

# Status of Water Quality in Ohio: The 2014 Integrated Report

February 12, 2014



# Today's Discussion

- Overview of the 2014 Integrated Report
  - Purpose and requirements
  - Summary of results
- Differences from the 2012 Integrated Report
- Trends in Ohio water quality
  - Goals past and future



# Clean Water Act



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

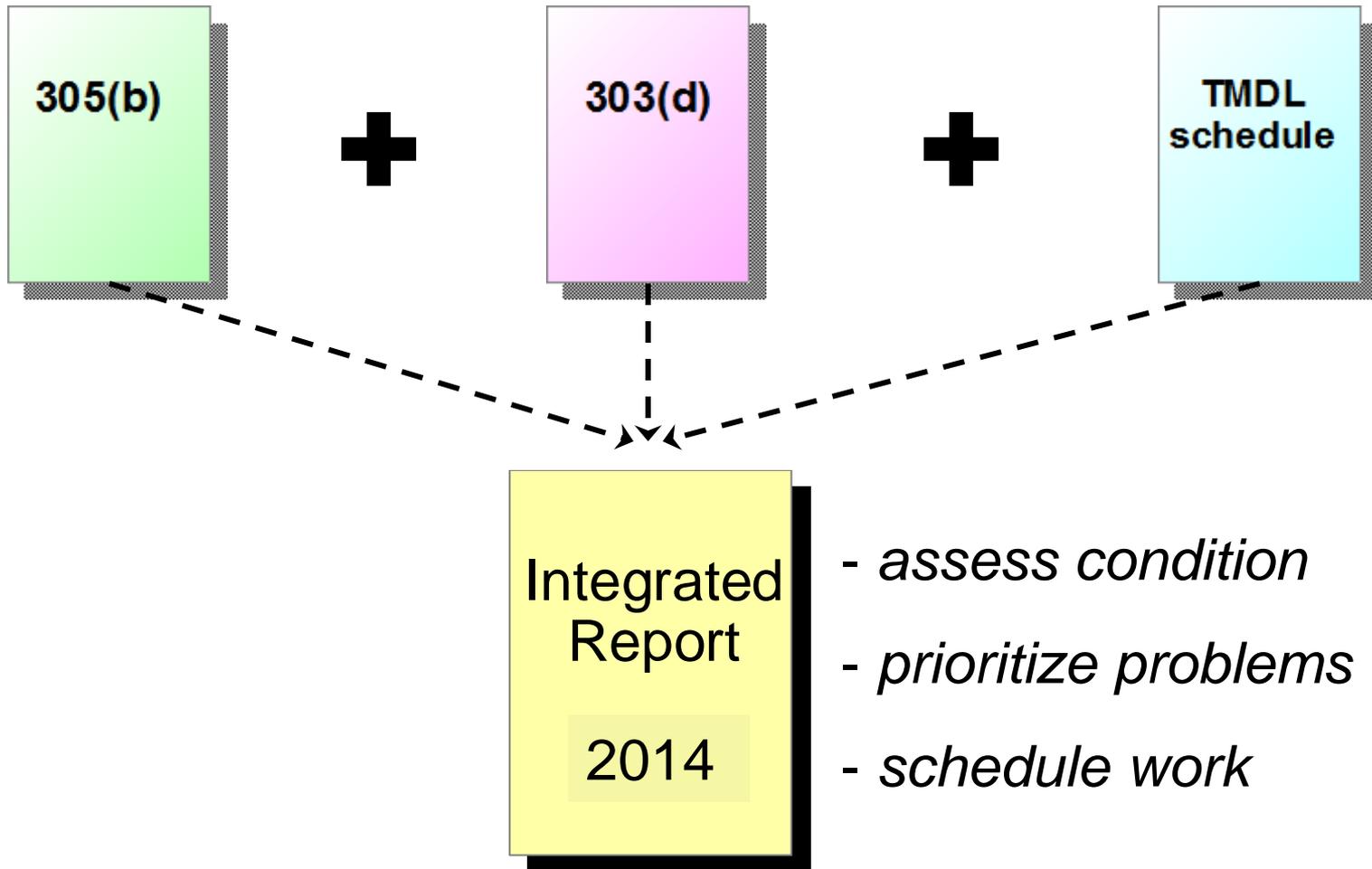


# Relationship of the Integrated Report to the Clean Water Act (CWA)

- Fulfills two CWA reporting requirements:
  - Section 305 requires periodic reporting on the condition of a State's waters
    - Ohio has reported every 2 years since 1988
  - Section 303(d) requires States to list and prioritize impaired waters
    - Ohio has reported every 2 years since 1992 (except 2000)
- “Integrated” into a single report in 2002



# Reporting/Listing in a Nutshell

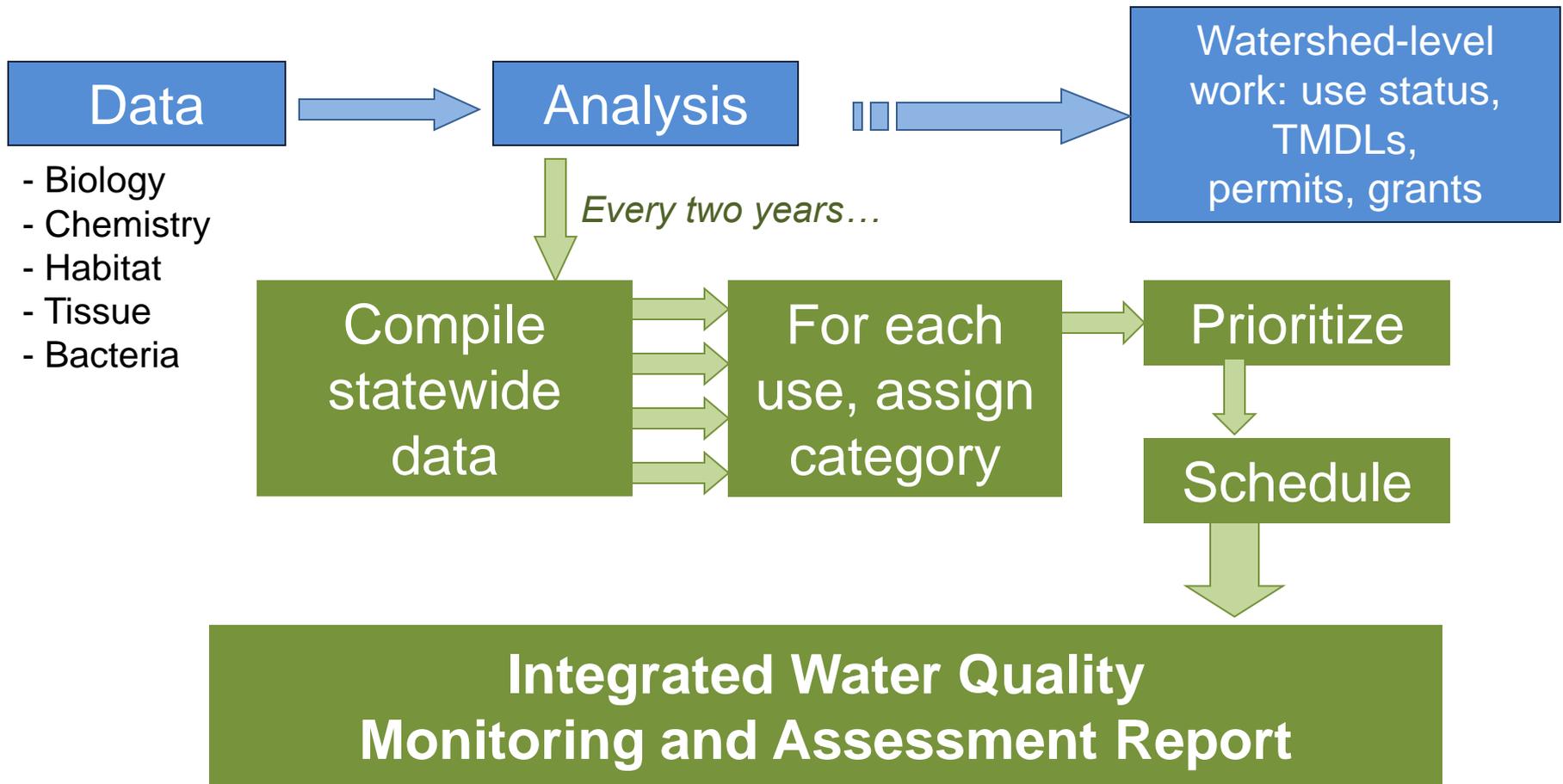


# Integrated Report

- U.S. EPA provides guidance
- Report includes:
  - Methodology
  - Decision for each water
  - Data (supports the listing of each impaired water)
  - Causes and sources of impairment
  - TMDL and monitoring schedules
  - Summary of public comments and responses
- U.S. EPA approves list of impaired waters



# Integrated Report Process



# Compile Statewide Data

- Each Integrated Report adds two new years' worth of data
- Data are pulled from databases
  - Level 3 external data
  - Most data are collected by Ohio EPA
- Ohio EPA determines attainment at individual sites
  - Detailed information available in watershed reports
- Each use is assessed independently



# Defining Assessment Units

- States define an “assessment unit,” then report on its condition
- Ohio defines 3 types:
  - Watershed units: 1,538 12-digit HUCs
    - Average drainage area: 27 square miles
  - Large river units: 38 pieces of 23 big rivers
    - Average length: 32 miles
  - Lake Erie units:
    - 3 nearshore (western, central, islands)



# Large Rivers vs. Watersheds: What's the Difference?

- Watersheds
  - Sites that drain less than 500 square miles
  - Best way to evaluate and solve problems
- Large rivers
  - Sites that drain more than 500 square miles
  - Not impacted in short-term by what's happening on immediate banks



# Assign Category

- Site data collected into an assessment unit
- Methodologies based on water quality standards have been established for each use
- Analyzed for each use independently
  - Category 1: Fully supporting
  - Category 3: Can't tell, not sure
  - Category 4: Not supporting and does not require action
  - Category 5: Not supporting and requires action



# What's Changed Since 2012?

## Some minor changes...

- Analysis and listings are based on 2 more years' data.
- For the aquatic life use, continue transition from 2010 from larger HUC11s to smaller HUC12s watershed size.
- Two new subcategories that show both attainment and TMDL status, needed as Ohio EPA returns to watersheds that already have approved TMDLs.
  - t: included in TMDL approved at larger scale
  - d: new data have been collected in an AU for which there is an approved TMDL, now either not impaired (1d) or is impaired (5d) for new cause.



# What's Changed Since 2012?

## Public Drinking Water Supply Use: Listing

- Methodology for listing revised to include new core indicator based on algae and associated cyanotoxins.
- Algae first identified as possible indicator in 2006, but no listings until 2014
- Focus on source water
- Results in 7 AU listings, 6 more on watch list
  - Western basin Lake Erie (5 systems)
  - East Fork Little Miami (Clermont Co.)
  - Grand Lake St. Marys (Celina)
  - Upper Cuyahoga (Akron)
  - Ottawa River (Lima)



# What's Changed Since 2012?

## Wetlands: Information

- Expanded discussion of wetlands; not for listing.
- Builds on proposal in 2012 IR, using a grant to study a subwatershed of the middle Scioto drainage to “ground truth” the proposal; slight adjustments
- GIS analysis using 10 parameters (selected from pool of 23)
- Summarizes wetland condition in the 1,538 watershed AUs
- Seeks comment



# What's Changed Since 2012?

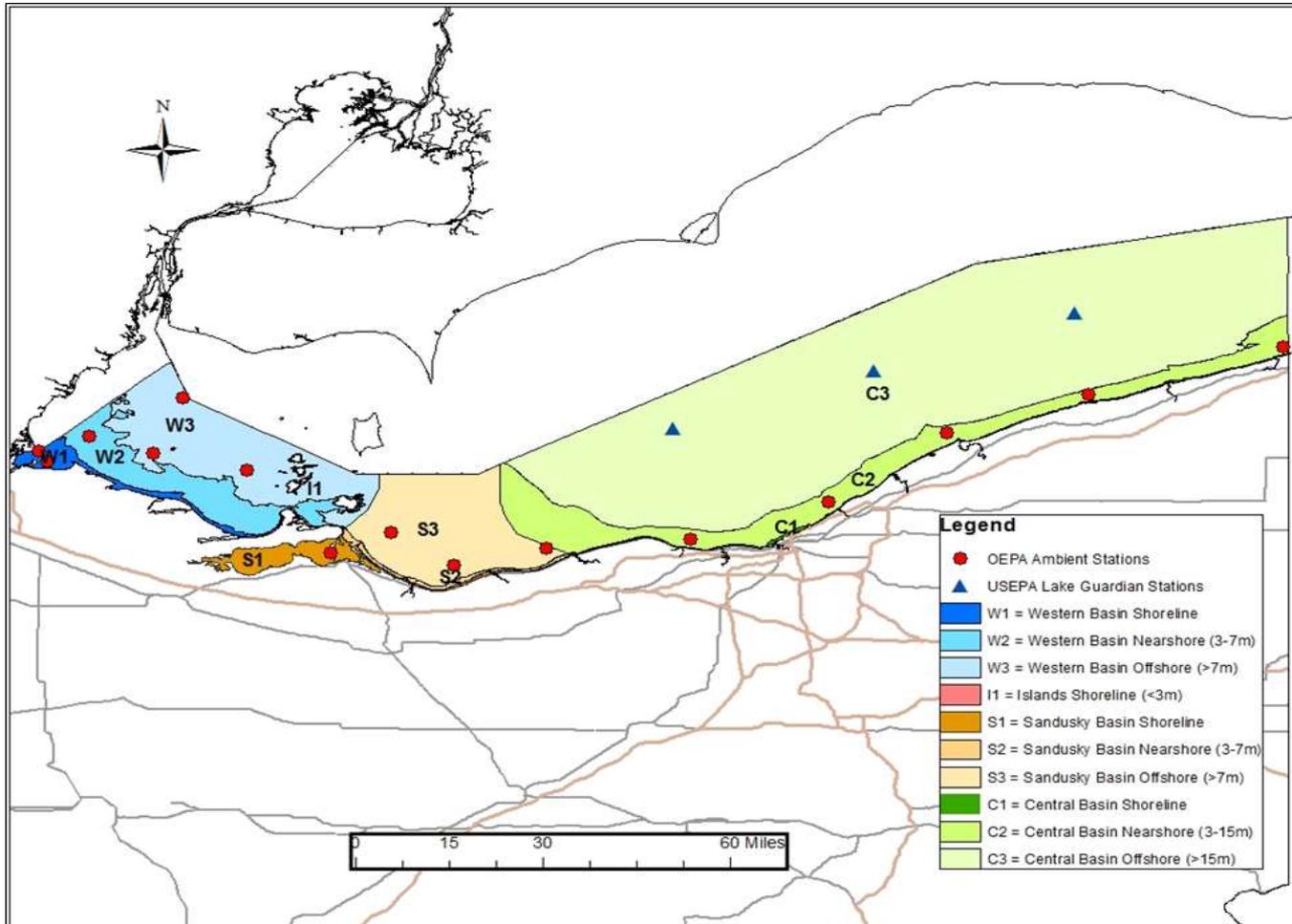
## Lake Erie: Information

- Expanded discussion of Lake Erie; not for listing.
- Proposes expanded assessment unit framework, redefines existing shoreline units
- Provides an overview of available data, including data from LE nearshore monitoring GLRI grant
- Identifies possible targets, discusses the resulting assessment and discusses potential for future monitoring and reporting on LE water quality



# What's Changed Since 2012?

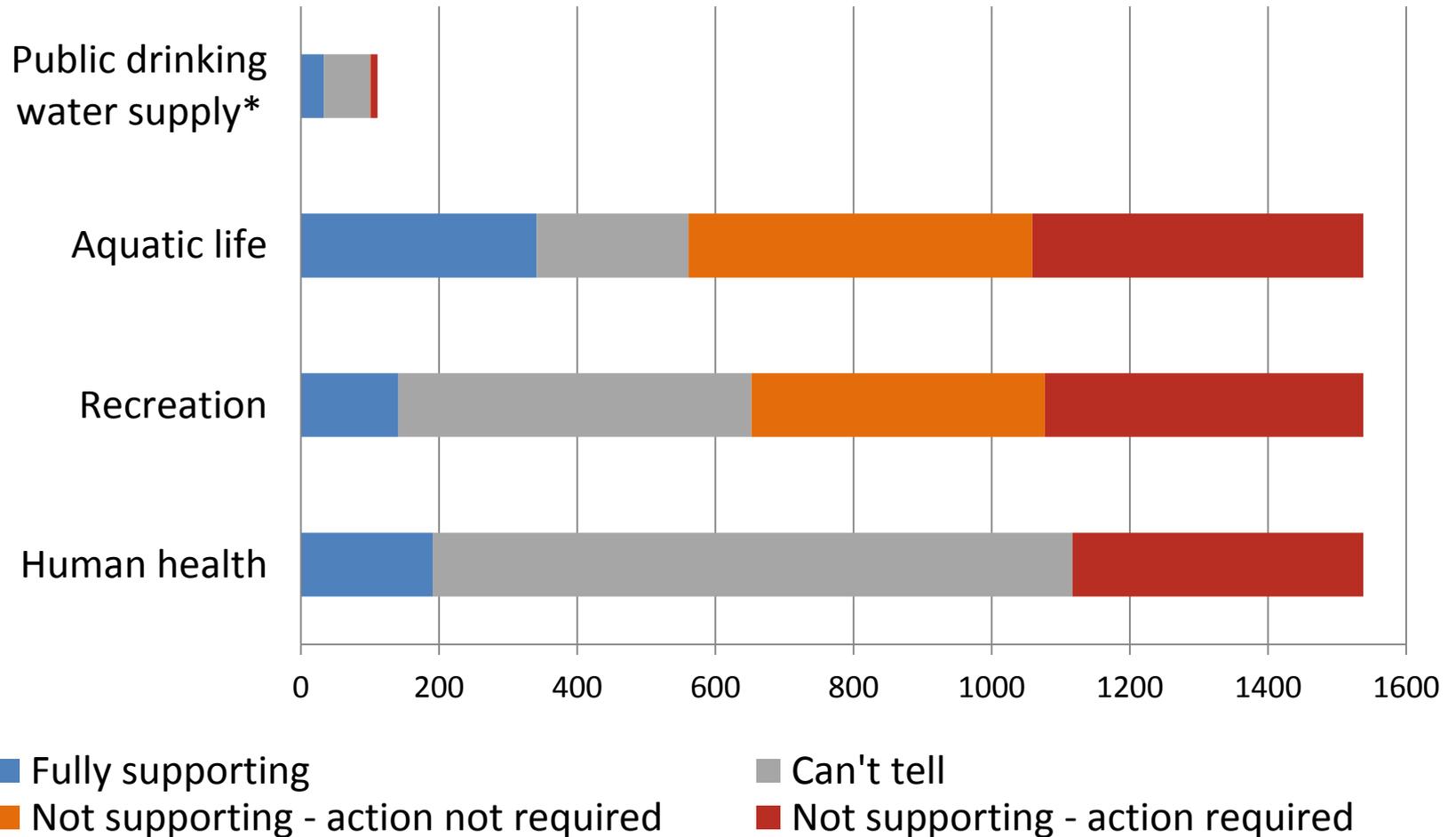
## Lake Erie Information



- Seeking public input on units, data, targets, etc.
- Expect discussion to continue beyond IR comment period

# Integrated Report: 2014 Results

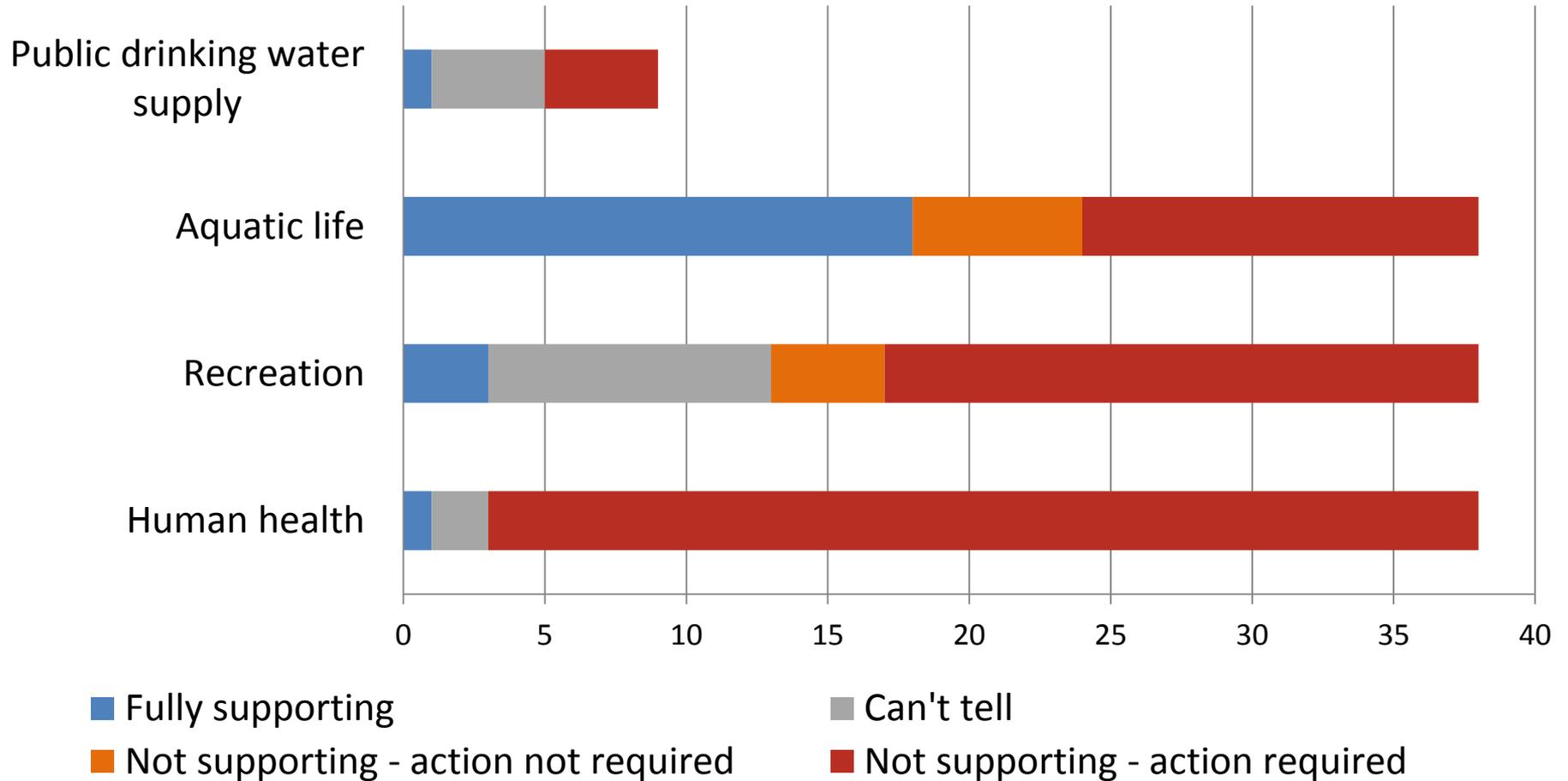
## Number of Watersheds



\* PDWS includes only waters currently used for public drinking water supplies.

# Integrated Report: 2014 Results

## Number of Large Rivers



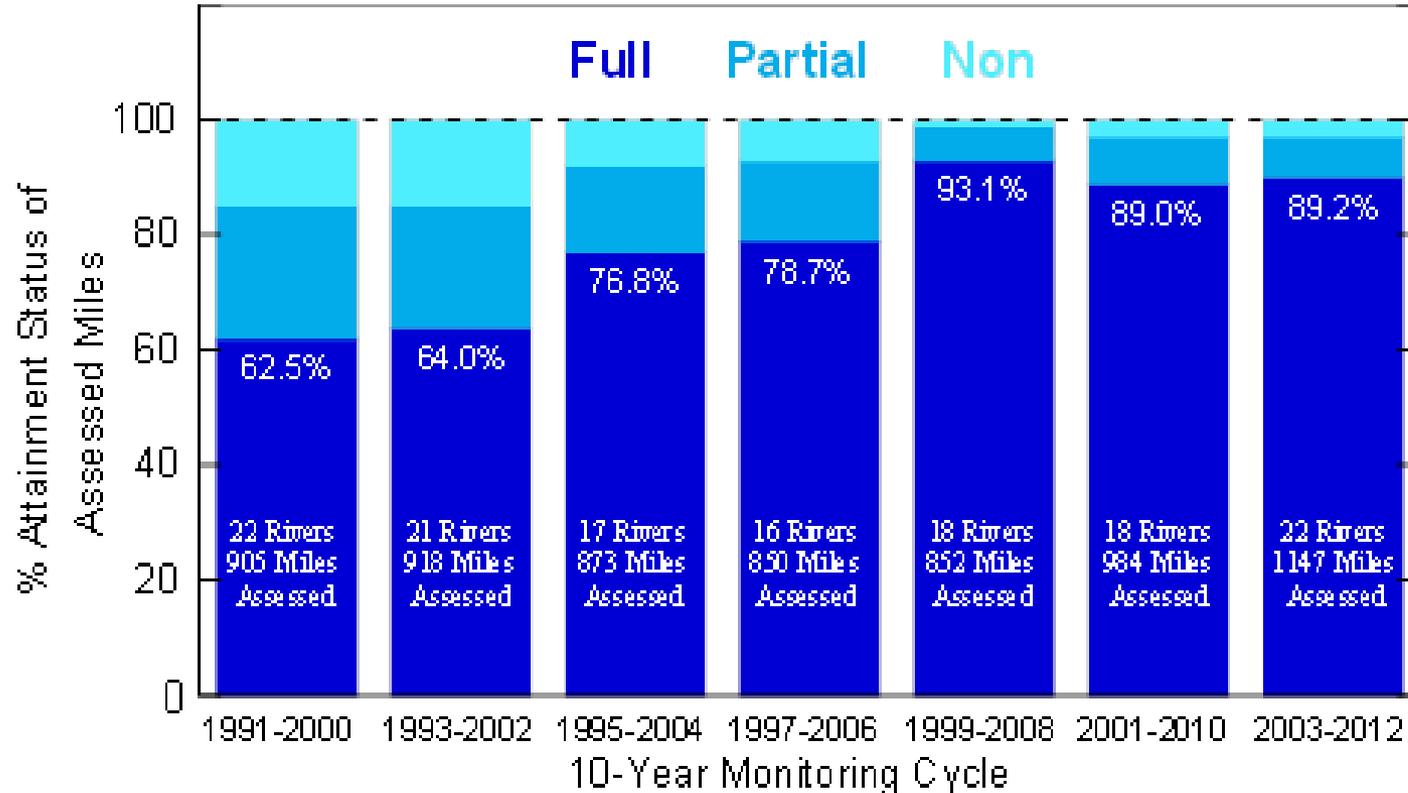
\* PDWS includes only waters currently used for public drinking water supplies.

# Trends: Large Rivers

- Improvement in Ohio's large rivers (the 23 rivers that drain more than 500 square miles) holding steady as tracked over last 20 years.
- The "100% full attainment by 2020" aquatic life goal statistic now stands at 89.2% full attainment.
  - Was 21% in 1980s
  - Was 62% in 1990s



# Trends: Large Rivers

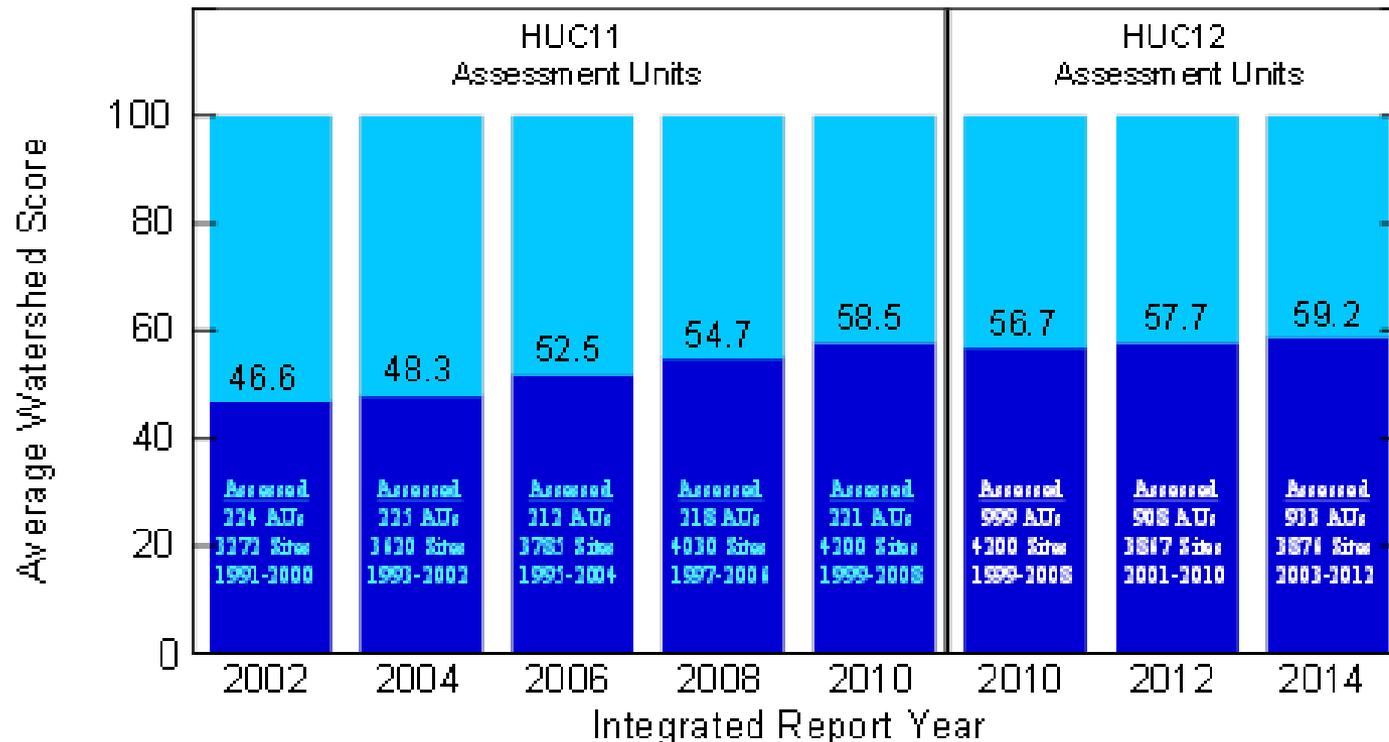


## 2020 Goals:

- 100% Full Attainment
- 100% Miles Assessed

# Trends: Watersheds

- Improvement in watersheds has been more modest than in large rivers.



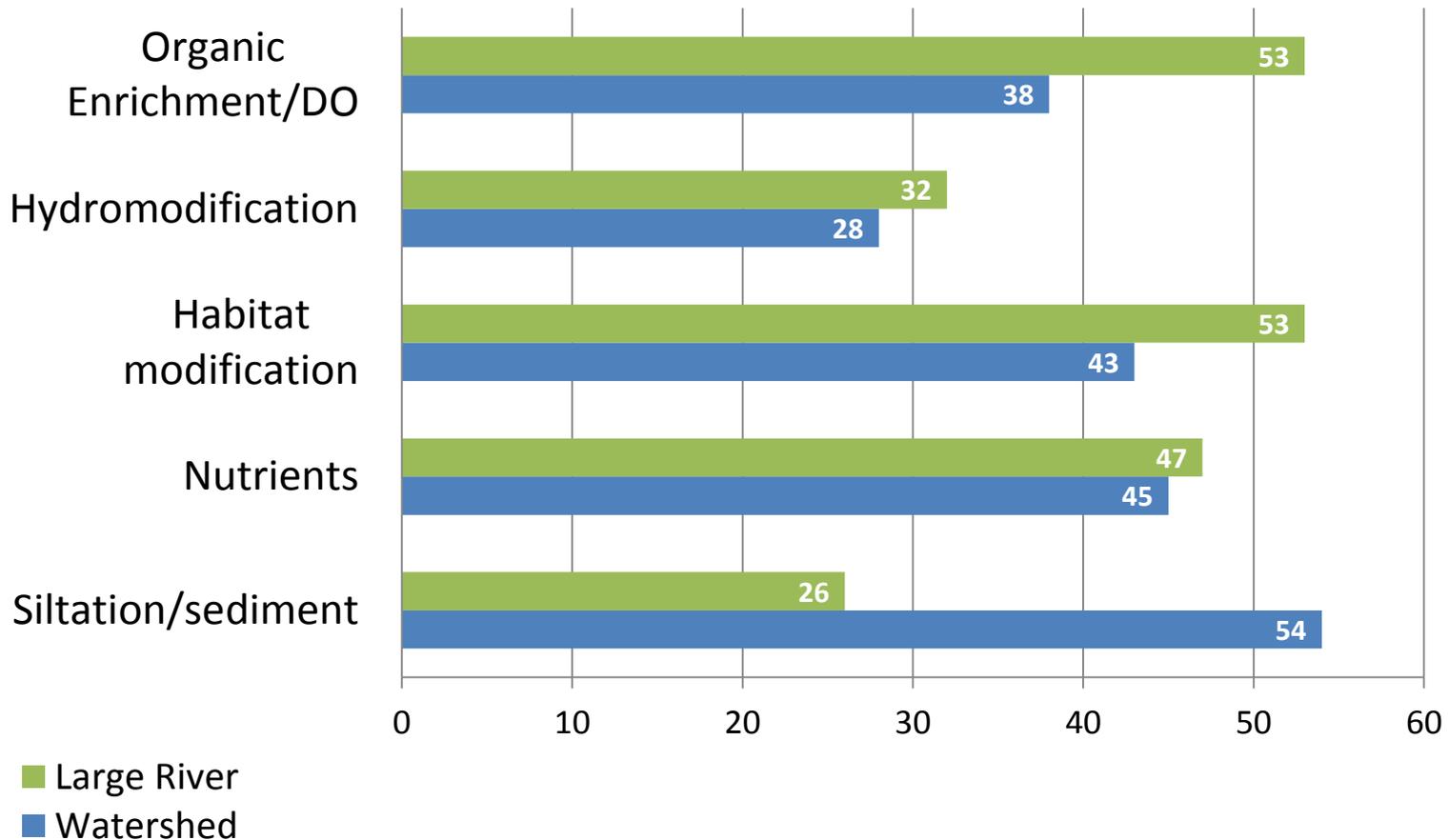
# What's Causing the Problems?

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



# Five Common Aquatic Life Causes

Percent of impaired assessment units that list each major cause



# Hydromodification



## Examples:

- stream impoundments (e.g., low-head dams)
- agricultural drainage systems (e.g., field tiles)
- urbanization (e.g., “hardening”)

Streams impacted by hydromodification:

Large Rivers – 32%

Watersheds – 28%

# Habitat Modification



## Examples:

- removal of riparian vegetation
- channelization
- stream bank modifications
- culverting

Streams impacted by habitat modification:

Large Rivers – 53%

Small Streams – 43%

# Silt and Sediment

Examples:

- construction
- unrestricted livestock access
- overland erosion



Streams impacted by silt and sediment:

Large Rivers – 26%

Watersheds – 54%

# Organic Enrichment and Dissolved Oxygen



Examples:

- wastewater treatment plants
- home sewage treatment systems
- livestock manure discharges

Streams impacted by organic enrichment:

Large Rivers – 53%

Small Streams – 38%

# Nutrients



Examples:

- crop fertilization
- urban runoff (e.g., lawn fertilizers)

Streams impacted by nutrients:

Large Rivers – 47%

Small Streams – 45%

# Common Sources of Bacteria



# Future Monitoring

- Expected, subject to change
- 2014 watersheds:
  - Lower Auglaize R
  - Big Darby Creek
  - SW Ohio R tribs
  - Wills Creek
  - Rocky River

