ISA Environmental Programs

Water Resources Coordinating Council
April 10, 2013. Metro Waste Authority, Des Moines, Iowa

Todd Sutphin
Operations Manager, Environmental Programs and Service
Iowa Soybean Association
Environmental Programs and Services

• Advance agricultural leadership for environmental quality by developing, applying, and promoting programs that assist producers to perform agronomically and economically

• Develops policies and programs that help farmers expand profit opportunities while promoting environmentally sensitive production using the soybean checkoff and other resources.

• The Association is governed by an elected volunteer board of 21 farmers.

• Largest State-based row commodity association in U.S. serving 45,000 Iowa soybean farmers.
Environmental Programs and Services

- Provide leadership for agriculture; have impact
  - Conservation and Environment
  - Policy
  - Profitability
- Seeking and capturing performance
- Apply science methods to gain understanding
- Crosses multiple geographic scales
- Valuing cooperative partnerships and collaborations
- Provide value to membership
ISA EPS Strategies

• Technical assistance for farmers, watersheds and organized stakeholder groups
• Leveraging farmer investment with public – private partnerships
• Monitoring and assessment
• Data management and analysis
• Adaptive management framework – PLAN, DO, CHECK, ACT
• Targeting for cost effectiveness and measuring outcomes for performance
• Public education, communication and outreach
• Management evaluation and reporting
Farm Scale Planning

• Create a plan to help farmers address natural resource concerns
  – Document: nutrient, soil and pest management planning
  – Partner with TSPs, CCAs and Agronomists
• Incorporates business management principles
  – Environmental policy, legal requirements and communication
  – Continual improvement cycle
• Implement evaluation and testing
  – Provides feedback to the plan
- Multi-state project to improve farm profitability, energy efficiency, and environmental performance.
• Enroll approximately 500 participants across 6 states in CEMSA (soil, nutrient and energy)
• Partner with state soybean commodity groups
• Document and analyze energy use, other input use and management practices—3 years
• Address on-farm resource management and sustainability
Quantifying Practices

Frequency of Tillage among 2010 Iowa Soybean Fields (n=151)

- **No Till**: 33%
- **1 Tillage Pass**: 6%
- **2 Tillage Passes**: 56%
- **3 Tillage Passes**: 5%

**Source**: Preliminary STAARS Data Analysis
Iowa Soybean Association Environment Programs and Services, February 2013

*Funded by: Soybean Checkoff, USB and 6 QSSB’s*
GDFE/ACRE & Yield
2010 Iowa Soy

Source: Preliminary STAARS Data Analysis N= 72 Producers 149 Fields
Iowa Soybean Association Environment Programs and Services, February 2013
Funded by: Soybean Checkoff, USB and 6 QSSB ’s
2006 Corn Stalk Nitrate Analysis (Boone River):
Comparison Between Growers
STAARS Data

Energy to Produce Soybeans:
Summary of 2 Years’ Combined Field Data

Source: Preliminary STAARS Data Analysis
Iowa Soybean Association Environment Programs and Services,
February 2013
Funded by: Soybean Checkoff, USB and 6 QSSB’s
Watershed Planning

• A comprehensive plan for the watershed (follows watershed planning protocol)
  – Farmer involvement; locally-led
  – Identify resource concerns
  – Establish specific goals/objectives
  – Inventory watershed
  – Formulate alternatives/evaluate alternatives
  – Make decisions/write plan; includes implementation schedule and resource needs.

• Infield/Edge of Field

• Set of integrated solutions; no silver bullet

• Implementation
225 farms
65 defined watersheds
- 39 active and 26 supporting ~ 6 million acres
- over 35 public and private partners.
Goal 1: Reduce non-point source pollution to at or below TMDL levels in the Badger Creek Lake watershed while maintaining agricultural productivity.

**Objective 1:** Reduce sediment delivery to Badger Creek Lake by 7,078 tons within 8 years, and an additional 3,805 tons by year 20 for a 10,883 ton per year or 74% load reduction.

**Objective 2:** Reduce phosphorus delivery to Badger Creek Lake by 9,202 pounds within 8 years, and an additional 4,945 pounds by year 20 for a 14,147 pounds per year or 74% load reduction.
# Badger Creek Lake Watershed Management Plan


<table>
<thead>
<tr>
<th>Upland Practices</th>
<th>Targeted Areas</th>
<th>Erosion Target Type</th>
<th>Treatment Type</th>
<th>Overall Goal (Acres/Practices)</th>
<th>Sediment Reduction Efficiency</th>
<th>Phosphorus Reduction Efficiency</th>
<th>Erosion Reduction (t/y)</th>
<th>SD Reduction (t/y)</th>
<th>P Reduction (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover Crops³</td>
<td>Cropland</td>
<td>Sheet &amp; Rill Erosion</td>
<td>Source Control</td>
<td>400</td>
<td>50%</td>
<td>50%</td>
<td>687.00</td>
<td>171.75</td>
<td>223.28</td>
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<tr>
<td>Grassed Waterways</td>
<td>Cropland</td>
<td>Ephemeral Gullies</td>
<td>Source Control</td>
<td>75</td>
<td>30%</td>
<td>-</td>
<td>154.58</td>
<td>108.20</td>
<td>140.66</td>
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<tr>
<td>Bioreactor</td>
<td>Cropland</td>
<td>NA</td>
<td>Source Control</td>
<td>1(#)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Grade Stabilization Structures</td>
<td>Cropland/Park</td>
<td>Gully Erosion</td>
<td>Trap</td>
<td>9(#) - 459</td>
<td>90%</td>
<td>90%</td>
<td>2,838.00</td>
<td>1,986.60</td>
<td>2,582.58</td>
</tr>
<tr>
<td>Water and Sediment Control Basins</td>
<td>Cropland</td>
<td>Sheet &amp; Rill Erosion</td>
<td>Trap</td>
<td>20(#) - 1,224 ac</td>
<td>90%</td>
<td>90%</td>
<td>7,567.99</td>
<td>1,892.00</td>
<td>2,459.60</td>
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<tr>
<td>Nutrient Management</td>
<td>Cropland</td>
<td>NA</td>
<td>Source Control</td>
<td>5,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Terraces³</td>
<td>Cropland</td>
<td>Sheet &amp; Rill Erosion</td>
<td>Trap</td>
<td>200,000 (ft) - 2,443 ac</td>
<td>90%</td>
<td>50%</td>
<td>5,082.75</td>
<td>1,270.69</td>
<td>1,651.90</td>
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<tr>
<td>Prescribed Grazing</td>
<td>Pasture</td>
<td>Sheet &amp; Rill Erosion</td>
<td>Source Control</td>
<td>90</td>
<td>25%</td>
<td>25%</td>
<td>17.55</td>
<td>4.39</td>
<td>5.70</td>
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<tr>
<td>Residue &amp; Tillage Management</td>
<td>Cropland</td>
<td>Sheet &amp; Rill Erosion</td>
<td>Source Control</td>
<td>4,000</td>
<td>50%</td>
<td>50%</td>
<td>13,740.00</td>
<td>3,435.00</td>
<td>4,465.50</td>
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</table>

### Riparian, In-Stream, Edge of Field Practices

<table>
<thead>
<tr>
<th>Practice</th>
<th>Type</th>
<th>Erosion Type</th>
<th>Treatment Type</th>
<th>Overall Goal (Acres/Practices)</th>
<th>Sediment Reduction Efficiency</th>
<th>Phosphorus Reduction Efficiency</th>
<th>Erosion Reduction (t/y)</th>
<th>SD Reduction (t/y)</th>
<th>P Reduction (lbs)</th>
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</thead>
<tbody>
<tr>
<td>Pasture/Grassland Management</td>
<td>Pasture</td>
<td>Streambank Erosion</td>
<td>Source Control</td>
<td>200</td>
<td>50%</td>
<td>50%</td>
<td>78.00</td>
<td>19.50</td>
<td>25.35</td>
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<tr>
<td>Riparian Buffers</td>
<td>Cropland</td>
<td>Sheet &amp; Rill Erosion</td>
<td>Trap</td>
<td>50</td>
<td>45%</td>
<td>45%</td>
<td>154.58</td>
<td>38.64</td>
<td>50.24</td>
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<tr>
<td>Wetland Restoration</td>
<td>All Sources</td>
<td>All Sources</td>
<td>Trap</td>
<td>2(#) - 5,225 ac</td>
<td>20%</td>
<td>20%</td>
<td>5,291.27</td>
<td>1,322.82</td>
<td>1,719.66</td>
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<tr>
<td>Streambank Protection</td>
<td>Streambank</td>
<td>Streambank/ Shoreline Erosion</td>
<td>Source Control</td>
<td>3,800 (ft)</td>
<td>90%</td>
<td>90%</td>
<td>350.00</td>
<td>315.00</td>
<td>409.50</td>
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<tr>
<td>Shoreline Protection</td>
<td>Shoreline</td>
<td>Shoreline Erosion</td>
<td>Source Control</td>
<td>5,000 (ft)</td>
<td>100%</td>
<td>100%</td>
<td>318.00</td>
<td>318.00</td>
<td>413.40</td>
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</table>

**Total**

<p>| | | | | | | | | | |</p>
<table>
<thead>
<tr>
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<td></td>
<td></td>
<td><strong>10,882.59</strong></td>
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<td><strong>14,147.36</strong></td>
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**Badger Creek Lake Watershed - Implementation**

Table 12. Implementation schedule.

<table>
<thead>
<tr>
<th>Goal 1</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phases 4 &amp; 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Years 1-4</td>
<td>Years 5-8</td>
<td>Years 9-12</td>
<td>Years 13-20</td>
</tr>
<tr>
<td><strong>Obj. 1 &amp; 2</strong></td>
<td><strong>Units (Acres/Practice)</strong></td>
<td><strong>SD Reduction (tons)</strong></td>
<td><strong>P Reduction (lbs)</strong></td>
<td><strong>Units (Acres/Practice)</strong></td>
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<tr>
<td><strong>Cover Crops (340)</strong></td>
<td>100</td>
<td>42.9</td>
<td>55.8</td>
<td>100</td>
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<tr>
<td><strong>Grassed Waterways (412)</strong></td>
<td>30</td>
<td>43.3</td>
<td>56.3</td>
<td>30</td>
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<tr>
<td><strong>Grade Stabilization Structures (410)</strong></td>
<td>6(#)</td>
<td>1,324.4</td>
<td>1,721.72</td>
<td>3(#)</td>
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<tr>
<td><strong>Water and Sediment Control Basins (658)</strong></td>
<td>10(#)</td>
<td>946</td>
<td>1,229.80</td>
<td>5(#)</td>
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<tr>
<td><strong>Nutrient Management (590)</strong></td>
<td>2,000</td>
<td>0</td>
<td>0</td>
<td>1,500</td>
</tr>
<tr>
<td><strong>Bioreactor (747)</strong></td>
<td>1(#)</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td><strong>Terraces (800)</strong></td>
<td>70,000 (ft.)</td>
<td>444.7</td>
<td>578.2</td>
<td>50,000 (ft.)</td>
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<tr>
<td><strong>Prescribed Grazing (528)</strong></td>
<td>35</td>
<td>1.70</td>
<td>2.21</td>
<td>35</td>
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<tr>
<td><strong>Residue &amp; Tillage Management (No Till/Strip Till) (329)</strong></td>
<td>1,600</td>
<td>1,374</td>
<td>1,786.2</td>
<td>1,200</td>
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<tr>
<td><strong>Pasture/Grassland Management (512)</strong></td>
<td>80</td>
<td>7.8</td>
<td>10.1</td>
<td>60</td>
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<tr>
<td><strong>Riparian Buffers (393)</strong></td>
<td>20</td>
<td>15.5</td>
<td>20.1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Wetland Restoration</strong></td>
<td>--</td>
<td>--</td>
<td>1(#)</td>
<td>--</td>
</tr>
<tr>
<td><strong>Streambank Protection</strong></td>
<td>1,000 (ft.)</td>
<td>82.9</td>
<td>107.8</td>
<td>1,000 (ft.)</td>
</tr>
<tr>
<td><strong>Shoreline Protection</strong></td>
<td>1,000 (ft.)</td>
<td>63.6</td>
<td>82.7</td>
<td>1,000 (ft.)</td>
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<tr>
<td><strong>TOTAL Reduction</strong></td>
<td></td>
<td></td>
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</tbody>
</table>
Implementation Funding:

- National Water Quality Initiative
  ~$250,000; 2012
  ~$328,000; 2013
- EPA Section 319
  ~$420,000
- Iowa DNR - TBD
- Local Match/Other - TBD
ISA Conservation Innovation Grant

- Develop watershed plans
- Monitor water quality
- Develop Resource Management plans for 100 – 120 producers
- Conduct evaluation for 100 – 120 producers
- Aggregate evaluation results
- Bring additional financial and technical resources to the watersheds
Highlights/Lessons Learned

- Local commitment and participation/locally-led
- Planning is essential (farm/watershed)
- Infrastructure to gain capacity
- Adaptive Management or Plan-Do-Check-Act
- Alignment (agronomists, co-op, CCA)
- Program Delivery; Tech. Assist. (public/private)
- No “silver bullet”
- TIME

Next steps:
- Update existing plans; interim goals; adaptive management – continual improvement
- Develop watershed plans for priority watersheds identified in State Nutrient Strategy
Iowa Nutrient Reduction Strategy

• A science-based framework for assessing and reducing nutrient loss from both point and nonpoint sources.

• Nonpoint Source Goals
  – Reduce Total N by 41%
  – Reduce Total P 29%

• Dedicated funding soon
Environmental Programs and Services

Association and Contract Management

2011 Ave. Nitrate Concentrations-Raccoon River Tributaries

ACWA Members
Ag organizations working for better water quality

Partners
Our partners make this work possible. Thanks to:

Acwa Thanks
The McKnight Foundation
for special project funding

Associate Members
Dow AgroScience
Koch Fertilizer, LLC

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www.acwa-iowa.org
Water Monitoring Analytical Services

Water laboratory, auto samplers and paired micro watershed study analysis.
Leadership Services - Provided staff leadership and farmer champions including sustainability tours for food companies, ISA Farm Bill Task force, National Soy Sustainability Task Force, Iowa Nutrient Reduction Strategy and several national committees working on Mississippi River issues.

**Environmental Programs and Services**

**Agriculture and Forestry in a Changing Climate: The Road Ahead**

January, 2012

**Family’s Sustainability Pledge to Our Global Customers**

DRAFT REVIEW DOCUMENT ONLY

- Overall commitment of continuing to provide the highest quality soy value system that the U.S. Soybean Growers and organizations we represent offer you the sustainability Pledge. This pledge is more than words and comparisons with other commitment to our customers that the U.S. soybean family will deliver healthy and human consumption, that offer superior amino acid profiles, enhanced feed improved overall animal performance; we remain committed to providing you advice after the sale, a supply system second to none, and continued access to products developed by the most prolific public and private research the world. We pledge that we are 100% committed to do everything possible to try link in the value chain continues to operate in a sustainable manner consistent environmental objectives, is socially responsible, promotes economic growth, and agricultural practices.

I pledge to you on behalf of the 89,182 responsible U.S. soybean growers, and the soybean grovers who are anxious to carry on our legacy of superior service ur customers.
Science publications - Four scientific papers published in respected environmental journals - including our work on bioreactors, water quality and watersheds.
Drainage Water Treatment
Woodchip Bioreactor

Available at: https://store.extension.iastate.edu/ItemDetail.aspx?ProductID=13691.
Re-saturated Riparian Buffers
Cover Crops

Numerous opportunities
– Wheat, rye, oats, radishes, etc
– They are a tool, and like any good tool must be used and managed properly

Challenges
– Lack of moisture after planting leading to poor germination
– Flying into standing beans seem to work better than standing corn
– Herbicide (before corn planting) sprayed, weather turned cool and wet, corn planted into cover crop that was still green, 40 bushel yield loss

But great potential
– Reduced erosion, increased nutrient retention, increased soil organic matter, increased earthworm population, weed suppression, green fields in March!, grazing, adds option to treating HEL ground, carbon sequestration, moisture retention
Oxbow Restoration within Boone River Watershed supports biodiversity and water quality goals.
Oxbow Restoration

Before

After
Thank You

Questions?