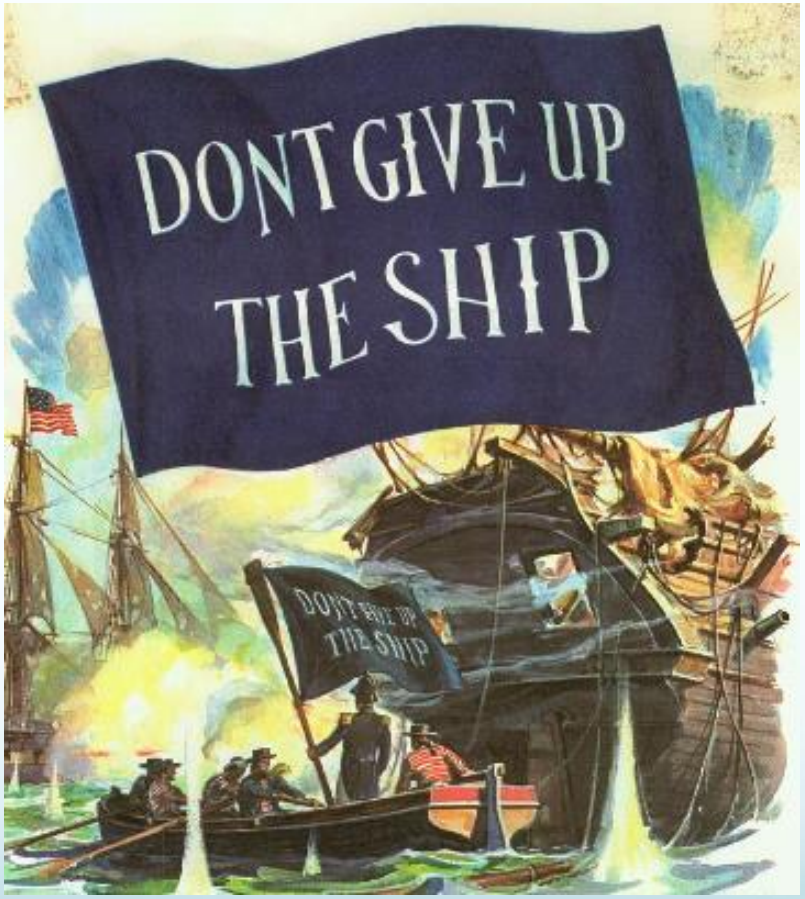
Presents

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"

1969: Cuyahoga River catches fire again

1970-72: Landmark Legislation

EPA
Clean water starts with you and ends with us.

Clean Water Act

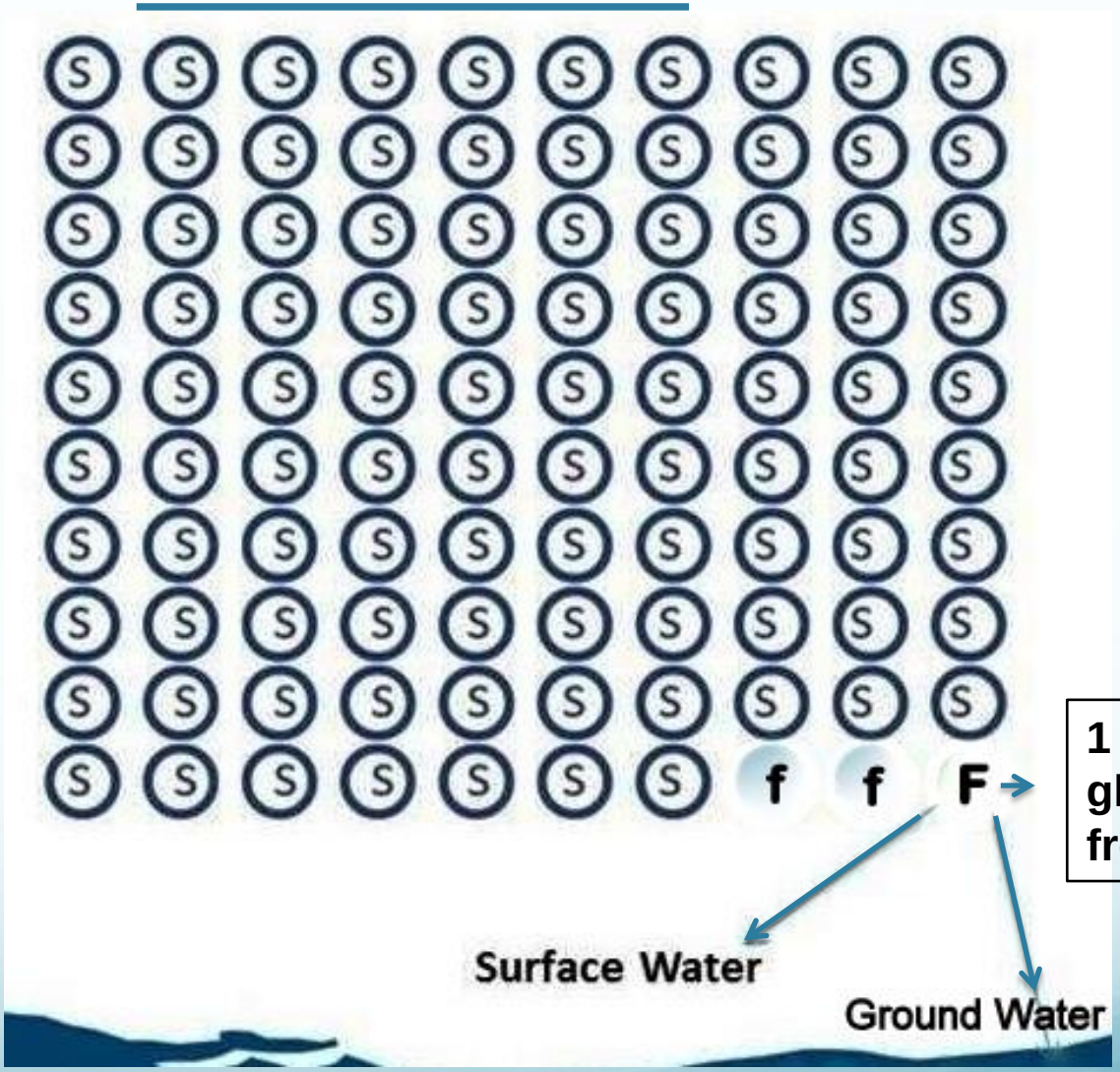
Phosphorus

Third Battle for Lake Erie

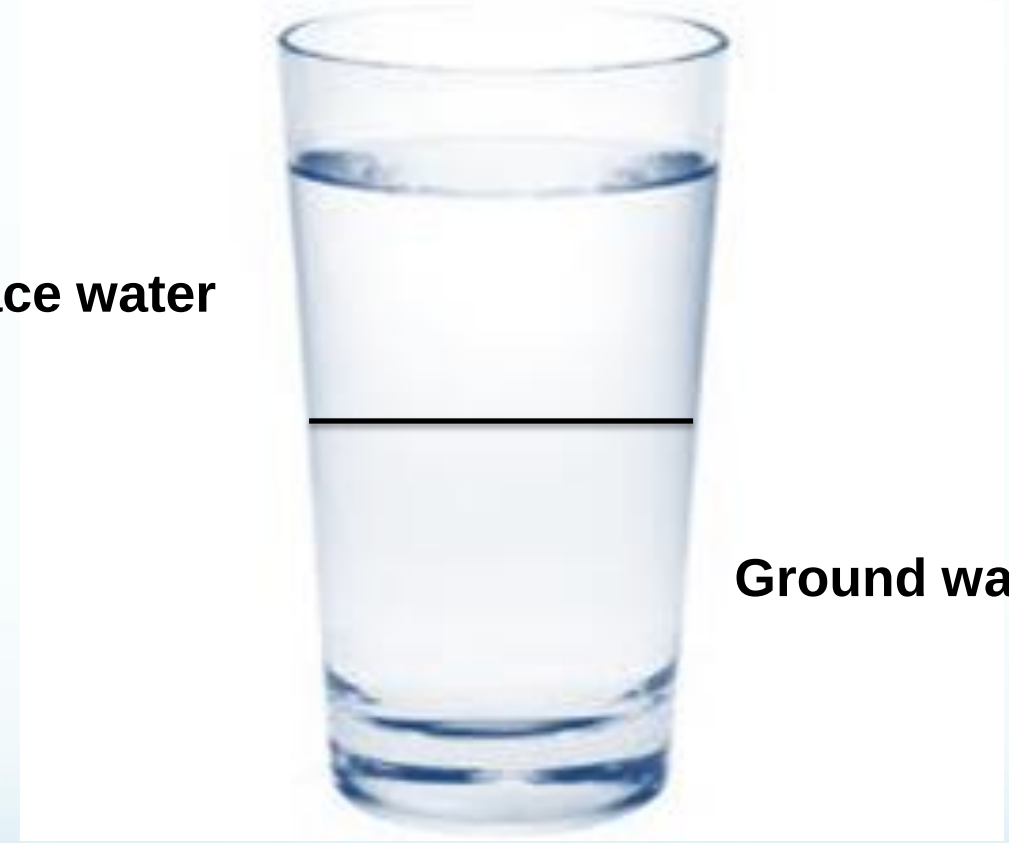
Clean Water is a Right

All Earth's Water in 100 Glasses

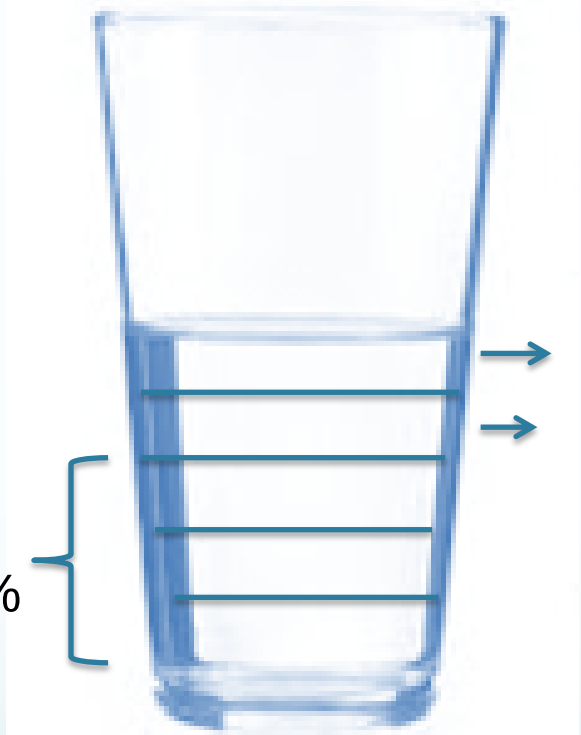
97 are saltwater



All Earth's usable fresh water



All Earth's usable, fresh, surface water



Lake Baikal 20%

5 Great Lakes 20%

All other lakes
and streams 60%

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

19 Precious Drops

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

Lake Erie's 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

5+ Years After Toledo's Water Crisis some are still looking for solutions!

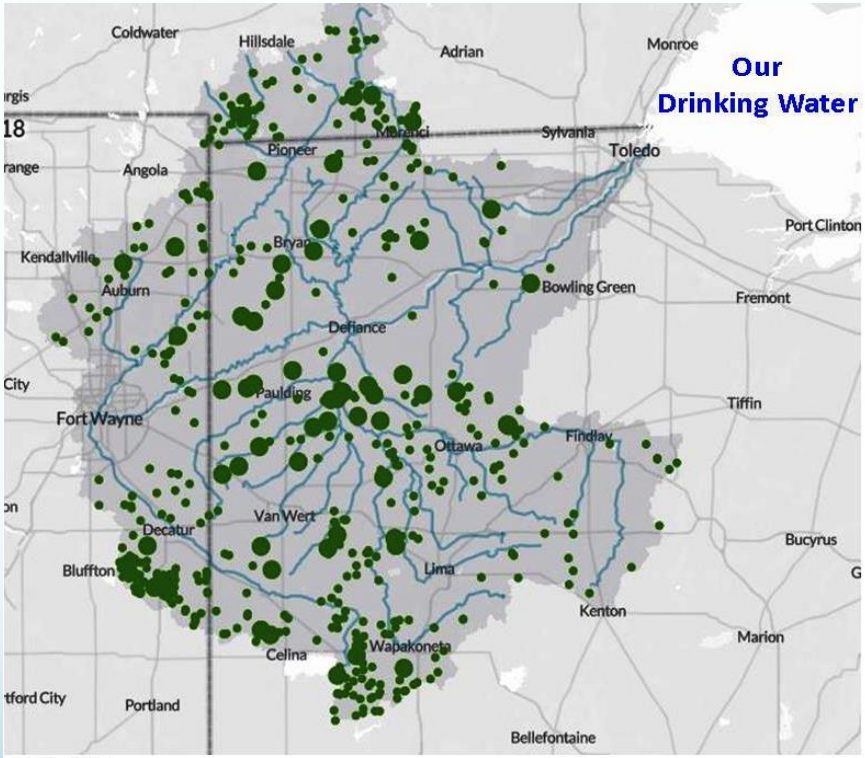
Maumee River Watershed: 775 Animal Factories

Over twice the waste of Los Angeles and Chicago combined

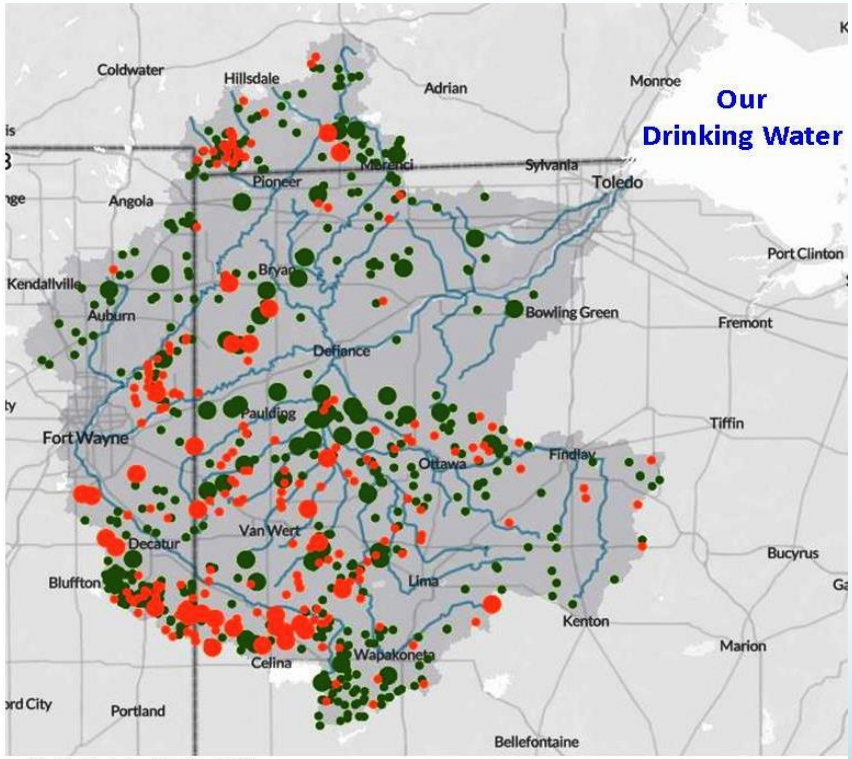
Photo: courtesy of ECCSCM

Animal Factories Exploding in Maumee Watershed.

- 775 Facilities. Animals increased from 9 to 20 million.
- These Factories Now Responsible for 69% of Phosphorus.
- Phosphorus from commercial fertilizer went down.
- Over twice the waste of Chicago and L.A. combined



2005



2005-2018

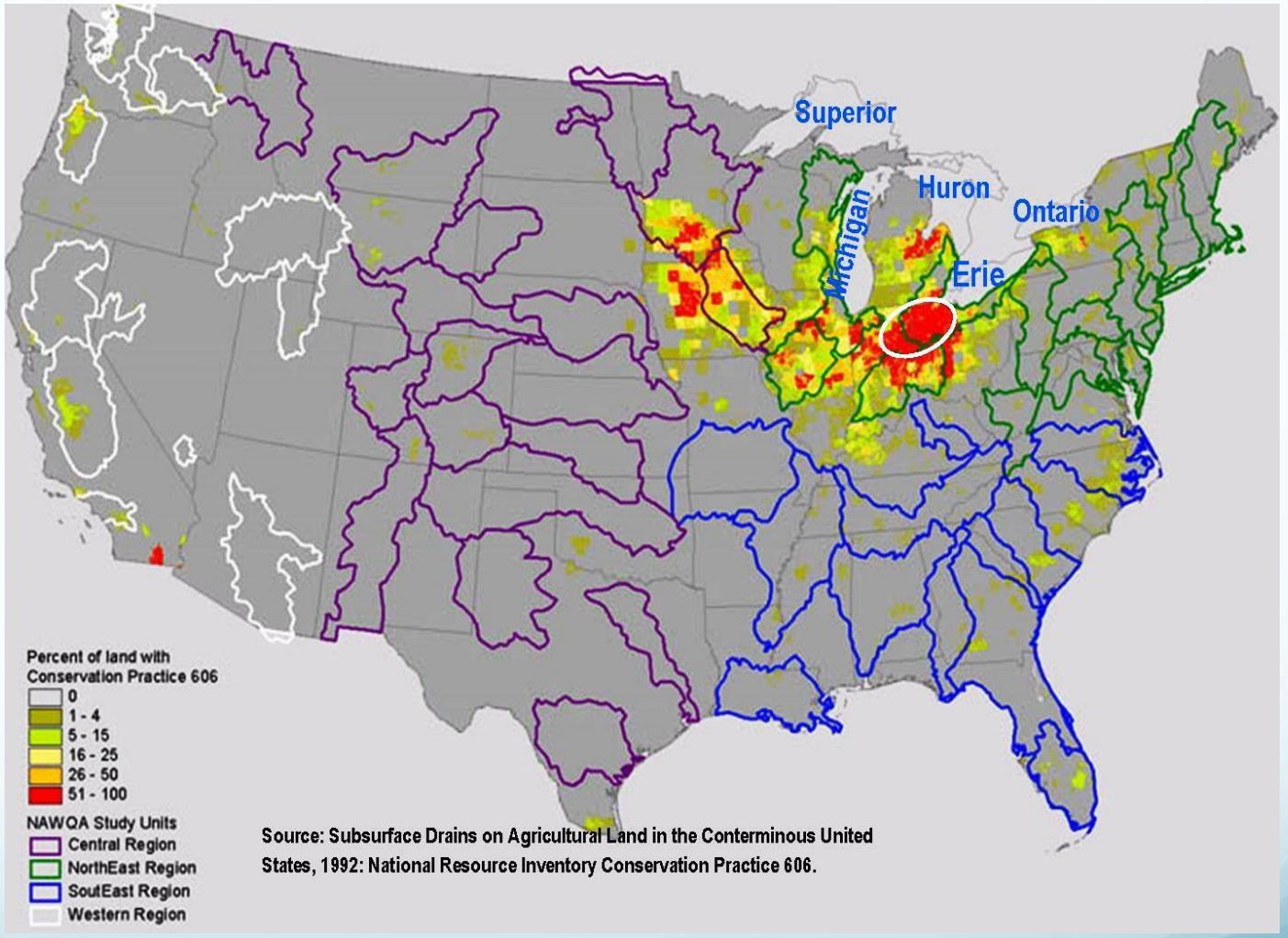
ewg

ENVIRONMENTAL LAW & POLICY CENTER

Subsurface Drainage

Of all the Great Lakes Erie is:

- **Shallowest**
- **Most southerly**
- **Warmest**
- **Highest concentration of drain tiles**
- **Perfect Storm for H.A.B.s (harmful algal blooms)**
- **Nation's 2nd largest, free public toilet for CAFOs**



The Lake Belongs to Everyone…

- **No Person or Corporation has the right** to impair our water
- **Animal Factory owners *shift costs onto the public:***
  - **Toledo Water Customers pay $6 million/year** more to treat drinking water since the 2014 water emergency. **$50 million for ozonation**
  - **Existing Businesses Suffer:** lake tourism, charter fishing, restaurants, factories…any business that uses water.
  - **New Jobs Go Elsewhere**
  - **Quality of Life is Reduced** directly for everyone who uses Lake Erie to fish, boat, swim, or sightsee.

…But It's Not Healthy

- **Water Crisis of 2014** left 400,000+ citizens without drinking water for 2.5 days
- **Harmful "Algal" Blooms (actually cyanobacteria)** elevate toxins in drinking water
- **Record "Algal" Cover in 2015** – 300 square miles

And Green is not good in this case

- **Overabundance of nutrients,** primarily **Soluble/Reactive Phosphorus,** feed the microcystis bacteria, creating microcystin toxins

- **Pollution/nutrients** come from **"point sources"** like factories, sewage treatment and food processing plants and CAFOs, plus **"non-point sources"** like corn and soybean fields, golf courses, lawns, faulty septic tanks

- **88% of excess nutrients in W. Lake Erie Basin from agriculture,* about 50% of that via subsurface drainage.****

* OEPA: *Nutrient Mass Balance Study for Ohio's Major Rivers*

** USDA and Royal Swedish Academy of Sciences: *Phosphorus losses from monitored fields with conservation practices in the Lake Erie Basin*

Animal Factories Put Our Health At Risk

- **Air and water contaminants:** Feces, urine, viruses, antibiotic-resistant E. coli and salmonella, methane, ammonia, hydrogen sulfide,
- **More Manure = More Phosphorus = More Microcystis** (bacteria) **= Microcystin** (toxin) + **BMAA** beta-methyl-amino-L-alanine linked to ALS and Parkinson's
- **Microcystin Exposure** causes nausea, vomiting, diarrhea, fever
- **Microcystin LR is a Liver Toxin**
  - Haimen, China–30x greater liver cancer rate among fishermen 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** (3 millionth mg)
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

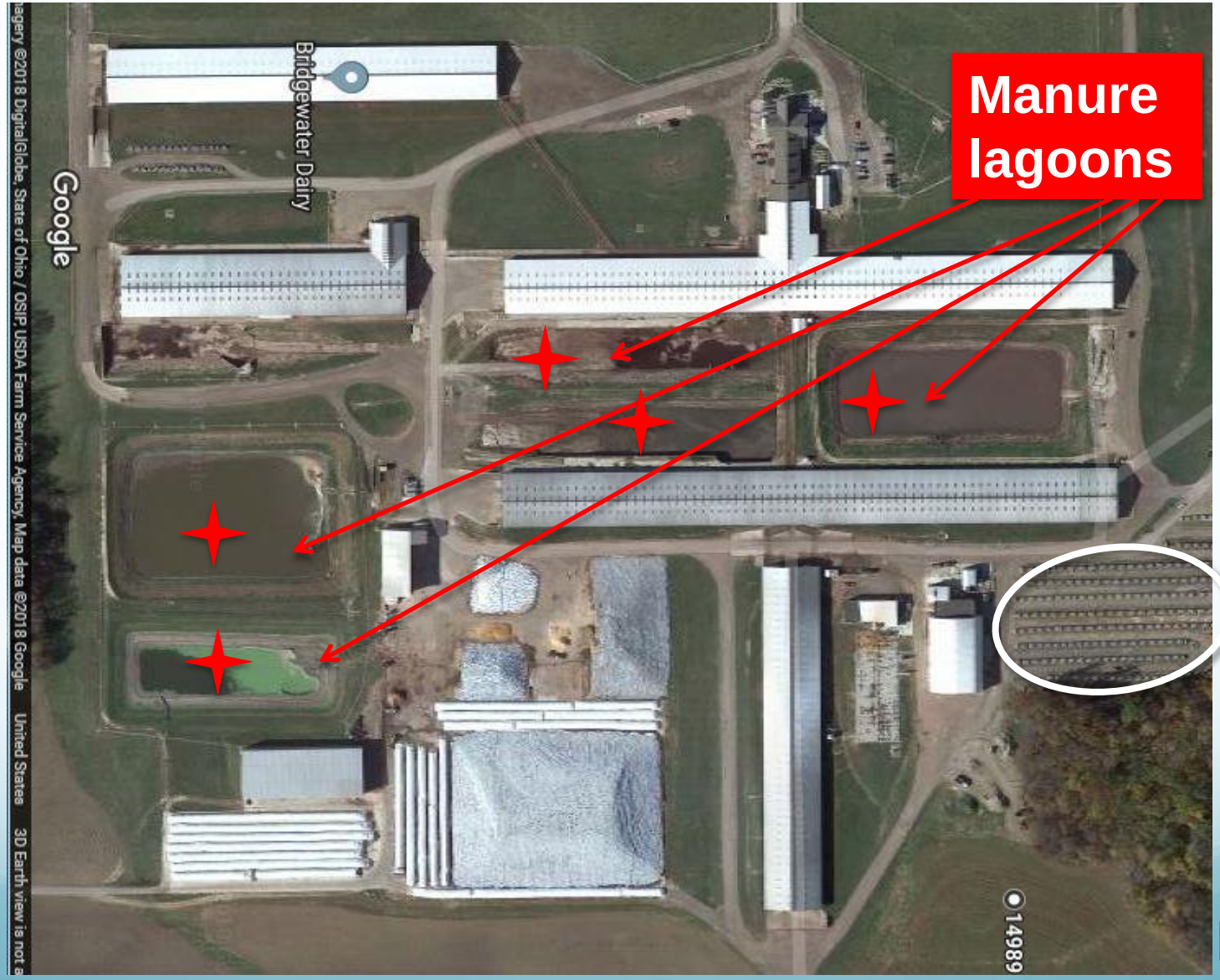
Does Treatment to Rid Water of Microcystin Make Us Safer?

- Treating water with Chlorine to reduce Microcystin produces carcinogens like **Trihalomethanes.** Reducing THMs adds significantly to water treatment costs -- $50M for ozonation at Toledo Water Treatment Plant

Source: Water Research Center

Now let's follow the manure…

3,900 cows at Bridgewater Dairy in Williams County, generate more animal waste every year than Perrysburg, Sylvania, Maumee, Defiance and Fremont, combined.



…repeated field applications.

Photo: courtesy of ECCSCM

Excess P, N, e. coli, etc. through soil to underground drainage …

Photo: courtesy of ECCSCM

…into streams that feed Lake Erie…

Photo courtesy ECCSCM

... causing annual cyanobacteria blooms.

Satellite view of Lake Erie showing algal bloom 2015

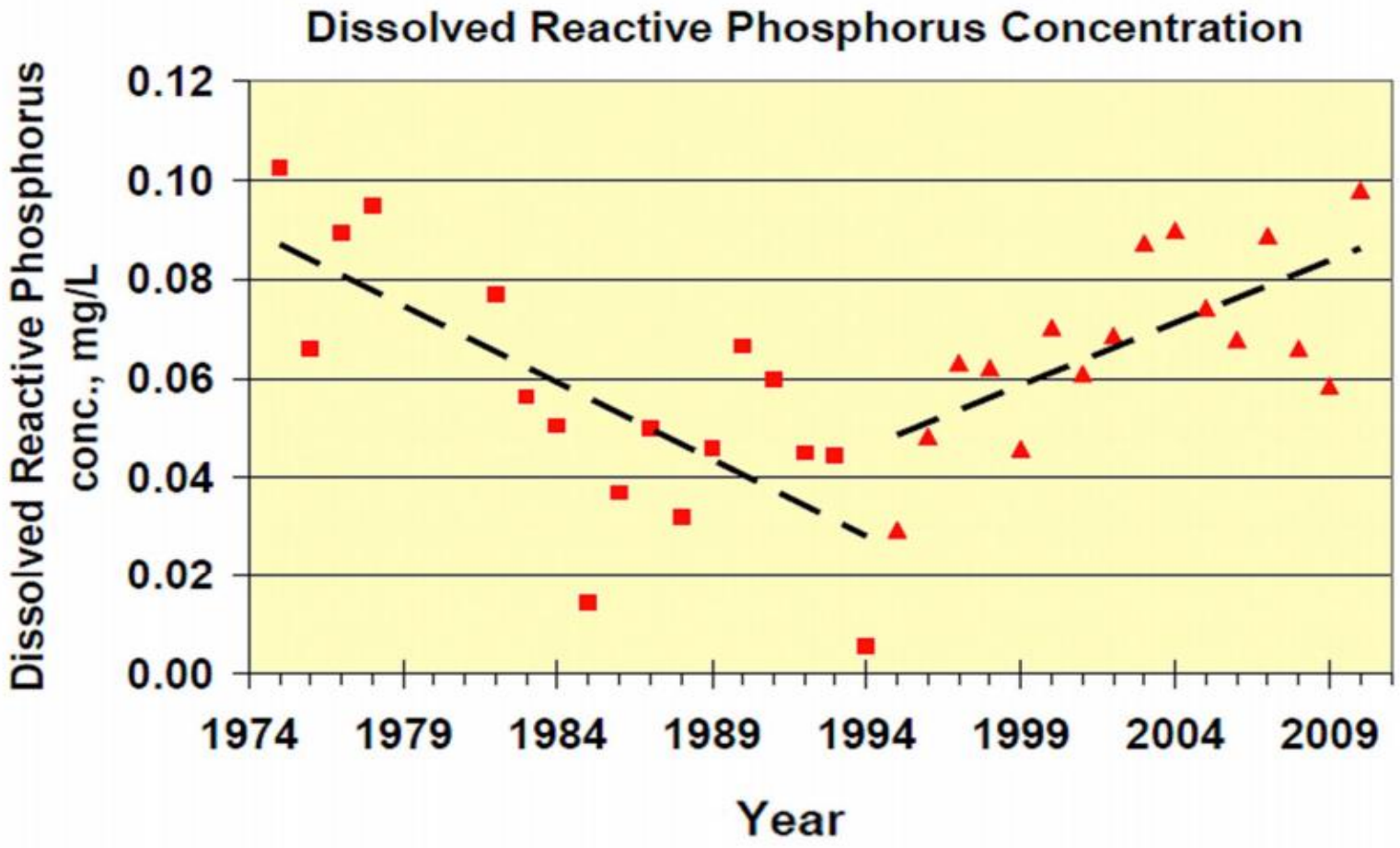
What We're Doing Doesn't Work

- **Current voluntary "Best Management Practices" (BMPs) help control sediment, nitrates and TP (total phosphorus)**
  - Examples: Buffer strips, grassed waterways, cover crops, no-till
- **<u>Best Management Practices do not control Dissolved Phosphorus</u>**
- **Liquid manure + subsurface drainage systems increase DP flow to the lake**

Buffer Strip **Photo: Mankato Free Press**

Grassed Waterway **Photo: Evrardo**

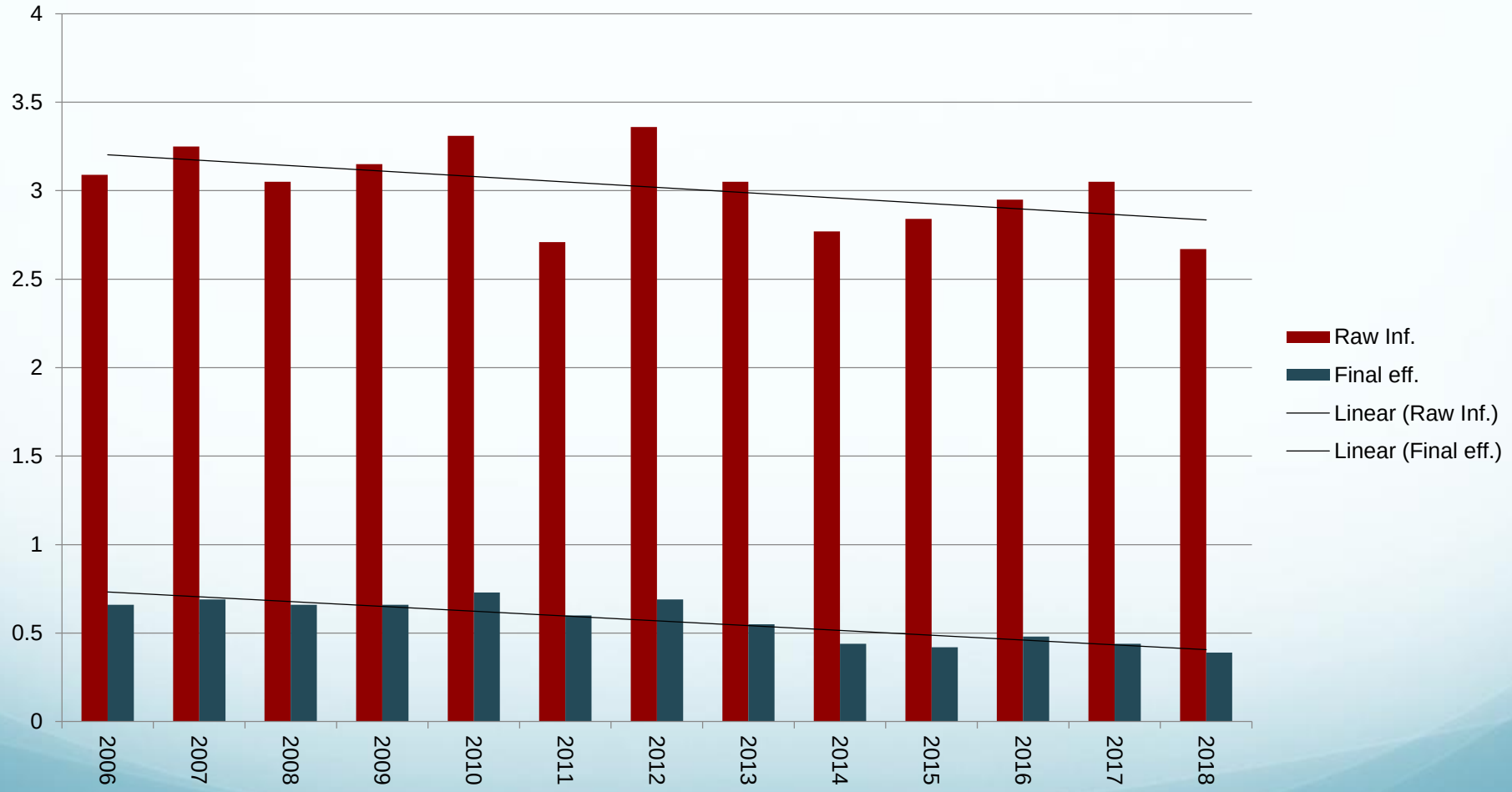
And Here's the Proof:



Ohio Sea Grant and Stone Laboratory

Bay View Waste Water Treatment Plant

Phosphorous: average raw and final effluent mg per liter 2006 - 2018



ACLE Recommends:

✓ **Support the Lake Erie Bill of Rights**

✓ **Declare Western Lake Erie Basin impaired**

Supposed to begin a process under the Clean Water Act

- **Determine sources and amounts**
- **Action plan** based on Total Maximum Daily Loads (TMDLs)
- ***Mandatory* reduction goals** with report cards and deadlines
- **Accountability** for meeting goals

- **No more Animal Factories**
- **Sewage treatment plants for existing ones**
- **Apply manure the same as fertilizer**
- **Less $ to BMPs, More $ to Impaired process**

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 Farm Bureau challenge to TMDL

The Good News Is…
TMDLs 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

The Washington Post

Scientists: Chesapeake Bay hasn't been this healthy in 33 years

June 15, 2018

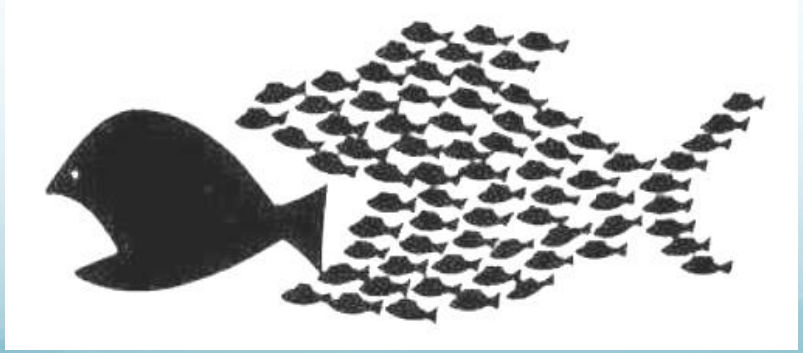
This is a Political Fight

- **Karl Gebhardt, Ohio EPA's former Deputy Chief worked 19 years as Ohio Farm Bureau lobbyist: "TMDLs aren't needed," keep voluntary measures.***
- **Best Management Practices = Good money after bad**
- **WLEB CAFOs given $17 million in public support between 2008-2015**
- **$$ needed to support sustainable farming**
- **Big political decision: who will pay to clean up Lake Erie?**
  - **Animal Factory owners?**
  - **Farmers using less commercial fertilizer?**
  - **Water and sewer ratepayers?**

*** Toledo Blade 4/18/2018**

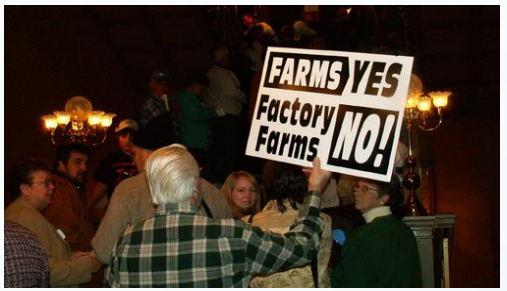
We Can Win
We've Done it Before!

- 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

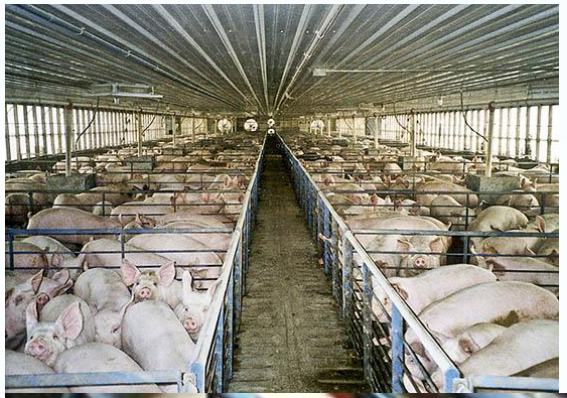
- **Support the Lake Erie Bill of Rights.**
- **Spread the word** to friends, relatives, neighborhood groups, churches, unions
- **Demand** Animal Factories install sewage treatment plants. Get local government resolutions for a moratorium.
- **Get active with ACLE!** Join a committee. Donate.
- ***<u>We are not going away until Lake Erie is healthy!</u>***



"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)***

Thank You!

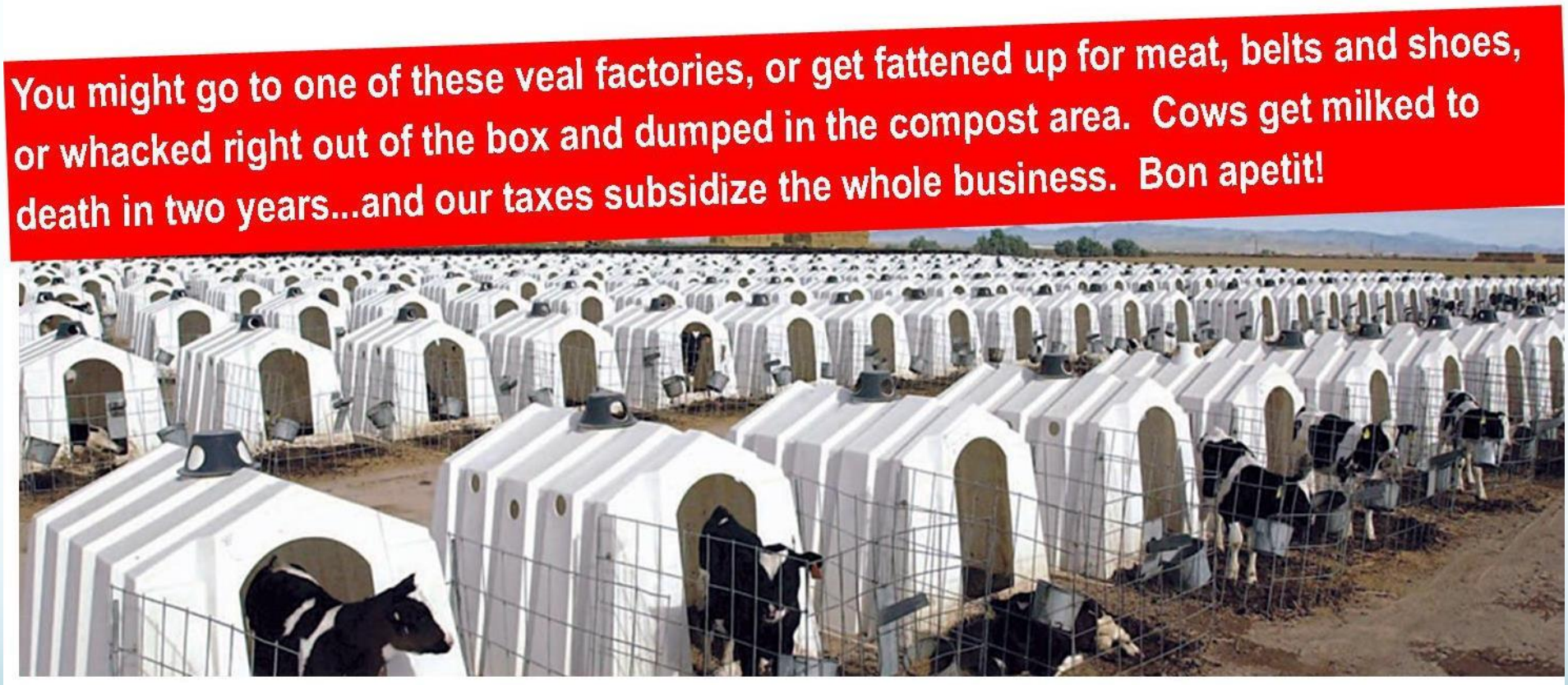
Advocates for a CLEAN Lake Erie





When you're not born a cow at a dairy CAFO, what happens?



Your Tax Dollars At Work

Grand Lake St. Mary's

Celina Daily Standard 4-27-2018

OEPA/ODNR "proof" that distressed works

US National Library of Medicine National Institutes of Health

https://www.ncbi.nlm.nih.gov/pubmed/29415096

J Environ Qual. 2018 Jan;47(1):113-120. doi: 10.2134/jeq2017.08.0338.

Changes in Water Quality of Grand Lake St. Marys Watershed Following Implementation of a Distressed Watershed Rules Package.

Jacquemin SJ, Johnson LT, Dirksen TA, McGlinch G.

Abstract

Grand Lake St. Marys watershed has drawn attention over the past decade as water quality issues resulting from nutrient loading have come to the forefront of public opinion, political concern, and scientific study. The objective of this study was to assess long-term changes in water quality (nutrient and sediment concentrations) following the distressed watershed rules package instituted in 2011. Since that time, a variety of rules (e.g., winter manure ban) and best management practices (cover crops, manure storage or transfers, buffers, etc.) have been implemented. We used a general linear model to assess variation in total suspended solids, particulate phosphorus, soluble reactive phosphorus (SRP), nitrate N, and total Kjeldahl nitrogen concentrations from daily Chickasaw Creek (drains ~25% of watershed) samples spanning 2008 to 2016.

Parameters were related to flow (higher values during high flows), timing (lower values during winter months), and the implementation of the distressed watershed rules package (lower values following implementation). Overall, reductions following the distressed designation for all parameters ranged from 5 to 35% during medium and high flow periods **(with exception of SRP).**

Reductions were even more pronounced during winter months covered by the manure ban, where all parameters (including SRP) exhibited decreases at medium and high flows between 20 and 60%. While the reductions seen in this study are significant, concentrations are still highly elevated and continue to be a problem. We are optimistic that this study will serve to inform future management in the region and elsewhere.

Toxin levels GLSM

Algal Toxin Results from Lake Erie, Ohio State Park Beaches, and Public Water Supplies (2011 - Present)

(Last Updated: 7/31/2014) *= qualified data

Date Sample Collected	Sample Type (Raw, Finished)	Water Body Type (Lake Erie, Inland Lake, Public Water System, River)	Location	Toxin	Result	Unit
7/30/2014	Finished	Public Water System	Celina, City of, Finished Water	Microcystins	<0.30	ppb
7/30/2014	Raw	Inland Lake	Celina, City of, PWS Intake, Grand Lake St. Marys	Microcystins	49.8	ppb
7/29/2014	Raw	Inland Lake	Grand Lake St. Marys, State Park Camp Beach	Microcystins	64.4	ppb
7/29/2014	Raw	Inland Lake	Grand Lake St. Marys, State Park Main Beach East	Microcystins	74.4	ppb
7/29/2014	Raw	Inland Lake	Grand Lake St. Marys, State Park Main Beach West	Microcystins	75.6	ppb
7/29/2014	Raw	Inland Lake	Grand Lake St. Marys, Windy Point Beach	Microcystins	95.6	ppb
7/28/2014	Raw	Lake Erie	Lake Erie, Maumee Bay State Park Beach	Microcystins	19	ppb

Heidelberg Univ. Sampling Sites

Can show gross amounts but no accountability for sources

20016 USDA Environmental Quality Incentives Program (EQIP) Payment Schedule

Practice_ Code	Cost_Share_ Program	Practice_Name	Component	Unit_Type	Unit_Cost	Cost_Type	Share_Rate
128	EQIP	Agricultural Energy Management Plan - Written	AgEMP Small, One Enterprise	Number	1601.98	PR	100
128	EQIP	Agricultural Energy Management Plan - Written	HU-AgEMP Small, One Enterprise	Number	1922.37	PR	100
316	EQIP	Animal Mortality Facility	HU-Composter with Storage, Turkey	Lb/Day	207.57	PR	100
316	EQIP	Animal Mortality Facility	Small Rotary Drum 270lbs. to 523lbs. of Daily Mortality with composter	Each	30090.98	PR	100
102	EQIP	Comprehensive Nutrient Management Plan - Written	HU-Dairy Operation Greater Than or Equal to 300 AU and Less Than 700 AU with Land Application	Number	10929.46	PR	100
102	EQIP	Comprehensive Nutrient Management Plan - Written	Dairy Operation Greater Than or Equal to 700 AU with Land Application	Number	10127.28	PR	100
412	EQIP	Grassed Waterway	HU-GWW > 1,000ft long	Acre	1668.51	PR	100
412	EQIP	Grassed Waterway	GWW with geotextile or stone checks	Acre	2085.57	PR	100
327	EQIP	Conservation Cover	HU-Introduced Species	Acre	164.82	PR	100
327	EQIP	Conservation Cover	Native Species	Acre	231.28	PR	100
647	EQIP	Early Successional Habitat Development/Management	Habitat Selective Herbicide	Acre	35.27	PR	100
595	EQIP	Integrated Pest Management (IPM)	HU-Advanced IPM Orchard All RCs	Acre	238.4	PR	100
595	EQIP	Integrated Pest Management (IPM)	Advanced IPM S-Farm All RCs	Each	782.39	PR	100
670	EQIP	Lighting System Improvement	HU-Lighting LED dusk to dawn lighting fixture	Each	974.35	PR	100
670	EQIP	Lighting System Improvement	Lighting - LED high bay lighting fixtures	Each	1380.6	PR	100
606	EQIP	Subsurface Drain	HU-Corrugated Plastic Pipe (CPP), Single-Wall, = 8 Inches	Foot	5.79	PR	100
606	EQIP	Subsurface Drain	Corrugated Plastic Pipe (CPP), Twin-Wall, = 8 Inches	Foot	10.08	PR	100
313	EQIP	Waste Storage Facility	Earthen Storage Facility greater than 50K ft3 Storage $38,000	CuFt	0.21	PR	100
313	EQIP	Waste Storage Facility	Earthen Storage Facility High Water Table $168,000	CuFt	0.99	PR	100
642	EQIP	Water Well	HU-Plastic Casing for unconsolidated geologic sites with unstable rock formations	Foot	28.42	PR	100
642	EQIP	Water Well	Steel casing for consolidated geologic sites with stable rock formations	Foot	18.89	PR	100