AGRICULTURAL NUTRIENT MANAGEMENT: STATE INNOVATIONS AND LOCAL RESPONSIBILITY

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AGRICULTURAL & FOOD LAW CONSORTIUM

THE UNIVERSITY of MISSISSIPPI SCHOOL OF LAW

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NUTRIENT MANAGEMENT PROJECT

- FOR THE PAST FEW YEARS, THE NSGLC HAS BEEN WORKING WITH ATTORNEYS AT OSU ON ISSUES REGARDING NUTRIENT MANAGEMENT.
- THE PROJECT HAS FOCUSED ON:
  - THE REGULATORY GAP IN THE CLEAN WATER ACT;
  - THE EFFECTS OF NUTRIENT POLLUTION ON LOCAL GOVERNMENTS AND PUBLIC WATER SUPPLIERS; AND
  - STEPS STATES ARE TAKING TO CONTROL NUTRIENT POLLUTION AND FILL THE REGULATORY GAP.

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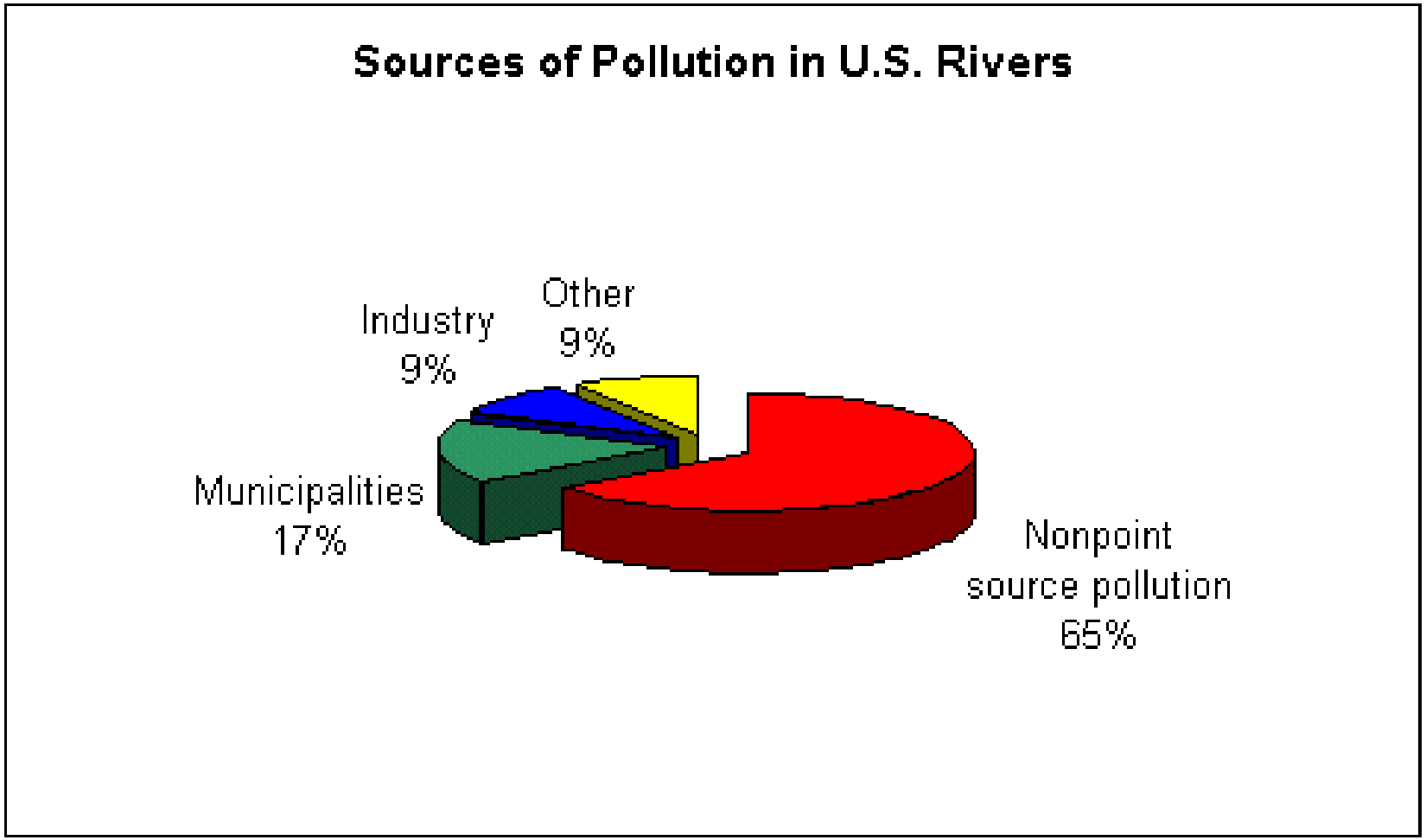
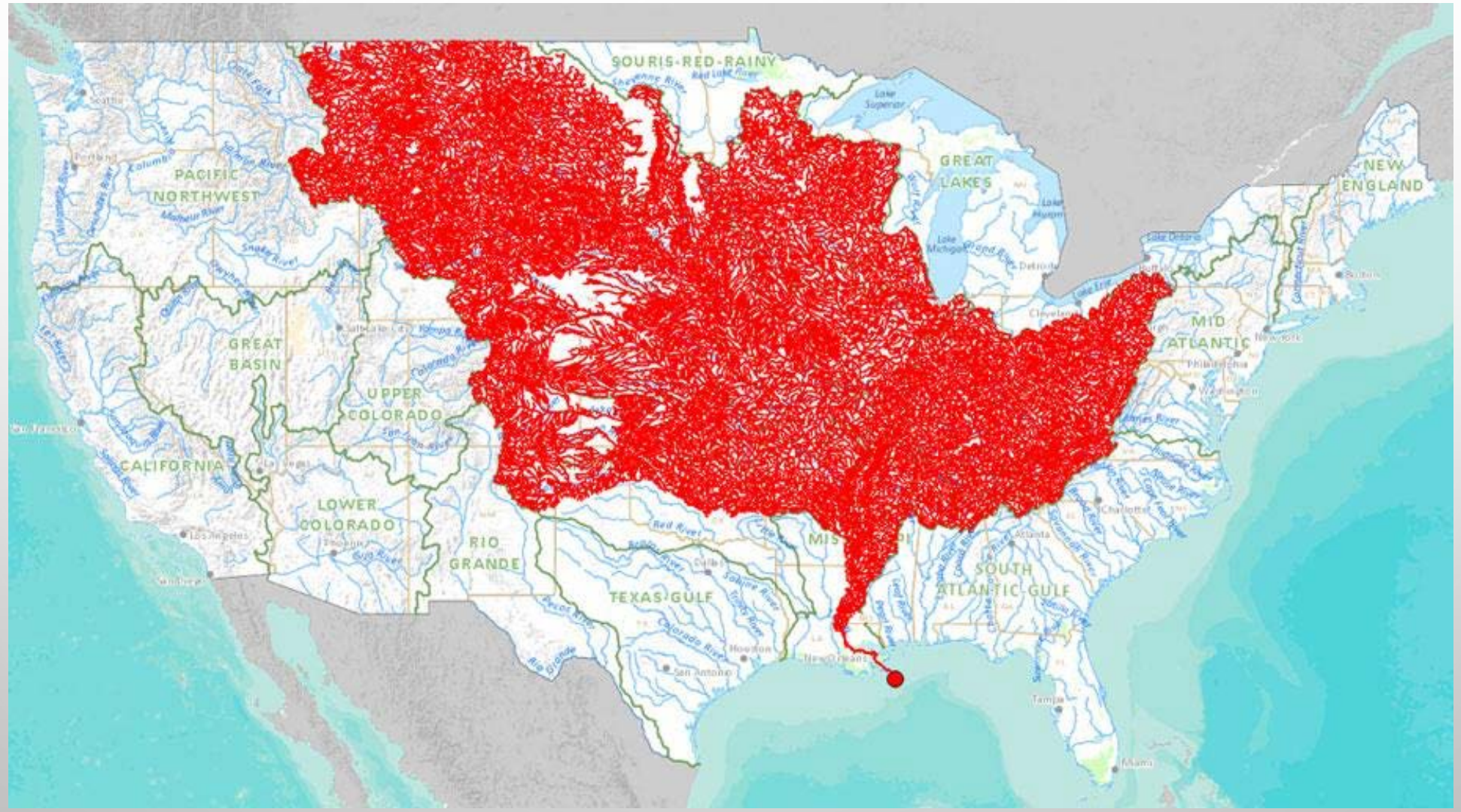
CLEAN WATER ACT

- PURPOSE: "TO RESTORE AND MAINTAIN THE CHEMICAL, PHYSICAL, AND BIOLOGICAL INTEGRITY OF THE NATION'S WATERS."
- REGULATES SURFACE WATER
- COOPERATIVE FEDERALISM
  - Federal rules, state implementation
- TWO TYPES OF DISCHARGES:
  - Point sources
  - Nonpoint sources

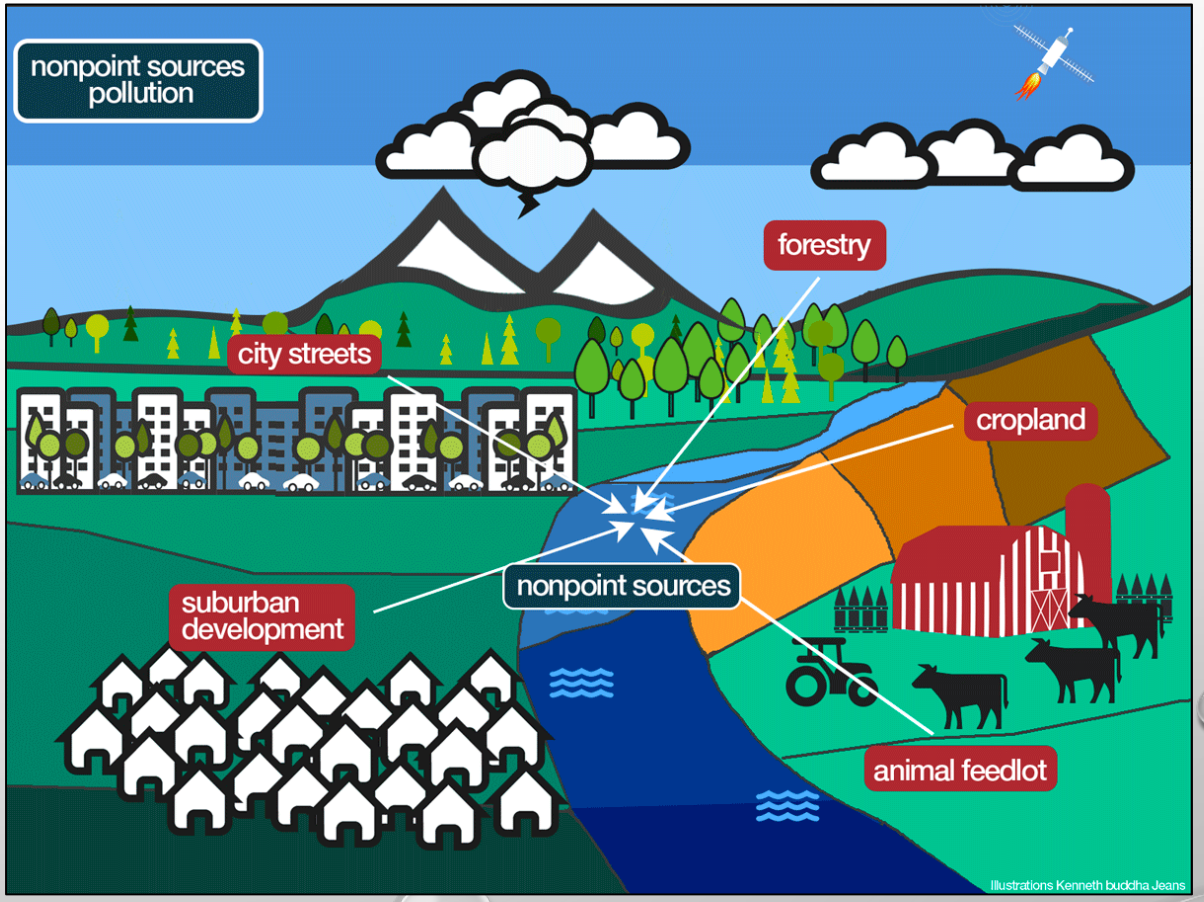
POLLUTION TODAY



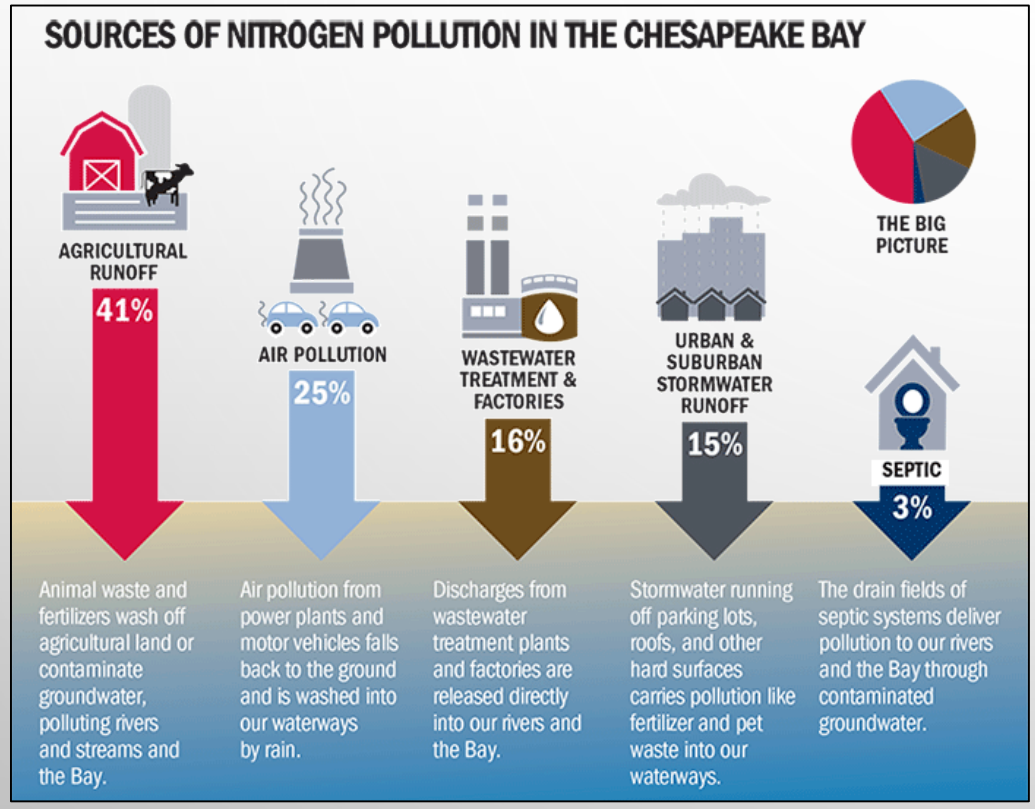

SOURIS-RED-RAINY
GREAT LAKES
NEW ENGLAND
PACIFIC NORTHWEST
GREAT BASIN
UPPER COLORADO
MID ATLANTIC
CALIFORNIA
LOWER COLORADO
RIO GRANDE
TEXAS-GULF
SOUTH ATLANTIC-GULF

NONPOINT SOURCE PROGRAM

- Section 319 requires states to develop nonpoint source management programs.
- States with approved programs are eligible for federal grants to assist with implementation.
- Must identify waters that are impaired or threatened by nonpoint sources of pollution.



GETTING AT NPS THROUGH TMDLS



Graphic Credit: Chesapeake Bay Foundation

- CWA requires states to establish water quality standards.
- Waters not meeting these standards are considered impaired and "Total Maximum Daily Loads" must be developed.
- TMDLs set a pollution "budget" necessary to achieve state water quality standards.
- TMDLs must address and set allocations for both point source and nonpoint sources.

CWA POINT SOURCE PERMITS

- DISCHARGES FROM POINT SOURCES PERMITTED PURSUANT TO TWO PERMITS:

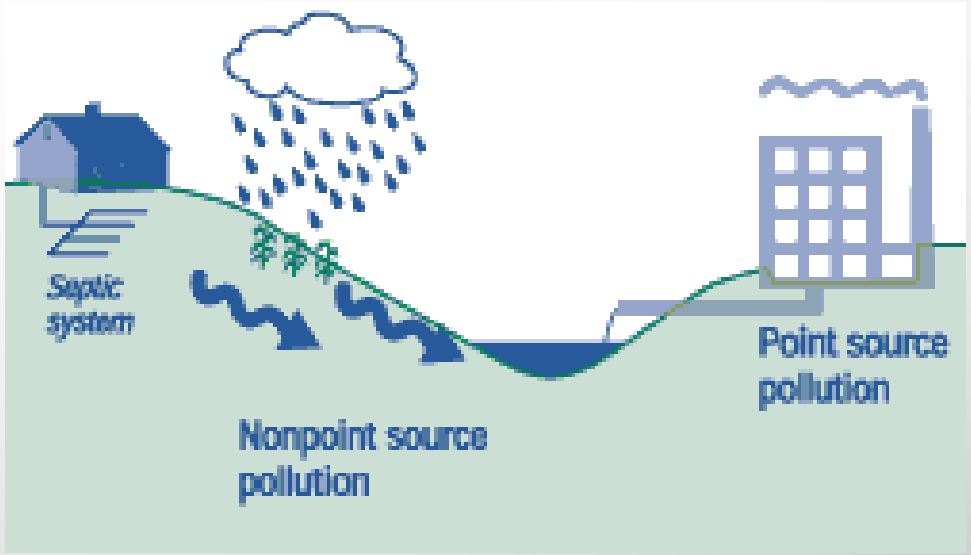
  1) NPDES permit: EPA/state agency

  2) Dredge or Fill permit: Army Corps of Engineers/state agency

- NPDES PERMIT NEEDED FOR:
  - The discharge of a pollutant
  - From a point source
  - Into navigable water

POINT SOURCE

- Point Source- the release of pollutants from a single, clearly identifiable source
  - Ex: channel, tunnel, pipe.
- Easier to manage and control
- Diffuse pollution like runoff isn't regulated:
  - *But what about when a town collects the runoff to discharge as stormwater?*



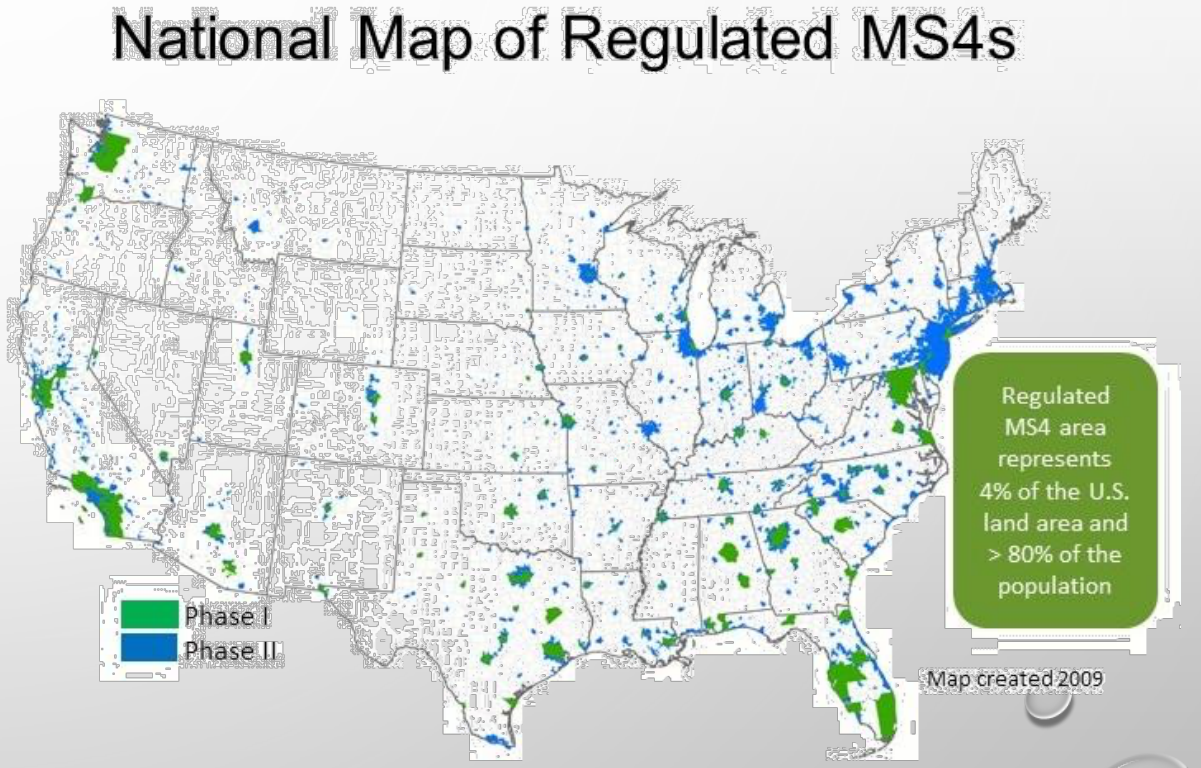
WASTEWATER

- Centralized wastewater collection systems serve over 75% of the U.S. population.
  - Significant source of nutrients in surface waters.
  - CWA requires they meet at least secondary treatment.
- Setting effluent limits can reduce the amount of N and P getting into waterways.

- But there are some issues facing wastewater treatment plants:
  - Many facilities are old.
  - Conventional secondary biological treatment processes may not substantially remove N and P.
  - The character and quantity of contaminants is constantly changing.
  - Population growth, farm runoff, and increased urbanization are further taxing these systems.

STORMWATER

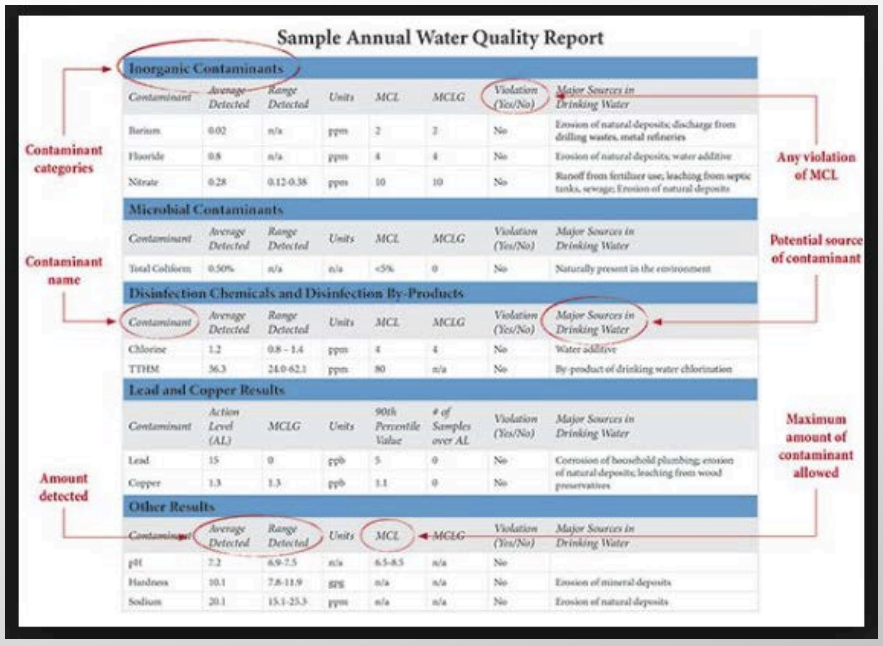
- The CWA requires jurisdictions with large populations to obtain NPDES MS4 (Municipal Separate Storm Sewer System) permits for their stormwater discharges.
    - Permit will limit the amount of certain pollutants that can be discharged.
- Local governments can be on the hook for the nutrients collected in runoff and discharged as stormwater.
    - *How can they best meet these requirements?*
    - *What steps can they take?*



What issues are Public Water Suppliers facing?

SAFE DRINKING WATER ACT

- EPA directed to regulate contaminants in drinking water that can adversely effect health
  - States can apply to become the primary regulatory/enforcement agency
- Requires delivery of Consumer Confidence Reports (CCR)
- Applies only to public water systems
  - Private wells are not regulated



HABS AND DRINKING WATER: TOLEDO

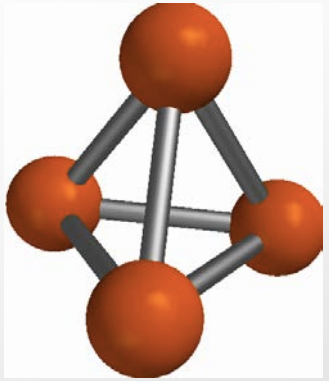
In 2014, a cyanobacterial HAB in Lake Erie forced the city of Toledo, Ohio to issue a "do not drink" order for tap water that resulted in 500,000 people being without drinking water for several days.

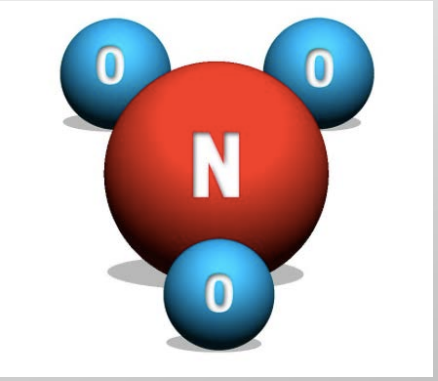
- An algal bloom is poisonous if consumed.
- Children, the elderly, people with compromised liver function, and pets are especially vulnerable to the toxins present in HABs.
- Economists estimate that the drinking water restriction resulted in $65 million in lost benefits.

Photo of 2015 Algal Bloom at Stone Lab, Courtesy of Ohio Sea Grant

NUTRIENT POLLUTION REGULATION UNDER SDWA

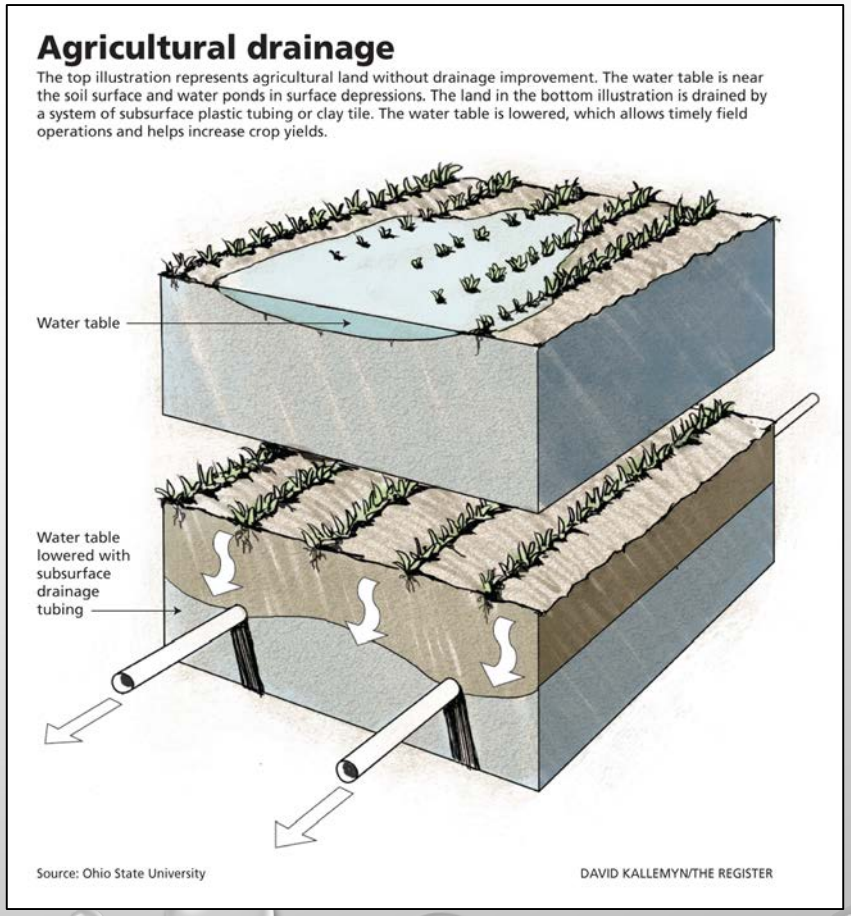
- PHOSPHORUS **NOT** REGULATED UNDER THE SDWA
- NITRATES ARE REGULATED
  - MCLG= 10 MG/L
  - MCL = 10 MG/L
- TOTAL NITRATE AND NITRITE
  - MCLG AND MCL = 10 MG/L
- STATE CAN ALLOW A NITRATE LEVEL NOT IN EXCESS OF 20 MG/L IN NON-COMMUNITY WATER SYSTEMS IF THE SUPPLIER CAN DEMONSTRATE:
  - WATER NOT AVAILABLE TO CHILDREN UNDER 6 MONTHS OLD
  - SYSTEM MEETS PUBLIC NOTIFICATION REQUIREMENTS
  - NOTIFY STATE/LOCAL PUBLIC HEALTH AUTHORITY IS EXCEEDING MAXIMUM NITRATE LEVELS
  - NO ADVERSE HEALTH EFFECTS WILL RESULT.





NITRATES AND THE DES MOINES WATER WORKS

- DES MOINES WATER WORKS SUED THREE IOWA DRAINAGE DISTRICTS OVER HIGH LEVELS OF NITRATES IN ITS WATER SUPPLY.
- SOUGHT ORDER COMPELLING DRAINAGE DISTRICTS TO OBTAIN NPDES PERMITS AND LIMIT NITRATE DISCHARGES.
- IOWA DISTRICT COURT DISMISSED LAWSUIT IN MARCH 2017.



State Responses to Agricultural Nutrient Pollution

Ellen Essman, The Ohio State University

A Project of the Agricultural & Food Law Consortium

This project is funded by the National Agricultural Library, Agricultural Research Service, U.S. Department of Agriculture.

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Ag Nutrient Reduction Categories

- Nutrient Management Plans
- Conservation Programs
- Application Certification & Education
- Application Restrictions
- Private and Nonprofit Partnerships
- Educational/Informational Tools

What is a Nutrient Management Plan?

- Varies from state to state
- Overall goal: reduce the amount of nutrients from fertilizer, manure, and other inputs that are carried from fields to water sources
- States can require certification to write NMPs, records to be kept by farmers, and periodic revisions
- NMPs can include:
  - Soil tests
  - Relevant information about farm or particular fields
  - Manure analysis
  - How much manure is being generated by how many animals
  - Best management practices
  - How nutrients will be applied

Nutrient Management Plans

- Ohio—Voluntary Nutrient Management Plans
- Although required in “watersheds in distress,” in most cases, NMPs are voluntary
- Someone who owns/operates agricultural land *may*
  - Develop a nutrient management plan
  - Or have someone develop one on their behalf
  - Also, may have it approved by their Soil and Water Conservation District or Ohio Department of Agriculture
  - If approved, must be resubmitted for review every 5 years

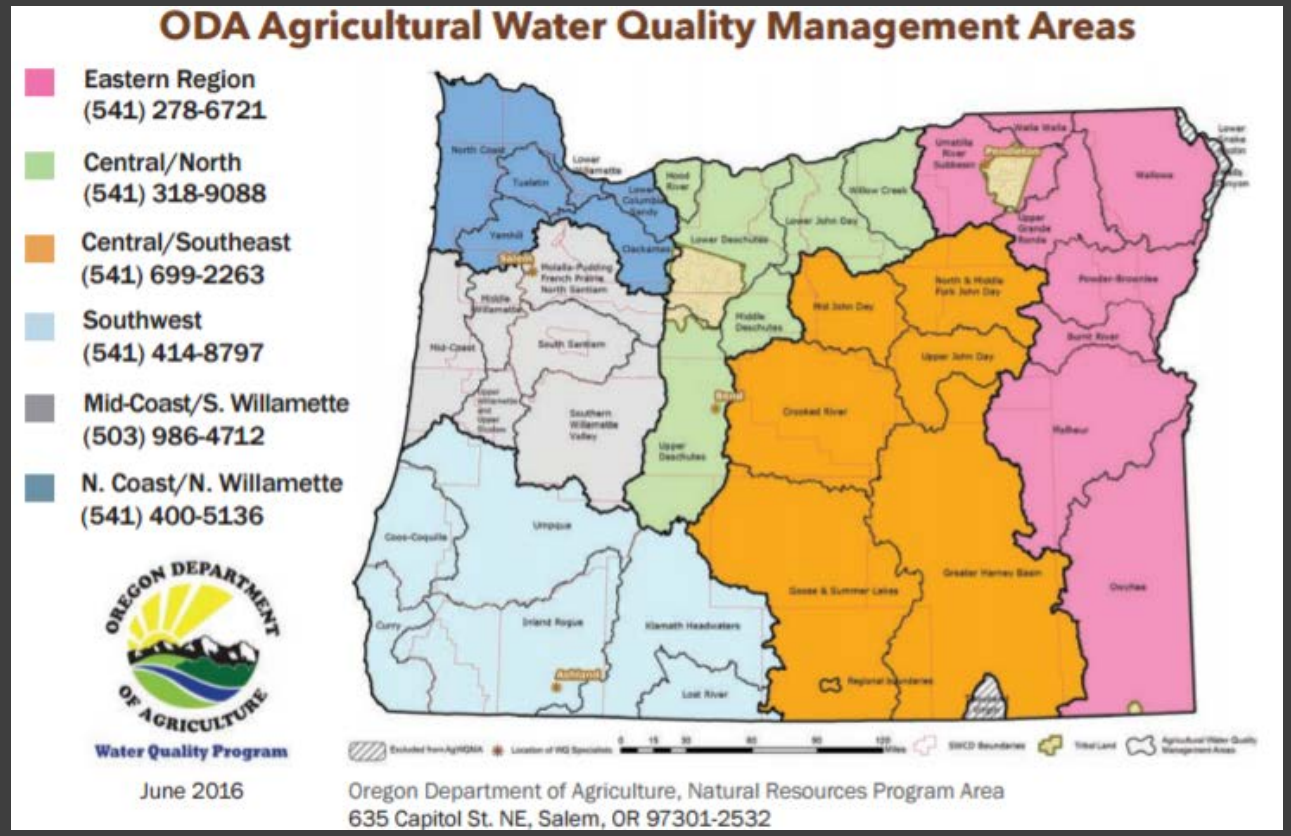
Nutrient Management Plans

- Maryland—Mandatory Nutrient Management Plans
- Required for:
- All farmers grossing $2,500 a year or more
- Livestock producers with 8,000 pounds or more of live animal weight
- Plans specify how much fertilizer, manure, other nutrients may be safely applied to crops
- Must be prepared by someone certified to do so

Nutrient Management Plans

- Oregon—Mandatory Nutrient Management Plans
  - Agricultural Water Quality Area Plans
  - State broken down into 38 watershed-based “Management Areas”
    - Within each Management Area, local committees create Area Plans and subsequent Rules
      - These plans and rules are meant to help landowners and farmers prevent nutrient runoff and other degradation of water
      - Farmers are given a number of choices of tools they can use to comply with the plan—what works best for them/ what is best for the conditions in the area

Nutrient Management Plans
Oregon Agricultural Water Quality Management Area Plans



Conservation Programs

- Numerous types of approaches to assist farmers in protecting water from agricultural runoff
- Two we will focus on:
  - Financial incentives
    - Cost-share, tax breaks
  - Required conservation programs
    - Mandatory under state law

Conservation Programs

- Maryland—Financial Incentives
- Agricultural Water Quality Cost-Share Program
- Grants to cover up to 87.5% of installing best management practices, selection depends on geographic area, how much project will actually improve water quality
  - Qualifying practices include: cover crops, waste treatment lagoons, fencing, riparian buffers, filter strips, grassed waterways, terraces, wetland restoration
- Manure Transport and Matching Service
- Helps animal producers cover costs of transporting excess manure off farm—up to $20 per ton to transport to other farms or alternative use facilities

Conservation Programs

- Maryland—Financial Incentives
  - Income Tax Subtraction Modification for Conservation Equipment
  - Subtraction on tax return of 50% and 100% depending on equipment
  - No-till planters, manure injection equipment, manure spreaders, GPS devices
  - Cost-share grants for manure injection
  - May be used to hire custom operators, rent or lease equipment, or offset operating costs associated with secondary tillage equipment, $55/acre

Conservation Programs

- **Minnesota—Required Conservation Program**
  - Mandatory Buffer Law
    - Requires landowners within certain mapped protection areas, with property next to public waters or public drainage systems, to install and maintain buffers
      - Buffers are meant to protect water resources from runoff pollution
      - Public waters—buffers must be an average of 50 feet wide, continuous
      - Public drainage systems—16.5 feet wide and continuous
    - Agricultural land
      - Have options other than buffers
      - Must provide water quality comparable to buffer protection

Applicator Certification and Education

Ohio

- Requires certification in order to apply fertilizer for agricultural purposes
- Certificates are $30 and valid for three years
- Obtaining certification requires completing either:
  - A three hour nutrient training course, or
  - A fertilizer examination
    - Educational component includes instruction or testing on proper time, place, amount, and application techniques, which form of fertilizer should be used, storage and handling

Applicator Certification and Education

Ohio

- Starting 9/30/17, no person shall apply fertilizer unless they:
  - Have been issued a fertilizer certificate
  - Are acting under the instructions and control of a certificate holder who is either:
    - An immediate family member
    - An employee of the same farm or business
- Certificate holders must keep records of fertilizer they apply, save the records for three years

Application Restrictions

- Some states restrict application of manure and fertilizer:
  - In particular areas;
  - At different times of the year; and
  - Under certain weather conditions.

Application Restrictions

- Ohio
  - Western Basin of Lake Erie
  - Fertilizer (nitrogen and phosphorus) cannot be applied when:
    - Soil is frozen or snow-covered
    - Top two inches of the soil are saturated from precipitation
  - Fertilizer cannot be applied in a granular form when:
    - Local weather forecast contains > 50% chance of precipitation exceeding 1 inch in a 12 hour period
  - Restrictions do not apply when:
    - Fertilizer is injected into the ground
    - Fertilizer is incorporated within 24 hours of surface application
    - Fertilizer is applied to a growing crop

Application Restrictions

- Ohio
  - Western Basin of Lake Erie
  - Manure cannot be applied when:
    - Soil is frozen or snow-covered
    - When the top two inches of soil are saturated from precipitation
    - There is > 50% chance of precipitation exceeding one-half inch in a 24 hour period
  - Restrictions do not apply when:
    - The manure is incorporated within 24 hours of surface application
    - The manure is applied to a growing crop

Application Restrictions

Ohio

- Watersheds in Distress
- Owners, operators, applicators for animal feeding operations cannot apply manure:
  - Between December 15 and March 1
  - Before December 15 and after March 1 when the ground is frozen or there is more than one inch of snow
  - If there is > 50% chance of precipitation greater than half an inch in the 24 hours after application
- Manure can be applied in certain circumstances if it is packed with snow
- Before December 15 and after March 1, if ground is frozen or snow-covered, manure can be applied if it is injected or incorporated into the soil

Private and Nonprofit Partnerships

- Many states rely on private and nonprofit money and partnerships
- These may help fund and implement water quality and nutrient management projects

Private & Nonprofit Partnerships

Illinois

- Keep it 4R Crop
- Ag retailers sign pledge to work with farm customers to reduce nutrient losses by promoting 4Rs of fertilizer application—right source, right rate, right time, and right place

- Nutrient Research & Education Council
- Created by Illinois General Assembly
- Public-private partnership for funding for nutrient research and education programs—money from bulk fertilizer sold in state
- Projects and educational programs funded focus on preventing runoff—cover crops, buffers, wetlands

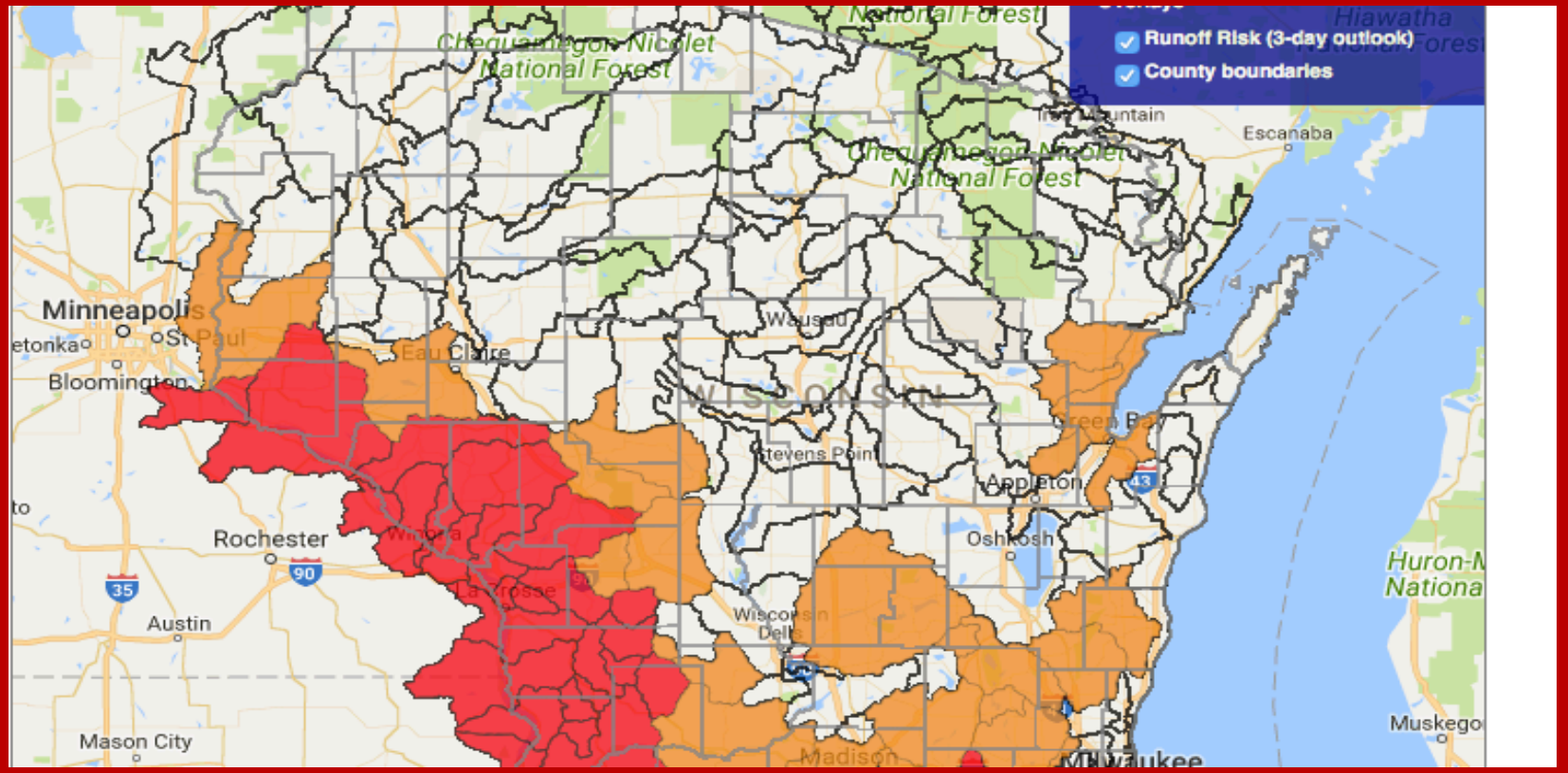
Private & Nonprofit Partnerships

- Illinois
  - Illinois Buffer Partnership
    - Between Trees Forever, Illinois Council on Best Management Practices, Syngenta, GROWMARK, state and federal government agencies
    - Provides cost-share and other assistance for riparian buffers, livestock buffers, stream bank stabilization, wetland development, etc.

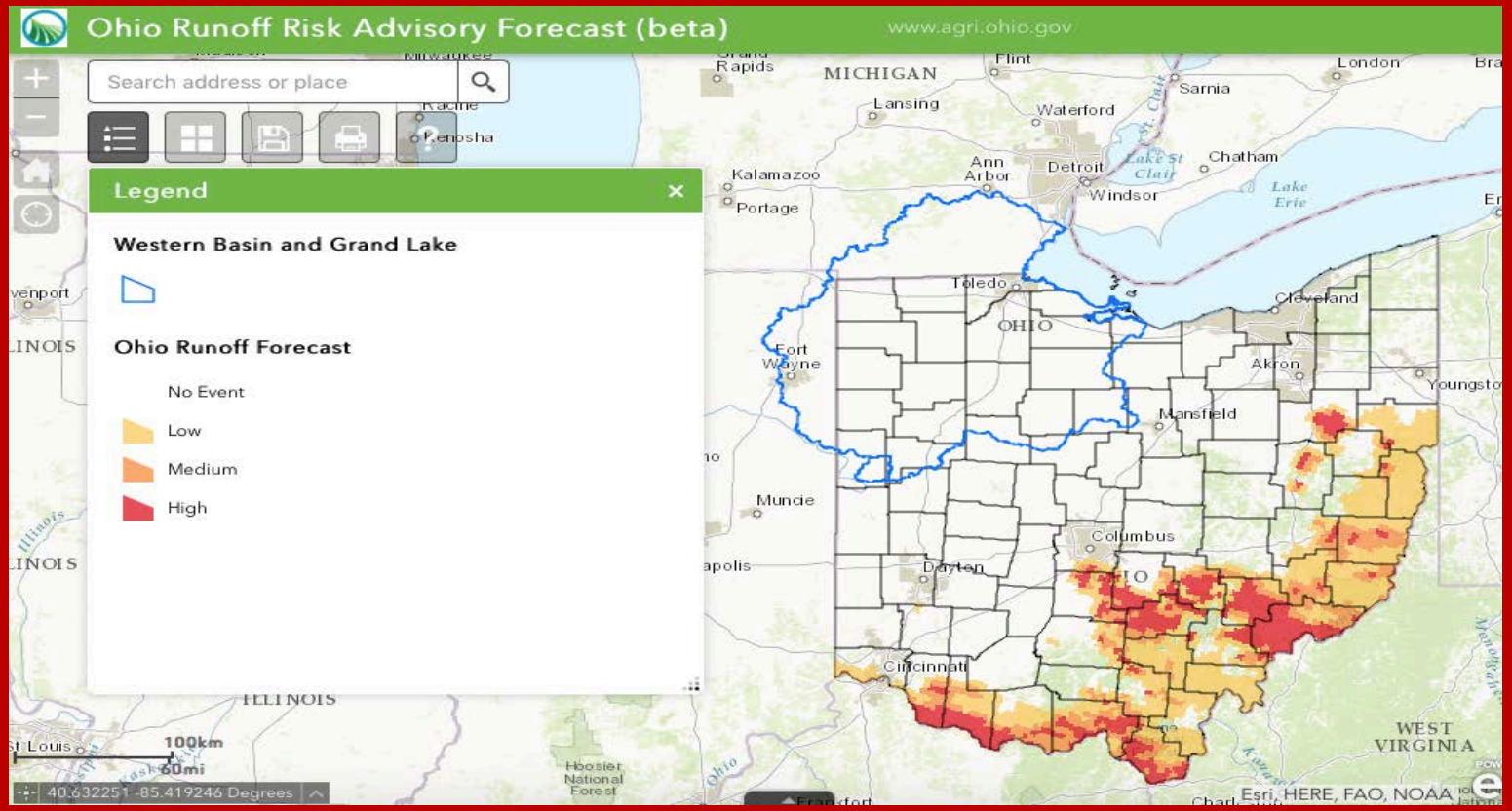
Educational and Informational Tools

- Some states provide online tools for farmers and applicators
- Wisconsin and Ohio have tools that help farmers predict the risk for nutrient runoff, based on National Weather Service forecasts and data

Educational/Informational Tools: Wisconsin Runoff Risk Advisory Forecast



Educational/Informational Tools: Ohio Applicator Forecast Map



Project Results

Compilation of state nutrient management tools, a will be available on:

National Agricultural Law Center website:
http://nationalaglawcenter.org

OSU Agricultural & Resource Law website:
http://farmoffice.osu