
March 2, 2020
Today’s Topics

• Overview of the 2020 Integrated Report
  – Purpose and requirements
  – Assessment overview
• Differences from the 2018 Integrated Report
• Results and trends in Ohio water quality
• Lake Erie update
Clean Water Act

The goal is to restore and maintain the chemical, physical and biological integrity of the Nation’s waters.
Clean Water Act

• Reporting requirements:
  – Section 305(b) requires reporting on the condition of all state waters
  – Section 303(d) requires states to list and prioritize impaired waters

• Integrated Report combines these reporting requirements into biennial report
Reporting/Listing in a Nutshell

305(b) + 303(d) + TMDL schedule

Integrated Report

- assess condition
- prioritize problems
- schedule work

2020
Integrated Report Process

Data
- Biology
- Chemistry
- Habitat
- Tissue
- Bacteria

Analysis

Compile statewide data

Assign category for each use & parameter

Prioritize

Schedule

Watershed-level work: use status; TMDLs; permits; grants

Integrated Water Quality Monitoring and Assessment Report

Every two years...
Integrated Report

- U.S. EPA provides guidance
- Report includes:
  - Methodology
  - Decision for each water body assessed
  - Data description (supports the listing of each impaired water)
  - Impairment causes and sources available online
  - TMDL and monitoring schedules
- U.S. EPA has 30 days to approve
OHIO’S ASSESSMENT UNITS
Large Rivers

- 38 reaches of 23 big rivers
Watersheds

- 1,538 12-digit HUCs
- Average drainage area: 27 square miles
Lake Erie

- Four shoreline (western, Sandusky Bay, central, islands)
- Three open water units (western, Sandusky Bay, central)
Beneficial Uses

Methodologies based on water quality standards have been established for each use

- Aquatic life
- Recreation
- Human health (fish consumption)
- Public drinking water
Assign Category

Assessment units are analyzed for each use & parameter independently

Category 1: Fully supporting
Category 2: Available data indicate some uses attaining
Category 3: Can’t tell, not enough information
Category 4: Not supporting and does not require action
   A: TMDL report approved
   B: Other required control measures will result in attainment
   C: Impairment cause not a pollutant (habitat)
Category 5: Not supporting and requires action
Total Maximum Daily Load

Defines max amount of pollution a stream can handle & still meet CWA goals
# TMDL Stakeholder Involvement

<table>
<thead>
<tr>
<th>Phase</th>
<th>Green Circles</th>
<th>White Circles</th>
</tr>
</thead>
<tbody>
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<td>Study Plan</td>
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<td>Biological and Water Quality Report</td>
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High Priority TMDL Projects

- Maumee Watershed TMDL to address Lake Erie western basin recreation (algae) and drinking water impairments
- St. Joseph River TMDL
- Black River TMDL
- Multi-watershed Bacteria TMDL
Multi-watershed Bacteria TMDL

Watershed Status

- Impaired; part of 2020 project
- Impaired; TMDL approved
- Impaired; not part of project yet
- Full attainment
- Not assessed/need more data
2020 Monitoring Schedule

Section J-31 in draft Integrated Report:

Ohio EPA will be conducting water quality monitoring in all 23 large rivers throughout the state (38 large river assessment units)
2020 – Large Rivers

• In order to report on the “status/health” of our large rivers to U.S. EPA and the public, we developed a schedule to perform holistic, Large River assessments, to better represent these waterbodies both spatially and temporally

• It will give us a complete snapshot of all our large rivers at the same point in time

• This has never been done
Large Rivers

- 38 reaches of 23 big rivers
2020 Monitoring Schedule

Section J-31 in draft Integrated Report:

The new Beaver Creek, Grand Lake St. Marys, Mississinewa River, Wabash River and upper Great Miami River watersheds project area
2020 Study Plans

• March 2020 Public Notices:
  – 23 Large Rivers
  – Beaver Creek, Grand Lake St. Marys, Mississinewa River, Wabash River and upper Great Miami River

• June 15, 2020 Field Work Begins
2021 Monitoring Schedule

Section J-31 in draft Integrated Report:

The new project areas:

• Sandusky River (upper and lower)
• Pymatuning Creek, Little Beaver Creek and Yellow Creek
• Hocking River, Sunday Creek and Monday Creek
• Middle Great Miami River and Mad River
WHAT’S CHANGED SINCE 2018?
Report in Transition

• First Integrated Report prepared and submitted using new U.S. EPA database
  – ATTAINS (Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System)

• Transition from large, static report to web-based, interactive
  – How’s My Waterway app – coming spring 2020
    • Public access to ATTAINS data
Ohio by the Numbers

1,538
Total Watershed Assessment Units (HUC-12a)

1,248
Large rivers (draining more than 500 sq. miles)
miles

3,568
Lake Erie Waters
ac. miles

The Ohio Environmental Protection Agency, Division of Surface Water's mission is to protect, enhance and restore all waters of the state for the health, safety and welfare of present and future generations. The mission is accomplished by monitoring the aquatic environment, permitting, enforcing environmental laws, using and refining scientific methods and regulations, planning, coordinating, educating, providing technical assistance and encourag... Show more
2020 Results and Trends
OVERVIEW OF LARGE RIVERS

AQUATIC LIFE
Top Five Causes of Impairment:
Large Rivers – 38 Segments

- Organic enrichment: 4
- Sedimentation/siltation: 6
- Hydromodification: 7
- Nutrient enrichment: 9
- Habitat modification: 9

Number of LRAUs that list each cause of impairment
OVERVIEW OF WATERSHEDS

AQUATIC LIFE
Aquatic Life Trends: Watersheds

HUC 12 Assessment Units

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Watershed Score</th>
<th>Sites Assessed</th>
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<tbody>
<tr>
<td>2010</td>
<td>56.7</td>
<td>999 AUs, 4200 Sites</td>
</tr>
<tr>
<td>2012</td>
<td>57.7</td>
<td>908 AUs, 3867 Sites</td>
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<tr>
<td>2014</td>
<td>59.2</td>
<td>933 AUs, 3876 Sites</td>
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<tr>
<td>2016</td>
<td>61.5</td>
<td>983 AUs, 3875 Sites</td>
</tr>
<tr>
<td>2018</td>
<td>64.2</td>
<td>1007 AUs, 3911 Sites</td>
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<tr>
<td>2020</td>
<td>64.3</td>
<td>838 AUs, 3533 Sites</td>
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</table>
Top Five Causes of Impairment: Watersheds (1538 HUC 12s)

- Hydromodification: 290
- Organic enrichment: 296
- Nutrient enrichment: 360
- Habitat modification: 377
- Sedimentation/siltation: 488
Public Water Supply Use

- In Ohio, 103 public water systems use surface water as water source
- Nitrates, pesticides and cyanotoxins in raw/source water conditions are evaluated for attainment

<table>
<thead>
<tr>
<th>Water Type</th>
<th>Full Attainment</th>
<th>Not Supporting</th>
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<tr>
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<tr>
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</table>
Recreation Use (Bacteria)

Developing Multi-watershed Bacteria TMDL project to address impaired watersheds

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<th>Water Type</th>
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<th>Not Assessed</th>
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<tr>
<td>Lake Erie</td>
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<td>4</td>
<td>-</td>
<td>3</td>
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<tr>
<td>Inland Lake Beaches</td>
<td>54</td>
<td>8</td>
<td>37</td>
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</table>
Human Health (Fish Consumption)

Most common contaminant is PCBs followed by mercury

<table>
<thead>
<tr>
<th>Water Type</th>
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<th>Not Assessed</th>
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<td>-</td>
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<tr>
<td>Lake Erie</td>
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<td>7</td>
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<tr>
<td>Inland Lakes</td>
<td>54</td>
<td>8</td>
<td>37</td>
<td>-</td>
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</table>
OVERVIEW OF LAKE ERIE
Rec. (algae): Western Basin

• In the 2018 IR: New assessment methodology for algal impacts to recreation in the western basin

• Uses satellite data from NOAA

• Considers western basin open water bloom coverage for each algae season (July–Oct.) over multiple years

• Based on goals set by Great Lakes Water Quality Agreement Annex 4 (i.e., bloom size/severity no greater than observed in 2004 or 2012)
Rec. (algae): Western Basin Results

2020 IR Status

- Western basin remains impaired for recreation.
- Two or more years have three or more frames that exceed the coverage and cell density thresholds.

<table>
<thead>
<tr>
<th>Year</th>
<th>Western Open waters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>4</td>
</tr>
<tr>
<td>2009</td>
<td>6</td>
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<tr>
<td>2010</td>
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<td>2017</td>
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<tr>
<td>2018</td>
<td>6</td>
</tr>
<tr>
<td>2019</td>
<td>5</td>
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</table>
New Assessment of Recreation

Methods & Results Sandusky and Central Basins in 2020 IR
Rec. (algae): Sandusky Open Water Assessment Unit

- Transition zone
- Generally most impacted by western *Microcystis* bloom being blown/pushed into this unit. Some *Dolichospermum* blooms occur in this unit as well.
Rec. (algae): Sandusky Open Water Method

Assessment Unit is Impaired if:

• **Spatial coverage**: satellite data to determine if greater than 30% of area is covered at 20k cell density threshold

• **Duration**: Three or more 10-day frames in a year’s algae season (July-Oct)

• **Frequency**: Two or more years in a rolling 6-year window
Rec. (algae): Sandusky Open Water Results

≥30% coverage at ≥20k cell/mL; 10-day frames

<table>
<thead>
<tr>
<th>Year</th>
<th>Sandusky Open waters</th>
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<tbody>
<tr>
<td>2008</td>
<td>4</td>
</tr>
<tr>
<td>2009</td>
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<td>2017</td>
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</tr>
<tr>
<td>2018</td>
<td>2</td>
</tr>
<tr>
<td>2019</td>
<td>0</td>
</tr>
</tbody>
</table>

- Only one year exceeded the goal out of the last six
- **This assessment unit use is met/not impaired**
Rec. (algae): Central Open Water

- Short *Dolichospermum* blooms occur early. Sometimes western *Microcystis* bloom migrates to unit later in the season
- Annex 4 loading goals did not address central basin blooms; therefore a reference “acceptable” bloom is not defined
- Instead looking at unacceptable bloom – 2011. If blooms of this nature were the norm, it would impair recreation use
Rec. (algae): Central Open Water

- In 2011, three 10-day frames were >15% area; this is the unacceptable benchmark
- In 2015, one 10-day window exceeded 15% of the area
Rec. (algae): Central Open Water Method

Assessment Unit is Impaired if:

- **Spatial coverage**: satellite data to determine if greater than 15% of assessment unit area is covered at 20k cell density threshold
- **Duration**: Three or more 10-day frames in a year
- **Frequency**: Two or more years in a rolling 6-year window
Rec. (algae): Central Open Water Results

≥15% coverage at ≥20k cell/mL; 10-day frames

<table>
<thead>
<tr>
<th>Year</th>
<th>Central Open Water</th>
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<tbody>
<tr>
<td>2008</td>
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<td>2017</td>
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<tr>
<td>2018</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>0</td>
</tr>
</tbody>
</table>

- No years have exceeded the metric out of the last six
- **This assessment unit use is met/not impaired**
Rec. (algae): Sandusky Shoreline

- Assessment unit includes all Sandusky Bay
- Different type of HAB occurs in the Sandusky Bay.
- Satellite data does not predict cyanotoxins as well as in Lake Erie’s other units
Rec. (algae): Sandusky Shoreline Methodology

Assessment Unit is Impaired if:

• **Spatial coverage:** Microcystin samples collected at seven locations throughout the Sandusky Bay

• **Duration:** Three or more 10-day frames in a year (June-Sep) exceed 6 $\mu$g/L

• **Frequency:** Two or more years in a rolling 6-year window
Rec. (algae): Sandusky Shoreline Results

- Currently only have two years of data collected by Bowling Green State University and submitted to Ohio EPA’s lab for analysis
- Insufficient information to determine impairment status

<table>
<thead>
<tr>
<th>Year</th>
<th>10-day frames exceeding</th>
<th>total frames with data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2019</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>
# Lake Erie Use Summary

<table>
<thead>
<tr>
<th>Use Designation Impairment</th>
<th>Western Shoreline</th>
<th>Western Open Water</th>
<th>Islands Shoreline</th>
<th>Sandusky Shoreline</th>
<th>Sandusky Open Water</th>
<th>Central Shoreline</th>
<th>Central Open Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Life Use (Biological Community/Diversity)</td>
<td>✓</td>
<td>✗</td>
<td>✓</td>
<td>✓</td>
<td>✗</td>
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<tr>
<td>Public Drinking Water Supply (Algae)</td>
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<tr>
<td>Human Health - Fish Tissue (PCBs)</td>
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<td>✓</td>
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<tr>
<td>Recreation (E. coli)</td>
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<td>✓</td>
<td>✗</td>
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<td>✗</td>
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<td>✓</td>
<td>✗</td>
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<td>✗</td>
</tr>
</tbody>
</table>

**Legend**

- ✓ = Impaired
- N/A = Not applicable
- ✗ = Not impaired
- ✧ = Method under development
- ✩ = Insufficient information at this time
# Lake Erie Use Summary

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<th>Use Designation Impairment</th>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
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</tbody>
</table>

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Comments on 2020 IR

Email: epatmdl@epa.ohio.gov

Mail: Ohio EPA, Division of Surface Water
Attn: 303(d) Comments
P.O. Box 1049
Columbus, Ohio 43216-1049

Comments must be received by the close of business on March 13, 2020. Comments received after this date may be considered as time and circumstances allow.