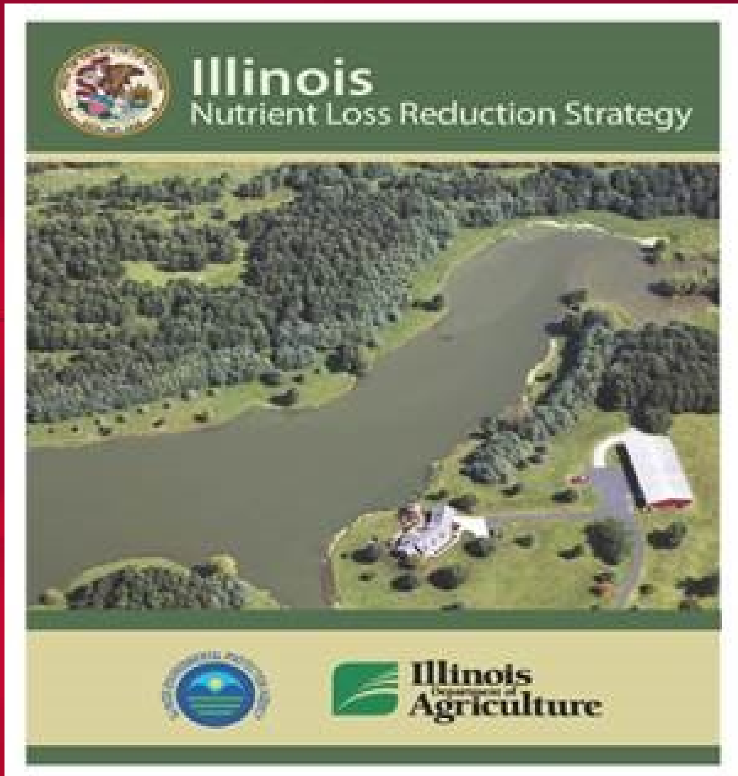


Illinois Nutrient Loss Reduction Strategy: What is it? How does it impact me?

Lauren Lurkins
Director of Natural and Environmental Resources
Illinois Farm Bureau

WHY IS THE STRATEGY NEEDED?

- **Gulf Hypoxia Task Force**
- **USEPA Guidance Memo in March 2011**
  - Purpose: Encourage states to develop nutrient reduction strategies while continuing to develop numeric nutrient standards.
  - Lays out 8 elements of a framework
- **Federal litigation in Louisiana**

IOWA NUTRIENT REDUCTION STRATEGY

- **Iowa's NRS has been in place for almost 2 years**
- **Des Moines Water Works filed lawsuit March 16, 2015 in federal court to declare drainage districts as point sources under the Clean Water Act**
- **Opponents claim voluntary action is not enough, and no benchmarks**
- **Damages: Claiming operation of nitrate removal technology (2013 alone - costs of $900,000)**
- **Iowa agriculture groups continue to emphasize collaborative efforts to improve water quality, rather than litigation**

STAKEHOLDER INVOLVEMENT

Stakeholders met August 2013 – May 2014:

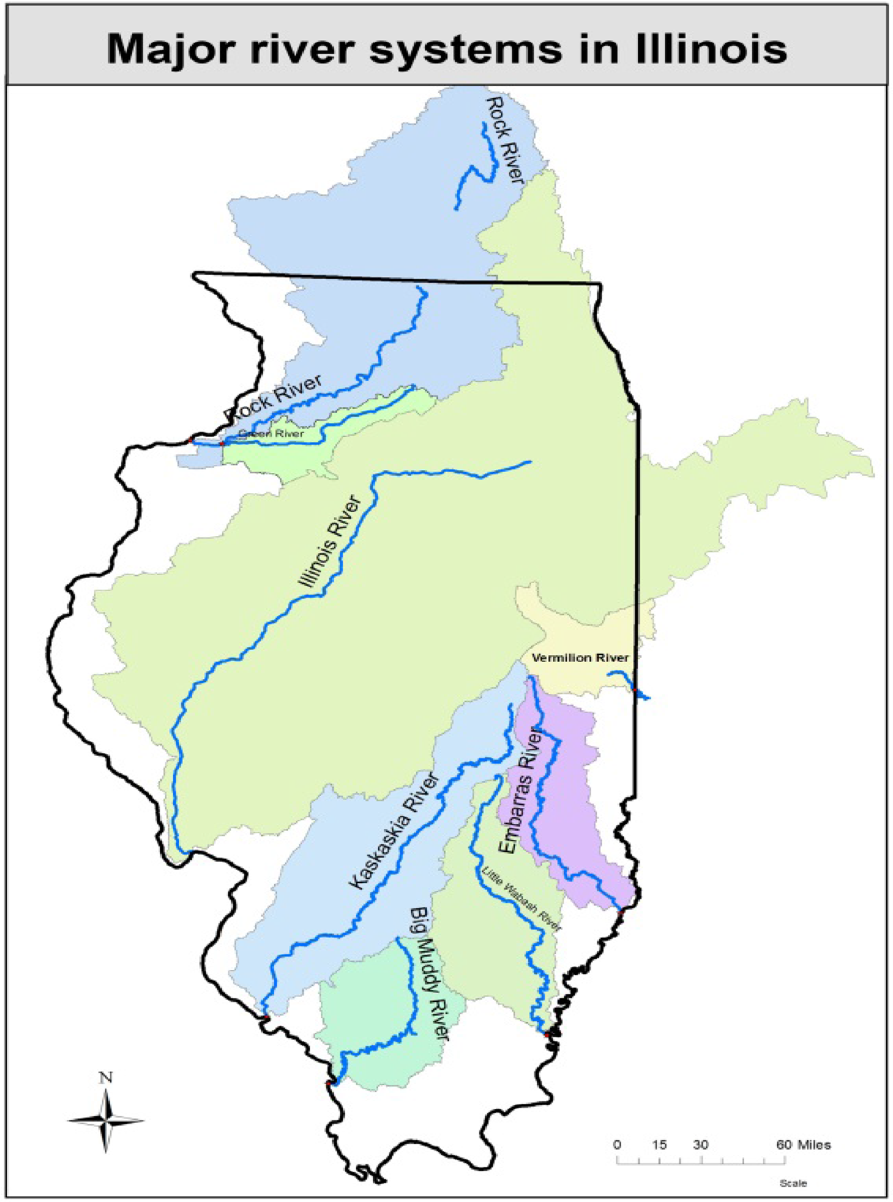
- Illinois Department of Agriculture, Illinois EPA
- University of Illinois Science Team
- Illinois Farm Bureau, Illinois Pork Producers Association, Illinois Fertilizer and Chemical Association, Illinois Corn Growers Association
- Association of Illinois Soil and Water Conservation Districts
- University of Illinois Extension
- NRCS
- Sanitary Districts/Wastewater Treatment Plants
- Prairie Rivers Network, Environmental Law and Policy Center, Sierra Club
- Illinois Environmental Regulatory Group

STATUS OF THE STRATEGY

- **Public comment closed January 24, 2015**
  - Nearly 1,000 comments filed
  - 80 from farmers, 100s from Sierra Club members
- **Expected final strategy in July/August – will go to USEPA, and implementation will begin**

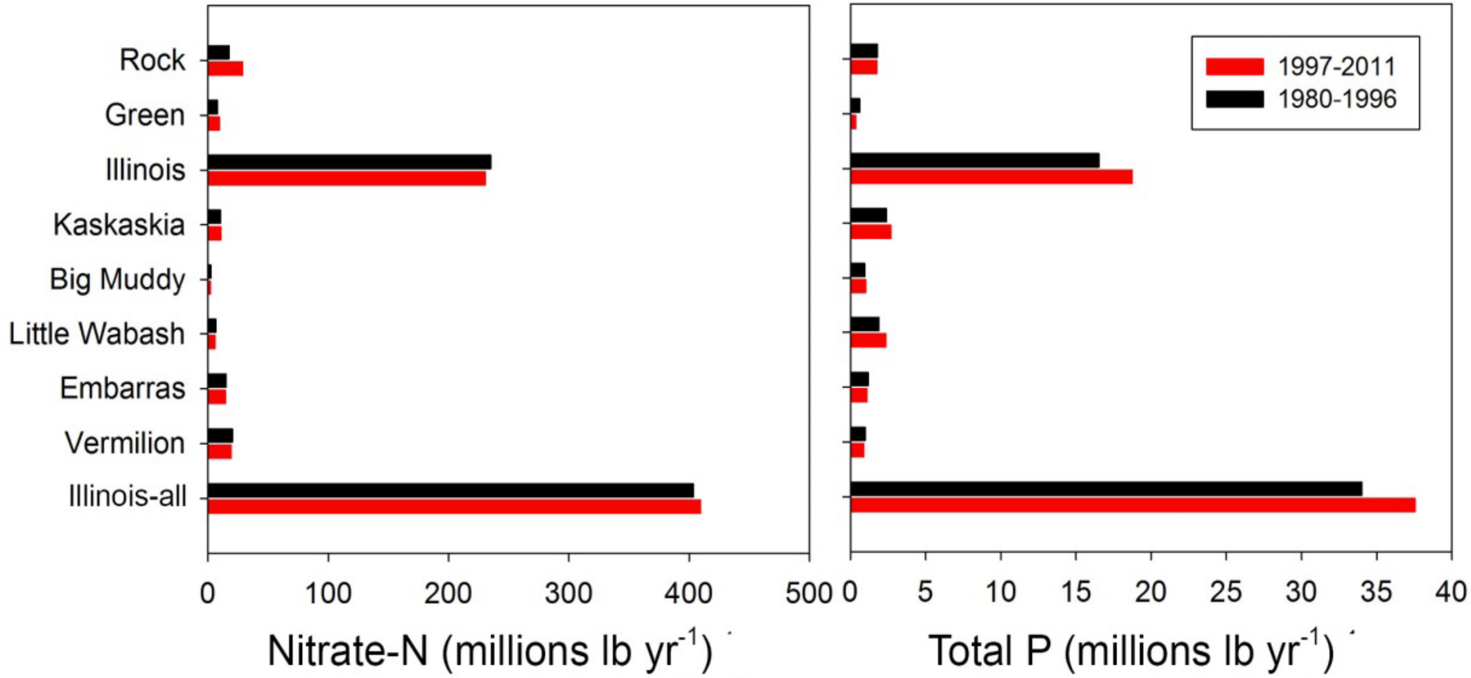
SCIENCE ASSESSMENT

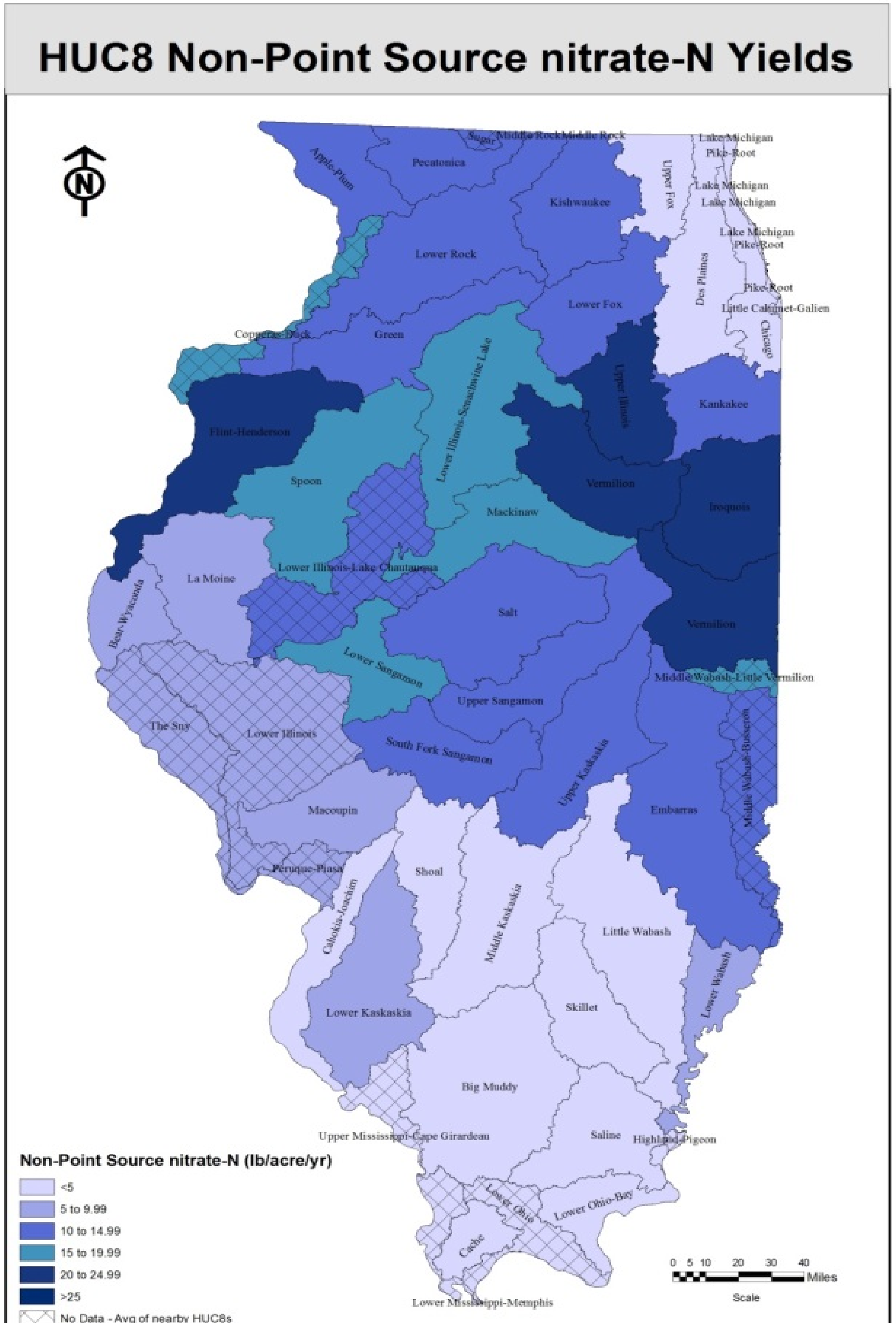
- **February 2013 – Illinois EPA partnered with University of Illinois to develop the Science Assessment:**
  - Current conditions in Illinois of nutrient sources and export by rivers in the state from point and non-point sources
  - Methods that could be used to reduce these losses and estimates of their effectiveness throughout Illinois
  - Estimates of the costs of statewide and watershed level application of these methods to reduce nutrient losses to meet TMDL and Gulf of Mexico goals

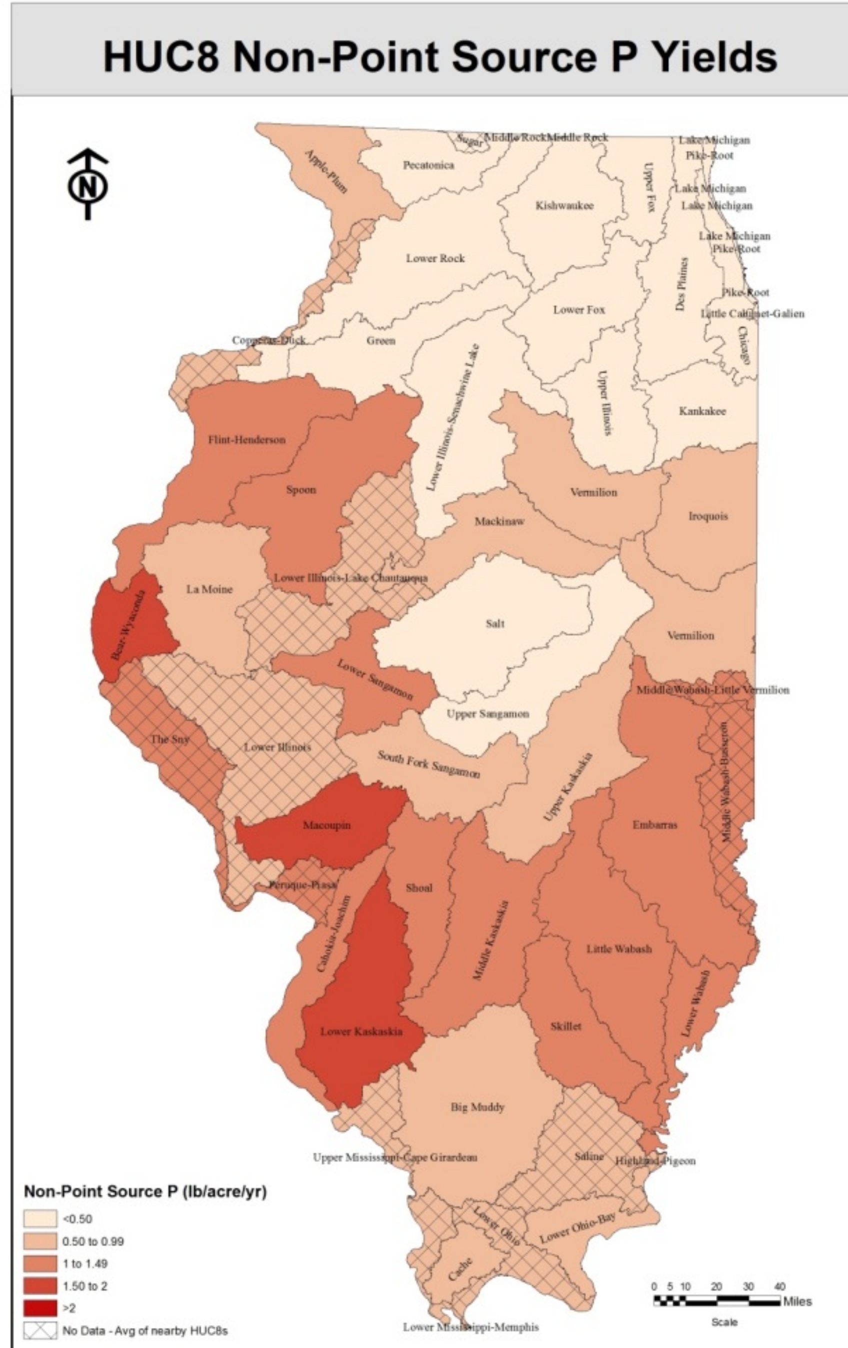


- 8 major river systems used in estimating nutrient loads
- Gaging stations are upriver from the state boundary, so the estimated area is smaller
  - Rock River - Joslin
  - Green River - Geneseo
  - Illinois River – Valley City
  - Kaskaskia River – Venedy Stn.
  - Big Muddy River - Murphysboro
  - Little Wabash River – Carmi
  - Embarras River – Ste. Marie
  - Vermilion River - Danville

RIVERINE LOADS OF NITRATE-N AND TOTAL P




HUC8 Non-Point Source nitrate-N Yields
Apple-Plum
Pecatonica
Sugar
Middle Rock
Middle Rock
Upper Fox
Lake Michigan
Pike-Root
Lake Michigan
Lake Michigan
Lake Michigan
Pike-Root
Kishwaukee
Lower Rock
Lower Fox
Des Plaines
Pike-Root
Little Calumet-Galien
Chicago
Copperas-Duck
Green
Lower Illinois-Senachwine Lake
Upper Illinois
Kankakee
Flint-Henderson
Spoon
Vermilion
Iroquois
Mackinaw
La Moine
Lower Illinois-Lake Chautauqua
Bear-Wyaconda
Salt
Vermilion
Lower Sangamon
Middle Wabash-Little Vermilion
Upper Sangamon
The Sny
Lower Illinois
South Fork Sangamon
Upper Kaskaskia
Middle Wabash-Busseron
Macoupin
Embarras
Peruque-Piasa
Shoal
Cahokia-Joachim
Middle Kaskaskia
Little Wabash
Skillet
Lower Kaskaskia
Lower Wabash
Big Muddy
Upper Mississippi-Cape Girardeau
Saline
Highland-Pigeon
Lower Ohio
Lower Ohio-Bay
Cache
Lower Mississippi-Memphis
Non-Point Source nitrate-N (lb/acre/yr)
<5
5 to 9.99
10 to 14.99
15 to 19.99
20 to 24.99
>25
No Data - Avg of nearby HUC8s
0 5 10 20 30 40 Miles
Scale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Pike-Root
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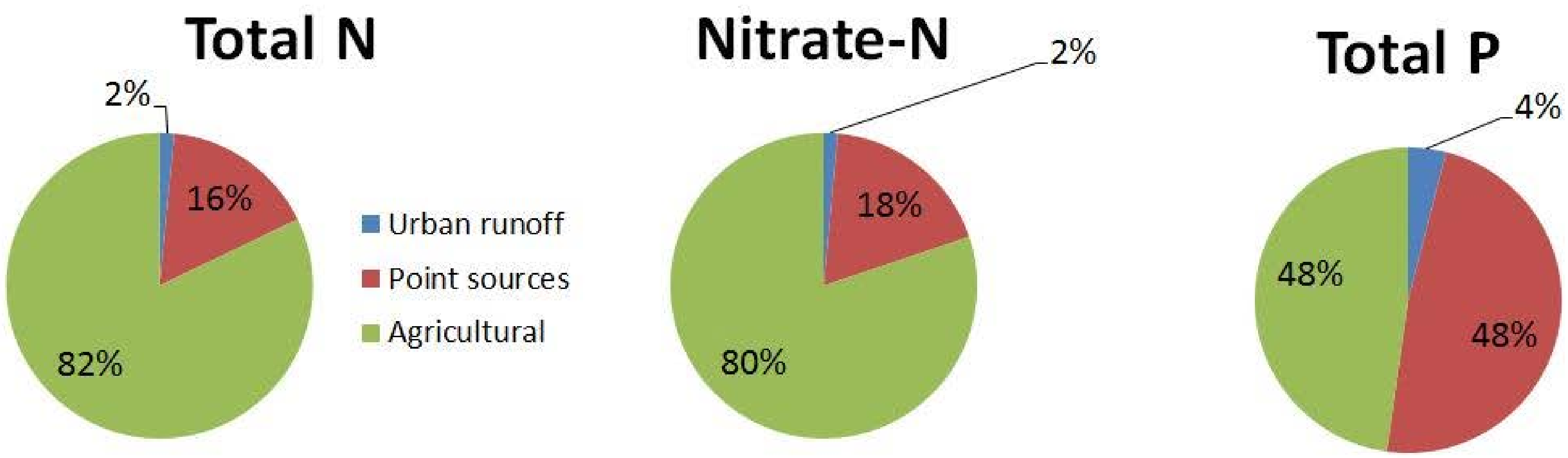
Upper Illinois
Kankakee
Flint-Henderson
Spoon
Vermilion
Iroquois
Mackinaw
La Moine
Lower Illinois-Lake Chautauqua
Bear-Wyaconda
Salt
Vermilion
Lower Sangamon
Middle Wabash-Little Vermilion
Upper Sangamon
The Sny
Lower Illinois
South Fork Sangamon
Upper Kaskaskia
Middle Wabash-Busseron
Macoupin
Embarras
Peruque-Piasa
Shoal
Cahokia-Joachim
Middle Kaskaskia
Little Wabash
Skillet
Lower Kaskaskia
Lower Wabash
Big Muddy
Upper Mississippi-Cape Girardeau
Saline
Highland-Pigeon
Lower Ohio
Lower Ohio-Bay
Cache
Lower Mississippi-Memphis
Non-Point Source P (lb/acre/yr)
<0.50
0.50 to 0.99
1 to 1.49
1.50 to 2
>2
No Data - Avg of nearby HUC8s
0 5 10 20 30 40 Miles
Scale

SCIENCE ASSESSMENT

Illinois contributes 20% of nitrate (410 M lbs) and

11% of phosphorus (37.5 M lbs) that makes it to the Gulf



STRATEGY TARGETS AND COSTS

- **<u>Baseline</u> – Average annual loading of nitrate-N and P from the 1980-1996 levels**
- **<u>Targets</u> – (5 year running average)**
  - N: 15% by 2025, 45% ultimate
  - P: 25% by 2025, 45% ultimate
- **<u>Estimated costs</u> - $800 million annually from point source and nonpoint source, with no new funding sources**

AGRICULTURAL NONPOINT SOURCES

- **Includes recommended BMPs shown through peer reviewed research to reduce nutrient losses**
  - In-field
  - Edge of field
  - Land use changes (perennial crops)
- **Information on costs and estimated reductions/acre for N and P**
- **Combination scenarios of BMPs to see large scale reductions**

Table 3.11. Example statewide results for nitrate-nitrogen reductions with shading to represent in-field, edge-of-field, land use, and point source practices or scenarios.

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	40	56	13.6	1.38
Wetlands on 25 percent of tile-drained land	40	28	6.8	5.06
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

Table 3.14. Example statewide results for total phosphorus reductions by practice/scenario with shading to represent in-field, edge-of-field, land use changes, and point source practices or scenarios.

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

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Table 3.15. Example statewide nitrate-nitrogen scenarios.

Name	Combined practices and scenarios	Nitrate-N (percent reduction)	Total P (percent reduction)	Cost of reduction ($/lb)	Annualized costs (million $/yr)
N1	MRTN rate, spring-only N application, cover crops on 70 percent of tile-drained and 45 percent non-tiled acres, bioreactors on 50 percent of acres, wetlands on 25 percent of acres, all ag streams have buffers	45	20	3.67	678
N2	MRTN rate, spring-only N application, cover crops on 100 percent of tile-drained and 70 percent of non-tiled acres, bioreactors on 50 percent of acres, perennial crops on non-tiled acres, point source to 10 mg/L	45	33	4.34	811
N3	MRTN rate, cover crops on 100 percent of tile-drained and 70 percent of non-tiled acres, wetlands on 25 percent of acres, perennial crops on non-tiled acres, all ag streams have buffers, point source to 10 mg/L	45	24	4.51	833
N4	MRTN rate, spring-only N application, cover crops on 5 percent of tile-drained acres, bioreactors on 50 percent of acres	20	0.3	1.99	162
N5	MRTN rate, cover crops on 35 percent of tile-drained acres, bioreactors on 50 percent of acres	20	2	2	161
N6	MRTN rate, cover crops on 75 percent of tile-drained and 55 percent of non-tiled acres	20	8	4.55	370

Table 3.16. Example statewide total phosphorus scenarios.

Name	Combined practices or scenarios	Nitrate-N (percent reduction)	Total P (percent reduction)	Cost of reduction ($/lb)	Annualized costs (million $/yr)
P1	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/L	7	45	2.84	48
P2	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/L	29	45	36.44	615
P3	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	38	45	41.24	696
P4	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	6	20	-10.40	-78
P5	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/L on 45 percent of discharge	0	20	-9.73	-73
P6	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	11	20	22.93	172

AGRICULTURAL NONPOINT SOURCES

Livestock operations - BMPs included for:

- Land application of manure
- Runoff management from production areas
- Separate from the NLRS, we have new environmental rules for AFOs and CAFOs in Illinois.

KEY NUTRIENT REDUCTION PROGRAMS FOR NONPOINT SOURCES

- **Focus on building upon existing programs and resources**
- **Reinvigoration of voluntary conservation adoption and nutrient management**
- **No new legislation or regulation for agriculture**

KEY NUTRIENT REDUCTION PROGRAMS FOR NONPOINT SOURCES

State Programs:

IEPA Section 319 grant program, IDNR CREP, IDOA Partners for Conservation Cost-Share

Federal Programs:

EQIP, CSP, Easement Programs, RCPP ($2.7 to IL in 2015)

Illinois Agricultural Initiatives:

CBMP

NREC

ONGOING NLRS WORK

- **The work will continue even after the Strategy is finalized (many of these have just started):**
  - Agriculture Water Quality Partnership Forum
  - Nutrient Science Advisory Committee (NNCs)
  - Water Quality Monitoring Council
  - Urban stormwater group
- **Progress will be reviewed and reported to the public every 2 years**
- **Strategy is a living document, will be reviewed every 5 years by the stakeholder group to evaluate necessary revisions**
- **The big effort now is on IMPLEMENTATION of the NLRS!**

CONCLUSION

- **Everyone (urban, suburban, point source, nonpoint source) has contributed to the problem, and now everyone has an opportunity to be part of the solution**
- **Reinvigoration of voluntary conservation adoption and nutrient management on the farm**
- **New focus on tracking implementation of BMPs and resulting water quality impacts**
- **No "one size fits all" approach for all of Illinois agriculture**
- **Our opportunity to demonstrate that voluntary conservation does work**
- **Will take something done on every acre!**

WANT TO GET INVOLVED WITH IFB ON THIS ISSUE?

- **"Nutrients Matter" profiles of Nutrient Spokesmen**
  - Weekly series, articles in FarmWeek, videos and photos shared through other IFB media outlets
  - Highlighting current practices across the state, diverse farmers and operations
  - Repurpose to share stories with stakeholders, regulators, legislators, teachers (AITC), general public
- **Strength With Advisory Teams (SWAT)**
- **Local county and watershed engagement/development**
- **More meeting requests fall/winter**

QUESTIONS?

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(309) 557-3153

CBMP – www.illinoiscbmp.org

NREC – www.illinoisnrec.org

IFB page on Illinois NLRS – www.ilfb.org/NLRS