

What is a Pollutant?

What are you doing the TMDL for?

- TMDLs can only be done for pollutants

(C) Each State shall establish for the waters identified in paragraph (1)(A) of this subsection, and in accordance with the priority ranking, the total maximum daily load, for those pollutants which the Administrator identifies under section 1314 (a)(2) of this title as suitable for such calculation...

- TMDL program uses the CWA-NPDES definition of pollutant (i.e., something added to the water)



So, what is a pollutant?

- Phosphorus? ✓ Yes
- Bacteria? ✓ Yes
- DO? No, it is an impairment
- Habitat? No, it is an impairment
- Temperature? ✓ Yes, because Congress says so
- Impaired biologic community? No, it is an impairment (observed effect)
- Flow? No

So, what else is a pollutant?

- A dam? No - pollution
- Low DO behind a dam
(due to excessive nutrients
collecting there)? Yes
- Channelization? No – pollution
- Sediment entering a
waterbody due to
channelization removing
all riparian vegetation? Yes

Narrative standards

- So, if you know the pollutant, and it exceeds the numeric WQS, you are good to go. (chloride, *E. coli*)
- But, what if it is a narrative WQS or “observed effect” (DO, IBC, etc)?
 - First step, have to figure out the pollutant
 - This relationship needs to be laid out clearly
 - linkage between pollutant and impairment

Examples

- DO exceedences caused by excessive plant growth as a result of phosphorus (or nitrates)
- IBC problems due to silted-in stream due to excessive sediment running off fields (note: here is where habitat can be worked in)
- Turbidity problems due to high TSS due to streambank erosion during storm events (note: here is how flow can be worked in)

Sediment→habitat→IBC

Specific examples

- OEPA has lots of examples;
 - Big Walnut, Auglaize, Big Darby
 - *Association between Nutrients, Habitat, and Biological Biota in Ohio Rivers and Streams*, 1999
 - Uses QHEI scores to show that sediment is degrading the habitat, thus impairing the biota
 - Currently upgrading to ensure it meets *Anacostia* concerns (call us before you use this)
- Wisconsin: Gills Coulee
 - used reference condition to determine sediment loads
 - Target was WWF and no nuisance deposits
- Michigan: Sand Creek
 - Targets were habitat score and TSS load
 - Procedure 51 used



Low DO→plant growth→phosphorus

Specific Examples

■ OEPA

- *Association* document links biota and phosphorus
- Same examples as sediment

■ Michigan: Berry Drain

- DO a result of TSS loads containing TP, BOD materials

■ Minnesota

- Lake Independence: rec use discussed

Reference sheet

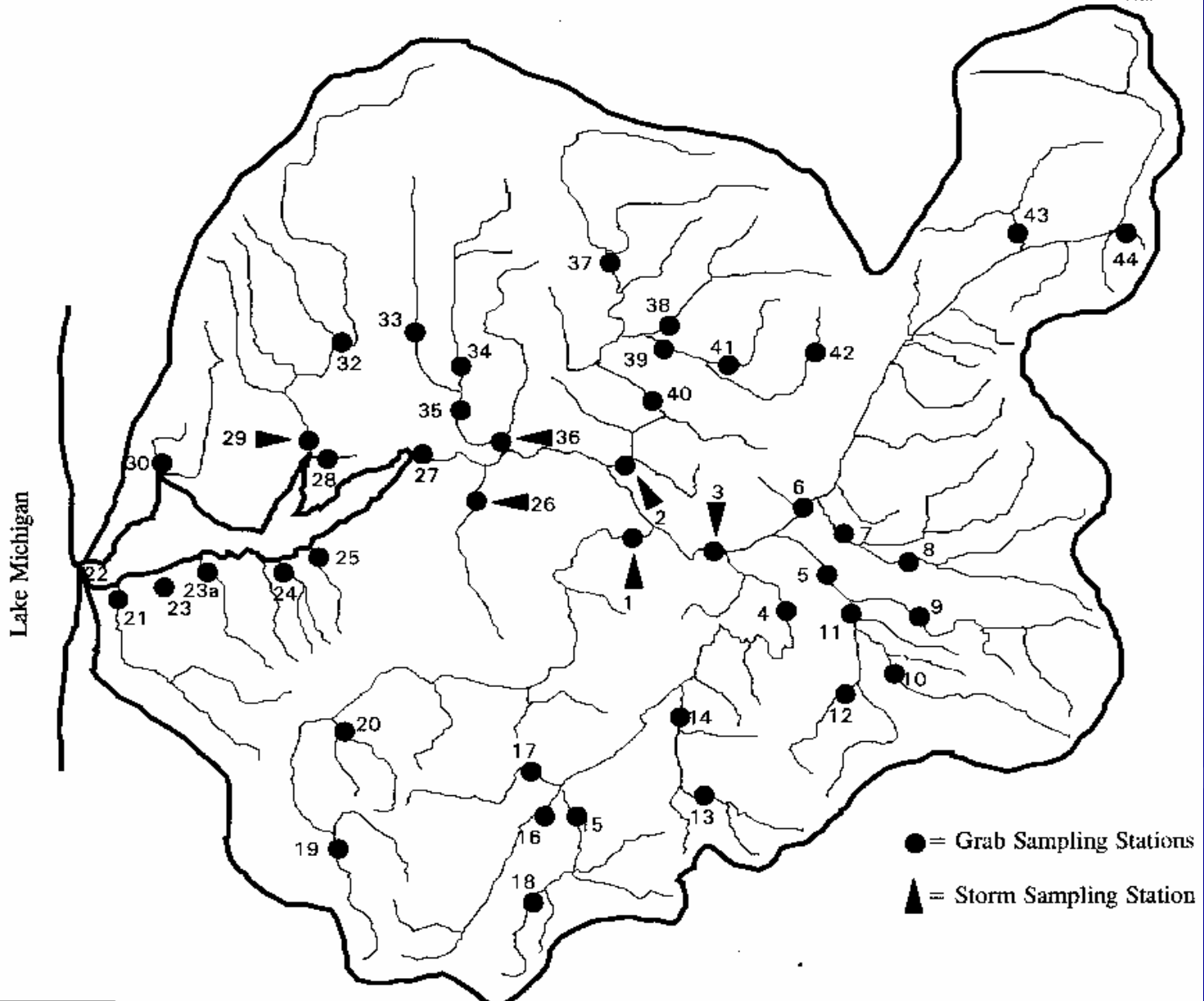
- **Pollution: man-made alteration**
 - Dams, Culverts, Channelization
- **Impairment: exceedence of a WQS/designated use**
 - DO, pH, IBC, *E. coli*, Chloride
- **Pollutant: something added to the waterbody to cause an impairment**
 - Phosphorus, *E. coli*, TSS, Chloride

Lake Macatawa, MI

- Shallow lake located on the western shore of Lake Michigan
- Listed on the 1998 303(d) list as impaired due to high nutrient levels
 - Poor fish community
 - Algal blooms
 - Sedimentation
 - Low DO
- 44 point sources; 4 are major sources
- Lots of run-off from agricultural land

Figure 1

LAKE MACATAWA WATERSHED




Lake Macatawa, MI

- Violated narrative WQSs for
 - turbidity, color, SS, and deposits
 - Non-supportive of aquatic life use
 - Excessive aquatic plants/algae
- Which pollutant? – TSS? Phosphorus?
BOD?
 - State determined phosphorus the best pollutant to target
 - Better linkage to impairments, more data
 - TP reductions will also involve TSS reductions

What target?

■ Setting the target

- Lake was so bad, models were hard to use to predict the target
- First target was 50 λ g/L based upon book values and BPJ (30 would actually work, but too hard to meet )
- Ultimately used a reference lake to demonstrate the target of 50 λ g/L
 - Demonstrated that the lake was meeting WQSSs (secchi depth, fish community, etc)
 - Similar land use, similar size and depth

Where are we at now?

- Watershed info and background, 303d list
 - WQS – impairment being addressed
 - Pollutant identified
 - Linkage between impairment and pollutant clearly explained
 - Parts 1 and 2 of the TMDL template
-
- We have laid out where we are, now we need to figure out where we need to be

