Oconomowoc Watershed Protection Program

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By:
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City Of Oconomowoc
Oconomowoc River Watershed

46% Agriculture
19% Wetland
14% Forest
11% Urban, suburban
10% Water or open land

49 Miles in length
17 Lakes (10 impoundments)
83,000 acres
3,000 animal units
Watershed Features
Did you know?
Oconomowoc WWTP
The only permitted treatment facility in the watershed
Rock River Watershed TMDL Study 2006 - 2012

Legend
USGS Gaging Station
- 2 Year Sampling
- Long Term Sampling
- Flow Only
- Waste Water Outfall
Impaired Stream Segment
- Sediment or TSS
- Dissolved Oxygen or Phosphorus
- Impaired Lake
- Lake or River
- County Boundary
- Rock River Basin

Impaired Waters of Rock River Basin

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Watershed Health

- 3 Impaired streams
- 3 Pending Lakes

Jefferson County

OWWTP

Battle Creek

Mason Creek

Flynn Creek

Ocon. River

Washington County

Waukesha County
“Impaired”
What does this mean?

• The water body is considered “Impaired” if it’s designated use is not being met.
  
  Examples:
  - Is the water body able to support game fish?
  - Is the water body safe to swim in?

• The DNR reviews every two years and adds or subtracts from the list.

• The water body can be “Impaired due to low oxygen, high TSS, high phosphorus, high bacteria counts.
What does “Impaired” look like?
Oconomowoc River – Not Impaired, however…..
Watershed Health at the Rock River Confluence

Present - 0.09 Mg/l Total Phosphorus

Criteria for compliance with RR TMDL - 0.075
1. City of Oconomowoc WPDES Permit March, 2014
   • Mass based limits for Total Suspended Solids
   • Mass based limits for Phosphorus
   • From Rock River Total Max. Daily Load ("TMDL")

2. Rock River TMDL affects both Oconomowoc (WWTP) and Municipal Separate Storm Sewer Systems (MS4)

3. Current Permit: Phosphorus limit of 0.17 mg/l by April, 2022
The City’s Options:

• **Capital Projects at the Plant and in Storm Water System** – Build more treatment facilities to get down to the ultra low levels for Total Phosphorus.

• **ADAPTIVE MANAGEMENT** – Watershed based approach. Partners and stakeholders work collectively to remediate problem areas. Requires documented water quality improvement and compliance with TMDLs.
ADAPTIVE MANAGEMENT THREE (3) 
ELIGIBILITY CONDITIONS:

1. Receiving water does not meet water quality for TP. TP (May – Oct) 0.096 mg/l; standard is 0.075 mg/l

2. Watershed is non-point dominated. 70% non-point, 30% point

3. Facility would need plant upgrades to meet the Water Quality Based Effluent limit.
DRIVERS FOR THE DECISION TO GO AM

- Estimated $5M capital costs for WWTP for TP reduction
- Estimated $10M capital costs for MS4 TP reduction
- Long term sustainability and environmental benefits of AM approach for the entire watershed.
Adaptive Management Advantages

• Requires actual water quality improvement.
• Addresses the remediation of problem areas throughout the watershed.
• Reduces overall costs and cost per pound of pollutants removed.
• Facilitates the involvement of many public and private entities.
• Reduces duplication of efforts.
• Long term cost savings for all public and private entities.
Adaptive Management Plan

• First full application submitted March 2015

• Approved by the DNR on September 16.

• First AMP approved in the state.
AMP – By the numbers

• Will require Confluence compliance within three permit terms. 0.075 mg/l, five year statistical average.

• WWTF effluent limits – 0.5 mg/l instead of 0.17 mg/l at design flow.
Where will the reductions in phosphorus come from?

☑ Critical Source Areas
☑ Urban Storm Water Systems
☑ Oconomowoc Wastewater Treatment Facility
Critical Source Areas
Waukesha and Jefferson County
Critical Source Areas
Washington and Waukesha County
Watershed Monitoring
OWPP Monitoring Points in the Watershed
Rock River Phosphorus Concentration
OWPP Monitoring Program

- Rock River Hwy. P/E
- Rock River Hwy. F
- Confluence

Total Phosphorus mg/l

Graph showing the concentration of total phosphorus in the Rock River from August 2014 to August 2015, with monitoring sites at Rock River Hwy. P/E, Rock River Hwy. F, and Confluence.
Regional Conservation Partnership Program

- NRCS Program, USDA
- Part of Farm bill
- Conservation measures for soil, water, wildlife and natural resources
- Build partnerships, leverage resources on watershed scale
Regional Conservation Partnership Program

- Independent of WDNR and EPA
- Objectives aligned with TMDL and Adaptive Management program
Partners and Stakeholders

- MS4s – there are currently six
- Industrial permit holders
- Land Owners
- Lake Management Districts
- Land Conservation Organizations
- County Land Management Departments
OWPP Progress so far

• Partnerships formed
• Awarded RCPP Grant from USDA
• Gained approval for Adaptive Management Plan
• Three Producers Meetings
• Testing and research completed evaluating alternative treatment methods at the treatment plant to meet lower TP limits.
OWPP Progress ......

• Two producer projects signed and underway.  
  Filter strips, cover crops

• Three producer projects pending.  
  Cover crops, filter strips, pollinator habitat
Cost Split Percentages

CSA #51 – Filter Strip Project

- FSA/NRCS: 66%
- OWPP: 13%
- NLM: 13%
- Brks/Morris: 8%
- Producer: 8%
Meeting Future TP Limits Within AMP at the Oconomowoc WWTP
Pilot Testing Completed
2013 - 2015

- Iron addition feed rate
- Multiple feed points
- Evaluation of Bio-P removal
- Rare earth chemical addition
- Combination of iron and rare earth chemical
Pilot Testing Conclusions

• Iron feed rate – unable to add required volume due to filter fouling.
• Multiple feed points – generally no significant advantage.
• Bio-P Evaluation – capital intensive and questionable operation
• Rare earth chemical addition – successful but not cost effective long term.
• Combination of iron and rare earth chemical – results were favorable and cost effective. Appears to be our method of removal going forward – no further capital improvements necessary! Buys time.
Next Steps

• Now organizing our land owner contact process for the upcoming “off season”.
• Meet with local government bodies and Lake Management Districts.
• Phase Two of Farmer education on available programs.
• Publicize OWPP and organize citizen volunteer groups.
Success Through Cooperation

OWPP

- Government
- Ag Community
- Citizens, Owners
- LMD, LCD

WIN → WIN → WIN
Thanks to our Partners

Tall Pines Conservancy

Executive Director, Susan Buchanan

Ruekert & Mielke, Inc.

Dave Arnott, PE, Senior Project Manager
Thank you!

Questions?