Nutrient Committee Report

Consideration of a rational path forward

September 11, 2018

Outline

• A call for action
• Example state models
• Iowa nutrient model review
• Discussion
Nutrient Regulation is Part of our Future

- USEPA will continue to push KDOW

- A proactive approach may offer better control of our destiny

2007 Grumbles Memo 2011 Stoner Memo 2016 Beauvais Memo

Gulf of Mexico Hypoxic Zone

National concerns:
- Dead Zone
- Task force formed
- Mississippi River basin
- State specific Nutrient Reduction Strategies are being developed
Where do Nutrients Come From?

- Urban Runoff: <5%
- Agriculture: >75%
- WWTPs: >20%

Peer States Take Action - Indiana

- Indiana
  - Non Rule Policy in 2014
  - Phosphorus Limit of 1 mg/L
  - Every plant above 1 mgd
  - Silent on Nitrogen
Peer States Take Action - Ohio

- Great Lakes
  - Phosphorus Limit of 1 mg/L
  - Silent on Nitrogen
- Ohio River
  - Every plant above 1 mgd must Develop study to achieve Phosphorus Limit of 1 mg/L (2018 initiative)
  - Silent on Nitrogen

Peer States Take Action - Wisconsin

- 1972 – Great lakes basin 1 mg/l Phosphorus limits
- 1993 Statewide 1 mg/L Phosphorus Limits
- 2010 New Rule, in-stream water quality standards

<table>
<thead>
<tr>
<th>Waterbody Type</th>
<th>Water Body Phosphorus Criterion, mg/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers (non-wadeable)</td>
<td>0.10</td>
</tr>
<tr>
<td>Streams</td>
<td>0.075</td>
</tr>
<tr>
<td>Reservoirs</td>
<td>0.03 - 0.04</td>
</tr>
<tr>
<td>Inland Lakes</td>
<td>0.015 - 0.04</td>
</tr>
<tr>
<td>Great Lakes</td>
<td>0.005 - 0.007</td>
</tr>
</tbody>
</table>
Peer States Take Action - Iowa

- 2006 – Developed strategy
- 2011 - EPA endorsed reduction strategy
  - Focus on 104 major Municipal and 50 industrial dischargers
  - Achieve BNR equivalent
    - 66% total nitrogen removal
    - 75% total phosphorus removal
- 2018 – 5 year Review
  - Great participation from regulated communities
  - 89% required to prepare feasibility studies
  - 55% have completed feasibility studies
  - Results – 13 municipal plants - removed ~4M lb N/year
    - 6 municipal plants –removed ~0.7M lb P/rear
  - USEPA seems happy
Presentation Goals

- Why we did what we did
- Permitting approach and why
- Progress to date – permitting, monitoring, nutrient reduction, next steps
- Questions-Discussion

When water quality was worse:

There were times when the flow in the Missouri River along the west shore was literally red with blood. Great mats of congealed grease floated downstream for miles and entrails collected in scummy islands.

Omaha's primary treatment plant went into operation only four years ago (~1965). Before that, it too dumped all its wastes untreated into the Missouri River.
Why this strategy?

- 2006

- Excessive nutrients can cause water quality problems
  - In state, downstream

- Numeric nutrient criteria development presents challenging problems
  - Difficult to pin down cause & effect relationship
  - Difficult to comply with permit limits and costly to try
  - Possibly every water body impaired

- A different approach needed (IAWED, ABI, & ILOC)
PS and NPS Common Threads

- Acknowledgement of the problem

- Recognition that traditional approaches are not workable (e.g. cost, technically)

- Willingness to want to do something now to make progress

- Needs to be practical in its implementation

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Iowa Strategy General Approach

1) Achieve nutrient load reductions through performance-based actions, while

2) Continuing to assess and evaluate the nutrient water quality standards
PS/NPS Collaboration

• PS account for 8% of the TN and 20% of the TP annually

• NPS account for 92% of the TN and 80% of the TP annually

• Both NPS and PS play important roles on an annual and seasonal basis for Iowa water quality

Point Source Strategy

• Working closely with CWA regulated community

• Use existing rules (Chapter 567 IAC Chapter 62)
  
  62.8(5) Effluent limitations for pollutants not covered by effluent or pretreatment standards. An effluent limitation on a pollutant not otherwise regulated under 62.3(455B) to 62.6(455B) (e.g., polybrominated biphenyls, PBBS) may be imposed on a case-by-case basis. Such limitation shall be based on effect of the pollutant in water and the feasibility and reasonableness of treating such pollutant.

• Use performance-based limits in lieu of nutrient criteria
Implementation Flexibilities

- Regulatory certainty – 10 year assurance
- Affordability considerations
- Ability to fine tune limits
- Annual average mass permit limits
Who?

Focus on:
- ~100 major municipal wastewater treatment plants
- ~50 industries with biological treatment for process waste
- Total of ~150

Goal:
- To achieve BNR equivalent nutrient removal at each plant
  - TN removal ~66%
  - TP removal ~75%

Cost and Affordability

Estimated Costs for BNR Improvements for Municipal Major (Target Effluent TN = 10 mg/L, Target Effluent TP = 1 mg/L)

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th># of Facilities</th>
<th>Combined Design Flow (MGD)</th>
<th>Total Capital Cost (Million $)</th>
<th>Total Annual O&amp;M Cost (Million $)</th>
<th>Total Present Worth Cost (Million $)</th>
<th>Total Annual Cost (Million $)</th>
<th>Cost Household (Million $)</th>
<th>Weighted Cost Household (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activated Sludge</td>
<td>56</td>
<td>322</td>
<td>385</td>
<td>228</td>
<td>56.9</td>
<td>5.9</td>
<td>0.36</td>
<td>1.18</td>
</tr>
<tr>
<td>Aerated Lagoon</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>110</td>
<td>11.0</td>
<td>1.1</td>
<td>0.05</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Totals               | 102           | 430                       | 887                           | 13.5                             | 101.9                                | 11.1                         | 0.64                   | 18.8                            |

Estimated Costs for BNR Improvements for 5 Industries with Biological Treatment (Target Effluent TN = 10 mg/L, Target Effluent TP = 1 mg/L)

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th># of Facilities</th>
<th>Combined Design Flow (MGD)</th>
<th>Total Capital Cost (Million $)</th>
<th>Total Annual O&amp;M Cost (Million $)</th>
<th>Total Present Worth Cost (Million $)</th>
<th>Total Annual Cost (Million $)</th>
<th>Cost Household (Million $)</th>
<th>Weighted Cost Household (Million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activated Sludge</td>
<td>20</td>
<td>44.2</td>
<td>29.3</td>
<td>2.9</td>
<td>56.1</td>
<td>4.2</td>
<td>0.12</td>
<td>0.28</td>
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<tr>
<td>Fixed Film</td>
<td>1</td>
<td>0.6</td>
<td>2.7</td>
<td>0.04</td>
<td>3.3</td>
<td>0.7</td>
<td>0.01</td>
<td>0.01</td>
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<tr>
<td>Aerated Lagoon</td>
<td>7</td>
<td>5.8</td>
<td>86.5</td>
<td>2.24</td>
<td>116.0</td>
<td>8.6</td>
<td>0.05</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Totals               | 28             | 56.7                      | 118.5                         | 4.2                              | 175.5                                | 13.1                         | 0.71                   | 1.71                             |
Gulf Restoration Network v. EPA

- Recent decision in December 2016

- Upheld EPA denial petition for rulemaking to establish numeric nutrient criteria for states within the Mississippi basin

- Court found that "the most effective and sustainable way to address widespread and pervasive nutrient pollution in the Mississippi-Atchafalaya River Basin and elsewhere would be to build on its earlier efforts and to continue to work cooperatively with states and tribes to strengthen nutrient management programs" is a valid legal basis to decline to make a necessity determination

- Court also noted that the use of nutrient reduction frameworks may only buy EPA so much time if they can't prove they're working
Iowa Progress to Date on Point Sources

*84 of 104 Major POTWs, 41 of 50 Industries; 89% of the wastewater permitted

Iowa Progress to Date on Point Sources

*46 of 104 Major POTW & 22 of 50 industrial permits have been amended
Iowa Point Source Monitoring

September 2013

ZERO facilities sampling, NRS based off of engineering assumptions

-5 years

April 2018

125 facilities X 4 samples/wk X 52 weeks = ~26,000 samples annually
(approximately $925,000 annually)

Performance by all facilities with 10 or more months of data

<table>
<thead>
<tr>
<th></th>
<th>Estimate (Target)</th>
<th>POTW</th>
<th>Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Nitrogen (average)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of facilities</td>
<td>63</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>raw waste (mg/L)</td>
<td>25</td>
<td>29.7 (range 11.9 – 83.6)</td>
<td>79.6 (range 16.5 – 314.6)</td>
</tr>
<tr>
<td>final effluent (mg/L)</td>
<td>10</td>
<td>16.6 (range 2.1 – 58.3)</td>
<td>21.7 (range 4.5 – 79.9)</td>
</tr>
<tr>
<td>% removal</td>
<td>66%</td>
<td>41.8% (range -10.0% – 91.9%)</td>
<td>69.0% (range 20.9% – 89.3%)</td>
</tr>
<tr>
<td><strong>Total Phosphorus (average)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of facilities</td>
<td>63</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>raw waste (mg/L)</td>
<td>4</td>
<td>5.1 (range 1.9 – 31.8)</td>
<td>20.6 (range 2.5 – 51.5)</td>
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<tr>
<td>final effluent (mg/L)</td>
<td>1</td>
<td>3.1 (range 0.7 – 24.9)</td>
<td>12.8 (range 0.8 – 73.0)</td>
</tr>
<tr>
<td>% removal</td>
<td>75%</td>
<td>40.5% (range -14.7% – 82.8%)</td>
<td>48.8% (range -41.9% – 84.8%)</td>
</tr>
<tr>
<td><strong>Annual Load Reduction (2015-2016)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total nitrogen (tons)</td>
<td>-</td>
<td>5,069</td>
<td>517</td>
</tr>
<tr>
<td>Total phosphorus (tons)</td>
<td>-</td>
<td>937</td>
<td>273</td>
</tr>
</tbody>
</table>

Note: Up from 43 POTWs and 9 industries in December 2016
Performance by treatment type for facilities with 10 months or more of data for 2016-2017 reporting cycle.

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>No.</th>
<th>Total Nitrogen</th>
<th>Total Phosphorus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Raw (mg/L)</td>
<td>Final (mg/L)</td>
</tr>
<tr>
<td>POTW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerated Lagoon</td>
<td>3</td>
<td>22.5</td>
<td>16.6</td>
</tr>
<tr>
<td>Activated Sludge</td>
<td>25</td>
<td>33.6</td>
<td>20.0</td>
</tr>
<tr>
<td>Rotating Biological</td>
<td>6</td>
<td>21.3</td>
<td>12.3</td>
</tr>
<tr>
<td>Contactor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequencing Batch</td>
<td>9</td>
<td>28.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Reactor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trickling Filter</td>
<td>20</td>
<td>29.2</td>
<td>17.6</td>
</tr>
<tr>
<td>Industry</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerated Lagoon</td>
<td>2</td>
<td>167.9</td>
<td>42.2</td>
</tr>
<tr>
<td>Activated Sludge</td>
<td>6</td>
<td>52.4</td>
<td>17.2</td>
</tr>
<tr>
<td>Rotating Biological</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Contactor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequencing Batch</td>
<td>1</td>
<td>66.8</td>
<td>7.2</td>
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<tr>
<td>Reactor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trickling Filter</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Phosphorus Municipal Commitments
From Feasibility Studies

- Construct
- Optimize
- Meets Goals; add limits
- New FS
- FS still under review

Total Feasibility
Studies Submitted: 44
Total Permits
Amended: 25

2017 reporting year (5/1/2016-4/30/2017)
percent removal (concentration)

<table>
<thead>
<tr>
<th>Facility</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATLANTIC CITY OF STP</td>
<td>78.1</td>
</tr>
<tr>
<td>CLEAR LAKE SANITARY DISTRICT</td>
<td>72.2</td>
</tr>
<tr>
<td>ELDRIDGE, CITY OF SOUTH SLOPE</td>
<td>68.3</td>
</tr>
<tr>
<td>ESTHerville CITY OF STP</td>
<td>72.0</td>
</tr>
<tr>
<td>IOWA CITY, CITY OF (SOUTH) STP</td>
<td>73.5</td>
</tr>
<tr>
<td>MOUNT PLEASANT CITY OF STP (MAIN)</td>
<td>85.8</td>
</tr>
<tr>
<td>OELWEIN CITY OF STP</td>
<td>91.9</td>
</tr>
<tr>
<td>SIOUX CITY CITY OF STP</td>
<td>75.2</td>
</tr>
<tr>
<td>WASHINGTON CITY OF STP</td>
<td>73.9</td>
</tr>
<tr>
<td>WEST BURLINGTON CITY OF STP</td>
<td>72.6</td>
</tr>
<tr>
<td>WEST LIBERTY CITY OF STP</td>
<td>79.3</td>
</tr>
<tr>
<td>CORALVILLE CITY OF STP</td>
<td>80.9</td>
</tr>
<tr>
<td>IOWA CITY, CITY OF (SOUTH) STP</td>
<td>82.8</td>
</tr>
<tr>
<td>MOUNT VERNON CITY OF STP</td>
<td>80.9</td>
</tr>
<tr>
<td>SIOUX CITY CITY OF STP</td>
<td>75.2</td>
</tr>
<tr>
<td>WEST LIBERTY CITY OF STP</td>
<td>79.3</td>
</tr>
</tbody>
</table>
2017 reporting year (5/1/2016-4/30/2017)

percent removal (concentration)

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCHER DANIELS MIDLAND CORN</td>
<td>66.1</td>
</tr>
<tr>
<td>ASSOCIATED MILK PRODUCERS</td>
<td>78.8</td>
</tr>
<tr>
<td>GRAIN PROCESSING CORP.</td>
<td>88.5</td>
</tr>
<tr>
<td>MANILDRA MILLING CORPORATION</td>
<td>73.3</td>
</tr>
<tr>
<td>OSI INDUSTRIES (OAKLAND FOODS)</td>
<td>89.3</td>
</tr>
<tr>
<td>REMBRANDT ENTERPRISES, INC.</td>
<td>74.6</td>
</tr>
<tr>
<td>SWISS VALLEY FARMS</td>
<td>66.0</td>
</tr>
<tr>
<td>DAIROCONCEPTS</td>
<td>84.8</td>
</tr>
<tr>
<td>MANILDRA MILLING CORPORATION</td>
<td>80.4</td>
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<tr>
<td>REMBRANDT ENTERPRISES, INC.</td>
<td>83.6</td>
</tr>
</tbody>
</table>

## Municipal Nitrogen Data Through April 2017

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Treatment Type</th>
<th>Raw Water Nitrogen</th>
<th>Effluent Nitrogen</th>
<th>Nitrogen Removal</th>
<th>Average % Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELMED WAY</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>16.7</td>
<td>18.2</td>
<td>66.1</td>
</tr>
<tr>
<td>WEST LIBERTY</td>
<td>ACT SLUDGE</td>
<td>20.6</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>ATLANTIC</td>
<td>SBW</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>MOUNT PLEASANT</td>
<td>SBW</td>
<td>20.6</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>BLOOMINGTON CITY</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>IOWA CITY YOUTH</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>WASHINGTON</td>
<td>SBW</td>
<td>19.1</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>CLEAR LAKE SOUTH</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>WES HURON SOUTH</td>
<td>SBW</td>
<td>19.1</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>FREDERICKSBURG</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>THE WOODS</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
<tr>
<td>NEW HAMBURG</td>
<td>ACT SLUDGE</td>
<td>22.3</td>
<td>14.2</td>
<td>19.2</td>
<td>66.1</td>
</tr>
</tbody>
</table>

IOWA DEPARTMENT OF NATURAL RESOURCES
Ch 2251-10 7/18
## Municipal Phosphorus Data Through April 2017

<table>
<thead>
<tr>
<th>Facility Name</th>
<th>Treat Type</th>
<th>conc (mg/l)</th>
<th>Avg mg/l</th>
<th>mass (lbs/day)</th>
<th>Sum of raw lbs/d data</th>
<th>Est. Avg raw lbs in 1 year</th>
<th>conc (mg/l)</th>
<th>Avg mg/l</th>
<th>mass (lbs/day)</th>
<th>Sum of final lbs/d data</th>
<th>Est. Avg lbs discharged in 1 year</th>
<th>conc (mg/l)</th>
<th>Avg mg/l</th>
<th>mass (lbs/day)</th>
<th>Est. lbs removed in 1 year (avg raw-avg final)</th>
<th>Average lbs of P removed</th>
<th>Phosphorus % removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 CARROLL</td>
<td>ACT SLUDGE</td>
<td>4.1</td>
<td>62.4</td>
<td>250</td>
<td>22,767</td>
<td>0.3</td>
<td>3.8</td>
<td>99</td>
<td>1,390</td>
<td>92.0%</td>
<td>99.9%</td>
<td>21,377</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 WEST LIBERTY</td>
<td>ACT SLUDGE</td>
<td>5.0</td>
<td>60.6</td>
<td>8,417</td>
<td>22,102</td>
<td>1.0</td>
<td>11.8</td>
<td>1,641</td>
<td>4,309</td>
<td>80.8%</td>
<td>80.5%</td>
<td>17,793</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 KORAVILLE</td>
<td>SBR</td>
<td>5.5</td>
<td>129.4</td>
<td>12,945</td>
<td>47,249</td>
<td>1.1</td>
<td>24.1</td>
<td>2,406</td>
<td>8,783</td>
<td>80.1%</td>
<td>81.4%</td>
<td>38,466</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 IOWA CITY SOUTH</td>
<td>ACT SLUDGE</td>
<td>5.8</td>
<td>453.6</td>
<td>112,937</td>
<td>165,550</td>
<td>1.2</td>
<td>99.6</td>
<td>24,795</td>
<td>36,346</td>
<td>79.2%</td>
<td>78.0%</td>
<td>129,204</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 MOUNT VERNON</td>
<td>ACT SLUDGE</td>
<td>7.0</td>
<td>23.9</td>
<td>2,531</td>
<td>8,714</td>
<td>1.5</td>
<td>5.2</td>
<td>549</td>
<td>1,050</td>
<td>79.1%</td>
<td>78.3%</td>
<td>6,824</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 SIoux CITY</td>
<td>ACT SLUDGE</td>
<td>18.4</td>
<td>1865.6</td>
<td>201,346</td>
<td>680,930</td>
<td>4.3</td>
<td>470.5</td>
<td>51,284</td>
<td>171,731</td>
<td>76.4%</td>
<td>74.8%</td>
<td>509,199</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Examples of point source progress

- Cedar Rapids
- Des Moines WRA
- Sioux City
- Tyson Fresh Meats - Perry and Storm Lake
- Clinton
- 2018 Construction Season
  - Grinnell, Eagle Grove, West Burlington, DairiConcepts
Looking forward...

- Issue permits to the remaining facilities listed in the NRS
- Improve our understanding of what’s happening out there and work to address problem areas
- Continue to analyze raw waste and final effluent data for nutrients as data from more facilities becomes available
- Incorporate baseline efforts, recalculate load reduction based on actual data
- Year 5 Refresh – make necessary adjustments and incorporate innovations (e.g., nutrient reduction exchange, optimization)

Questions?
**Nutrient Pollution Problem**

- Excessive phosphorus and nitrogen impairs water quality in Kentucky and in downstream waters.
  - Causes harmful algal blooms (HABs) which impact drinking water facilities, reduces access or closes swimming beaches, and affects local economy.
  - Negatively affects water’s uses, aquatic life, tourism, and property values.
- High nitrogen content in recreational waters may be harmful to infants.
Issues

- Phosphorus and Nitrogen loading in surface waters are contributed by:
  - Point sources from direct dischargers; and
  - Nonpoint sources through stormwater run-off.
- Currently no numeric water quality-based criteria for point source discharges developed by EPA or KY
  - Technology Based Effluent Limitation for all POTWs could be impractical and costly to achieve.
  - Water Quality Based Effluent Limitation could take years to develop.
- Limiting factors are:
  - Kentucky’s complex geology and ecoregions; and
  - Unknown relative contributions from PS and NPS sources.

Other States

<table>
<thead>
<tr>
<th></th>
<th>OH</th>
<th>IN</th>
<th>IL</th>
<th>MN</th>
<th>WI</th>
<th>MS</th>
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</thead>
<tbody>
<tr>
<td>Phosphorus Limit for Major POTWs</td>
<td>1 mg/L</td>
<td>1 mg/L</td>
<td>1 mg/L</td>
<td>1 mg/L</td>
<td>1 mg/L</td>
<td>Exploring opportunities</td>
</tr>
<tr>
<td>Mechanism</td>
<td>Regulation</td>
<td>Non-Rule Policy</td>
<td>Antidegradation Criteria</td>
<td>Eutrophication Standards</td>
<td>TBEL and QBEL</td>
<td></td>
</tr>
<tr>
<td>Other information</td>
<td>Allows trading</td>
<td>Ongoing feasibility studies</td>
<td>Small POTWs have P management plan</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Iowa requires municipal majors, and industrial majors and minors to:
  - Monitor total N and total P from raw waste influent and final effluent for a two-year period;
  - Establish a baseline of the amounts discharged and the degree of reduction with existing treatment system; and
  - Conduct feasibility study to evaluate potential operational changes and technology upgrades, and propose a practical implementation plan to reduce nutrients.
Strategy Moving Forward

- Identify partners
  - Regulated community, municipal dischargers, industry, enviros?
  - EPA, NRCS, Public Health, and other agencies
  - NGO, KIA, etc.
  - Consultants
- Work with permittees to gather data and develop practical implementation plan.
- Focus on reducing total mass loading per facility to develop permit limitations.

Division of Water

Reduction for Point Source Discharges

- Work with study group - may include POTWs and industries.
- Collect influent and effluent data, and other information regarding type of technology used.
- Determine statistical performance data of technologies being used and other influencing factors.
  - Secondary treatment types
  - O&M practices
- Evaluate options and cost to upgrade.
- Use information to establish performance-based discharge limits for each facility.
Operator Shortages and Facility Staffing

Operator Shortages - Need for Workforce Planning
Figure 3. Age of Respondents
Facilities without enough operators

Operator Availability
Median Yearly Wages for Water and Wastewater Treatment Plant and System Operators in KENTUCKY

Median Yearly Wage
- $21,455 - $26,990
- $27,824 - $33,690
- $33,941 - $40,257
- $40,728 - $44,323
- $44,494 - $48,790
- NA

Median Yearly Wages of Highlighted Area(s):
Kentucky: $35,690
KY DEP

- Multiple challenges for the industry and those connected with it.
- Thoughtfully review and consider changes to policies and regulations with those challenges in mind.
- We have had discussions with the Boards of Certification, Operator Recruiting and Development Subcommittee, Alternate Staffing Plan Workgroup for initial feedback.
- End goals: attract new talent, maintain reciprocity and most importantly protect human health and the environment.

Challenges

1. Baby Boomer Retirement
2. Recruitment: competition from other industries for operators and those with applicable skills.
3. Recruitment: Distaste for shift work and differing work expectations in younger generation.
4. Pay and benefits (retirements) aren't adequate to retain operators.
5. Technology is changing the industry.

Changes in OIT
- Allow responsible charge for OIT II-IV.
- No retest

OP Cert Regulations
- Review of all regulations if we are addressing OIT
- What works, what doesn't
- Education substitutions
- Qualifications-Class IV WW operators

No regulatory change, but work with partners to educate about and promote the profession.

How does this impact staffing requirements?
1. Retirements
2. Recruitment-competition for workers and change in work preference
3. Operator pay and benefits
4. Technology

Alternate Staffing

Changes in OIT
Does what we have take us where we want to be in the future? Look at all regs for operator certification; education substitution for a varied workforce, qualifications (Class IV, etc)

Widen the pipeline of people considering the career

Education about operators for officials and general public

No reg change but concerted efforts between partner agencies needed

Facility staffing

How does technology impact facility staffing and regulatory requirements for facilities?

Alternate Staffing Plans
Alternate Staffing Plans

- Should not be a permanent staffing plan, but a path forward
- Reviewed at 6 month intervals
- Must provide an overview of issues surrounding staff shortage
- Provide an outline of how staffing will be handled
- Determine a timeline and route for certification of operators
- Accomplished through Agreed Orders with stipulated penalties

Operator Certification
Changes under consideration

- Operator-In-Training
- Educational Substitutions
- Wastewater Class IV Qualifications

Operator-In-Training

Change
- Class II-IV OIT can be in responsible charge of a facility.
- Remove the language that would require an operator to retest for renewal.

Benefit
- Allows OIT designation to be used for a tool for operator advancement and facility accountability in alternate staffing plans
- Provides some flexibility to the facility as operators progress through training
- Removes overlap and undue testing burden
In an emergency situation......

- 223.210 allows for the issuance of an emergency certification
  - Specific criteria would have to be set

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Educational Substitutions

<table>
<thead>
<tr>
<th>Change</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open the substitution to more degree programs.</td>
<td>Would open the field to a broader range of candidates</td>
</tr>
<tr>
<td>This could substitute for up to a quarter of the experience requirement</td>
<td>Acknowledges an enhanced skill set gained through advanced learning but also that they lack much of the theoretical knowledge gained through the approved degrees in place</td>
</tr>
<tr>
<td>Currently only environmental engineering, environmental technology and biological, physical and chemical sciences accepted - half of required experience</td>
<td>Can be part of an effort to bridge those in other careers into the industry</td>
</tr>
<tr>
<td>This change would have to be ok'd by EPA</td>
<td></td>
</tr>
</tbody>
</table>
## Class IV Wastewater Treatment

<table>
<thead>
<tr>
<th>Change</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Possibly lower the number of years of experience required for a Class IV Wastewater operator.</td>
<td>* Would allow a more reasonable certification timeline.</td>
</tr>
<tr>
<td>* Currently 5 years with a degree. Nine years for those without.</td>
<td></td>
</tr>
<tr>
<td>* Time requirements should provide adequate experience, but allow for reasonable certification timelines- 3 years instead of 5?</td>
<td></td>
</tr>
</tbody>
</table>

## Other considerations

- Staff will review all aspects of the certification regulations
- Will look for inconsistencies in language and language that creates confusion for those seeking certification
- The fee structure that supports education and testing will also be reviewed
- Continued efforts will made to get feedback on issues
Questions and Comments

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