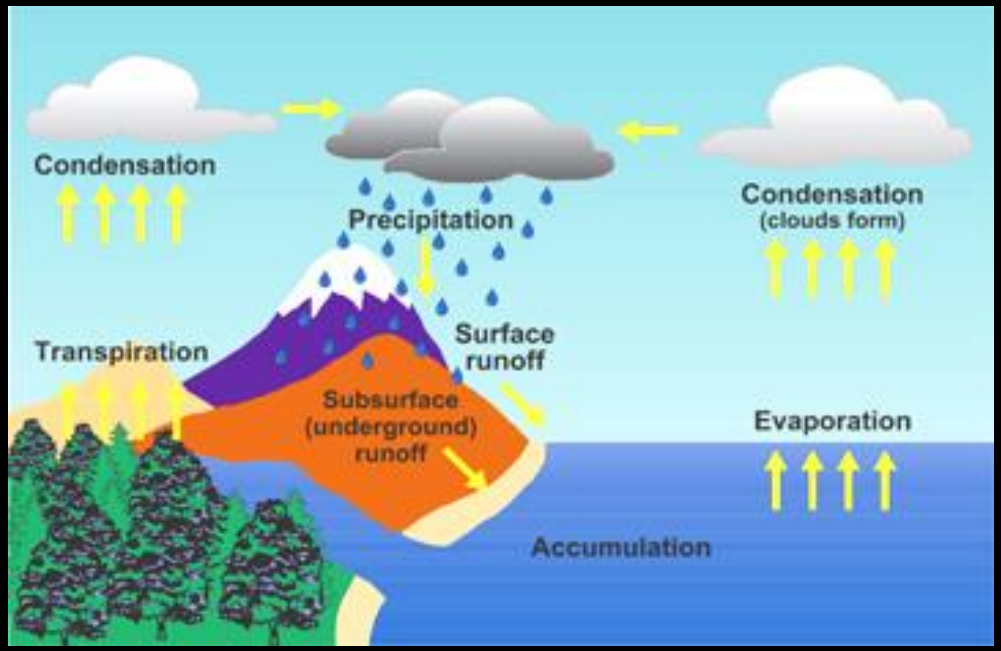
Phosphorus Pollution Reduction in the Flint River Watershed

The Hydrologic Cycle

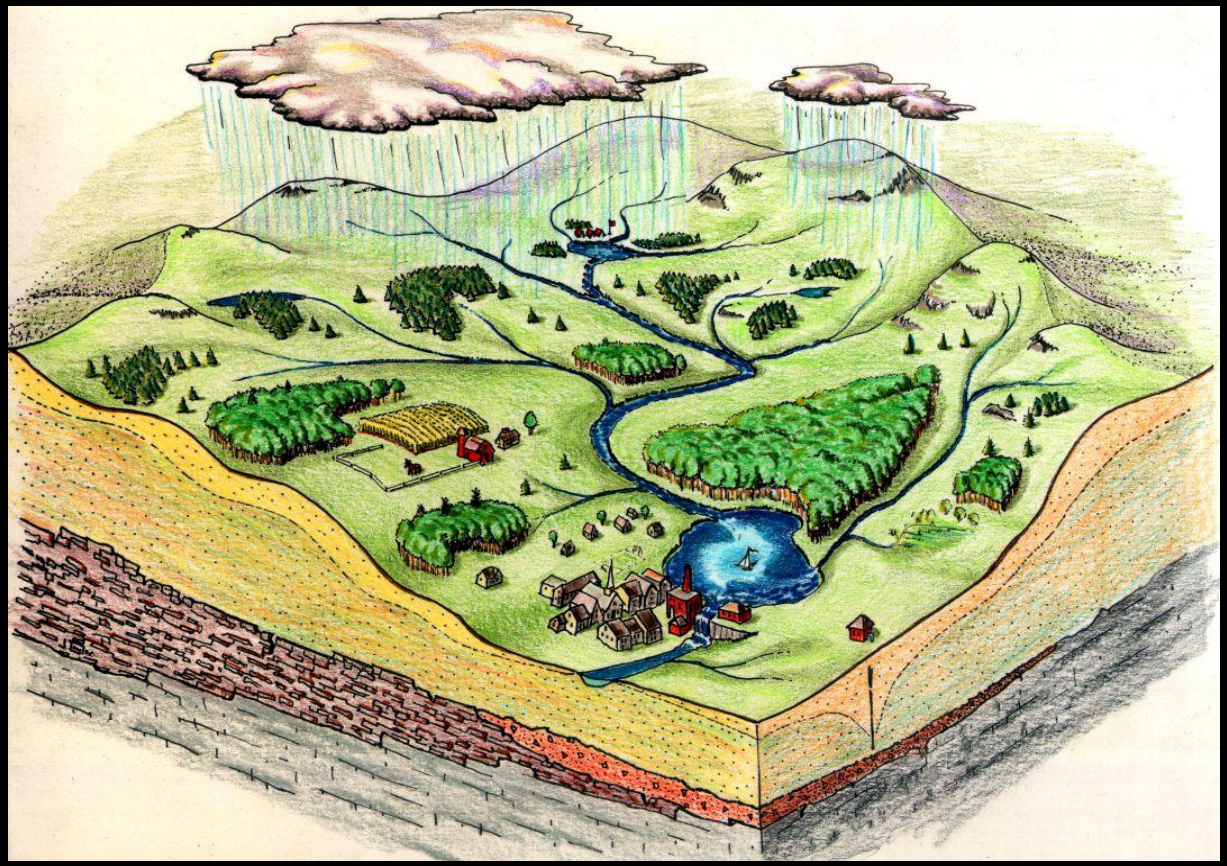
Water evaporates from streams, lakes and oceans, and then, rises into the air and condenses into clouds, and falls back to the ground as rain, hail, sleet or snow.

There is no new water: it just goes round and round through the hydrologic cycle.



Watersheds

A watershed is an area of land that drains to a particular stream, lake or wetland.

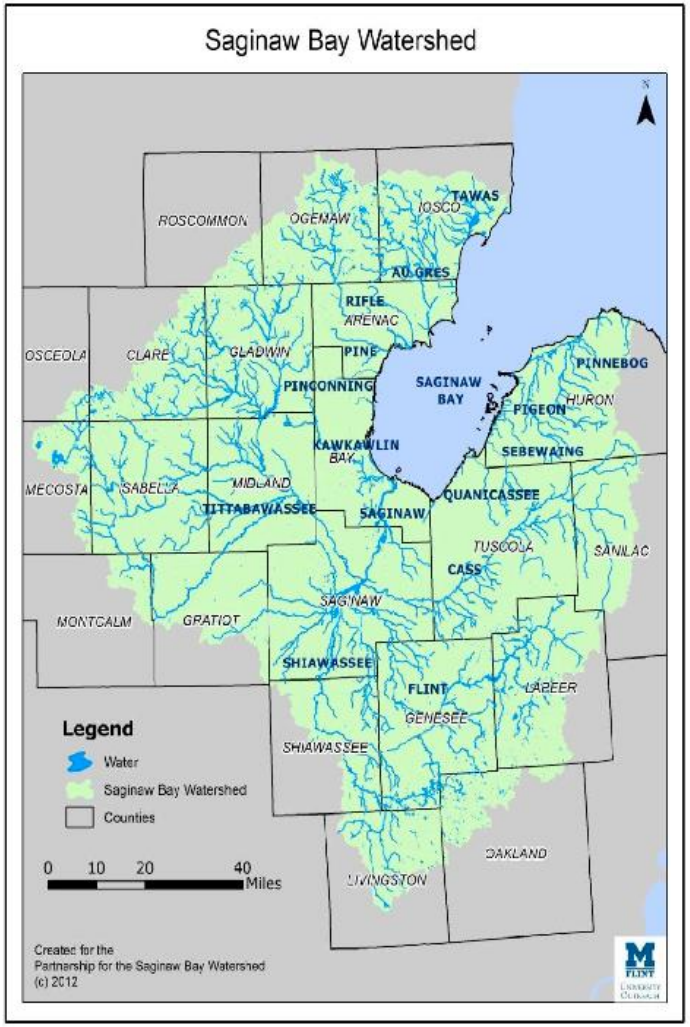


Michigan has many watersheds.

The Saginaw Bay Watershed

- The Saginaw Bay Watershed, Michigan's largest, is all the land (8,709 square miles) where rain, snowmelt and groundwater drains into Saginaw Bay.

- It covers all or part of 22 counties and drains 15% of Michigan's total land area.



- The Saginaw Bay Watershed covers 9 smaller watersheds, including the Flint River Watershed.

- It has more than 1 million residents and includes Flint, Saginaw, Bay City, Midland, Mount Pleasant and Owosso.

- Over 50% of the land in the watershed is agricultural.

Saginaw Bay Phosphorus Pollution

- Phosphorus in the water in Saginaw Bay promotes aquatic plant growth, including the growth of algae.

- Too much phosphorus in the water can cause excessive plant growth, resulting in dissolved oxygen depletion and ecological imbalances that can impair the fishery, and also cause nuisance algae growth.

- Abundant algae growth in Saginaw Bay can be seen from outer space.

Agricultural Sources

- Based on a recent study, the Michigan Department of Environmental Quality (MDEQ) has concluded that agriculture is the largest remaining source of phosphorus pollution entering Saginaw Bay.

- The MDEQ estimates that about 90% of the phosphorus transported into the bay by storm water runoff (rain and snowmelt) comes from agricultural land.

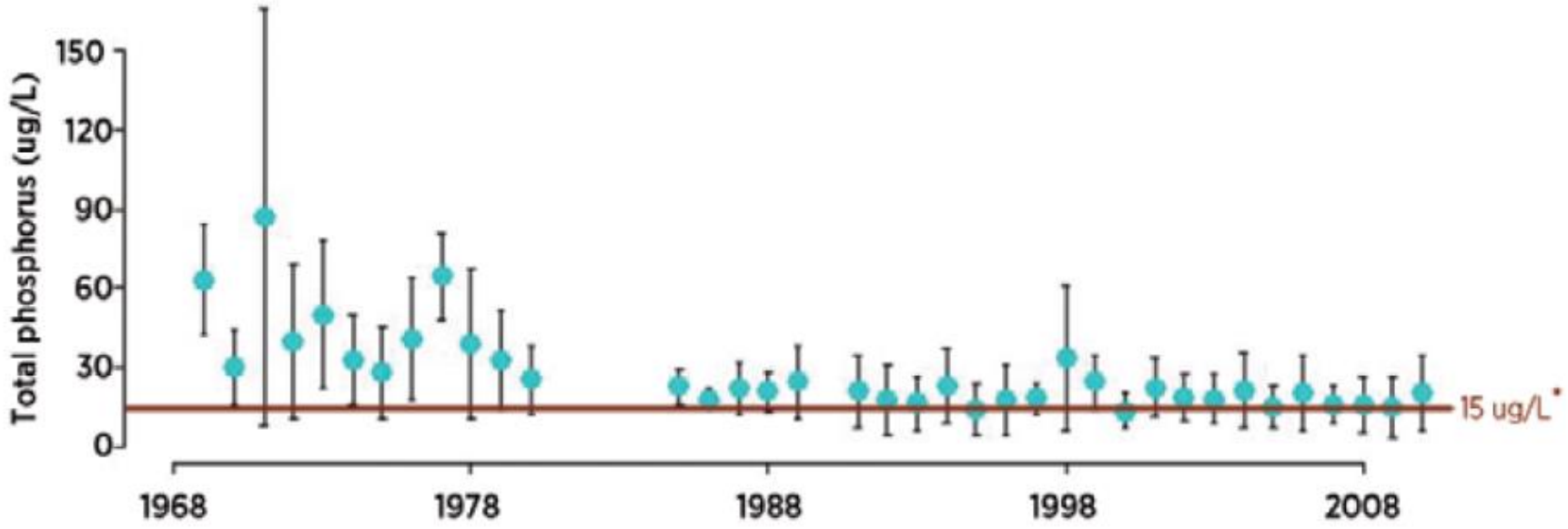
- The MDEQ also estimates that the major sources of phosphorus pollution in the bay are from fertilizer (50%) and livestock manure (17%).

- Agricultural phosphorus pollution needs to be reduced to improve the ecological health of Saginaw Bay.

- A phosphorus target level (15 ug/L) has been set for controlling plant growth in the bay.

- Phosphorus levels in the bay dropped 43% between 1974 and 2005, largely due to improved wastewater treatment and the elimination of phosphorus in laundry detergents; and they are nearing the target.

Figure 2: Phosphorus Levels in the Saginaw Bay, 1968–2008



The Flint River Watershed

- The Flint River Watershed is the 2nd largest watershed in the Saginaw Bay Watershed.

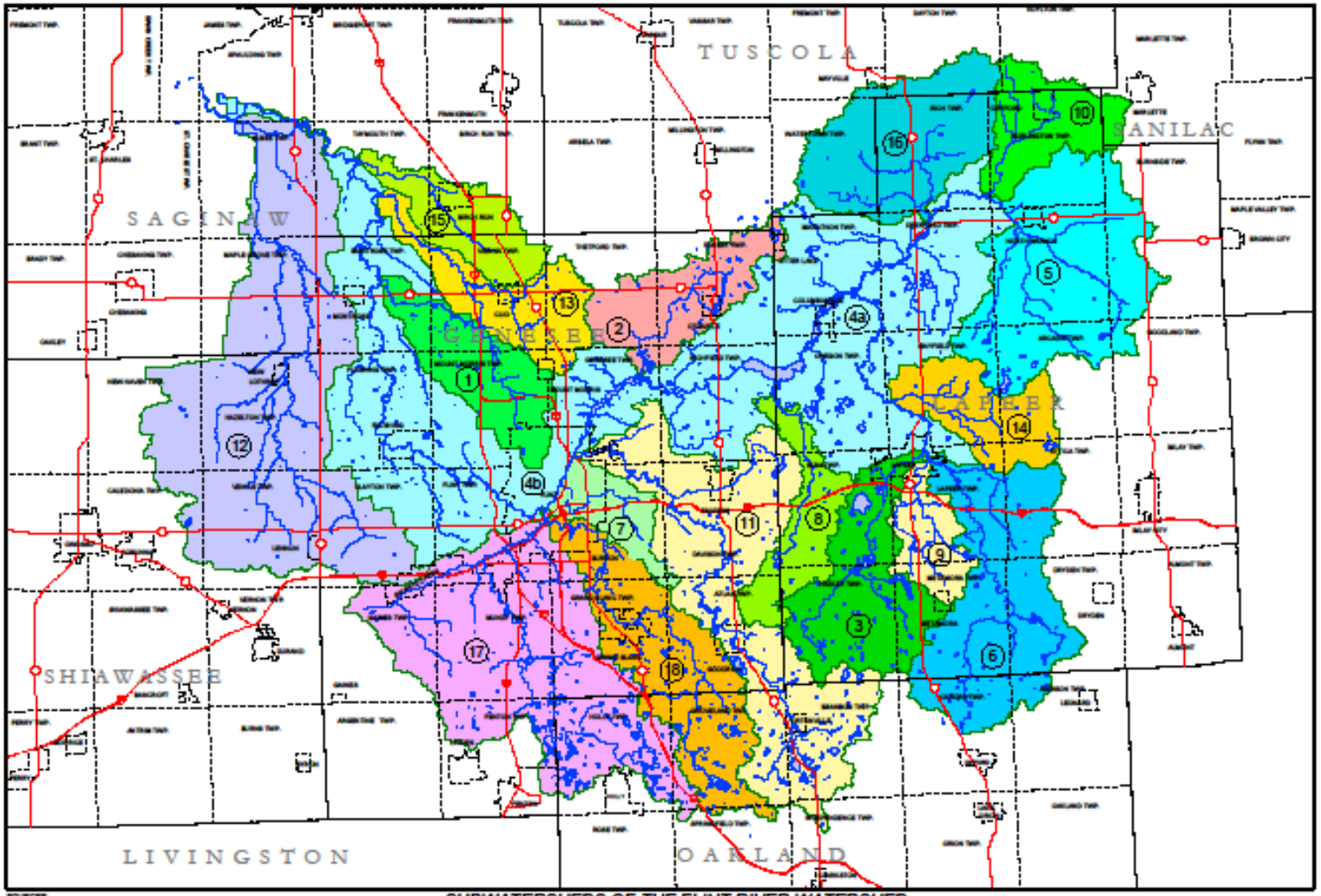
- Its 1,400 square miles covers 15% of the Saginaw Bay Watershed.

- It includes 18 smaller watersheds located in Genesee, Lapeer, Oakland, Shiawassee, Saginaw and Tuscola Counties.

- 46% of the watershed is agricultural land.

- The MDEQ estimates that about 17% of the phosphorus pollution entering Saginaw Bay comes from the Flint River Watershed, which is the second largest source.

FLINT RIVER WATERSHED



SUBWATERSHEDS OF THE FLINT RIVER WATERSHED

SOURCES:
- Michigan Department of Natural Resources,
- Michigan Resource Information System, 1978
- Michigan Department of Environmental Quality

Federal and State Highways
Municipal Boundaries
Surface Water
Rivers and Streams

1. Brent Run
2. Butternut Creek
3. Farmers Creek
4a. Flint River-Upper Main Channel (4a)
4b. Flint River-Lower Main Channel (4b)
5. Flint River - North Branch
6. Flint River - South Branch
7. Gilkey Creek
8. Hasler Creek
9. Hunters Creek
10. Indian Creek
11. Kearsley Creek
12. Misteguay Creek
13. Pine Run
14. Plum Creek
15. Silver Creek
16. Squaw Creek
17. Swartz Creek
18. Thread Creek

0 10 Miles

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Pollution Reduction

➢ Farmers working to reduce agricultural phosphorus pollution in streams in the Kearsley Creek, Swartz Creek and Thread Creek Subwatersheds of the Flint River Watershed are being helped by the:

- Genesee Conservation District
- Michigan Department of Agriculture and Rural Development (MDARD)
- USDA Natural Resources Conservation Service (NRCS)
- Michigan State University Institute of Water Research
- Flint River Watershed Coalition

➢ These farmers are enhancing environmental protection on the farm through the MDARD Michigan Agriculture Environmental Assurance Program (MAEAP) and NRCS Environmental Quality Incentives Program (EQIP).

Michigan Agriculture Environmental Assurance Program (MAEAP)

MAEAP includes:

- Farm* A*Syst
- Crop *A*Syst
- Livestock *A*Syst
- Greenhouse *A*Syst

Environmental Quality Incentives Program (EQIP)

- EQIP is a voluntary conservation program administered by the NRCS.
- Through EQIP, farmers, ranchers, and private forest land owners may receive financial and technical assistance to implement structural and land management conservation practices on eligible agricultural land. Eligible producers are individuals engaged in livestock, crop or forest production.
- Eligible land includes cropland, rangeland, pasture, and private non-industrial forestland.

- EQIP activities are carried out according to a site specific conservation plan developed in conjunction with the producer.

- All conservation practices are installed according to NRCS technical standards.

- Producers may elect to use an approved technical service provider for technical assistance.

Great Lakes Restoration Initiative

- The NRCS is assisting with the Great Lakes Restoration Initiative (GLRI) by focusing technical and financial assistance on priority watersheds, such as the Kearsley, Swartz and Thread Creek Subwatersheds.

- Landowners and producers within these watersheds are encouraged to utilize this assistance to implement conservation activities that will benefit the Great Lakes ecosystem.

- A working group including NRCS-Michigan staff and conservation partners developed a plan that identified priority watersheds and conservation practices to most effectively address resource concerns affecting the Great Lakes.

- Through GLRI, financial assistance is available via grant dollars and existing NRCS programs.

GLRI-subsidized Cropland Practices

- Nutrient management
- Cover crops
- Reduced tillage (either mulch or no till)
- Drainage water management
- Grade stabilization Structures

GLRI-subsidized Pasture Operations Practices

- Animal trails and walkways
- Prescribed grazing
- Fences
- Pipelines
- Watering facilities
- Access control
- Pasture and hayland planting
- Heavy use area protection

GLRI-subsidized Headquarters with Livestock Practices

- Waste storage facilities
- Waste transfer facilities
- Roofs and covers
- Runoff diversions
- Roof runoff management
- Heavy use area protection
- Agrichemical handling facilities

GLRI-subsidized Headquarters without Livestock Practices:

- Agrichemical handling facilities