

US EPA ARCHIVE DOCUMENT

Seeing the Gulf from Iowa
Mississippi-Iowa Farmer to Farmer Exchange

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August 30, 2011

Iowa to Mississippi
Farmer to Farmer Exchange



Agenda
&
Trip Itinerary

27 - 30 May 2010











Potential to Expand Future Engagement

- Iowa will co-lead Gulf hypoxia task force 2012
- Expand engagement of national and regional ag organizations and agencies
- Expand engagement of ag research community, land-grant universities

Mississippi to Iowa – *“The Trip Upstream”*

July 7-10, 2010





Iowa Learning Farms

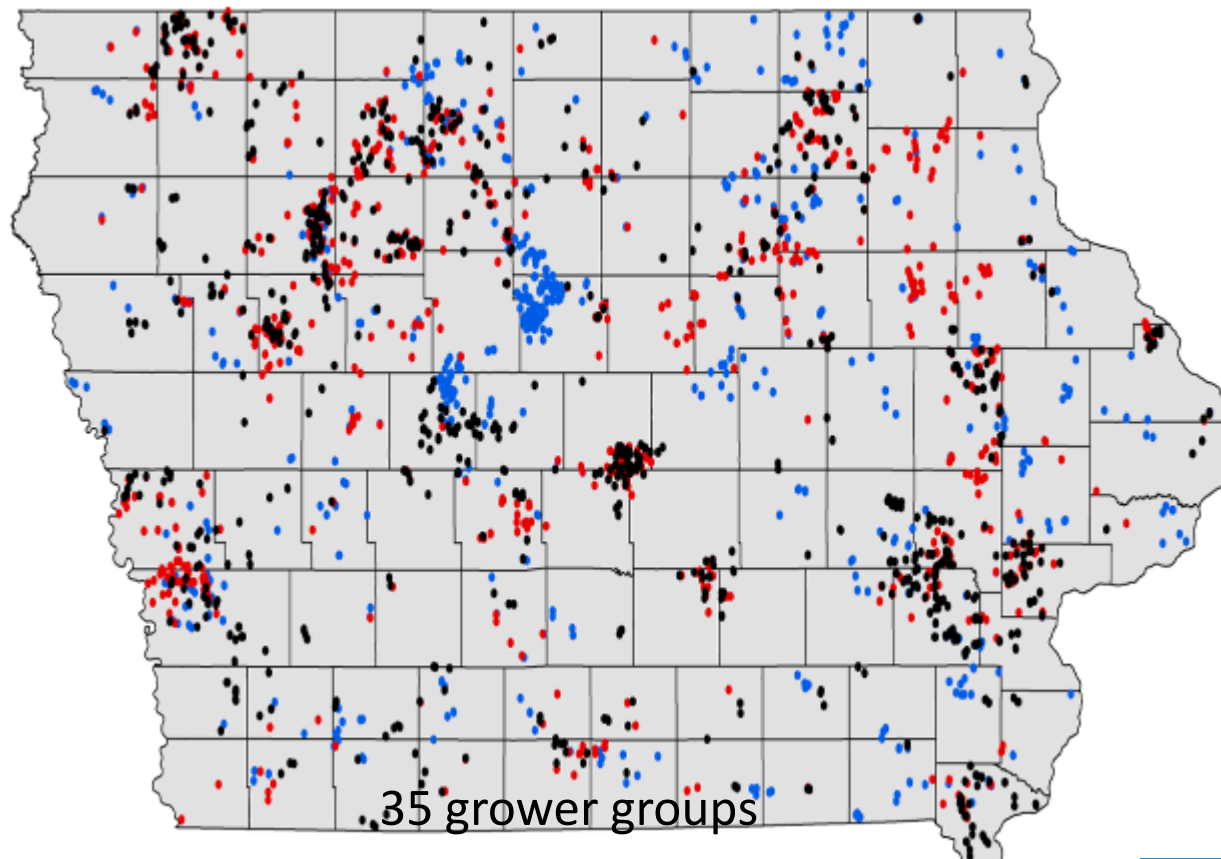
- Conducted by Iowa State University
- “Peer to peer” engagement and learning
- Farm cooperator demonstrations – crop residue and tillage management
- Education and outreach, awareness
- Rainfall simulator educational tools
- “Building A Culture of Conservation”







Iowa



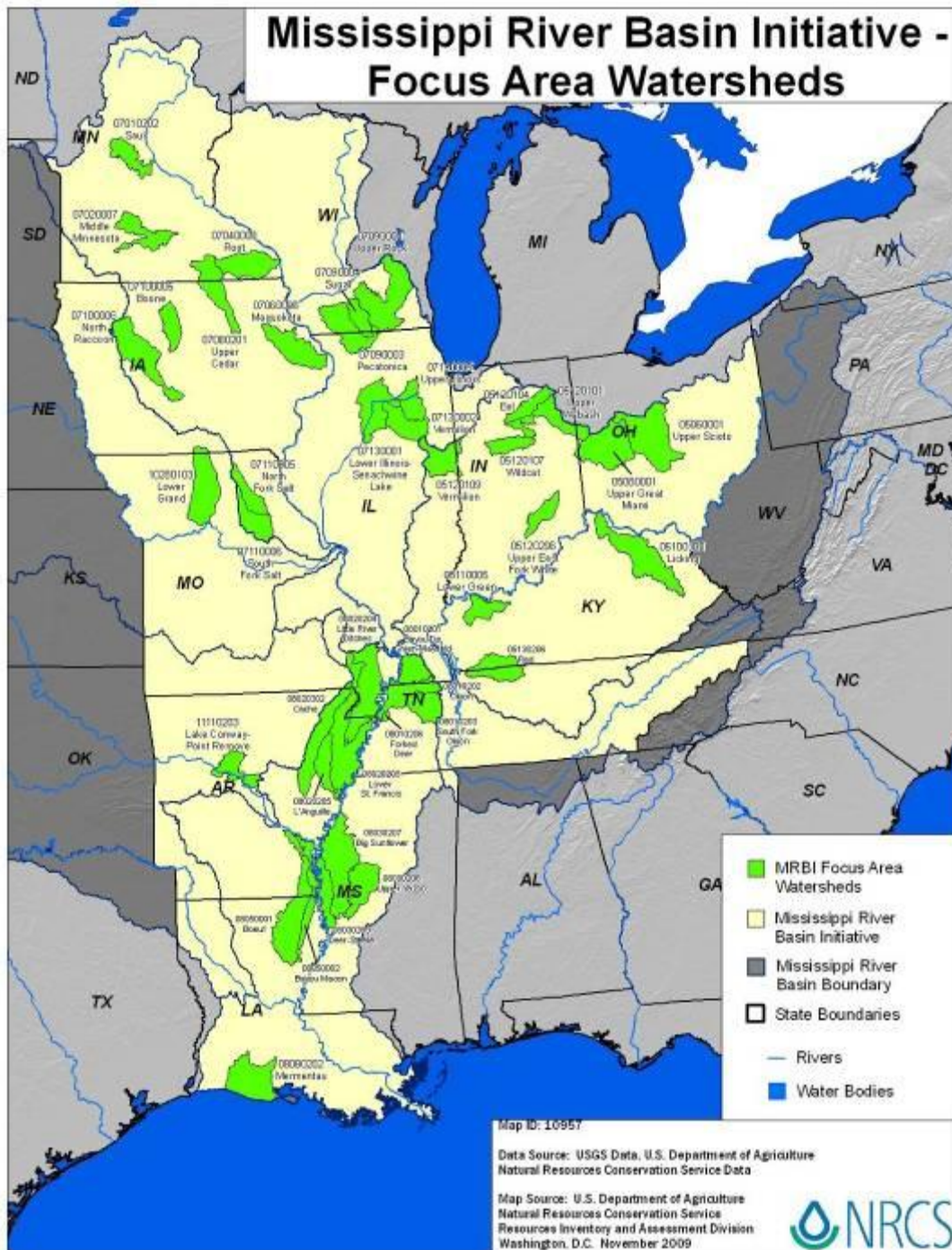
- 2006
- 2007
- 2008

35 grower groups

Nitrogen Trials

Year	Rotation	Fertilizer N		Grain Yield		
		Low Rate	High Rate	Low Rate	High Rate	Diff.
		-----lb N/acre-----		-----bu/acre-----		
2001	C-SB	80	130	177	176	-1
2002	C-SB	70	120	193	195	2
2003	C-C	130	180	167	166	-1
2004	C-SB	60	110	200	206	6
	C-C	110	160	172	178	6
2005	C-SB	60	110	192	197	5
	C-C	110	160	182	194	12
2006	C-C	120	150	188	193	4
2007	C-C	125	150	177	182	5
2008	C-C	130	155	169	174	4

Mississippi River Basin Initiative - Focus Area Watersheds



Experimental Setup

The systems being studied include a range of percentage and placement of perennial vegetation as shown in Figure 1. The project is being conducted on fourteen small watersheds around the Neal Smith National Wildlife Refuge ranging in size from 1.2 acres to 13 acres.

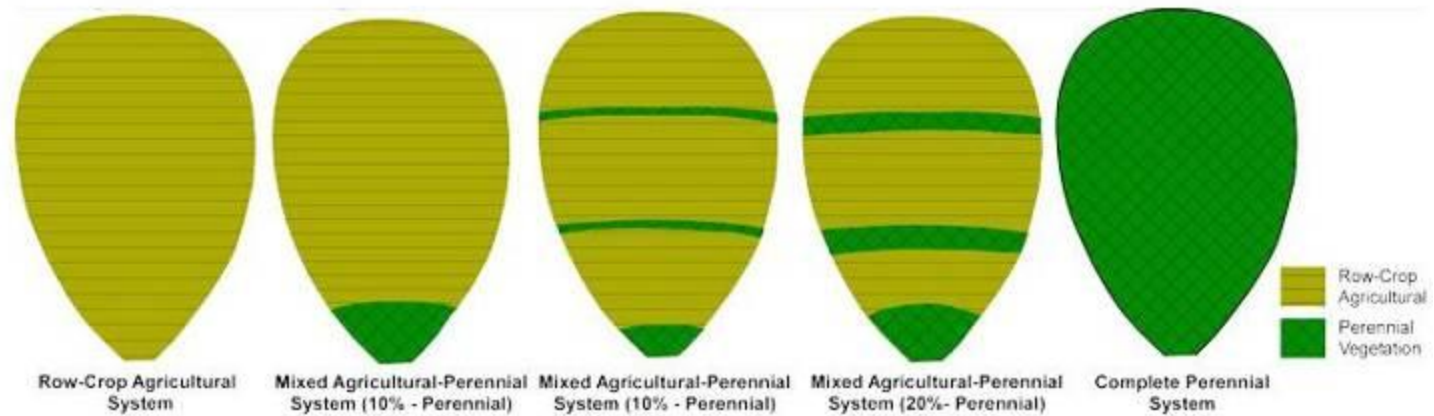


Figure 1. Conceptual design of watersheds.

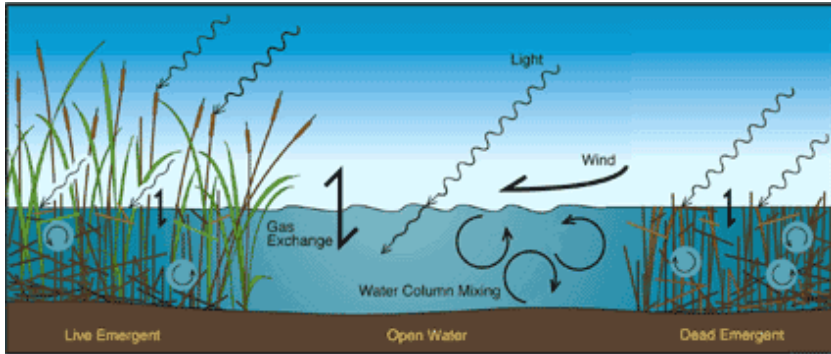








Wetlands Research

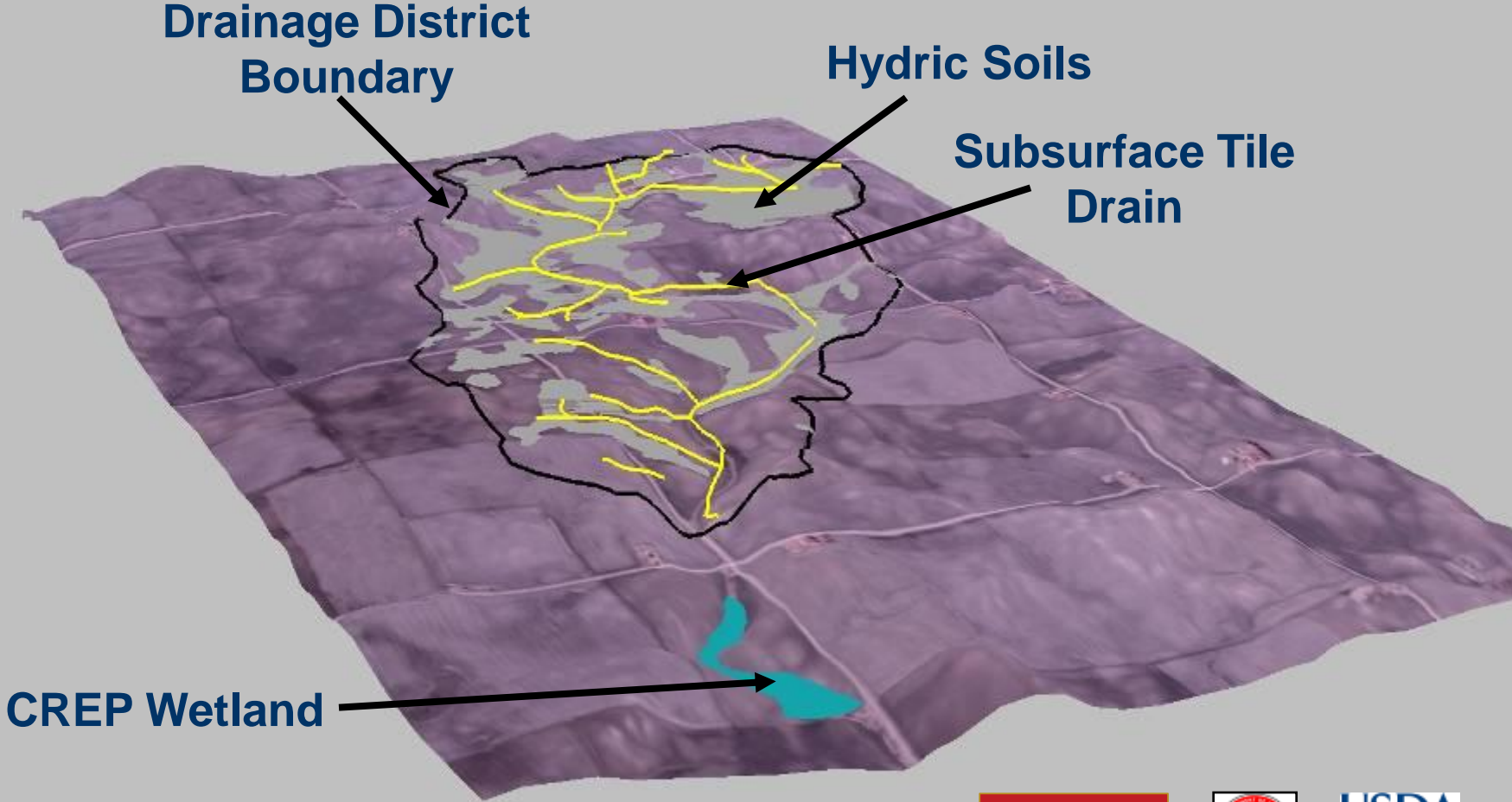


EASEMENT BOUNDARY

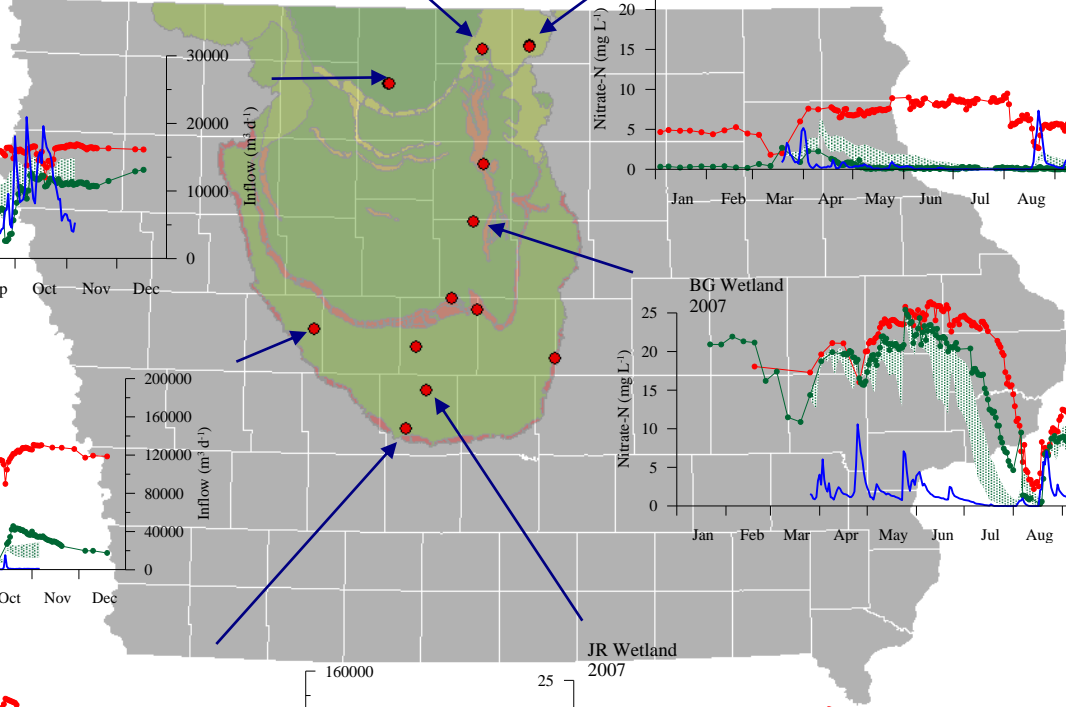
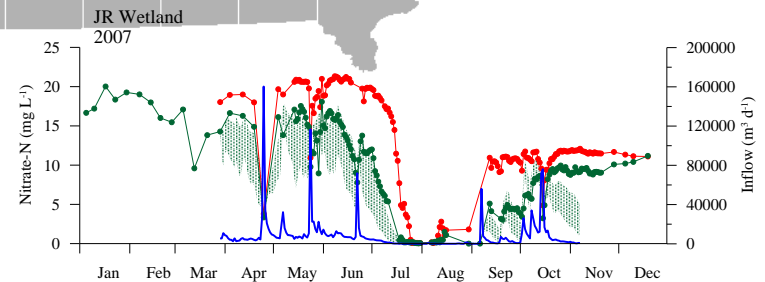
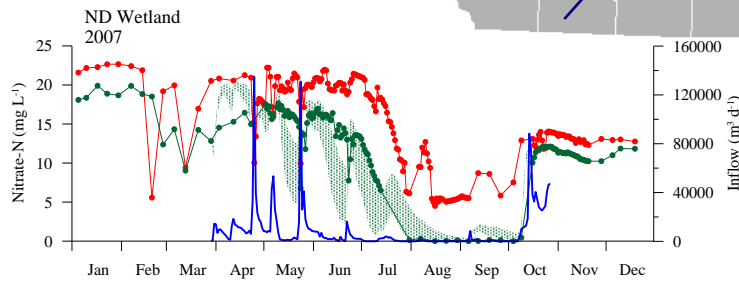
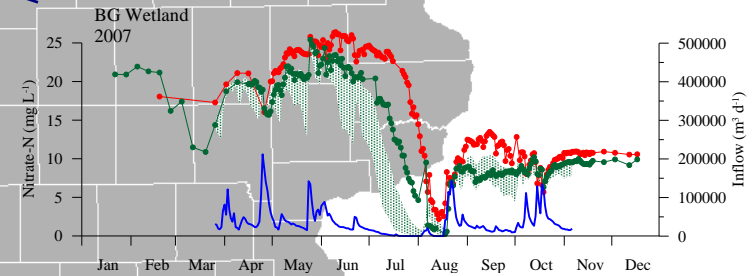
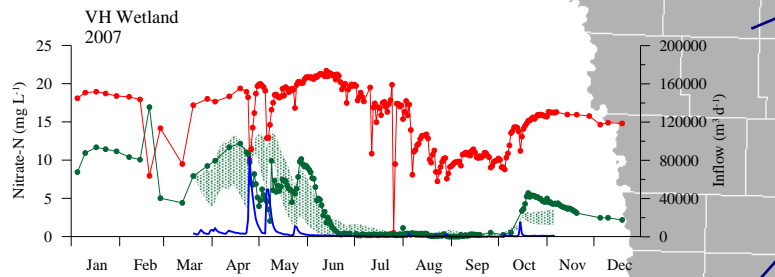
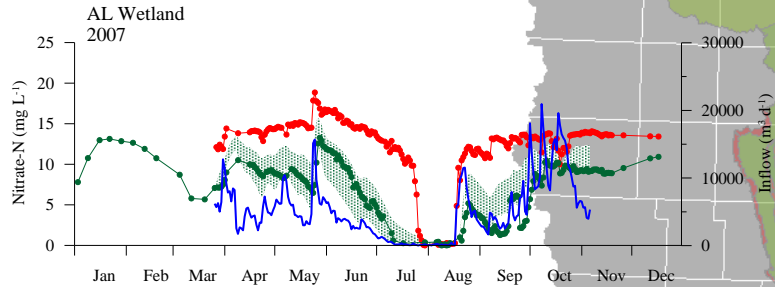
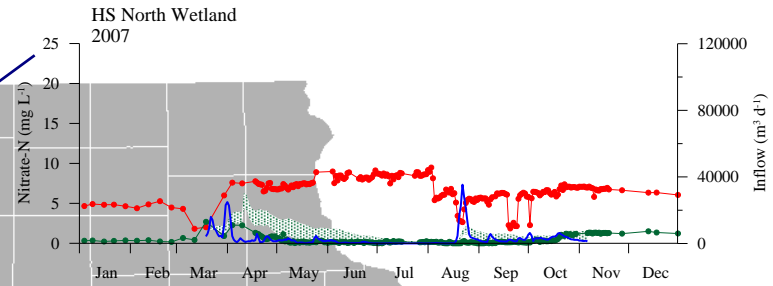
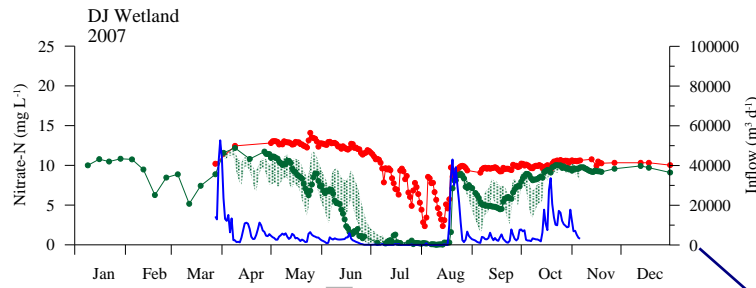
IOWA
Conservation
Reserve
Enhancement
Program



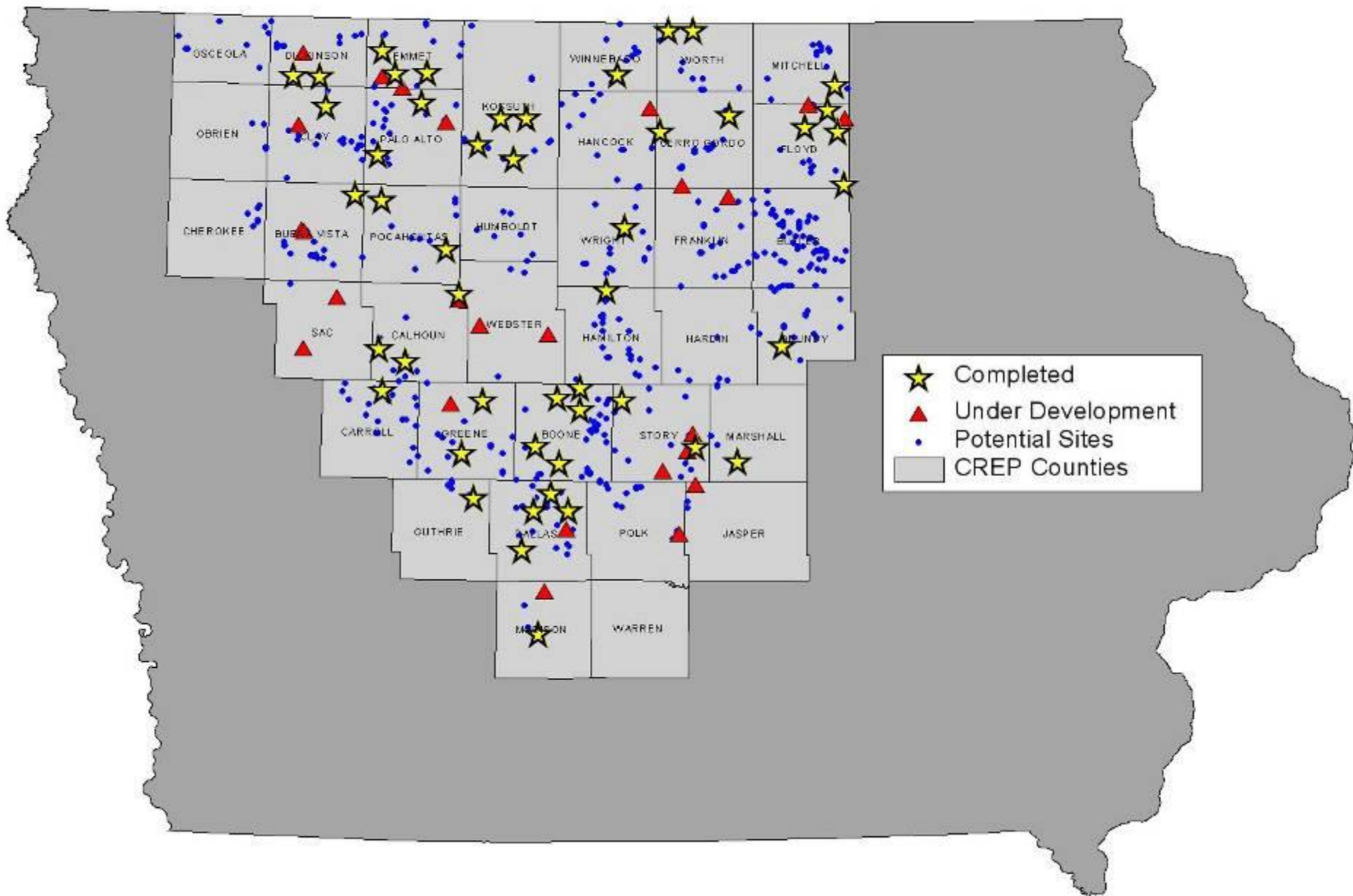
Iowa Conservation Reserve Enhancement Program



Observed and modeled wetland performance (2007)



Current Iowa CREP - Nitrate Removal Wetlands



Iowa CREP Status

72 wetlands restored, under construction or design

- 715 acres total wetland pool
- Remove 40-70% of nitrate from 86,100 acres
- Estimated nitrate removal over practice lifetime is 53,600 tons
- Nitrogen removal cost \$0.23/lb, below current cost of fertilizer N

Iowa Department of Agriculture & Land Stewardship
Iowa Farm Service Agency
A Partnership of Iowa Agriculture for
Reducing Nutrients to the Gulf - Des Moines, Iowa

Gulf Guardian Award

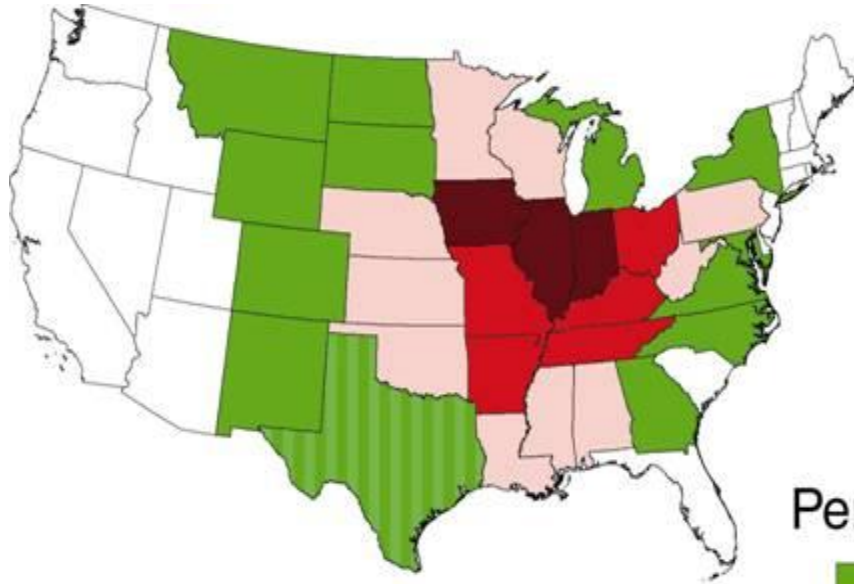
Partnership
2008



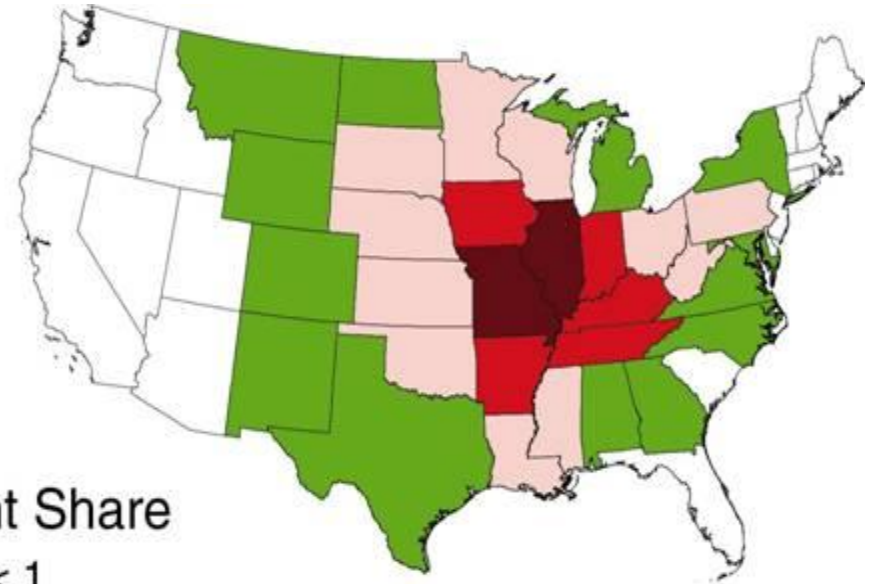
Nutrient delivery to the Gulf of Mexico

State shares of the total nutrient flux

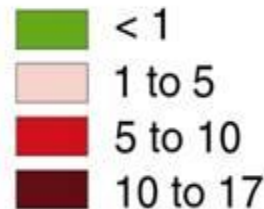
Nitrogen



Phosphorus



Percent Share



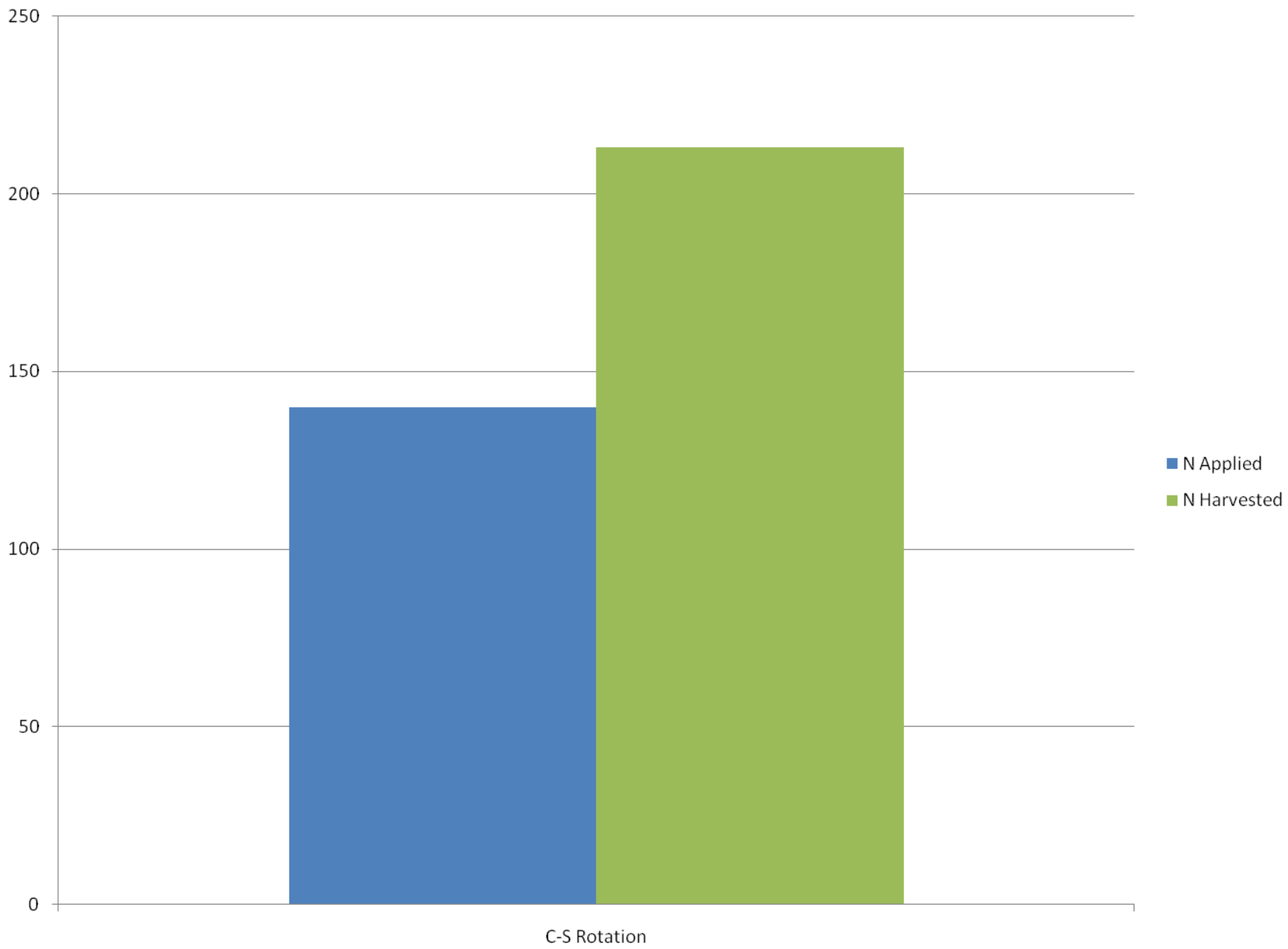
Alexander et al,
Environ. Sci. Technol., in press

Nutrient Reductions Needed to Meet Gulf Hypoxia Goal

Nutrient Reductions

- 45% reduction of nitrogen to Gulf
- 45% reduction of phosphorus to Gulf

Statewide strategy by 2013 for achieving reductions





Science Assessment – Actions to Achieve 45% N Reduction for Iowa

- 100% implementation of all in-field N reduction practices, wherever technically feasible
- Up to 3000 multi-purpose water quality wetlands for N removal across 6 million acres, \$1.8 billion cost for Iowa (\$2011 based upon Iowa CREP costs)

Iowa Wetland Landscape Systems Initiative

To Achieve 45% N Reduction from Iowa
Primarily Through Market Force Economic
Drivers, Coupled with In-field N Management
Practices

Pilot Demonstration & Study Projects





Hand digging tile, Boone Co. IA. ca 1914
Source: 'An Iowa album: a photographic history, 1860-1920' by M. J. Bennet, University of Iowa Press, Iowa City, Iowa



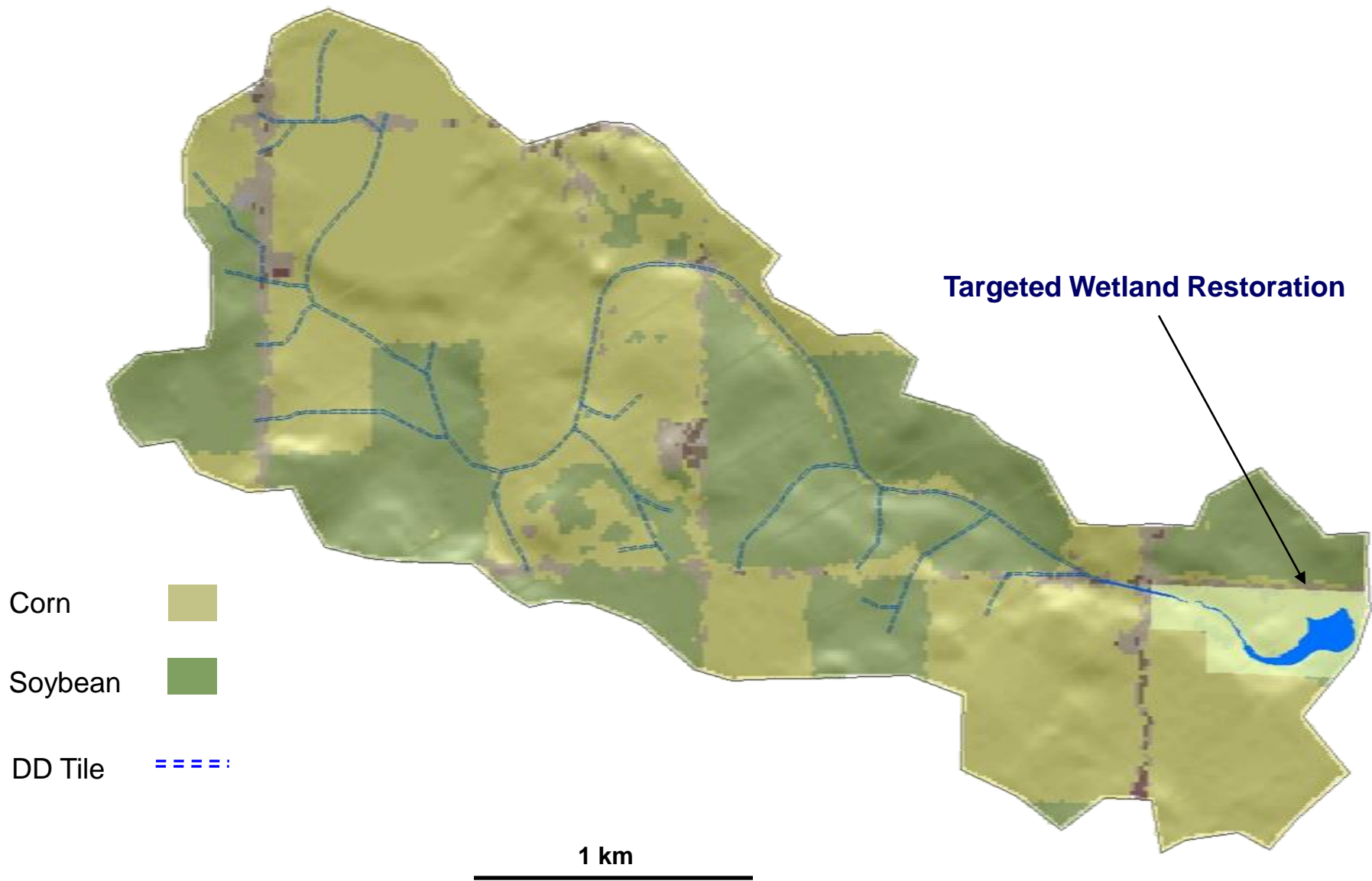
J.B. Crim Farm
Nov 15 ,1916 end of 54 inch block tile in northern Boone Co.



Iowa Wetland Landscape Systems Initiative - Research/Science Basis

- Water Quality & Drainage Studies – Since 1988, Funded from Fees on Ag Chemicals
 - Gilmore City Research Station & Outlying Farms
 - Ames Research Farm
 - Pekin Farm
- EPA Grant \$1 million – “Integrated Drainage-Wetland Systems for Reducing Nitrate Loads from Des Moines Lobe Watersheds”

Iowa Wetland Landscape Systems Initiative



Projected Environmental/Ecological Service Benefits – Wetland Landscape Systems

- Reduce nitrate transport – 40-70%

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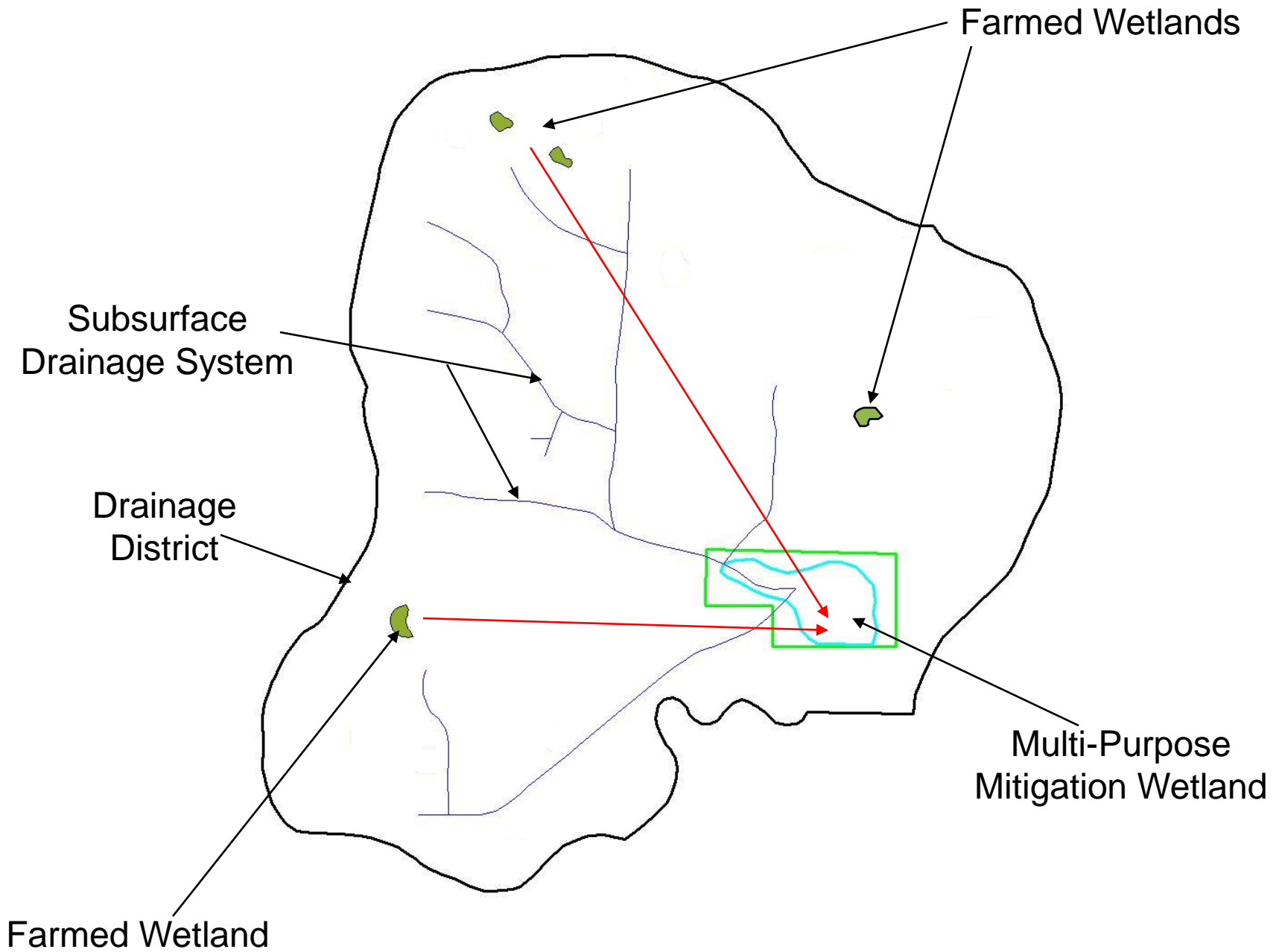
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- Market force economic driver for implementation and food security benefit - optimize crop production

Market Force Economic Drivers

- 7-20% crop yield increases from optimized drainage – Iowa State University studies
- Mitigation to N removal wetlands of some “unavoidably manipulated” continuously-cropped farmed wetlands





Pothole
Depression
Typical of Farmed
Wetland
May 2007



Same
Pothole
Depression
June 2007

Kossuth County – 0.4 Acre Farmed Wetland with Crop Loss Spring 2007





Other Economic Benefits

- \$4-6 billion infrastructure construction – jobs, services, materials, etc.
- Contribution of increased grain production to US balance of foreign trade
- Increased net income to farmers is taxable, federal and state

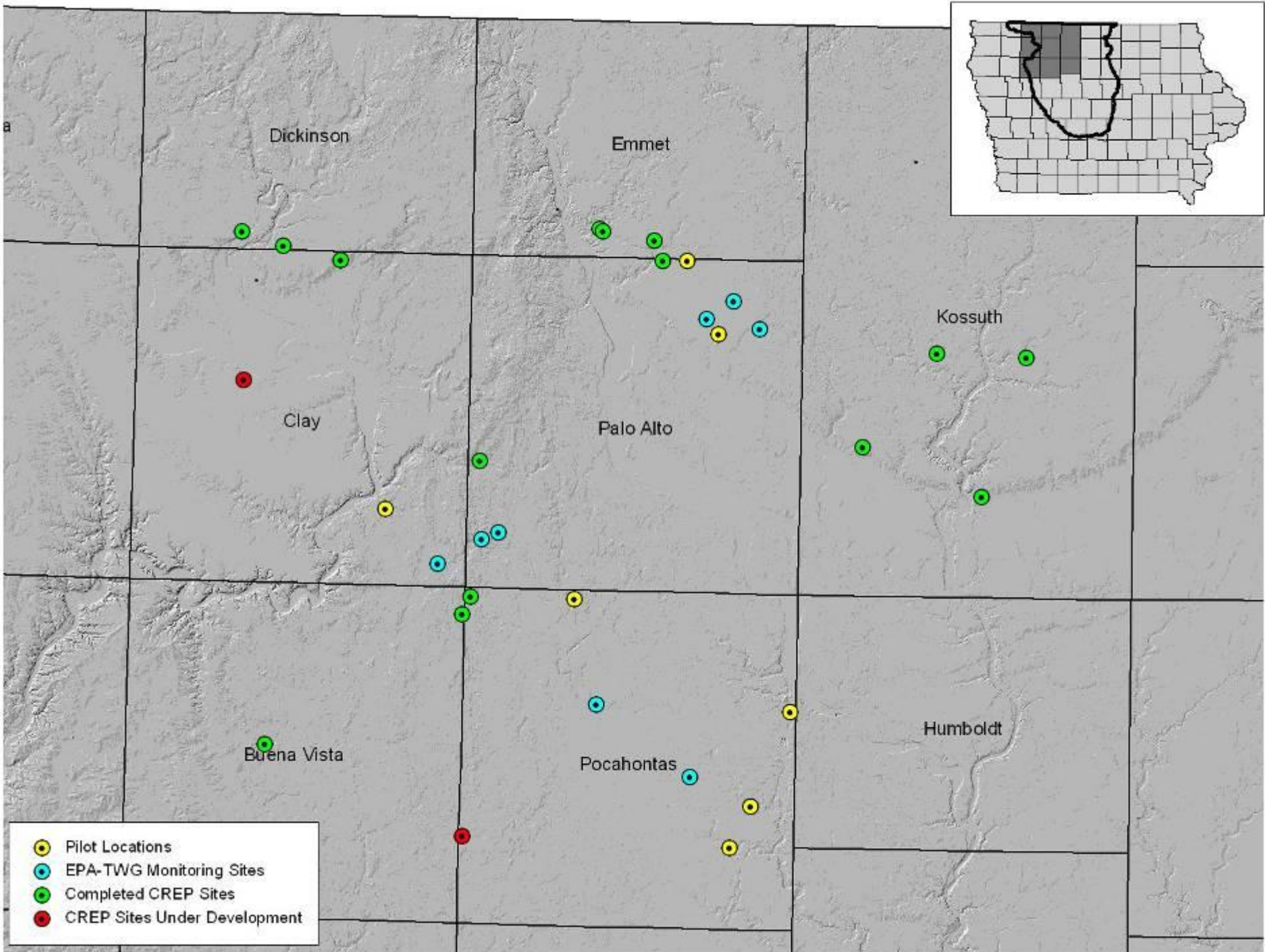
Iowa Wetland Landscape Systems Initiative

Named “the most innovative and promising public policy idea”

Farm Foundation 30-Year Challenge policy competition in natural resources (2009)

Pilot Demonstration Study Sites

- Solicitation of interest across 3000 watershed districts
- Pilot demonstration study watersheds
 - Pocahontas DD 65 (CREP wetland) – construction/restoration completed
 - Clay DD 8 (CREP wetland)
 - Pocahontas DD 48 & 81 (CREP wetland)
 - Palo Alto DD15 North (mitigation wetland)
 - Palo Alto DD15 South (CREP wetland)
 - Pocahontas/Palo Alto Joint DD36 (mitigation wetland)
 - Pocahontas DD178 – project to close 11 ag drainage wells (CREP wetland)



Interagency Working Group

Iowa Department of Agriculture & Land Stewardship (IDALS)

Iowa State University (ISU)

University of Iowa (UI)

Iowa Institute of Hydraulic Research (IIHR)

Center for Agricultural and Rural Development (CARD)

Iowa Flood Center (IFC)

Iowa Department of Natural Resources (DNR)

USDA – Farm Service Agency (FSA)

USDA – Natural Resources Conservation Service (NRCS)

USDA – Agricultural Research Service (ARS)

United States Fish & Wildlife Service (FWS)

United States Environmental Protection Agency (EPA)

United States Geological Survey (USGS)

Technical Work Groups and Study Areas

- Hydrology and Water Quality
- Soil Resources
- Habitat
- Green House Gases
- Crop Yield
- Decision Drivers

49 research and technical members

Funding of Pilots - Wetlands, Watershed Infrastructure, and 5 Years of Studies/Assessments

Project landowners	\$7.11 million
State of Iowa programs	<u>\$7.89 million</u>
Funding committed	\$15.0 million
Total estimated cost	\$22 million
Remaining funding need	\$7.0 million

Remaining Needs for Pilot Demonstrations and Studies

- \$7 million from federal or other sources, to achieve \$22 million total estimated cost over 5 years
- Completion of regulatory decisions

Recap

- Mississippi/Iowa farmer to farmer exchange built engagement of farm leaders to the Gulf
- Potential opportunity to expand engagement between Gulf and corn belt farm leaders
- Many actions are underway in Mississippi and Iowa to reduce nutrients from croppeds lands
- Iowa Wetland Landscape Initiative – regulatory resolution and completion of funding needed



