Quantification of Sources

- Background
- Agricultural
- Urban Runoff
- Industrial and Municipal Point Sources
TMDL Development Process

- Allocation strategy consistent with other TMDLs.
  1. Start with baseline condition,
  2. evaluate alternative limits and bring everyone to the same level,
  3. apply needed reductions using a proportional reduction (by mass, equal percent reduction) approach.

- Allocations driven by local water quality requirements and downstream reservoirs.

- Calculated allocations with and without SSC.
Load Allocation

- Agricultural (includes load from CAFO land spreading)
- Non-permitted Urban
- Background

Waste Load Allocation

- WWTPs / POTWs
- Industries
- Permitted MS4s
- Non-Metallic Mines
- Construction Sites
- NCCWs
- CAFOs
As a result of the TMDL, wastewater facilities will receive mass allocations that meet water quality standards for both local and downstream reservoirs.

Once EPA has approved the TMDL, the next permit must contain an expression of the WLAs consistent with the TMDL.
Allocations to MS4s & NPS

* **Permitted MS4s (See Table J3 and J4, K3 and K4)**
  * Apply percent reduction to “no-controls”/baseline condition as outlined in the TMDL MS4 guidance.
  * Extended compliance option with agreed upon benchmarks.

* **Nonpoint Source (See Table J4 and K4)**
  * Compliance with more stringent performance standards is voluntary unless promulgated through NR 151.004 to become a performance standard. Cost share requirements still in place.
Questions

• Is phosphorus really the main cause of algae blooms?

• Doesn’t some of the phosphorus come from the lake bottom sediment?

• Do Petenwell and Castle Rock need to reach 40 µg/L TP to meet recreational water quality standards?

• How much reduction in algae can we expect when the TMDL goals are met?
Is phosphorus really the main cause of algae blooms?

Reducing Phosphorus to Curb Lake Eutrophication is a Success

David W. Schindler,*† Stephen R. Carpenter,‡ Steven C. Chapra,§ Robert E. Hecker,‖ and Diane M. Orihel¶

“Here we review the evidence, finding that numerous long-term studies of lake ecosystems in Europe and North America show that controlling algal blooms and other symptoms of eutrophication depends on reducing inputs of a single nutrient: phosphorus.”
Is phosphorus really the main cause of algae blooms?
Doesn’t some of the phosphorus come from the lake bottom sediment?
Doesn’t some of the phosphorus come from the lake bottom sediment?
Doesn’t some of the phosphorus come from the lake bottom sediment?

Phosphorus moves in and out of sediment seasonally, but there is net retention in the lakes.

Table 15 (page 67 in draft report)

<table>
<thead>
<tr>
<th>Water Body</th>
<th>Inflow TP load (t/yr)</th>
<th>Outflow TP load (t/yr)</th>
<th>TP Retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petenwell Lake</td>
<td>428</td>
<td>319</td>
<td>25%</td>
</tr>
<tr>
<td>Castle Rock Lake (Main Body)</td>
<td>329</td>
<td>346</td>
<td>11%</td>
</tr>
<tr>
<td>Castle Rock Lake (Yellow River Arm)</td>
<td>59</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Site-Specific Total Phosphorus Criteria for Petenwell Flowage, Castle Rock Flowage, and Lake Wisconsin

- Wisconsin Administrative Code NR 102.06(7) states that site-specific criteria (SSC) for total phosphorus (TP) may be adopted where site-specific data and analysis using scientifically defensible methods and sound scientific rationale demonstrate a different criterion is protective of the designated use of the specific surface water segment or waterbody.

- TP SSC were estimated for Petenwell Flowage, Castle Rock Flowage, and Lake Wisconsin that are expected to meet the chlorophyll a (CHL) target for recreational use (70th percentile CHL < 20 µg/L during July 15 – September 15).

- The SSC are based on empirical estimates of the effects of TP concentration, river discharge, and day of year on CHL concentration.

- The recommended SSC for Petenwell and Castle Rock are 53 and 55 µg/L TP, respectively, as a summer (June 1 – September 15) mean concentration, which is higher than the existing criteria (40 µg/L TP).

- The recommended SSC for Lake Wisconsin is 47 µg/L TP, which is lower than the existing criterion (100 µg/L TP).

- See TMDL report Appendix C for details.
Lake Wisconsin
Comparison with Other Lakes
How much reduction in algae can we expect when the TMDL goals are met?

Enjoyment is somewhat impaired for half of WI lake users

- Algal green
- Nuisance
- Severe nuisance (Lake Pepin)

Moderate risk from cyanobacterial toxins (World Health Organization)
How much reduction in algae can we expect when the TMDL goals are met?

- Enjoyment is somewhat impaired for half of WI lake users
- Algal green
- Nuisance
- Severe nuisance

Moderate risk from cyanobacterial toxins

(Lake Pepin)

(World Health Organization)
Moving Forward

* March 5th Stakeholder Meeting in Rhinelander at 1:00 to 4:00 at Quality Inn

* March 6th Stakeholder Meetings in Stevens Point at the Courthouse Annex Building at 10:00 to 12:00 and 4:00 to 6:00

* March 14th Stakeholder Meetings in Portage at the Portage Public Library at 10:00 to 12:00 and 4:00 to 6:00

Comments Accepted Through April 23rd, 2018

* Official 30-Day Public Informational Hearing Process

* Finalize TMDL and Send for EPA Approval
http://dnr.wi.gov/topic/tmdls/

The DNR, together with many partners throughout the basin, are working to improve water quality of the Wisconsin River, its reservoirs and tributaries. The Total Maximum Daily Load (TMDL) study and implementation plan will provide a strategic framework and prioritize resources for water quality improvement in the Wisconsin River Basin.

Draft report downloads
The following files will be discussed during the Feb. 21, 2018, webinar.

- Draft Report
- GIS Data
- Appendices
For those who are unable to attend the sessions, comments on the initial draft TMDL plan, which will be released at the webinar, may be submitted to DNRWisconsinRiverTMDL@wisconsin.gov or by mail to:

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