



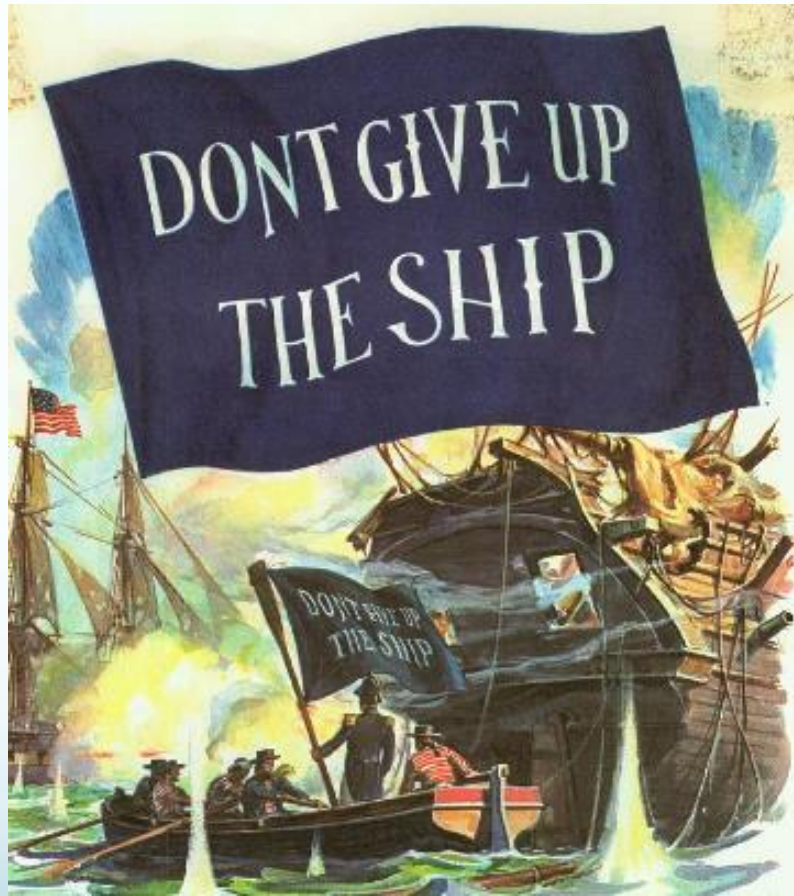
Presents

3rd

“The ^Battle for Lake Erie”

First Battle for Lake Erie

September 10, 1813



Second Battle for Lake Erie

1950s-60s: Citizen outrage builds as sewage and industrial waste create massive “dead zones”

Rectangular Snip



1969: Cuyahoga River catches fire again



1970-72: Landmark Legislation



Third Battle for Lake Erie

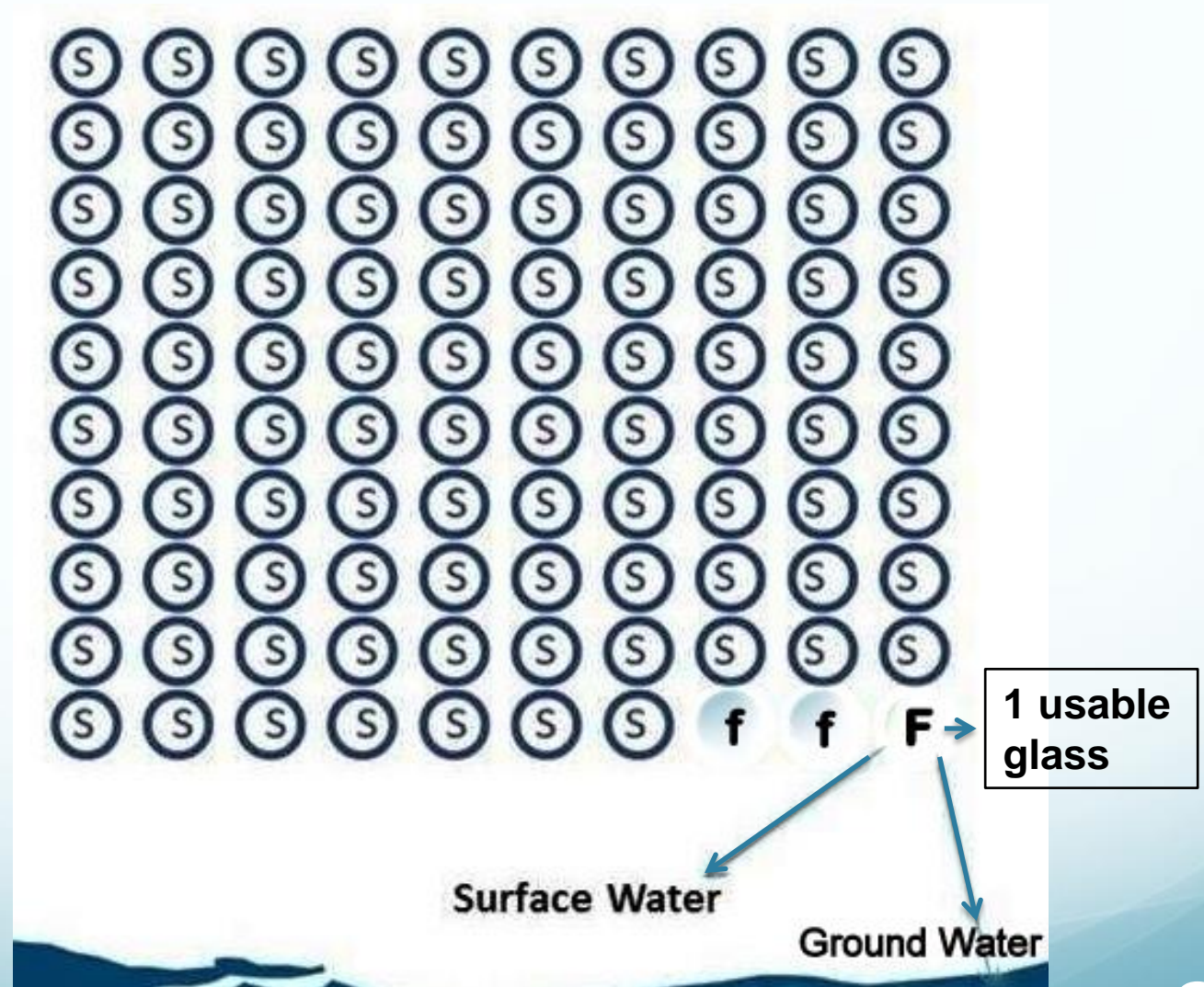


Clean Water is a Right



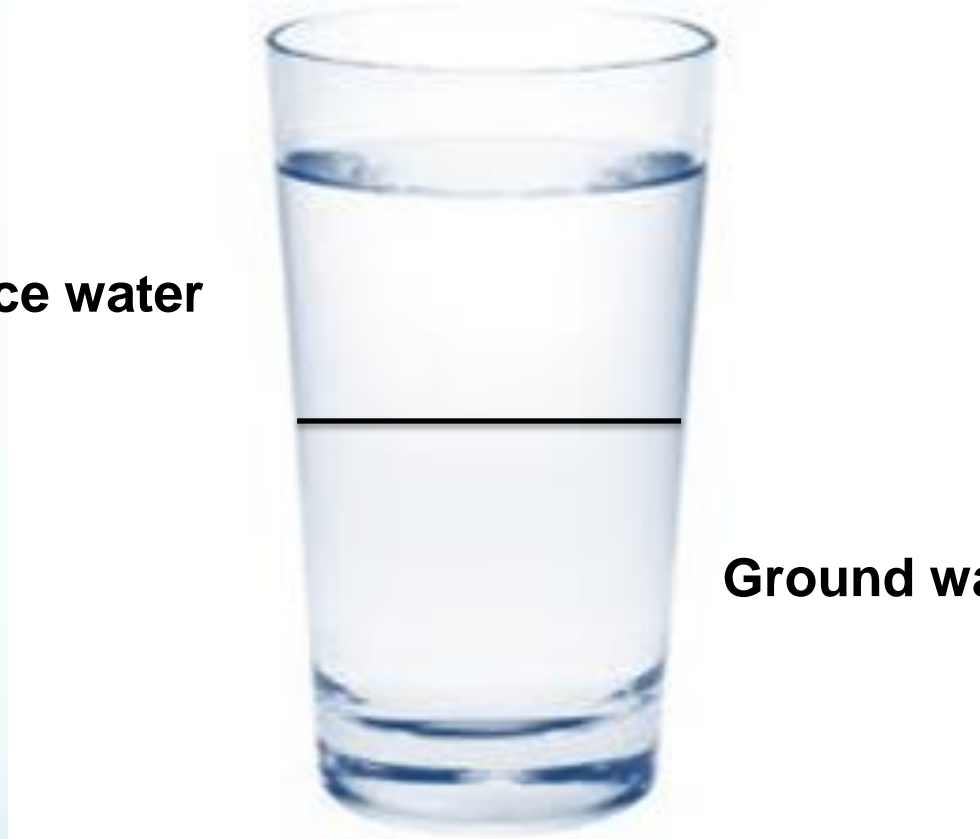
All Earth's Water in 100 Glasses

97 are saltwater



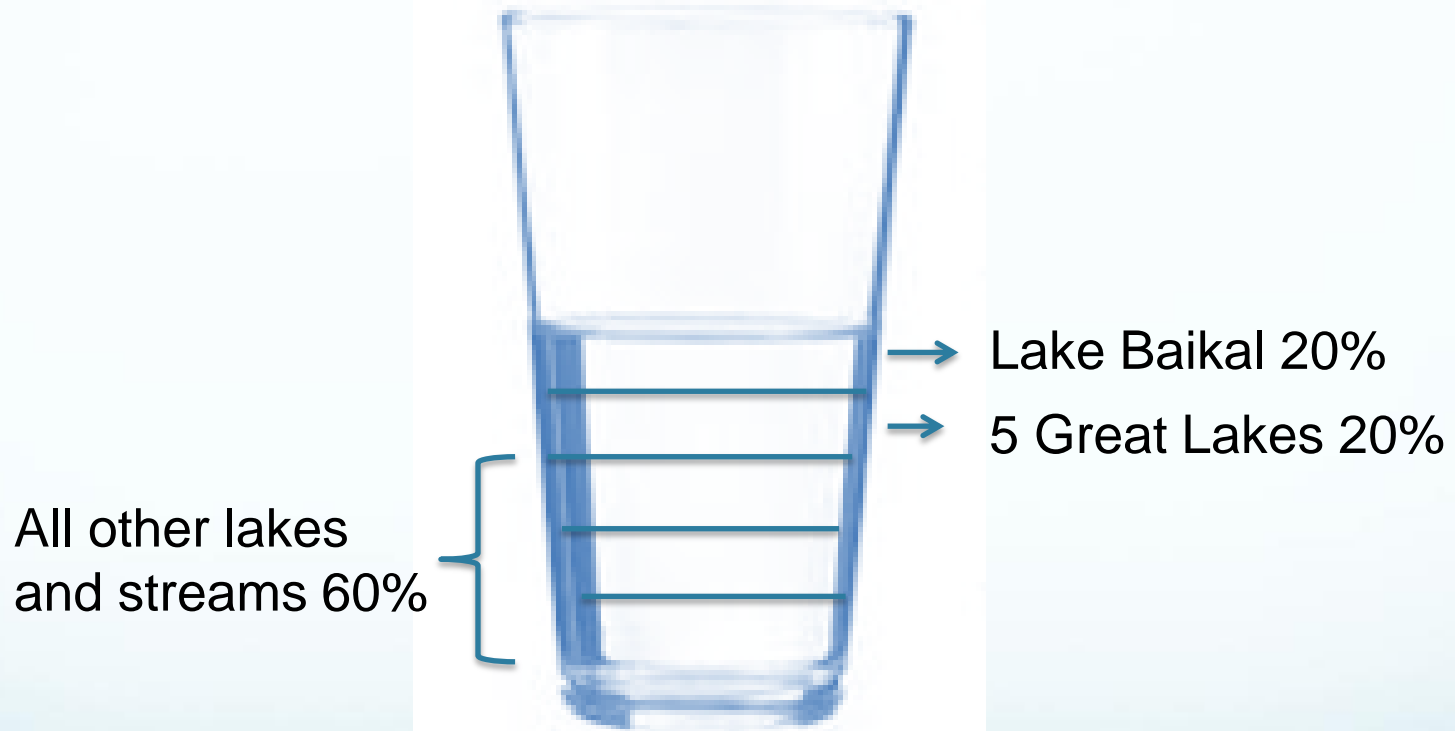
All Earth's usable fresh water

Surface water



Ground water

All Earth's usable fresh surface water



and Lake Erie's share
of usable fresh surface water...

19 Precious Drops



...and here's what we're doing with them!



Our 19 Precious Drops

- **Home to more than 1,500 species of plants and animals**
- **Prime migratory bird route**
- **Drinking water for over 13 million people**
- **Economic resource for multiple states and Ontario**

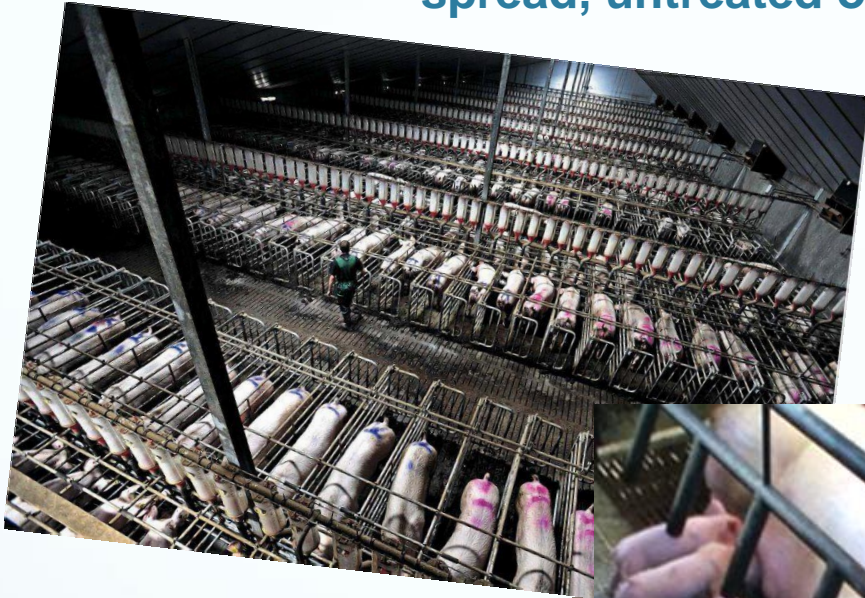
Source: Ohio Environmental Council

Three Years After Toledo's Water Crisis our officials are still looking for solutions!



In Our Watershed:

97,475 cows, 13,292,455 poultry and 459,692 pigs from 146 registered CAFOs
700,000,000+ gallons of feces and urine every year = Chicago and L.A. sewage,
spread, untreated on fields above Lake Erie



4/20/20

The Lake Belongs to Everyone

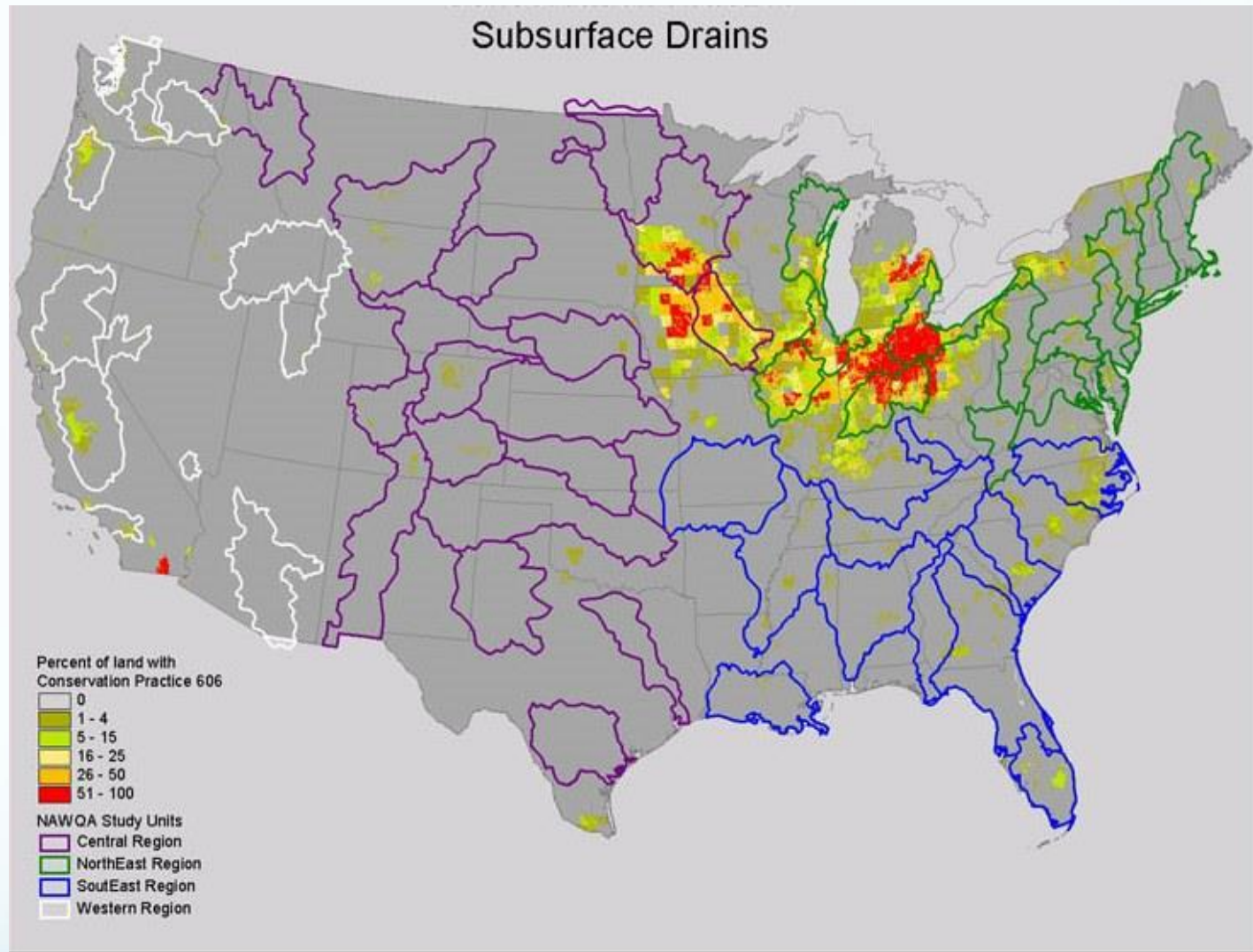
- **No Person or Corporation has the right** to impair our water
- **CAFO (Concentrated Animal Feeding Operation)** owners shift their costs onto the public:
 - **Toledo Water Customers pay \$6 million/year** more to treat drinking water since the 2014 water emergency
 - **Quality of Life is Reduced** directly for everyone who uses Lake Erie to fish, boat, swim, or sightsee.
 - **Existing Businesses Suffer:** lake tourism, charter fishing, restaurants, factories...any business that uses water.
 - **New Jobs Go Elsewhere**
 - **Our Health is at Risk**

More Manure = More Phosphorus

- **Phosphorus from commercial fertilizers:** greatly reduced
- **Phosphorus from manure:** greatly increased
 - Spraying liquid manure on fields
 - Over application super-saturates soil with Phosphorus
 - Inadequate management of manure lagoons and stockpiles
 - Legacy Phosphorus
- **Rain events and spring thaws** increase nutrient loads
- **Dissolved Phosphorus (DP)** gets to the lake via surface runoff and even more from **underground drain tiles**

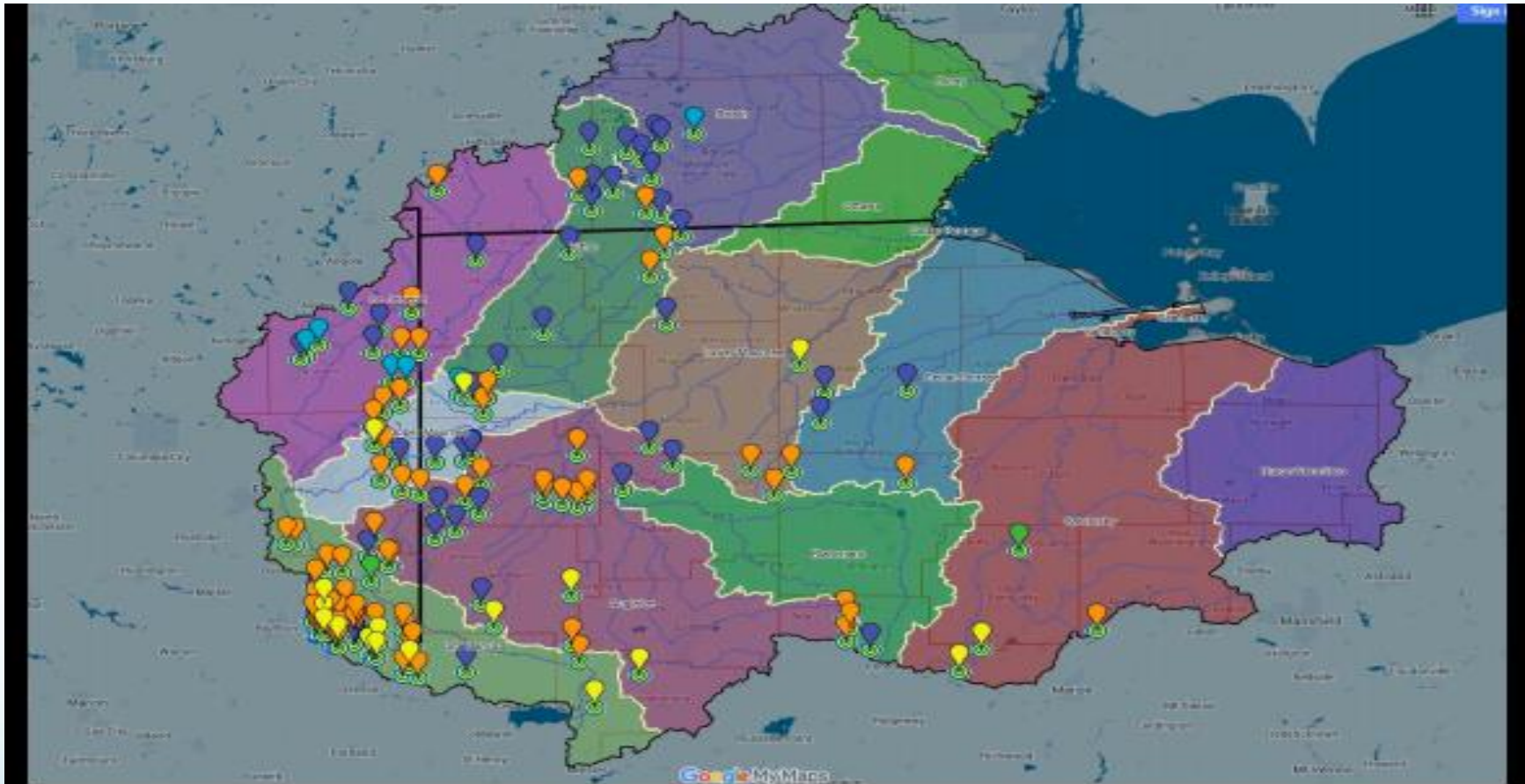
**Of all Great Lakes
Erie is:**

- **Shallowest**
- **Warmest**
- **Most Southerly**
- **Highest
Concentration
of Drain Tiles**



146 Registered CAFOs in Western Lake Erie Watershed

map courtesy Michigan Sierra Club and ECCSCM



www.nocafos.org

The 146 CAFOs in the WLEB produce as much urine and feces as the human populations of the Chicago and Los Angeles metropolitan areas, combined. This untreated waste is stored in lagoons or stockpiled until it is eventually spread on farm fields.

Lake Erie is in Jeopardy

- **Water Crisis of 2014** left 400,000+ citizens without drinking water for 2.5 days
- **Harmful Algal Blooms (HAB)** elevate toxins in drinking water
- **Record Algal Cover in 2015** – 300 square miles
- **Excess Nutrients** from a variety of sources, particularly manure, poison the lake



And **Green** is not good in this case

- **Overabundance of nutrients**, primarily **Phosphorus**, feeds the algae on which microcystis bacteria grow, creating microcystin toxin
- **Pollution/nutrients** come from “**point sources**” like factories, sewage treatment and food processing plants and “**non-point sources**” like row crops, golf courses, lawns, faulty septic tanks
- **Climate change** elevates lake water temperatures as well as phosphorus loading from heavy rain events, feeding the bacteria
- **Concentrated Animal Feeding Operations (CAFOs)** are **point sources** under the Clean Water Act. But OEPA’s “enforcement” has given us today’s Lake Erie.

CAFOs Put Our Health At Risk

- **CAFOs = Manure = Phosphorus = Algae = Microcystis = Microcystin**
- **Microcystin Exposure** causes nausea, vomiting, diarrhea, fever
- **Microcystin LR is a Liver Toxin**
 - Haimen, China—30x greater liver cancer rate among fisherman who consumed microcystin contaminated water, ducks and fish
 - Cararu, Brazil—101 dialysis patients developed liver failure after treatment with microcystin contaminated water and 50 died
 - Documented deaths of wild and domestic animals after consuming water containing microcystin

How Toxic is Microcystin?



Toxin	Dosage Required to Kill 50% of Lab Rats
Dioxin	0.000001 mg/kg/d
Microcystin LR	0.000003 mg/kg/d
PCBs	0.00002 mg/kg/d
Methylmercury	0.0001 mg/kg/d
DDT	0.0005 mg/kg/d
Cyanide	0.02 mg/kg/d
Chlorine	0.1 mg/kg/d

Source: OSU Stone Laboratory

Does Treatment to Rid Water of Microcystin Make Us Safer?

- Treating water with Chlorine to reduce Microcystin produces carcinogens like **Trihalomethanes**. Reducing THMs adds significantly to water treatment costs.



Source: Water Research Center

Now let's look at the manure...

The 10,280 cows at Schilderink and Paulding Dairies in Paulding County generate more feces, urine, waste antibiotics and hormones every year than Perrysburg, Sylvania, Maumee, Defiance, Fremont, Fostoria and Dayton combined.



...and follow it from storage lagoons to...

...repeated field applications.



Photo: courtesy of ECCSCM

Phosphorus leaches through soil to underground drainage tiles...



Photo: courtesy of ECCSCM

...into streams that feed Lake Erie...



Photo courtesy ECCSCM

... causing summer algal blooms.



Satellite view of Lake Erie showing algal bloom 2015

Photo: NOAA

How Does Algae Grow?

- **Excess nutrients enhance algal growth** – forming a mat of bacteria on the lake
- **Total Phosphorus (TP)**: Includes *all* forms of Phosphorus, dissolved or particulate, that are found in a sample of water
- **Dissolved Phosphorus (DP)** is the form taken up by plants like algae
- **The amount of DP** determines the severity of the algal bloom

Current Measures Do Not Work

- Current voluntary “Best Management Practices” (BMPs) are designed to control sediment, nitrates and TP (total phosphorus)
 - ▶ Examples: Buffer strips, grassed waterways, cover crops, no-till
- BMPs do not control Dissolved Phosphorus
- Tile drainage systems increase DP flow to the lake
- GLRI: \$2 billion, 4300 projects, the word “manure” mentioned twice.



Buffer Strip

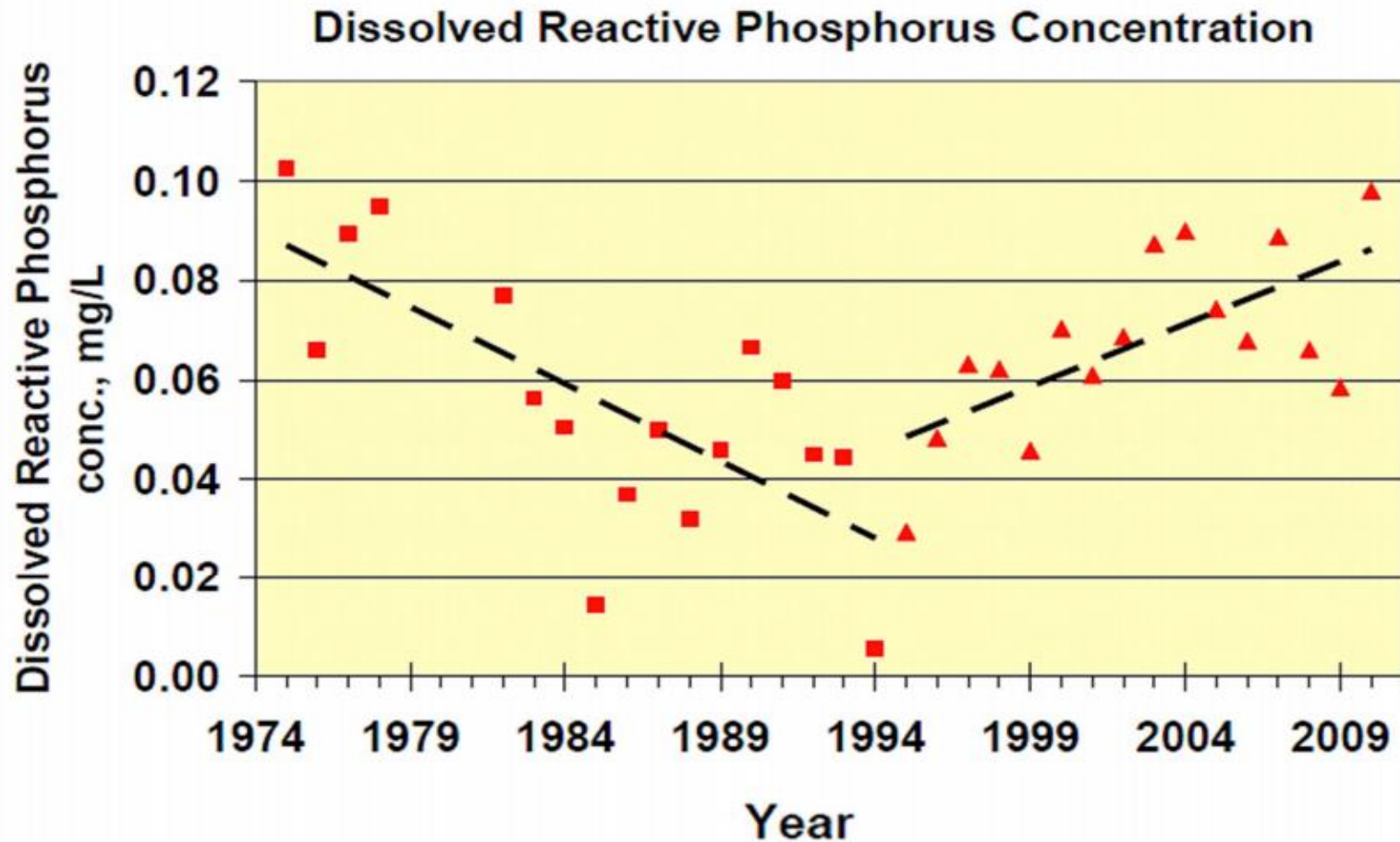
Photo: Mankato Free Press



Grassed Waterway

Photo: Evrardo

And Here's the Proof:



Ohio Sea Grant and Stone Laboratory

ACLE Recommends the USEPA Declare the Western Lake Erie Basin Impaired

(The legal mechanism to implement the Clean Water Act)

- **Determine sources and amounts**
- **Action plan** based on Total Maximum Daily Loads
- ***Mandatory* reduction goals** with report cards and deadlines
- **Accountability** for meeting goals
- **Federal funding** to help address problem

The Chesapeake Bay Story

1983-2016

- **1983-2010:** Three unsuccessful voluntary agreements over 27 years
- **2010:** EPA implements Total Maximum Daily Loads (TMDLs)
- **2011:** American Farm Bureau, Pork Producers Council, National Chicken Council, National Builders Assn. sue EPA over TMDL Plan
- **2016:** Supreme Court rejects challenge to TMDL
- **Do we want Lake Erie's Story to take 33 years?**

The Good News Is...

TMDL Plans are Working for the Bay!

- Over 400 acres of oyster reefs restored in six rivers
- Over \$2 billion in federal restoration funds 2015-16
- Nutrient load estimate for 2017: down 60% from 2009



Lessons Learned from Chesapeake Bay

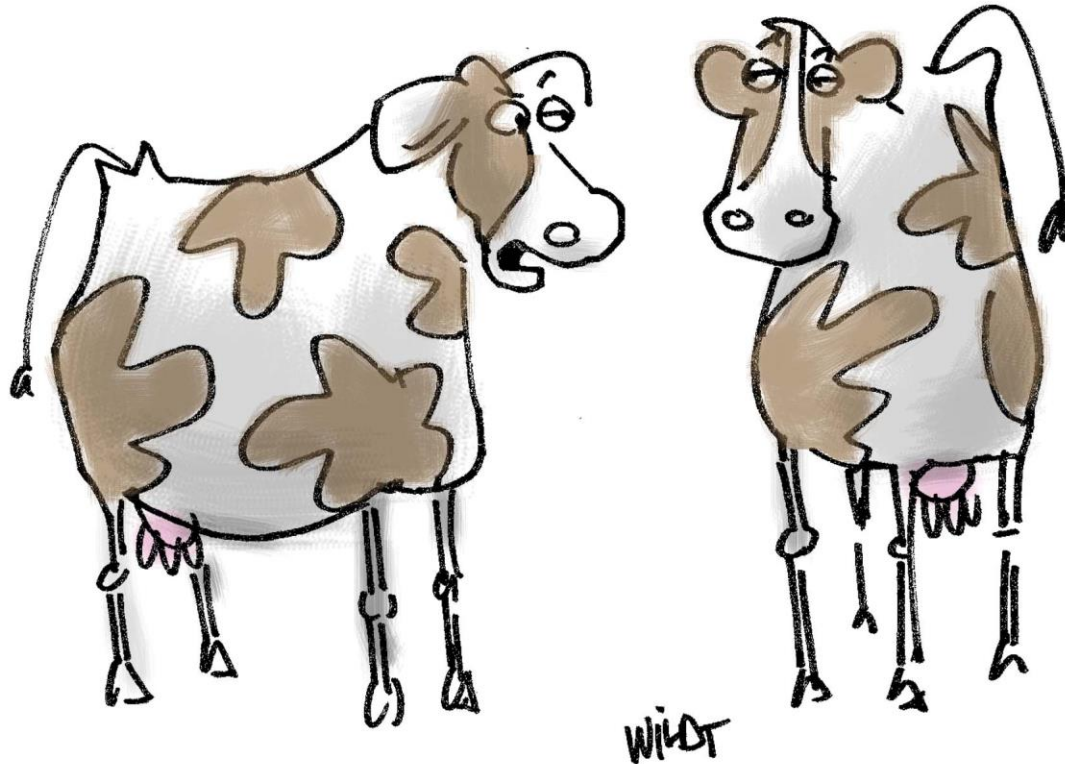
- **Citizen engagement and funding are essential on the path to clean water**
- **Time and money will be wasted without:**
 - Enforceable, measurable goals (TMDLs)
 - Fair agricultural participation
 - Implementation plan and periodic report card
 - Verification
- **“Big Ag” opposes mandatory regulations**



This is a Political Fight

- **Karl Gebhardt, the Ohio EPA's Director of Lake Erie Policy worked for 19 years as a lobbyist for the Ohio Farm Bureau**
- **WLEB CAFOs given \$17 million in public support between 2008-2015**
- **Under HB 297, taxpayers would reimburse 50% of CAFO investments back to 2005**
- **Nutrient reduction laws aren't worth the paper they are printed on:**
 - Manure is not included, only commercial fertilizer
 - Authority over manure switched from the ODNR to Ohio Department of Agriculture.

Dairy Cows Speak

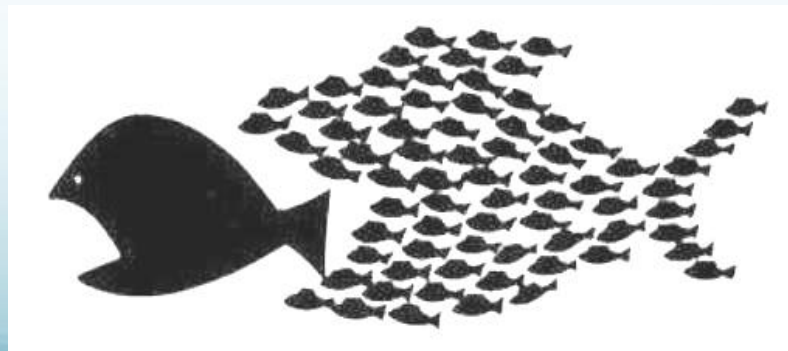


"I can take nonsense, but not udder nonsense."

We Can Win

We've Done it Before!

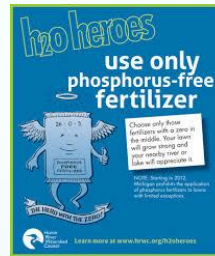
- In the 1960's Lake Erie was considered a dead lake
- Concerned citizens rolled up their sleeves and went to work
 - Phosphorus was banned in laundry detergent
 - Sewage treatment plants were upgraded
- Lake Erie was brought back to health!
- This time the problem is manure
- The power of democracy can save Lake Erie again!



What You Can Do

- **Get involved!**
- **Spread the word** to friends, relatives, neighborhood groups, churches, unions
- **Demand** Ohio and U.S. EPA designate the Western Lake Erie Basin impaired. Get your local government to pass resolutions in support.
- **Join ACLE** and bring a friend to ACLE picketing, demonstrations and events!

- **Use phosphorus-free fertilizers**



- **Keep pressure on local and state officials - let them know we are not going away until Lake Erie is drinkable, swimmable and fishable**

Join In!!



Special Thanks

The following individuals shared their years of research knowledge, materials, advice and suggestions regarding this presentation. We are very grateful for their assistance:

- **Pam Taylor** - Environmentally Concerned Citizens of Southern and Central Michigan (ECCSCM)
- **Sandy Bihn** - Lake Erie Waterkeeper
- **Earl Campbell, MD** - Professor Emeritus of Medicine, UTM
- **Vickie Askins** - Ohio Environmental Stewardship Alliance
- **Eileen Metress, PhD** - Professor Emeritus of Public and Environmental Health, University of Toledo

“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.” - (Margaret Mead)



ACLE Contact Info



Check us out on Facebook

www.facebook.com/advocatesforacleanlakeerie

Visit us on the web

www.advocatesforacleanlakeerie.org

...and as Oliver Hazard Perry would say



Thank You!

