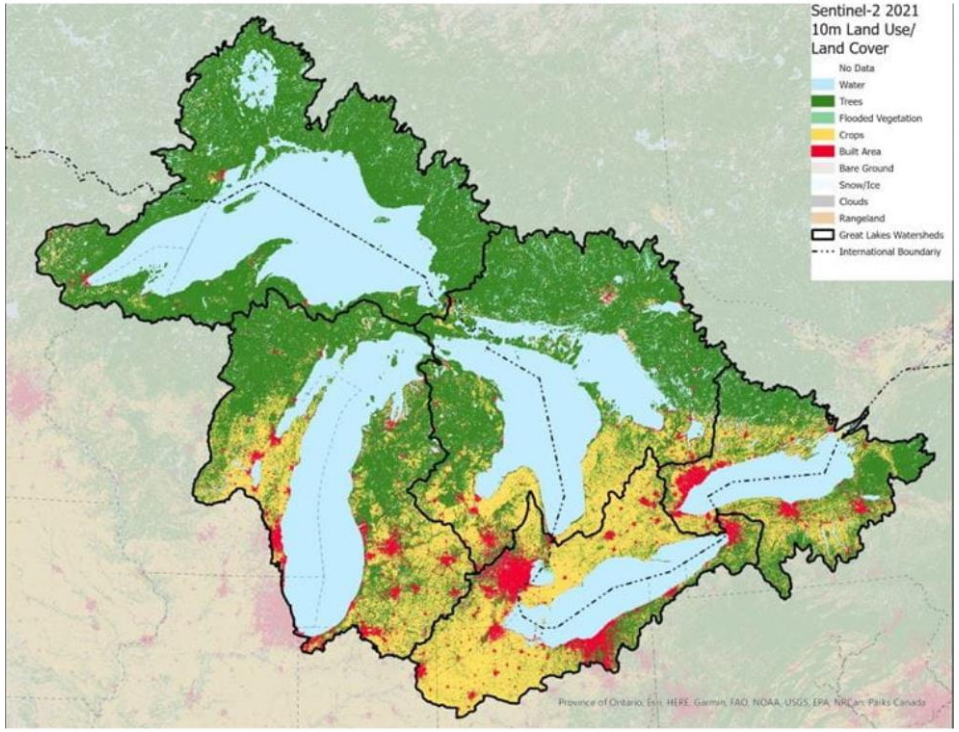




Forests to Mi Faucets

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

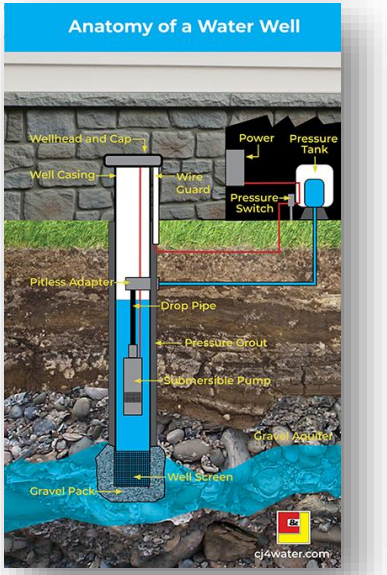
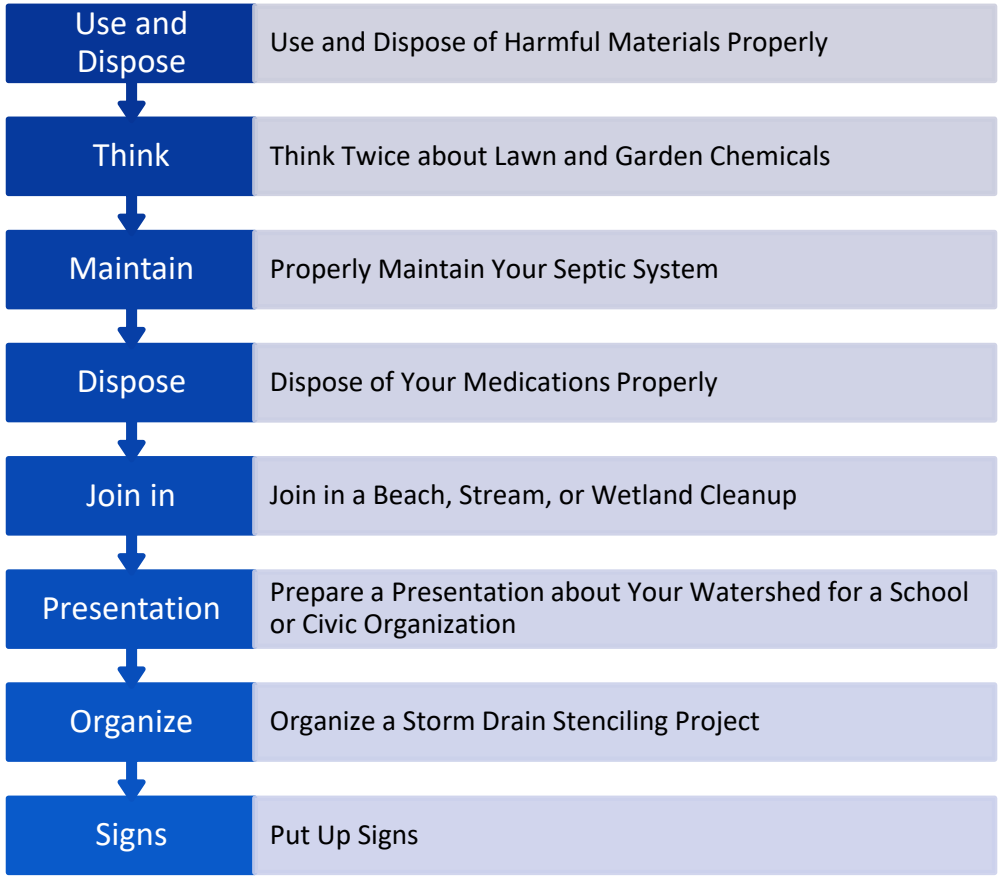


Image source: C&J Well Company

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/

EGLE

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

EGLE

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