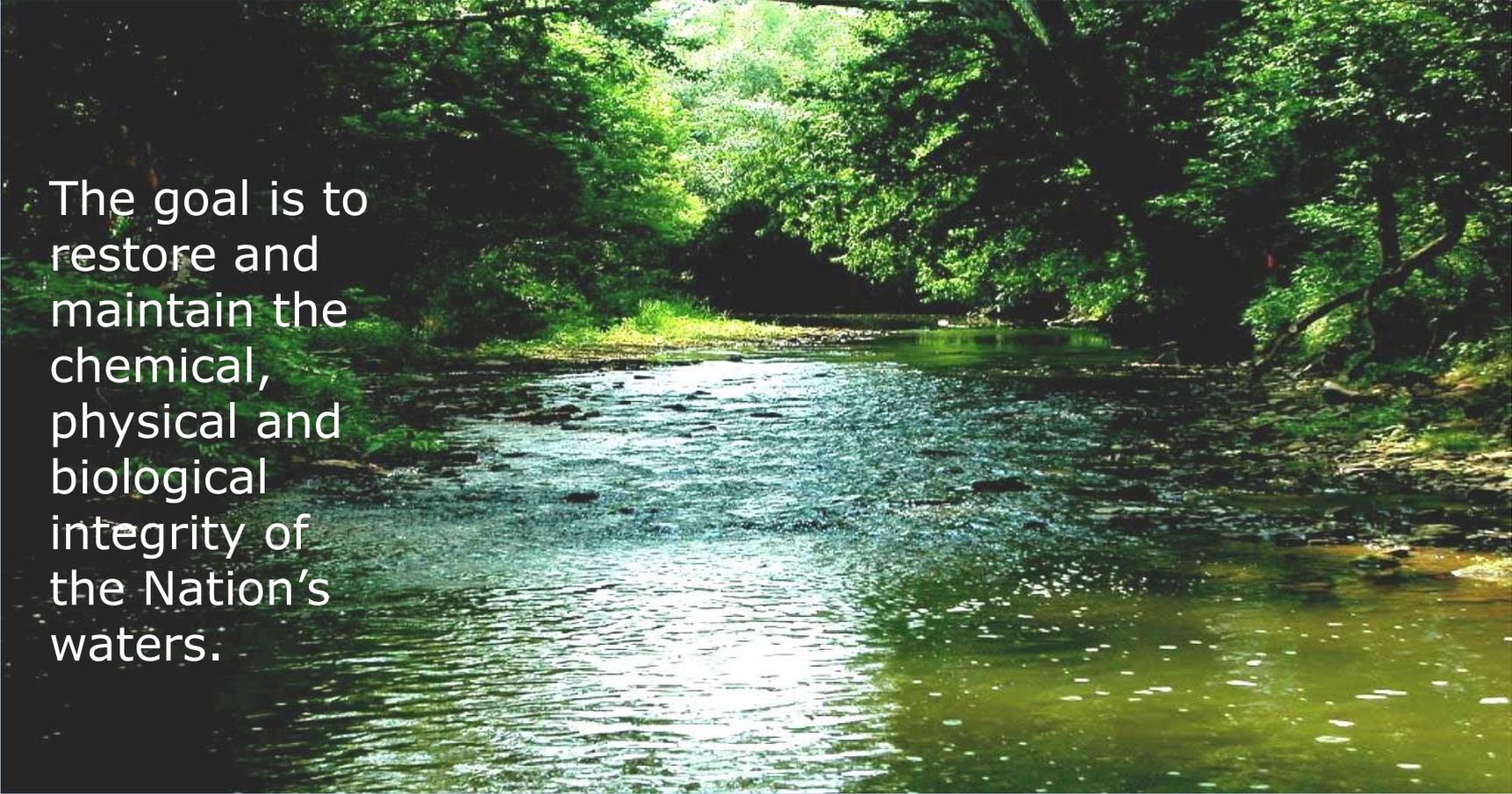


2015 Midwest Conference
March 18, 2015

**TMDLs and Impacts on
Streams– What it All Means**





The goal is to restore and maintain the chemical, physical and biological integrity of the Nation's waters.

Clean Water Act



State's Obligations, Simplified

Decide

- Set goals for water quality

Measure

- Measure water quality; are goals are being met?

Report

- Report on water quality and prioritize problems

Analyze

- For waters not meeting the goal, prepare a TMDL

Fix

- Implement changes: permits, grants, etc.

Set Goals for Water Quality

- Most Pollutants: Ohio Water Quality Standards (metals, dissolved oxygen, bacteria, ammonia, etc.)
- Nutrients: Set Targets using Technical Documents, Modeling and Literature to support Narrative Water Quality Standard

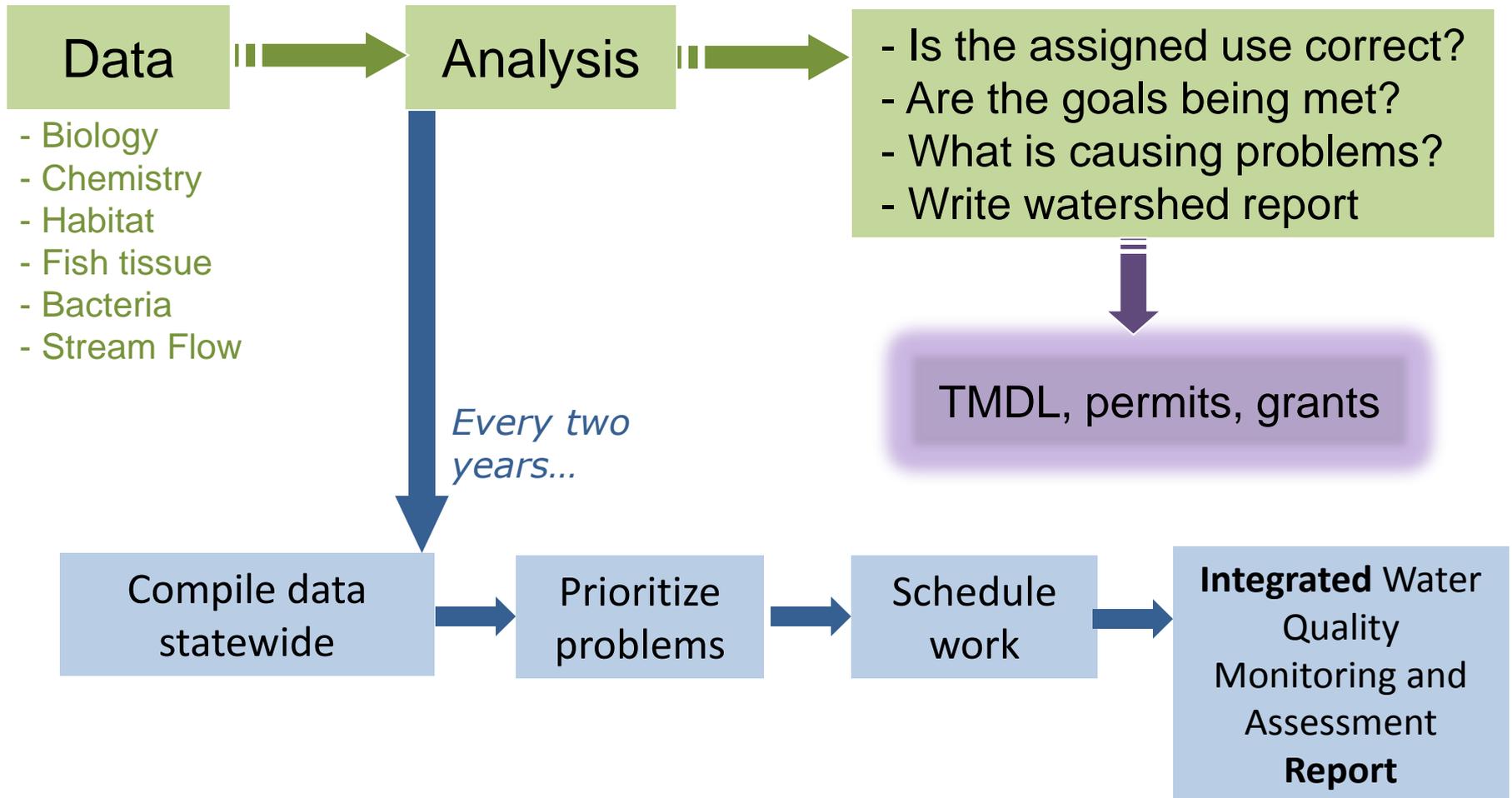
Measuring Water Quality

Does the stream support expected aquatic life? Will you get sick when you recreate?

- Sample across watershed but also focus on areas with known pollution sources
- Collect/measure fish, insects, chemistry, bacteria; sediment, habitat



What Happens To Monitoring Data?



305(b) Report + 303(d) List = Integrated Report

This particular report is required by the federal Clean Water Act to fulfill two purposes:

- to provide a summary of the status of the State's surface waters
 - to develop a list of waters that do not meet established goals—the “impaired waters.”
- Long history of monitoring and reporting
 - Data collected through routine sampling every summer in several Ohio rivers and watersheds



Trends in Ohio Water Quality

The trend in the status of aquatic life in Ohio's largest rivers is a key indicator that is regularly reported.

<i>Condition</i>	<i>1980s</i>	<i>1990s</i>	<i>2014</i>
Full Attainment	21%	62%	89.2%
Partial Attainment	38%	22%	6.3%
Non Attainment	41%	17%	4.5%

Small Streams Have More Problems

- More vulnerable to activities on the landscape
- Natural ability to process waste instream easily lost
- Less water, so more easily injured by spills or other events

<i>Condition</i>	<i>Large Rivers</i>	<i>Small Streams</i>
Full Attainment	89.2%	57.8%
Partial Attainment	6.3%	22.3%
Non Attainment	4.5%	19.9%

Trends in Ohio Water Quality

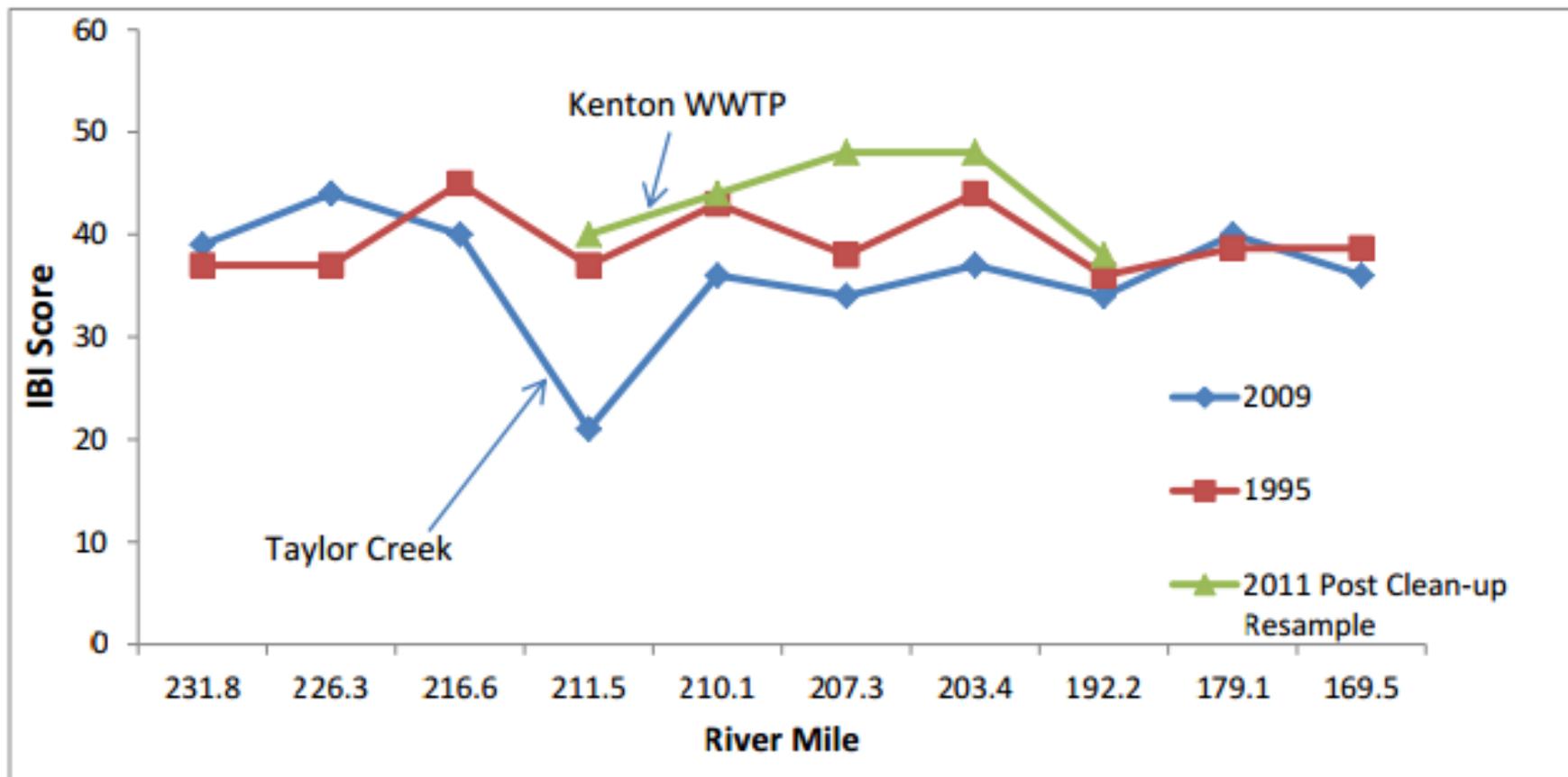
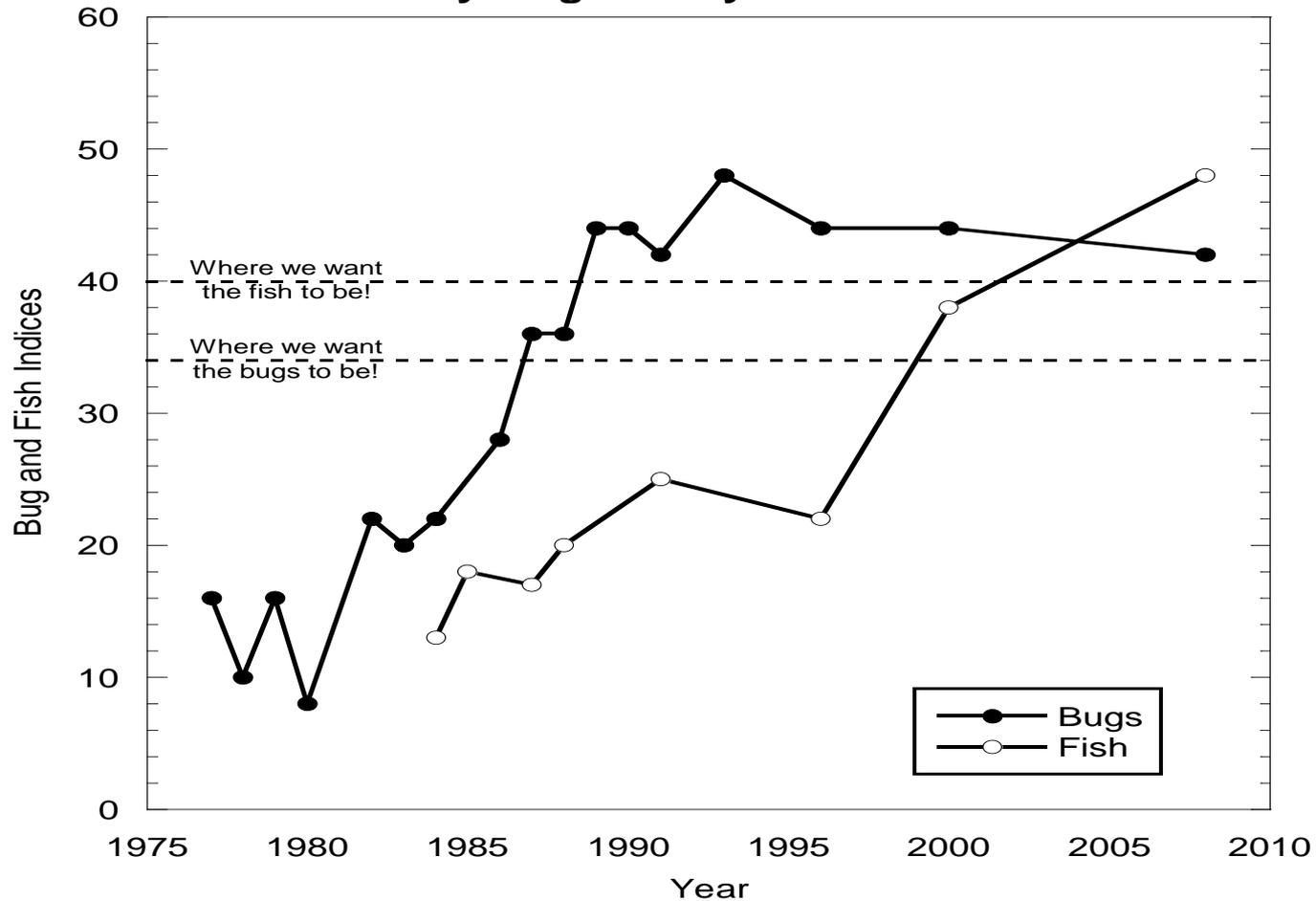


Figure 1. Upper Scioto River and IBI trends (1995-2011) by river mile for selected main stem sites which outline the magnitude of the pollution effects emanating from Taylor Creek.

Trends in Ohio Water Quality

Cuyahoga River at Hillside Road Cuyahoga Valley National Park

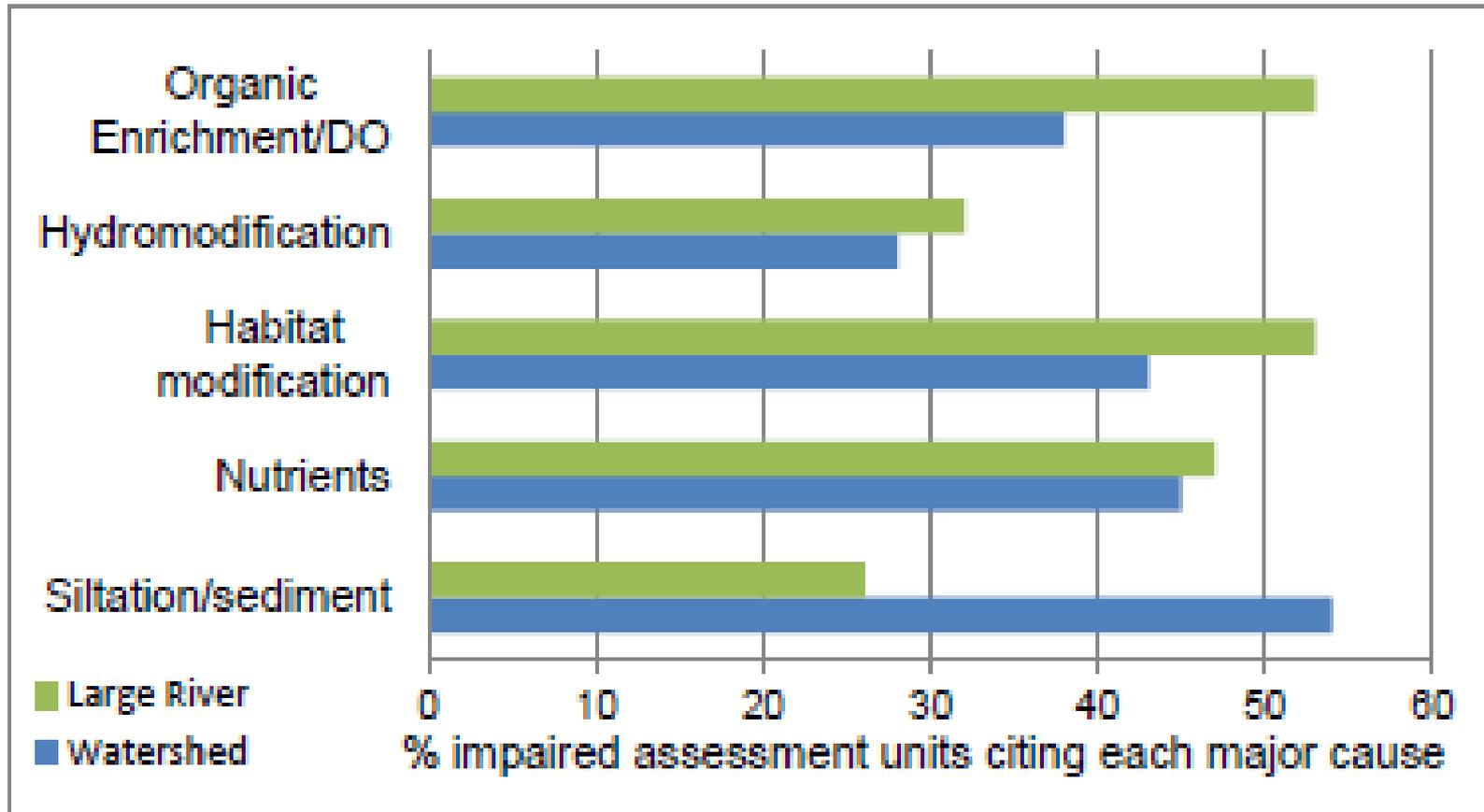


What Causes Water Quality Problems in Ohio?

Most aquatic life impairment is caused by **land disturbances** related to agriculture activities and urban development.



Ohio 2014 Integrated Report



Organic Enrichment and Low Dissolved Oxygen



Examples:

- **domestic sewage**
- livestock manure discharges

Impaired streams - organic enrichment:

- Large Rivers – 53%
- Small Streams – 38%

Nutrients



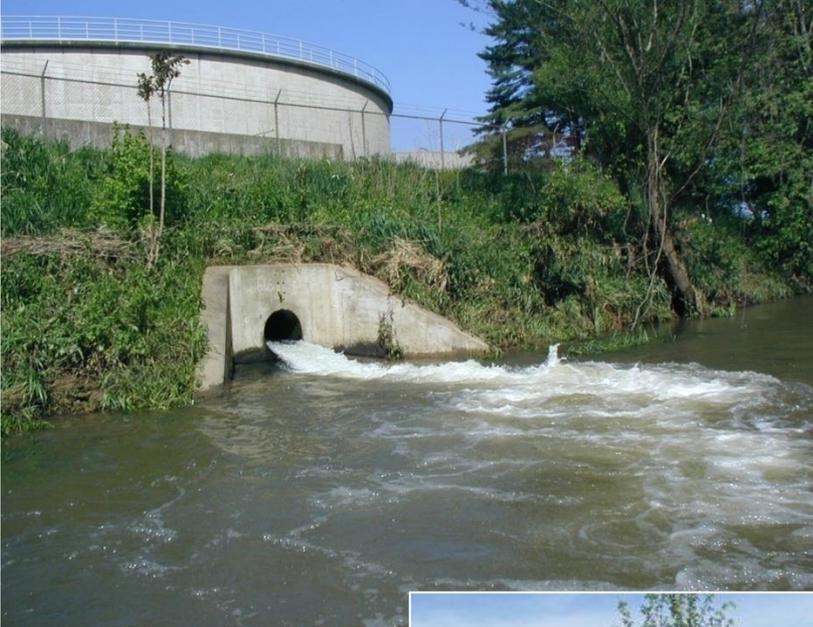
Impaired streams - nutrients:

- Large Rivers – 47%
- Small Streams – 45%

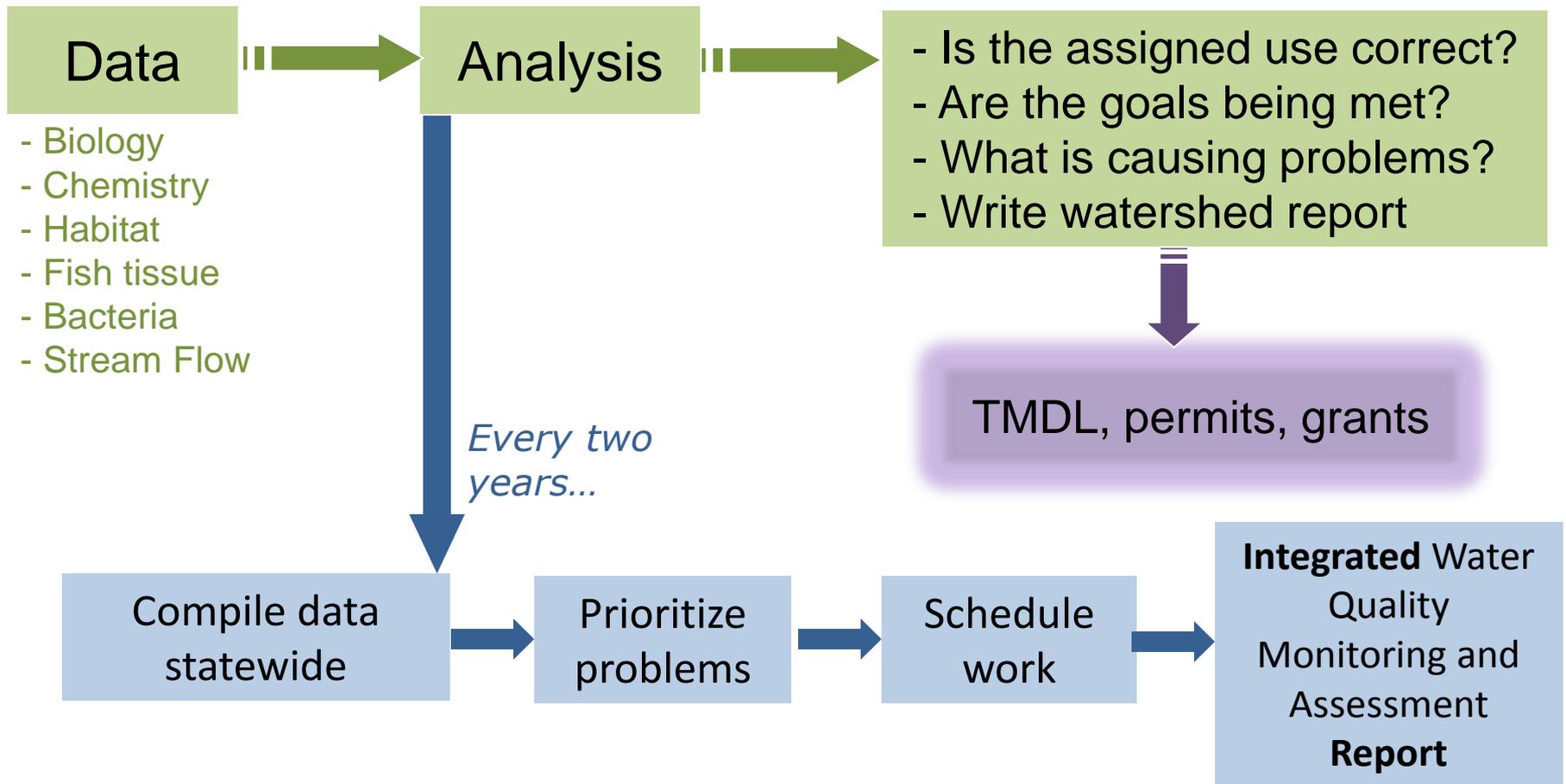
Examples:

- crop production
- unrestricted cattle access

Another Problem (Recreation): Bacteria



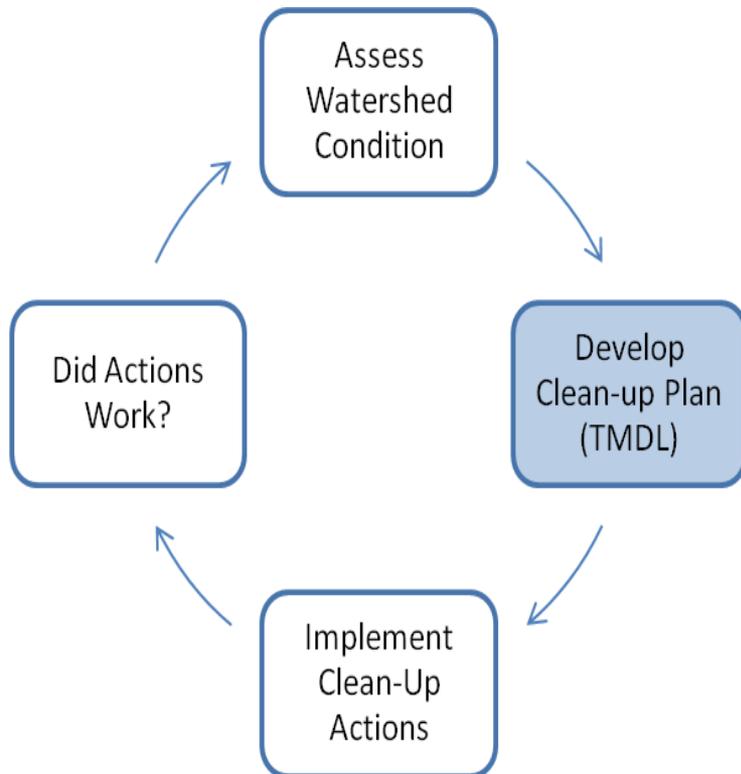
What Happens To Monitoring Data?



Addressing Problems Using TMDLs

- Once impaired waters are identified the state must take action to improve them
- TMDL: **T**otal **M**aximum **D**aily **L**oad
- A written, quantitative assessment of water quality problems and contributing sources of pollution
- Essentially a planning and analysis tool; does not provide additional authority
- *If waters reach attainment by other means, a TMDL is not necessary*

Addressing Problems Using TMDLs



Ohio integrated the federal TMDL requirement into its monitoring, permits, and incentive programs to form a simple problem-solving approach to restoring water quality.

How do HSTS factor into TMDLs?

Identified cause of impairment (nutrients, organic enrichment, bacteria, etc)

Confirm sources (maps, observations, local knowledge, additional data)

Include HSTS in TMDL allocations and implementation recommendations

How do HSTS factor into TMDLs?

- $TMDL = LA + WLA + MOS$
- LA (non-point source loads) - Usually HSTS lumped with other sources. If not, estimate number of failing on-site systems, use literature values to estimate load.
- WLA (point source loads or permitted discharges) - use NPDES general permit information. One WLA given to area.

How do HSTS factor into TMDLs?

Scioto River (upper) Watershed TMDLs

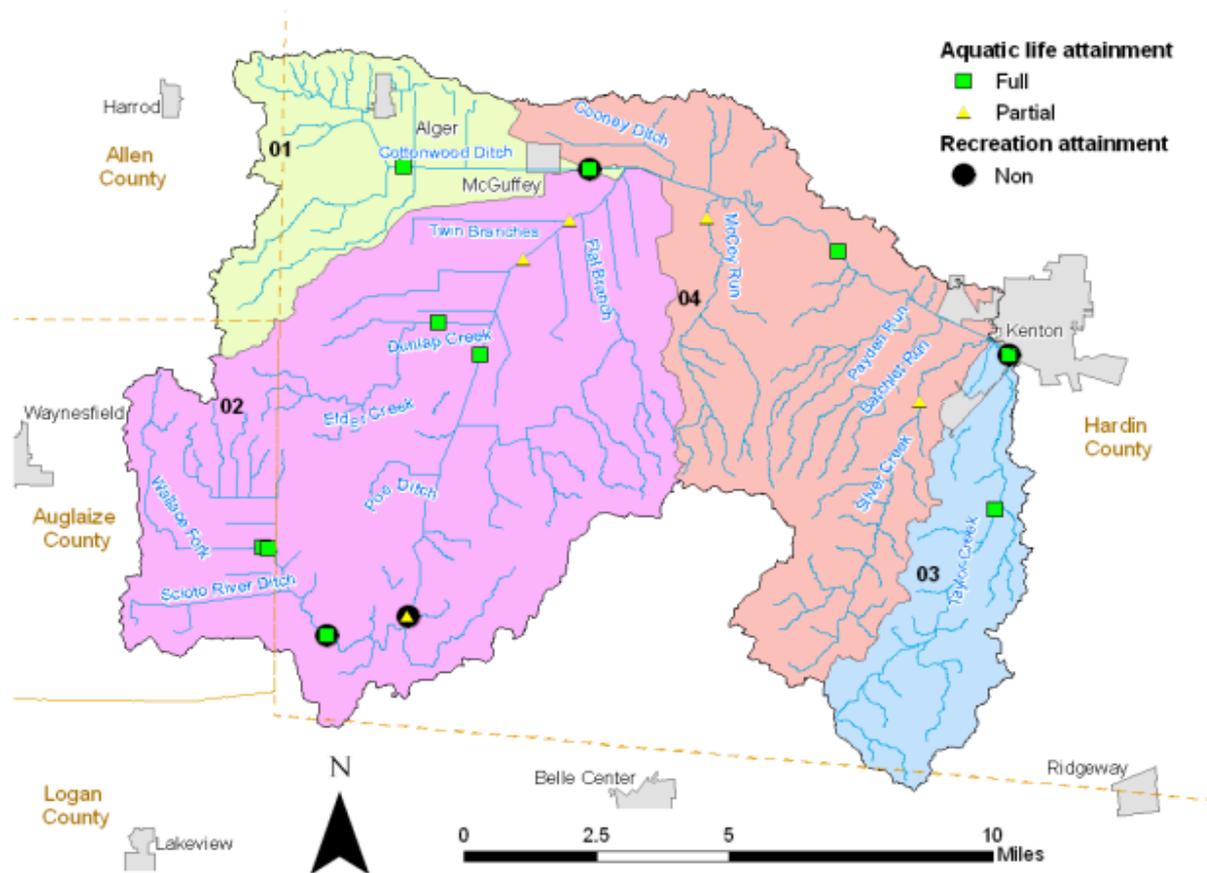


Figure 3-3. Attainment results for the Headwaters Scioto River subwatershed.

How do HSTS factor into TMDLs?

12-Dig HUC 05060001	Subwatershed	NPDES	Concentration* (mg/l)	Allocation load (kg/day)
12 04	Peoples Run	Coldwater MHP	3	0.49
		Country Fields MHP	3	0.20
		HSTS general permit (1)	7	0.004
23 01	Bear Run	Lumber Co	0.0112	0.01
		Machining Inc.	3	0.02
		Park Co LLC	3	0.11
		HSTS general permits (5)	7	0.017
23 03	Clear Run	HSTS general permits (4)	7	0.015

How do HSTS factor into TMDLs?

If evidence points to HSTS being a source of the pollutants causing the impairment (nutrients, organic enrichment, bacteria) then in addition to the allocations, the implementation recommendations include actions for reducing the impact of HSTS in that watershed assessment unit

How do HSTS factor into TMDLs?

Standard Implementation Recommendations

Develop HSTS plan

Inspect HSTS

Repair or replace traditional HSTS

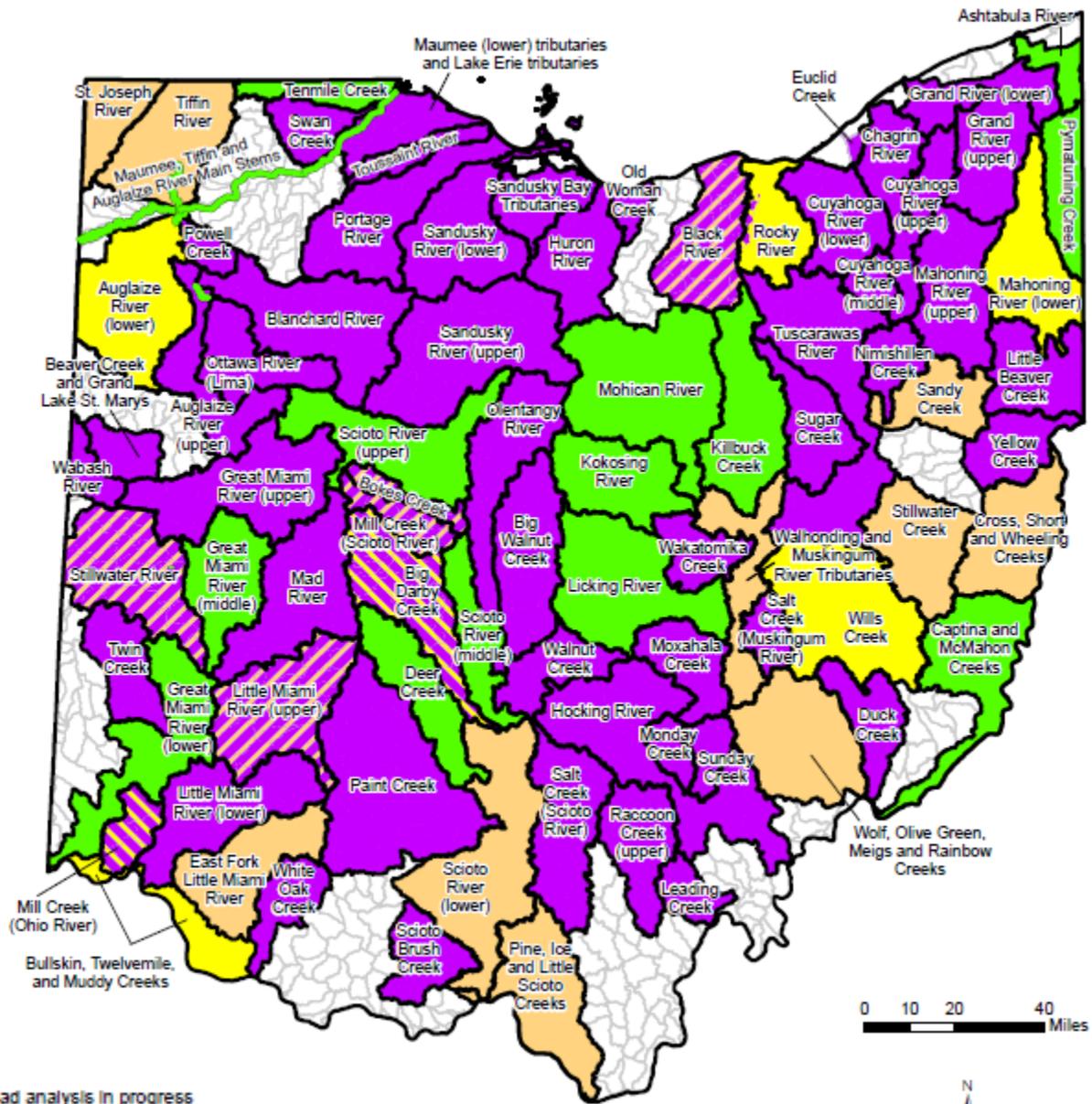
Repair or replace alternative HSTS

What Effect Have TMDLs Had?

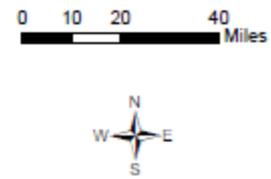
- Dam modifications/removals
- Monitoring/limits on total phosphorus from sewage treatment facilities, especially in the Ohio River basin
- Additional controls on construction site activities in some watersheds
- Identification of magnitude of nonpoint source pollution
- More targeted application of grants/incentive programs
- Instilling a systematic, cyclic, adaptive management approach to restoring water quality
- Work more aligned with restoration work of others



Progress of TMDL Projects in Ohio

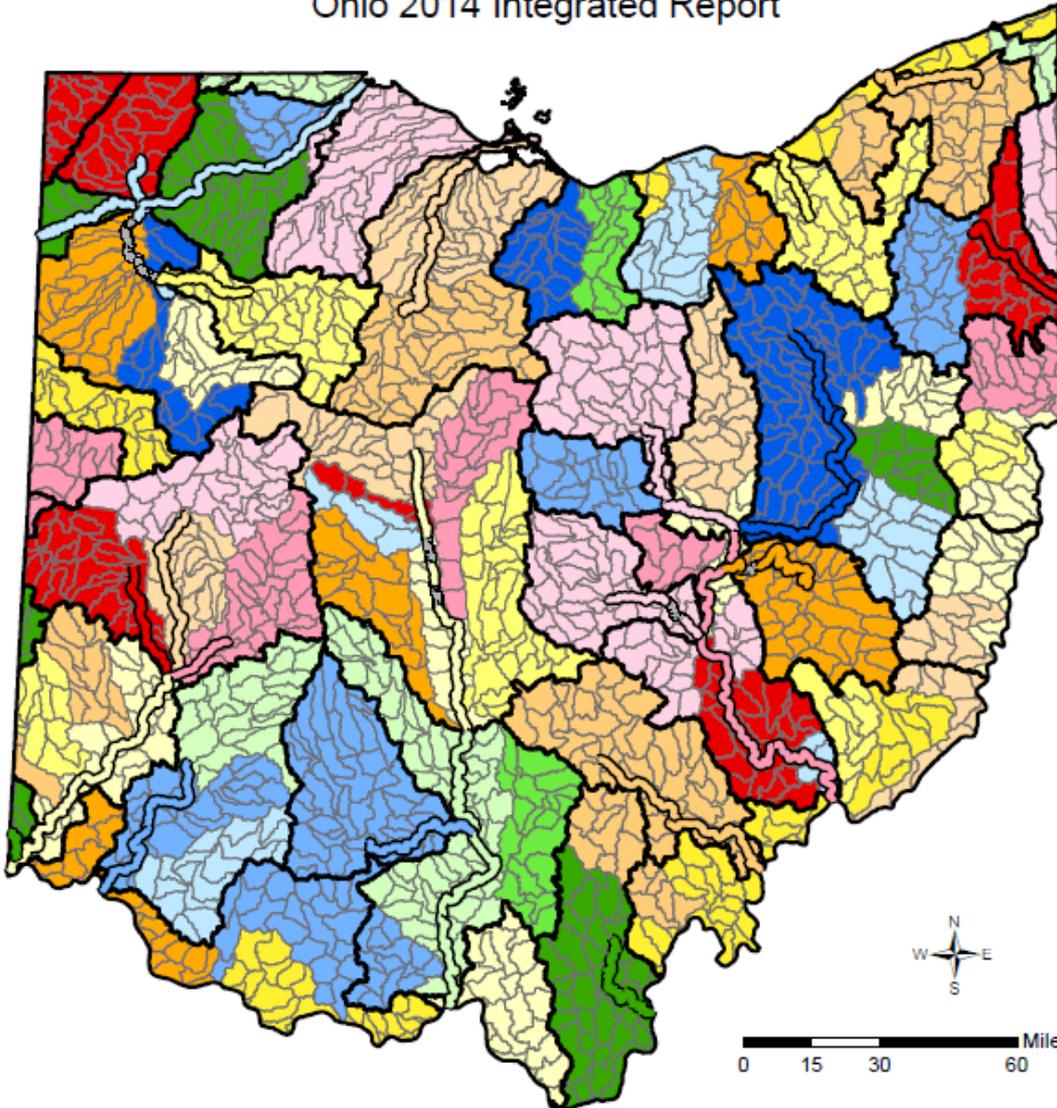


- No data available
- Approved by U.S. EPA
- First cycle TMDL approved by U.S. EPA; second cycle load analysis in progress
- First cycle TMDL approved by U.S. EPA; second cycle watershed assessment in progress
- TMDL nearly complete
- Load analysis in progress
- Watershed assessment in progress



Future Monitoring

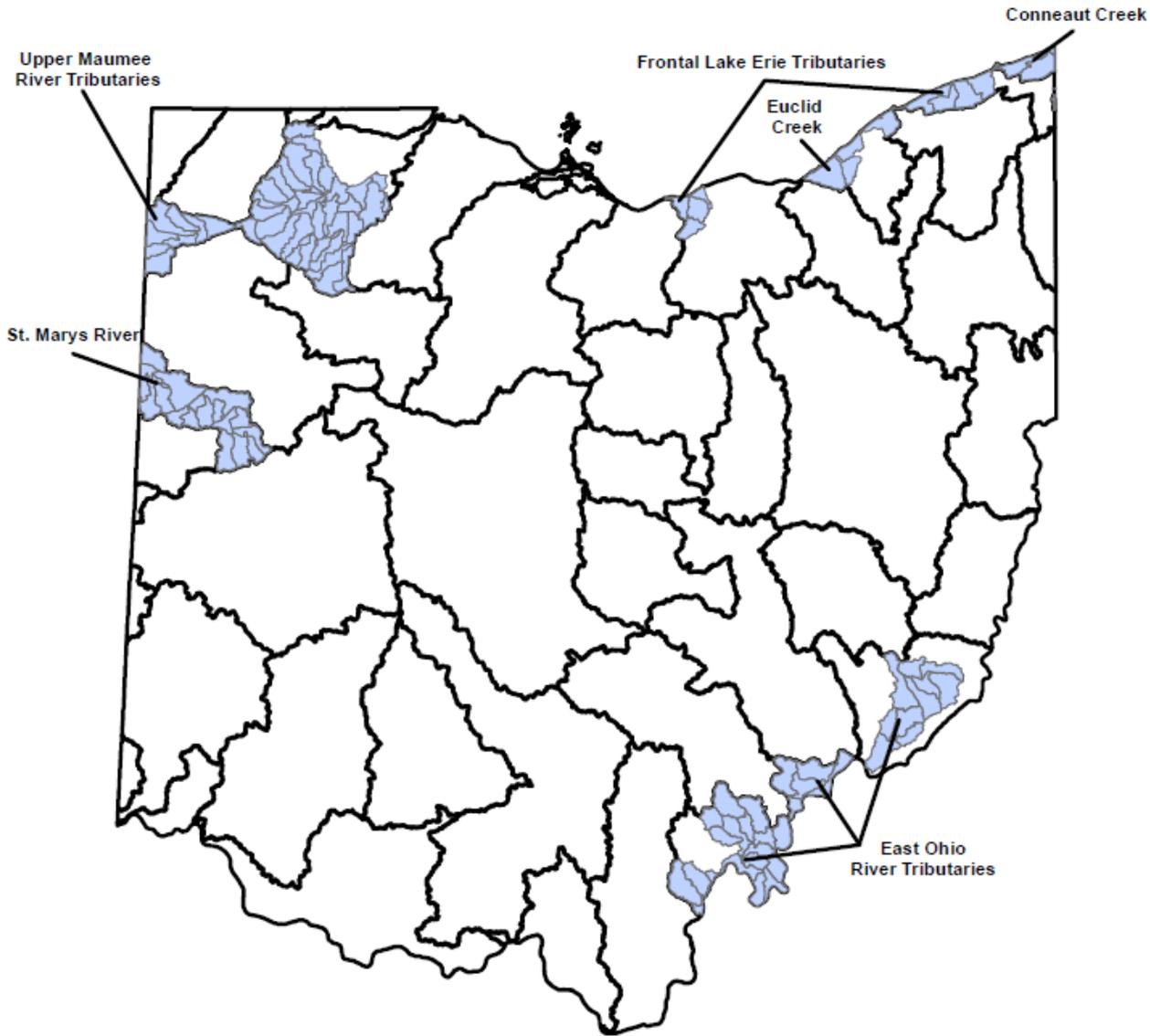
Ohio 2014 Integrated Report



- Currently being reevaluated
- Will be included in the 2016 integrated report



Future Monitoring



2015
Watershed
Assessments

Questions?

- Cathy Alexander

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614-644-2021

- Ohio EPA TMDL information:

www.epa.ohio.gov/dsw/tmdl/index.aspx

- U.S. EPA TMDL information:

www.water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/index.cfm

