Background for Nutrient Reduction Practice

- Existing Buffer Restoration crediting is based on rural conditions
- Assumes literature-based values for areas of agricultural drainage and nutrient loads from ag land covers
- Needed a nutrient crediting method for buffer restoration in developed (non-ag) settings
Brief History

• Initial practice development by UNRBA and Cardno Spring 2016
• Presentation to NSAB December 2016
• Lots of comments, reviewed method against data, extensive revision through 2017
• Review/comment by UNRBA, 401 Unit, DMS
• Incorporate comments and revise for NSAB
Desired Practice Elements

• Variable buffer widths (min 20’ – max 200’)
• Calculation based on site-specific conditions
• Diffuse concentrated flows for more credit
• Time-limited implementations (requires no conservation easement)
• Minimized surveying and reporting requirements
• Incorporate existing forest and utility easements
• Simple credit calculation method
• Otherwise: use similar conditions and requirements as Alt. Buffer Mitigation Rule (.0295)

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Jan 2018 Draft: Practice Conditions

- Use in areas of >50% developed
- Restoration and/or enhancement
- All stream flow types and conditions
- Min 20’ width, max 200’ width
- Allow the use level spreaders to diffuse more flows
- Buffer use limitations recommended by CWP

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Jan 2018 Draft: Practice Requirements

• Buffer Improvement Plan:
  • Map with delineated area of land covers
  • Implementation schedule, plant establishment, grading, soil improvement / erosion control, fertilization, weed / pest control
  • O & M and Monitoring plan
• 260 stems/ac at 5 years, 4+ hardwood/shrub species
• Annual documentation first 5 years, every 5 years after for time-limited projects
• Level spreaders designed to 65ft/cfs
Jan 2018 Draft: Credit Calculation

- Nutrient reduction: land conversion + treatment of runoff through buffer
- Reduction from land conversion and nutrient loads in upslope runoff (developed) → SNAP v4
- Nutrient loads from upslope ag → fixed loading
- Buffer treatment → percent reduction
- Percent reduction (N & P) based on Nitrogen Loss Estimation Worksheet
- Credit modifications for credit release schedule, enhancement, low survivorship
<table>
<thead>
<tr>
<th>Average Buffer Width from Top-of-Bank (feet)</th>
<th>Percent Nitrogen Reduction</th>
<th>Percent Phosphorus Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>30-49</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>50-74</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>75-99</td>
<td>32%</td>
<td>32%</td>
</tr>
<tr>
<td>100-199</td>
<td>35%</td>
<td>35%</td>
</tr>
<tr>
<td>200+</td>
<td>40%</td>
<td>40%</td>
</tr>
</tbody>
</table>
## Jan 2018 Credit Release Schedule

<table>
<thead>
<tr>
<th>Reporting Period</th>
<th>Credit Release Modifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial implementation</td>
<td>50% of full credit</td>
</tr>
<tr>
<td>1 year after implementation</td>
<td>60% of full credit</td>
</tr>
<tr>
<td>2 years after implementation</td>
<td>70% of full credit</td>
</tr>
<tr>
<td>3 years after implementation</td>
<td>80% of full credit</td>
</tr>
<tr>
<td>4 years after implementation</td>
<td>90% of full credit</td>
</tr>
<tr>
<td>5 years after implementation</td>
<td>100% of full credit</td>
</tr>
<tr>
<td>&gt;5 years after implementation</td>
<td>100% of full credit</td>
</tr>
</tbody>
</table>
## Jan 2018 Agricultural Land Use Loading Rates

<table>
<thead>
<tr>
<th>Agricultural Land Cover</th>
<th>N loading rate (lb/ac/yr)</th>
<th>P loading rate (lb/ac/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crops</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Pasture</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

- Only use to calculate load where ag land use is <50% of area
- Use SNAP v4 for all other calculations of nutrient load in runoff
Changes from Dec 2016 Draft

• Sticks to conditions and requirements of .0295 as much as possible:
  • Vegetative success criteria
  • Stream types and site conditions
  • Improvement plan requirements

• Mods from .0295 are for desired elements and to ensure accountability
  • 5 year reporting for time-limited projects, no easement
  • Credit release schedule and low survivorship discount
  • Veg survey explicit, but simpler than standard UMBIs
  • Buffer use limitations
Changes from Dec 2016 Draft

• Same crediting for all stream flows/conditions
• Same reduction through buffer for N and P
• Simplified buffer use limitations
• Predominantly developed drainage area
• Inclusion of minor areas of agriculture
• Enhancement may be 100% of project
• Sewer easements in Zone 2 OK
• Simplified differences between permanent and time-limited
• Percent reduction based on blocks of buffer width
• Options for incremental percent reduction if not restoring adjacent to the streambank
Unchanged from Dec 2016 Draft

• Sites with all kinds of stream conditions/flows
• Min width 20’, max width 200’
• Level spreaders to diffuse flows, MDC with 65ft/cfs
• Requires diffusion of roof drains, small stormwater
• No additional stormwater flows
• Permanent and time-limited options
• Land conversion calculation separate from buffer treatment calculation
• Percent reduction based on NLEW
QUESTIONS?

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