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Iowa Nutrient Reduction Strategy Annual Progress Report 2017-2018

Water Resources Coordinating Council Meeting
26 June 2018

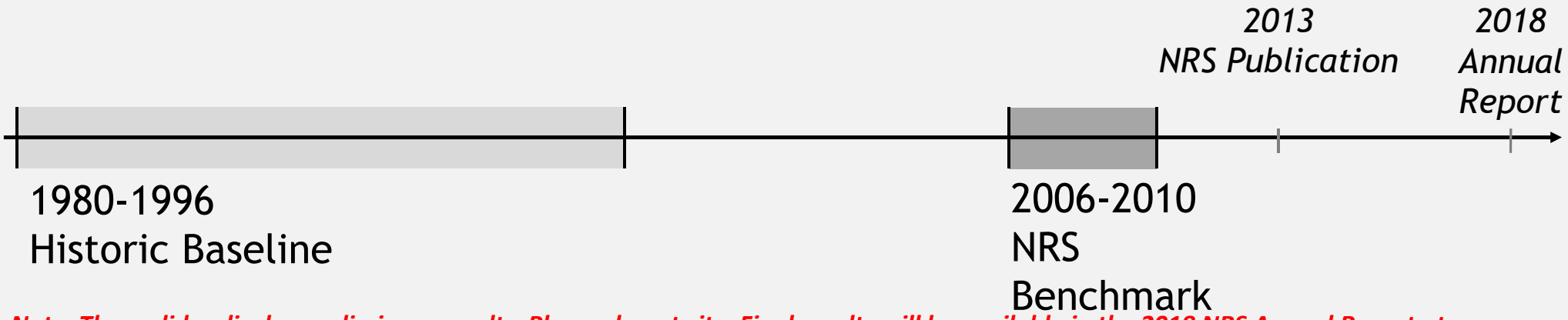
IOWA DEPARTMENT OF NATURAL RESOURCES

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP

IOWA STATE UNIVERSITY

INRS Baseline

Section 466B.3 , subsection 3, paragraph c, states:
Whether the funds, programs, and regulatory efforts coordinated by the council eventually result in a long-term improvement to the quality of surface water in Iowa. To evaluate the progress achieved over time toward the goals of the Iowa nutrient reduction strategy, as defined in section 455B.171, and the United States environmental protection agency gulf hypoxia action plan, ***the baseline condition shall be calculated for the time period from 1980 to 1996***.



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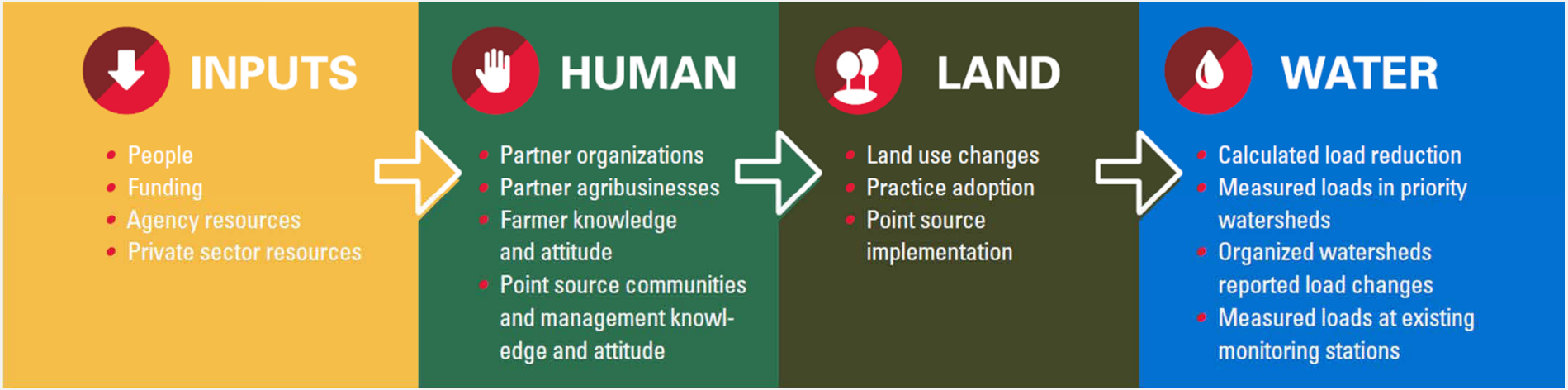


- Funding
- Staff
- Point source permits

- Outreach
- Farmer surveys

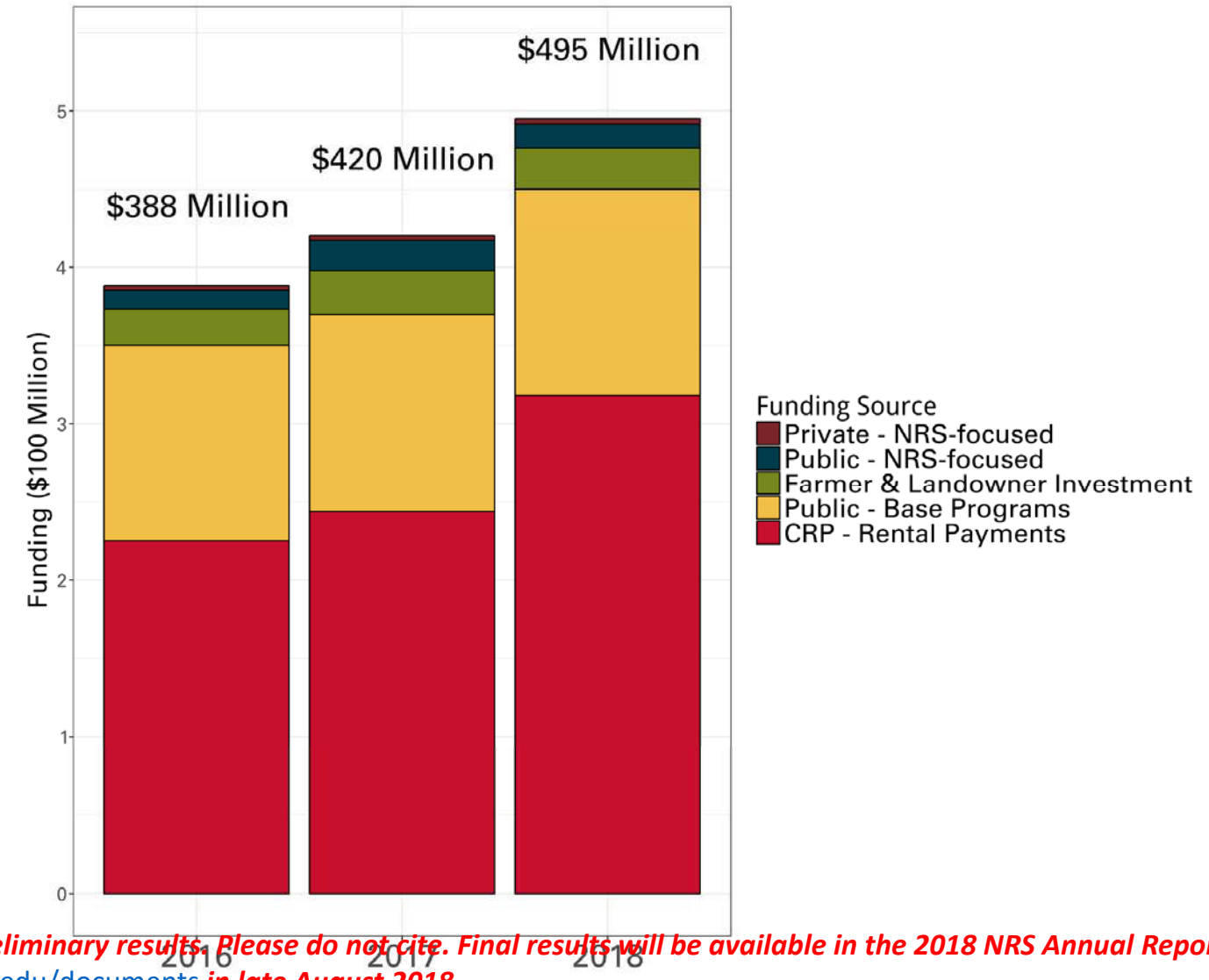
- Land Use
- Practice Use
- Addressing data gaps

- Nitrogen export
- Modeled nutrient reductions
- Point source reductions

Selected non-quantified topics discussed in the annual report:

- Activity in priority watersheds
- Nutrient loss research
- Practice added: blind inlets
- Refining the measurement process
- Source water protection
- Watershed Academy and retaiN

INPUTS



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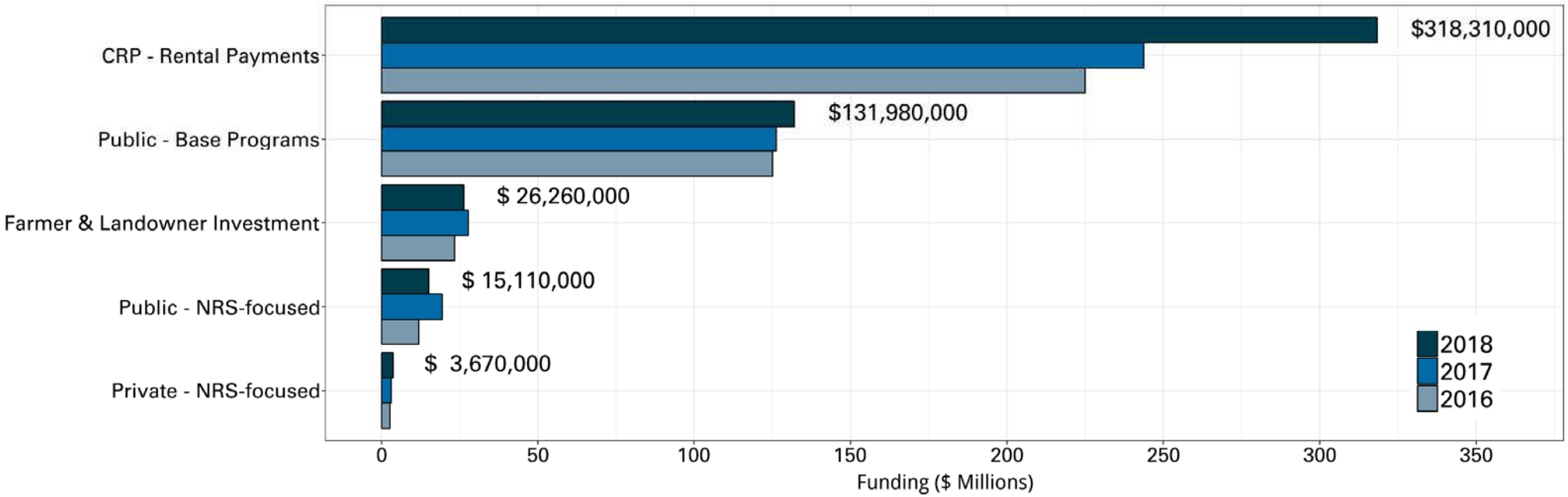
INPUTS



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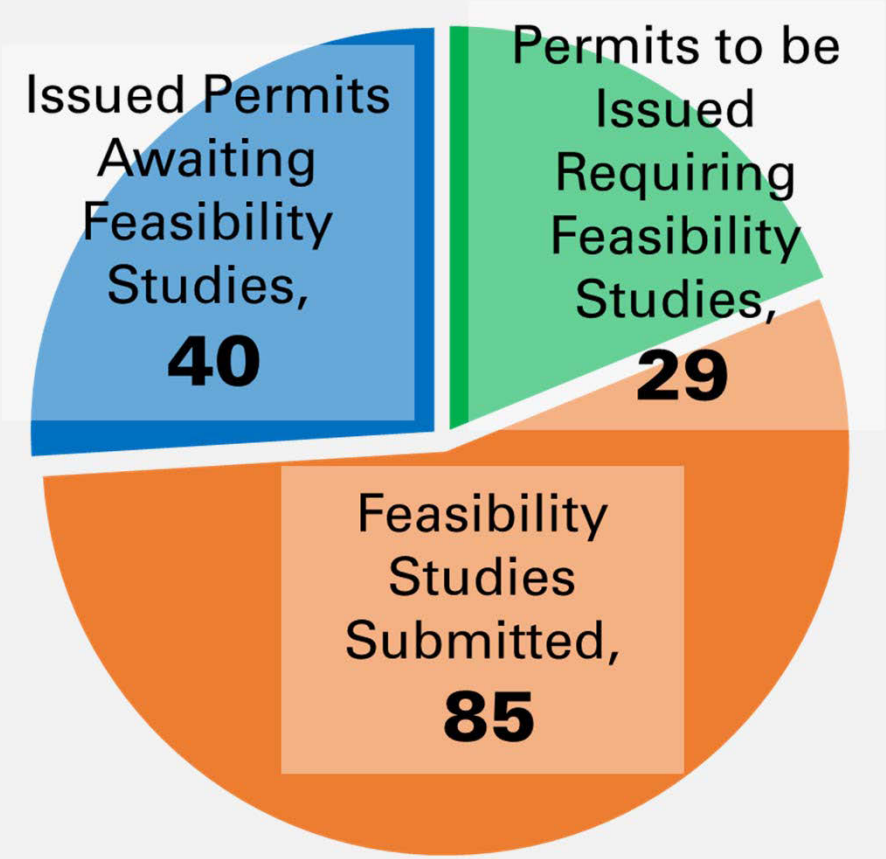
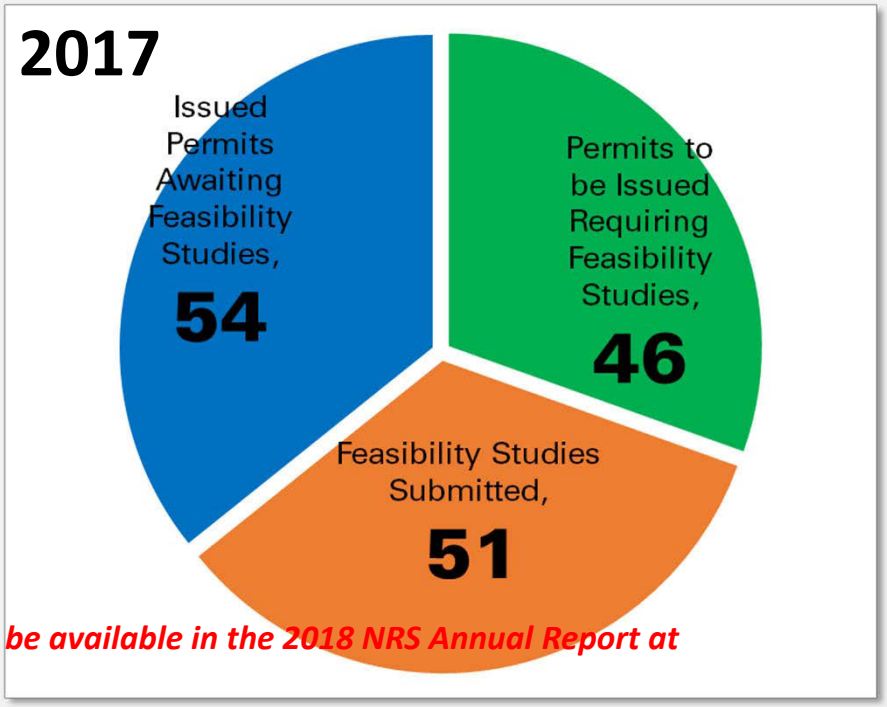
INPUTS

Point Source Permits Issued





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Outreach and Education

	Number of Events	Total Reported Attendance
2018	511	45,846
2017	474	54,478
2016	246	21,193

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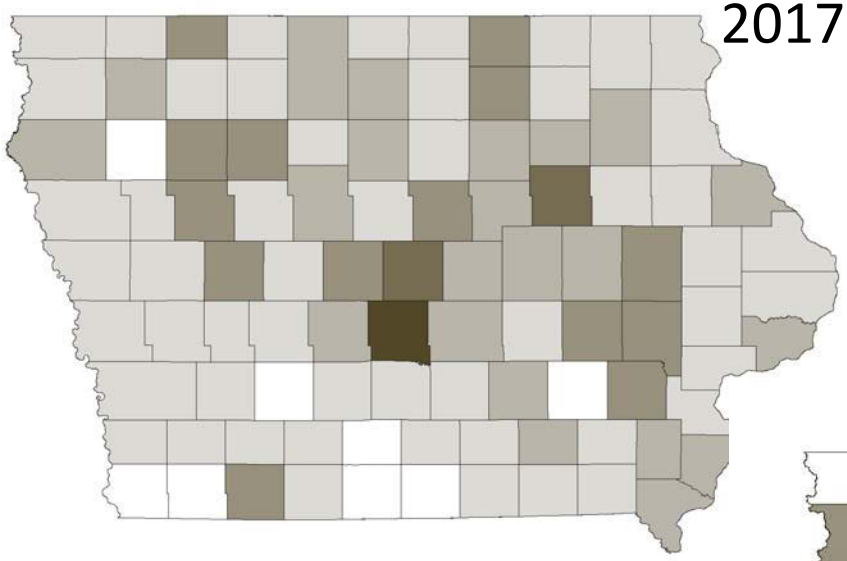
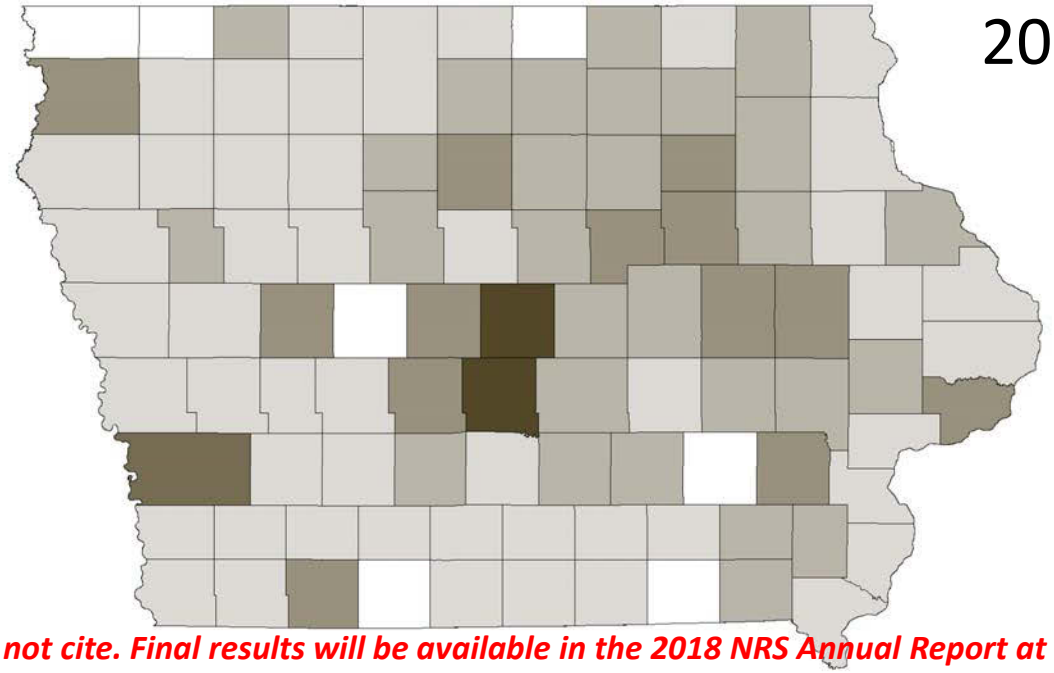
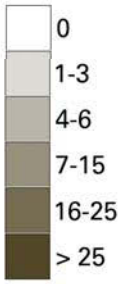
2017



2018





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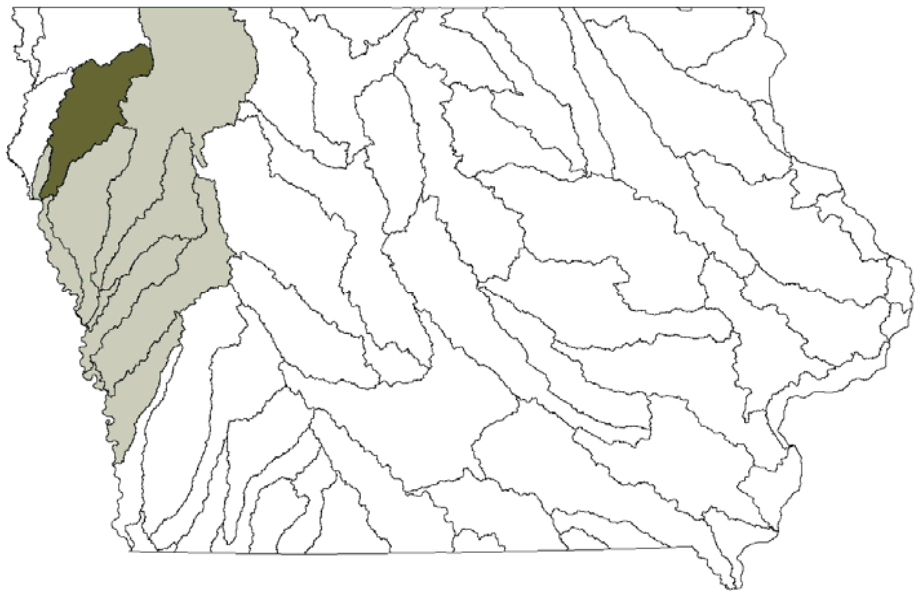
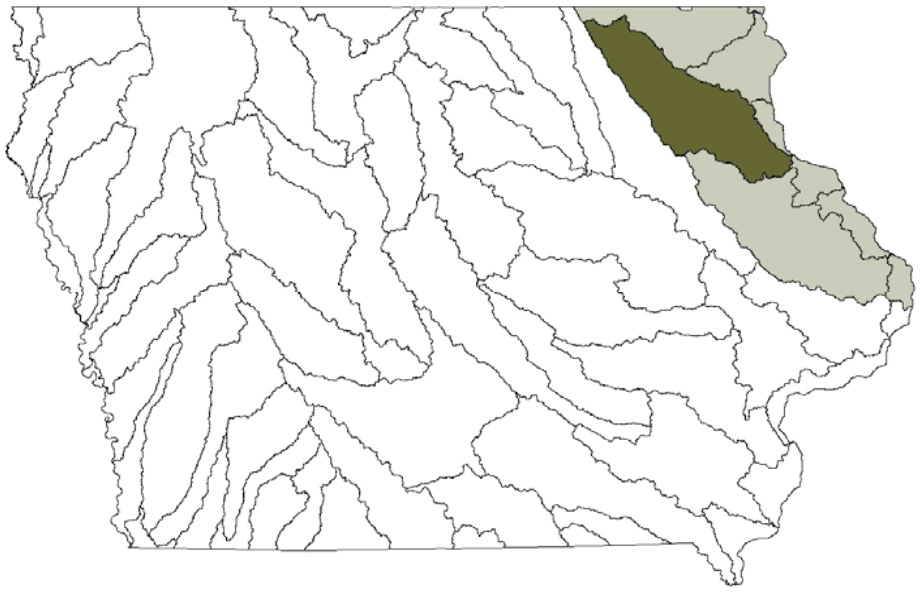
HUMAN

Farmer awareness and attitudes





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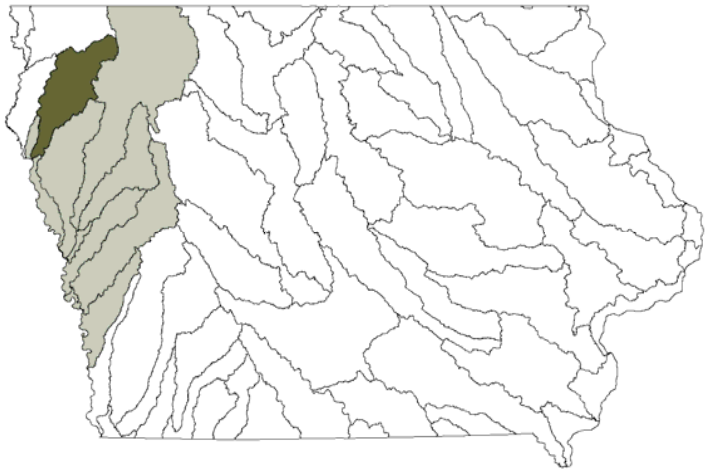
HUMAN

Farmer awareness and attitudes

Missouri-Little Sioux HUC6

- No significant change in knowledge of the NRS
- Minimal significant change in attitudes and concern related to nutrient reduction
- Increase (48 to 54%) in commodity groups and farm organizations as information sources about the NRS
- Significant increase in use of side-dress, conversion to perennial crops, and extended rotations
- Significant decrease in knowledge as a barrier to cover crops, bioreactors, and four additional practices



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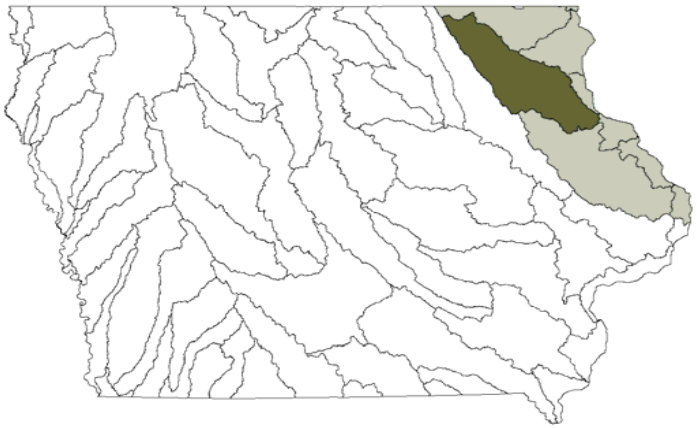
HUMAN

Farmer awareness and attitudes



Upper Mississippi-Maquoketa-Plum HUC6

- No significant change in knowledge of the NRS
- Minimal significant change in attitudes and concern related to nutrient reduction
- Increase in following information sources: farm press, NRCS/SWCD, commodity group or farm org., govt agency (e.g. IDALS)
- No change in practice use

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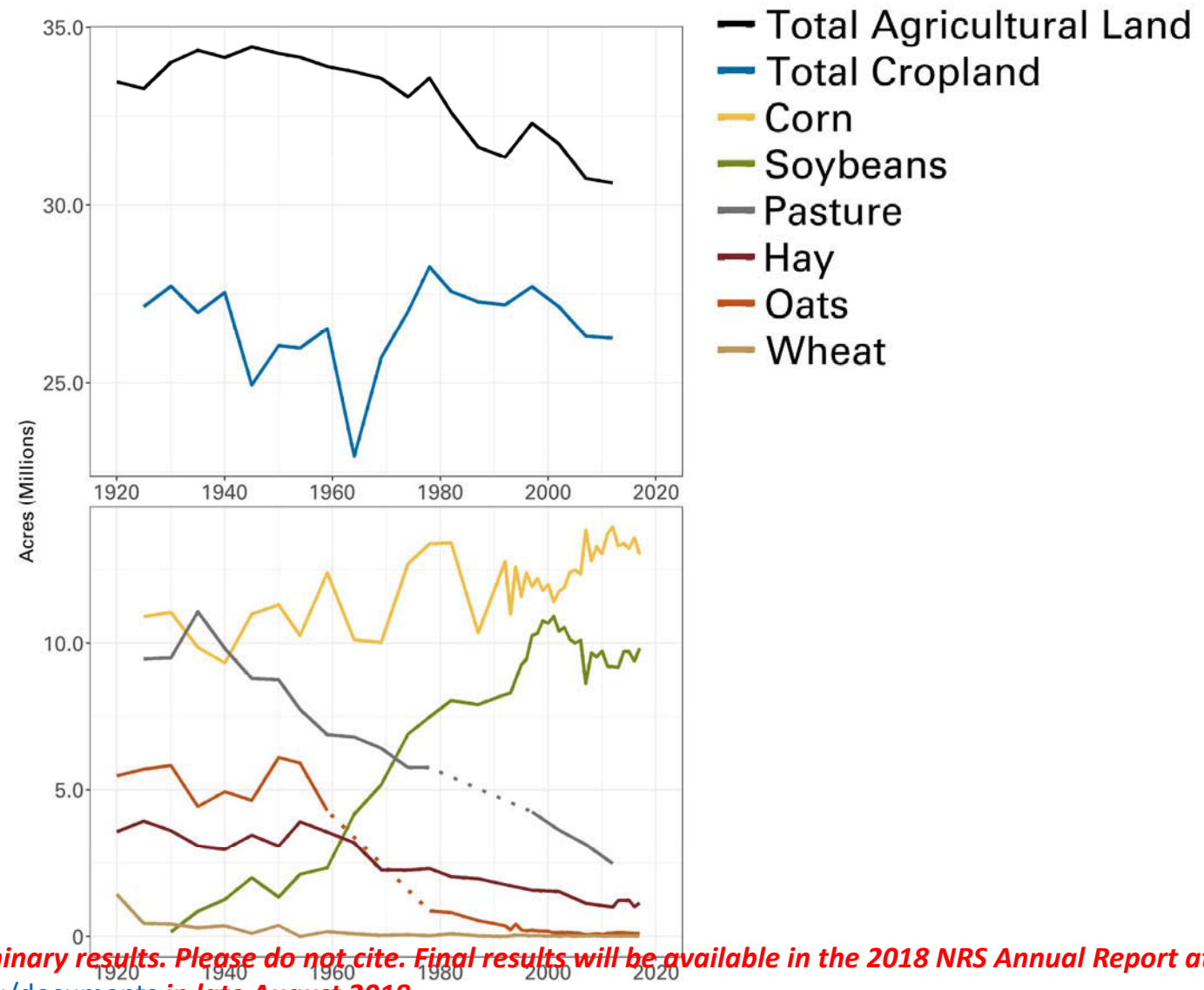
LAND



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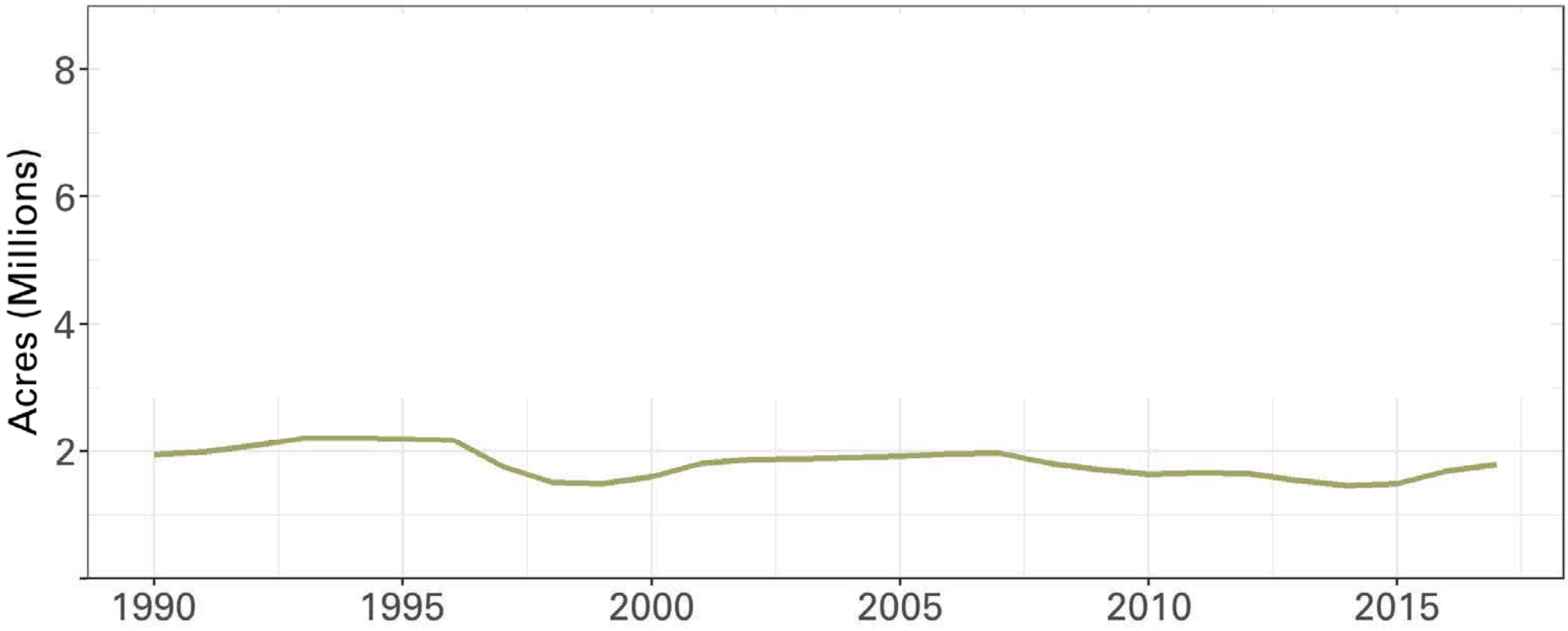
LAND

CRP Land Retirement



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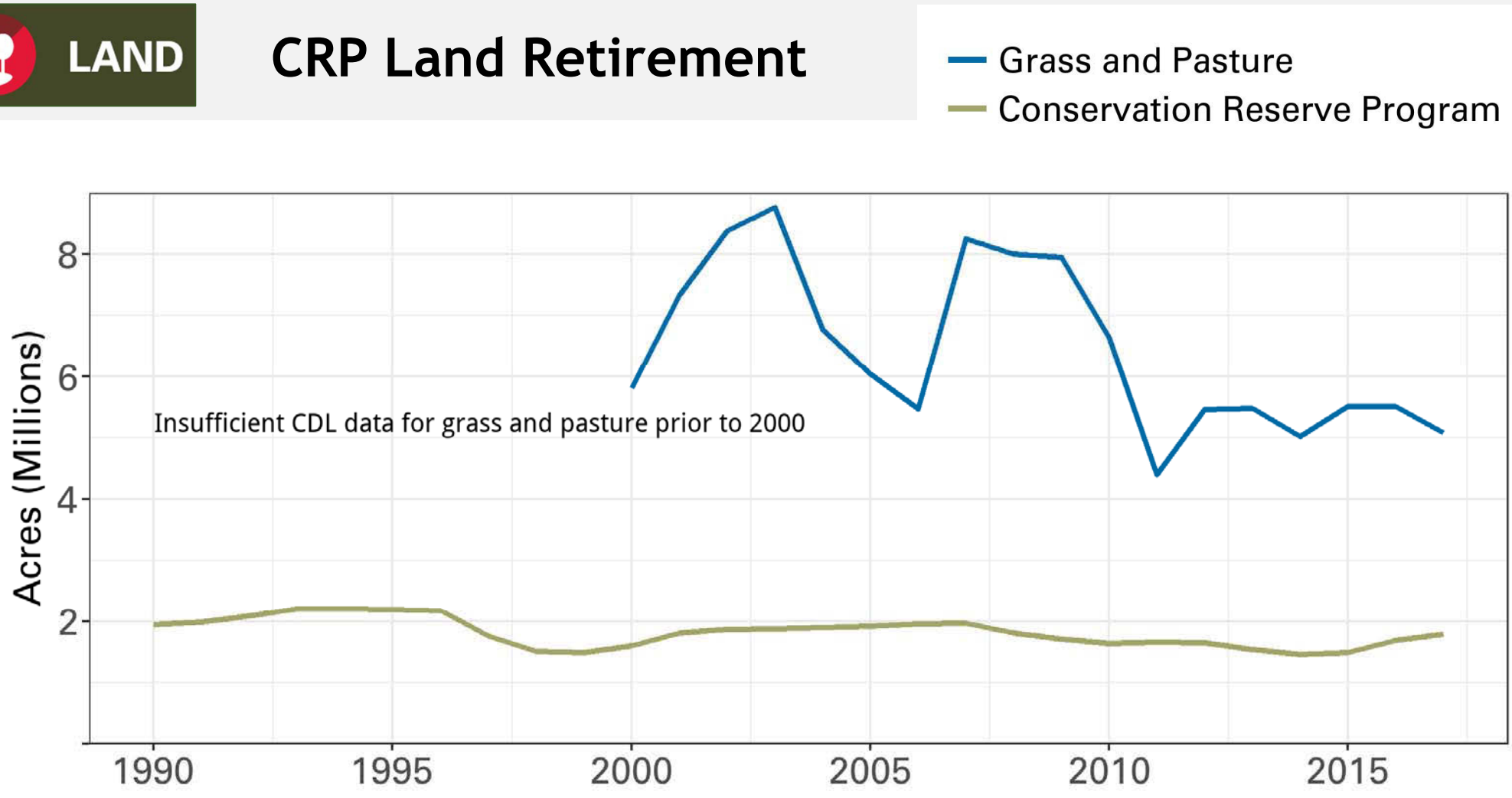
LAND

CRP Land Retirement



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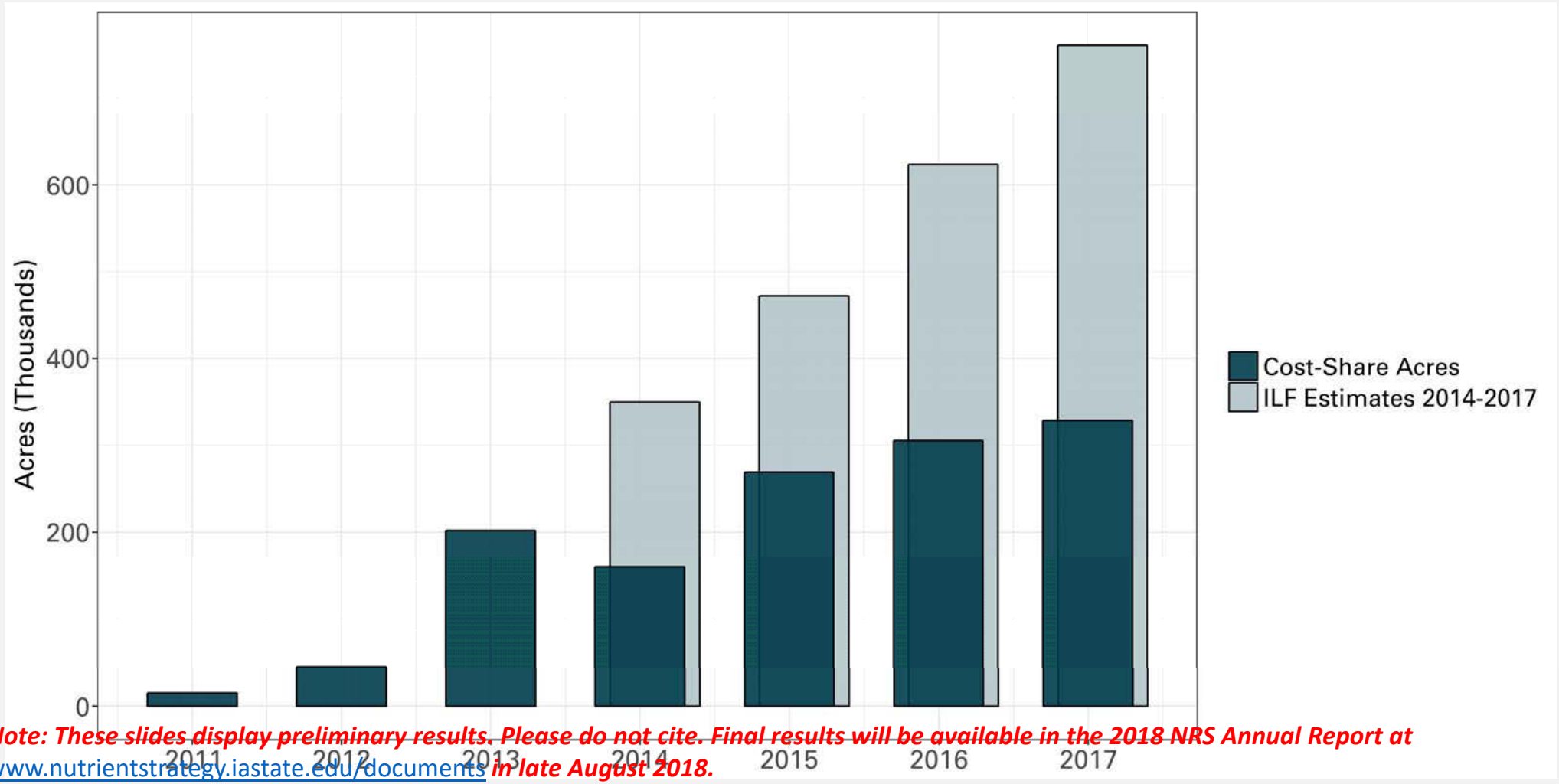
LAND

Cover Crops



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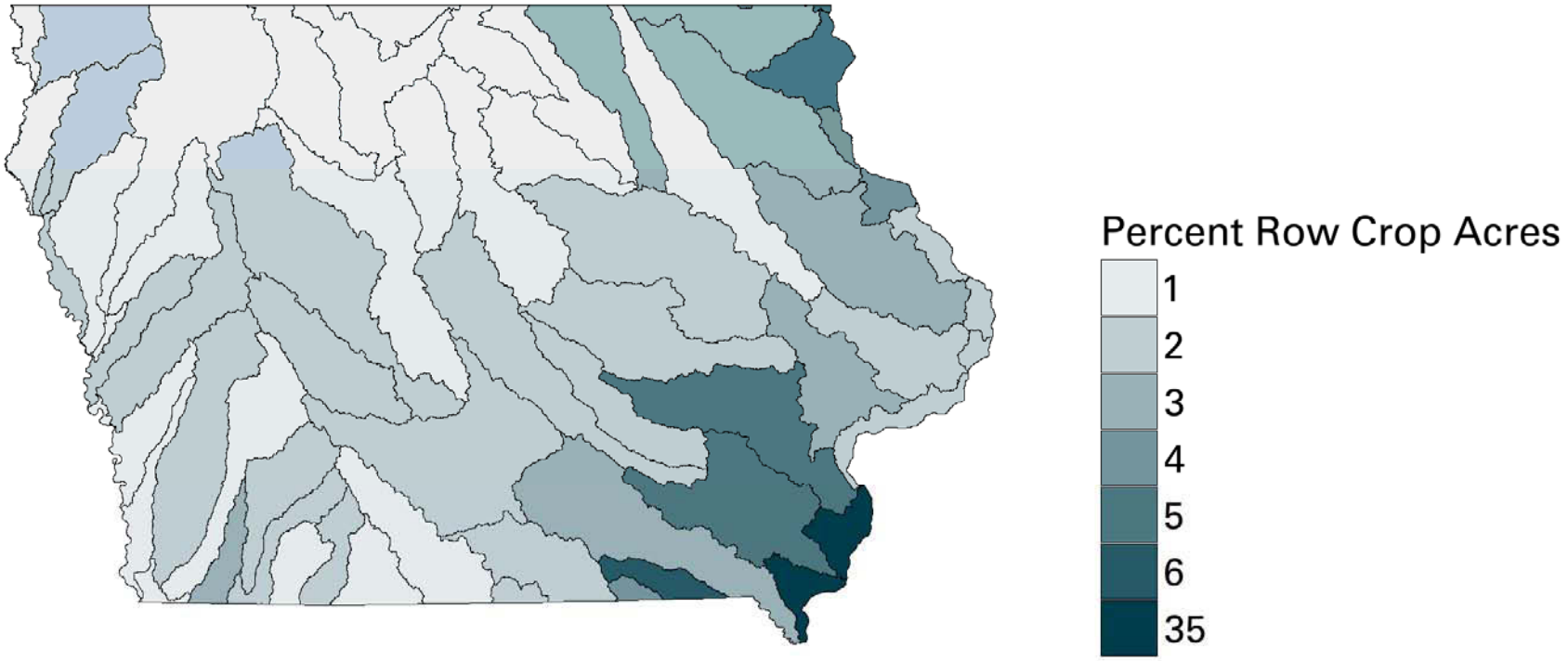
LAND

Cover Crops, 2017 Cost-Share Programs



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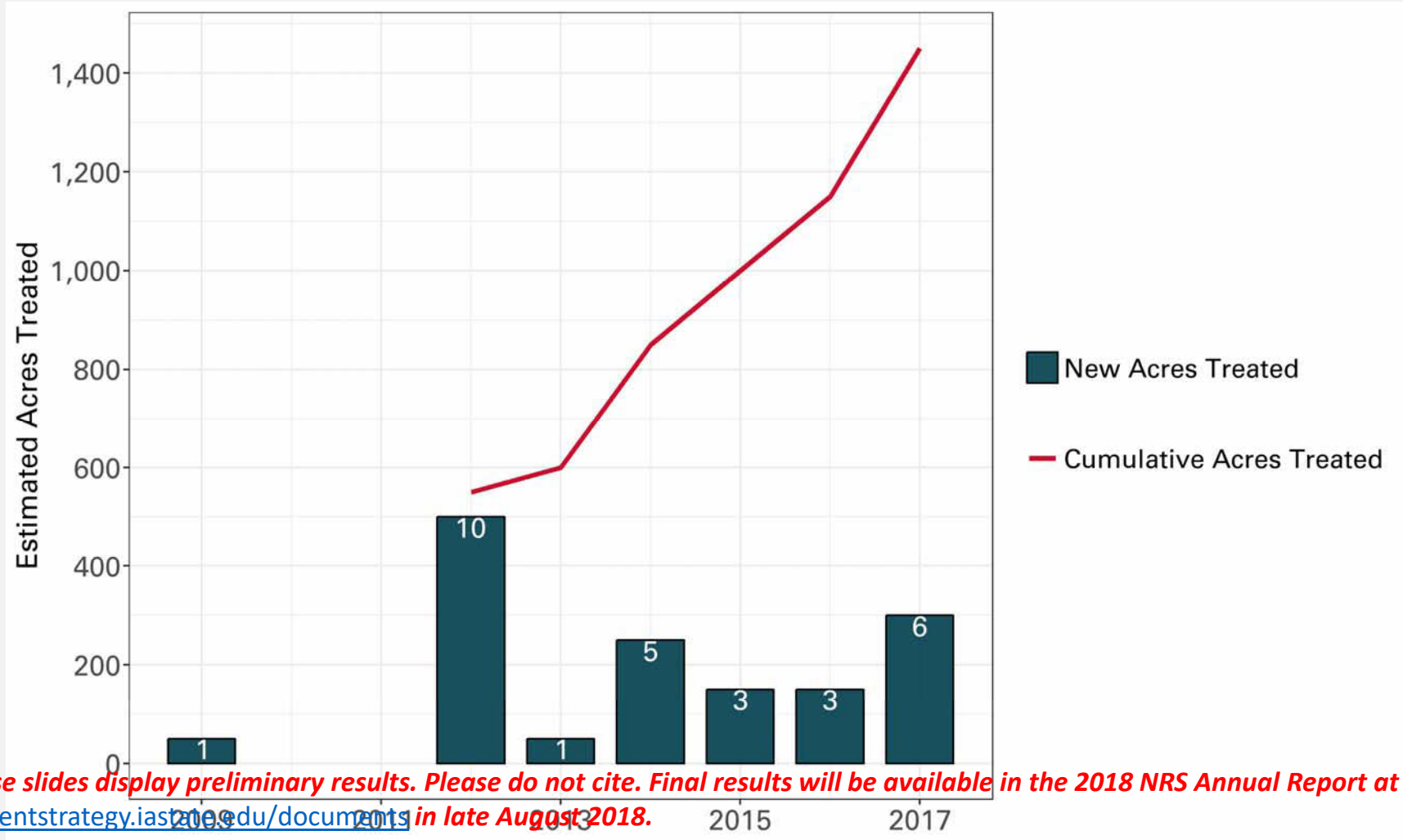
Bioreactors and Saturated Buffers



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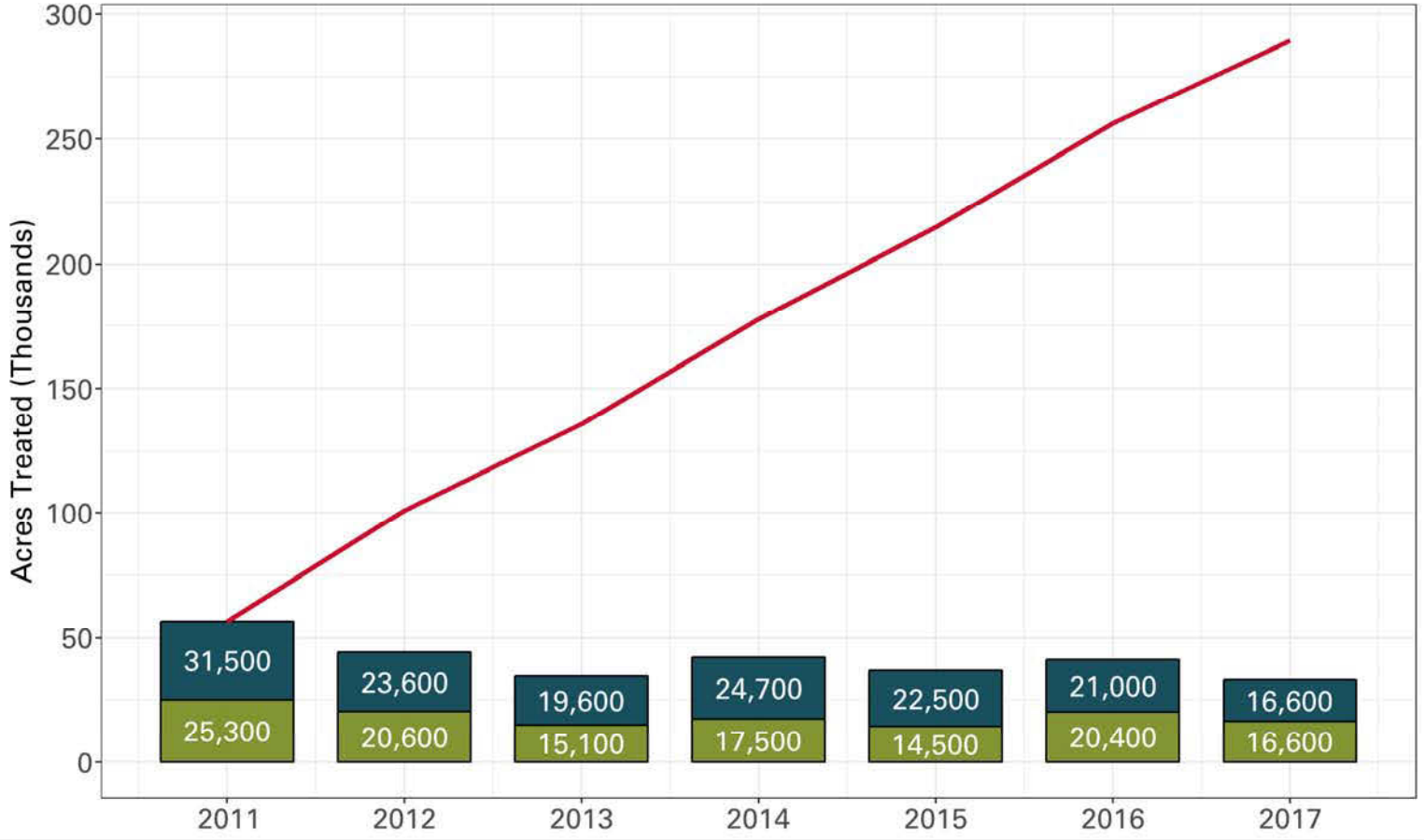
LAND

Terraces & WASCOBs, Cost-Share Programs



Terraces: **160,000** new acres treated since 2011

WASCOBs and GS: **130,000** new acres treated since 2011

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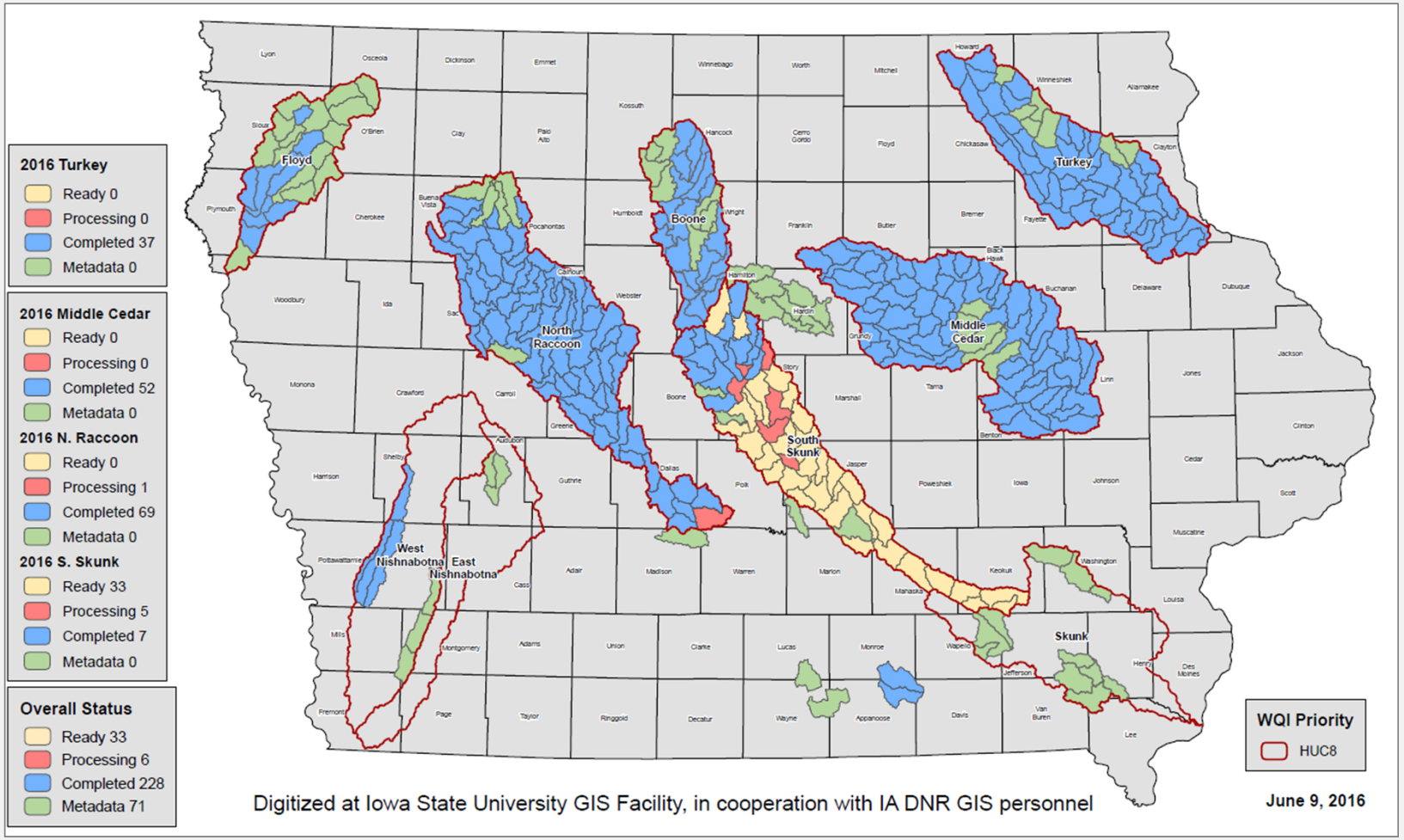
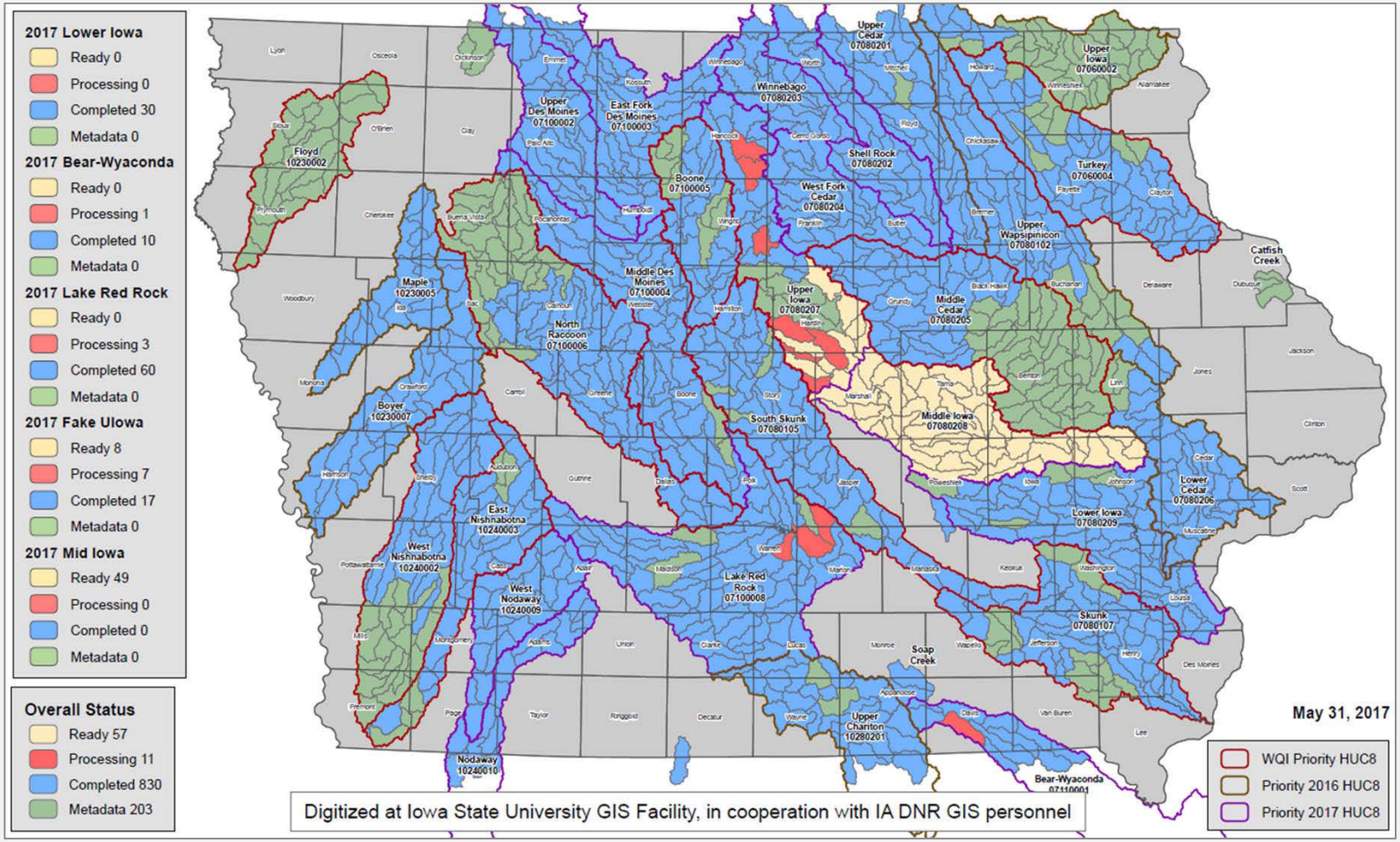
LAND

Mapping Structural Practices



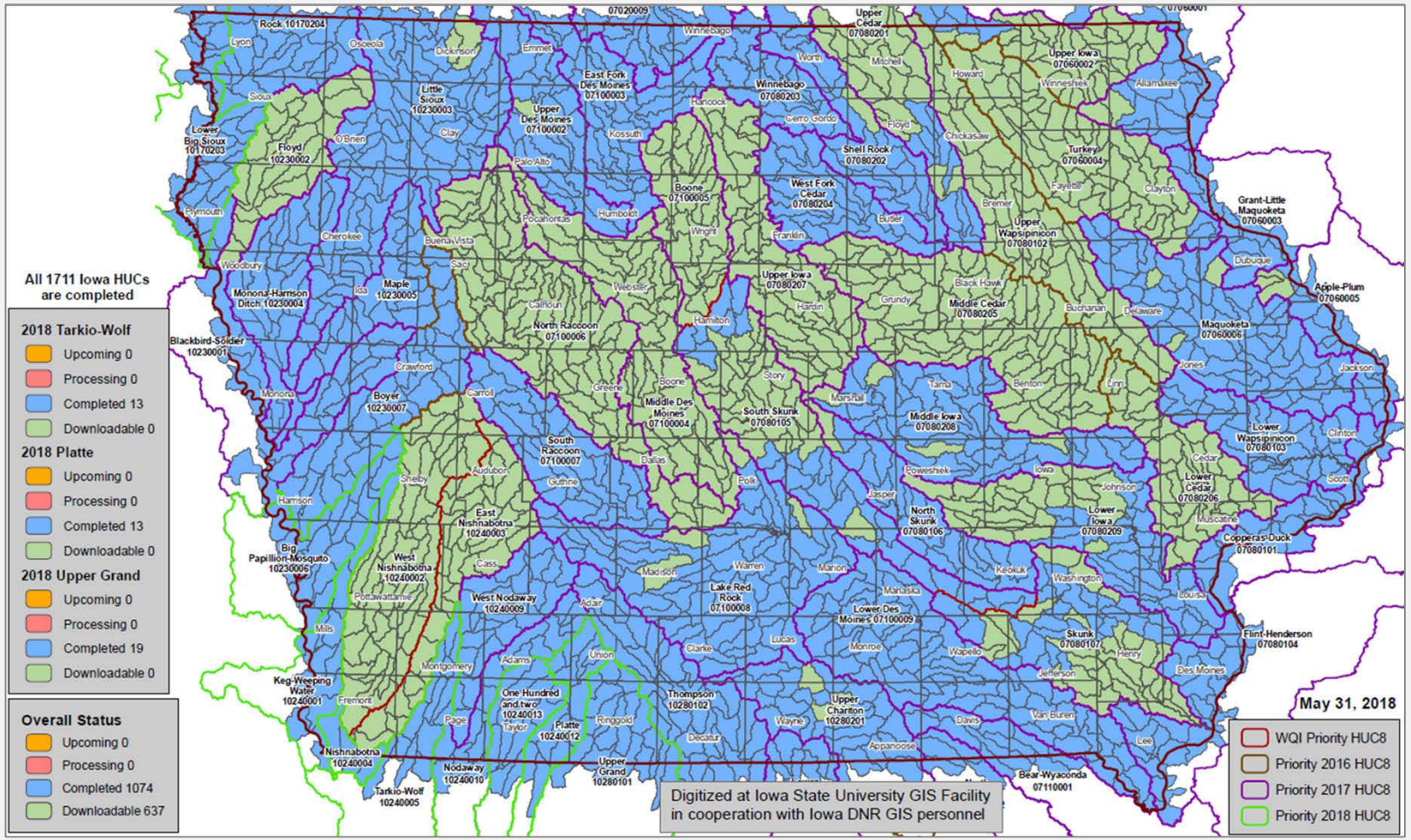
LAND

Mapping Structural Practices



LAND

Mapping Structural Practices



WATER

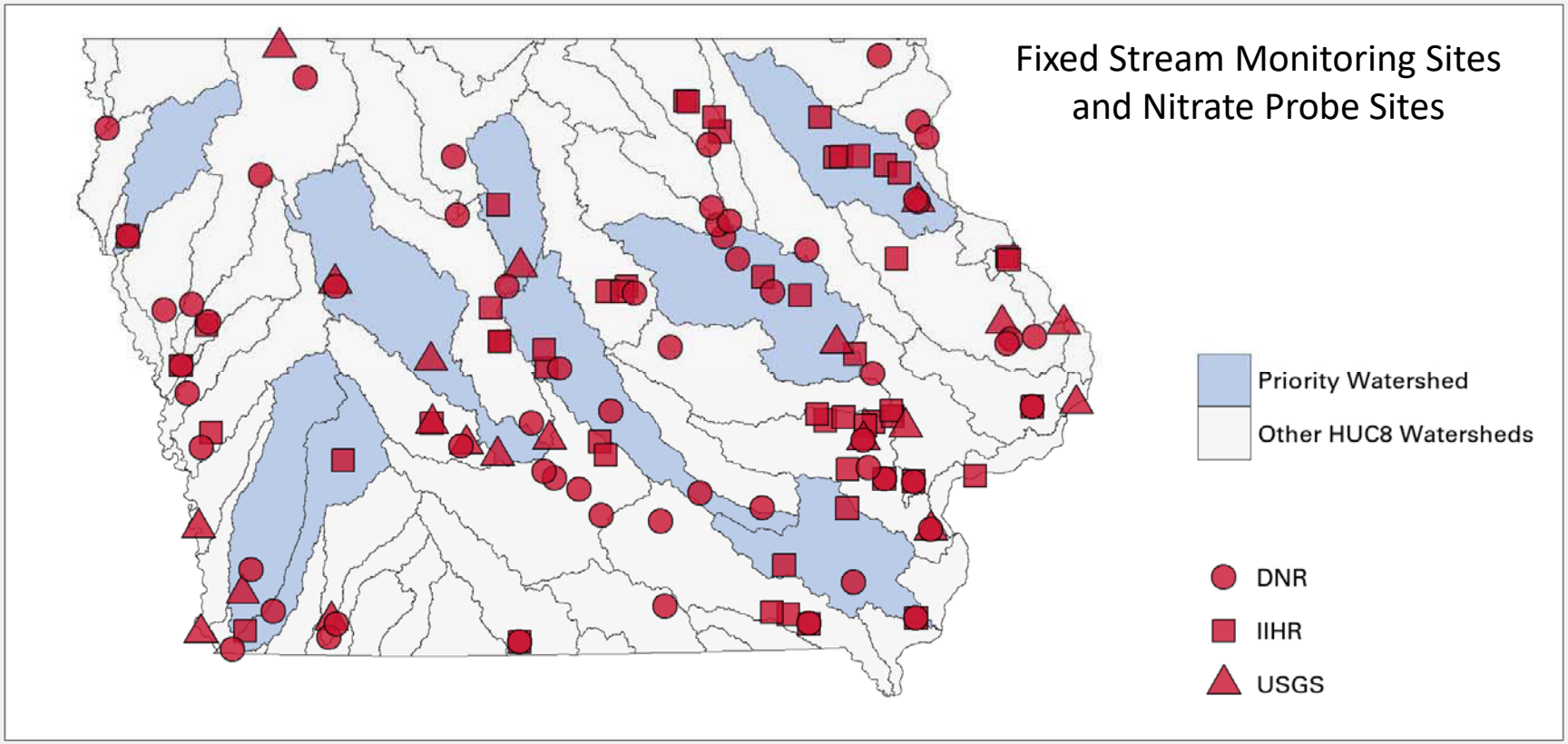
Estimating Changes in Nutrient Export

Two-pronged approach:

1. Measuring nutrient concentrations through surface water monitoring

2. Modeling nutrient loss reductions affected by conservation practices and measured point source reductions

Surface Water Monitoring Efforts



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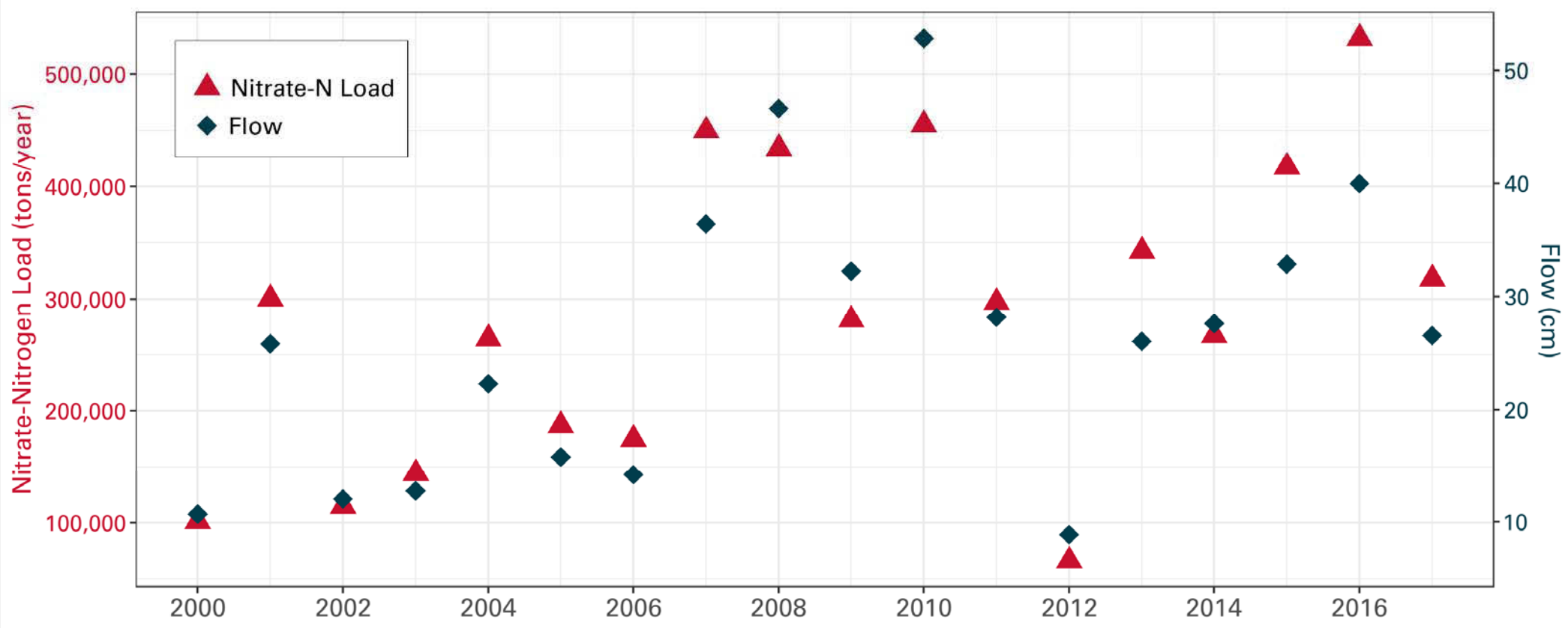
WATER

Iowa's Annual Nitrogen Export



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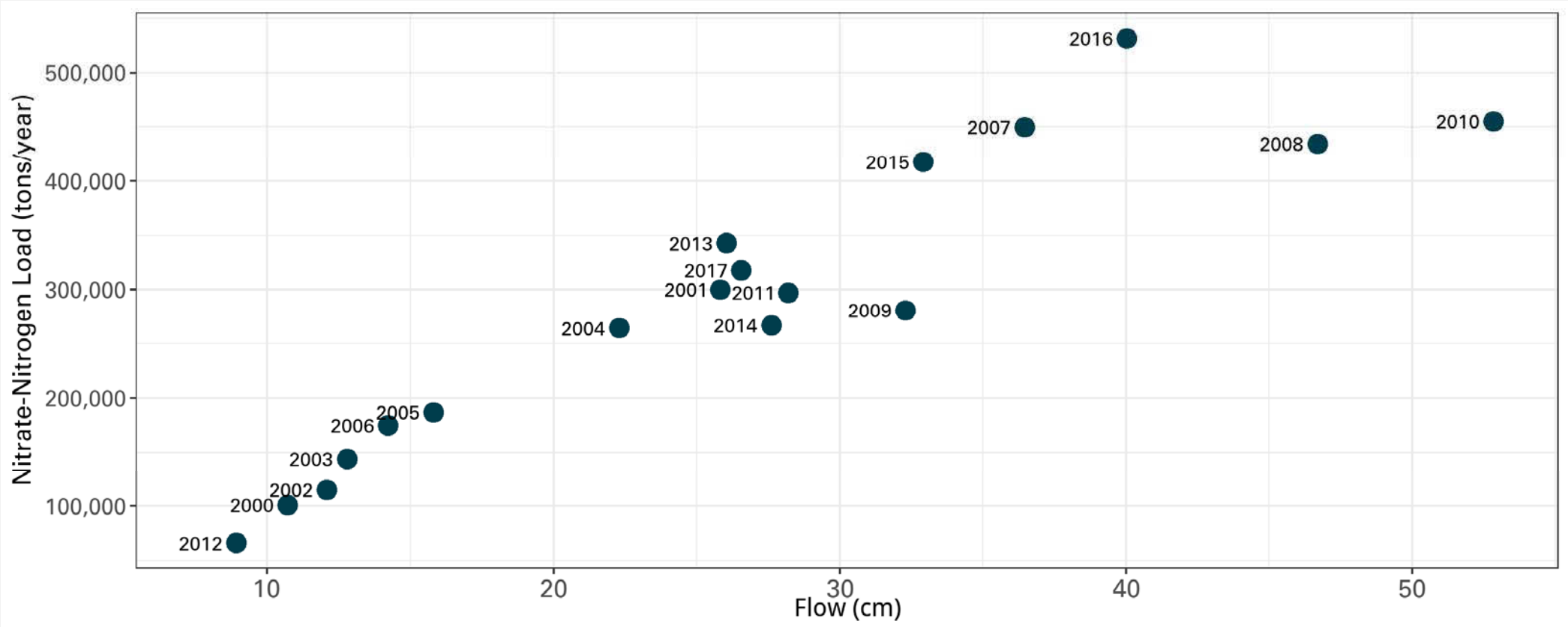

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Estimated Load Reductions From Conservation Practices - Nitrogen

		2011	2017
Cover Crops	Acres Installed Annually	14,683	328,525
	N Loss Reduction (tons)	67.5	1,464.6
Bioreactors and Saturated Buffers	Acres Benefitted (cumulative 2011-2016)		1,400
	N Loss Reduction (tons)		8.6
CREP Wetlands	Acres Benefitted (cumulative 2011-2016)	6,965	44,654
	N Loss Reduction (tons)	44.7	303.5
Conversion of row crop to perennials (CRP)	Total Acres Benefitted Annually	1,661,876	1,785,996
	N Loss Reduction compared to 2011 (tons)		2,323.9

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WATER

Estimated Load Reductions From Conservation Practices - Phosphorus

		2011	2017
Cover Crops	Acres Installed Annually	14,683	328,525
	P Loss Reduction (tons)	4.1	111.0
Terraces	Acres Benefitted (cumulative 2011-2016)	30,741	157,343
	P Loss Reduction (tons)	9.5	48.2
Conversion to perennials (CRP)	Total Acres Benefitted Annually	1,661,876	1,785,996
	Net P Loss Reduction compared to 2011 (tons)		57.0

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WATER

Point Source Facilities' Reduction of Effluent Concentration

	Estimate (Target)	POTW	Industry
Total Nitrogen (average)			
number of facilities		72	
raw waste (mg/L)	25	34.7 (range 15.6 – 104.9)	TBD
final effluent (mg/L)	10	18.3 (range 4.1 – 63.1)	TBD
% removal (lbs)	66%	44.1% (range -2.0% - 87.0%)	TBD
Total Phosphorus (average)			
number of facilities		72	
raw waste (mg/L)	4	6.6 (range 2.3 – 33.0)	TBD
final effluent (mg/L)	1	3.9 (range 0.7 – 24.5)	TBD
% removal	75%	40.0% (range 4.8% - 87.6%)	TBD

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Point Source Analyses for Annual Report

1. Begin to track progress against PS baseline
2. Facility performance data to be provided
3. Analyses of PS commitments
4. Summary and next steps from the 5 year review

Upcoming WRCC/WPAC Review process

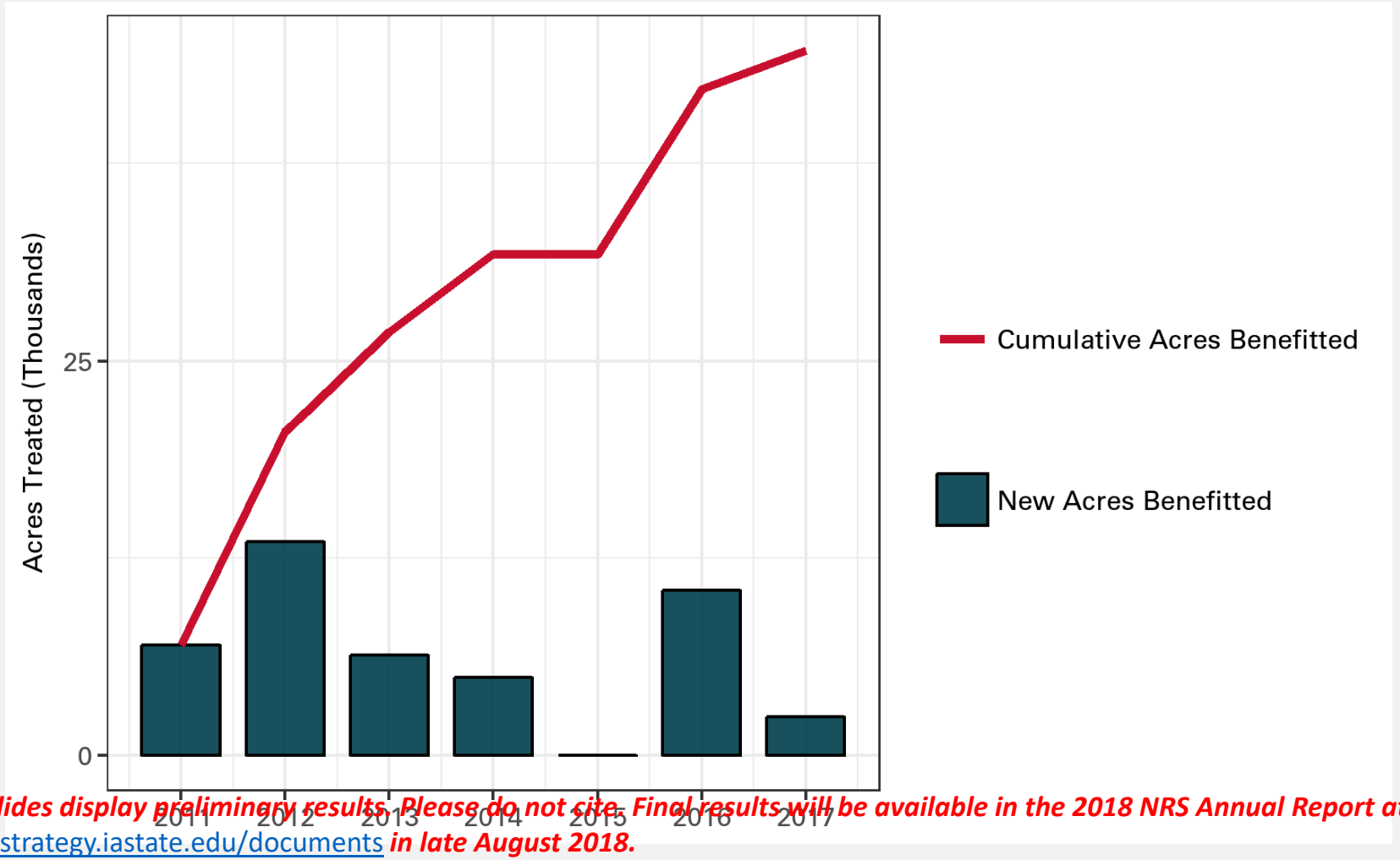
- 2-week review period
- Distributed by Jake Hansen (IDALS) through WRCC mailing list
- Email comments or suggested revisions to Adam Schnieders, adam.schnieders@dnr.iowa.gov
- Comments will receive direct responses, and will be compiled and posted on the NRS website

Thank you

Laurie Nowatzke
lwissler@iastate.edu
515-294-0527

LAND

CREP Wetlands



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WATER

Surface Water Monitoring Efforts

Edge-of-Field or Delivery Scale	Small Watershed < 100 sq. mi.	Medium Watershed 100 – 1,000 sq. mi.	Large Watershed > 1,000 sq. mi.	Mississippi River Basin