Watershed Plan Implementation in Oklahoma: What We Do and What We’ve Learned

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What is the purpose of a Watershed Plan?

Solving Water Quality Problems by:

- Prioritizing Areas of Focus (Elements B & C)
- Identifying Partners and Assemble Resources (Element D)
- Identifying Causes and Sources (Element A and H)
- Assemble Resources (Element D)
- Implement Practices (Elements B, C, F)
- Education (Element E)
- Evaluate Your Success (Element G & I)
- Remain Flexible
1) Prioritize Areas of Focus
Impaired Waters in Oklahoma

OK Focuses on Priority Watersheds

- Prioritized on:
  - % impaired
  - Causes and sources of impairments
  - Public water supply
  - Endangered species
  - Etc.
2) Identify **Problem(s) and Sources**

303(d) App. C – Why are they impaired? - ID Problems and Sources

### Appendix C

2010 Oklahoma 303(d) List of Impaired Waters

<table>
<thead>
<tr>
<th>Waterbody ID</th>
<th>Waterbody Name</th>
<th>Waterbody Size</th>
<th>Category</th>
<th>TMDL Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK1204001001001</td>
<td>Webbers Falls Lake</td>
<td>11,600.00 ACRES</td>
<td>5a</td>
<td>2021</td>
</tr>
<tr>
<td>Turbidity</td>
<td>FWP - Warm Water Aquatic Community</td>
<td>149</td>
<td>Unaltered Potential Sources</td>
<td></td>
</tr>
<tr>
<td>Eutrophication</td>
<td>Primary Body Contact Recreation</td>
<td>46, 104, 128, 149</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OK120400101302</td>
<td>Greenleaf Lake</td>
<td>920.00 ACRES</td>
<td>5a</td>
<td>2018</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>FWP - Warm Water Aquatic Community</td>
<td>149</td>
<td>Unaltered Potential Sources</td>
<td></td>
</tr>
<tr>
<td>Oxygen, Dissolved</td>
<td>FWP - Warm Water Aquatic Community</td>
<td>149</td>
<td>Unaltered Potential Sources</td>
<td></td>
</tr>
<tr>
<td>Turbidity</td>
<td>FWP - Warm Water Aquatic Community</td>
<td>149</td>
<td>Unaltered Potential Sources</td>
<td></td>
</tr>
<tr>
<td>OK120400102609</td>
<td>Arkansas River</td>
<td>11,17 MILES</td>
<td>5a</td>
<td>2018</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>FWP - Warm Water Aquatic Community</td>
<td>149</td>
<td>Unaltered Potential Sources</td>
<td></td>
</tr>
<tr>
<td>Eutrophication</td>
<td>Primary Body Contact Recreation</td>
<td>46, 104, 128, 149</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chl-a</td>
<td>Fish Consumption</td>
<td>10, 140</td>
<td></td>
<td>Unaltered Potential Sources</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>Agricultural</td>
<td>49, 102, 140</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Using R Software to define causes (stressors) linked to poor stream condition

• R is Open Source (Free) Software – scripts provided by EPA
• Extent Estimates give the percent of stream length in “Good,” “Fair,” or “Poor” condition
• Relative Risk assesses the relative importance of multiple stressors (Which stressors should be the major focus for remediation, restoration or protection?)
• Attributable Risk estimates the percent of improvement (if it were possible to completely address a stressor)

ID Sources

• Identify the most likely activities causing the problem
• Select AREAS of your watershed most likely to be contributing
  – Use a watershed model
  – Windshield/foot surveys
3) Identify and Convince Partners

Oklahoma Program Partners

- Work through Conservation Districts and with local NRCS
  - Hire Local Project Staff
- Assembled a Local Watershed Advisory Group
  - Recommends Practices and Cost-Share Rates to be Offered
4. Draft the Watershed Plan

5. Implement Practices
Implement Practices- Be Flexible

• Typically implement NRCS standard practices
• However, sometimes choose NEW practices or alter existing

Choose Practices- Be Flexible
Use Cost-Share Rates to Help Prioritize

- Higher rates (90% or higher) for practices that should have the most impact
- Lower rates for things producers want anyway (cross fencing, etc.)

6. Education
Demonstration Farm

7) Evaluate Your Success
Monitor to Show Success

- Photodocumentation: Take Before and After photographs to document improvement in a site.

Monitor to Show Success

- Evaluate Water Quality
Paired Watershed Monitoring

- Demonstrates that change in WQ are the result of management changes in the watershed rather than due to changes in climate
- Collects ENOUGH data to be scientifically valid
Implement Multi-Faceted Monitoring Program

Change in Total Phosphorus Load

- Paired watershed analysis allows estimation of the effect of BMPs while controlling for environmental variability
- Results include:
  - 24.5% reduction in TP load in Honey Creek (1.5 years of data)
  - 30% reduction in TP load in Flint Creek of the Illinois River (2 years post-impl. data)
  - 37% reduction in TP load in Spavinaw and Beaty Creeks (8 years post-impl. data)

- Every time we’ve used this method, we’ve been able to detect positive water quality impacts from our BMPs
8) Remain Flexible

Oklahoma Successes- WQ

- In EPA’s 2009 - 2012 Grants Reporting and Tracking System Summary Report, **OK was in the top 5 states in the nation at estimated nitrogen and phosphorus load reductions.**
Oklahoma Successes - WQ

• Only three states in the country have more nonpoint source success stories (www.epa.gov/nps/success/)

Oklahoma Successes- cont.

• **New and continued sources of funding**-
  – EPA funding
  – USDA CREP programs
  – Private funding from rural electric cooperatives, Ag groups, etc.
  – EPA CW SRF funds
  – State funding for monitoring network

• **New Partners**-
  – Tribes
  – State agencies
  – Etc.
Lessons Learned

• ALWAYS remember that WQ improvement is the ultimate goal, but there is more than one way to get there and you might not have the only map.
• Set REALISTIC milestones
• Successful solutions are not “Set-it-and-Forget-it”
• Holler about your successes because people will have already heard about your failures.

# 1 Lesson Learned

• Don’t Scrimp on Your Water Quality Monitoring Budget
Questions???

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