Policy Working Group

Illinois Nutrient Loss Reduction Strategy
Workshop – November 13, 2018
ACES Library, Urbana IL

Photo credit: Layne Knoche

Introductions

Point Source
Albert Cox Rick Manner Kay Anderson Nick Menninga Randy Stein Alec Davis

Agriculture
Liz Hobart Lauren Lurkins Julie Armstrong Jennifer Tirey Jean Payne Rodney Weinzierl Dick Lyons

Stormwater
Mary Beth Falsey

Drinking Water Supply
Ted Meckes Kevin Culver

University/Technical Assistance Providers
Paul Davidson Laura Christianson Steve Stierwalt

Environmental Groups
Albert Ettinger Carol Hays Jessica Dexter Cindy Skrukrud

Conservation Groups
Kris Reynolds Caroline Wade

Government
Trevor Sample Warren Goetsch Gene Barickman Mike Chandler

Nutrient Standards Update:

Sanjay Sofat, Illinois EPA

Agriculture Water Quality Partnership Forum

Warren Goetsch

AWQPF Meeting: March 12, 2018

PRESENTATIONS

Soil Transect Survey – Elliott Lagacy

- Next Biennial Report plans to include Transept Survey conservation tillage data statewide and by watershed.

FSA Cover Crop reporting – Doug Bailey

- FSA updated its database for reporting cover crops and has a new software system that may resolve the difference between FSA and NASS numbers.

AWQPF Meeting: March 12, 2018

PRESENTATIONS (CON'T)

Filter Strips and Riparian Buffers/Iowa BMP mapping project – Trevor Sample

- Iowa is mapping all the structural practices they recommend in their Nutrient Strategy using LIDAR data and aerial imagery. One option for IL is to focus on filter strips in P priority watersheds.

Review method for adding conservation practices to the NLRS and review BMP performance based on NREC findings – Laura Christianson and Reid Christianson

- Science Team will coordinate adding conservation practices to NLRS. It is agreed that there needs to be a written procedure that is well thought out and science based. A key contact person needs to be established.

AWQPF Meeting: March 12, 2018

PRESENTATIONS (CON'T)

Saving Tomorrow's Agricultural Resources S.T.A.R. – Bruce Henrikson

- Champaign County Soil and Water Conservation District's Stewardship committee developed a free tool to assist farm operators and land owners to evaluate their own nutrient loss management practices and to promote BMPs on individual fields. Each field can have a sign posted that indicates the S.T.A.R. rating (1-5) at no cost to the farmer.

2019 NASS Survey – Mark Schleusener

- The next NLRS NASS Survey reference year will be 2017. Data collection will be in 2019.

SURVEY TIMING AND DATA COLLECTION PLAN

First mailing: *January 1*

Questionnaire printed on yellow paper

Second mailing: *February 1*

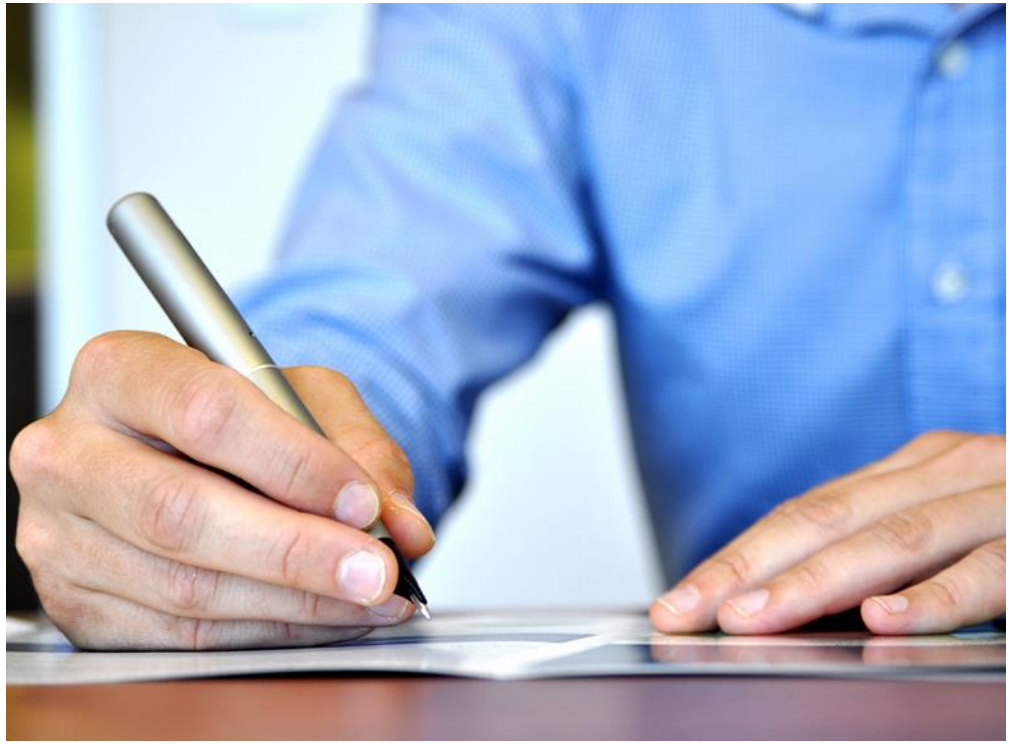
Only to non-respondents

Working on a 2nd request cover letter

Phoning: *March 20 – March 31*

Data analysis: *March 1 – April 15*

Summary and publication: *April 15 – June 1*



SAMPLING PLAN

1,096 total farms

Field crops producers

Trying to exclude fruits, vegetables

At least 100 acres of cropland

Less than 5,000 acres of cropland

NASS INTERNAL PROCESSES

Staffing decisions made for:

- Visual / manual review of forms
- Data entry
- Computer programming

NASS INTERNAL PROCESSES (CON'T)

Software needs

- Calling (done)
- computer editing (started)
- Analysis (started)
- Summary (started)

FUTURE NEEDS

- Publicity

- Lyndsay Ramsey (IL Farm Bureau) reached out to me
  - Creating a brochure for Annual Meeting
  - I gave her the basic facts

Urban Stormwater Working Group

Mary Beth Falsey, DuPage Co.

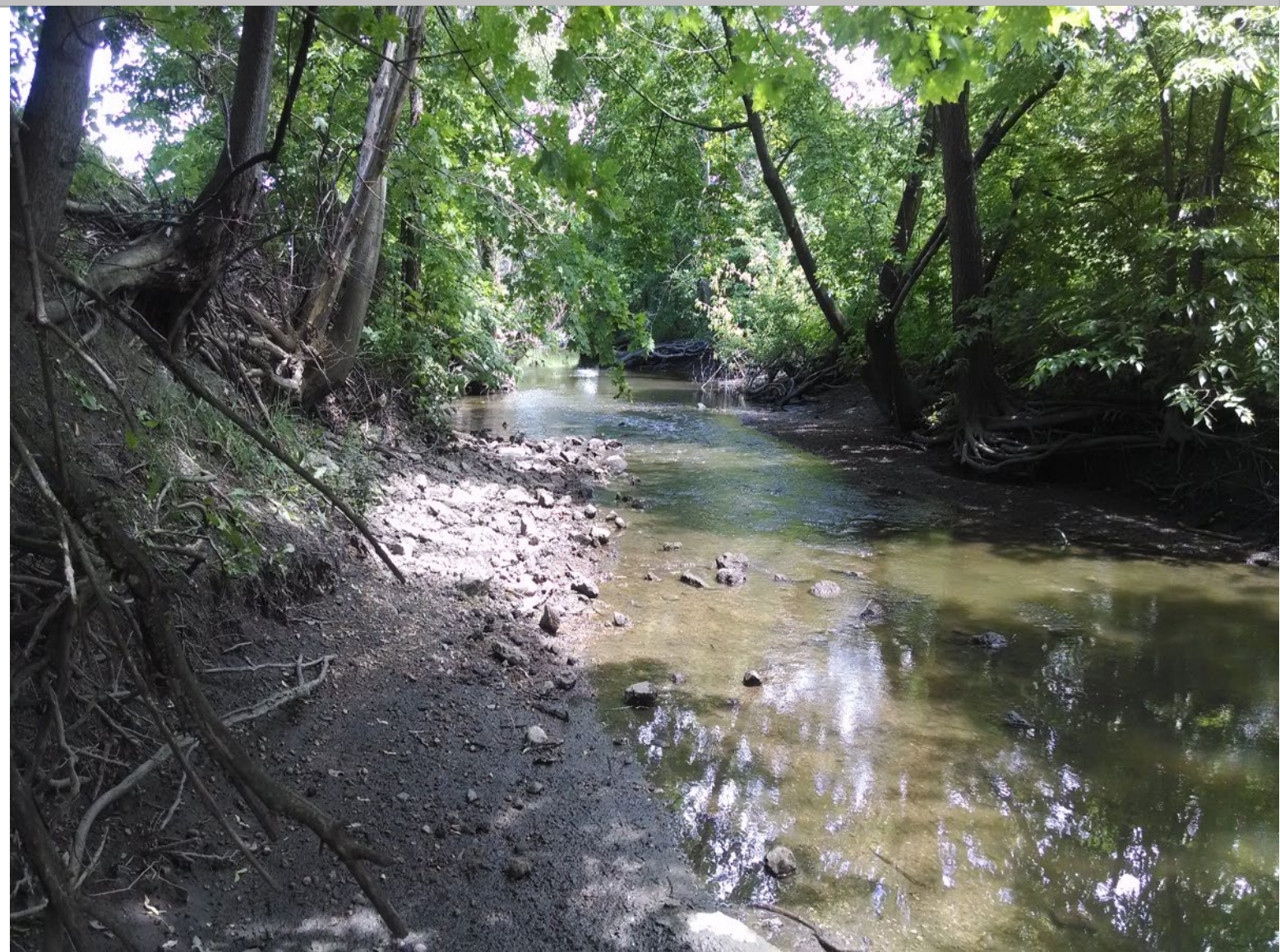
Urban Stormwater Working Group

Meetings:

May 14, 2018

Aug 22, 2018

Sep 26, 2018



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Urban Stormwater Working Group

May 14, 2018

- Introductory conference call
- Established subgroups
  - Education
  - Tracking

Urban Stormwater Working Group

Aug 22, 2018

- Chesapeake Bay Stormwater Network
  Tom Schleuler
- Tracking Stormwater BMPs
- P and N removal rates

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Urban Stormwater Working Group

Sep 26, 2018, Chicago

- Mary Beth Falsey – DuPage Co Stormwater Inventory
- Roger Bannerman – USGS Leaf Study

Urban Stormwater Working Group

Roger Bannerman – USGS Leaf Study Findings

- Vegetation most important source of Total P in urban runoff
- Highest loads in fall
- Improved leaf collection (timing, frequency) can reduce annual total P loads
- Tree type, density, species also factors
- More study needed on crediting, cost effectiveness

Education Subgroup

Education Subgroup calls: June 26 and August 7

Exploring ways to provide stormwater education resources and to make audiences aware of stormwater issues

Education Subgroup

Two initiatives happening:

1. Resource Repository – based off of Calumet Stormwater Collaborative and USWG Spreadsheet
2. Stormwater 101 PowerPoint

Education Subgroup: Resource Repository

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EDUCATION & ENGAGEMENT

The IL NLRS Urban Stormwater Working Group education and engagement section provides accessible stormwater resources that can be useful to local government staff, homeowners, and the general public. Hyperlinked names take you to each resource.

Factsheets and Pamphlets		
Name	**Organization**	**Description**
Rainready Factsheets	Center for Neighborhood Technology	Factsheets that provide information on urban flooding, stormwater management, and other related topics.
Stream Maintenance Brochure	Metropolitan Water Reclamation District	A pamphlet for the general public that describes the importance of regular neighborhood stream maintenance to ensure natural function and prevent flooding.
Understanding Your Sewer	Metropolitan Water Reclamation District	This document explains how a combined sewer system works, and what causes sewer overflows and backups.
World Meteorological Organization Information Pamphlets for Developers and Homeowners	Metropolitan Water Reclamation District	These documents provide general information for developers and homeowners regarding the need for a World Meteorological Organization permit.
World Meteorological Organization Short Summary	Metropolitan Water Reclamation District	This brochure provides general information on flood prevention and stream maintenance.
Adopt-A-Stream	DuPage County	This brochure shows how citizens can get involved in river and stream clean-up in DuPage County.
Best Management Practices	DuPage County	This brochure lists and explains stormwater best management practices (BMPs) to improve runoff quality, including quick fixes for homeowners, construction solutions, and the DuPage County Adopt-A-Stream program.
Emergency Flood Operations	DuPage County	This brochure explains the DuPage County flood control operations, including flood control facilities, flood forecasting, and emergency contact information.
Falling into Winter	DuPage County	This pamphlet lists stormwater best management practices (BMPs) for Fall and Winter.
Springing into Summer	DuPage County	This pamphlet lists stormwater best management practices (BMPs) for Spring and Summer.
Greening Urban Areas	DuPage County	This brochure explains the benefits and provides examples of green infrastructure.
Homeowners Guide to Naturalized Areas	DuPage County	This guide provides information on naturalized areas and how to manage them, as well as common weeds and their management practices.
Citizen Monitoring (IDDE)	DuPage County	This brochure provides information for citizens interested in monitoring illicit discharge in DuPage County.
PCBMP Brochure for Homeowners	DuPage County	This brochure provides post-construction stormwater best management practices (BMPs) for homeowners.
Rain Barrel Installation One-Sheet	DuPage County	This factsheet explains how to install a rain barrel.
Streambank Stabilization	DuPage County	This brochure provides detailed information for maintaining streambanks in DuPage County, including suggested shrubs and trees, how to discourage beavers, and what to do if streambanks area eroding.

IAFSM to house on their website

182 resources

Data & Tools
Design & Implementation
Education & Engagement
Funding & Financing
Policies & Regulations
Stormwater Planning
Training & Maintenance

Tracking Subgroup

Conference calls: June 28 and July 24

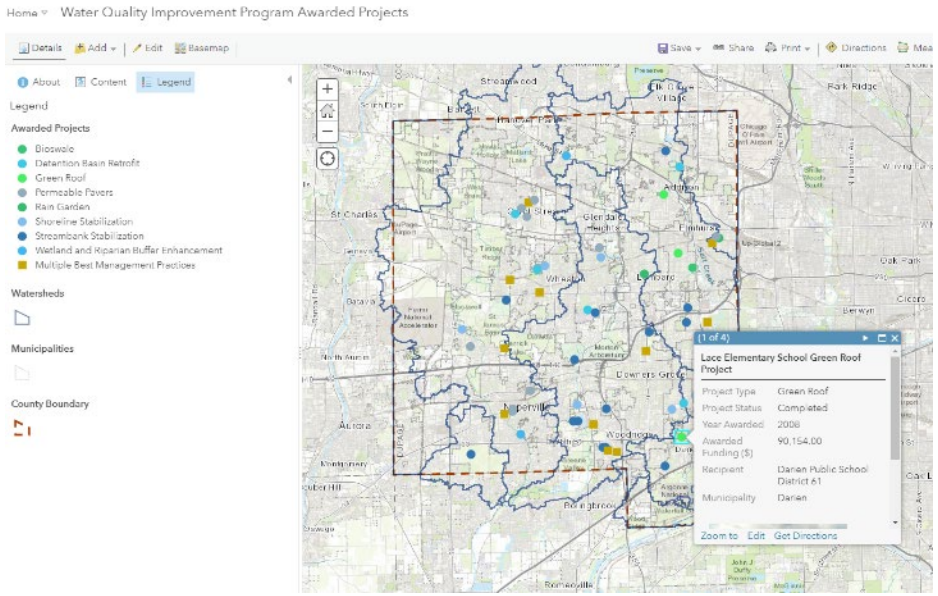
- June 28: Brainstorming
- Exploring ways to track stormwater BMPs for Biennial Report
- How to capture this information
- Huge task for a statewide initiative.

Tracking Subgroup

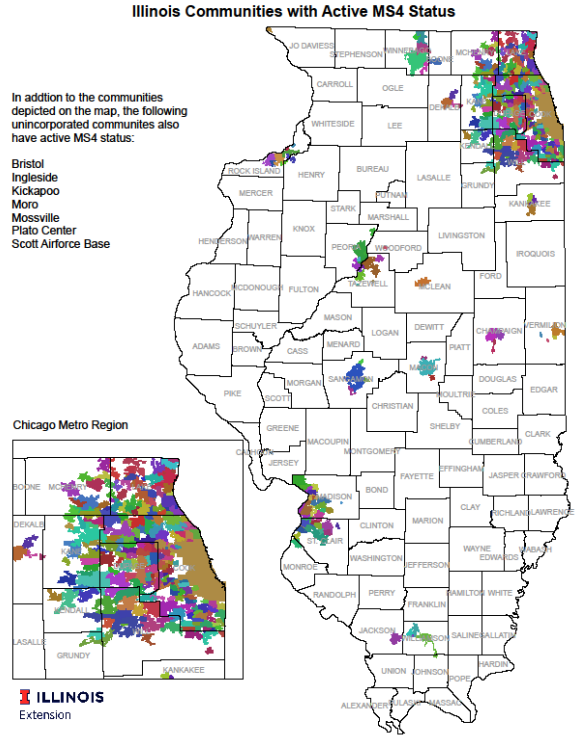
Reid Christianson presented a spreadsheet used for all nonpoint source implementation (location, BMP, program, installation date). **But, how to collect this information?**

Tracking Subgroup

Mary Beth Falsey demonstrated DuPage County's GIS tool for managing stormwater.



Extension evaluating MS4 reports for data.



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Future topics and Next meetings

Golf Courses as sources of nutrients (or solutions?)

The Preserve at Oak Meadows

DuPage County Forest Preserve

Funding also provided by

DuPage County Stormwater & DuPage River Salt Creek Workgroup

Other topics?

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Photo credit: dupagegolf.com

Questions?

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Performance Benchmark Committee

The Performance Benchmark Committee works with sector work groups to identify on-the-ground steps needed to meet the 2025 interim milestones and ultimate nutrient loss reduction targets and in-state waterway cleanup goals of the Strategy.

Where are we going and how do we get there?

Committee Meeting

August 21, 2018

Committee Members

- Kay Anderson, American Bottoms
- Gene Barickman, U.S. Department of Agriculture - Natural Resources Conservation Service
- Albert Cox, Metropolitan Water Reclamation District of Greater Chicago
- Alec Davis, Illinois Environmental Regulatory Group
- Warren Goetsch, Illinois Department of Agriculture
- Carol Hays, Prairie Rivers Network
- Brandon Janes, Village of Deerfield
- KJ Johnson, Illinois Fertilizer & Chemical Association
- Lauren Lurkins, Illinois Farm Bureau
- Dick Lyons, Illinois Association of Drainage Districts
- Kris Reynolds, American Farmland Trust
- Trevor Sample, Illinois Environmental Protection Agency
- Cindy Skrukrud, Sierra Club
- Steve Stierwalt, Association of Illinois Soil and Water Conservation Districts
- Jennifer Tirey, Illinois Pork Producers Association
- Caroline Wade, The Nature Conservancy

Table 3.17. Example statewide nitrate-nitrogen and total phosphorus scenarios.

Name	Combined practices and scenarios	Nitrate-N reduction (percent)	Total P reduction (percent)	Cost of reduction ($/lb)	Annualized costs (million $/yr)
NP1	MRTN, spring-only N application, bioreactors on 50 percent of acres, wetlands on 35 percent of acres, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, buffers on all applicable lands, point source to 1 mg total P/L and 10 mg nitrate-N/L	35	45	**	438
NP2	MRTN, spring-only N application, bioreactors on 50 percent of acres, wetlands on 10 percent of acres, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, cover crops on all corn/soybean acres, point source to 1 mg total P/L and 10 mg nitrate-N/L	45	45	**	878
NP3	MRTN, spring-only N application, bioreactors on 30 percent of acres, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, cover crops on 87.5 percent of corn/soybean acres, buffers on all applicable lands, perennial crops on 1.6 million acres >T and 0.9 million additional acres	45	45	**	827
NP4	MRTN, spring-only N application, bioreactors on 53 percent of acres, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, buffers on 80 percent of all applicable land	20	20	**	76
NP5	MRTN, spring-only N application, bioreactors on 45 percent of acres, wetlands on 15 percent of acres, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, point source to 1 mg total P/L and 10 mg nitrate-N/L on 45 percent of discharge	20	20	**	173
NP6	MRTN, spring-only N application, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, cover crops on 1.6 million acres eroding >T and 40 percent of all other corn/soybean acres	24	20	**	244

Practices in the Strategy

N Reduction Practices

Practice/scenario	Nitrate-N reduction per acre (percent)	Nitrate-N reduced (million lb)	Nitrate-N reduction from baseline (percent)	Cost ($/lb removed)
Reducing N rate from background to MRTN on 10 percent of acres	10	2.3	0.6	-4.25
Nitrification inhibitor with all fall-applied fertilizer on tile-drained corn acres	10	4.3	1	2.33
Split application of 50 percent fall and 50 percent spring on tile-drained corn acres	7.5-10	13	3.1	6.22
Spring-only application on tile-drained corn acres	15-20	26	6.4	3.17
Split application of 40 percent fall, 10 percent pre-plant, and 50 percent side dress	15-20	26	6.4	
Cover crops on all corn/soybean tile-drained acres	30	84	20.5	3.21
Cover crops on all corn/soybean non-tiled acres	30	33	7.9	11.02
Bioreactors on 50 percent of tile-drained land	25	35	8.5	2.21
Wetlands on 35 percent of tile-drained land	50	49	11.9	4.05
Buffers on all applicable crop land (reduction only for water that interacts with active area)	90	36	8.7	1.63
Perennial/energy crops equal to pasture/hay acreage from 1987	90	10	2.6	9.34
Perennial/energy crops on 10 percent of tile-drained land	90	25	6.1	3.18
Point source reduction to 10 mg/L		14	3.4	3.3

P Reduction Practices

Practice/scenario	Total P reduction per acre (percent)	Total P reduced (million lb)	Total P reduction from baseline (percent)	Cost ($/lb removed)
1.8 million acres of conventional till eroding >T converted to reduced, mulch, or no-till	50	1.8	5	-16.6
P rate reduction on fields with soil test P above the recommended maintenance level	7	1.9	5	-48.75
Cover crops on all corn/soybean tile-drained acres	30	4.8	12.8	130.4
Cover crops on 1.6 million acres eroding >T currently in reduced, mulch, or no-till	50	1.9	5	24.5
Wetlands on 25 percent of tile-drained land	0	0	0	
Buffers on all applicable crop land	25-50	4.8	12.9	11.97
Perennial/energy crops equal to pasture/hay acreage in 1987	90	0.9	2.5	102.3
Perennial/energy crops on 1.6 million acres >T currently in reduced, mulch, or no-till	90	3.5	9	40.4
Perennial/energy crops on 10 percent of tile-drained land	50	0.3	0.8	250.07
Point source reduction to 1 mg/L (majors only)		8.3	22.1	13.71

Summaries of Trajectories and Progress - Examples

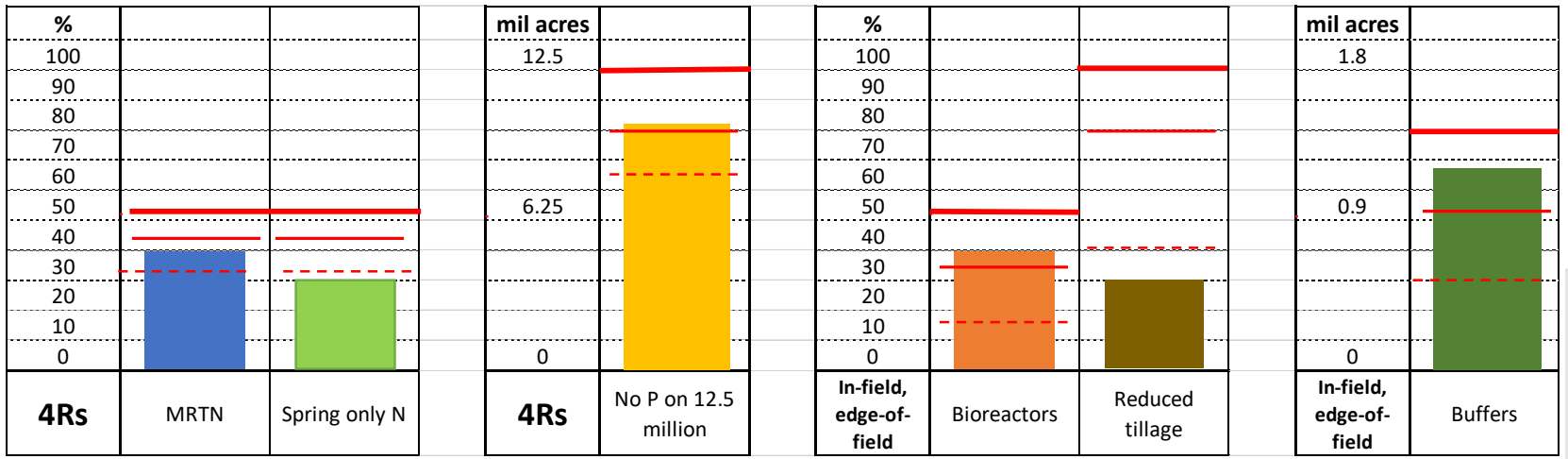
Current and projected phosphorus reductions from major municipal point sources (projections based on 1 mg/L discharge permits)

		Flow (MGD)	TP (Million lb/yr)*			
Region	No. Facilities	DAF	Baseline (2009)	2015	2025	Reduction
MWRDGC	3	1887	5.67		2.58	3.09
Des Plaines	29	249	0.92		0.44	0.48
Fox River	30	165	0.31		0.26	0.05
DuPage/SC	31	212	1.32		0.36	0.96
Downstate	124	676	5.09		1.12	3.97
Totals	217	3189	13.31		4.76	8.55

Summaries of Trajectories and Progress - Examples

Statewide Example for a 20% reduction of N and P
NP Scenario 4 from Table 3.17 –
MRTN on 53%
Spring only N on 53%
Bioreactors on 53%
No P fertilizer on 12.5 million acres
Reduced tillage on 1.8 million conventional acres
Buffers on 80% of acres

2025 Goal
2023 Goal
2021 Goal



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NP3	MRTN, spring-only N application, bioreactors on 30 percent of acres, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, cover crops on 87.5 percent of corn/soybean acres, buffers on all applicable lands, perennial crops on 1.6 million acres >T and 0.9 million additional acres	45	45
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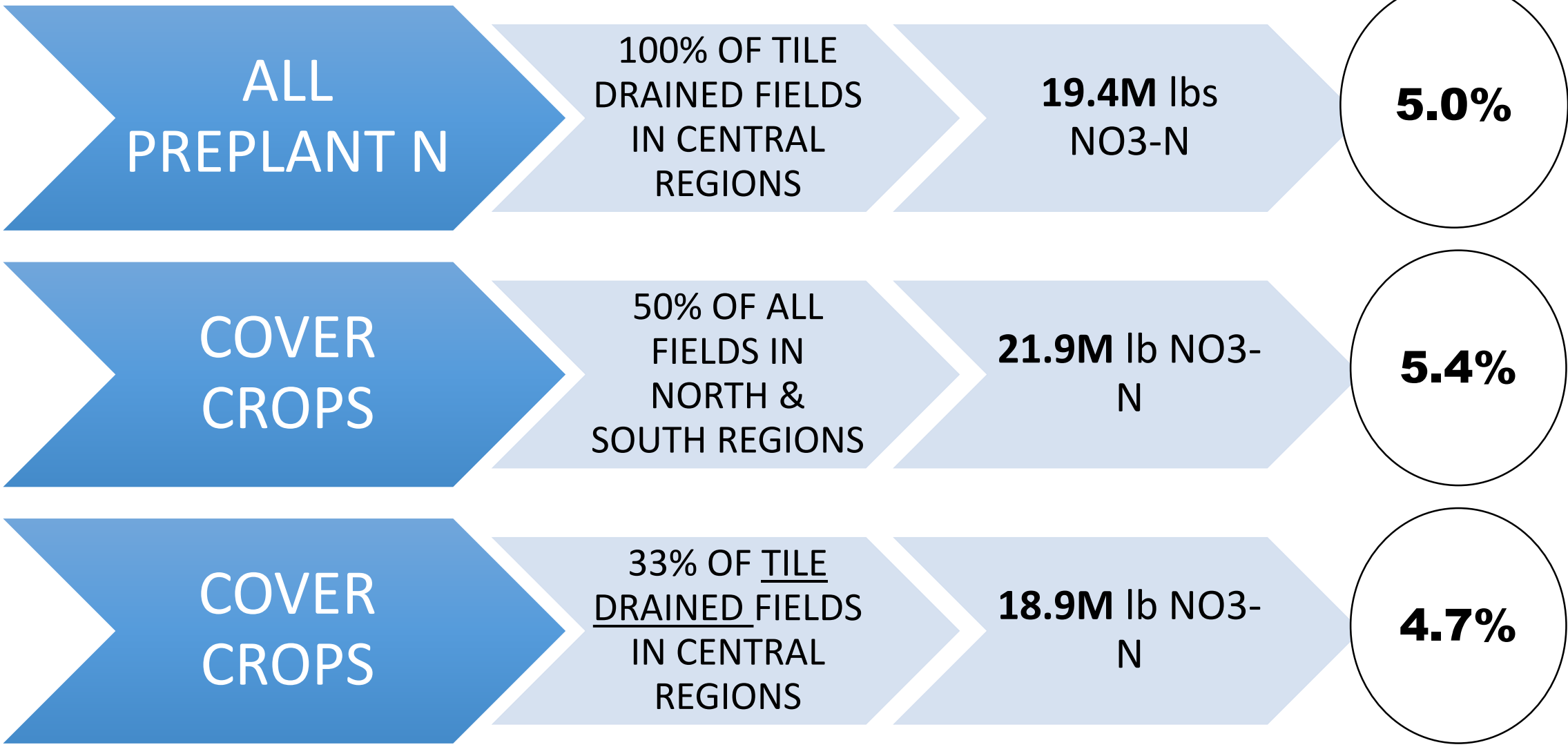
NP6	MRTN, spring-only N application, no P fertilizer on 12.5 million acres above STP maintenance, reduced till on 1.8 million conventionally tilled acres eroding >T, cover crops on 1.6 million acres eroding >T and 40 percent of all other corn/soybean acres	24	20

15%NO3-N – SCENARIO 1



15.1% REDUCTION FROM BASELINE

- **4.8% FROM MOVING FALL N TO SPRING**
- **10.1% FROM COVER CROPS**

Projecting Forward

Example practices from NP 2 & 3	Recommendation		Est. Acres (Million)	Nutrient	Data Sources for metric capture
Reducing N rate from background to MRTN	Applies to all corn acres, but reductions only realized on 10%		11	N	NASS
Spring-only N application	Tile drained corn acres		5.7*	N	NASS
Bioreactors (acres treated)	50% of crop acres		11	N	IEPA-from reported data
Wetlands (acres treated)	10% of crop acres		2.2	N	NRCS, IEPA (acres treated?)
No P fertilizer above STP maintenance			12.5	P	IL Dept of Ag tonnage report? Soil lab association data? Assumption that 12.5 M acres are above maintenance.
Reduced till of conventional eroding >T			1.8	P	Soil Transect Survey
Cover crops on all corn/soybeans			22	N&P	NASS, FSA, IEPA, NRCS. Satellite imagery?
MRTN	Applies to all corn acres, but reductions only realized on 10%		11	N	NASS
Buffers on all applicable lands			0.2**	P	IEPA, FSA, NRCS, GIS Study?
Perrenial crops on land >T			1.6	N&P	FSA (CRP), IDNR (CREP)
Additional perrenial crops			0.9	N&P	FSA (CRP), IDNR (CREP)
Point Sources (type and amount not defined)	1.0 mg/L P	Majors- 0.5 mg/L P by 2030		P	IEPA
Point Sources (type and amount not defined)	10.0 mg/L Nitrate			N	IEPA

Crop Acres based on NASS June 2018 acreage report (Corn=11.0 M acres, Soybean=10.9)

*Estimated by Science Team

**Buffers on all applicable lands based on GIS analysis perfromed by IL State Water Survey

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Performance Benchmark-Point Sources

2ND REPORT ON POINT SOURCE PROGRESS IN HYPOXIA TASK FORCE STATES

DECEMBER 2018

DRAFT

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Table 1. Number and percentage of major sewage treatment plants discharging to the MARB with nitrogen (N) and/or phosphorus (P) monitoring requirements for monitoring-only purposes or for compliance with an effluent limit.

State	Universe	Monitoring (Both N and P)		Monitoring N only		Monitoring P only		Total Permits with Nutrient Monitoring (N or P)	
	# in 2017	# in 2017	%	# in 2017	%	# in 2017	%	# in 2017	%
Arkansas	77	55	71%	1	1%	7	9%	63	82%
Illinois	213	165	77%	5	2%	28	13%	198	93%
Indiana	117	12	10%	0	0%	102	87%	114	97%
Iowa	96	7	74%	5	5%	0	0%	76	79%
Kentucky	88	81	92%	0	0%	6	7%	87	99%
Louisiana	101	27	27%	0	0%	2	2%	29	29%
Minnesota	62	56	90%	0	0%	6	10%	62	100%
Mississippi	26	24	9	0	0%	1	4%	25	96%
Missouri	123	78	6	3	2%	0	0%	81	66%
Ohio	133	130	98%	0	0%	0	0%	130	98%
Tennessee	114	100	88%	2	2%	1	1%	103	90%
Wisconsin	55	26	47%	0	0%	29	53%	55	100%
All States (2015)[2]	1,175	662	56%	16	1%	167	14%	839	71%
All States (2017)[3]	1,205	824	68%	16	1%	182	15%	1,203	99%

Table 2. Number and percentage of major sewage treatment plants discharging to the MARB with numeric discharge limits for nitrogen (N) and/or phosphorus (P).

State	Universe	Limits (Both N and P)		Limits (N only)		Limits (P only)		Total Permits with Nutrient Limits (N or P)	
	# in 2017	# in 2017	%	# in 2017	%	# in 2017	%	# in 2017	%
Arkansas	77	7	9%	2	3%	9	12%	18	23%
Illinois	213	0	0%	0	0%	61	28%	61	28%
Indiana	117	0	0%	0	0%	71	61%	71	61%
Iowa	96	[illegible]	0%	[illegible]	19%	1	1%	19	20%
Kentucky	88	[illegible]	[illegible]%	[illegible]	0%	27	31%	27	31%
Louisiana	101	[illegible]	[illegible]%	[illegible]	0%	0	0%	0	0%
Minnesota	62	0	0%	0	0%	38	61%	38	61%
Mississippi	26	[illegible]	35%	[illegible]	[illegible]%	0	[illegible]%	9	35%
Missouri	123	[illegible]	0%	[illegible]	2%	[illegible]	7%	10	8%
Ohio	133	4	3%	[illegible]	0%	[illegible]	27%	40	30%
Tennessee	114	19	17%	2	2%	6	5%	27	24%
Wisconsin	55	[illegible]	0%	[illegible]	0%	55	100%	55	100%
All States (2014)[4]	1,175	52	4%	[illegible]	1%	252	21%	314	27%
All States (2017)[5]	1,205	39	3%	24	2%	313	26%	376	31%

Table 3. Loads of nitrogen (N) and phosphorus (P) from major sewage treatment plants discharging to the MARB in 2017, either calculated from discharge monitoring reports (DMRs) or estimated*.

State	Universe	2017 N Loads (lb/yr)	% Facilities w/ N Load from DMR	2017 P Loads (lb/yr)	% Facilities w/ P Load from DMR
Arkansas	77	9,593,294	1	2,058,148	84
Illinois	213	68,468,056	82	11,214,569	87
Indiana	117	30,680,138	5	2,824,196	96
Iowa	96	18,144,908	6	4,503,856	66
Kentucky	88	11,304,936	98	1,974,571	88
Louisiana	101	19,560,924	35	3,148,917	29
Minnesota	62	14,734,312	89	816,756	95
Mississippi	26	1,804,005	96	443,982	100
Missouri	123	29,874,631	9	8,452,364	59
Ohio	133	32,717,667	31	4,767,663	97
Tennessee	114	38,511,215	90	6,130,372	89
Wisconsin	55	8,410,162	35	379,150	78
All States (2017)	1,205	291,801,688	62	45,118,391	80

Illinois

Illinois *Major sewage treatment plants with monitoring or limits for nutrient pollution*						Facility Nutrient Loadings	
Facility Name	NPDES ID	Monitoring P	Monitoring N	Limits P	Limits N	Phosphorus (lbs. in 2017)	Nitrogen (lbs. in 2017)
PLANO, CITY OF	IL0020052	✓	✓	✓		1,398	35,379
WOOD DALE, CITY OF	IL0020061	✓	✓			10,772	62,110
GENEVA, CITY OF	IL0020087	✓				5,181*	165,088*
WAUCONDA, VILLAGE OF	IL0020109		✓	✓		1,021	126,001
HARVARD, CITY OF	IL0020117	✓	✓	✓		3,324	8,331
MILAN, VILLAGE OF	IL0022214	✓	✓			11,402	52,895
MANHATTAN, VILLAGE OF	IL0022 22	✓	✓	✓		1,353	22,421
FLORA, CITY OF	IL0020 3	✓	✓			5,670	34,419
HAMPSHIRE, VILLAGE OF	IL0020281		✓	✓		2,075	33,942
ANTIOCH, VILLAGE OF	IL0020354	✓	✓	✓		4,032	92,685
CARY, VILLAGE OF	IL0020516	✓	✓			14,878	115,688
FRANKFORT, VILLAGE OF	002053	✓				5,583*	38,122*
NEW LENOX, VILLAGE OF	055			✓		,840	180,828
PRINCETON, CITY OF	002057	✓				782*	48,116*
FOX RIVER GROVE, VILLAGE OF	IL0020583	✓	✓			3,431	40,765
LITCHFIELD, CITY OF	IL0020621	✓	✓			7,076	65,420
MARENGO, CITY OF	IL0020729		✓	✓		1,754	30,416
DANVILLE SANITARY DISTRICT	IL 20788	✓	✓			16,003	355,566
LINDENHURST SANITARY DISTRICT	IL 20796	✓	✓	✓		2,387	35,034
FOX METRO WATER RECLAMATION DISTRICT	IL0020818	✓	✓			227,941	2,044,198
FOX LAKE, VILLAGE OF	IL0020958	✓	✓	✓		16,442	521,231
MARSEILLES WWTP, CITY OF	IL0021059	✓	✓			7,159	59,586
MCHENRY, CITY OF	IL0021067	✓	✓			6,919	47,243
CASEYVILLE TOWNSHIP	IL0021083	✓	✓	✓		4,047	101,568
MORRIS, CITY OF	IL0021113	✓	✓			7,580	76,358
CREST HILL, CITY OF	IL0021121					16,390*	90,872*
BLOOMINGDALE, VILLAGE OF	IL0021130	✓	✓			67,877	128,104
SOUTH BELOIT, CITY OF	IL0021156	✓	✓			31,305	132,527

2017 Biennial Report

Figure 5.2 Feasibility studies and optimization studies submitted by Illinois major facilities (222 total)

* NUTRIENT ASSESSMENT REDUCTION PLANS

NUTRIENT MONITORING COUNCIL (NMC)

Gregg Good, Illinois EPA

Last update: 5/30/18

11th NMC Meeting: 8/29/18
Urbana

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Nutrient Monitoring Council Members (11/13/18)

Illinois EPA
Gregg Good, Rick Cobb

Illinois State Water Survey
Laura Keefer

Aqua Illinois
Kevin Culver

Illinois Dept. of Natural Resources
Ann Holtrop

Univ. of IL – Dept. of Agriculture and Biological Engineering
Paul Davidson

Sierra Club
Cindy Skrukrud

MWRDGC
Justin Vick

Illinois Corn Growers Association
Laura Gentry

U.S. Army Corp of Engineers-Rock Island
(Vacant)

U.S. Geological Survey
Kelly Warner

National Center for Supercomputing Apps
Jong Lee

Univ. of IL – Dept. of Natural Resources and Environmental Sciences (Emeritus)
Greg McIsaac

NLRS Coordinator – Illinois EPA
Trevor Sample

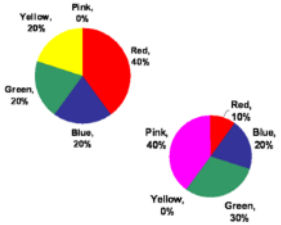
NMC Charges *(Revised 10/26/15)*

1. Coordinate the development and implementation of monitoring activities (e.g., collection, analysis, assessment) that provide the information necessary to:

   a. Generate estimations of 5-year running average loads of Nitrate-Nitrogen and Total Phosphorus *leaving the state of Illinois* compared to 1980-1996 baseline conditions; and
   b. Generate estimations of Nitrate-Nitrogen and Total Phosphorus loads *leaving selected NLRS identified priority watersheds* compared to 1997-2011 baseline conditions; and
   c. Identify Statewide and NLRS priority watershed *trends in loading over time* using NMC developed evaluation criteria.

2. Document *local water quality outcomes* in selected NLRS identified priority watersheds, or smaller watersheds nested within, where future nutrient reduction efforts are being implemented (e.g., increase in fish or aquatic invertebrate population counts or diversity, fewer documented water quality standards violations, fewer algal blooms or offensive conditions, decline in nutrient concentrations in groundwater).

3. Develop a *prioritized list of nutrient monitoring activities and associated funding* needed to accomplish the charges/goals in (1) and (2) above.



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Trevor Sample, Illinois EPA
NLRS Coordinator

- NLRS Watershed Coordinators Update
- NLRS Science Team and Science Assessment Update
- Future opportunities for communication and collaboration with NLRS Watershed Coordinators, Science Team, and NMC???

Updates on IL NLRS Data Portal

August 29, 2018

@ Nutrient Monitoring Council

Jong Lee, Ph.D.

National Center for Supercomputing Applications

University of Illinois at Urbana-Champaign

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Great Lakes to Gulf
VIRTUAL OBSERVATORY

Illinois Nutrient Loss Reduction Strategy
Data Portal

WELCOME | EXPLORE | COMPARE | DOWNLOAD | ABOUT

Welcome to the Illinois Nutrient Loss Reduction Strategy Data Portal

About This Application

The Illinois Nutrient Loss Reduction Strategy guides state efforts to improve water quality at home and downstream by reducing nitrogen and phosphorus levels in our lakes, streams, and rivers. The strategy lays out a comprehensive suite of best management practices for reducing nutrient loads from wastewater treatment plants and urban and agricultural runoff. Recommended activities target the state's most critical watersheds and are based on the latest science and best-available technology. It also calls for more collaboration between state and federal agencies, cities, non-profits, and technical experts on issues such as water quality monitoring, funding, and outreach.

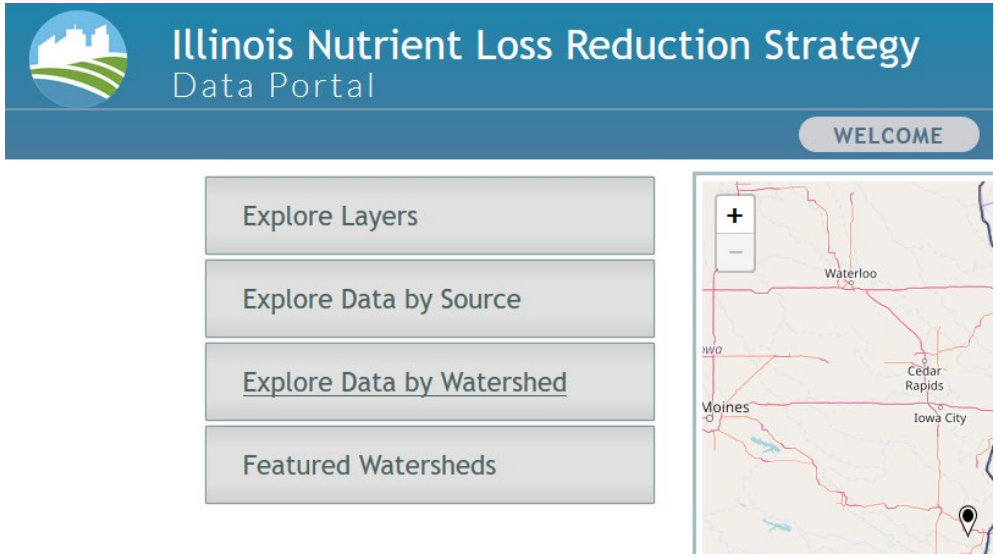
The strategy was developed by a policy working group led by the Illinois Water Resource Center-Illinois Indiana Sea Grant, the Illinois Environmental Protection Agency, and the Illinois Department of Agriculture. Group members included representatives from state and federal agencies, agriculture, and non-profit organizations as well as scientists and wastewater treatment professionals.

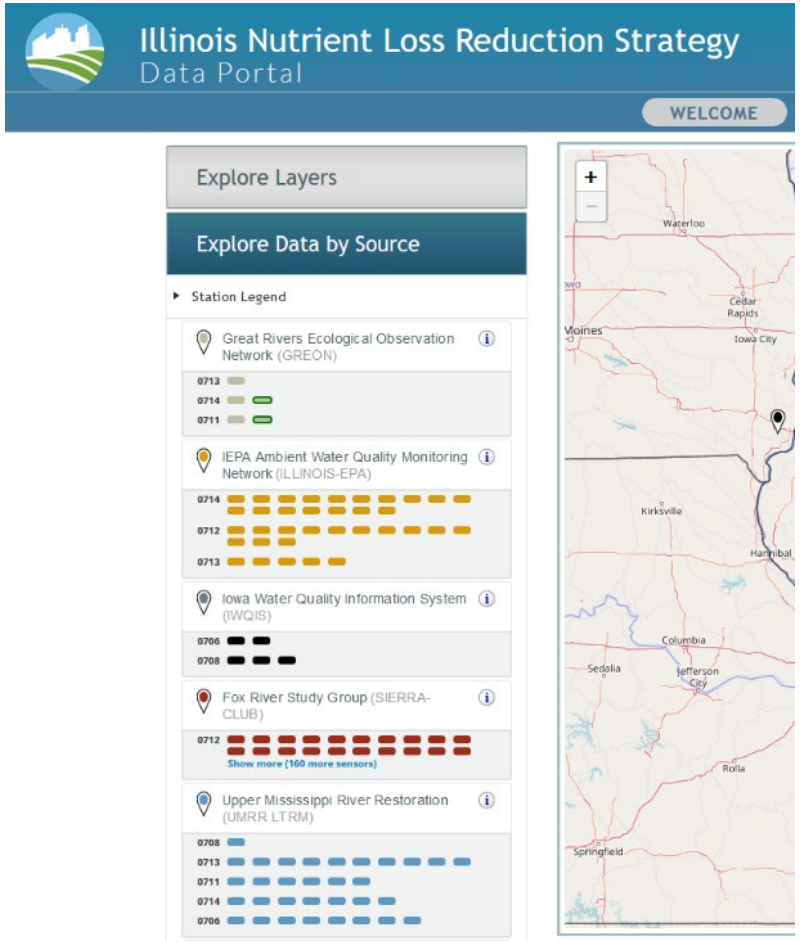
This portal is powered by the Great Lakes to Gulf Virtual Observatory. The National Great Rivers Research and Education Center (NGRREC[SM]), Illinois-Indiana Sea Grant, and the National Center for Supercomputing Applications (NCSA) partnered in the development of the **Great Lakes to Gulf (GLTG[SM]) Virtual Observatory**. The GLTG virtual observatory gathers data from a variety of federal, state, local, and private sources, including the Water Quality Portal. Through visualizing water quality monitoring data and land-use data across sources and agencies, the virtual observatory provides insight to changes in water quality with a user friendly interface.

Updates Summary

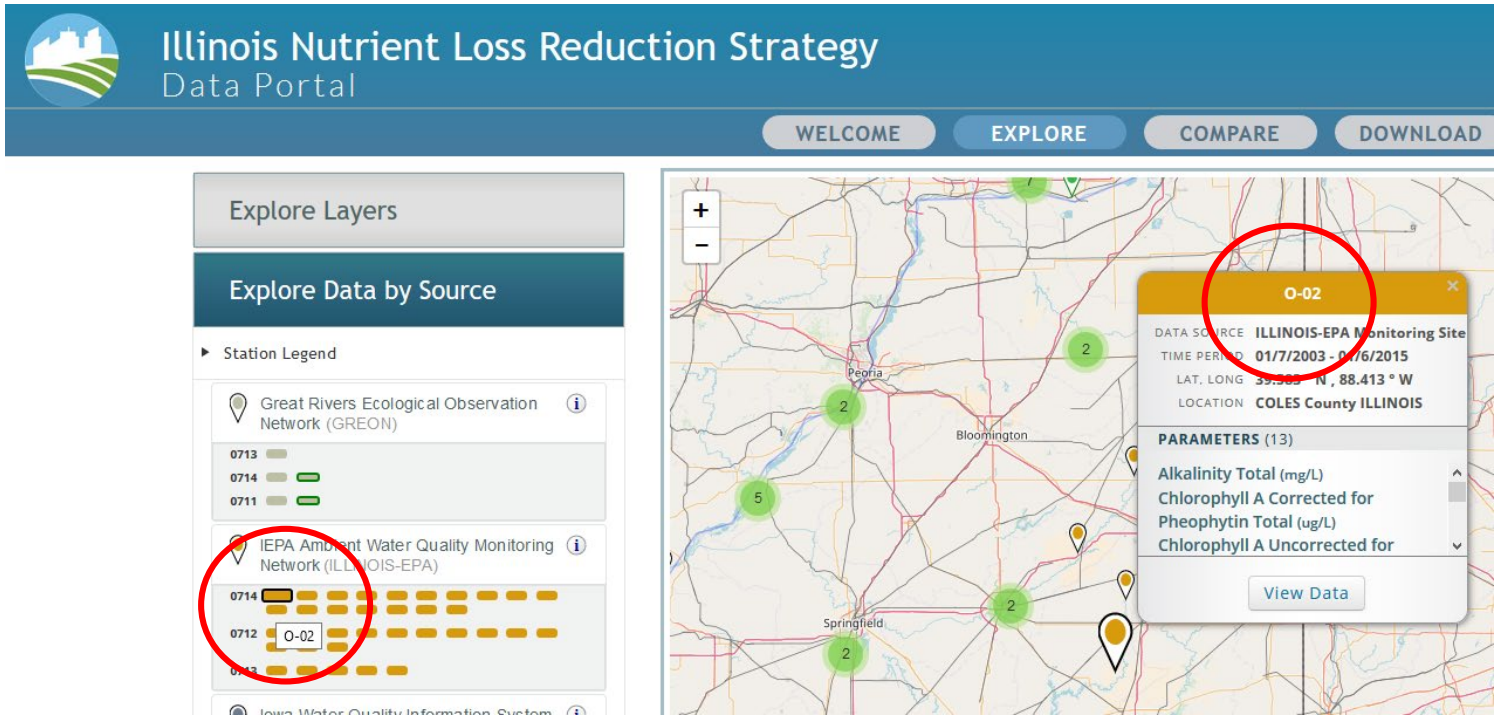
- Deployed the site
  - https://ilnlrs.ncsa.illinois.edu/
- Based on feedback from IEPA
  - Customized About/Welcome page
  - Updated the accordions
  - Updated naming of EPA sites and Supergages
  - Updated Phosphorus data
  - Updated parser to get additional data
- New capabilities from GLTG
- Version 3 is coming soon

Customized Categories



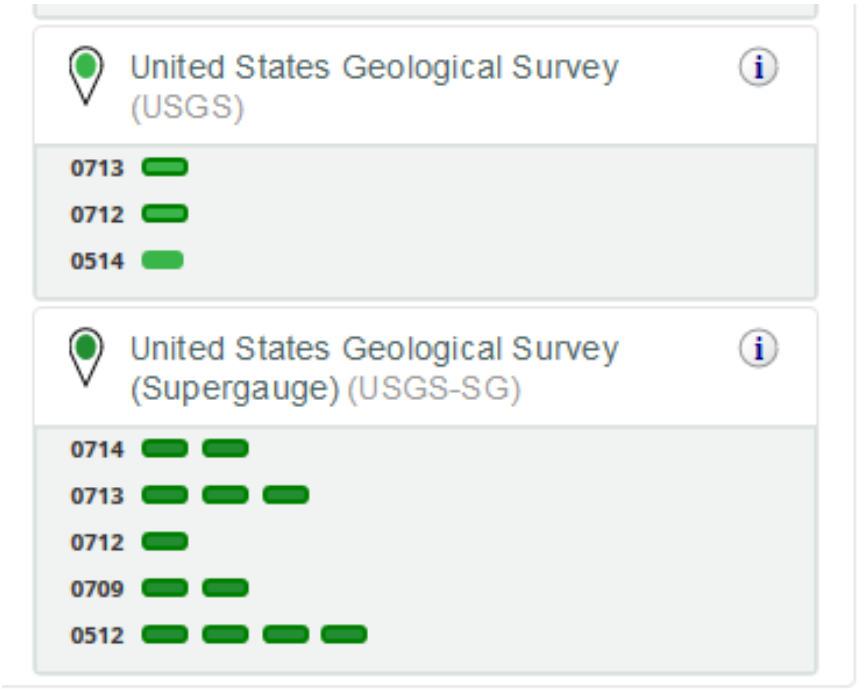


Updated Naming of EPA and USGS Sites



USGS and USGS Supergages

- Created Separate Group for USGS Supergages and others

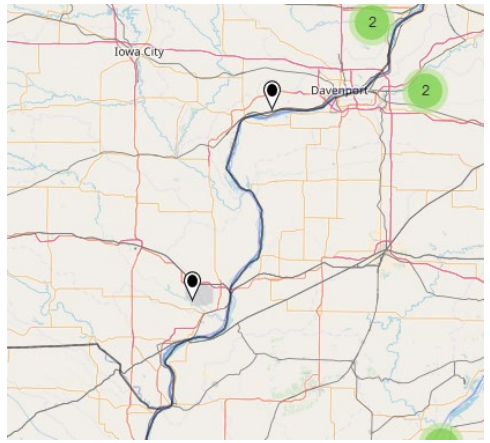


Updated Phosphorus Data

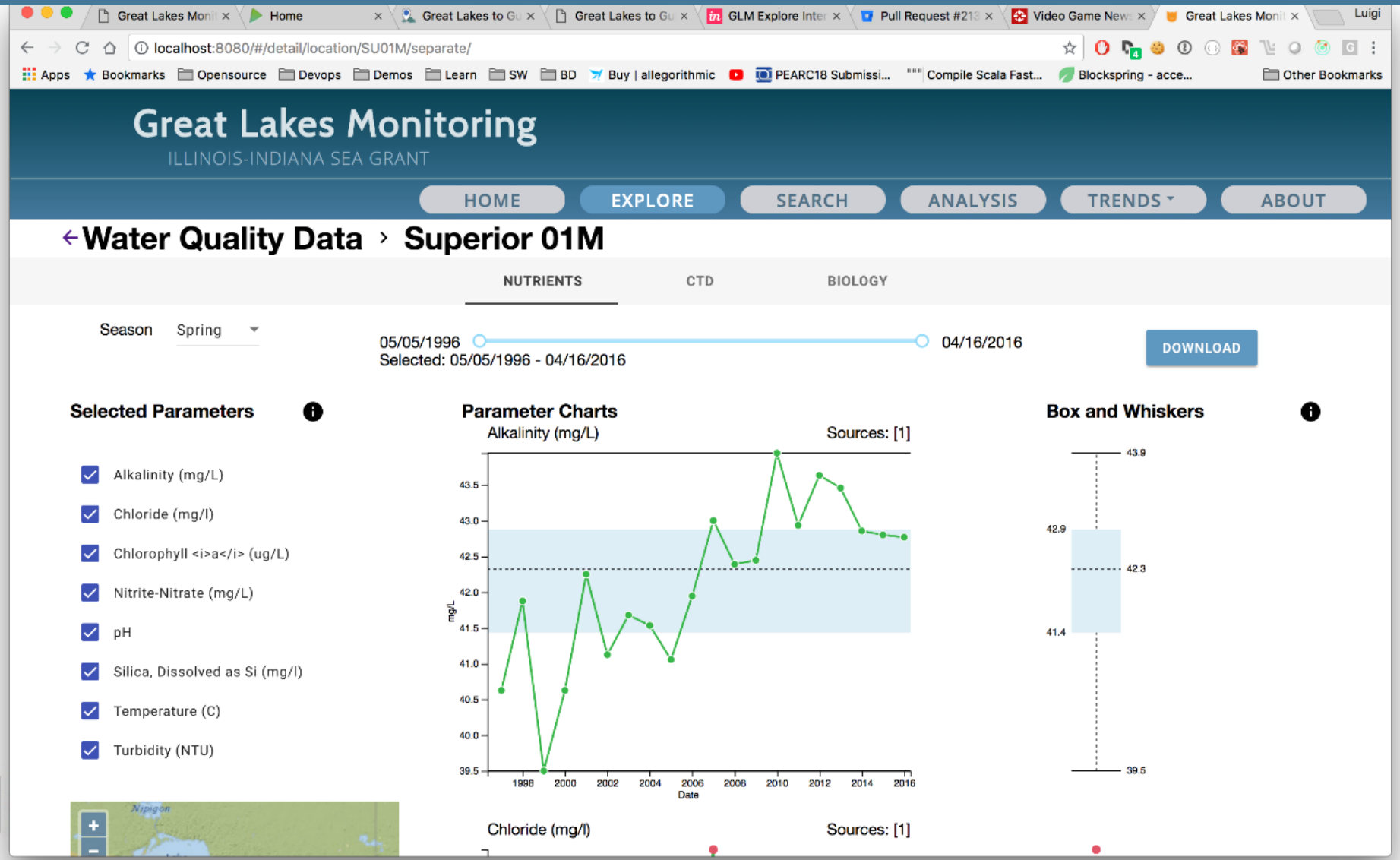
- USGS
  - Phosphorus in Situ Orthophosphate as P (mg/L)
- IEPA Ambient Water Quality Network
  - Phosphorus Dissolved as P (mg/L)
  - Phosphorus Total as P (mg/L)
- Sierra Club – Fox River Study Group
  - Phosphorus Dissolved as P (mg/L)
  - Phosphorus Total Bottom Deposit Dry Weight (Mg/kg)
  - Phosphorus Total as P (mg/L)
  - Phosphorus, SED, BOT, <63, Wet Sieve, Field, Total (mg/L)

New Sites

- Sites from Iowa Water Quality Information Systems



Great Lakes to Gulf
VIRTUAL OBSERVATORY



ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Water Quality Monitoring in Groundwater near Havana, Illinois

Lance Gruhn and Bill Morrow

Central Midwest Water Science Center

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Well data since March 8, 2017

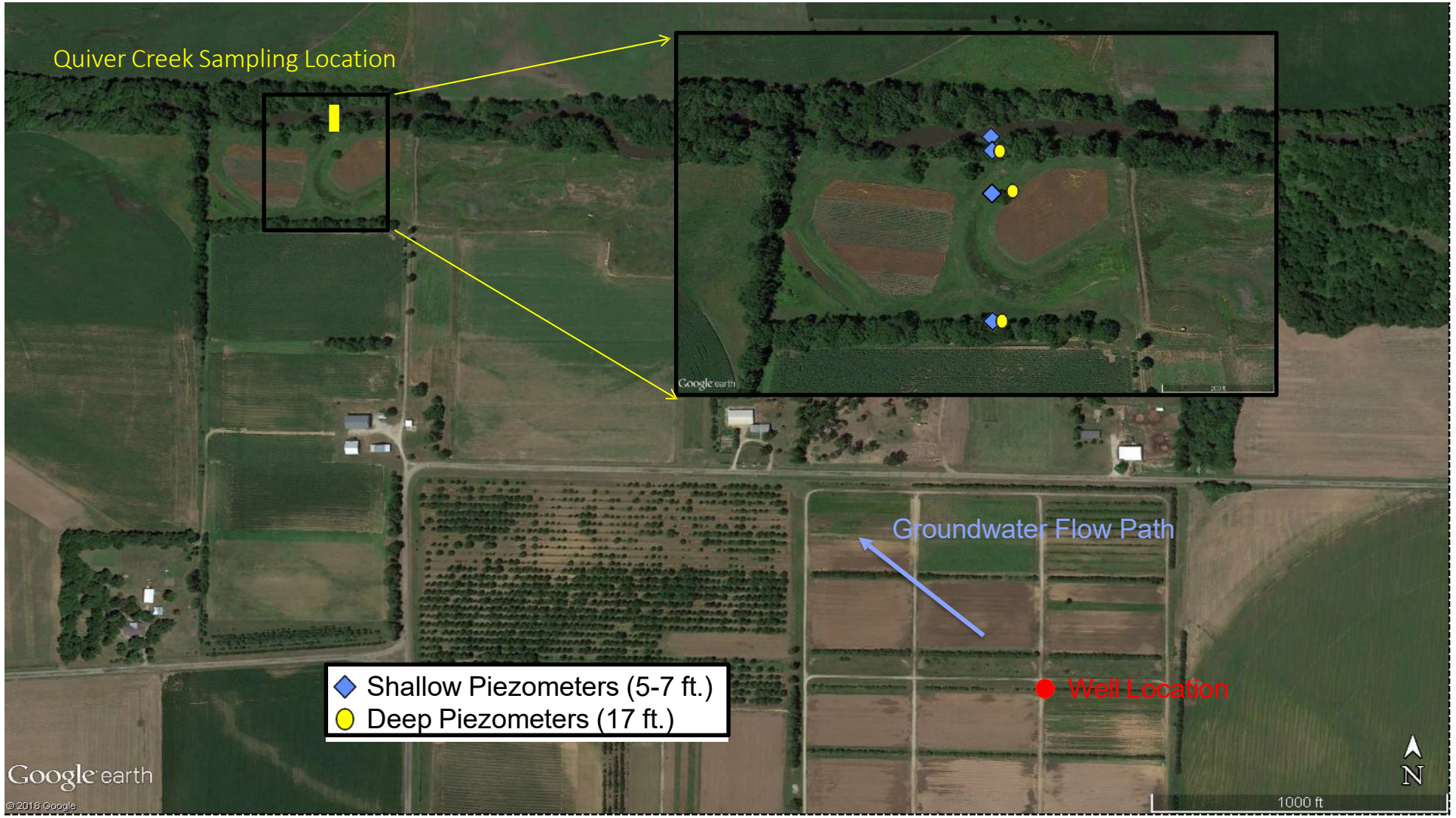
HACH NITRATAX plus sc
- Nitrate

In-Situ Aqua TROLL 600
- pH
- Specific Conductivity
- Water Temperature
- Dissolved Oxygen
- Water Level

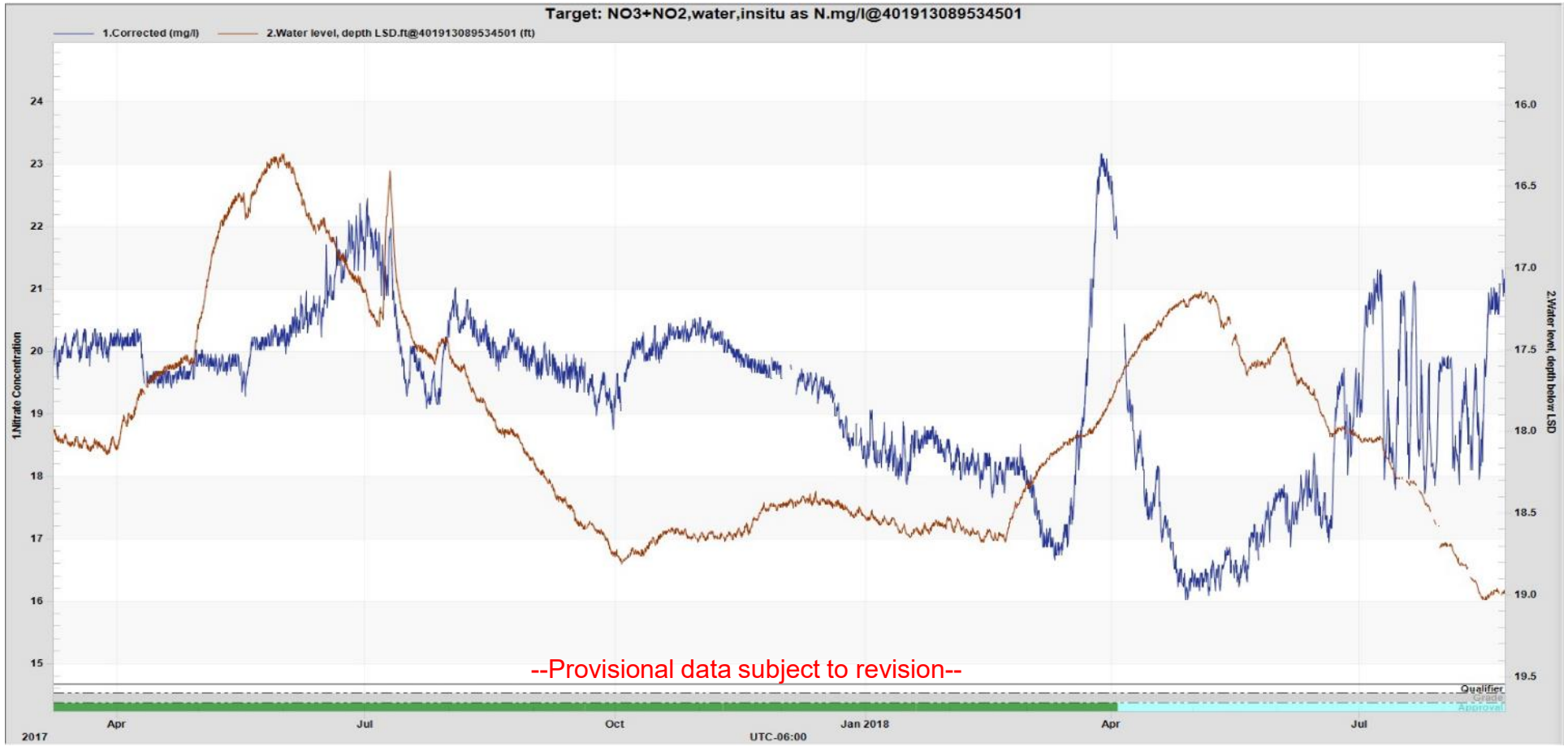
3 discrete water quality

USGS science for a changing world

*Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government


Quiver Creek Sampling Location
Groundwater Flow Path
Well Location
Shallow Piezometers (5-7 ft.)
Deep Piezometers (17 ft.)
Google earth
© 2018 Google
1000 ft
N

Nitrate (Blue) and Water Levels (Brown)



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Potential P Load Reductions from Recovering Wastewater P in the Upper Sangamon HUC 8

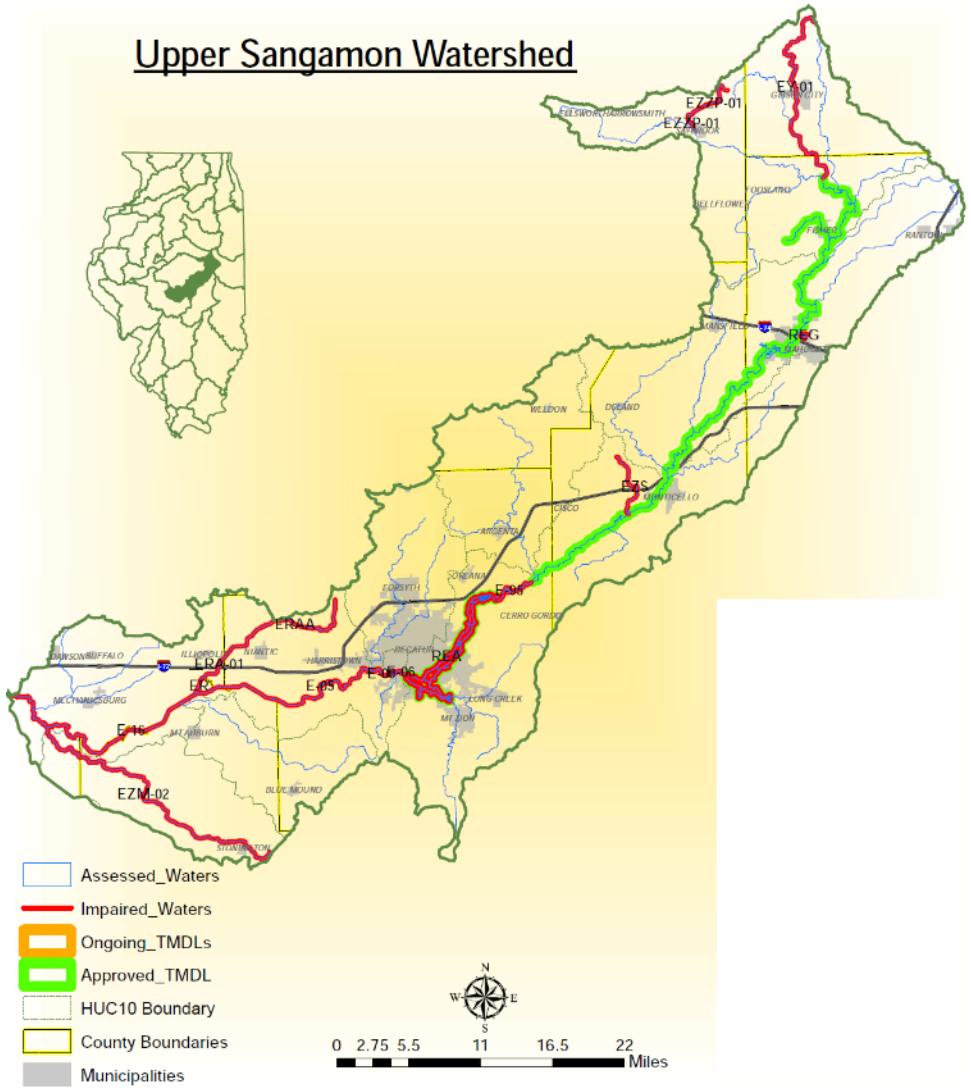
Gregory McIsaac, PhD

Associate Professor Emeritus,

U of IL at Urbana Champaign

Research Scientist

Agricultural Watershed Institute



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http://www.epa.illinois.gov/Assets/iepa/water-quality/watershed-management/tmdls/2016/303-d-list/appendix-a5.pdf

Advancing Food-Energy-Water (FEW) System Resilience in the Corn Belt by Integrated Technology-Environment-Economics Modeling of Nutrient Cycling

National Science Foundation funded project 2017-2021

Ximing Cai, Civil & Environmental Engineering

Roland Cusick, Civil & Environmental Engineering

Vijay Singh, Agricultural & Biological Engineering

Ben Gramig, Agricultural & Consumer Economics

Steve John, Ag Watershed Institute

Gregory McIsaac, Ag Watershed Inst.

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY | Improving our water resources with collaboration and innovation

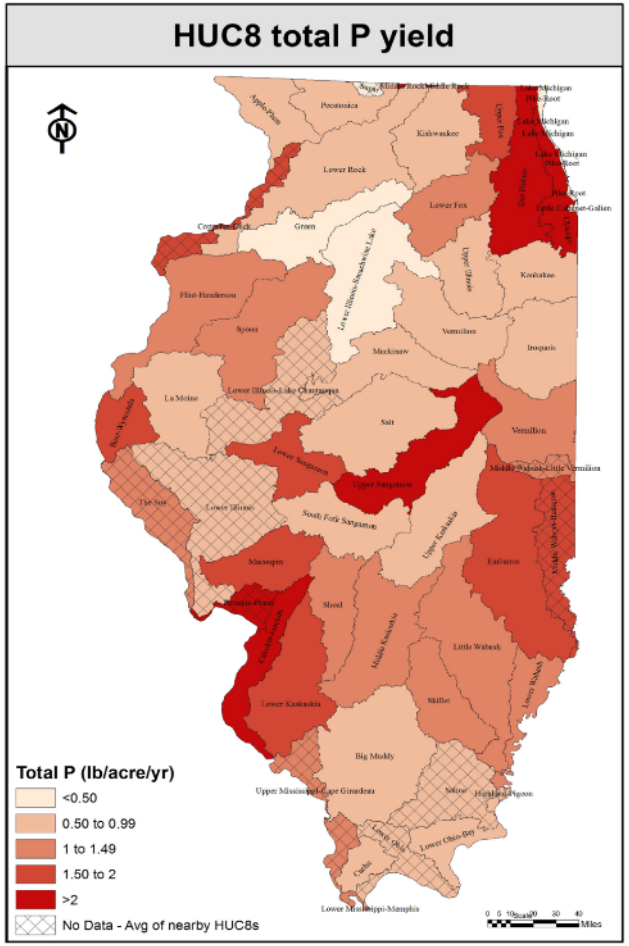
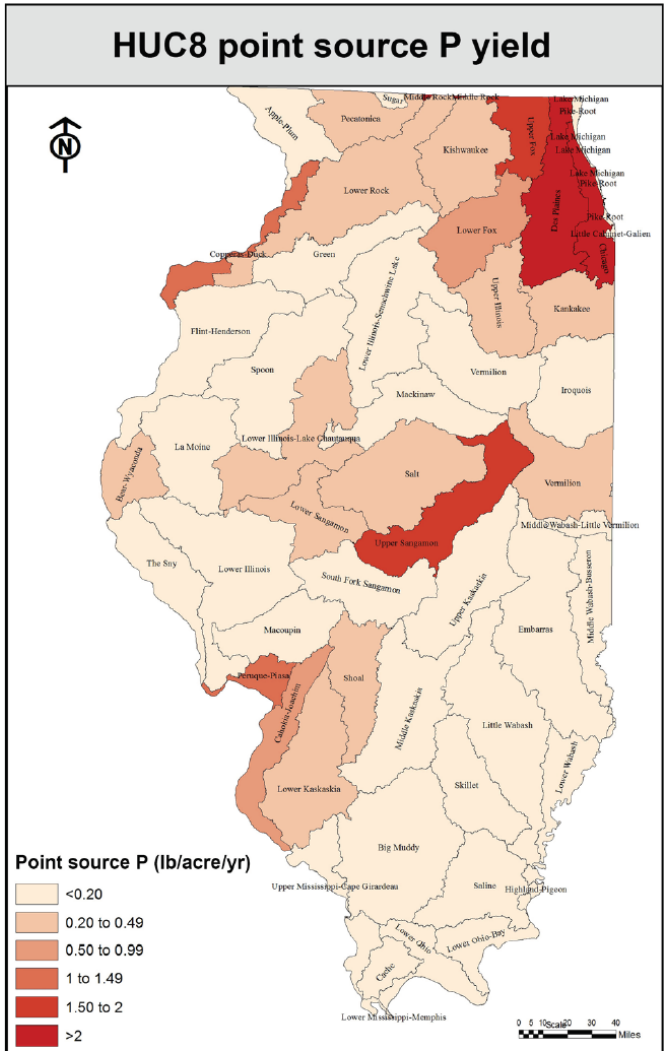


Figure 3.14. Total phosphorus yields by HUC8 in Illinois.



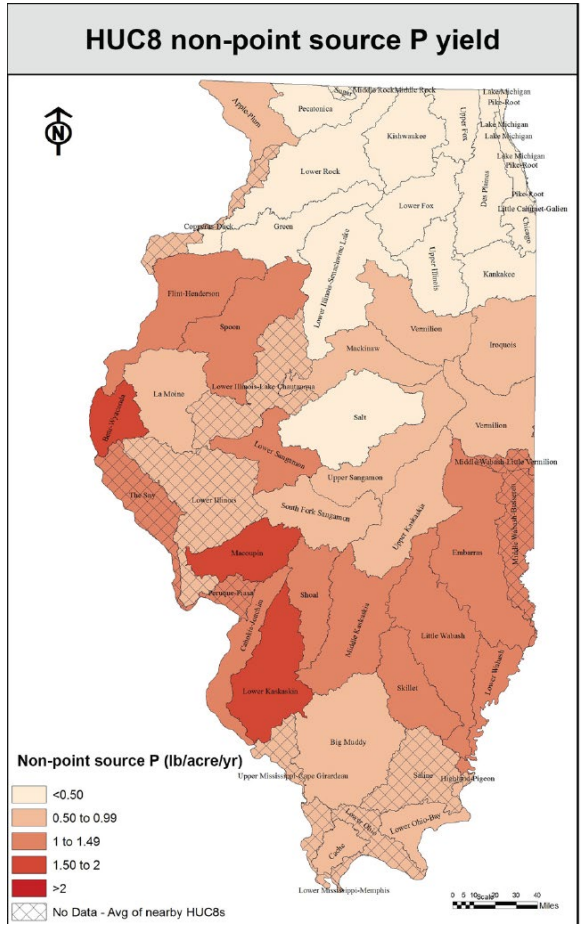


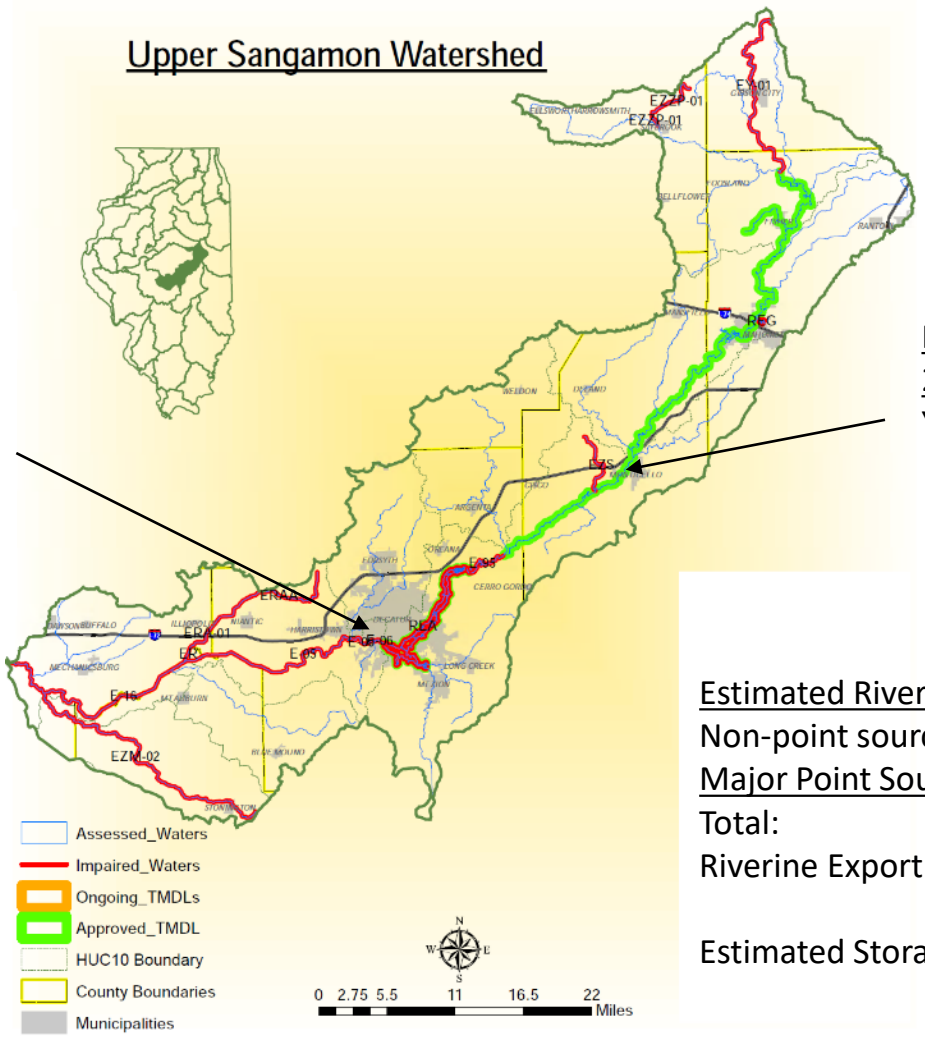
Figure 3.15. Point and non-point source total phosphorus yields by HUC8 in Illinois.

Avg Precipitation = ~40 inches
Water Yield = ~12 inches

<u>Major Point Source 2009-2016</u>
Sanitary District of Decatur (SDD)
Discharge: ~700 Ton P/yr
Population of 90,000
plus wastewater from 2 wet mill ethanol facilities and 1 soybean crushing facility

<u>2009-2016 avg. Export</u>
Yield: 2.1 lb P/ac-yr
Load: 1,100 Ton P/yr

Data sources: USGS, IEPA & SDD



<u>Non-point source</u>
<u>2009-2016 water year avg</u>
Yield: 1.1 lb P/ac-yr

<u>Estimated Riverine P sources & sinks</u>:
Non-point sources: 550 Ton P/yr
<u>Major Point Source: 700 Ton P/yr</u>
Total: 1,250 Ton P/yr
Riverine Export: 1,100 Ton P/yr

Estimated Storage: 150 Ton P/yr

http://www.epa.illinois.gov/Assets/iepa/water-quality/watershed-management/tmdls/2016/303-d-list/appendix-a5.pdf

Summary

- Over the next 3 to 4 years, our team hopes to provide analysis and recommendations for P recovery and P discharge reduction relevant to the Upper Sangamon and the Corn Belt in general
- We hope this informs decision making and future research

USGS Happenings and Updates

Kelly Warner and Paul Terrio

- Super Gage Stations Update
- AWQMN Trends/Loads Computations
- USGS 2nd Year Super Gage Results Report – Results through Water Year 2017

Nutrient and Sediment Export from Illinois – 2017 update

Results from continuous monitoring in the 8 major watersheds in Illinois

Paul J. Terrio and Tim Hodson

U.S. Geological Survey

Central Midwest Water Resource Center

USGS

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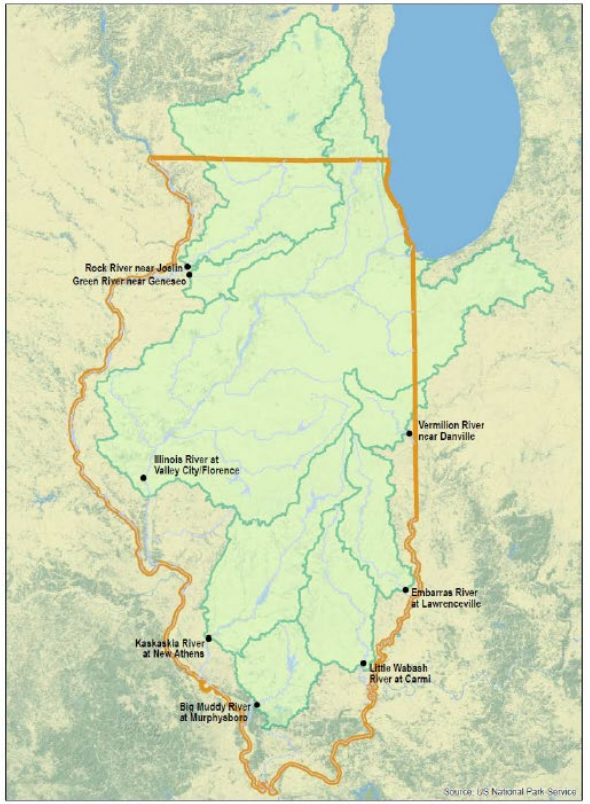
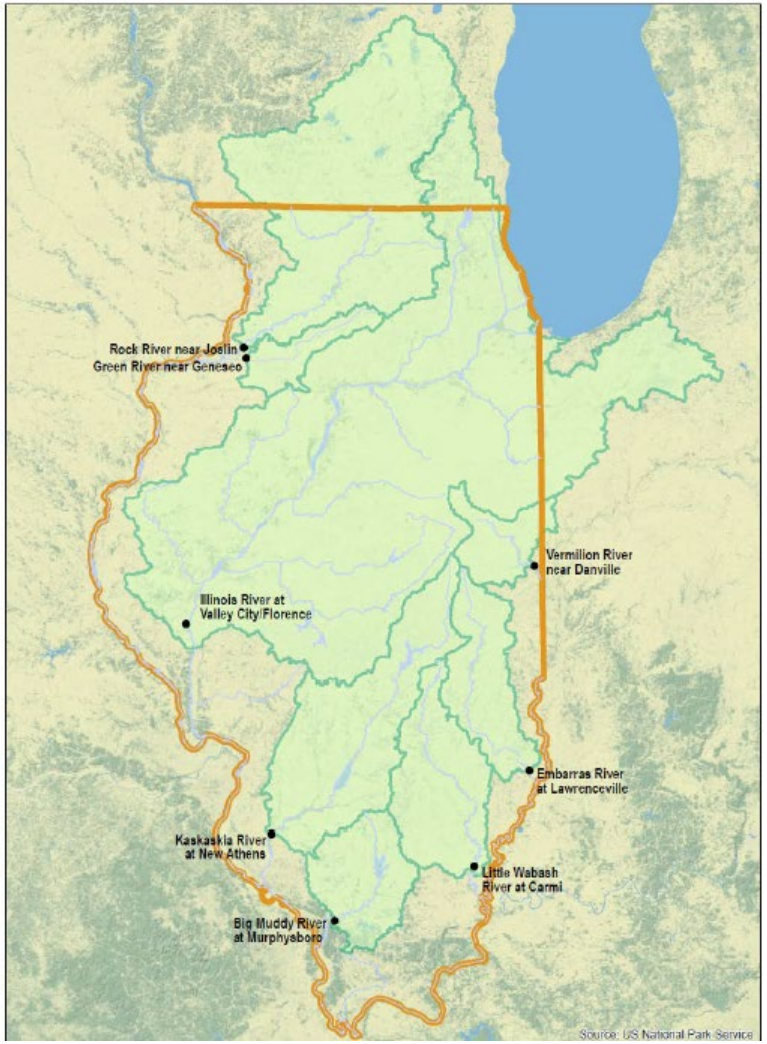
Nutrient and Sediment Export from Illinois–Quantification through a Continuous Loadings Network
(PROVISIONAL RESULTS through WY 2017)



Prepared for
Illinois Environmental Protection Agency

by
U.S. Geological Survey
Central Midwest Water Science Center
405 North Goodwin Avenue
Urbana, Illinois 61801
(217) 328-8747



IEPA ID	Stream name	USGS gage number	Station drainage area in Illinois, only, in mi²
N12	Big Muddy River at Murphysboro	05599490	2,168
BE01	Embarras River at Lawrenceville	03346500	2,348
PB04	Green River near Geneseo[1]	05447500	1,000
D32	Illinois River at Florence[2]	05586300	22,651
O03	Kaskaskia River at New Athens	05595000	5,189
C23	Little Wabash River (Main St) at Carmi[3]	03381495	3,102
P04	Rock River near Joslin	05446500	3,973
BP01	Vermilion River near Danville	03339000	1,199

USGS

USGS 03346500 Embarras River at Lawrenceville, IL

(IEPA Site Number BE-01)

Location: Latitude 38°43'25", Longitude 87°39'52" referenced to North American Datum of 1983, in NE 1/4 SW 1/4 sec.5, T.3 N., R.11 W., Lawrence County, IL, Hydrologic Unit 05120112, on left bank at downstream side of U.S. Business Route 50 bridge in Lawrenceville, and at mile 6.7.

Equipment: In addition to instrumentation and equipment required for power supply, data logging, and data transmission, this station is equipped with the following water-quality monitoring sensors and equipment.

- Water temperature, specific conductance, dissolved oxygen, pH, turbidity-- YSI EXO 2, 15 minute interval,
- Nitrate-- Hach NITRATAX, 15-minute interval,
- Turbidity-- Hach SOLITAX, 15-mintue interval,
- Phosphate-- WETlabs Inc. Cycle-PO4, 2-hour interval

Data period: November 1, 2015 to December 1, 2017

Station Summary: Due to the configuration of the stream channel and bridge piers that the sensors are mounted to, the sensors at this station are inaccessible above moderate stages. This has resulted in periods of missing data, as well as periods of lower-quality data during extended periods without sensor cleaning or calibration. The nitrate data record at the station is nearly continuous, with the exception of August 2017, while the nitrate sensor was out for repair. The phosphate analyzer is especially difficult to operate at this station, due to its frequent maintenance requirements and limited accessibility.

Data Summary: During the 2017 WY, this station collected a nearly continuous record of streamflow, physical parameters, and turbidity. Nitrate concentration was continuous, except for the gap in August, but discharge throughout that period was low, so the gap should not affect the annual load estimate. However, the continuous phosphate record had several, sometimes substantial, gaps due to fouling, equipment failure, and manufacturer support issues. TP was predicted using a regression on turbidity alone, because additional concurrent OP and TP observations are needed to develop a satisfactory regression with OP (as discussed in the *Data Collection* section).

Table 6. Model summary for the Embarras River at Lawrenceville.

Dependent constituent	Model form	Observations	Adjusted r^2	p-value
SSC	$Log_{10}(SSC) \sim Log_{10}(Turbidity)$	29	0.91	1.5e-15
TP	TP ~ Orthophosphate + Turbidity	1	--	--
	TP ~ Turbidity	34	0.72	1.2e-10

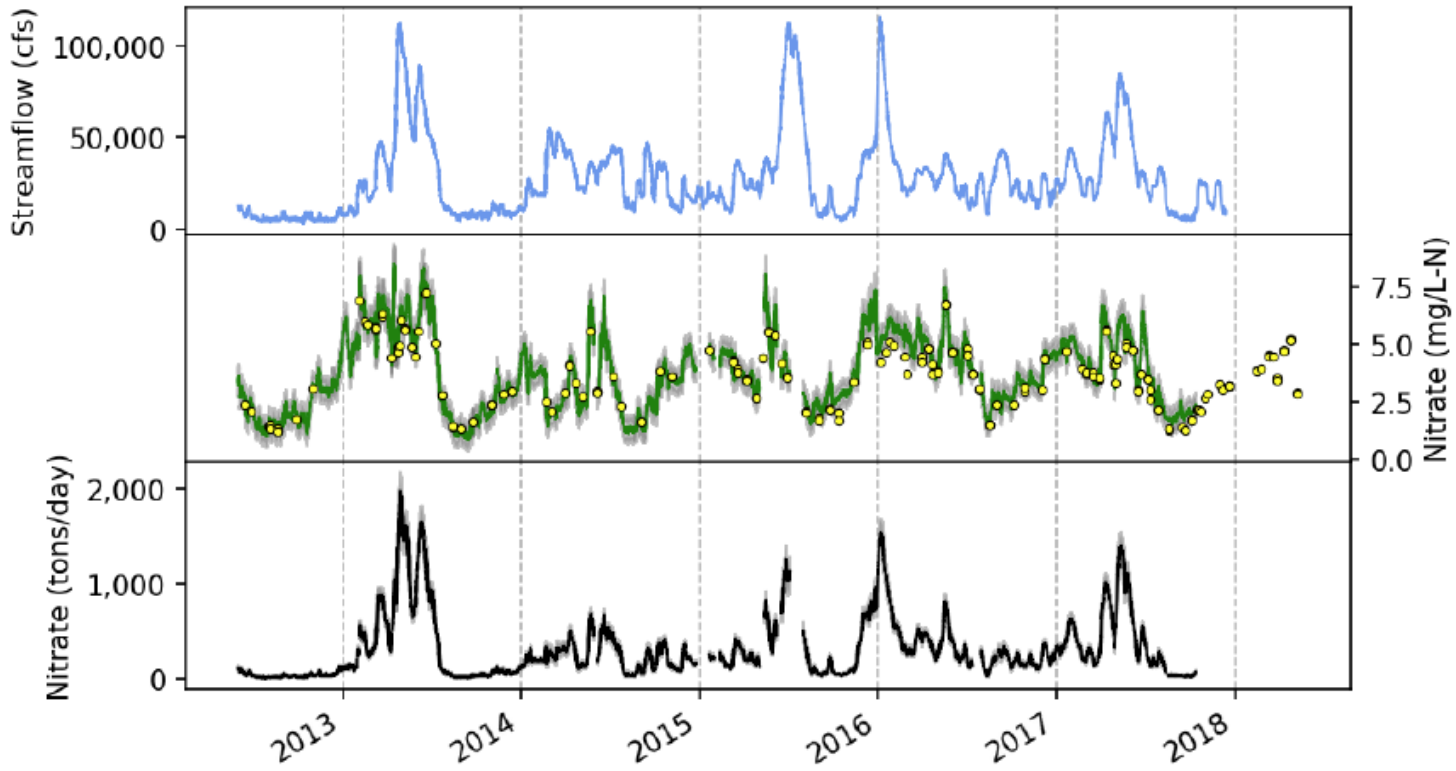


Figure 3. Nitrate concentration and load for the Illinois River at Florence. The yellow dots represent discrete sample measurements, and the grey region depicts the 90% prediction interval.

USGS

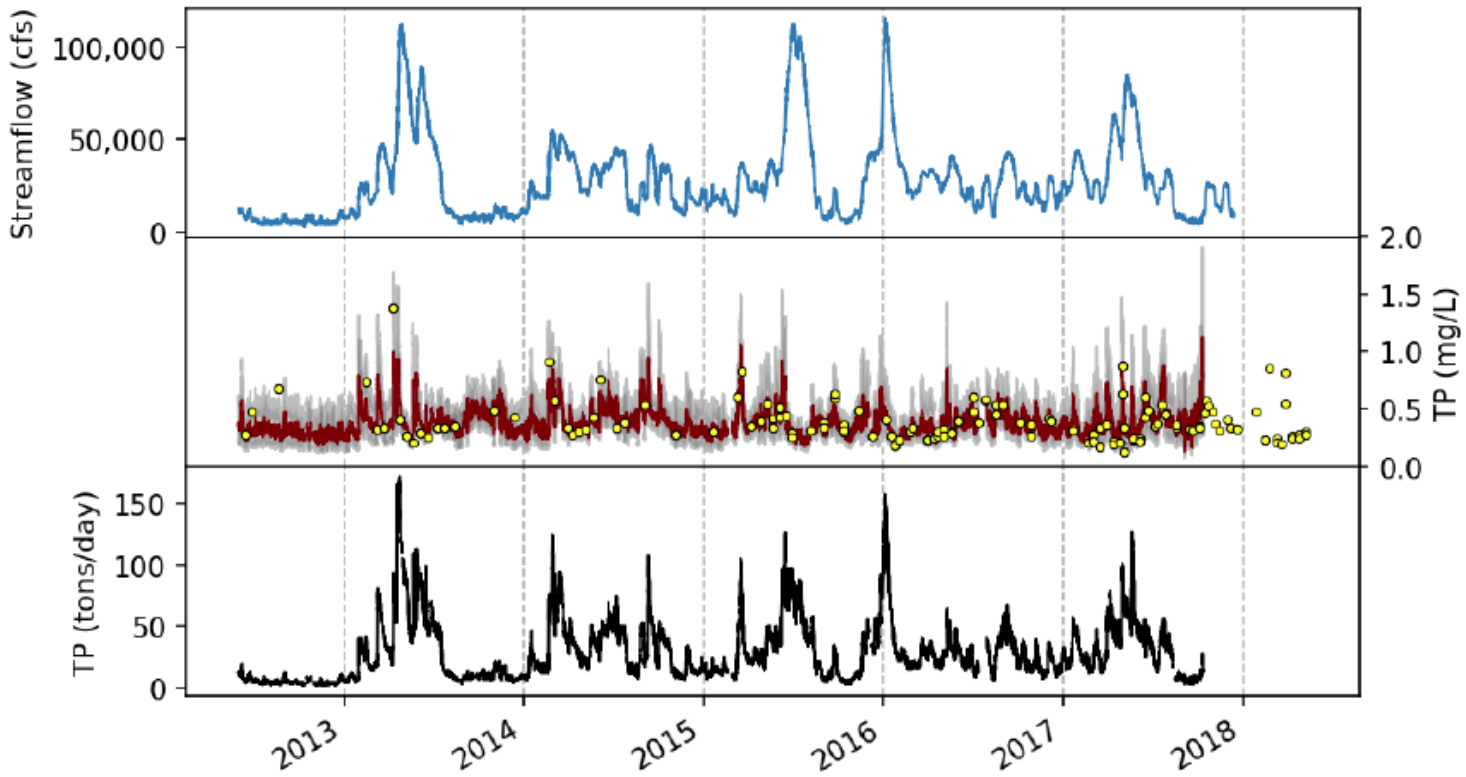


Figure 4. Total phosphorous concentration and load for the Illinois River at Florence. .The yellow dots represent discrete sample measurements, and the grey region depicts the 90% prediction interval.

USGS

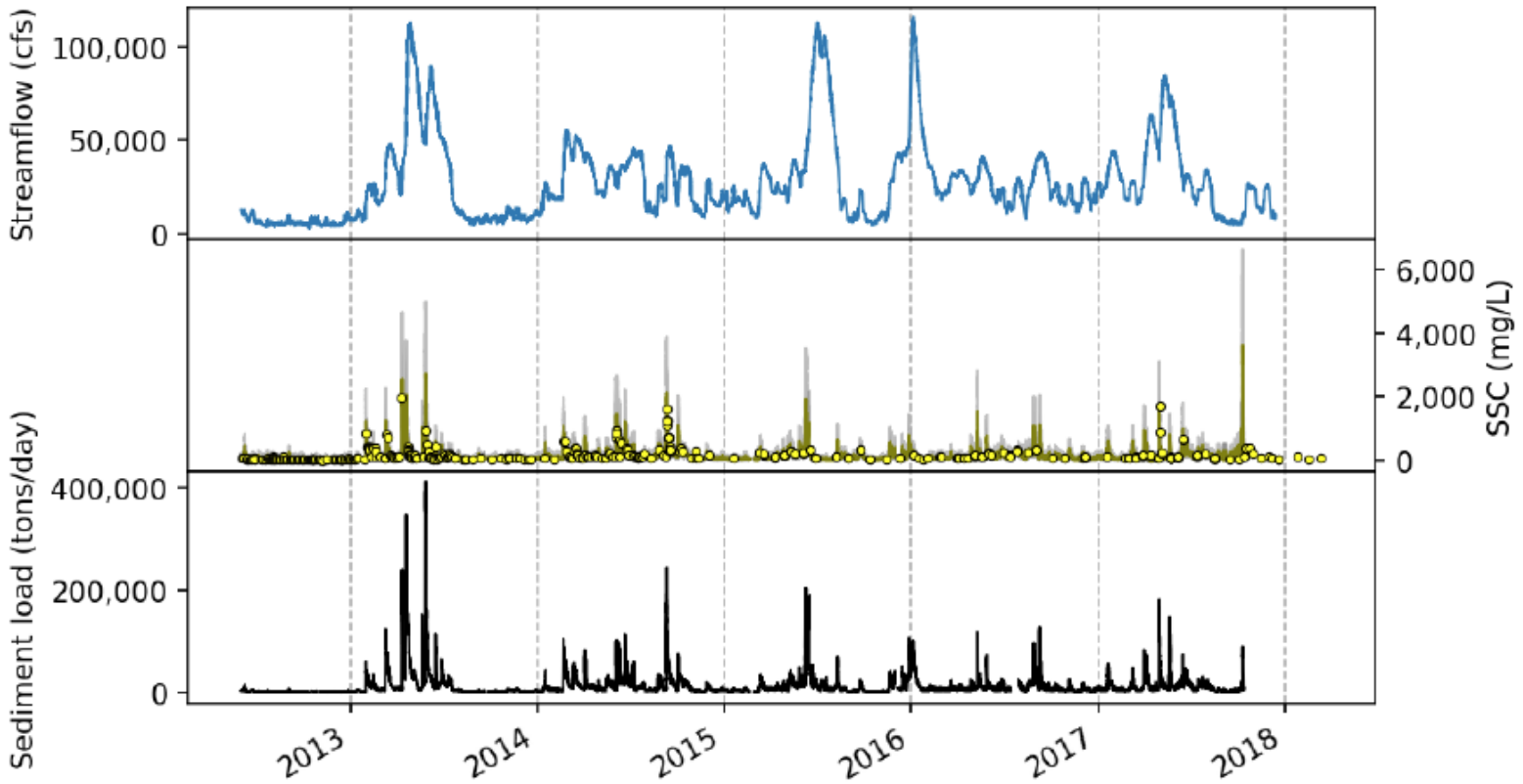


Figure 5. Suspended sediment concentration and load for the Illinois River at Florence. The yellow dots represent discrete sample measurements, and the grey region depicts the 90% prediction interval.

Table 2. Provisional annual nitrate load and yield for each site.

Stream name	2016		2017		Mean for period of record*	
	Annual load (lb)	Annual yield (lb/acre)	Annual load (lb)	Annual yield (lb/acre)	Annual load (lb)	Annual yield (lb/acre)
Illinois River at Florence	292,000,000	16.9	263,000,000	15.2	228,000,000,	13.2
Embarras River at Lawrenceville	20,300,000	13.5	15,800,000	10.5	17,400,000	11.6
Big Muddy River at Murphysboro	3,210,000	2.3	313,000	0.2	2,980,000	2.1
Green River near Geneseo	14,400,000	22.5	11,500,000	18.0	11,700,000	18.3
Rock River near Joslin	92,700,000	15.3	128,000,000	21.1	102,000,000	16.8
Little Wabash River (Main St) at Carmi	14,100,000	7.1	11,900,000	6.0	13,300,000	6.7
Kaskaskia River at New Athens	16,600,000	5.0	11,600,000	3.5	12,500,000	3.8
Vermilion River near Danville	21,100,000	25.6	20,700,000	25.1	21,000,000	25.5

* The period of record varies among stations and is specified in the individual station summary pages

Indicates highest yield

Indicates lowest yield

USGS

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Table 4. Provisional annual total phosphorus load and yield for each site that the data and (or) regression equations were provisionally adequate. These loads will change as more data becomes available and the regression equations are refined.

Stream name	2016		2017		Mean for period of record*	
	Annual load (lb)	Annual yield (lb/acre)	Annual load (lb)	Annual yield (lb/acre)	Annual load (lb)	Annual yield (lb/acre)
Illinois River at Florence	22,600,000	1.3	20,800,000	1.2	20,600,000	1.2
Embarras River at Lawrenceville	2,560,000	1.7	1,840,000	1.2	2,110,000	1.4
Big Muddy River at Murphysboro	1,540,000	1.1	208,000	0.1	1,450,000	1.0
Green River near Geneseo	438,000	0.7	348,000	0.5	360,000	0.6
Rock River near Joslin	4,300,000	0.7	5,800,000	1.0	4,870,000	0.8
Little Wabash River (Main St) at Carmi	3,260,000	1.6	2,260,000	1.1	2,810,000	1.4
Kaskaskia River at New Athens	5,320,000	1.6	3,520,000	1.1	4,100,000	1.2
Vermilion River near Danville	563,000	0.7	659,000	0.8	743,000	0.9

Indicates highest yield

Indicates lowest yield

USGS

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Table 3. Provisional annual suspended sediment load and yield for each site that the data and (or) regression equations were provisionally adequate. These loads will change as more data becomes available and the regression equations are refined.

Stream name	2016		2017		Mean for period of record*	
	Annual load (ton)	Annual yield (ton/acre)	Annual load (ton)	Annual yield (ton/acre)	Annual load (ton)	Annual yield (ton/acre)
Illinois River at Florence	4,510,000	0.26	3,623,000	0.21	4,253,000	0.25
Embarras River at Lawrenceville	1,090,000	0.73	686,000	0.46	851,000	0.57
Big Muddy River at Murphysboro	348,000	0.25	32,800	0.02	325,000	0.23
Green River near Geneseo	210,000	0.33	163,00	0.25	172,000	0.27
Rock River near Joslin	854,000	0.14	1,153,000	0.19	969,000	0.16
Little Wabash River (Main St) at Carmi	1,001,000	0.51	668,000	0.34	854,000	0.43
Kaskaskia River at New Athens	994,000	0.30	566,000	0.17	719,000	0.22
Vermilion River near Danville	456,000	0.55	620,000	0.75	737,000	0.89

Indicates highest yield

Indicates lowest yield

USGS

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Continuing issues with phosphate analyzers

- Performance in Illinois streams (turbidity and concentrations)
- Maintenance / upgrades
- Customer support
- Instrument age

NMC Member Updates

Exciting or Boring News to Share?

Next NMC Meetings

- *March 19, 2019 (#12)*
- *???*
- *???*

Yay, Dad’s Done Talkin!

Farm Bill Update:

Jonathan Coppess, University of Illinois

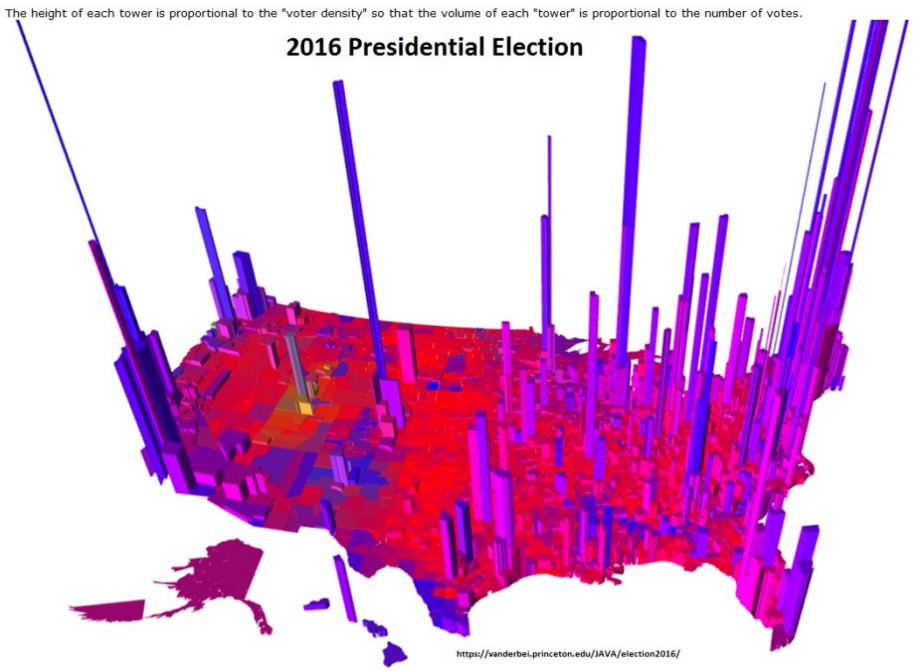
2018 Farm Bill Update

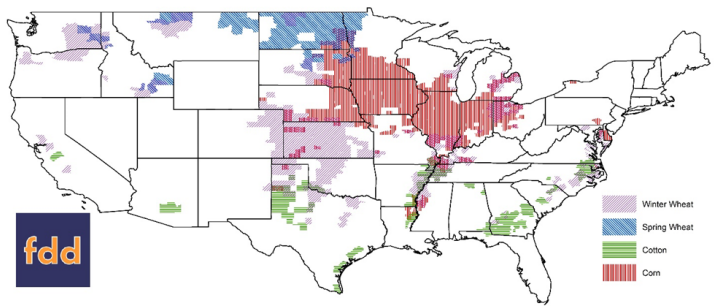
Jonathan Coppess

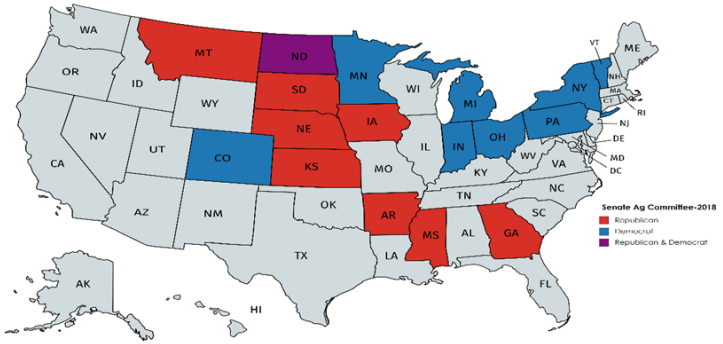
NLRS Workshop (Nov. 13, 2018)

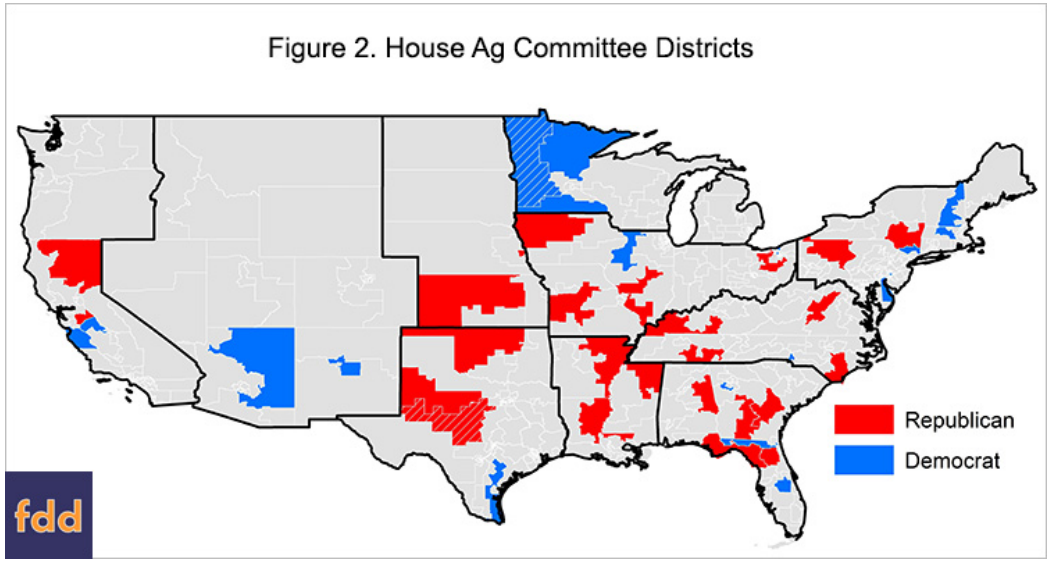
Gardner Agriculture Policy Program

Political Landscape for the Farm Bill.









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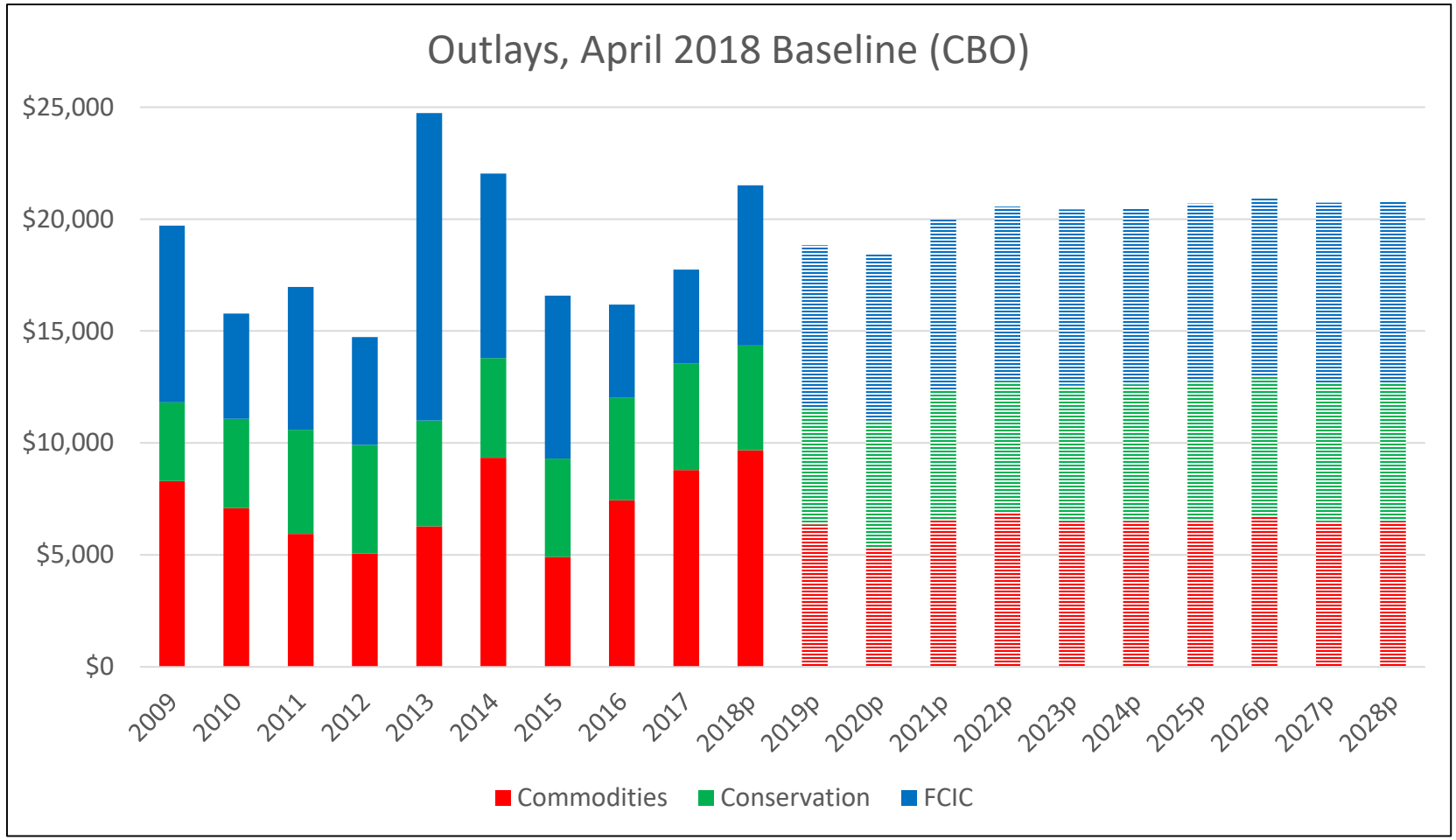
CBO Baseline for the Farm Bill.



- Farmer assistance at roughly $20b per fiscal year.
- CBO expected a big shift in corn and soybean base from ARC-CO to PLC.

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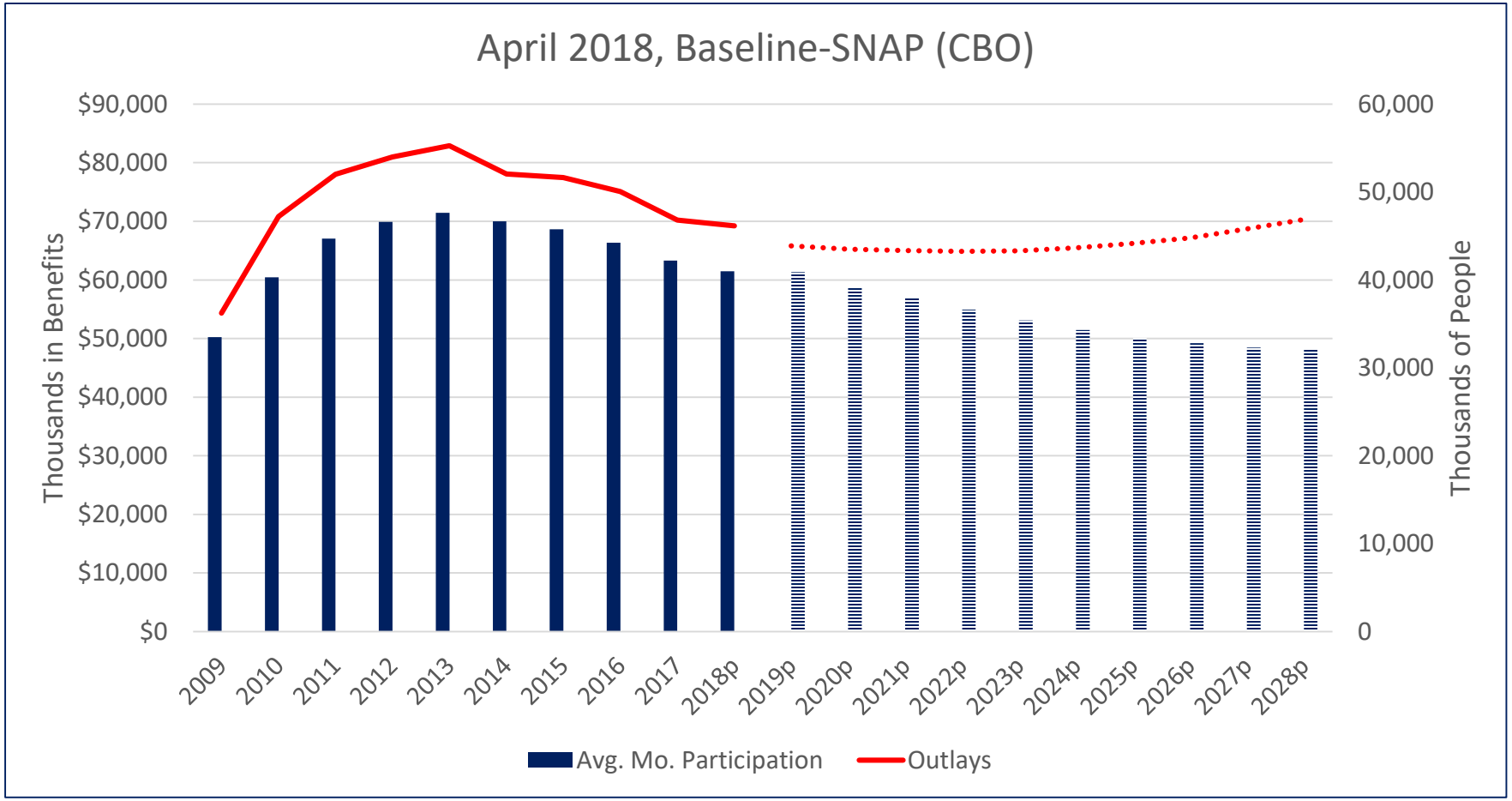
CBO Baseline for the Farm Bill.

- SNAP peaked in 2013 from Great Recession.
- 47.6m people and $82.9b in benefits.
- Expected to fall to 32m people and $70b benefits (2028).



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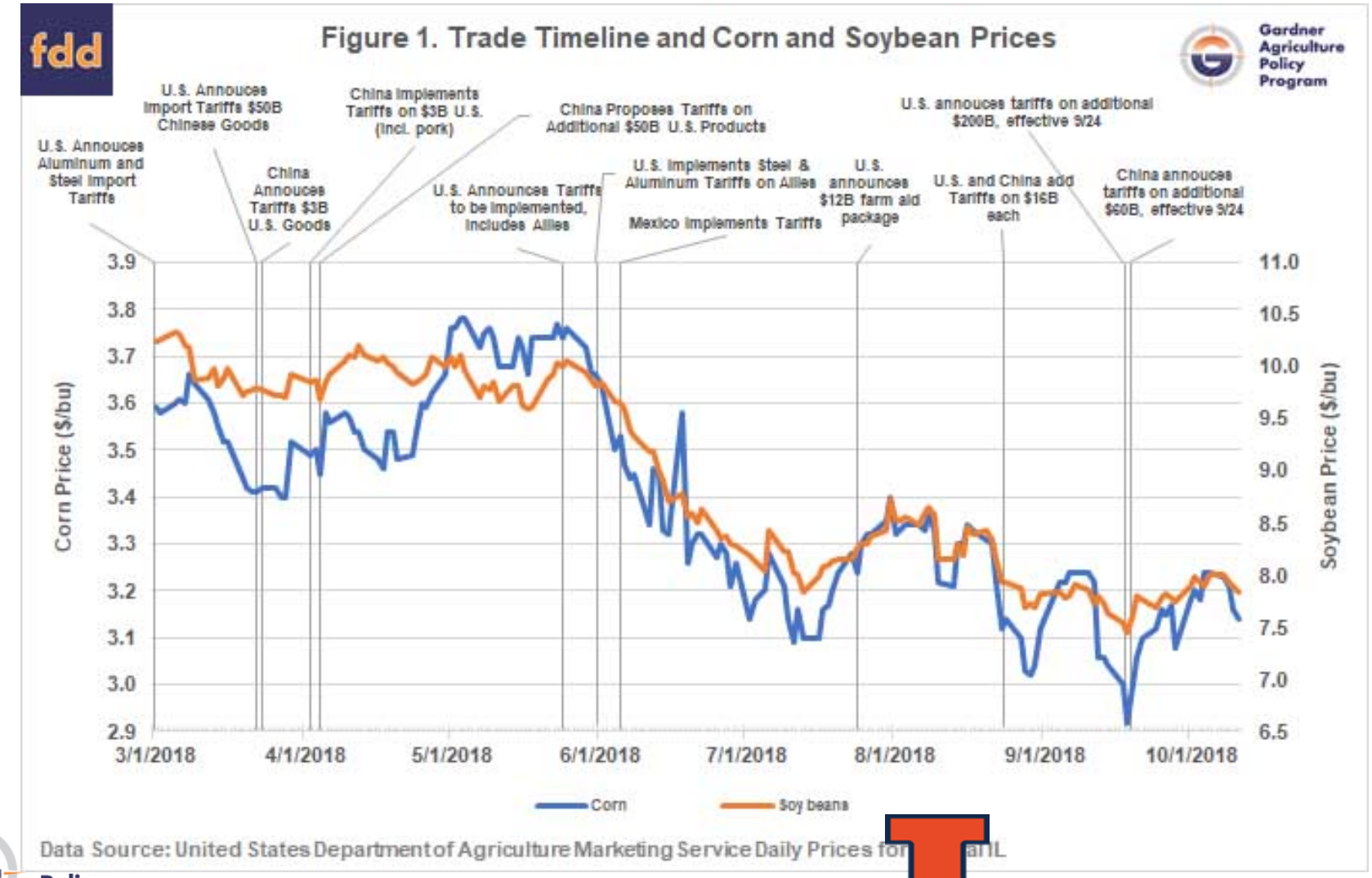
Crop Prices: A Farm Bill Challenge



- Prices spiked going into last farm bill; expected to be lower going forward.
- President Trump's tariff war & special payments (Market Facilitation).

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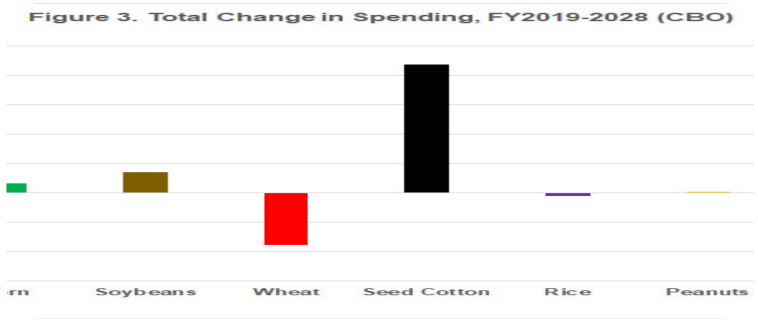
AGRICULTURAL ACT OF 2014.

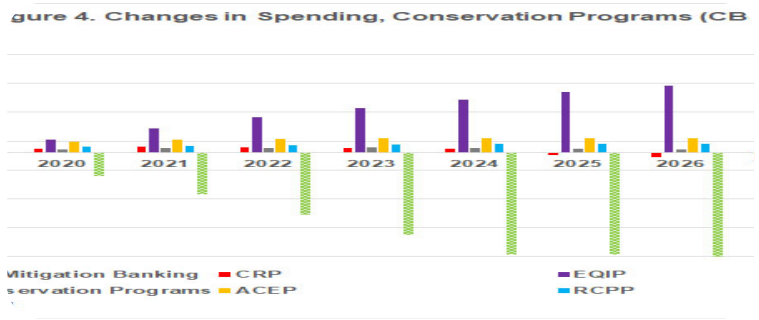
Farm Programs (Title I).	Farm program election; decoupled programs using base acres.
	ARC-CO: revenue-based (price*yield); five-year Olympic averages.
	PLC: price-based assistance using statutorily fixed reference prices (wheat @ $5.50; corn @ $3.70; soybeans @ $8.40).

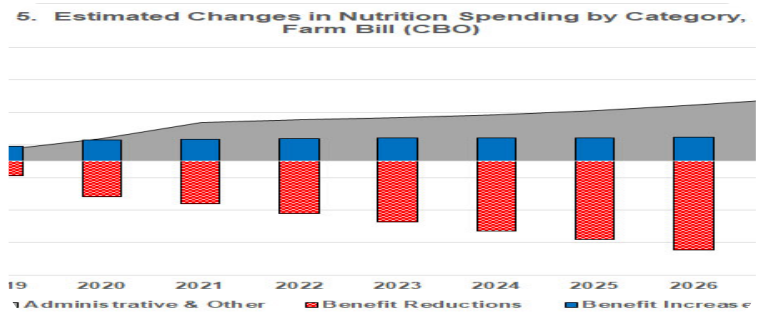
AGRICULTURAL ACT OF 2014.

Conservation (Title II).	Reduced Conservation Reserve Program acreage cap (step down from 32m to 24m acres).
	Continued Conservation Stewardship Program (CSP) with 10m acres added each year; continued Environmental Quality Incentives Program (EQIP).
	Rewrote easements (Agriculture Conservation Easement Program (ACEP)) and created Regional Conservation Partnership Program (RCPP).

2018 Farm Bill: House.







Commodities

- Additional funding for cotton; yield update.
- Reference price escalator.

Conservation

- Eliminate CSP; stewardship contracts in EQIP.
- Expand CRP acreage cap; discount re-enrollment.

Nutrition

- Controversial changes to reduce benefits (tighter eligibility).
- Billions in additional administrative costs.

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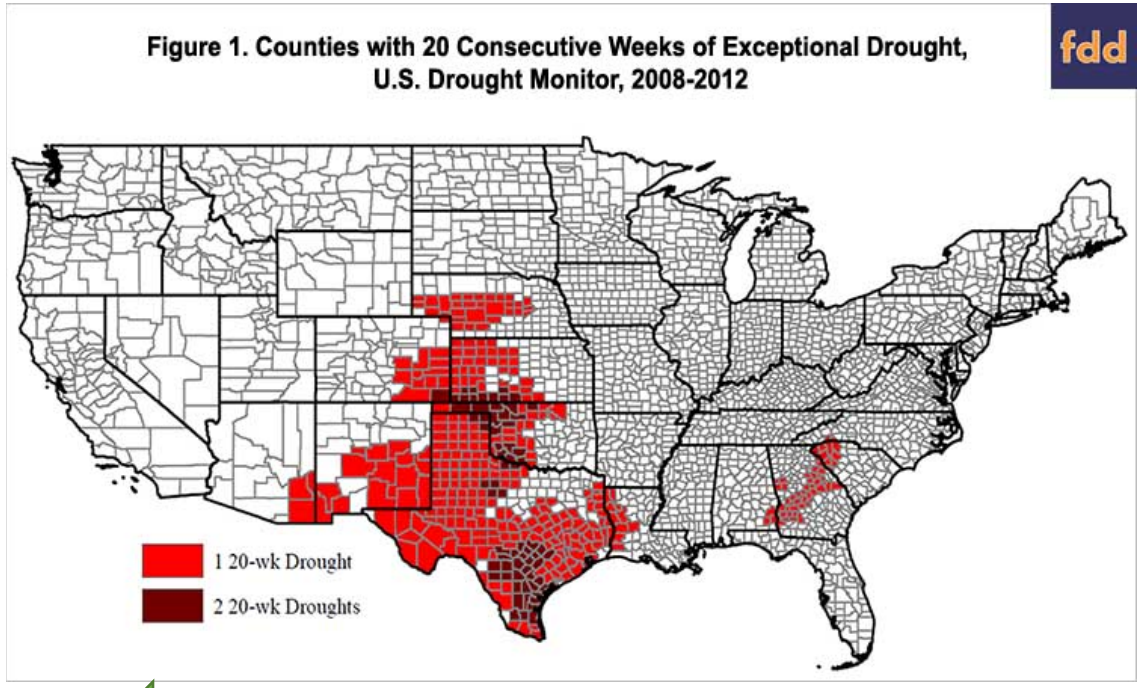
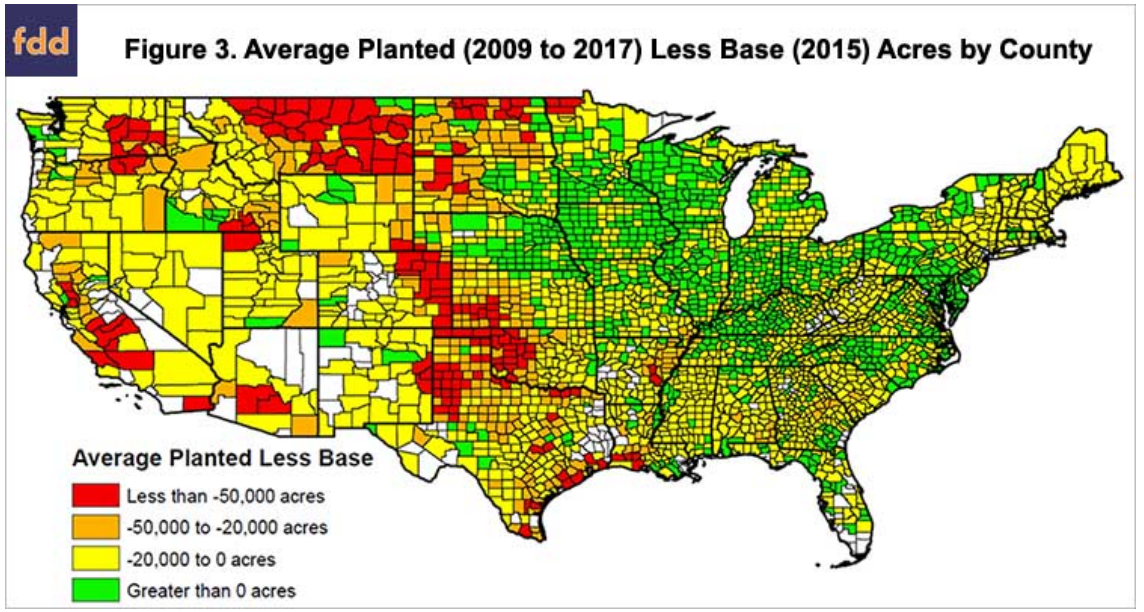
Wheat vs. Cotton in Title I?





- Regional specific yield update, likely to benefit cotton farmers;
- Paid for by eliminating payments on base acres not planted to a covered commodity from 2009 to 2017.

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Controversies in the Farm Coalition.

Figure 1.

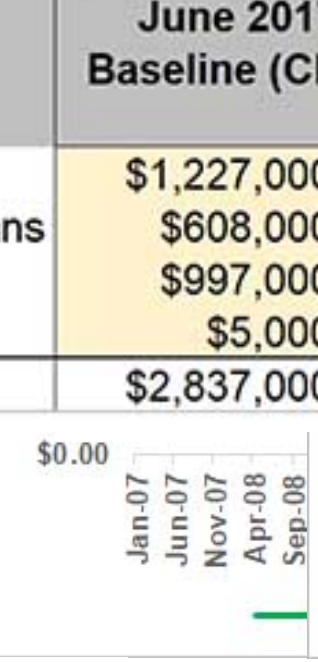

Figure 2. E

Figure 3. Additional Revenue from Payments,
per payment acre (ARC/PLC) and per acre (MFP and Other)

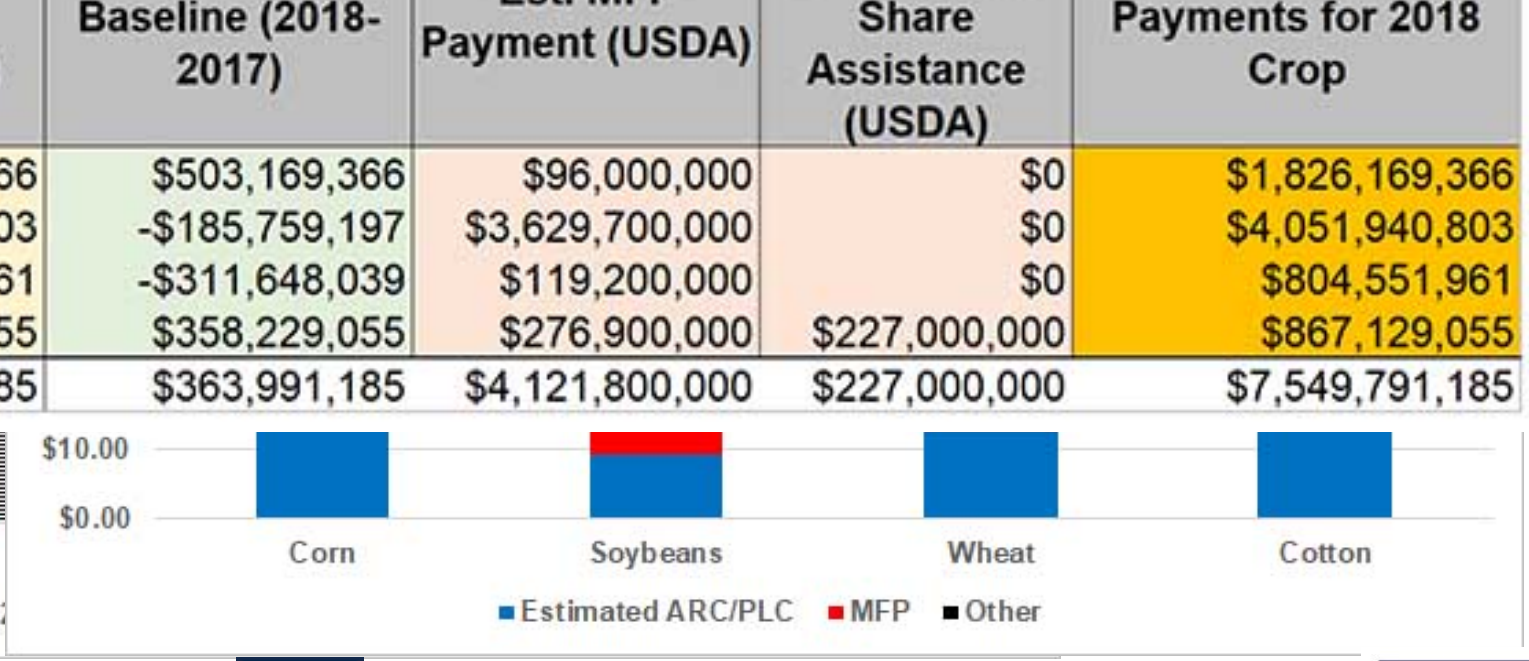

Table 2. Direct Cash Payments for 2018 Crop (CBO and USDA)

	ARC-PLC-LDP June 2017 Baseline (CBO)	ARC-PLC-LDP April 2018 Baseline (CBO)	Difference in Baseline (2018-2017)	Est. MFP Payment (USDA)	Cotton Ginning Cost Share Assistance (USDA)	Total Expected Payments for 2018 Crop
Corn	$1,227,000,000	$1,730,169,366	$503,169,366	$96,000,000	$0	$1,826,169,366
Soybeans	$608,000,000	$422,240,803	-$185,759,197	$3,629,700,000	$0	$4,051,940,803
Wheat	$997,000,000	$685,351,961	-$311,648,039	$119,200,000	$0	$804,551,961
Cotton	$5,000,000	$363,229,055	$358,229,055	$276,900,000	$227,000,000	$867,129,055
Total	$2,837,000,000	$3,200,991,185	$363,991,185	$4,121,800,000	$227,000,000	$7,549,791,185

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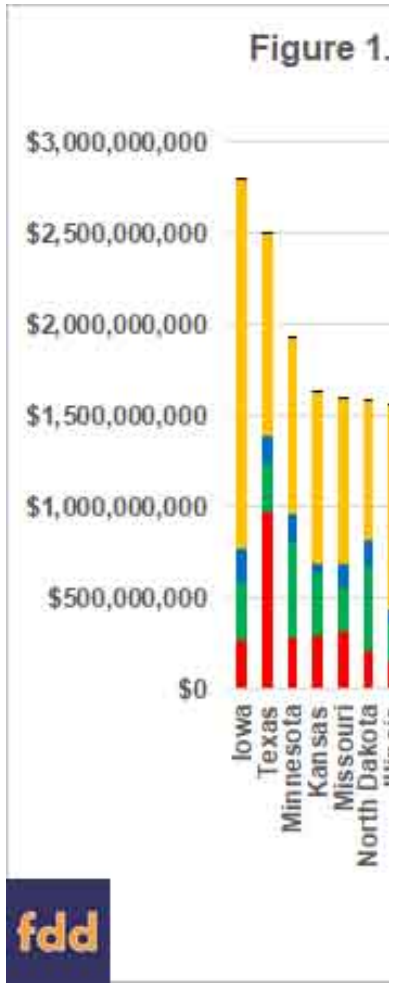
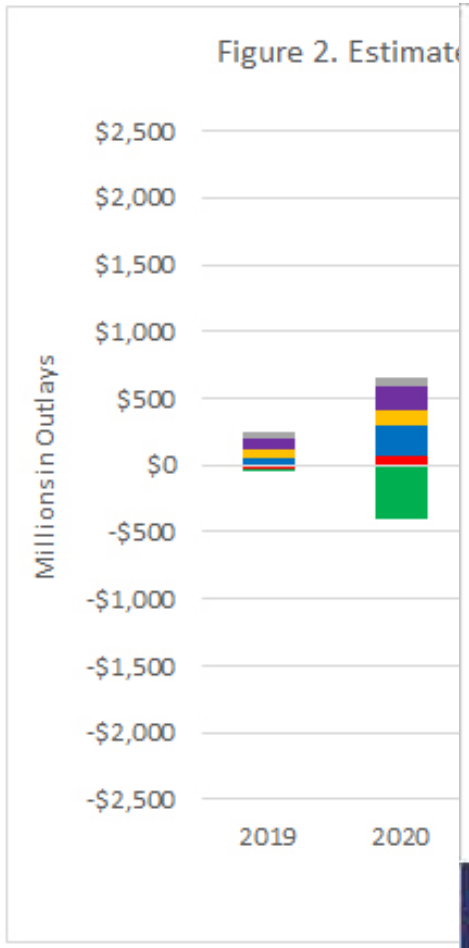
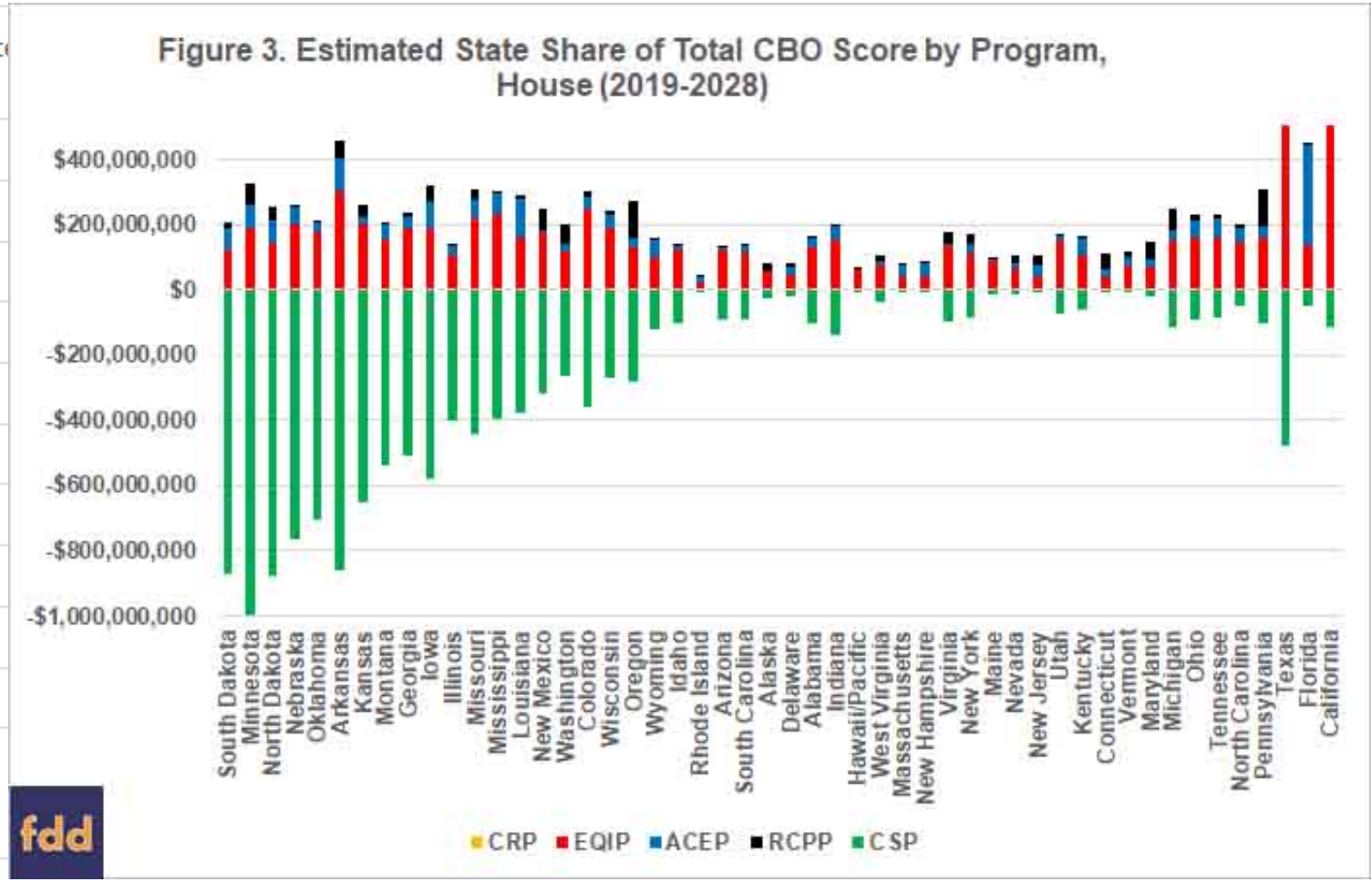
Controversies for Conservation.







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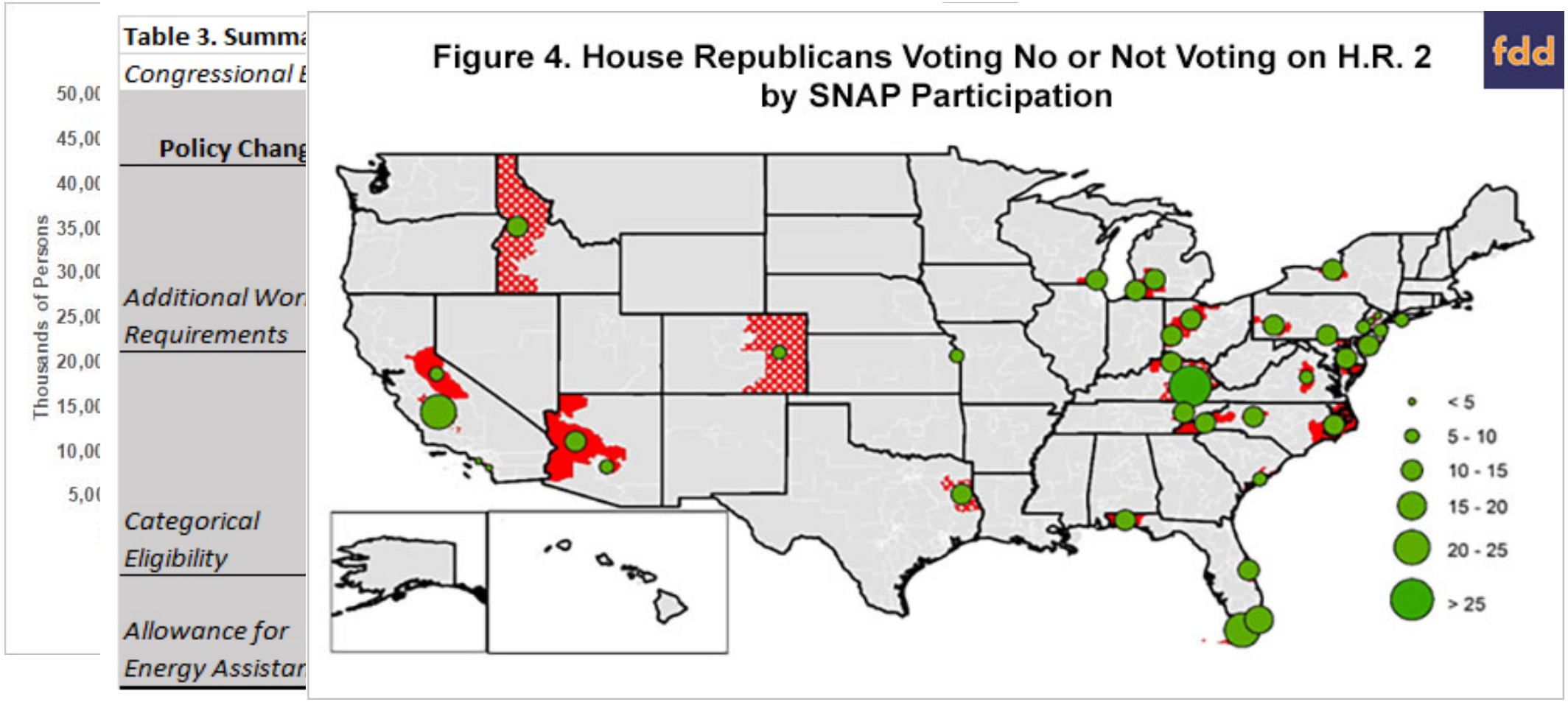
Picking an Ill-Considered Fight Over SNAP.



With SNAP fight (again);

House initially defeats farm bill (again).

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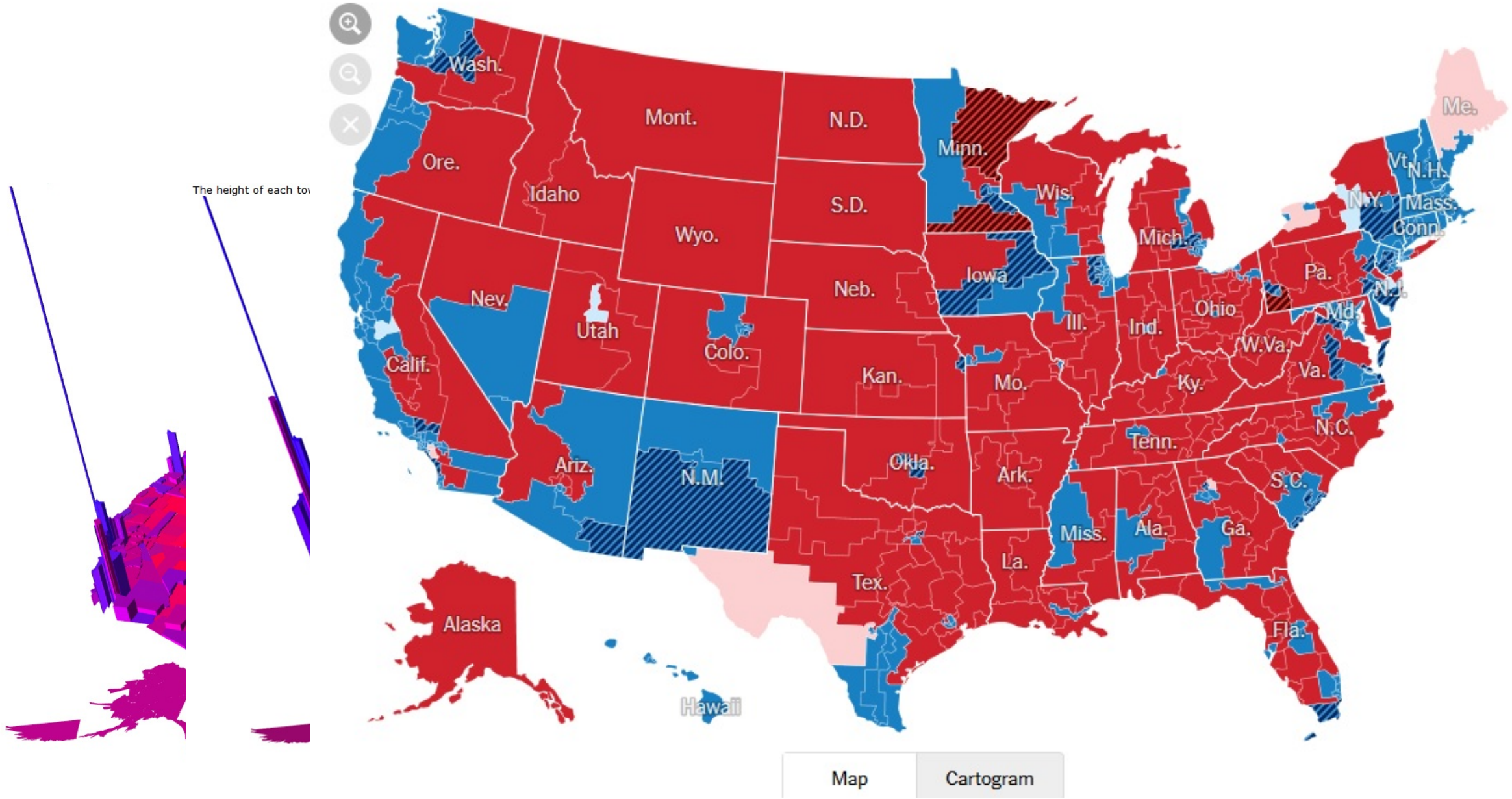
Different Undertaking in the Senate.

- ✓Reported out of committee 20 to 1;
- ✓Added stronger payment limits, AGI and eligibility (reduce the number of managers receiving payments).
- ✓Rejected House provisions on SNAP (68 to 30); minor changes to conservation (reduce CSP to pay for ACEP and RCPP).
- ✓Passage by one of largest votes in farm bill history (86 to 11).



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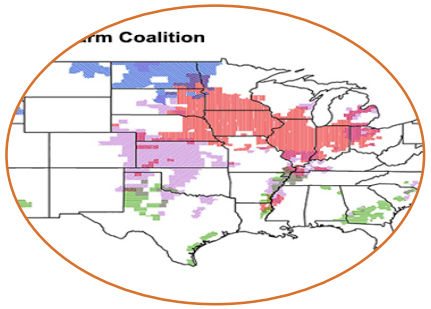
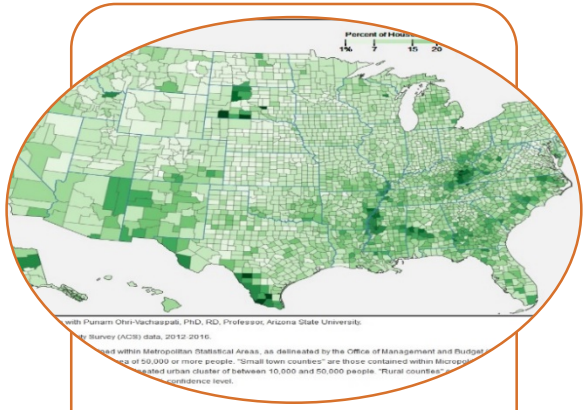
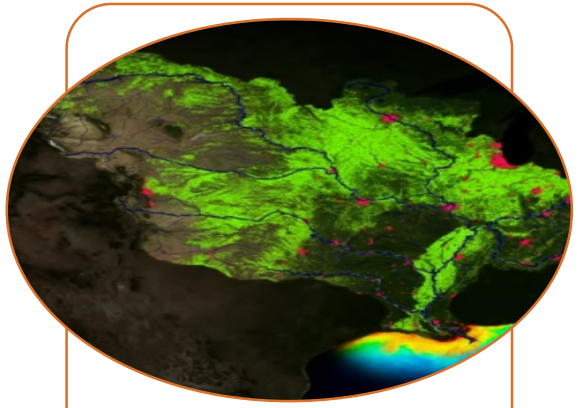
Future for the Farm Bill.



Farm Coalition



Food Assistance



Environmental-Conservation

- ✓ Two consecutive defeats on House floor over SNAP.
- ✓ 2018 Midterms: Republican rural America vs. Democratic urban/suburban.
- ✓ Dysfunctional Congress; farm bill as one example.
- ✓ Trade, tariffs and political signals; what does it all mean?

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Thank you….Questions.

Jonathan Coppess
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jwcoppes@Illinois.edu

Upcoming NLRS Biennial Report and Meetings

NLRS Biennial Report Outline

Chapter 1: Executive Summary

Chapter 2: Tracking Implementation

Chapter 3: Science Assessment Update

Chapter 4: Agriculture Water Quality Partnership Forum: Agricultural Sector

Chapter 5: Performance Benchmark Committee: Point Source Sector

Chapter 6: Urban Stormwater Working Group: Stormwater

Chapter 7: Nutrient Monitoring Council

Chapter 8: Nutrient Science Advisory Committee

Appendices

NLRS Biennial Report Timeline

Date	Action
Dec 31, 2018	All spreadsheet, implementation data, and partner project updates due to Extension (kgardin2@illinois.edu)
May 31, 2019	First draft due to PWG
Jun 15, 2019	Comments due to Extension
Jul 1, 2019	Draft due to Steering Committee and Agency Directors
Jul 15, 2019	Comments due to Extension
Aug 14, 2019	Due to printer
Aug 27, 2019	Biennial Report completed

Science Assessment Update:
Nitrate-N and TP Load Estimates in Progress

Gregory McIsaac, Associate Professor Emeritus
University of Illinois at Urbana Champaign

Adjunct Research Scientist
Agricultural Watershed Institute

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Nitrate and TP River Loads will be calculated through the 2017 water year

- Statewide loads based on 8 major river systems
- ~40 HUC 8s with sufficient flow and concentration data for load estimation
- Estimate point and non-point yields by HUC 8
- Draft report to IEPA by mid February 2019

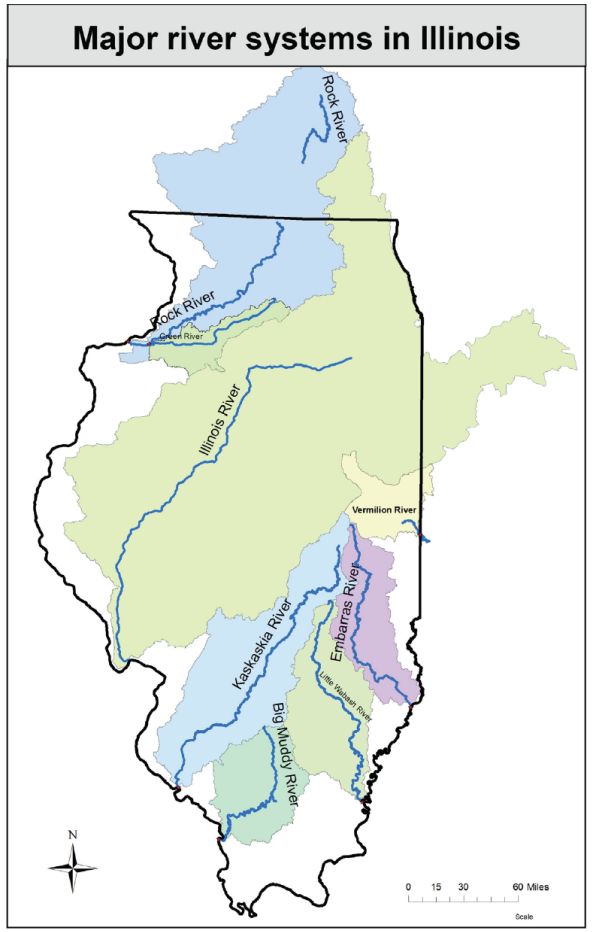

Figure 3.1. The eight major river systems used in estimating state nutrient loads. Note that gaging stations are upriver from the state boundary, so the estimated area is smaller.

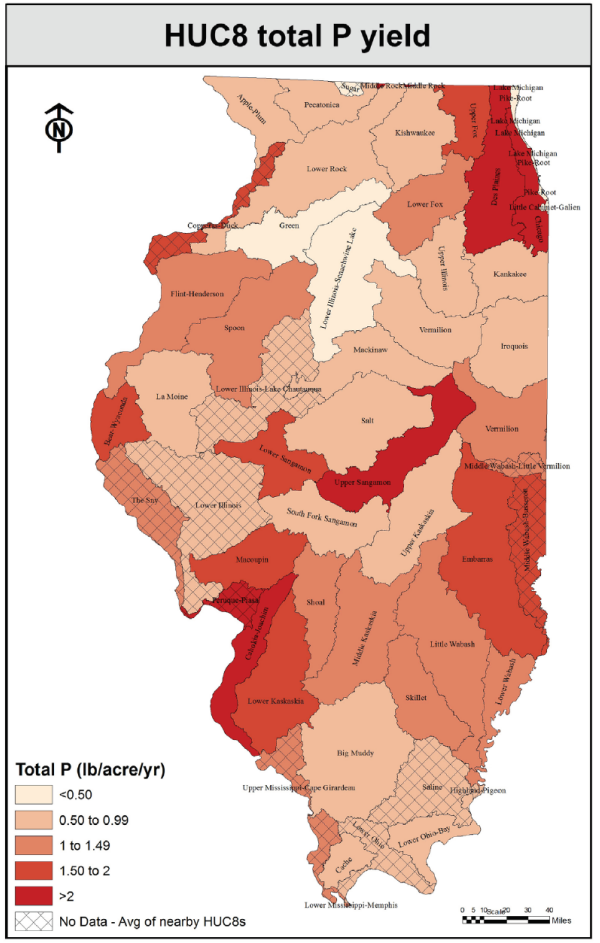

Figure 3.14. Total phosphorus yields by HUC8 in Illinois.

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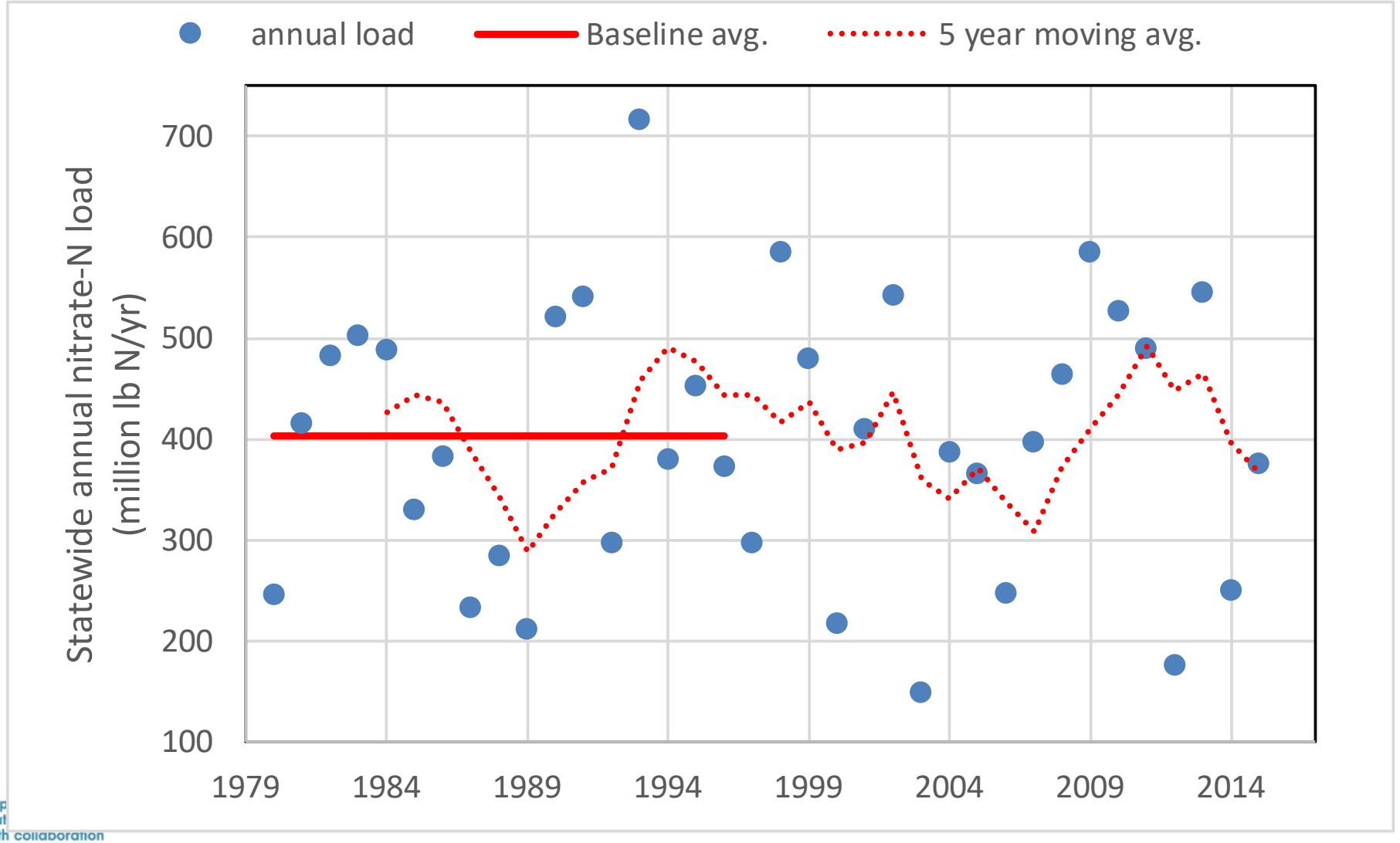
Statewide estimates of annual nitrate loads (blue dots), 1980-96 baseline average (solid red line), and five year moving average value (red dashed line)



Annual Load Estimation Methods Used in NLRS

Daily Load = daily water flow x estimated daily concentration

USGS provides daily water flow

IEPA and USGS provide sample concentrations approximately monthly

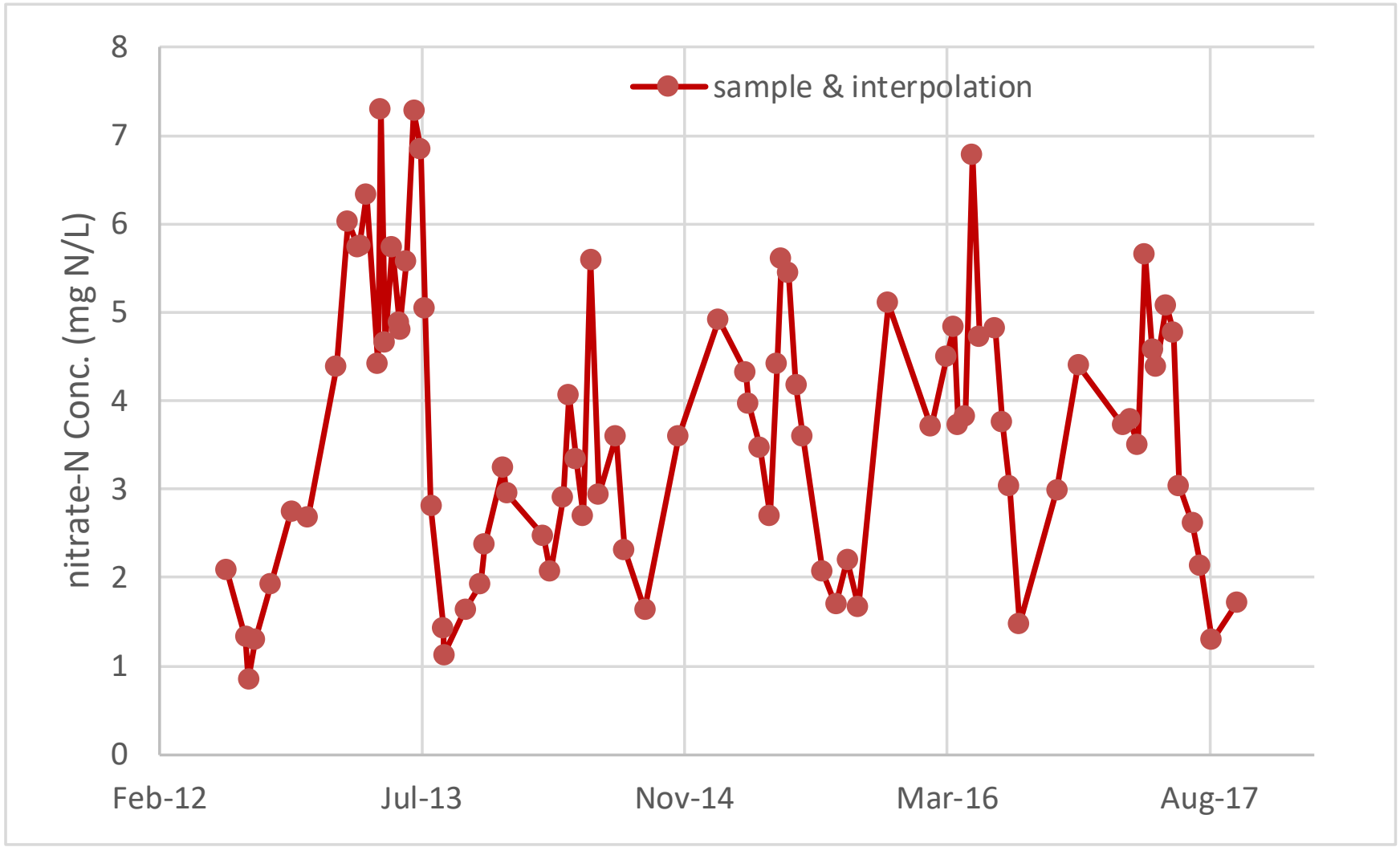
Need to estimate daily concentrations between measured concentrations

Nitrate: Linear Interpolation over time between samples

Phosphorus: Weighted Regressions on Time, Discharge and Seasonality (WRTDS)

Daily nitrate-N estimations of concentration by linear interpolation

Measured Nitrate-N concentrations ( )and linearly interpolated values at “Valley City” 2012-17



1997-2011 average values, although there was insufficient data to calculate loads in 2007 and 2008 for most locations

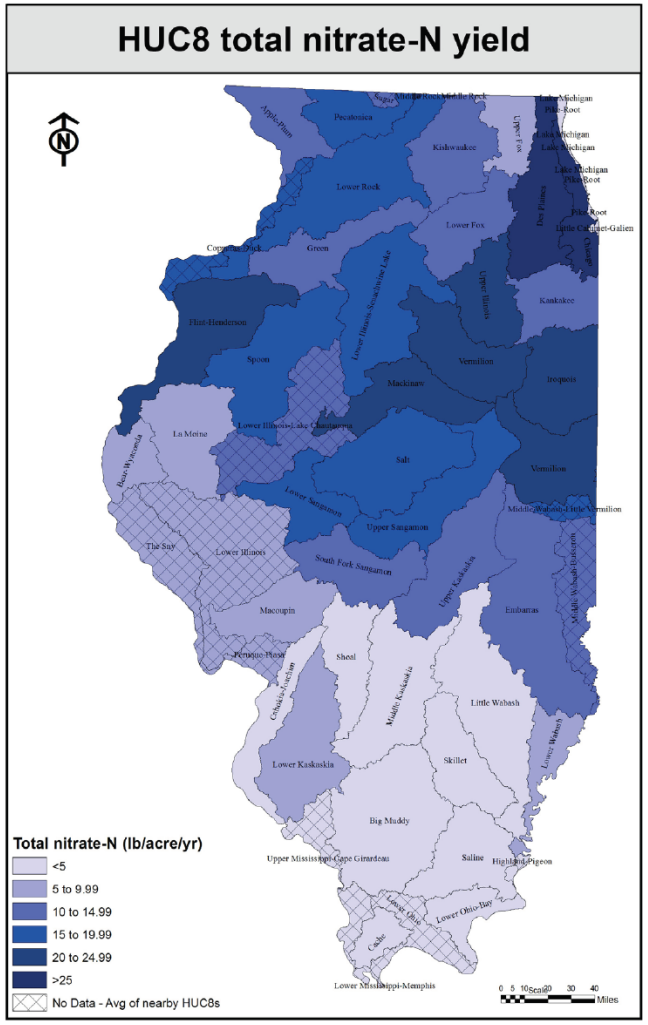
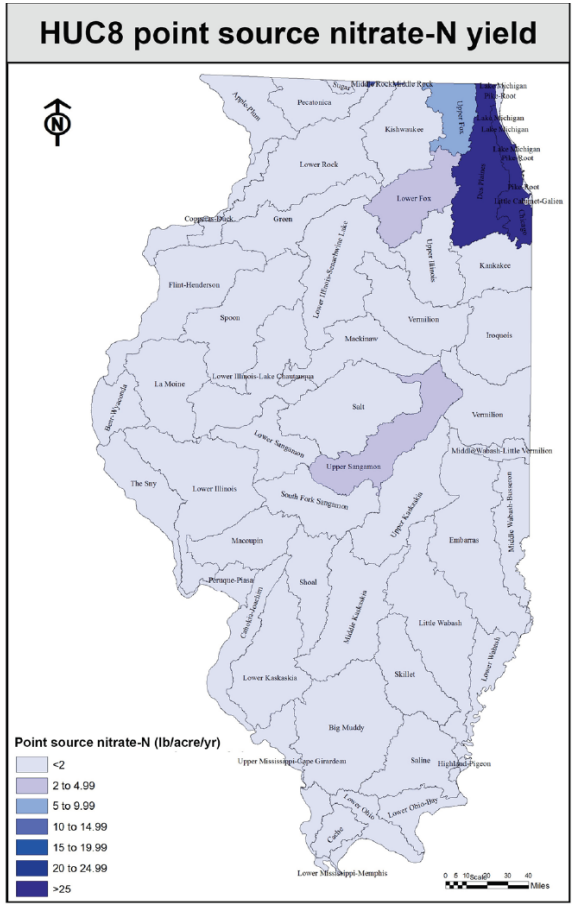


Figure 3.12. Total nitrate-nitrogen yields by HUC8 in Illinois.



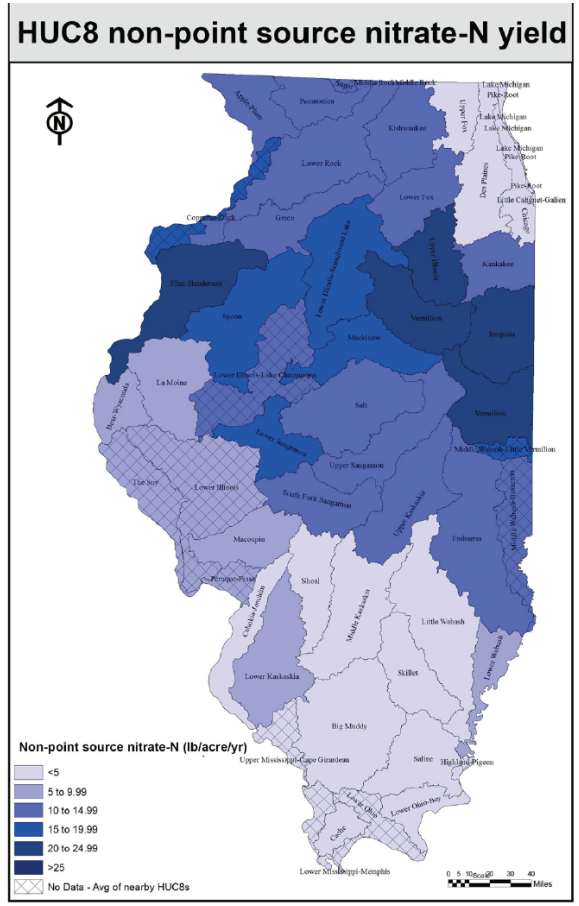


Figure 3.13. Point and non-point source nitrate-nitrogen yields by HUC8 in Illinois.

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Concentration data mostly from IEPA Ambient Water Quality Network; USGS and ISWS data was used at a few locations where it was available.

The new HUC 8 analysis will report Nitrate and TP yields averaged over two periods: 2012-17 and 2009-2017

- 2012-17 average flows were similar to 1980-96, but more variable across the state
- 2009-17 average flows less variable across the state but average ~20% greater than 1980-96

HUC 8 analysis changes from NLRS

- IEPA discontinued monitoring concentrations at 3 locations used in the NLRS HUC analysis
- In general, monitoring locations do not correspond to HUC areas; there is some room for improvement in translating the calculated load estimates to the HUC areas.

2019 NLRS Meeting Schedule

Mar 19	Nutrient Monitoring Council (Springfield)
Apr 23	Agriculture Water Quality Partnership Forum (Springfield)
May 22	Policy Working Group (Springfield)
Jun 5	Urban Stormwater Working Group (Chicago)
Nov 5-6	Nutrient Conference (Springfield)

RESEARCH SHOWCASE (Heritage Room)