



Improving our water resources with
collaboration and innovation

IFB Partner Update: Illinois Farmer Implementation of the NLRS

Lauren Lurkins
Director of Environmental Policy
Illinois Farm Bureau





ILLINOIS FARM BUREAU

- Since 1916, Illinois Farm Bureau has provided education and information to help farmers, while supporting legislation and lobbying about agricultural issues.
- Founded by farmers as the Illinois Agricultural Association, one of the first activities of the new organization was to bring soil and crop specialists to each county to supply farmers with the latest agricultural research information and recommendations.
- Today, IFB has approximately **80,000** voting members. The voting membership represents three out of every four Illinois farmers.
- Farmers join through their county Farm Bureau and engage in a grassroots policy development process, programs and initiatives.



**IFB HAS PRIORITIZED LEADING ON
ENVIRONMENTAL ISSUES - WITH A SPECIAL
FOCUS ON THE NLRS
2015 TO CURRENT - \$1.5 MILLION**

CURRENT IFB NLRS PRIORITIES

- Education and Outreach
- Supporting Research
- Supporting Implementation
- Demonstrating Progress



EDUCATION AND OUTREACH

- **From 2015 to present:**
 - Almost 48,000 people reached in 306 events (field days, workshops, webinars, conferences, presentations)
 - Approximately 500 FarmWeek articles to 74,000 weekly subscribers
 - Approximately 45 RFD Radio interviews, 80 rural markets in Illinois
 - Approximately 5 million people reached on social media
 - Approximately 60,000 visits to www.ilfarmersconserve.com



SUPPORTING RESEARCH

Scientific Researchers from:

- University of Illinois at Urbana-Champaign
- University of Illinois Extension
- Illinois State University
- Southern Illinois University Carbondale
- Prairie Research Institute

- ❖ Advisory Committees
- ❖ Support letters
- ❖ Farmer focus groups
- ❖ Hosting on-farm research sites





Supporting Implementation





DEMONSTRATING PROGRESS

Reporting Element 2 – Outreach and communication activities JULY - DEC 2018				
Please describe the following items related to resources available and/or needed in Organization/Agency Supported Outreach Activities during the reporting period for the Nutrient Loss Reduction Strategy and/or practices detailed in the science assessment.				
Name:	Attendance:	Topics Covered:	Partnerships:	Response/ Feedback:
Field Days: Includes learning activities sponsored at demonstration farms, water treatment plants and other locations.				
4840 Field Day: Christian County Farm Bureau / FS - 7/12/2018	50	Nutrient management trials	Illinois Farm Bureau, GROWMARK	Showcase of local farmer/ retailer partnership
SJU Belleville Research Station Field Day - 7/12/2018	222	NIRS, farmer implementation	Southern Illinois University	Great relationship building opportunity between the Farm Bureau and SJU
Stark County Farm Bureau and Blackhawk East Community College Nutrient Stewardship Grant Field Day - 7/20/2018	45	Woodchip bioreactors	Stark County Farm Bureau, Blackhawk Community College, SWCD, USDA-NRCS	Great learning opportunity for students – bring laboratory on campus
Livingston County Farm Bureau Field Day at John Wilkens Farm - 7/26/2018	60	Cover crop termination, strip till, soybean cyst nematode	American Farmland Trust, Vermilion Headwaters Watershed Group, Soil Health Partnership	Great data from a local farmer on how management impacts cover crops
Clinton County Farm Bureau Nutrient Stewardship Grant Project Field Day - 7/28/2018	100	Cover crops, manure	Clinton County Farm Bureau, Gateway FS, Terry Wychokala, SWCD, U of I Extension, Heartland Conservancy, Lower Kaskaskia Stakeholders, IL Milk Producers, IL Pork Producers, IL Beef Assn, Maschoff Pork, Kaskaskia Comm. College	Continued success for multiple years looking at integrating livestock and cover crops, soil health, and manure management
Knox County Farm Bureau Saturated Buffer Field Day - 8/30/2018	35	Saturated buffers, research, cost-share	Knox County Farm Bureau, Knox County SWCD, Springfield Plastics, University of Illinois-ACES, USDA-NRCS	Revelation of sampling data showing impressive nitrate removal rates for the practice



Important for:

- Tracking progress
- Telling farmer stories to a variety of audiences and agencies
- Showing diversity of needs and practices across state





CONCLUSIONS

- We appreciate the opportunity to participate and innovate
- Benefits of voluntary are robust engagement and commitment
- Documentation of efforts
- Direct farmer communication
- Meaningful progress



Kay Shipman

State sustainability award honors impact by IFB, farmers

A recent meeting between a group of Illinois farmers and EPA officials made a lasting impression, showing that ag's voice is part of the conversation.



Illinois Farm Bureau has collaborated on hundreds of events to improve farmers' awareness of environmental sustainability practices. (Illinois Farm Bureau file photo)
Published on: Oct 25, 2018

Farmers' work and Illinois Farm Bureau's efforts to improve water quality won statewide recognition this week, but Farm Bureau leaders' personal stories added frosting to a sweet day.

"We are having an impact and our voices are being heard," said IFB Vice President Brian

Duncan, who accepted the award from the Illinois Sustainable Technology Center (ISTC). ISTC is part of the state scientific surveys and the Prairie Research Institute.

IFB joined 27 winners that include suburban cities, universities and businesses. Following a rigorous review and selection process, the Sustainability Award is presented to public and private entities for their outstanding and innovative sustainability practices.





THANK YOU!

Lauren Lurkins

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INLRS: Practices to Focus on Moving Forward

Dan Schaefer, Director of Nutrient Stewardship IFCA



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

On-farm Nitrogen Rate Trials 2017–18



Legend

- North climate and soil region
- Central climate and soil region
- South climate and soil region
- ★ On-farm nitrogen rate trial location

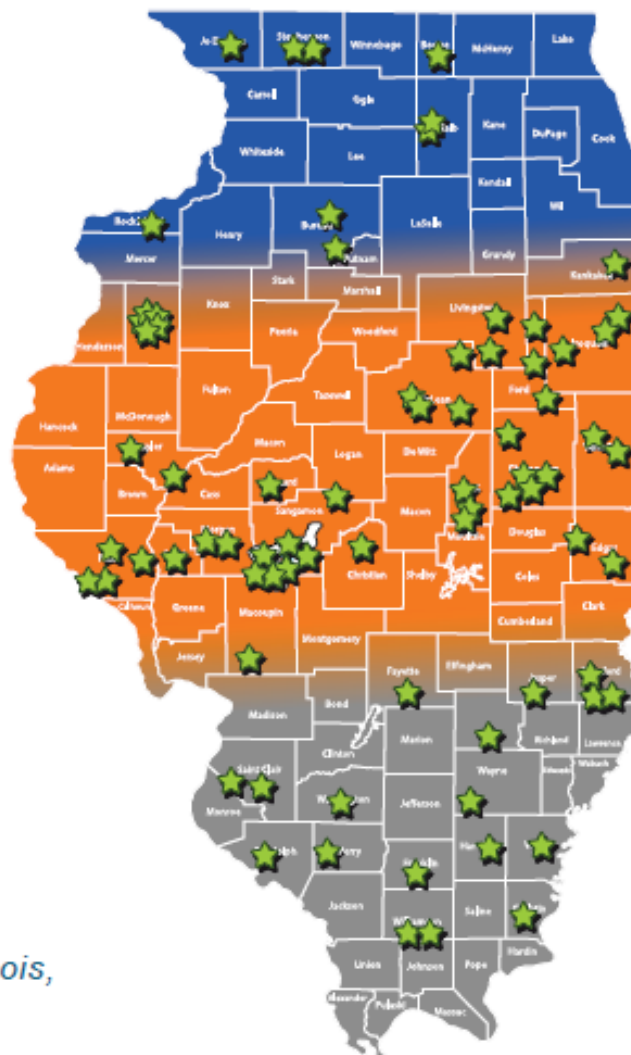


Figure 4.36. On-farm nitrogen rate trials in all regions of Illinois, 2017–18





MRTN N rates from the N rate calculator, fall 2019

Based on N price = \$0.30/lb N (NH_3 at \$500/ton) and corn price = \$3.75/bushel. Number in parentheses is number of trials used to produce the MRTN number

IL region	Soy-corn	Corn-corn
North	178 (68)	216 (72)
Central	188 (279)	208 (151)
Lake Springfield Watershed	183 (33)	209 (11)
South	200 (116)	208 (34)



Calculator website: <http://cnrc.agron.iastate.edu/>



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NUTRIENT LOSS
REDUCTION STRATEGY

NITROGEN RATE FACT SHEET

4R Nitrogen Rate Considerations

- The Nitrogen (N) input is among the highest variable cost inputs for the corn producer & ranks high in importance for corn production.
- Growers must continue their efforts to reduce the quantity of N moving off target and consider the 4R's related to N, where rate is key.
- As corn yields climb to record historic levels, application rate guidelines from the past may over estimate N needs of the crop, eg. The old "Mass Balance" approach to past N Rate - (Exp: 275bu./ac. predicted corn yield x 1.2#N/bu. = 330 lbs. /ac. actual N - SB credits).
- The Maximum Return to Nitrogen (MRTN) Calculator is a true data driven tool, (utilizing recent, local N-rate plots), which offers the producer a basis for an N rate which considers both yield and crop economics, (N cost relationship to corn grain selling price).
- N-Watch and The Climate Corp. N management tool can serve as "N verification" tools as growers are attempting to maximize NUE, yield and profitability.

Maximum Return to Nitrogen (MRTN)

Corn yields continue to climb to record historic levels and corn hybrids seem to have better use efficiency of N, growers need every dollar to give a maximum return, and concerns of excess N in surface and ground water can lead to efforts to regulate N rates. The factors listed above should be enough for us to consider a modified approach to making N recommendations. Find the MRTN Calculator (<http://cnrc.agron.iastate.edu/>), and look at those input decision factors that pertain to your area. See the example in the chart to the right that considers a multiple price scenario.

Highlights of the MRTN rate calculator.

- MRTN Rate (lb N/acre), (Green Arrow), is the N rate at the MRTN. For the data set, rotation, and price ratio(s), the MRTN rate would be the suggested rate to apply for maximizing net return to N application.
- Profitable N Rate Range (lb N/acre), is the N rate values at a \$1/acre net return range (LOW and HIGH) around the MRTN. An N rate within this range around the MRTN would provide similar expected economic return and could be considered the profitable N rate range. (\$415/T NH₃ in a C-SB rotation has a profitable rate range from 168—203 pounds per acre giving the grower some rate flexibility)
- MRTN rate calculator is data driven from local N rate field trials and as you can see in the chart to the upper-right, there are 152 current corn on corn field trials and 245 corn on soybean field trials in the data set for Central Illinois. The data set is updated annually where new trials are added and older trials are taken out of the system.
- Do I still give credit to soybean N left in the soil? No the data set above takes into consideration the N rate in the corn—soybean rotation. Soybeans are a net user of N and they do not leave N in the soil as an N credit, as some believe. The old Mass Balance approach to N recs took an "N - credit" for the previous soybean crop, whereas we should consider corn stover in a corn on corn rotation as a "penalty" to the N rate, because of the higher C:N ratio.
- How can I know that MRTN - N rates are adequate for the crop... Verification tools might include N-Watch soil sampling, Climate's - N management tool, or the combination of the two in order to form a more accurate assessment of N status in the soil. PRLFS can implement more N rate field studies in our "footprint" to increase confidence levels.

The chart below is calculated with anhydrous ammonia at price points that range from \$415-\$440/ton and \$3.50 selling price for corn. Calculations for both a corn on corn and a corn soy rotation are included in the chart. Lake Springfield Watershed has a separate calculator

	NH ₃ Cost per Ton			
	\$415	\$425	\$435	\$440
State: Illinois Region: Central Number of sites: 152				
Corn on Corn MRTN				
N Price (\$/lb N):	\$0.25	\$0.26	\$0.27	\$0.27
Corn Price (\$/bu):	\$3.50	\$3.50	\$3.50	\$3.50
Price Ratio:	0.07	0.07	0.08	0.08
MRTN Rate (lb N/acre):	215	214	212	212
Profitable N Rate Range (lb N/acre):	197 - 234	196 - 232	195 - 231	195 - 231
Net Return to N at MRTN Rate (\$/acre):	\$351.12	\$349.97	\$346.84	\$346.84
Percent of Maximum Yield at MRTN Rate:	99%	99%	99%	99%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	262	261	259	259
Anhydrous Ammonia (82% N) Cost at MRTN Rate (\$/acre):	\$53.75	\$55.64	\$57.24	\$57.24
State: Illinois Region: Central Number of sites: 245				
Corn on Soybean MRTN				
N Price (\$/lb N):	\$0.25	\$0.26	\$0.27	\$0.27
Corn Price (\$/bu):	\$3.50	\$3.50	\$3.50	\$3.50
Price Ratio:	0.07	0.07	0.08	0.08
MRTN Rate (lb N/acre):	184	183	182	182
Profitable N Rate Range (lb N/acre):	168 - 203	167 - 201	166 - 199	166 - 199
Net Return to N at MRTN Rate (\$/acre):	\$280.99	\$279.15	\$277.33	\$277.33
Percent of Maximum Yield at MRTN Rate:	99%	99%	99%	99%
Anhydrous Ammonia (82% N) at MRTN Rate (lb product/acre):	224	223	222	222
Anhydrous Ammonia (82% N) Cost at MRTN Rate (\$/acre):	\$46.00	\$47.59	\$49.14	\$49.14







- Large portion of agricultural land in Illinois has 0 to 2% slope
- Large precipitation events can cause substantial runoff even from relatively flat fields
- Lack of research on the effect of conservation tillage practices, P rate, and placement method on P runoff.



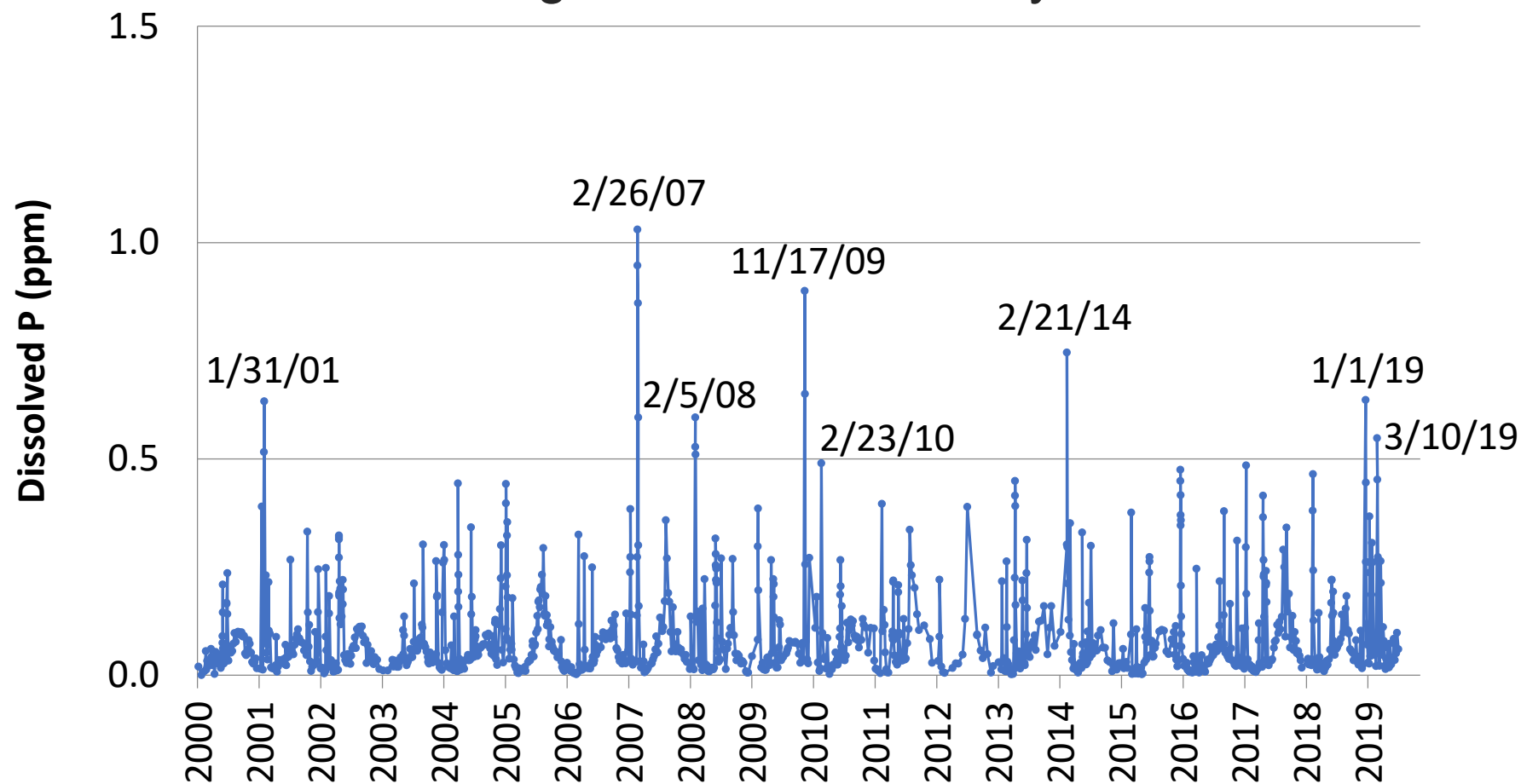






Dissolved P Concentration (Camargo IL)

Average P Loss = <1 lb/A/yr



*6 of 8 flow events with greatest DRP were snowmelt events; 11/17/09 and 1/1/19 were rain events on unfrozen soils

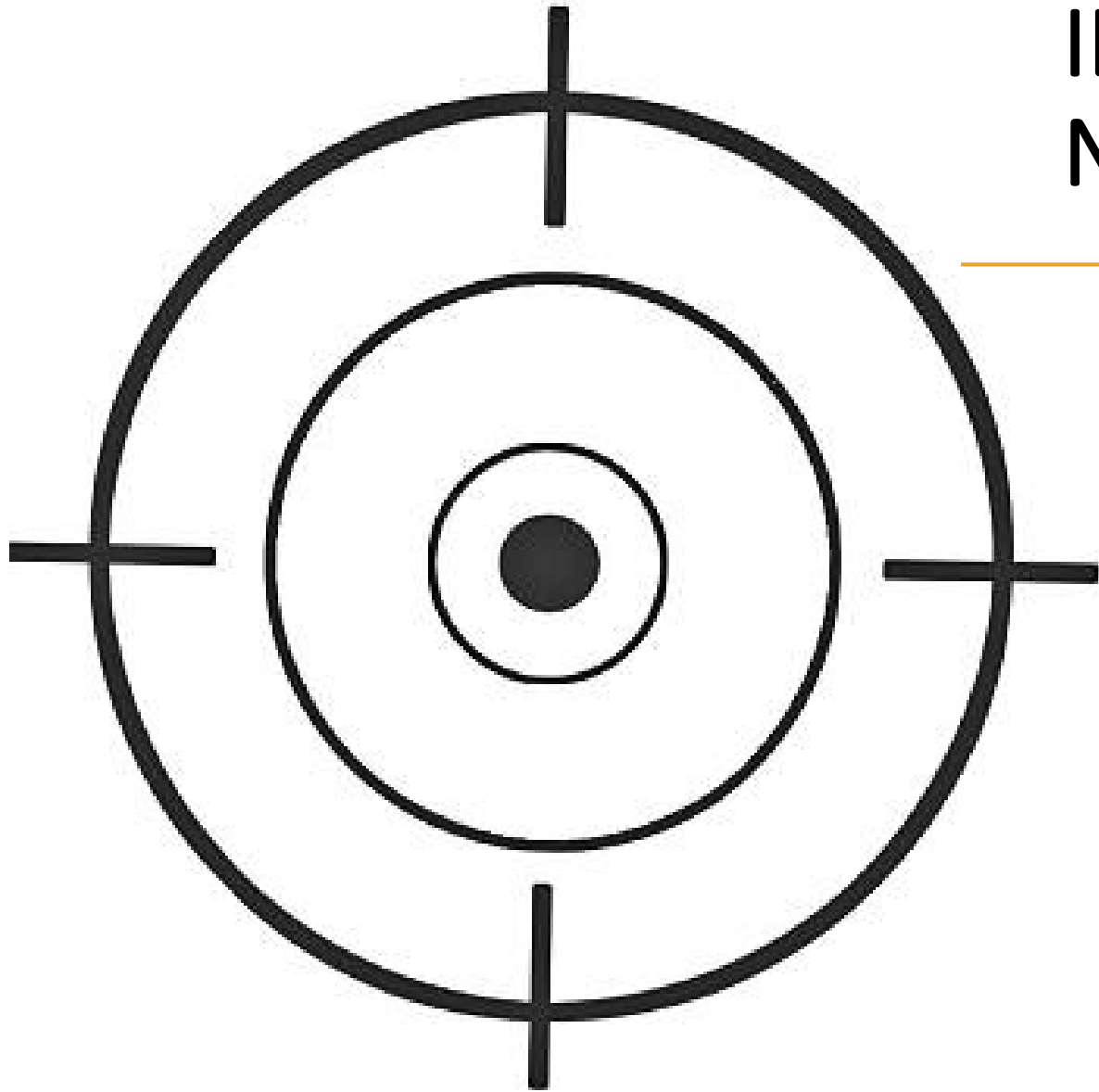




IL Corn NLRS Update

L.F. Gentry, Ph.D.

Director, Water Quality Research, Illinois Corn Growers Association



IL Corn Targeting Non-Point N & P Losses

Focus on: farmers

partnerships

financials

in-field practices

cover crops

Moving the needle on nutrient loss reduction



IL Corn's Water Quality Initiatives

- First Time Cover Crop program (with Becks Hybrids)
 - Every year since 2015
 - 80-100 farmers every year
- Cover Crop Coupon program
 - 3rd year
 - \$150-200 off cover crop seed costs
- Water testing program
 - Partnering with county SWCD offices
 - Anonymous water testing
- Precision Conservation Management

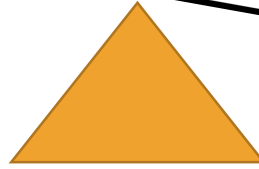
Precision Conservation Management

Running the numbers



- **330** farmers
- **350k** acres
- **2** states - Illinois, Kentucky
- **\$5.3M** NRCS RCPP award

Partnerships are Pivotal



Local Efforts

- SWCDs
- IL Sustainable Ag Partnership
- S.T.A.R.
- Local Ag Retailers & Independent Consultants

NRCS

Corporate Supply Chain

- PepsiCo, Mars, Field to Market

Conservation Groups

- The Nature Conservancy, American Farmland Trust, Environmental Defense Fund

Foundations and Universities

- Zea Mays, Walton Family Foundation, University of Illinois

PCM PARTNERS



United States Department of Agriculture
Natural Resources Conservation Service



Heartland Science and Technology Group

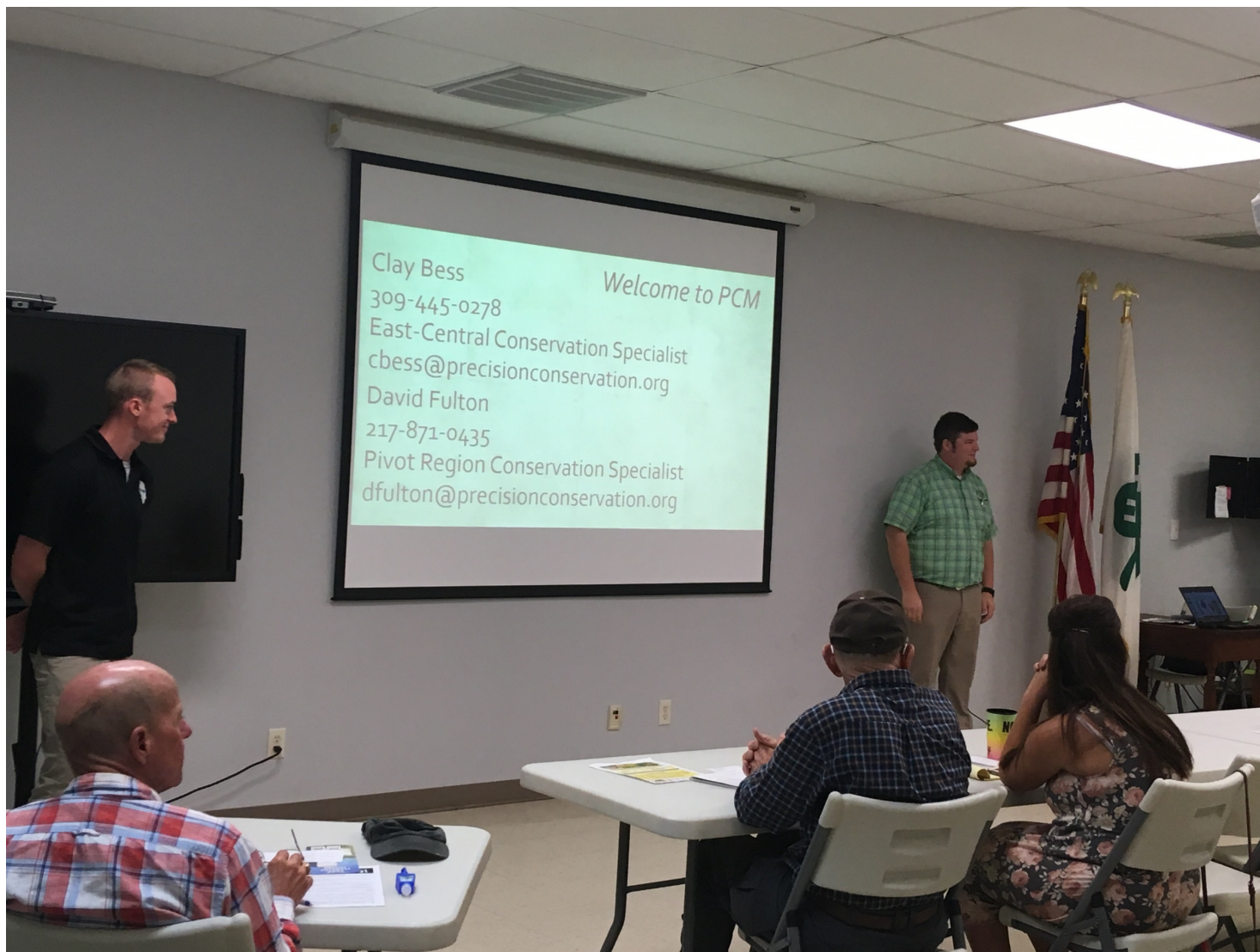


CHECK US OUT ONLINE: WWW.PRECISIONCONSERVATION.ORG



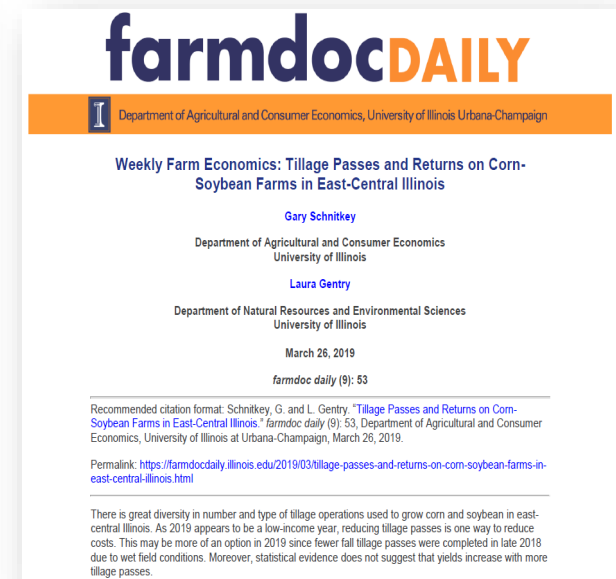
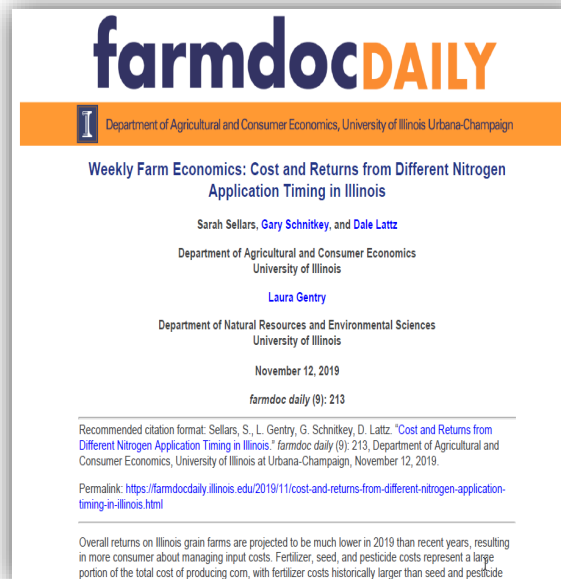
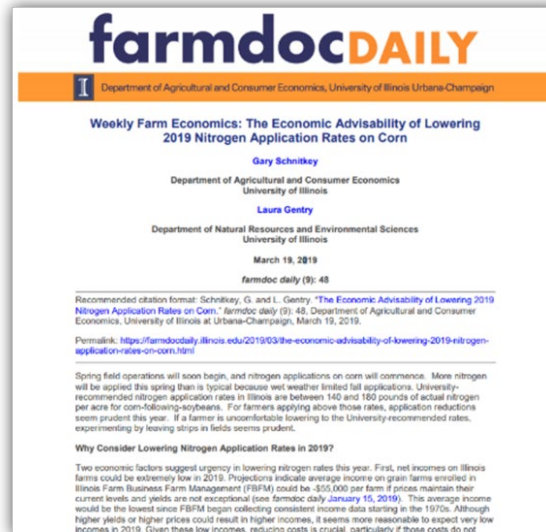
Scaling Up & Staffing Up

- New IL Corn staff hires
 - **Travis Deppe** – PCM Director
 - **Debbie Malloch** – PCM Administrative Manager
 - **Megan Dwyer** – Nutrient Loss Reduction Manager
- Otter Lake RCPP
- 5 Year Transition program
- Rural Green Partnership



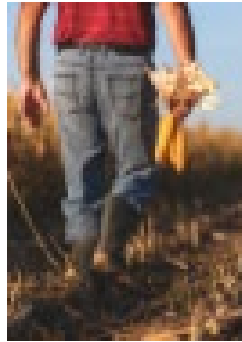
What are we doing to facilitate practice change in Illinois?

What are we doing to facilitate practice change across the Midwest?





United States Department of Agriculture
Natural Resources Conservation Service



Recognition & Success

- NRCS recognized PCM's RCPP as a model of innovation
- U.S. Sen. Dick Durbin (5/19/19, Pantagraph): ***"The Illinois Corn Growers are among just a handful of commodity groups in the Midwest leading the way toward solutions for better soil, water quality and wildlife habitat, all of which help to address climate change."***
- Nov 2019: **\$258k** National Fish and Wildlife Foundation Conservation Partners Program grant
- Nov 2019: **\$2.5M** Conservation Innovation Grant (with NCGA)

Thank you!

Questions?

S.T.A.R. Program Update

Emily Bruner, PhD

American Farmland Trust

Chair, S.T.A.R. Science Advisory Committee



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY



Saving Tomorrow's Agriculture Resources

WHAT IS S.T.A.R.?

- ✓ A FREE tool
- ✓ Evaluate nutrient and soil loss management practices on individual fields
- ✓ Promote “conservation management practices”



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REDUCTION STRATEGY



Saving Tomorrow's Agriculture Resources

HOW DOES S.T.A.R. WORK?

- 1.** Field Form completed for individual fields for a given crop year.
- 2.** Points assigned for each practice.
- 3.** Summary of points convert to a S.T.A.R. Rating of 1 to 5 stars.



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REDUCTION STRATEGY

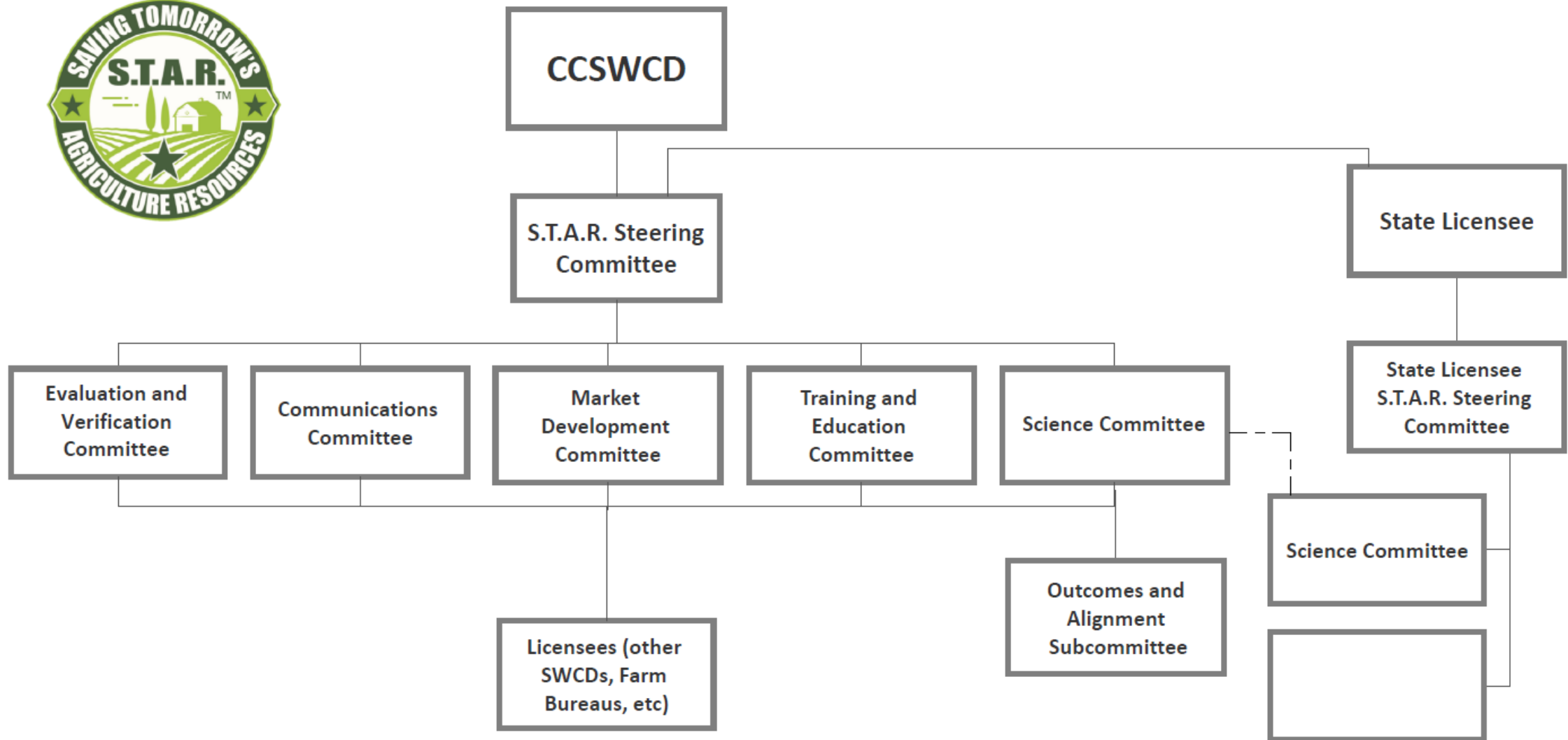
POTENTIAL S.T.A.R. BENEFITS

- Decrease nutrient & soil loss
- Positive image of agriculture
- Inspire other farmers and landowners
- Promotes producers for new farmland leases
- Assist with local conservation cost share
- Future market incentives for sustainably grown crops
- Support of water quality defense issues
- Increased net income

S.T.A.R. is a means to **EVALUATE**, **VERIFY**, and **RECOGNIZE**.



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NUTRIENT LOSS
REDUCTION STRATEGY



IL S.T.A.R. SUPPORTERS

- Illinois Department of Agriculture
- Illinois Environmental Protection Agency
- Association of Illinois Soil and Water Conservation Districts
- Soil and Water Conservation Districts
- The Nature Conservancy
- American Farmland Trust
- Illinois Sustainable Ag Partnership
- Soil Health Partnership
- Illinois Nutrient Loss Reduction Strategy Committee
- Illinois Fertilizer and Chemical Association
- ADM
- Kellogg's/Bunge
- Illinois Corn Growers/Precision Conservation Management
- Interested county Farm Bureaus
- Various watershed project groups
- Illinois Certified Crop Advisors
- Farm Credit Illinois



IL S.T.A.R. Program Results 2017-2018

	2017	2018
Participants	78	181
Fields	104	439
Acres	7,500	27,505
Licensed Counties	2	34

S.T.A.R. was officially endorsed by the Association of IL Soil and Water Conservation Districts in 2018



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NUTRIENT LOSS
REDUCTION STRATEGY

Licensees



IL S.T.A.R. Program 2019

- ✓ 45 counties now offer S.T.A.R. via SWCDs and Farm Bureaus
- ✓ S.T.A.R. training and information provided to over 800 attendees*

*Not including trainings provided by partner organizations



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REDUCTION STRATEGY

What's New in 2019

- ✓ Revised Field Form to better align with NLRS goals
- ✓ Third-Party Program Evaluation
- ✓ Updated Business Plan
- ✓ Progressive Web App Development
- ✓ Annual Outcomes Report



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REDUCTION STRATEGY

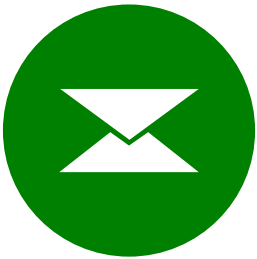
What's New in 2019

- ✓ **Regional and State Level**
 - ✓ Multiple RCPPs in development
 - ✓ IDOA official endorsement
- ✓ **Midwest**
 - ✓ MOU with Iowa Association of Soil Conservation District Commissioners
 - ✓ Several IN Counties participating
- ✓ **National**
 - ✓ NACD interested in making Program available nationally



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REDUCTION STRATEGY

★★★★★
CONNECT:



Star@ccswcd.com



@STARfreetool



@STARfreetool



StarFreeTool.com

★★★★★ **THANK YOU** ★★★★★

Practice Category	Points
Cover Crops (12)	
Winter Hardy (additional 2 pts if terminated after spring planting)	7 for first species, 3 for
Winter Kill	2 for first species, 1 for
Soil Sampling (4)	
Sampled every four years or less	2
Spring/Summer Sample	1
GPS sampled (grid or zone)	1
Nutrient Management, Fall - Feb (5)	
No Nitrogen applied in this time frame*	4
No more than 50% of the total N applied as NH_3 (82-0-0) with an inhibitor^	1
MAP or DAP applied before Dec 1st	1
Manure/Biosolid injected or applied and incorporated after October 20th	1
Manure applied, not incorporated	-1
Nutrient Management, March 1st - Summer (6)	
No Nitrogen applied in this time frame and no prior fall application*	4
Nitrogen application(s) during this time frame amounted to 50% to 74% of total N	1
Nitrogen application(s) during this time frame amounted to at least 75% of total N	2
A side-dress application (after planting) was at least 25% of the total N	2
Manure/Biosolid injected or applied and incorporated	2



Additional Nutrient Activities (14)	
Total N applied = 181 to 200 lb/ac corn after soy, 201 to 220 lb/ac corn after corn	2
Total N applied = 180 lb/ac or less corn after soy, 200 lb/ac or less corn after corn	4
50% of P applied was banded subsurface	4
Triple Super as P source	2
P and K applied based on removal rates or soil sampling	2
VRT application (any N,P,K application)	2
Any N or P source broadcast on frozen ground	-6
Crop Rotation (12)	
Any rotation that does NOT have more than 2 years in a row of same cash crop	2
Any rotation with 1 year or more of small grain in last 5 years	5
Any rotation with 1 year or more of a perennial forage in the last 5 years	5
Tillage Practices (10)	
Fall: No tillage or low disturbance fertilizer bar	5
Fall: Strip till, non-HEL field and/or shank type fertilizer bar, <u>and</u> no other Fall tillage	3
Fall: Any full width tillage operation <u>not</u> exceeding a 3" depth	1
Fall: Any full width tillage operation on soybean stubble	-3
Spring: No tillage or low disturbance fertilizer bar	5
Spring: Strip till, Strip Freshener and/or shank type fertilizer bar ⁺	3
Spring: Any full width operation, limited to a single pass, and <u>no</u> other fall tillage	1
* (MAP, DAP and Feb wheat top dress for fields south of I-70 exempted)	
^AND when the 4" soil temperature was below 50 degrees.	
⁺ Non-HEL Field, and NO other Spring tillage	



Practice Category	Points
Structural / Edge - of - Field	
Saturated buffers	2
Bioreactors	2
Constructed wetland	2
Terraces/Contours/WASCOBs	2
Grass Filter Strip/Riparian Buffer (includes woods/forest)	2
Grass waterway, WASCOB, or Contour/Terrace	2
Pollinator planting (a 1/2 acre minimum)	2
Windbreak	1
Activities	
Conservation Plan that reduces sheet & rill erosion to "T"	1
Nitrogen rate study	1
Attended soil or nutrient management meeting/field day	1
Have a written nutrient mgt. plan and/or farm under CCA advisement	1
Enrolled in Federal, State, or Local Conservation Program	1
Completed S.T.A.R. in 2018 for this field	1

STAR Level	Points
40+ Points	5 STARs
32 - 39 Points	4 STARs
23 - 31 Points	3 STARs
16 - 22 Points	2 STARs
0 - 15 Points	1 STAR





Listed are some practices used in the rating system and the points that may be assigned:*

Use of a winter hardy cover crop, no tillage in fall or spring, rotation that includes small grain or forage

5-7 points

No nitrogen applied in fall or spring, low nitrogen rate, at least 50% of phosphorus applied banded & subsurface

4 points

Strip tillage on non-HEL and/or shank type fertilizer bar if no other tillage

3 points

At least 75% of nitrogen applied in spring, winter kill cover crop, VRT, filter strips, waterways, etc.

2 points

MAP or DAP applied, full-width tillage (shallow), written nutrient plan, or other

1 point

**Some practices reduce the total points! Not all management practices considered are listed above.*



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

S.T.A.R STEERING COMMITTEE

- Megan Baskerville, Upper Sangamon River Watershed Manager Illinois | The Nature Conservancy
- Megan Dwyer, CCA, Nutrient Loss Reduction Manager | Illinois Corn Growers Association
- Elliott Lagacy, Regional Representative | Bureau of Land and Water Resources, Illinois Department of Ag
- Dr. Carol Hays, President | The Strategic Collaboration Group, Inc.
- Ivan Dozier, Illinois State Conservationist | Natural Resources Conservation Service
- Steve Steirwalt, President | Association of Illinois Soil and Water Conservation Districts
- Joe Rothermel, Chair and Farmer | Champaign County Soil and Water Conservation District
- Erin Bush, Resource Conservationist | Champaign County Soil and Water Conservation District
- Grant Hammer | Executive Director | Association of Illinois Soil and Water Conservation Districts
- Mike Wilson, Incoming Board Chair | Illinois Certified Crop Advisor Program
- Kris Reynolds, Midwest Deputy Director | American Farmland Trust
- Dr. Emily Bruner, Midwest Science Director | American Farmland Trust



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

S.T.A.R SCIENCE ADVISORY COMMITTEE

- Dan Schaefer, Director of Nutrient Stewardship | Illinois Fertilizer and Chemical Association
- Lowell Gentry, Principal Research Specialist in Agriculture | University of Illinois Natural Resources and Sciences
- Doug Gucker, Extension Educator, Local Food Systems and Small Farms | University of Illinois Extension
- Dr. Emily Bruner, Midwest Science Director | American Farmland Trust
- Eric Miller | Piatt County farmer and SWCD Board Member
- Dr. Emerson Nafziger, Professor Emeritus | College of ACES, University of Illinois
- Brett Roberts, State Conservation Agronomist | Illinois Natural Resources Conservation Service
- Erin Bush, Resource Conservationist | Champaign County Soil and Water Conservation District
- Joe Rothermel, Chair and Farmer | Champaign County Soil and Water Conservation District



Point Source Progress Report

Rick Manner

Illinois Association of Wastewater Agencies
(Urbana & Champaign Sanitary District)



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Point Source Progress Report

- **Originally about half of P coming from Point Sources**
- **Three existing modes of regulation existing**
 - 1.0 mg/L P monthly limit, upstream of reservoirs
 - TMDL's – primarily where existing impairment seen
 - 1.0 mg/L P monthly limit, "Interim P Rule" for all expanding plants
- **Recently all Major NPDES Permits include:**
 - Monitoring
 - Evaluation of limits of 1.0, 0.5, and 0.1 mg/L
 - Optimization and Minimization planning
- **Expecting that would be generating great progress**

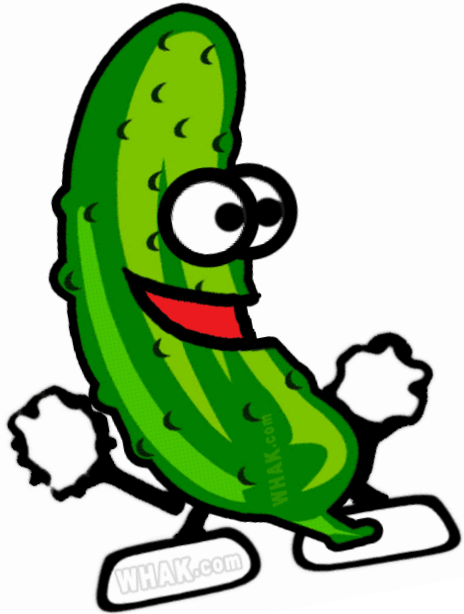




4.3



MILLION POUNDS



!!!!!!

24% in 7 yrs.



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

4.3 Million Pounds of Progress

Facility Name	NPDES Permit	2011 TP Load (lb/yr)	2018 TP Load (lb/yr)	Reduction (lb/yr)
MWRDGC-Stickney	IL0028053	2,344,030	707,230	1,636,800
MWRDGC-Kirie	IL0047741	141,985	40,012	101,973
MWRDGC-Calumet	IL0028061	2,058,425	1,990,902	67,523
Sangamon County Water Reclamation District-Spring Creek	IL0021989	113,296	49,419	63,877
North Shore Sanitary District-Gurnee	IL0035092	116,070	52,700	63,370
Village of Fox Lake	IL0020958	76,657	17,808	58,849
City of Belleville	IL0021873	67,701	11,040	56,661
DuPage County Public Works	IL0065188	73,625	17,683	55,942
Village of Plainfield	IL0074373	63,469	7,918	55,551
Greater Peoria Sanitary and Sewage District	IL0021288	96,827	42,477	54,350



4.3 Million Pounds of Progress

**In 7 Years,
Illinois Has Accomplished
the Largest Reduction
in Gulf Phosphorous Loadings
Ever Seen**



4.3 Million Pounds of Progress

If 100% of Missouri
Installed Enhanced P Removal
Across the Entire State,



4.3 Million Pounds of Progress

If 100% of Missouri
Installed Enhanced P Removal
Across the Entire State,

**Illinois' Improvement
Is Bigger!**



4.3 Million Pounds of Progress

If 100% of Indiana
Does Cover Crops,



4.3 Million Pounds of Progress

If 100% of Indiana
Does Cover Crops,
Every Year, Forever



4.3 Million Pounds of Progress

If 100% of Indiana
Does Cover Crops,
Every Year, Forever

**Illinois' Improvement
Is Bigger!**



4.3 Million Pounds of Progress

If 100% of Colorado,
Including Cities and Farms,
Stopped All Discharges to MS River



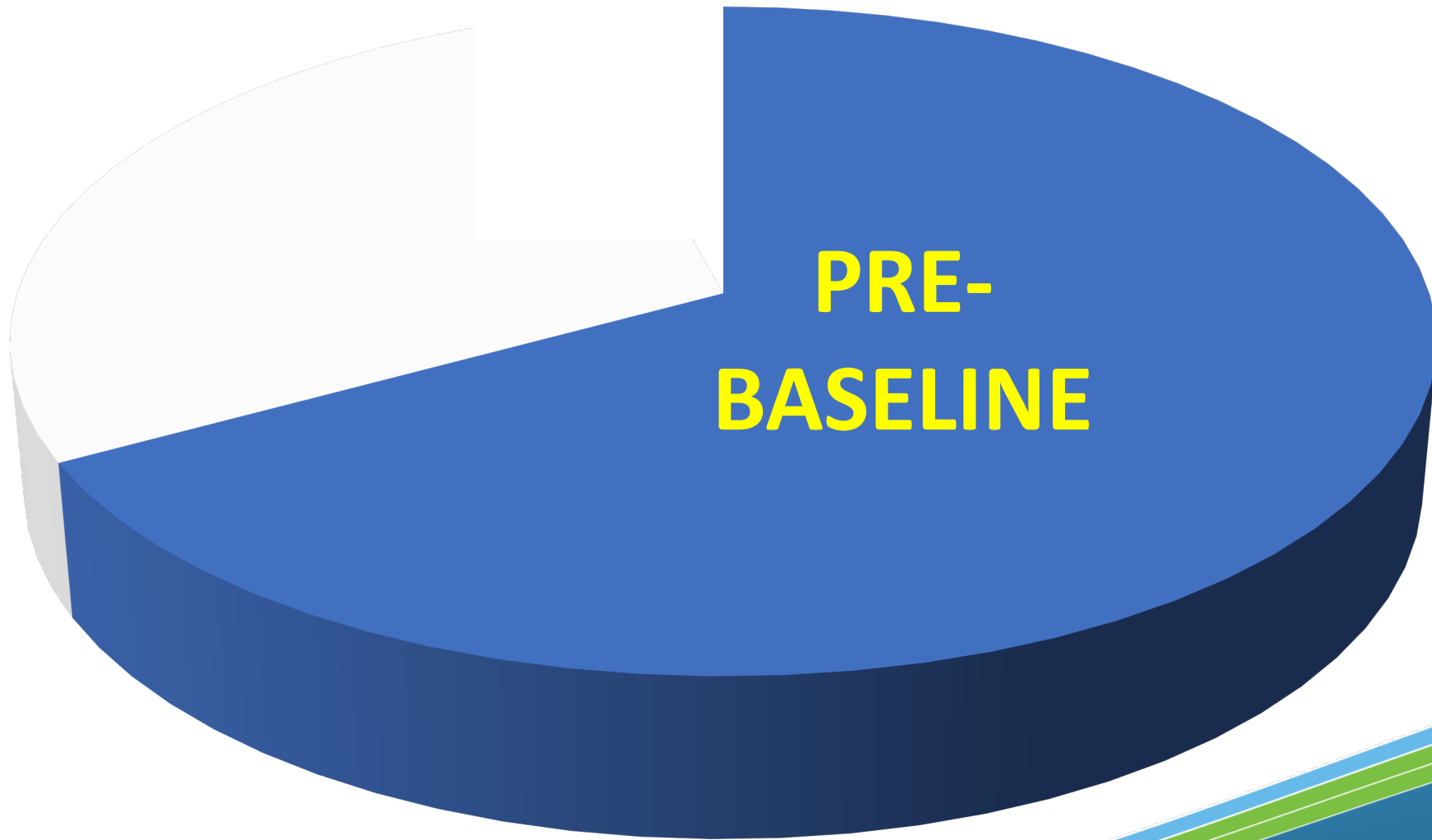
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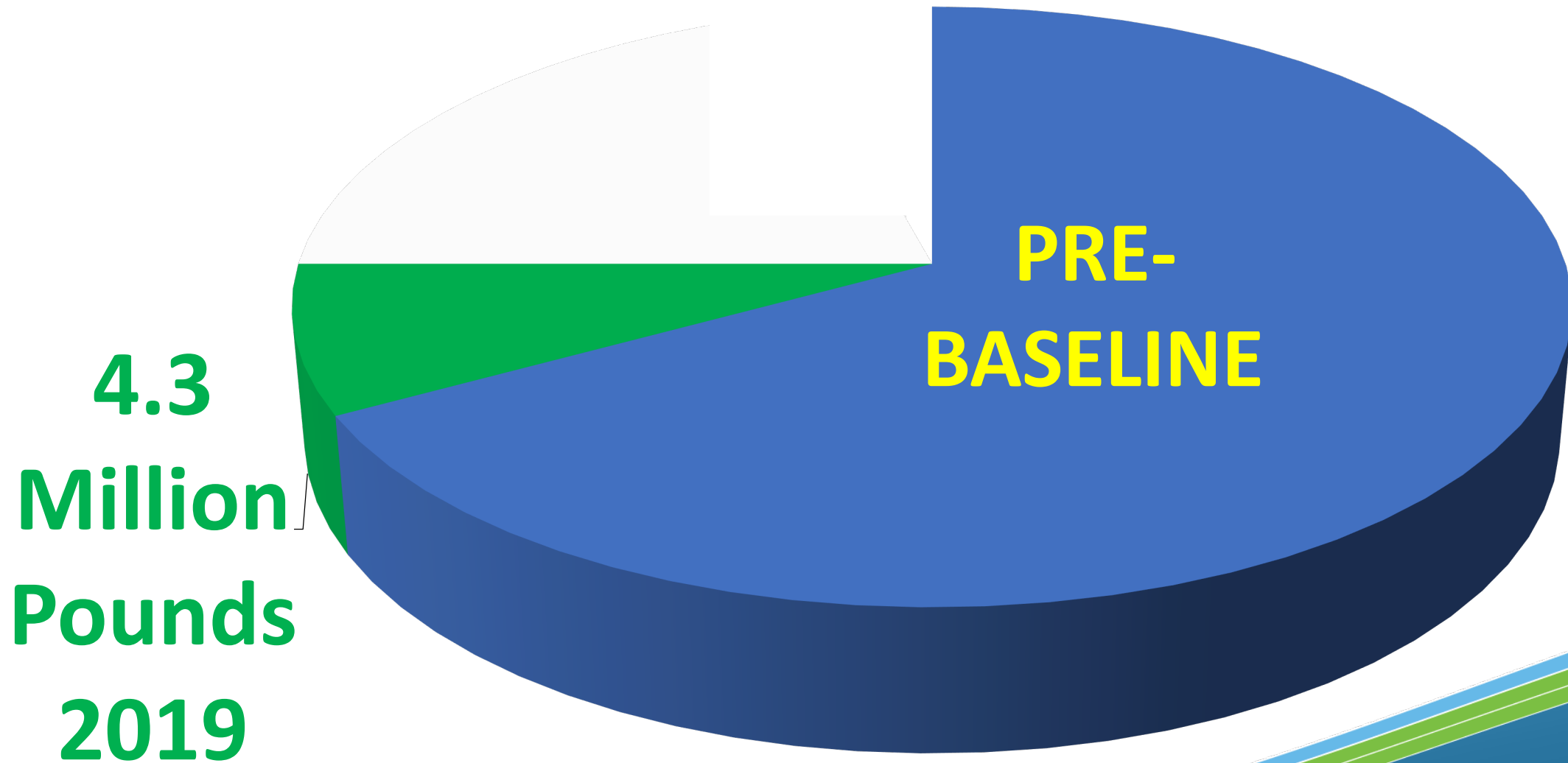
**Illinois' Improvement
Is Bigger!**



P Removed - Past, Present, and Projected



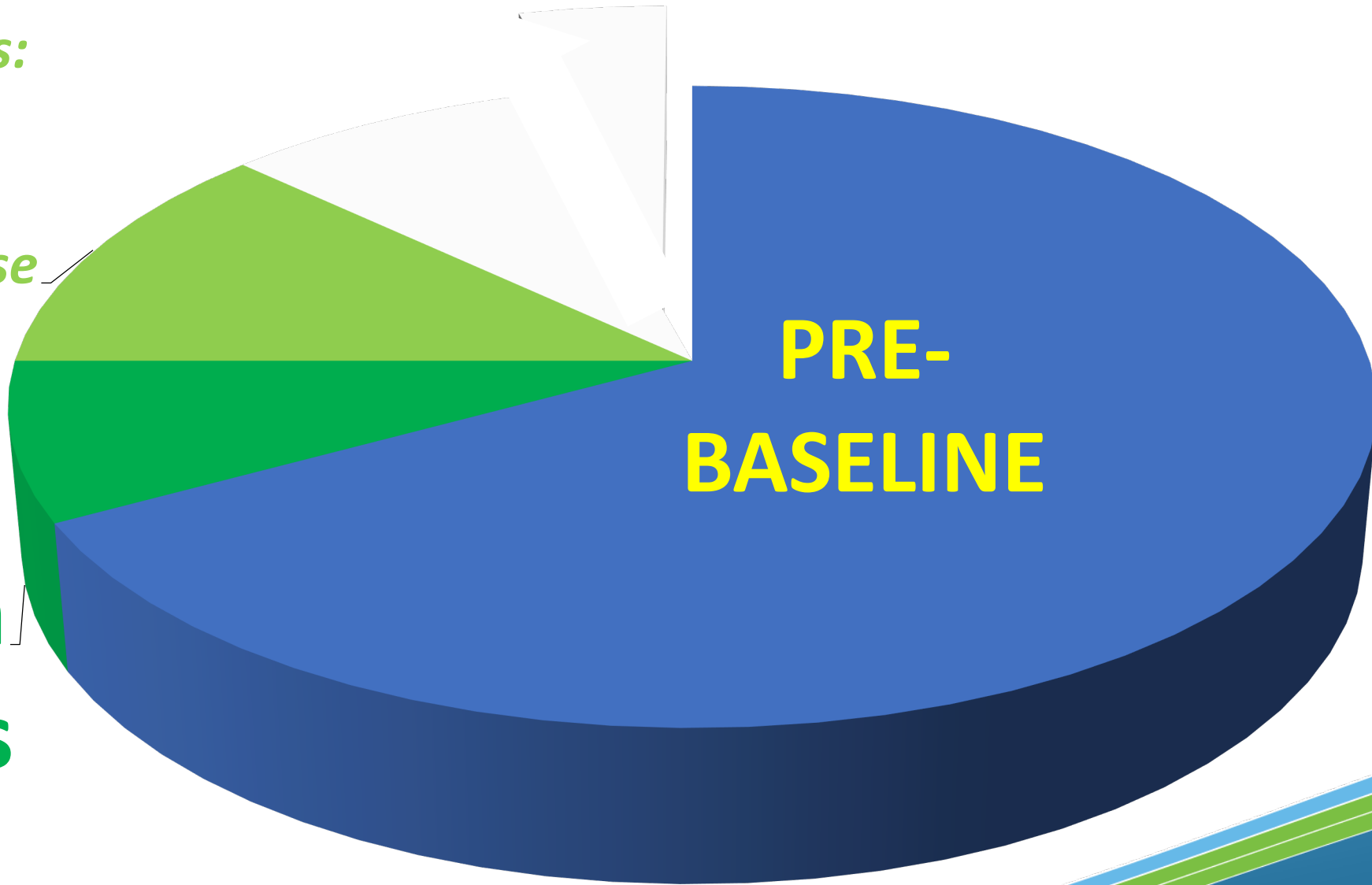
P Removed - Past, Present, and Projected



P Removed - Past, Present, and Projected

*In Progress:
Suburbs,
Nutrient
Compromise*

4.3
Million
Pounds
2019

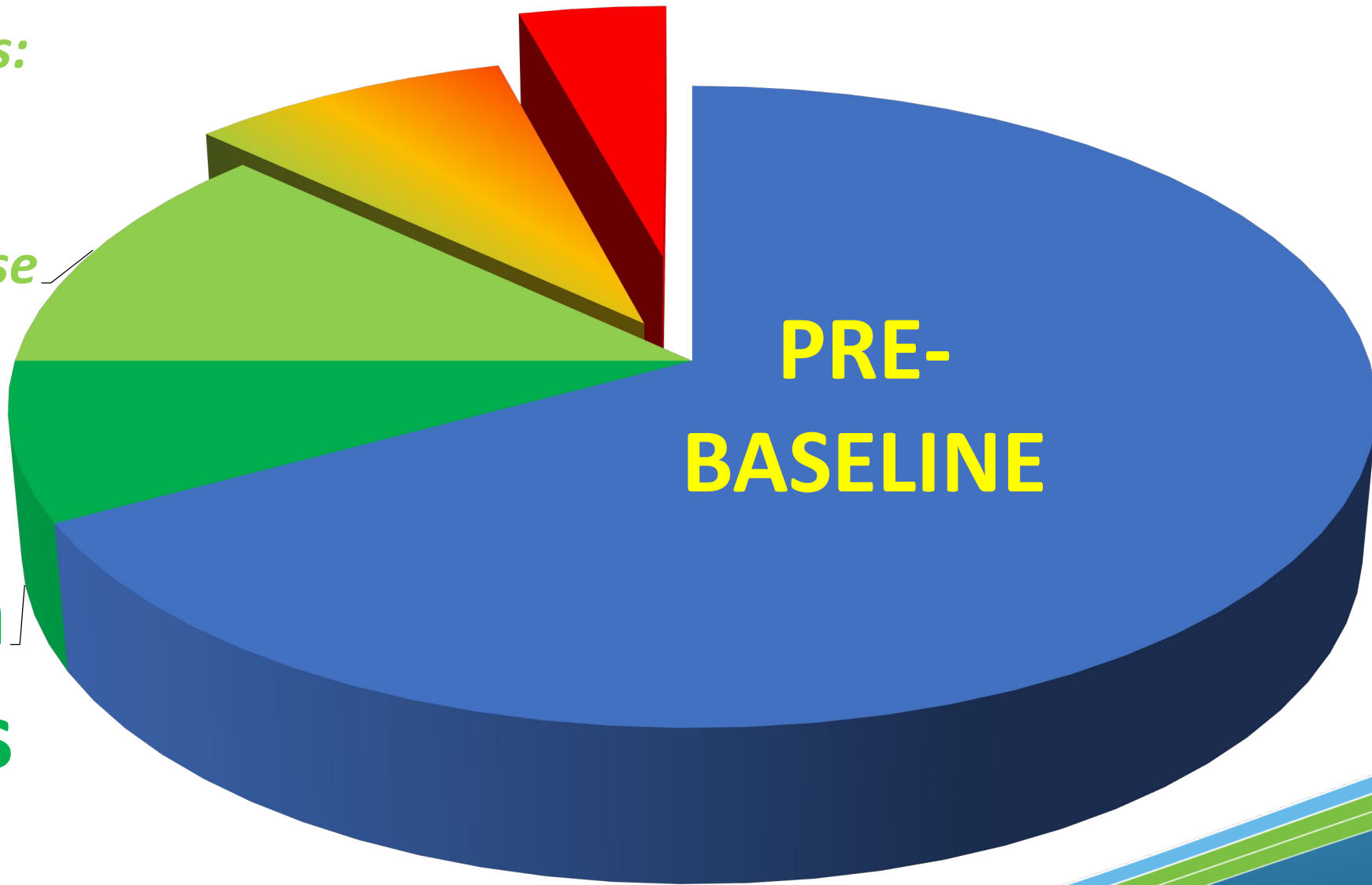


ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

P Removed - Past, Present, and Projected

*In Progress:
Suburbs,
Nutrient
Compromise*

**4.3
Million
Pounds
2019**



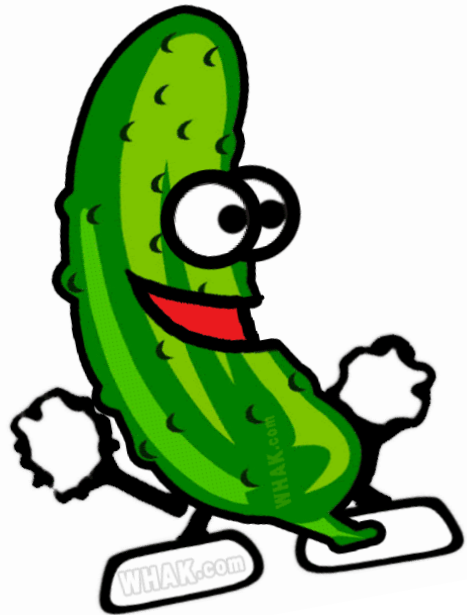
ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY



4.3



MILLION
POUNDS

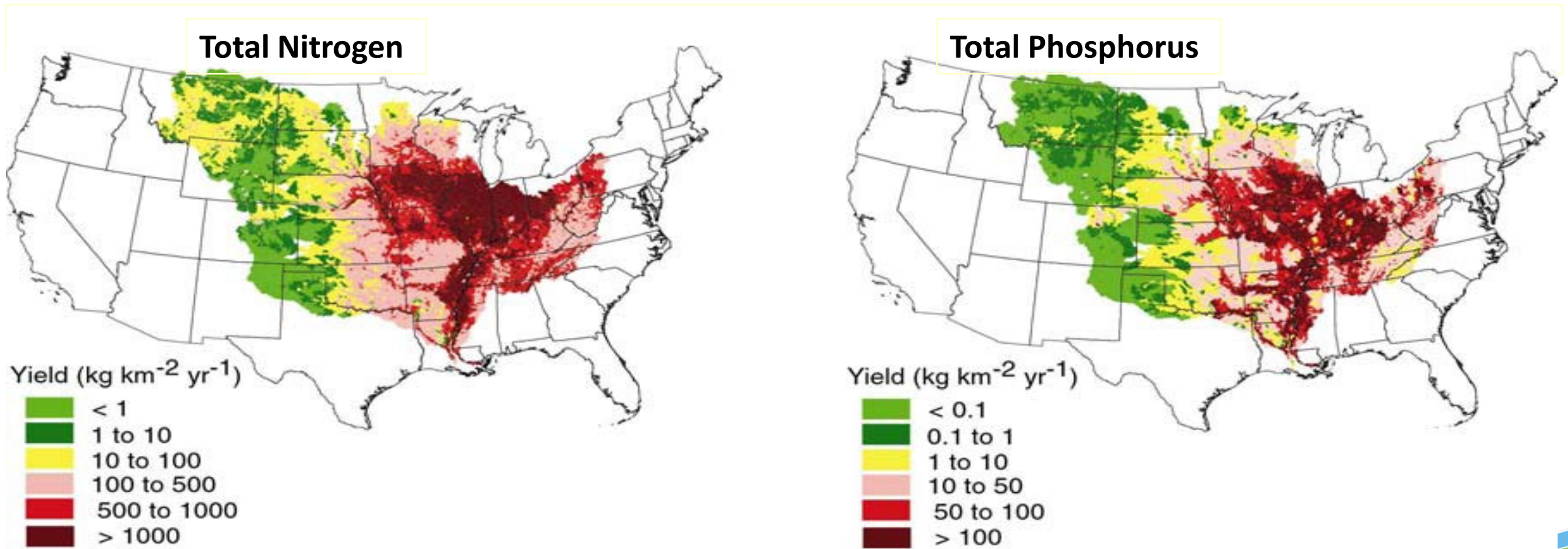


!!!!



IOIS
NUTRIENT LOSS
REDUCTION STRATEGY

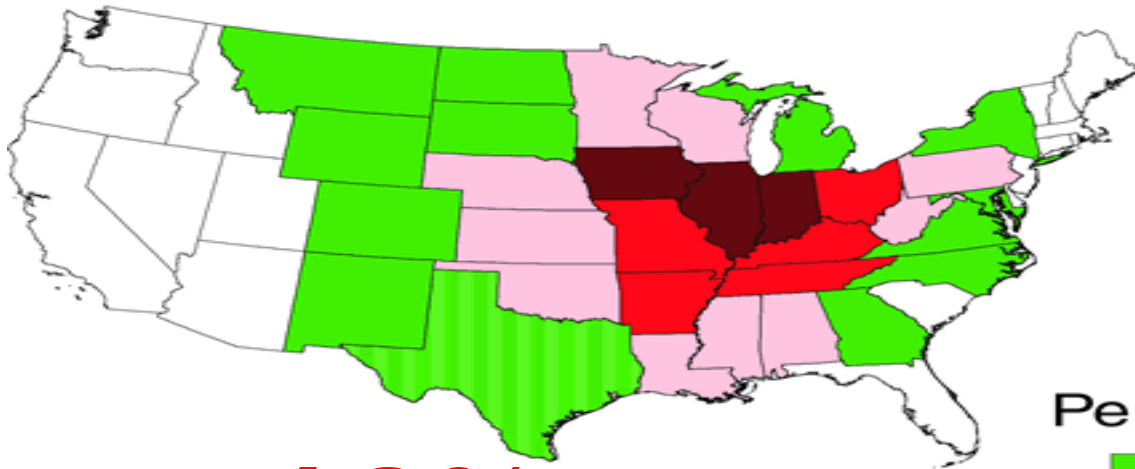
Nutrient Delivery to the Gulf of Mexico



Nutrient Delivery to the Gulf of Mexico

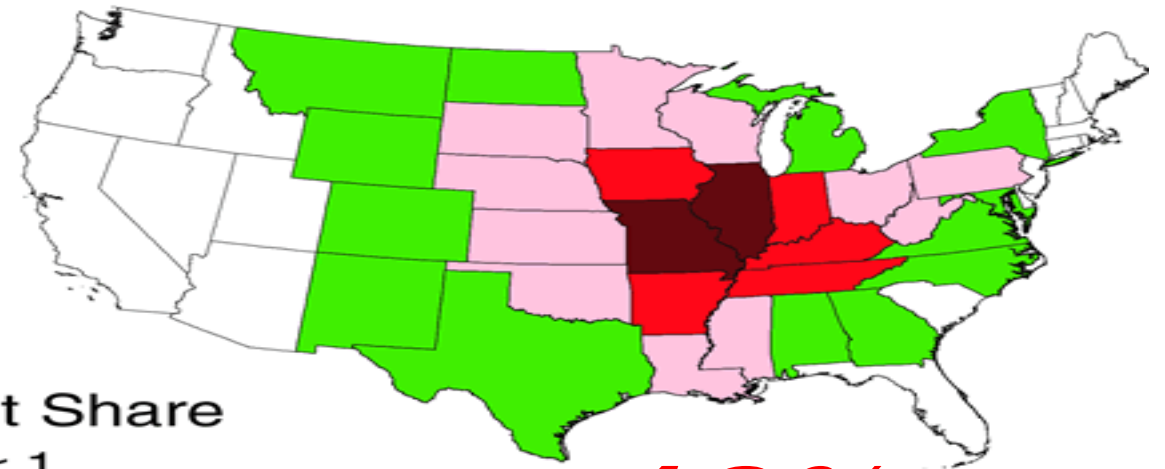
WE'RE #1 !

Nitrogen



16%

Phosphorus



13%

Percent Share



Illinois = **15%** of MS River population

Illinois = **16%** of US corn production

Illinois = **14%** of US bean production

NPDES Permits and Nutrients

Amy Dragovich, P.E.
Manager, Permit Section
Division of Water Pollution Control

December 3, 2019



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Overview

- IAWA and NGO Agreement
- Watershed Groups



IAWA and NGO Agreement

- Agreement between IAWA and NGOs for Major facilities
- To address 'reasonable potential' of violating narrative WQ standards
- Promoting biological nutrient removal
- Proposal drafted and NPDES conditions finalized
 - Nutrient Assessment Reduction Plan – required if facility is located upstream of a waterbody or stream segment that has been determined to have a phosphorus related impairment or determined to be at risk of eutrophication due to phosphorus levels in the waterbody.
 - Effluent limit of 0.5 mg/L Total Phosphorus 12 month rolling geometric mean by January 1, 2030 unless not technologically feasible or economically reasonable or meets one of the special circumstances
- Not an Effluent or Water Quality Standard



Phosphorus Related Impairment

- The downstream waterbody or segment is listed by the Agency as impaired due to dissolved oxygen and/or offensive condition (algae and/or aquatic plant growth) impairments related to excessive phosphorus levels.
- Impairments identified on 303 (d) List



Risk of Eutrophication

- Determination based on available information that plant, algal or cyanobacterial growth is causing or will cause violation of a water quality standard.
 - Data from most recent five years, during May – October
 - pH > 9.0; or
 - Median sestonic chlorophyll a > 26 ug/L; or
 - Daily maximum pH > 8.35 and daily maximum DO saturation > 110% on two or more days



Nutrient Assessment Reduction Plan

- Developed and submitted by December 31, 2023
- Supported by data and sound scientific rationale
- Must cooperate with and work with other stakeholders in the watershed
- Target Levels –
 - Recommendations by the Nutrient Science Advisory Committee – Dec 2018
 - Develop its own watershed-specific target levels
- Identify phosphorus input reductions from point sources and non-point sources
- Schedule for implementation
- Provisions for water quality trading



Timelines and Exceptions

- 0.5 mg/L total Phosphorus 12 month rolling geometric mean by Jan 1, 2030
- Exceptions
 - Not technologically feasible with biological phosphorus removal
 - Would result in substantial and widespread economic or social impact
 - Can **only** be met by chemical addition
 - Not feasible by January 1, 2030, but is feasible within a longer timeframe
 - Not achievable, but effluent limit shall not exceed 0.6 mg/L



Circumstances

- Written plan, preliminary engineering report or facility plan by January 1, 2025 to rebuild or replace the secondary treatment process – December 31, 2035
- Construct/operate BNR process – December 31, 2035
- Chemical addition instead of BPR – December 31, 2025
- NARP determines a lower limit is necessary and attainable
 - The lower limit and timeline in NARP will apply



Non-NARP Conditions

- 0.5 mg/L Total Phosphorus 12 month rolling geometric mean effective January 1, 2030
- Exceptions and Circumstances may apply
- Permit may be reopened if additional information becomes available that NARP would be required
- Permit modification would be public noticed



Fox River Watershed

- NPDES conditions Finalized and Permits issued
- Requirements include:
 - Collect additional data and amend model
 - Amend Fox River Implementation Plan by December 31, 2022
 - Submit optimization plans
 - 0.5 mg/L Total P 12 month rolling geometric mean effluent limit by January 1, 2030
 - Exceptions if not technologically feasible or economically reasonable



Upper Des Plaines River Watershed Workgroup

- NPDES conditions finalized
- Requirements include:
 - Develop an in-depth analysis of all chemical, physical and biological data collected
 - Develop a Nutrient Assessment Reduction Plan
 - Continue water quality monitoring program
 - Submit optimization plan
 - Submit Phosphorus Removal Feasibility Study
 - 1.0 mg/L monthly average limit within 3 years (if not required by existing permit)
 - 0.5 mg/L Total P 12 month rolling geometric mean effluent limit by January 1, 2030
 - Exceptions if not technologically feasible or economically reasonable



Lower Des Plaines Watershed Group

- NPDES conditions Finalized
- Requirements include:
 - Conduct stream monitoring and develop recommendations for future monitoring
 - Submit a Phosphorus Removal Feasibility Study
 - Submit optimization plan
 - 1.0 mg/L monthly average limit within 3 years (if not required by existing permit)
 - 0.5 mg/L Total P 12 month rolling geometric mean effluent limit by January 1, 2030
 - Exceptions if not technologically feasible or economically reasonable
 - Develop a Nutrient Assessment Reduction Plan
- Hickory Creek Watershed Planning Group joined group in July 2019



Other Watersheds

- DuPage River/Salt Creek Workgroup
- Lower DuPage River Watershed
- North Branch Chicago River Watershed Workgroup



Questions ?

Amy Dragovich, P.E.

Manager, Permit Section

Division of Water Pollution Control

217/782-0610

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ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY



DUPAGECOUNTY

STORMWATER MANAGEMENT

Nutrient Reduction Efforts in DuPage County

Background

DuPage County, IL

- Located just west of Chicago/ Cook County
- Population: 926,000 (2nd most populous in IL)
- 336 square miles



DUPAGECOUNTY



STORMWATER MANAGEMENT

Who Are We?



Stormwater Management in DuPage County

- Countywide program established in 1989
- Guided by the Stormwater Management Planning Committee & Plan
- Enforce the Countywide Stormwater Management & Floodplain Ordinance
- Flood Control Facilities have a floodwater capacity of nearly 6 billion gallons

Programs

- Watershed Management
- Water Quality
- Floodplain Mapping
- Regulatory Services
- Flood Control Operations & Maintenance
- Shared Services

Overview



Nutrient Reduction Efforts

- MS4 Permit partnership
- Watershed Planning
- Water Quality Improvement Program Grant
- Education & Outreach

Countywide NPDES Partnership

A total of 41 MS4s partners

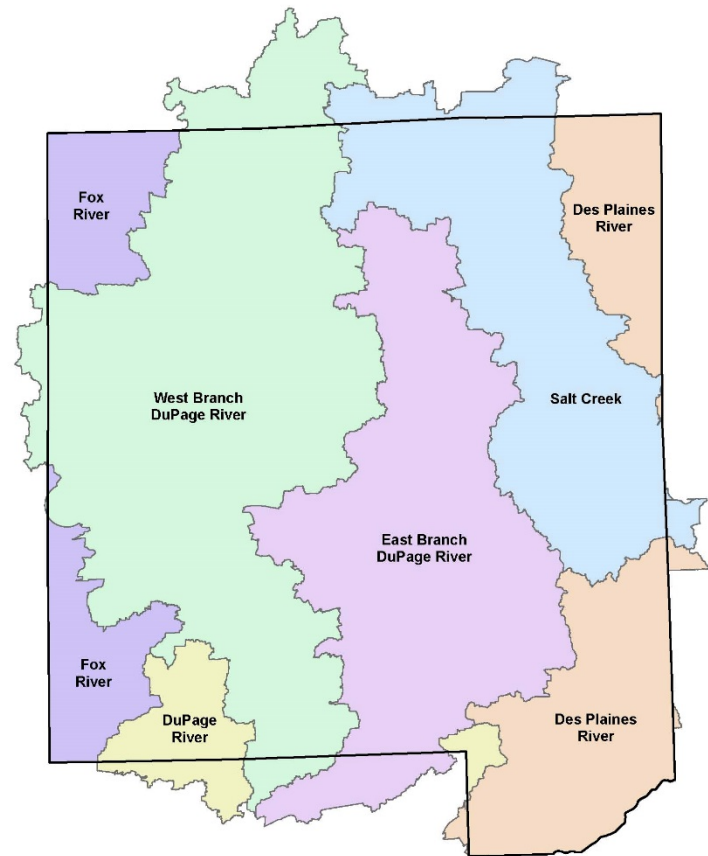
- Municipalities, Townships, DuPage County

Major Watersheds

- East Branch DuPage River
- West Branch DuPage River
- Salt Creek

Partial Watersheds

- Des Plaines River, Fox River, DuPage River mainstem



Watershed Planning

Watershed Plan Development for Impaired Waterways

- Klein Creek, Kress Creek, Winfield Creek, Sawmill Creek, St. Joseph Creek completed in 2017
- Lower Salt Creek Watershed Plan with Chicago Metropolitan Agency for Planning completed in 2018
- East Branch DuPage River 2019-2021
- Lots of outreach and stakeholder meetings



DUPAGE
COUNTY



St. Joseph Creek
Watershed-Based Plan

August 2017



DUPAGE
COUNTY



STORMWATER MANAGEMENT

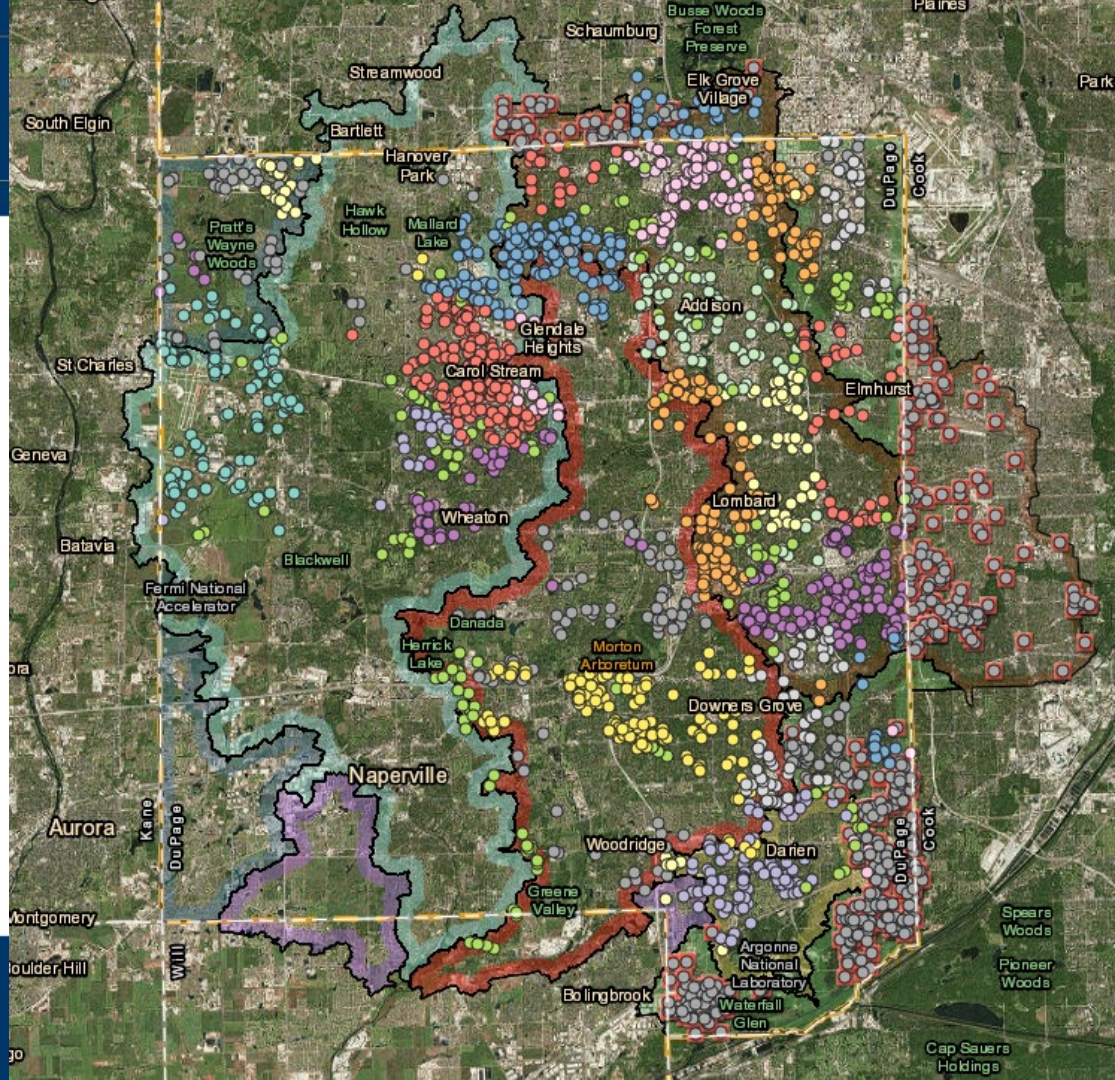
Watershed Planning

Detention Basin Assessments

- Over 3000 stormwater basins within the completed watersheds to date
- Engaged stakeholders to assist



DUPAGECOUNTY



Detention Basin Reconnaissance



Native plants, buffers, varying water levels/ zones, lots of plant/ soil/ water interaction, stable shorelines = quality basins

"good" water

Detention Basin Reconnaissance



Severe shoreline erosion, turfgrass, waterfowl, little to no plant/ soil/ water interaction, trash =
quality basins

"poor" water

Implementation



Potential Funding Sources

- Illinois EPA 319 funding
- DuPage County Water Quality Improvement Program

St Joseph Creek Stabilization

- Village of Downers Grove
- State, County, and Village funding to implement project identified in Watershed Plan
- Track estimated pollutant load reductions

Water Quality Improvement Program Grant



Projects that provide a water quality benefit

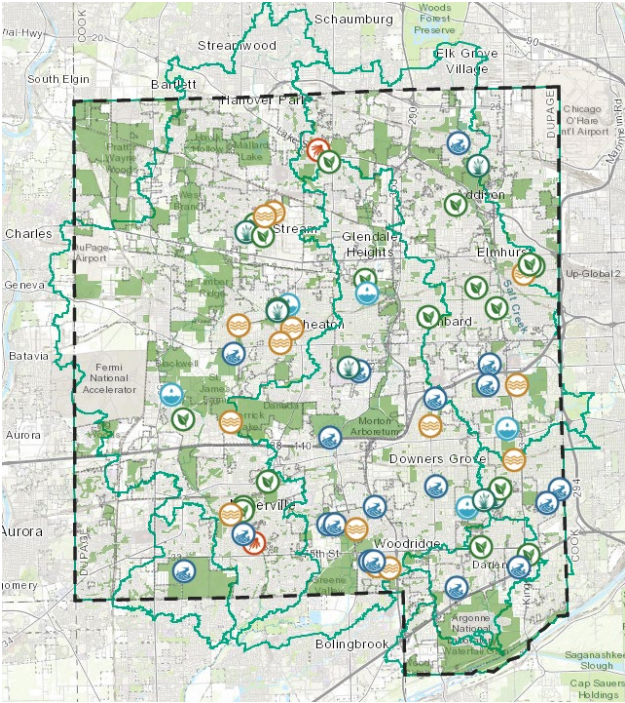
- Assistance program since 2000
- Fund up to 25% of construction

Eligible projects include:






- Streambank stabilization and rehabilitation
- In stream habitat improvements
- Detention basin retrofits
- Riparian or wetland buffer creation or enhancements
- Green roofs
- Rain gardens
- Permeable pavers



Water Quality Improvement Program Grant



Awarded Projects Types

-  Green Infrastructure Practices
-  Detention Basin Retrofit
-  Native Planting Project
-  Shoreline Stabilization
-  Stream Restoration
-  Multiple Best Management Practices

County Boundary



Municipal Boundary



Open Space



Watersheds



WQIP Funded Projects



Green Infrastructure



Elmhurst Police Department Rain Garden (2017)



Jay Stream School Permeable Paver Parking Lot, Carol Stream (2016)



Jefferson Junior High Green Initiatives, Woodridge (2016)

WQIP Funded Projects



Stream, Riparian Restoration & Basin Retrofits



Elizabeth Court Detention
Basin, Wood Dale (2015)



Arboretum Woods Shoreline
Stabilization, Lisle Park District
(2015)



Caddie Corner Park Streambank
Stabilization, Woodridge Park
District (2013)

Public Outreach & Education



Water Quality Education

- Social Media Campaign (“*Love Blue. Live Green.*”)
- Videos, Infographics, Brochures, Booklets, GIFs, Story Maps
- Monthly Newsletter
- Education Contracts (General, Youth & Technical)

Events

- Green Infrastructure Seminar
- Pollution Prevention Seminar
- Watershed Workshops
- Community Events
- Sponsored Seminars (i.e. Beyond the Basics, DuPage Environmental Summit)

Public Outreach & Education



Love Blue. Live Green.

@LoveBlueDuPage

A campaign to protect and enhance the quality of DuPage County water.

📍 DuPage County, IL 🌐 dupageco.org/swm 📅 Joined August 20

516 Following 301 Followers

Tweets

Tweets & replies

Media



Love Blue. Live Green. @LoveBlueDuPage · 17h

Planning to fry a turkey this Thanksgiving? Make sure to join in recycling your cooking oil at one of several @DuPageCou Saturday, November 30 from 9am-Noon!



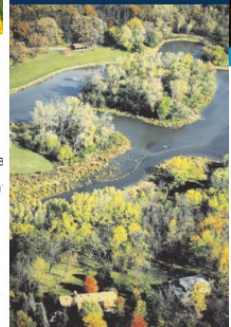
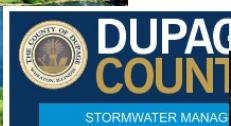
Cooking Oil Collection – Thanksgiving 2
As part of an annual, one-day event, we'll be collecting used, liquid cooking oil (not grease) for recycling. 📍 scarce.org

🗨 1

🔄 2

❤ 4

📎



WATER WHEN YOU LIVE

(630) 400-1234
stormwatermgmt@dupageco.org

www.dupageco.org/swm

November 2019

[View this email in your browser](#)



DuPage Hosting "Healthy Rivers, Healthy Communities"



A man fly fishing along the West Branch DuPage River near the site of several water quality projects.



DID YOU KNOW?

A single rain barrel will capture close to 1,300 gallons of water during the peak summer months.

LEARN MORE AT WWW.DUPAGECO.ORG/SWM



DUPAGECOUNTY



STORMWATER MANAGEMENT

Public Outreach & Education



Citizen Involvement

Citizen Stewardship Programs

- Adopt-A-Stream
- Storm Drain Medallions

Events

- Thanksgiving Cooking Oil Collection
- Pumpkin Smash
- DuPage River Sweep
- Sustainable Design Challenge



Questions?



Mary Beth Falsey

Water Quality Supervisor

DuPage County Stormwater Management

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marybeth.falsey@dupageco.org



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STORMWATER MANAGEMENT