AGRICULTURE WATER QUALITY PARTNERSHIP FORUM

MEETING 3
FEBRUARY 23, 2016

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

Photo by Eliana Brown

Introductions

Illinois EPA
Lisa Bonnett (Marcia Willhite)

IDA
Warren Goetsch

USDA-NRCS
Ivan Dozier (Eric Gerth)

IDNR
James Herkert

AISWCD
Kelly Thompson

The Nature Conservancy
Maria Lemke

IFCA
Jean Payne

American Farmland Trust
Mike Baise

Prairie Rivers Network
Kim Knowles

Illinois Farm Bureau
Lauren Lurkins

Illinois Pork Producers Association
Jennifer Tirey

Illinois Soybean Association
Amy Roady

University of Illinois - Extension
George Czapar

Farm Service Agency
Scherrie Giamanco (Kim Martin)

Illinois Certified Crop Advisor Board of Directors
Tom Kelley

Illinois Stewardship Alliance
Lindsey Record

Illinois Soc of Prof. Farm Man. & Rural Appr.
Randy Fransen

Illinois Corn Growers Association
Rodney Weinzierl

Committee Charge

Agriculture Water Quality Partnership Forum

- Steer and coordinate outreach and education efforts to help farmers address nutrient loss and select the most appropriate BMPs:
  - Identify needed education initiatives or training requirements for farmer and technical advisors.
  - Strengthen connections between industry initiatives, certified crop advisor continuing education requirements, state initiatives, and other technical services.
- Track BMP implementation
- Coordinate cost sharing and targeting
- Develop other tools as needed
  - Consider an agriculture water quality certification program.

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OUTREACH & EDUCATION UPDATE

Outreach and Education

Outreach to absentee land owners/farm managers

- How do we reach out to absentee landowners through farm managers?
  - Written material?
  - Face to face meetings?

Needs and next steps

Committee Charge

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PRIORITY WATERSHEDS

Illinois Nutrient Loss Reduction Strategy

Nutrient Monitoring Council

3nd Meeting, 12/3/15, Urbana, IL

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Introductions

Illinois EPA
Gregg Good, Rick Cobb

Illinois State Water Survey
Laura Keefer

Illinois Natural History Survey
Andrew Casper

Illinois Dept. of Natural Resources
Ann Holtrop

University of Illinois
Mark David

Sierra Club
Cindy Skrukrud

MWRDGC
Justin Vick

Illinois Corn Growers Association
Laura Gentry

U.S. Army Corp of Engineers-Rock Island
Marvin Hubbell

U.S. Geological Survey
Kelly Warner (temp assign)

National Center for Supercomputing Apps
Jong Lee

Aqua America
Kevin Culver (pending)

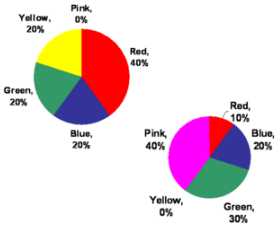
NMC Charges (Revised 10/26/15)

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.

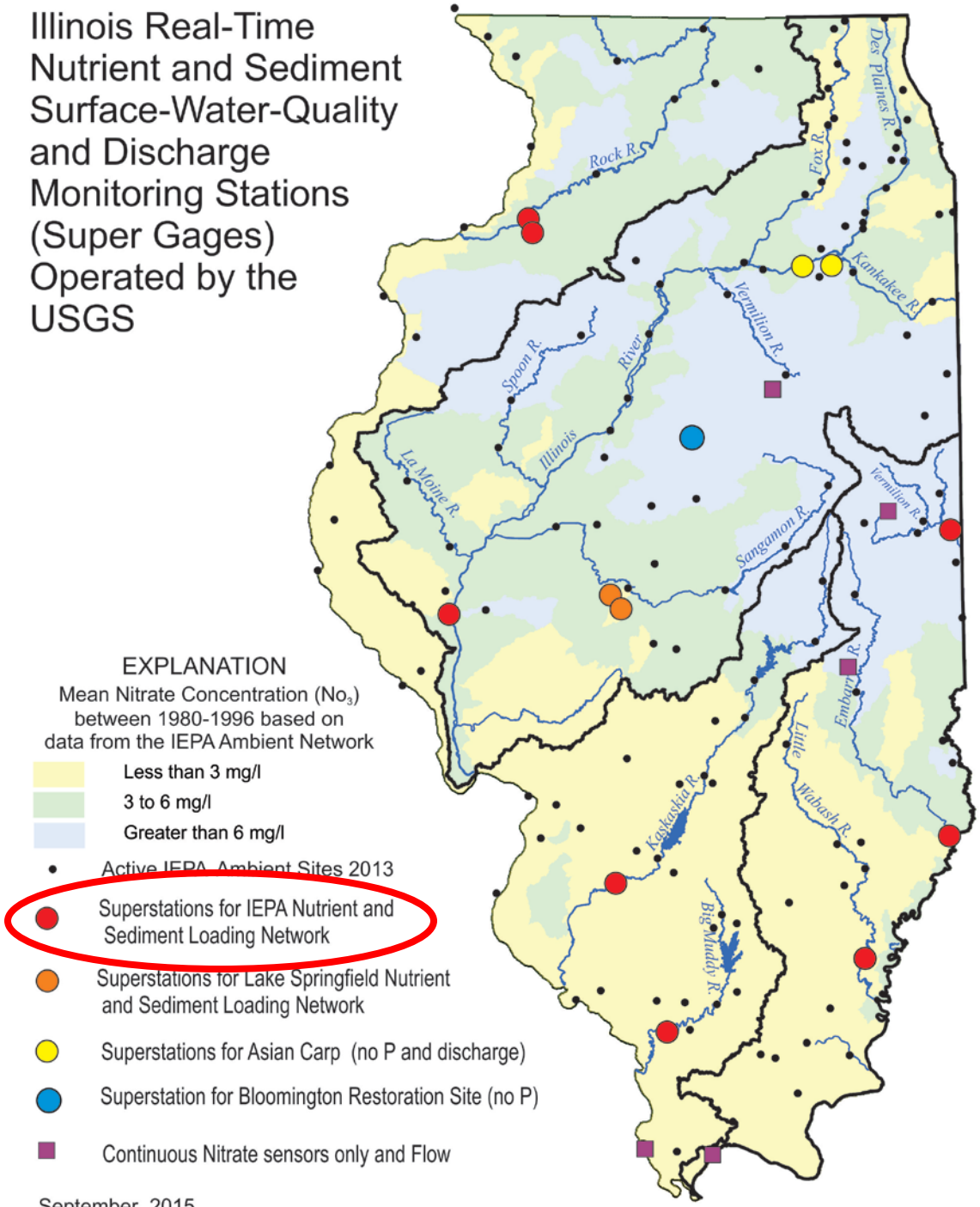
2. Document *local water quality outcomes* in selected NLRS identified priority watersheds, or smaller watersheds nested within, where future nutrient reduction efforts are being implemented (e.g., increase in fish or aquatic invertebrate population counts or diversity, fewer documented water quality 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.



The Plan

- Rock River
- Green River
- Illinois River
- Kaskaskia River
- Big Muddy
- Little Wabash
- Embarras River
- Vermilion River



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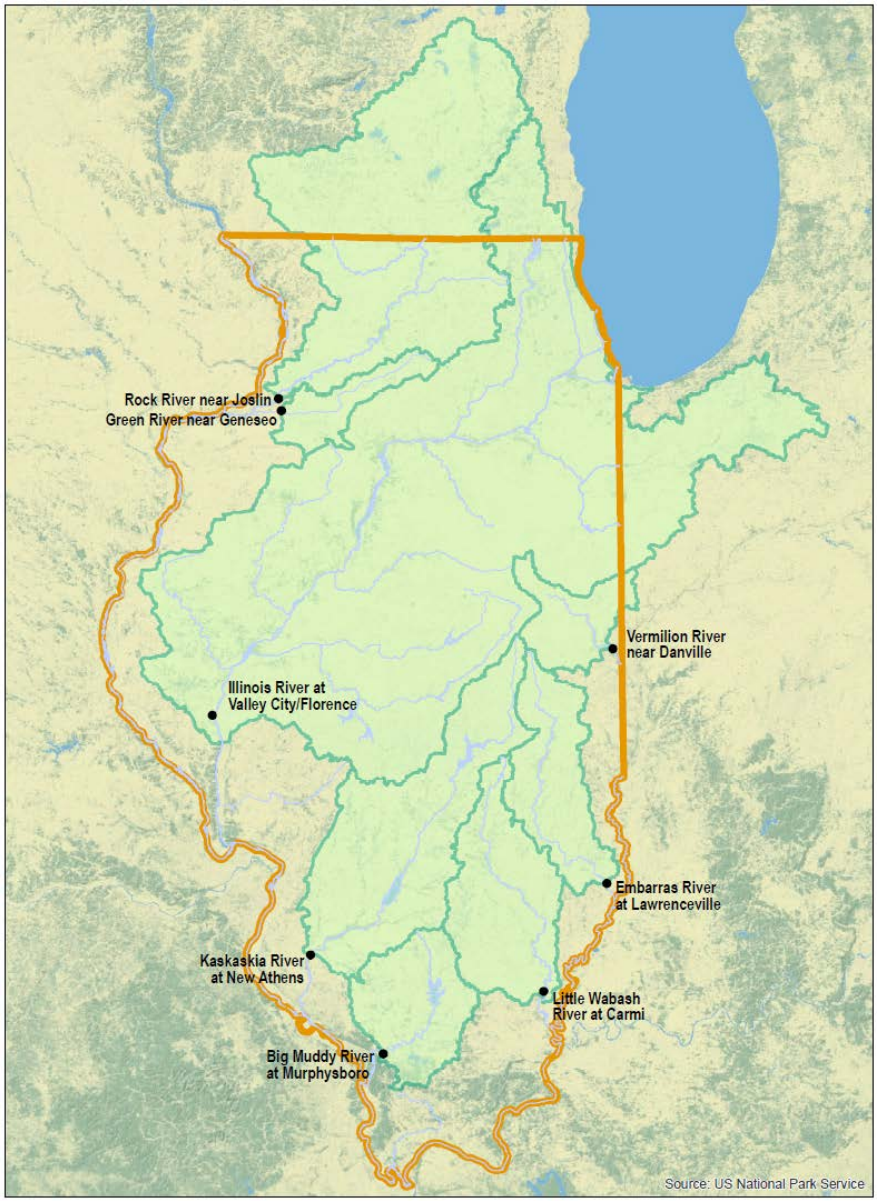
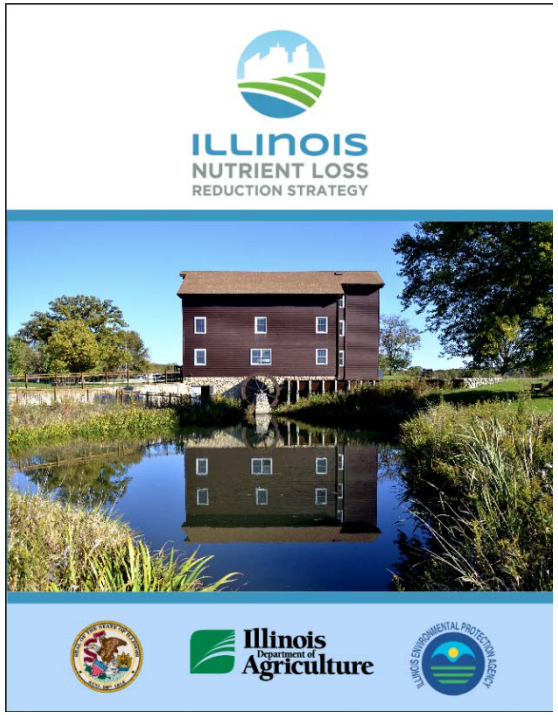


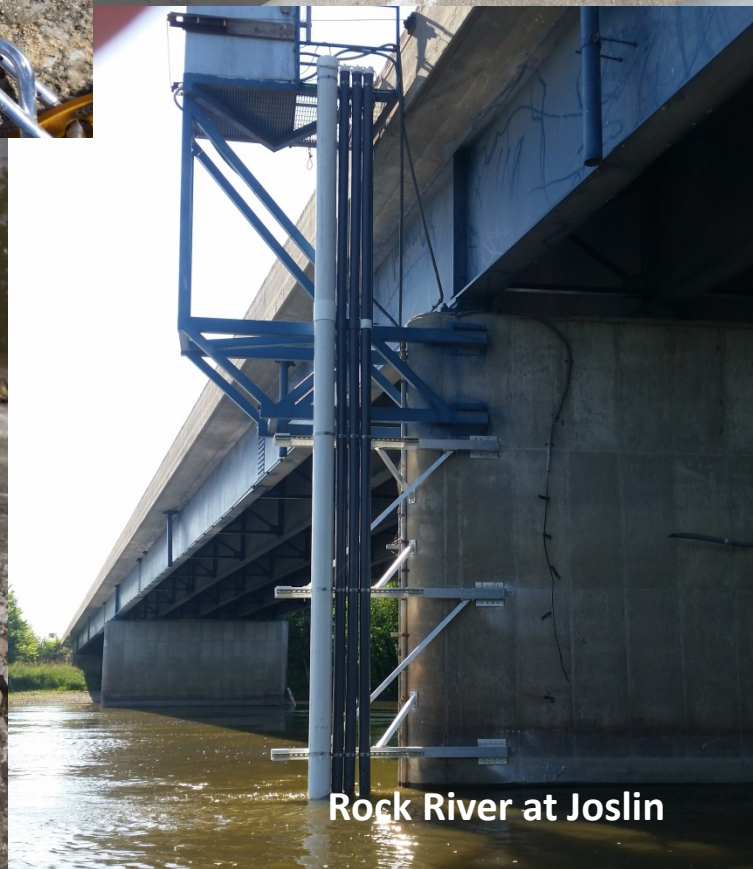
Basins cover almost 75% of the land area in the State



Kaskaskia at New Athens

Little Wabash
at Carmi

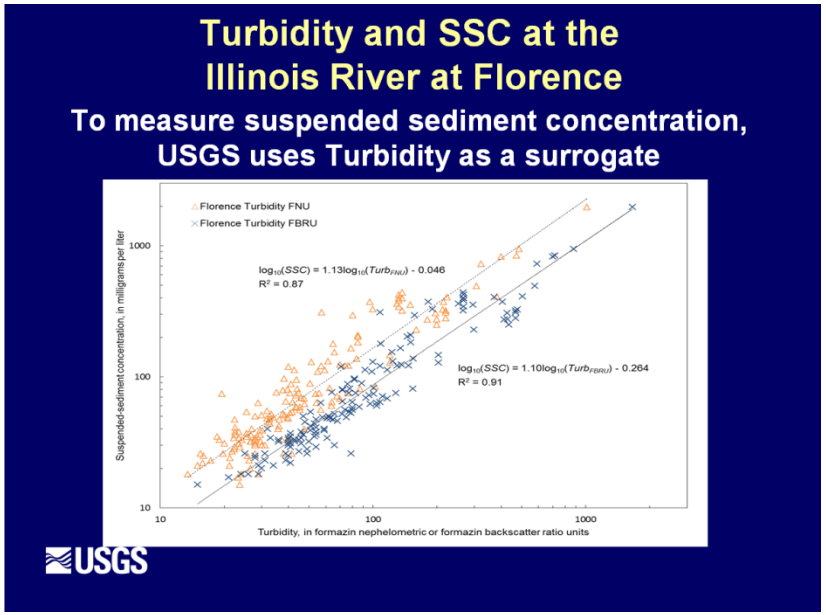
Green River at Geneseo

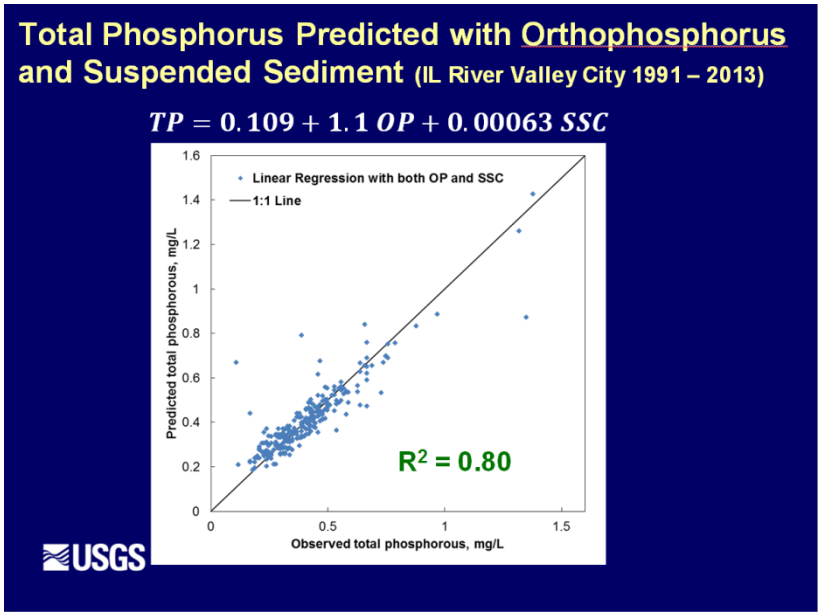


Rock River at Joslin

Future Plans

- Build record for surrogates (2015-2016)
- Report w/surrogate relationships (2016-2017)

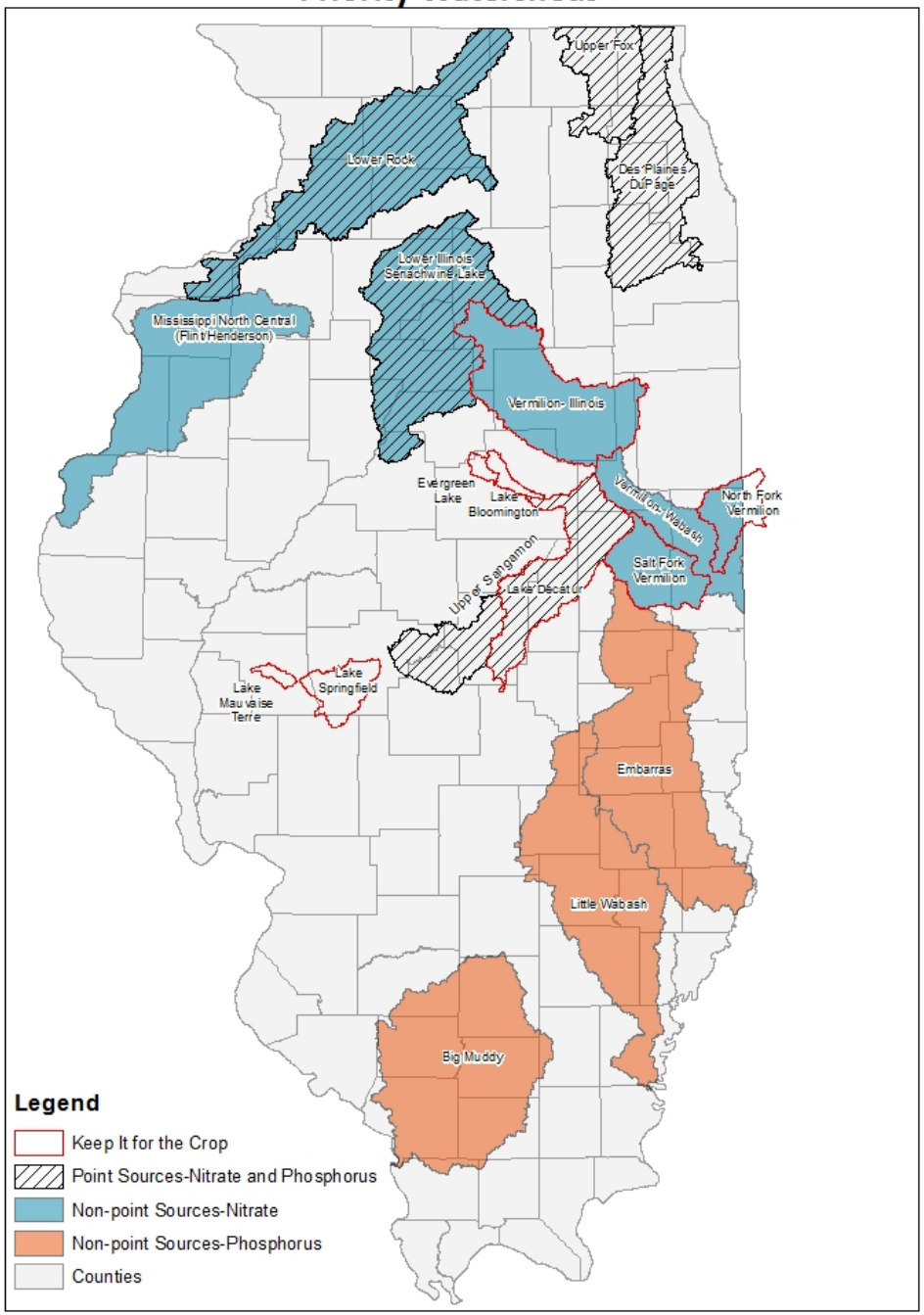




But what about:

- generating loading estimates and loading trends for some or all 18 priority watersheds?
- trying to show local water quality improvements (outcomes)?

Illinois Nutrient Loss Reduction Strategy
Priority Watersheds



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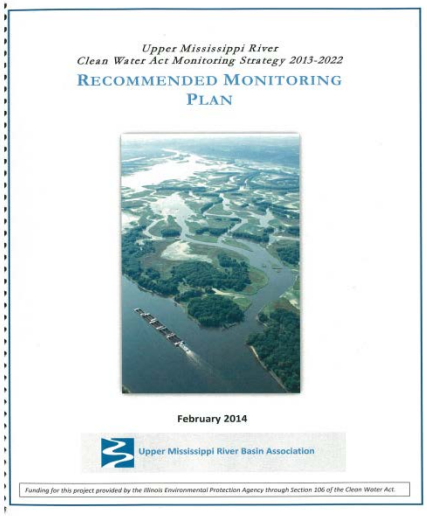
NEXT STEP: *Watershed Nutrient Monitoring Plan* development in NLRS High Priority Watersheds

- Goal would be to develop detailed *Watershed Nutrient Monitoring Plans and Associated Costs* for ALL NLRS high priority watersheds that:
  - Estimate N and P Loads
  - Trends
  - Water Resource Quality Outcomes


Upper Mississippi River
Clean Water Act Monitoring Strategy 2013-2022
RECOMMENDED MONITORING PLAN

February 2014

Upper Mississippi River Basin Association

Funding for this project provided by the Illinois Environmental Protection Agency through Section 106 of the Clean Water Act.

- But where do we start?
- In watersheds where a lot of work is already ongoing, that's where!
- So where are these top 5 or 6 watersheds?

“Top ~~10~~ 6” NLRS Watersheds with Lots of Ongoing Monitoring

(NMC meeting 9/16/15)

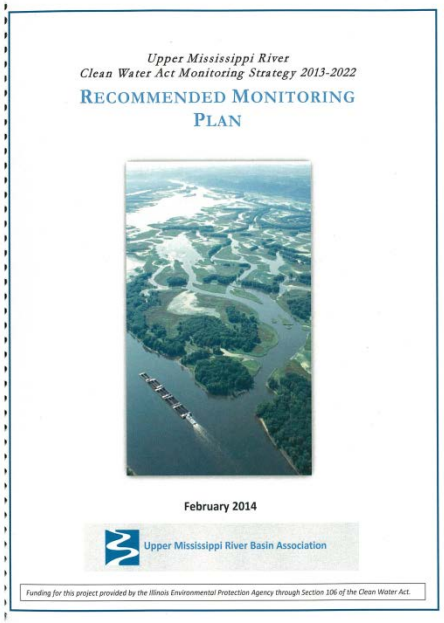
- Lake Springfield
- Lake Decatur
- Rock River
- Chicago/Little Calumet
- Upper Salt Fork
- “Middle Fox” River

Are these the same watersheds where most implementation work is/will be targeted?

- Ag Water Quality Partnership Forum meeting (Sept. 22, 2015) notes:
  - *"Similar to what the Nutrient Monitoring Council (NMC) did, the group looked at the NLRS Fig. 4.2 Priority Watershed map to select watersheds that include existing and future BMPs. This will help the NMC determine where more monitoring is needed. The following watersheds were discussed:"*
  - Lake Springfield*
  - Lake Decatur*
  - Lake Bloomington
  - Vermilion River (Indian Creek + Vermilion Headwaters)
  - N. Fork Vermilion (L. Vermilion)**
  - L. Mauvaise Terre (Jacksonville)
  - Kaskaskia River
  - Lower Illinois River

* also named by the NMC ** nearby a NMC-named watershed

What would a *Watershed Nutrient Monitoring Plan* look like?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- Background
- Overall Scope and Goals
- Monitoring Function (e.g., loads, trends, local WQ improvements)
- Monitoring Design (e.g., targeted, fixed, probabilistic, follow-up, ….chemical, physical, and biological indicators)
- Implementation (e.g., staffing-who?, timeline, costs, funding/in-kind resources, next steps)

Developed *NLRS Priority Watershed Nutrient Monitoring Plans* allow us to be ready to rock n' roll when resources become available!

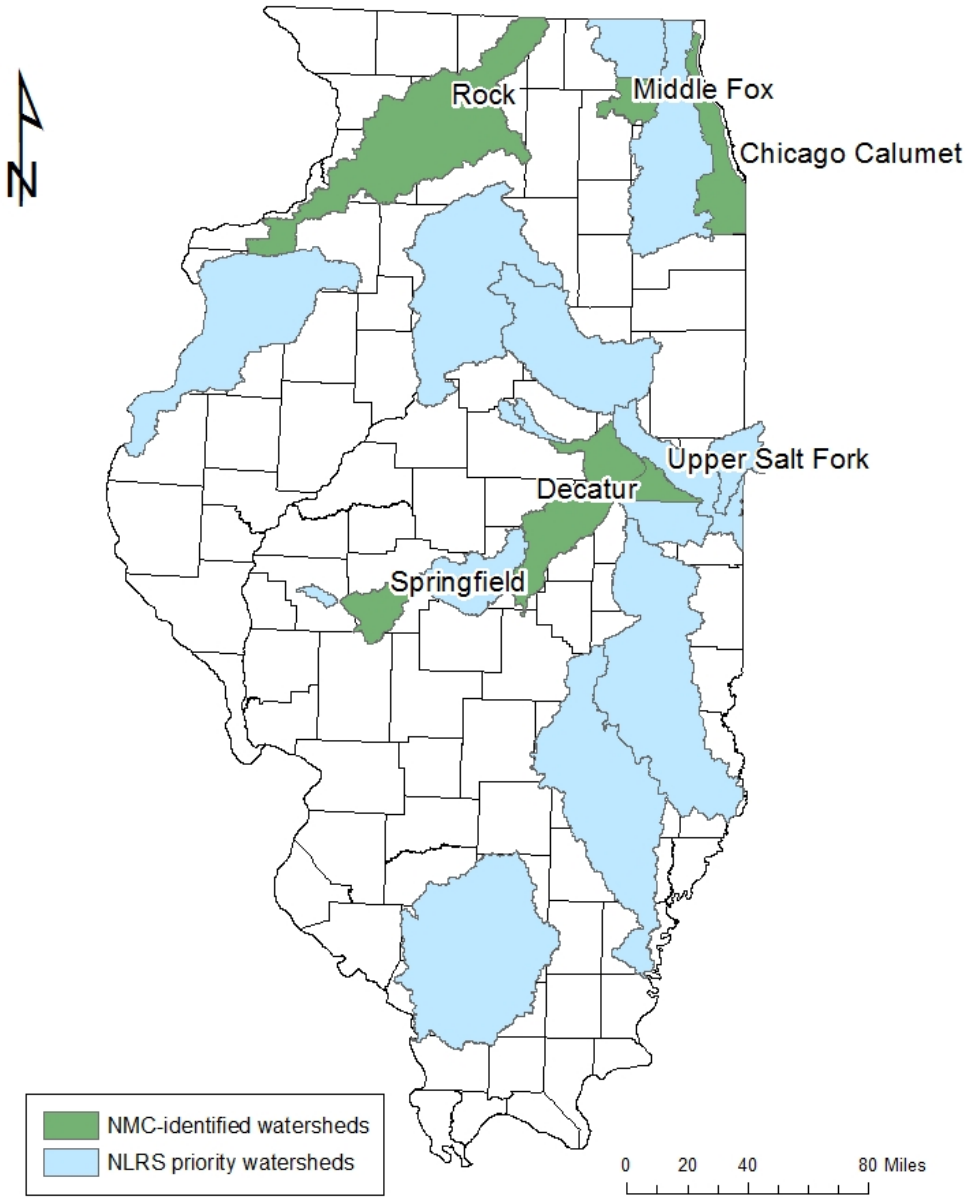
Watershed Nutrient Monitoring Plan

Questions for Future Discussion

- Hoo Hoo develops each plan?
  - Are these "other duties as assigned?"
  - Will there be a budget for their development?
- How do we ultimately retrieve, aggregate, and display monitoring data collected by multiple organizations? (Jong Lee, Great Lakes to Gulf Virtual Observatory)
- How do we "assess" loadings, trends, and water resource quality improvements?
  - Assessment methodologies decided on will drive data needs.
  - Do we need a NMC-Assessment Methodologies Subcommittee?
- Lots of questions to explore. (Cindy Skrukrud, Fox River)

If so, lets look at the “Top 6” NLRS Watersheds with Lots of Ongoing Monitoring

Most Monitored Watersheds



*As identified by the Illinois Nutrient Monitoring Council

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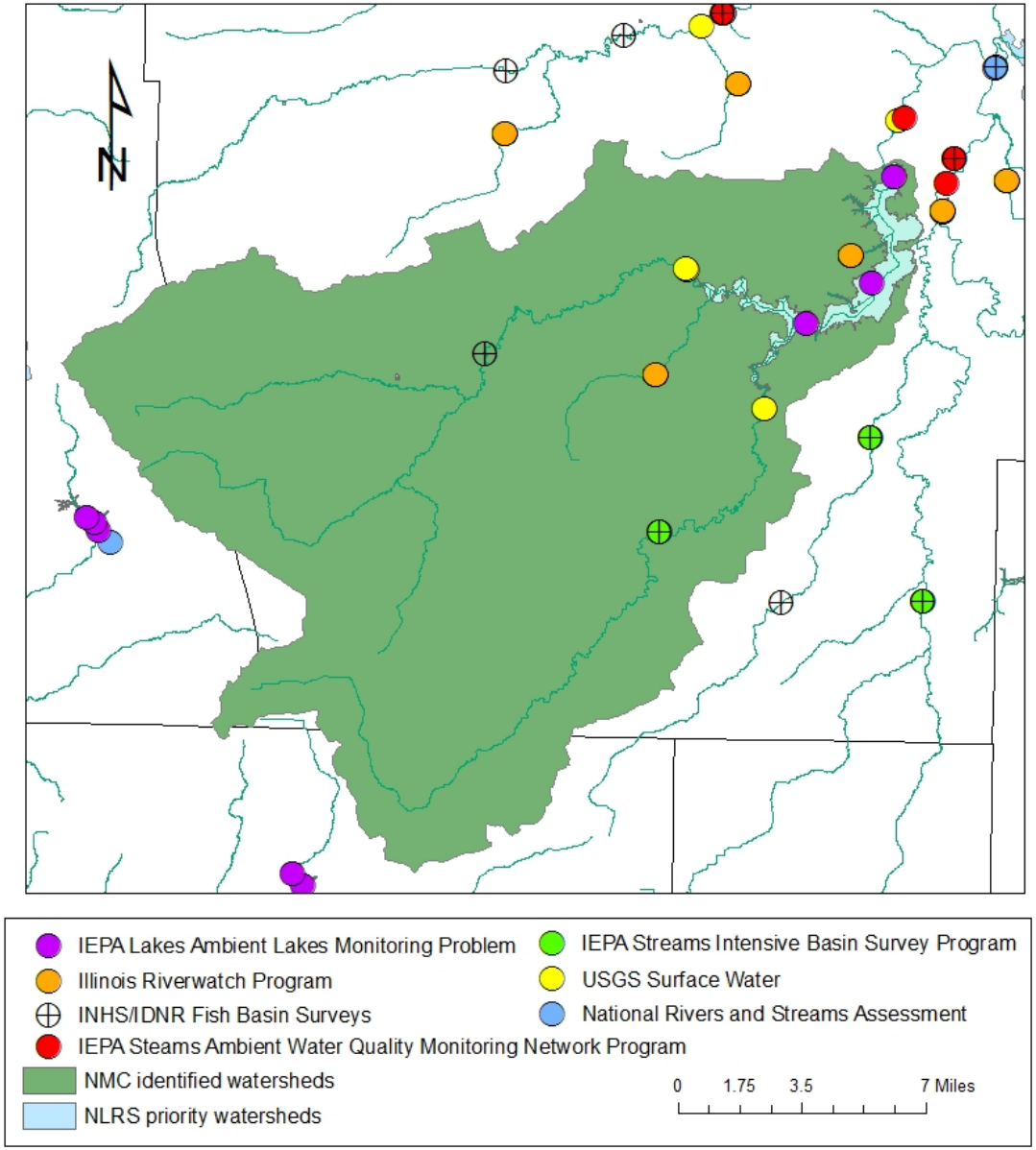
Aggregated Lake Springfield Watershed*



*As identified by the Illinois Nutrient Monitoring Council

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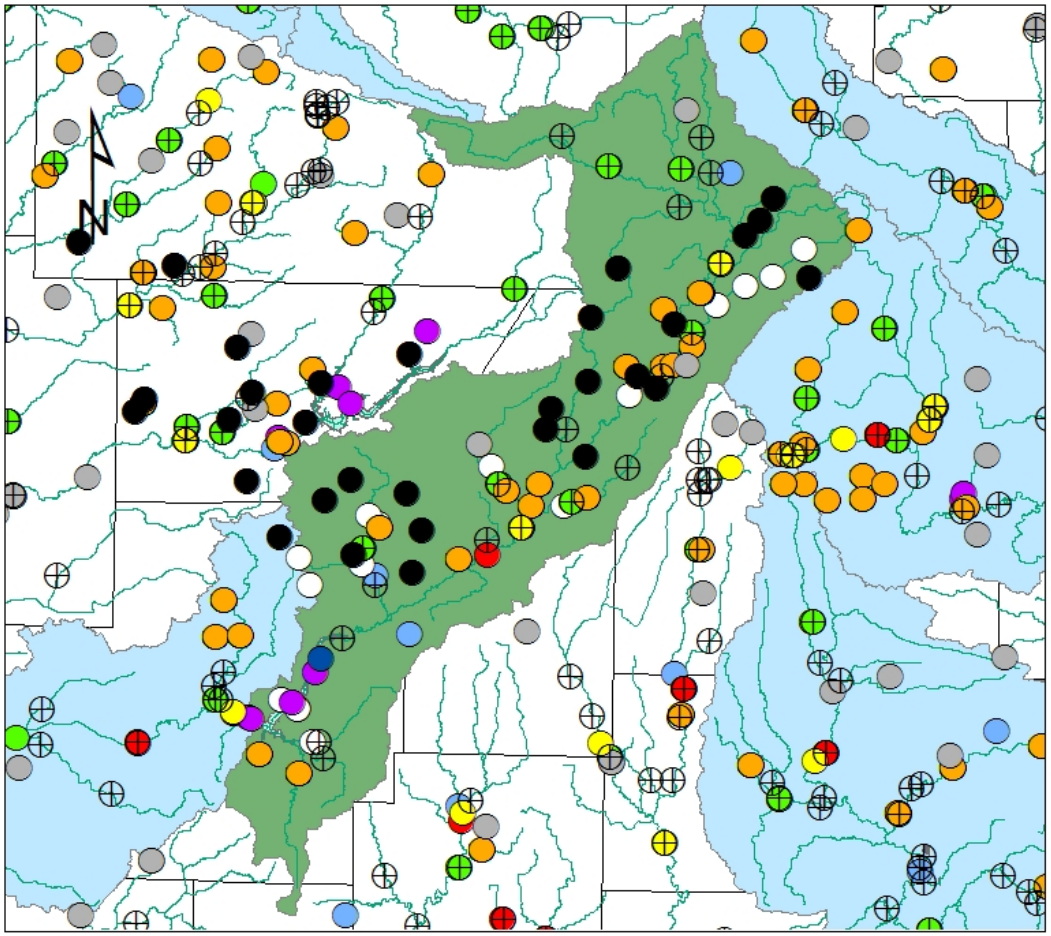
Aggregated Lake Decatur Watershed*



- INHS/IDNR Fish Basin Surveys
- USGS Ground Water
- USGS Surface Water
- GREON Program
- IEPA Lakes Ambient Lakes Monitoring Program
- IEPA Streams Ambient Water Quality Monitoring Network Program
- IEPA Streams Intensive Basin Survey Program
- ISWS Streams Monitoring Stations
- IEPA Ground Water Programs
- Illinois Riverwatch
- National Rivers and Streams Assessment
- NMC identified watersheds
- NLRS priority watersheds

0 5 10 20 Miles

*As identified by the Illinois Nutrient Monitoring Council

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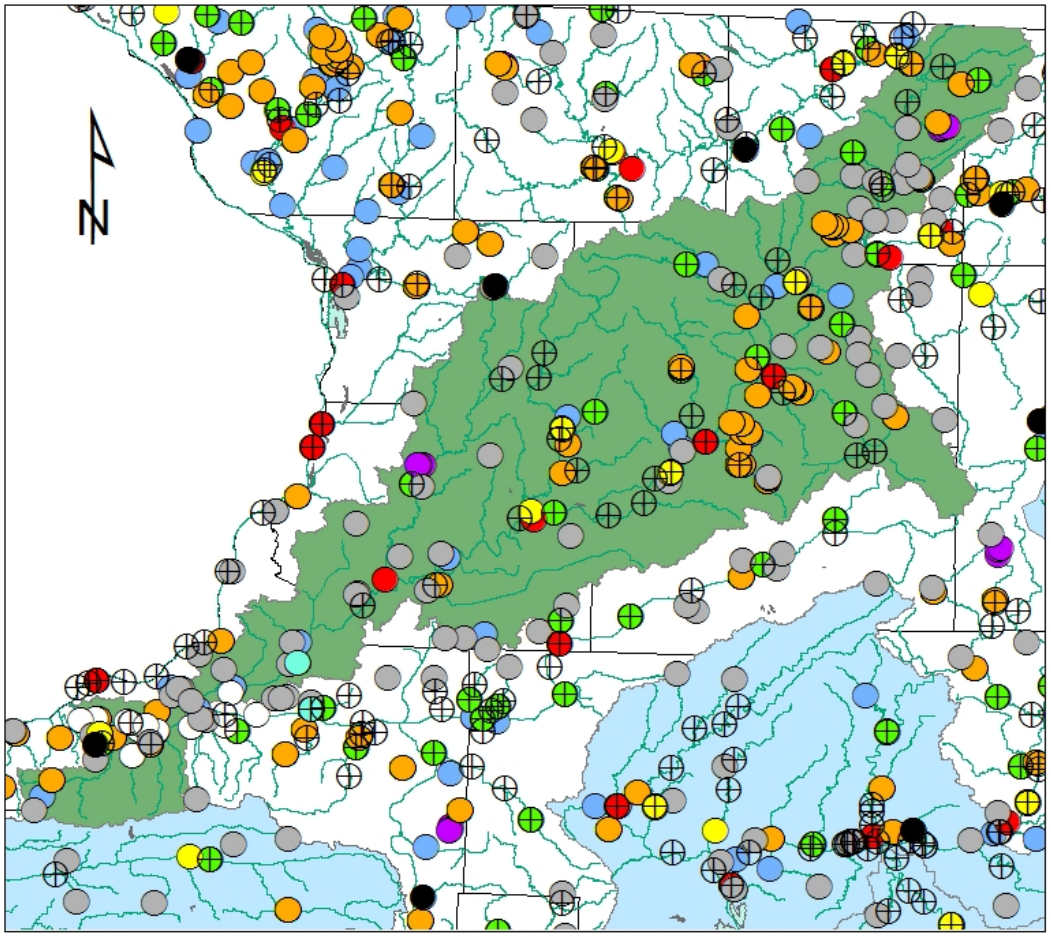
Aggregated Rock River Watershed*



- INHS/IDNR Fish Basin Surveys
- USGS Ground Water
- USGS Surface Water
- USGS Superstations
- IEPA Lakes Ambient Lakes Monitoring Program
- IEPA Streams Ambient Water Quality Monitoring Network Program
- IEPA Streams Intensive Basin Survey Program
- Sierra Club Rock River Group
- IEPA Ground Water Programs
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0 5 10 20 Miles

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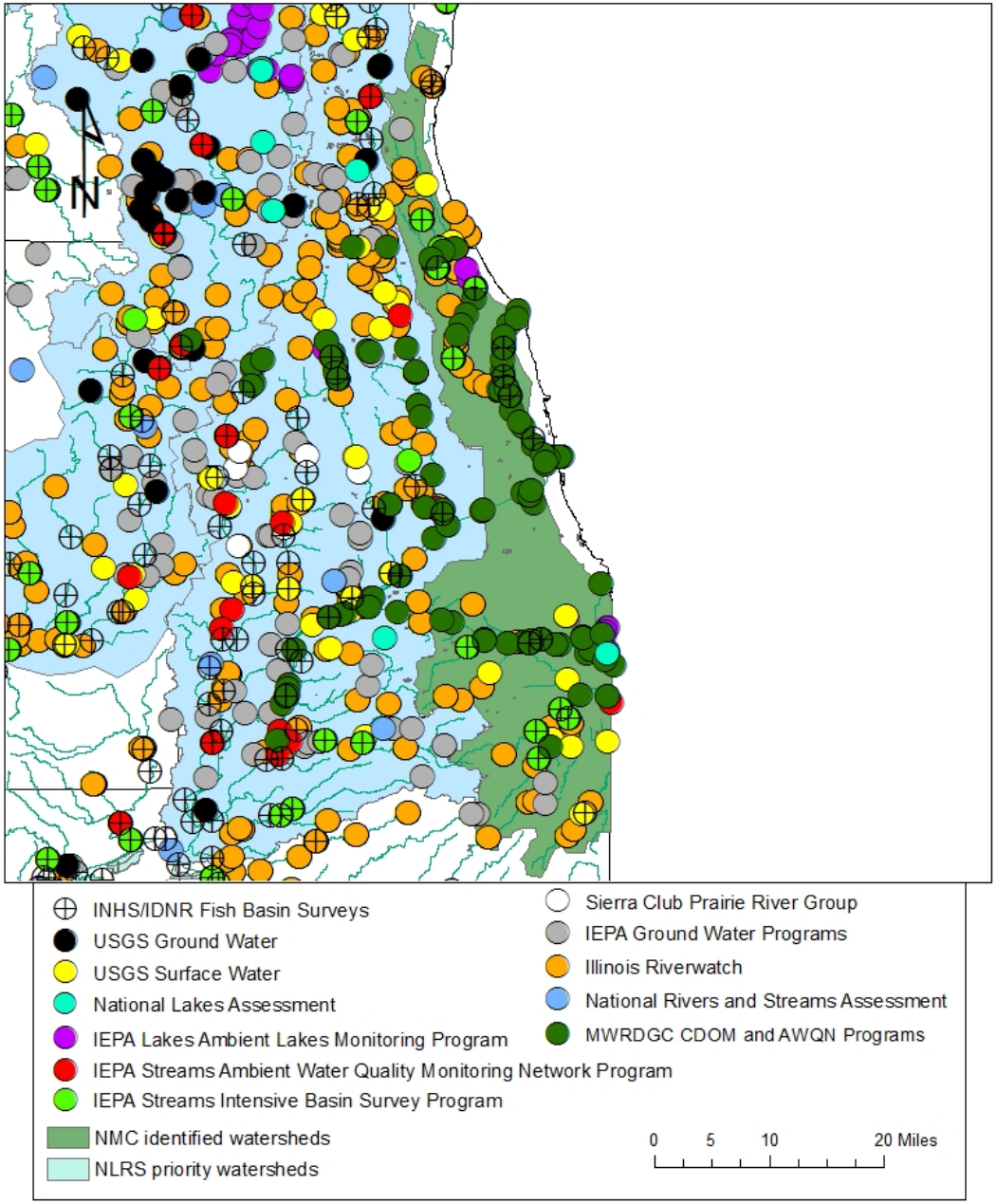
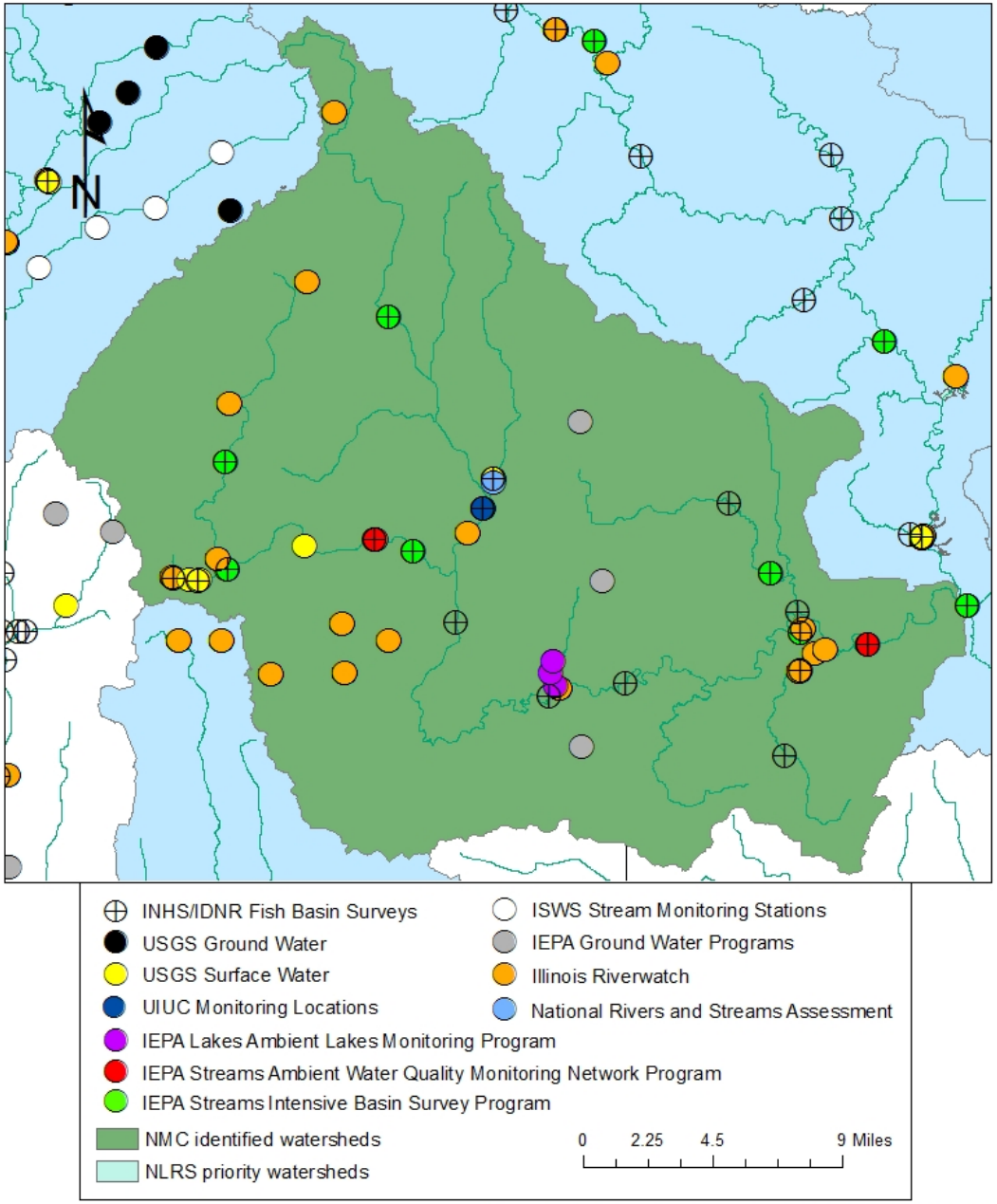
ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY | Improving collaborati

Aggregated Chicago/Little Calumet Watershed*



*As identified by the Illinois Nutrient Monitoring Council

Aggregated Salt Fork Watershed*



*As identified by the Illinois Nutrient Monitoring Council

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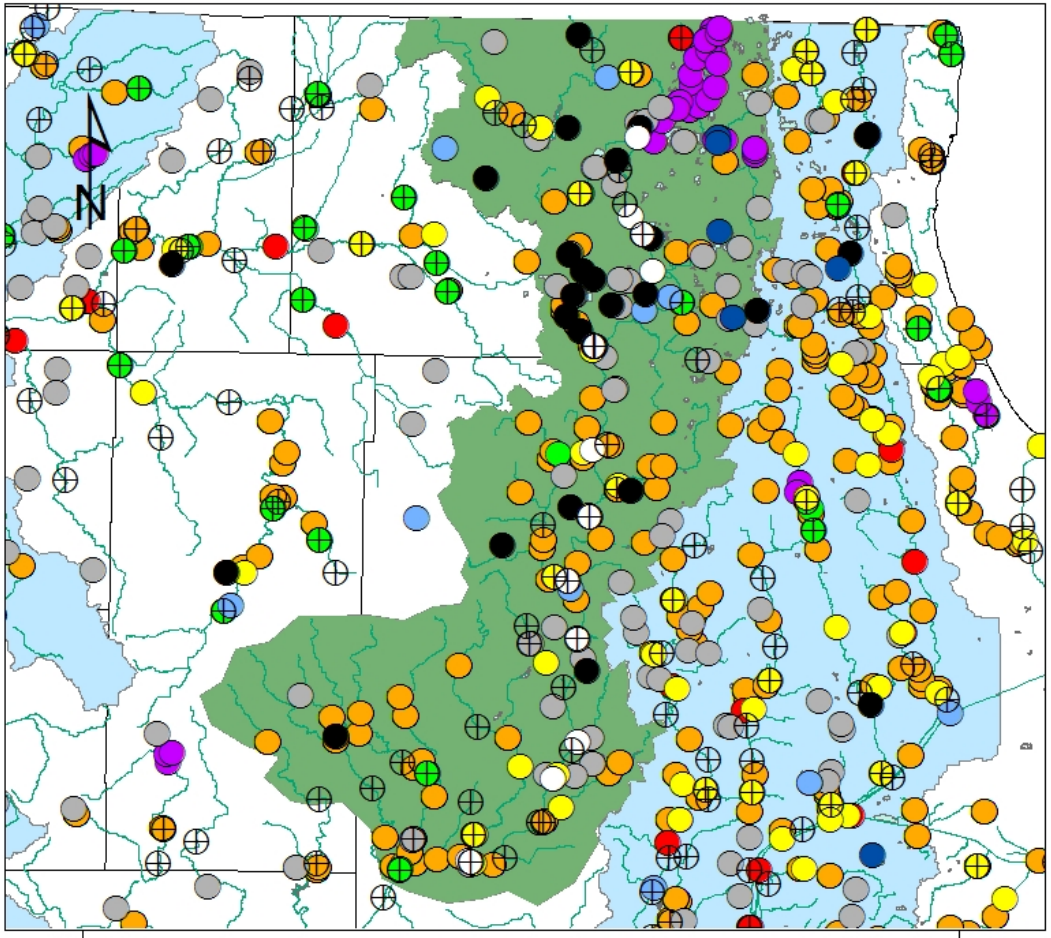
Aggregated Upper Fox/Northern Lower Fox ??? Watershed*



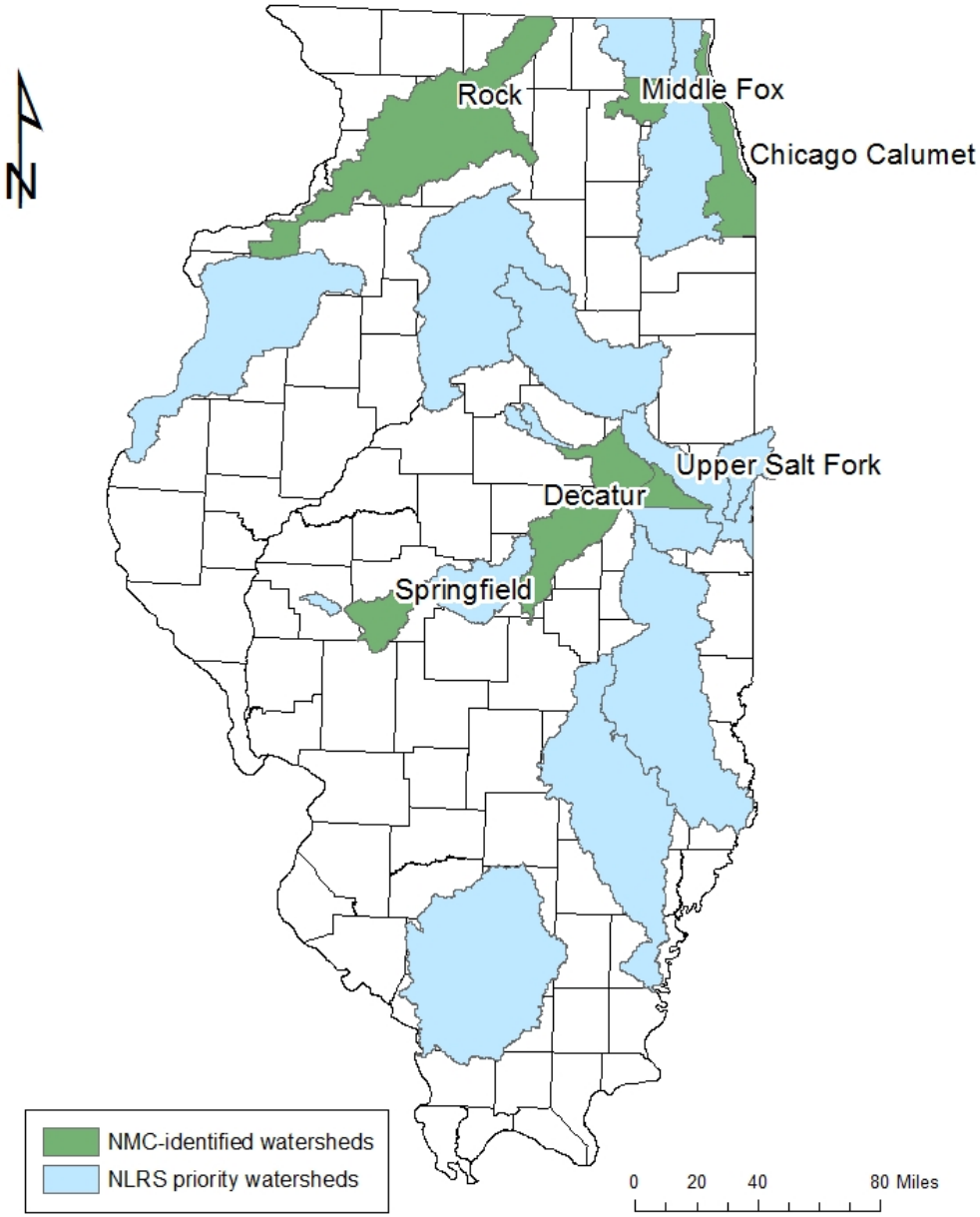
INHS/IDNR Fish Basin Surveys
USGS Ground Water
USGS Surface Water
National Lakes Assessment
IEPA Lakes Ambient Lakes Monitoring Program
IEPA Streams Ambient Water Quality Monitoring Network Program
IEPA Streams Intensive Basin Survey Program
Sierra Club Fox River Study Group
IEPA Ground Water Programs
Illinois Riverwatch
National Rivers and Streams Assessment
NMC-identified watersheds
NLRS priority watersheds

0 4.75 9.5 19 Miles

*As identified by the Illinois Nutrient Monitoring Council

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY | Improving collaborati

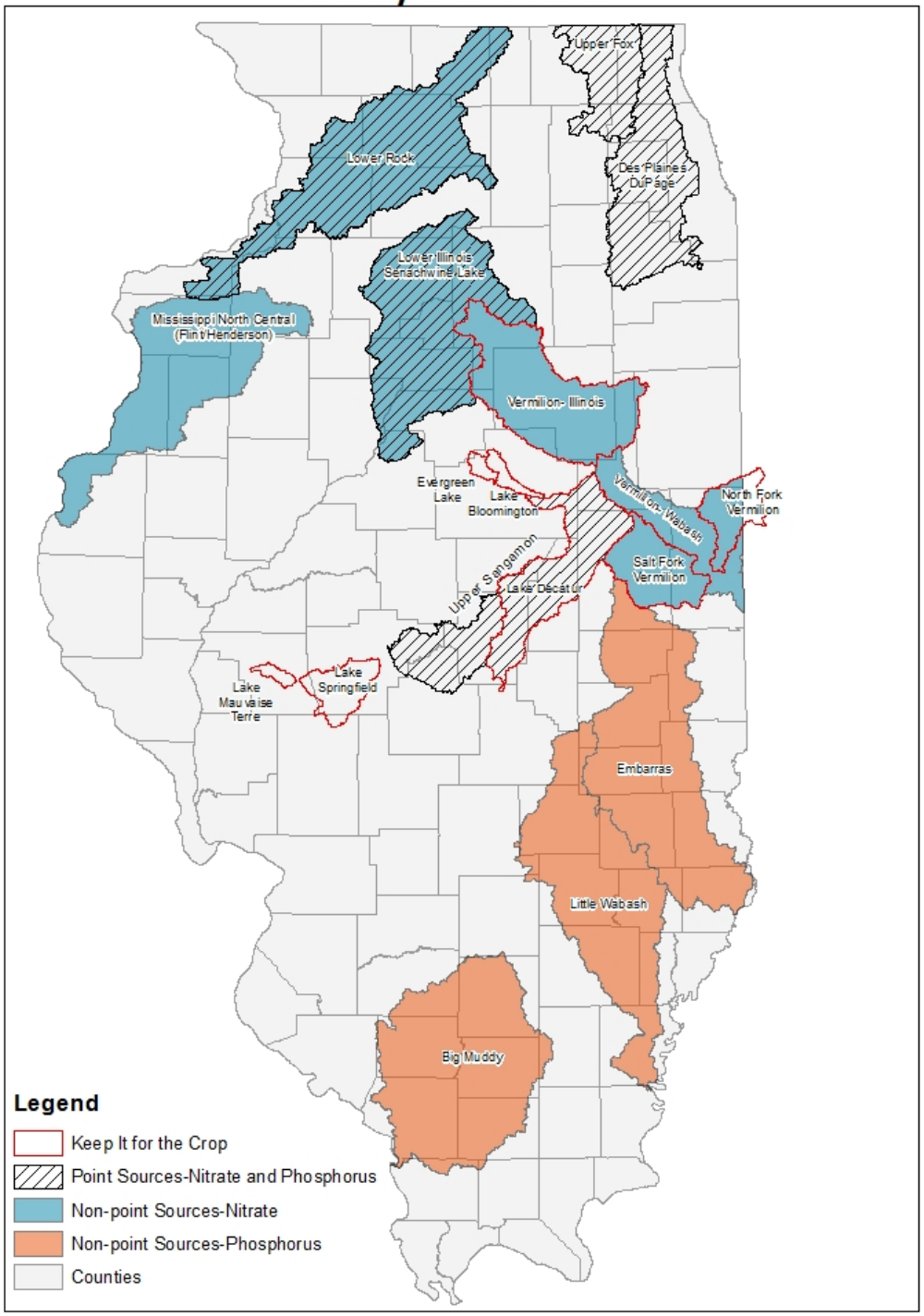
Most Monitored Watersheds

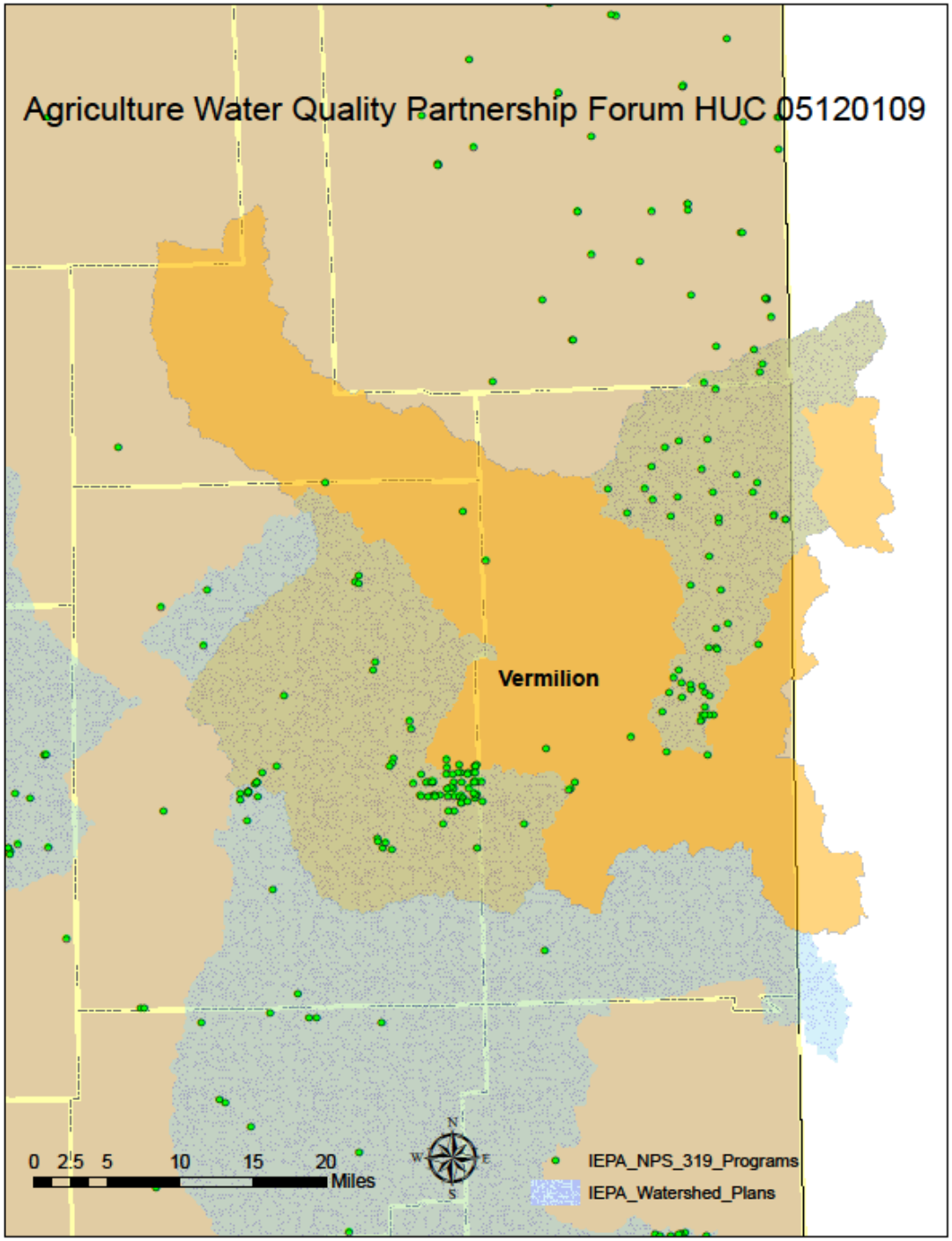


*As identified by the Illinois Nutrient Monitoring Council

Summary Thoughts

- *There was no magic in selecting these 6 watersheds!* They were only selected based on where NMC members thought the most ongoing monitoring was happening in NLRS-identified priority watersheds.
- *The NMC is not "wed" to these 6 watersheds!* Prioritizing the development of Watershed Nutrient Monitoring Plans needs to be a joint decision, not just the NMC's.
- *The GOAL: To show nutrient reduction progress through monitoring!* Therefore, NMC activity needs to be in those NLRS priority watersheds (or other identified critical watersheds) were the most money, and education, outreach, and BMP implementation activity is occurring.


Upper Fox
Lower Rock
Des Plaines/ DuPage
Lower Illinois Senachwine Lake
Mississippi North Central (Flint/Henderson)
Vermilion- Illinois
Evergreen Lake
Lake Bloomington
Vermilion- Wabash
North Fork Vermilion
Salt Fork Vermilion
Upper Sangamon
Lake Decatur
Lake Springfield
Lake Mauvaise Terre
Embarras
Little Wabash
Big Muddy
Legend
Keep It for the Crop
Point Sources-Nitrate and Phosphorus
Non-point Sources-Nitrate
Non-point Sources-Phosphorus
Counties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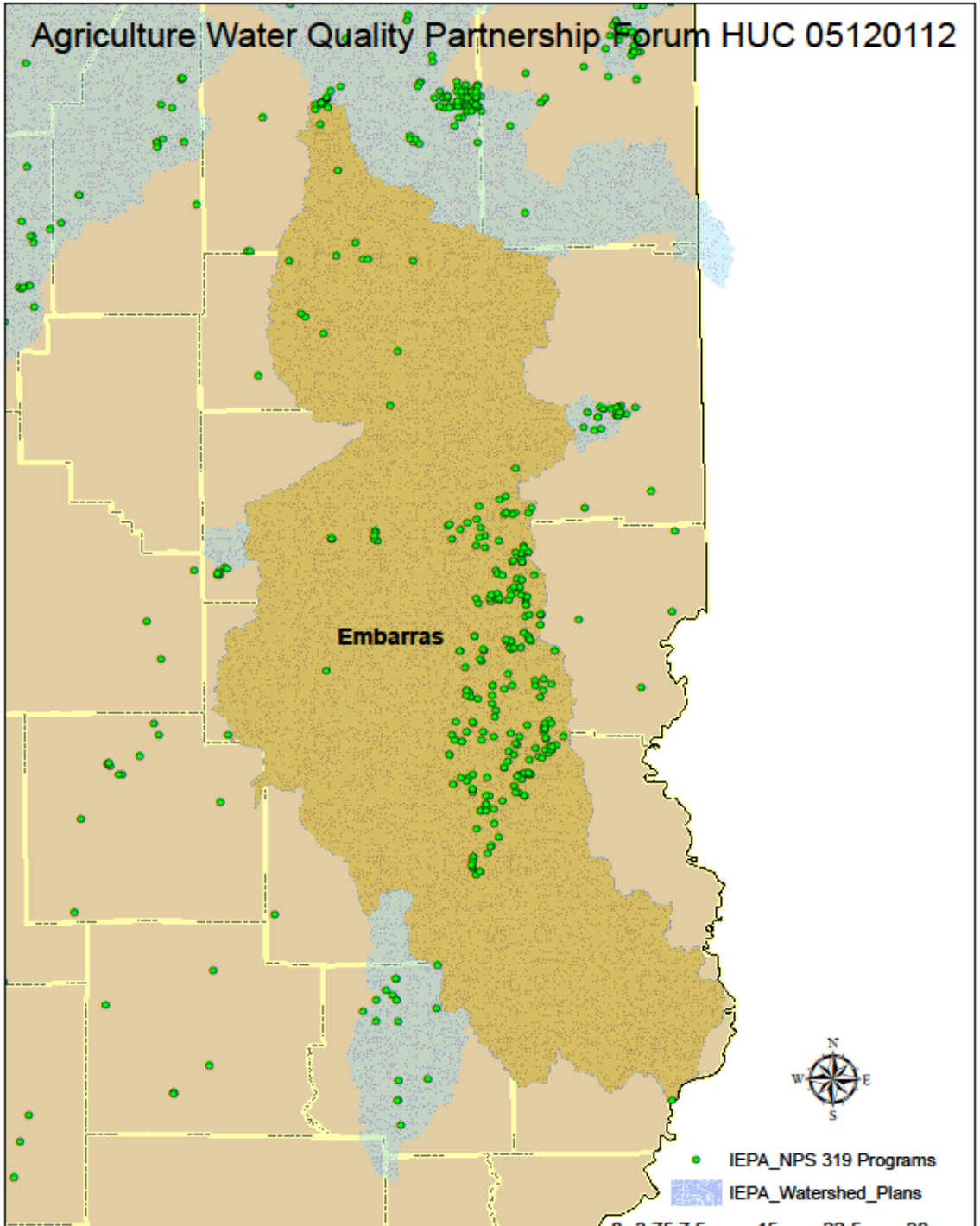
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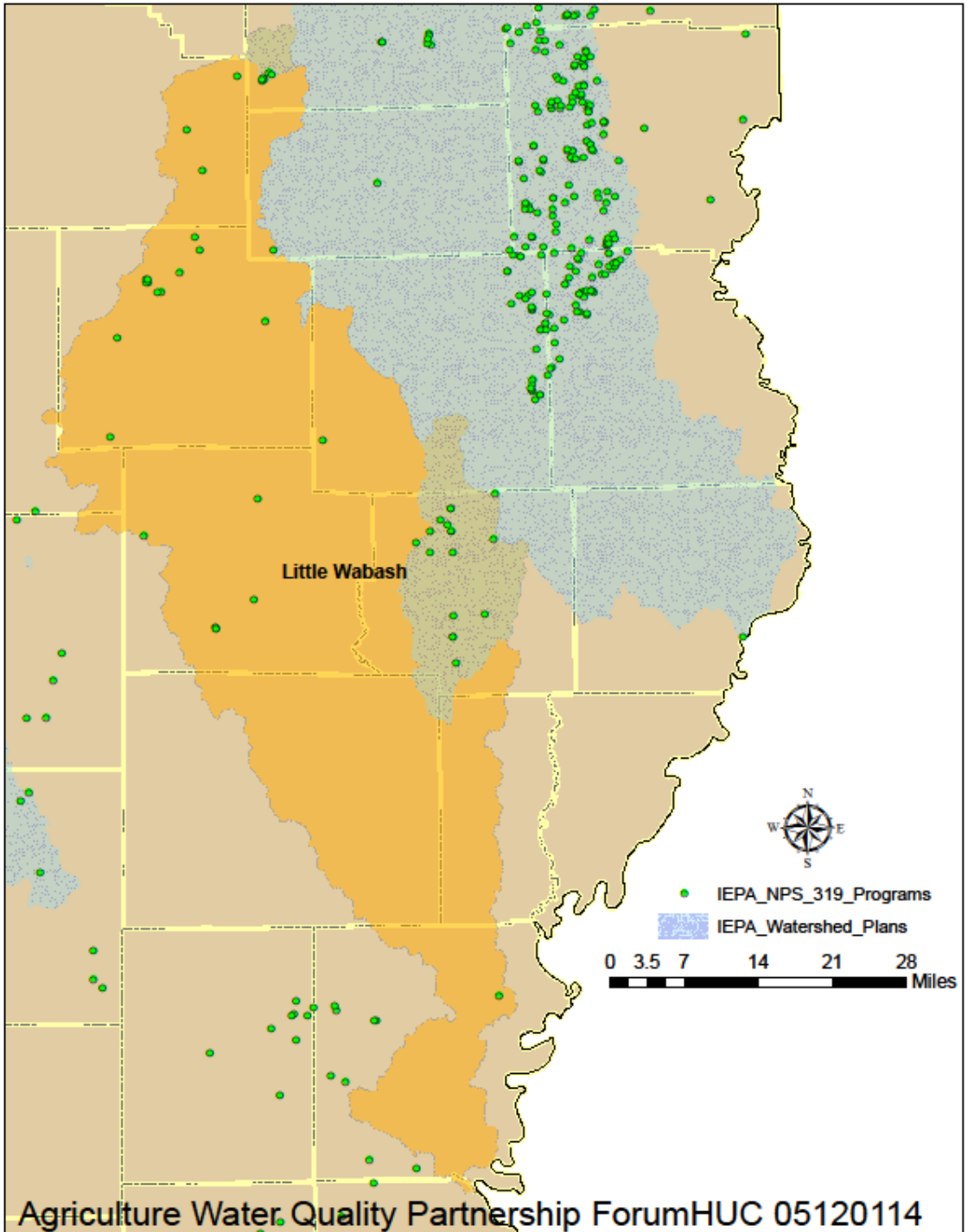
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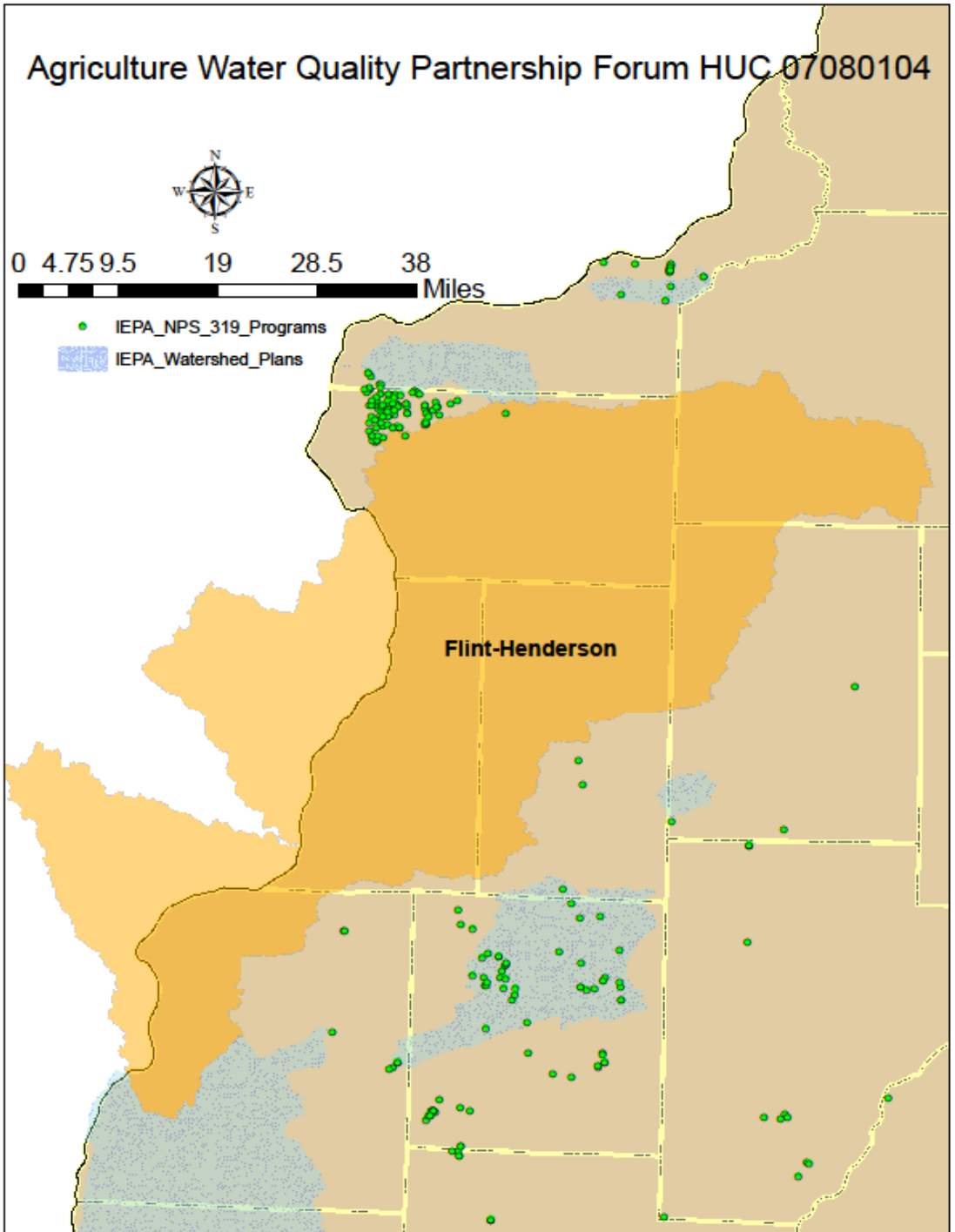
Agriculture Water Quality Partnership ForumHUC 05120114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Flint-Henderson

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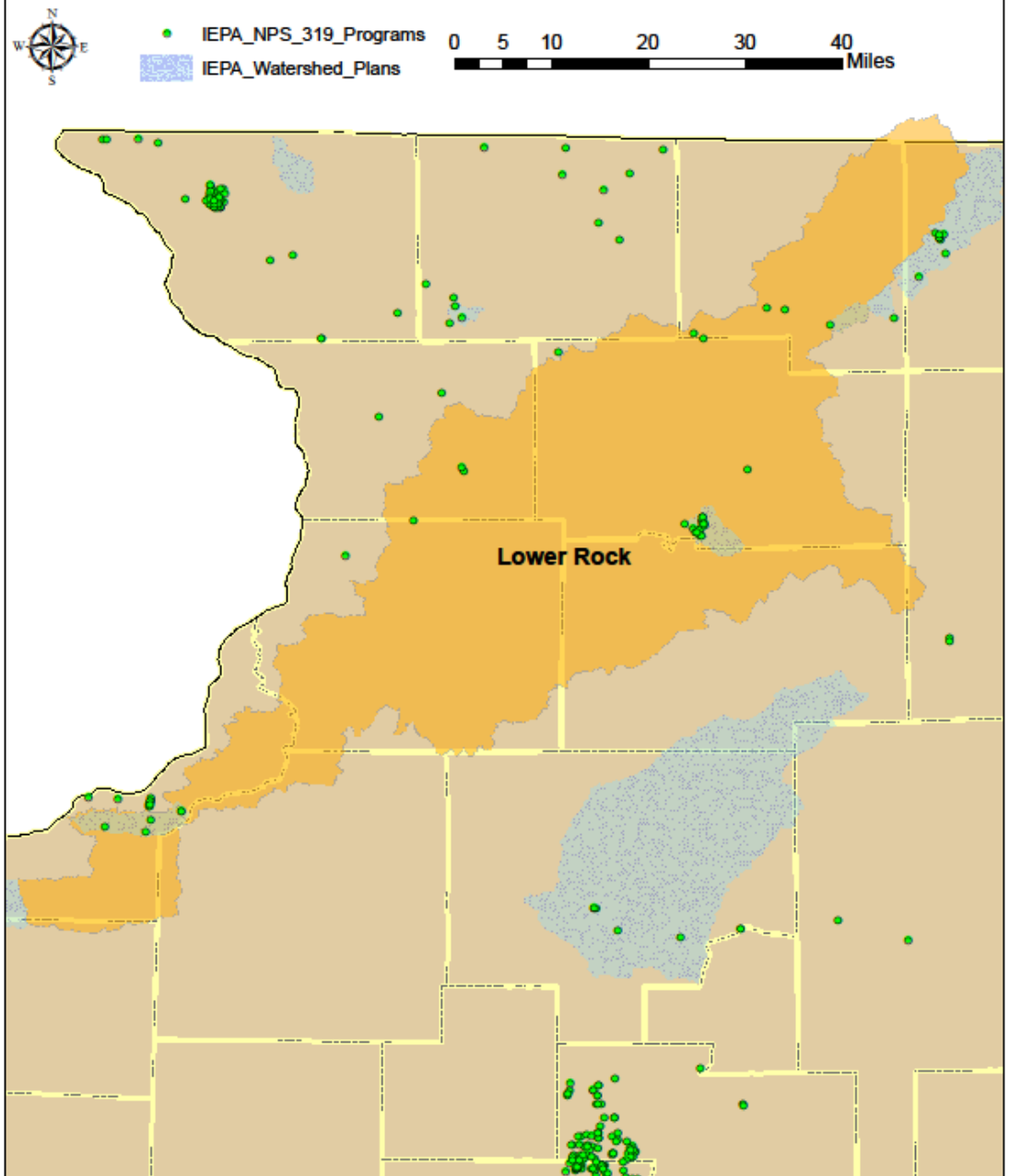

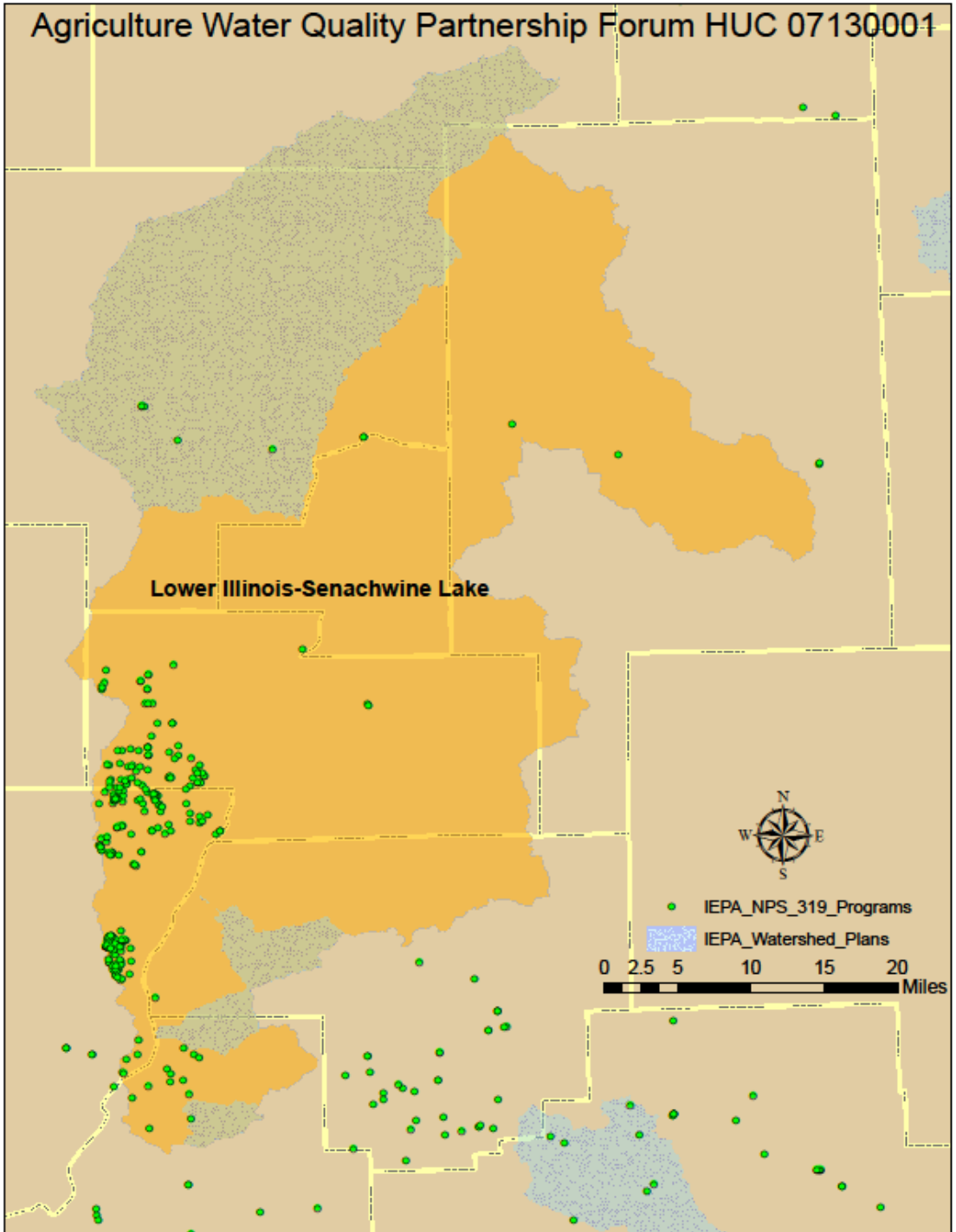
Agriculture Water Quality Partnership Forum HUC 07130001
Lower Illinois-Senachwine Lake
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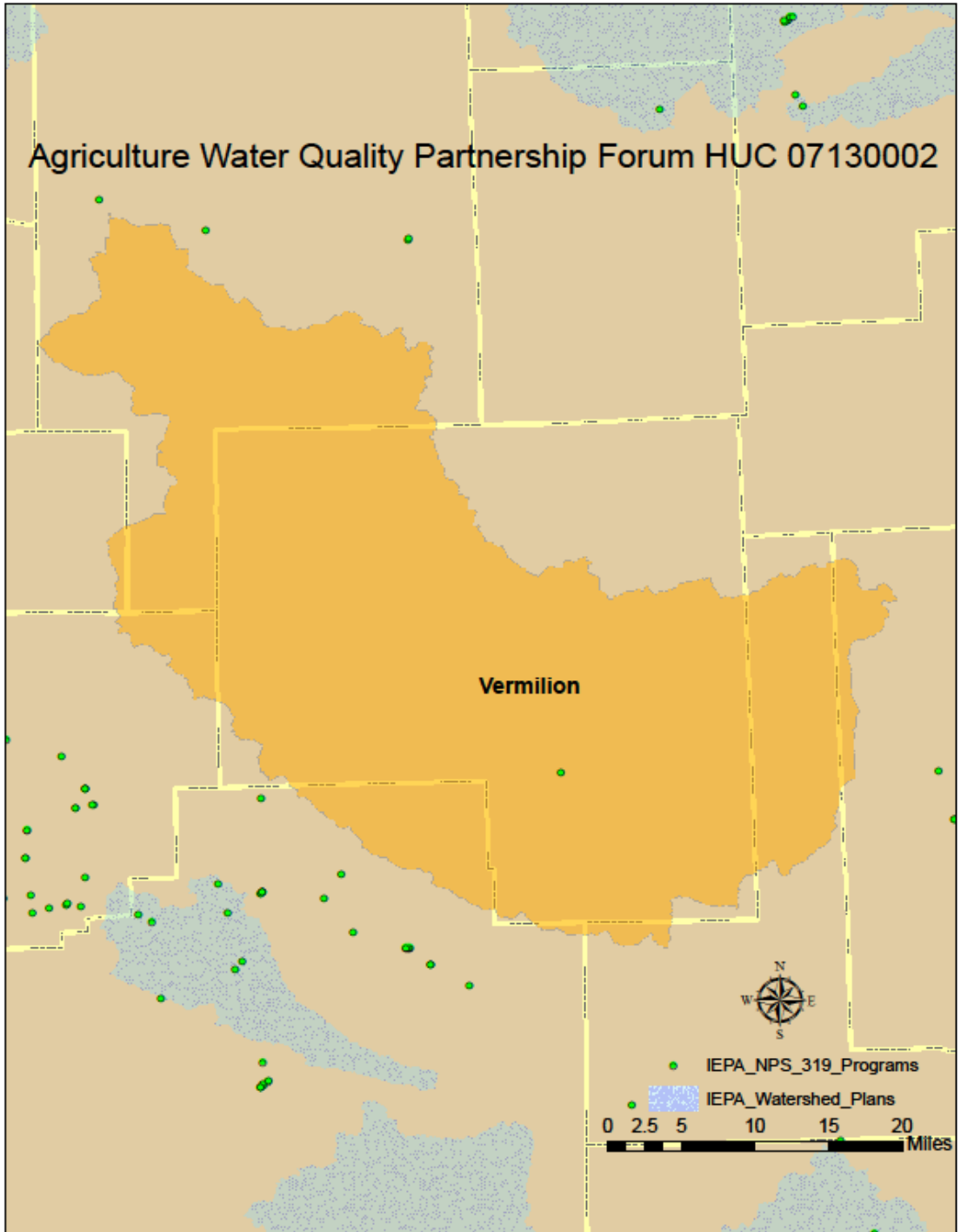
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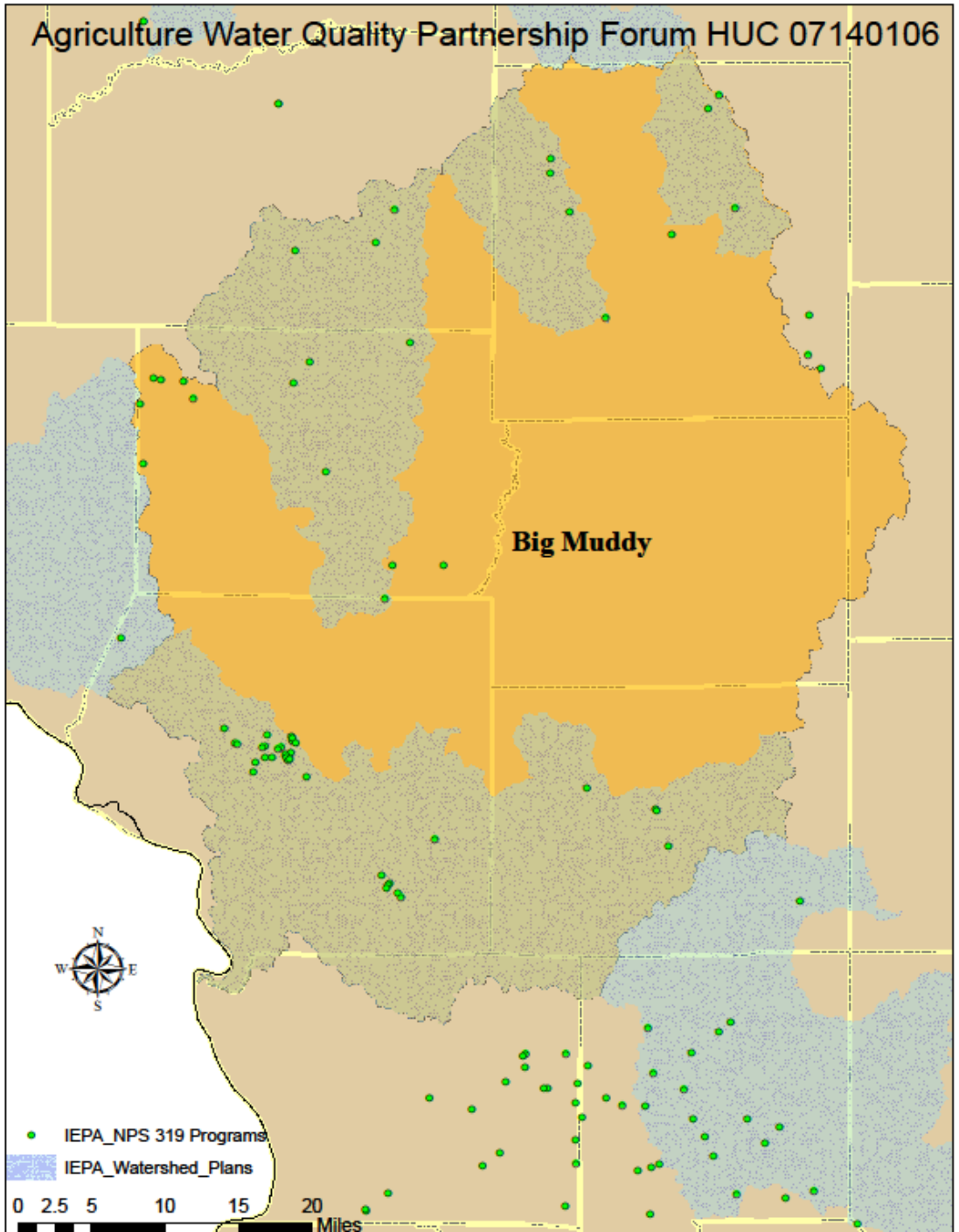
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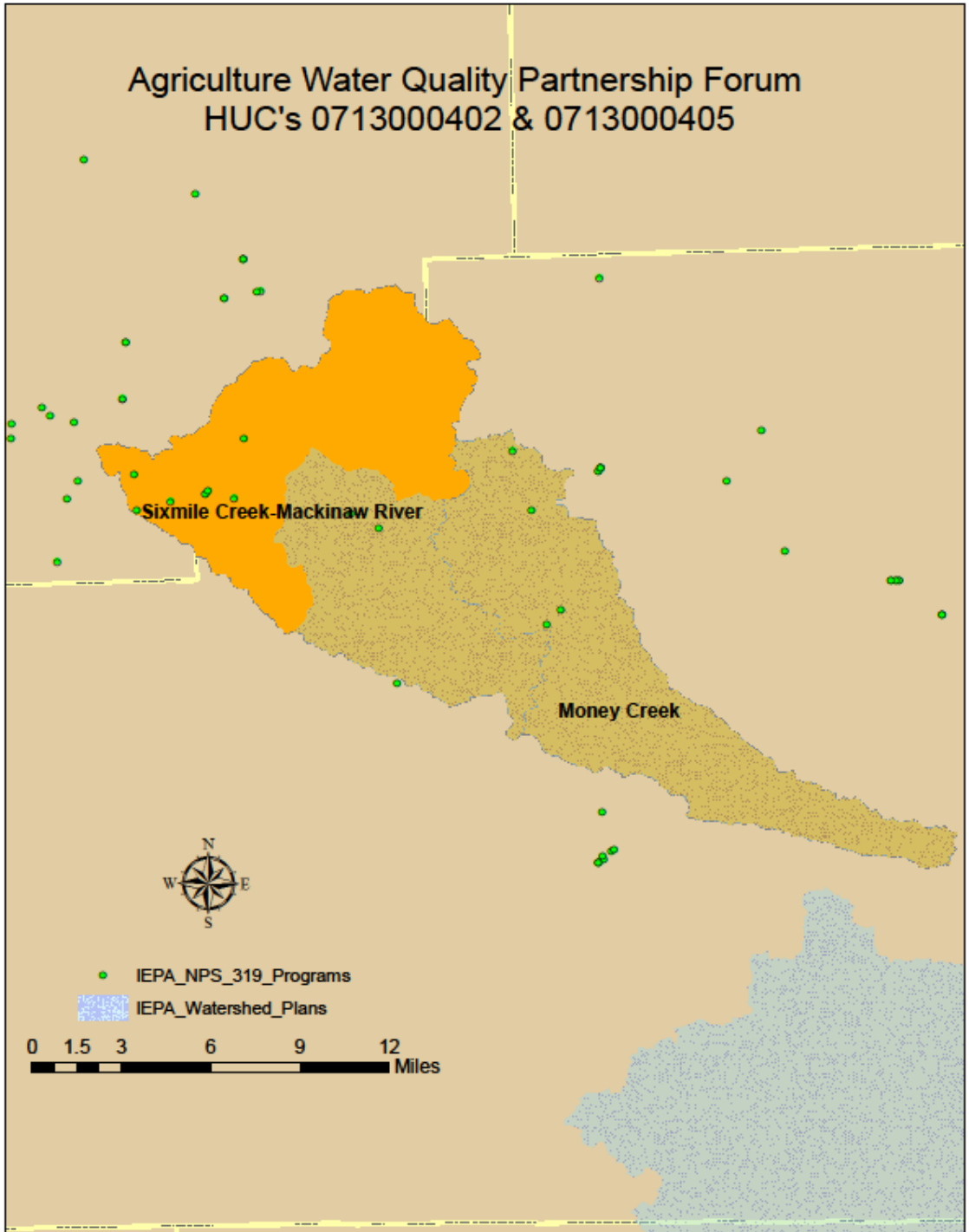
Agriculture Water Quality Partnership Forum
HUC's 0713000402 & 0713000405
Sixmile Creek-Mackinaw River
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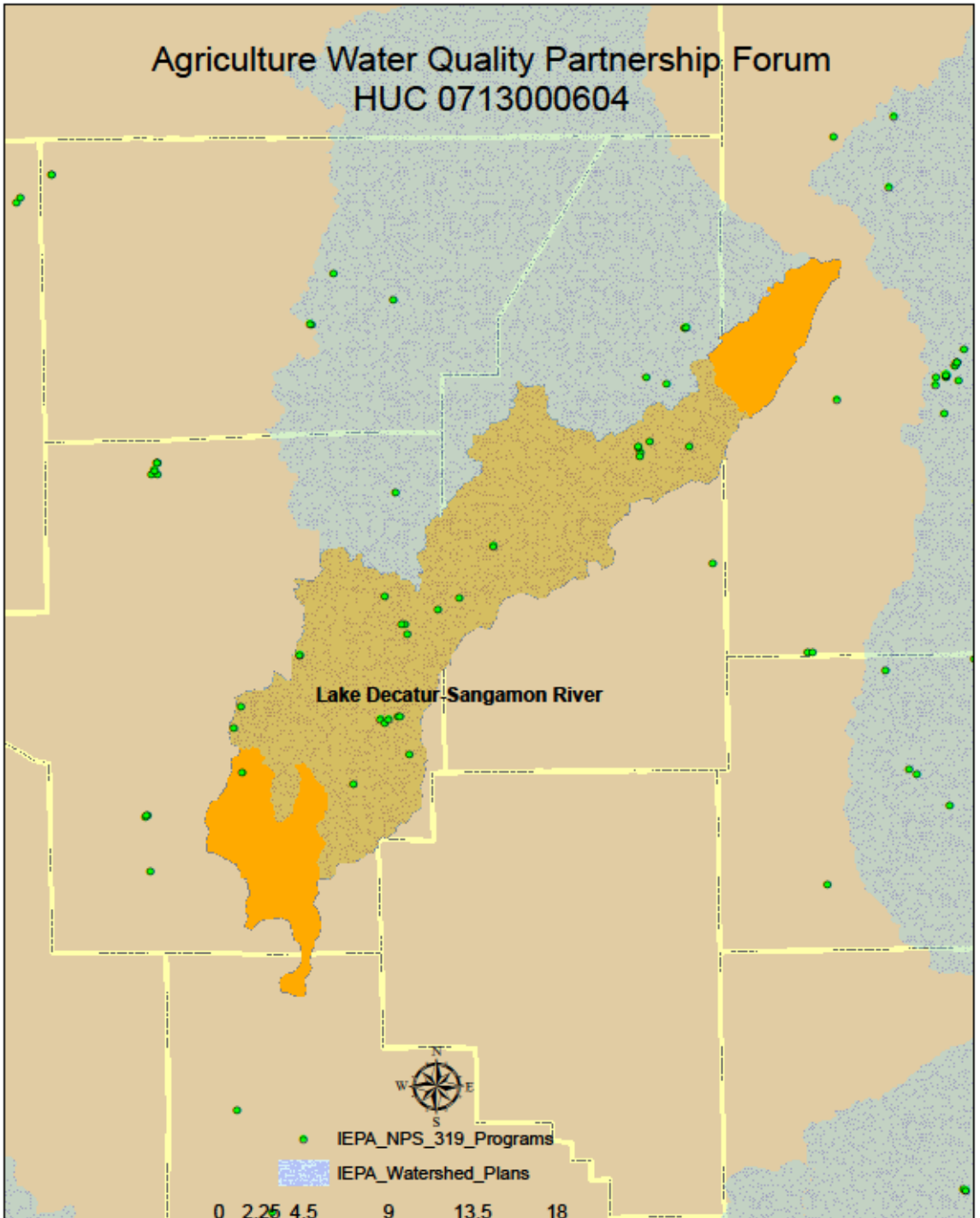
Agriculture Water Quality Partnership Forum
HUC 0713000604
Lake Decatur-Sangamon River
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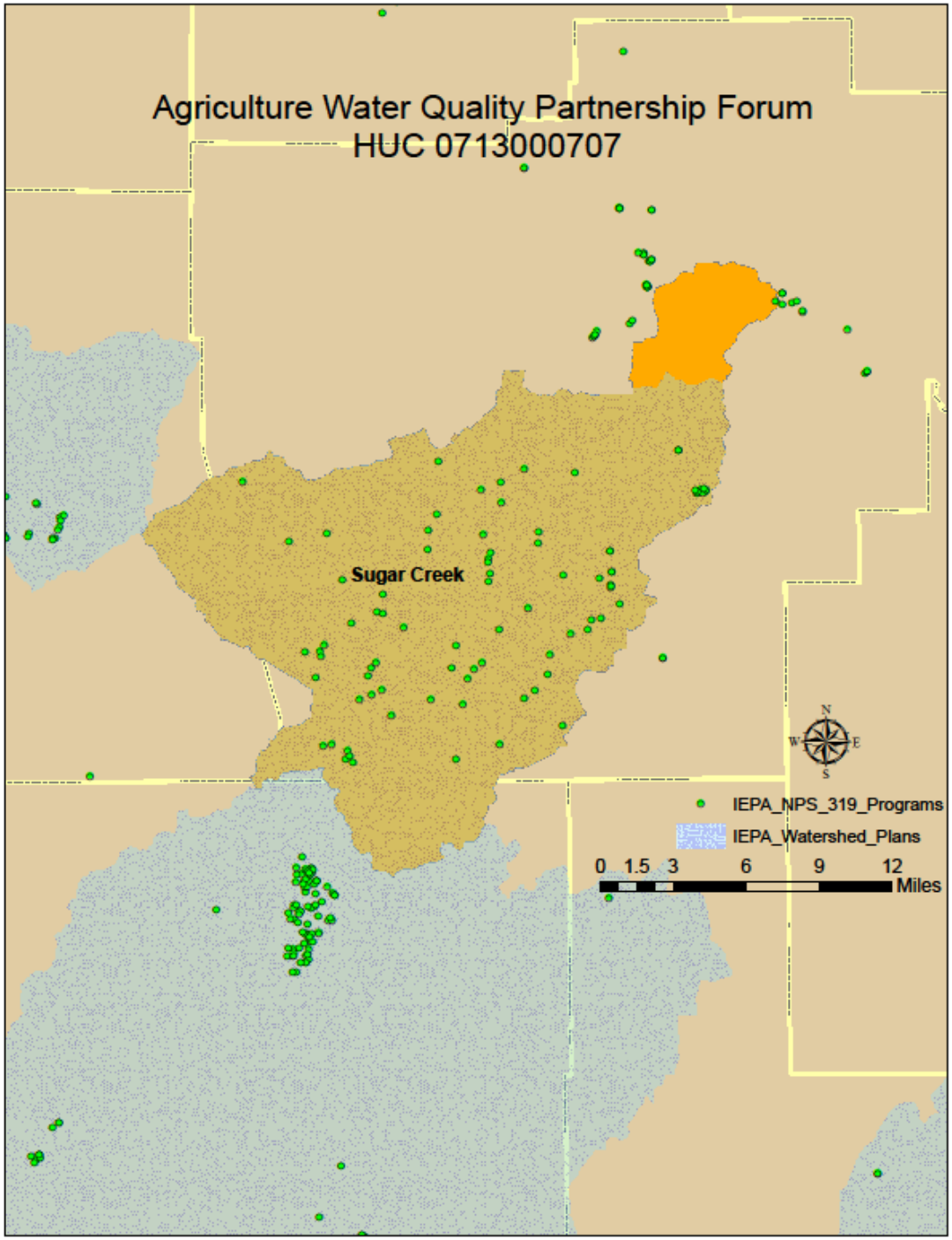
Agriculture Water Quality Partnership Forum
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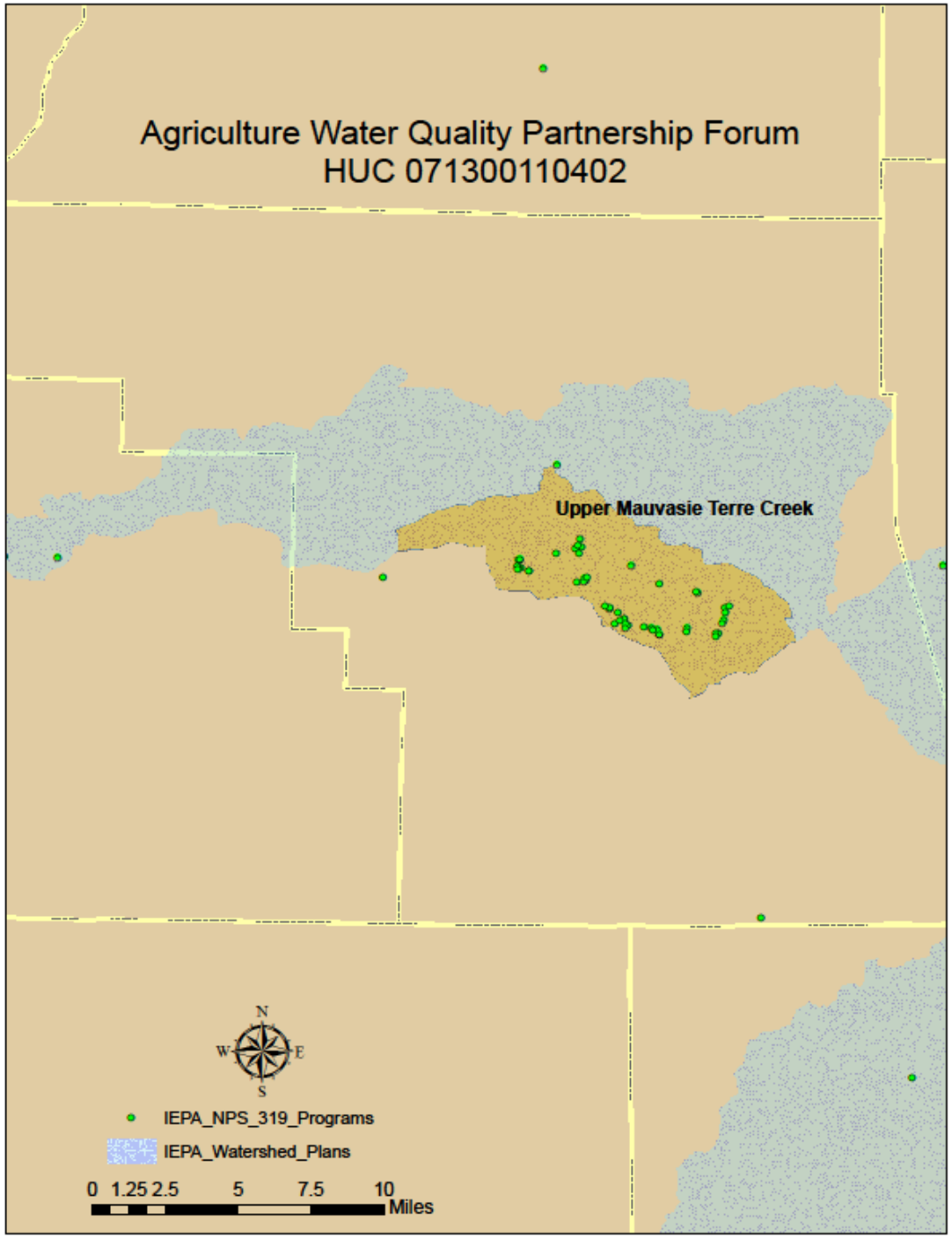
Agriculture Water Quality Partnership Forum
HUC 071300110402
Upper Mauvasie Terre Creek
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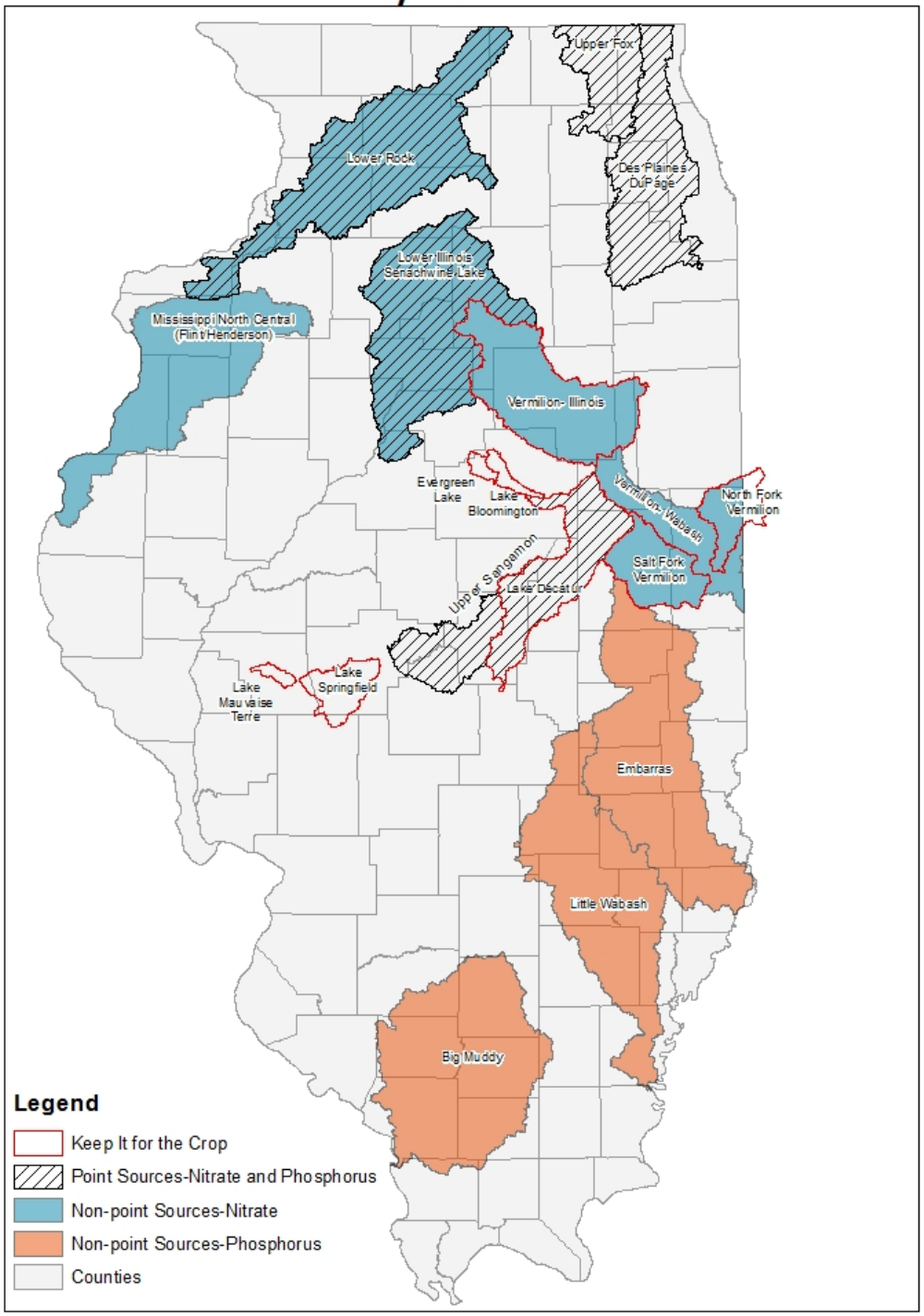
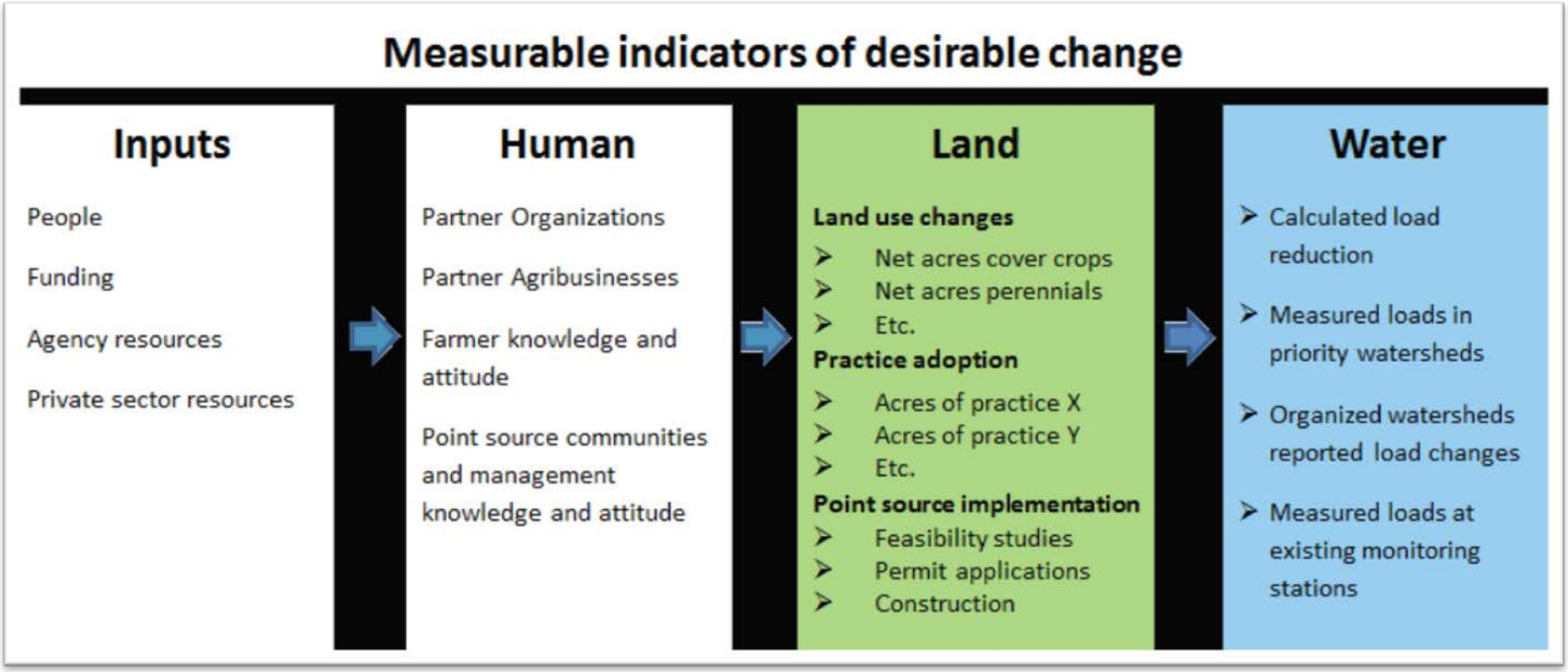
0 1.25 2.5 5 7.5 10
Miles


Upper Fox
Lower Rock
Des Plaines/ DuPage
Lower Illinois Senachwine Lake
Mississippi North Central (Flint/Henderson)
Vermilion- Illinois
Evergreen Lake
Lake Bloomington
Vermilion- Wabash
North Fork Vermilion
Salt Fork Vermilion
Upper Sangamon
Lake Decatur
Lake Springfield
Lake Mauvaise Terre
Embarras
Little Wabash
Big Muddy
Legend
Keep It for the Crop
Point Sources-Nitrate and Phosphorus
Non-point Sources-Nitrate
Non-point Sources-Phosphorus
Counties

LOGIC MODEL

Tracking BMP Implementation – Iowa Logic Model



Source: Iowa State University, Extension and Outreach, Measures of Success Committee

Tracking BMP Implementation – Iowa Logic Model

Inputs	Human
People	Partner Organizations
Funding	Partner Agribusinesses
Agency resources	Farmer knowledge and attitude
Private sector resources	Point source communities and management knowledge and attitude

Tracking BMP Implementation – Iowa Logic Model

Land

Land use changes

- Net acres cover crops
- Net acres perennials
- Etc.

Practice adoption

- Acres of practice X
- Acres of practice Y
- Etc.

Point source implementation

- Feasibility studies
- Permit applications
- Construction

Land	Units	Measurement Provider		Action
Reducing N rate from backgrnd to MRTN on 10% acres	Cropland acres	NASS survey	Check with IFCA about similar questions on industry survey.	
Nitrification inhibitor with all fall-applied fertilizer on tile-drained corn acres	Cropland acres	Add 2 questions to NASS survey: inhibitor & drain		
2 Split application of 50% fall & 50% spring on tile-drained corn acres	Cropland acres	NASS survey		
1 Spring-only application on tile-drained corn	Cropland acres	NASS survey		
3 Split application of 40% fall, 10% pre-plant, and 50% side dress	Cropland acres	NASS survey		
Cover crops on all corn/soybean tile-drained acres	Cropland acres	Two sources: FSA (need to link soil data and/or HUC8) and NASS will add this question and tile drain ac to survey		Determine list of cover crops: Natalie to provide list of FSA crops and send it to Mark, Warren and Eric. Then, Mark and NRCS state agronomist review list to determine what is a cover crop. FSA will report on Mar 29.
Cover crops corn/soybean non-tiled acres	Cropland acres	2 sources: FSA (need to link soil data and/or HUC8) and NASS (add this question and tile drain ac to survey)		
Bioreactors on 50% of tile-drained land	Number of acres treated	EQIP (NRCS) & 319 have useable data. Add NASS survey question. Check with LICA about question on industry survey.		Illinois EPA and NRCS to bring report on Mar 29. Number of bioreactors and acres treated. If possible, provide watershed.
Wetlands on 35% of tile-drained land	Acres of wetland/ Numbers of acres treated (NASS)	FSA and IDNR will coordinate data. 319 also has usable data. NASS acts for acres of acres treated.		FSA (Kim M) and IDNR (Lisa B and Mike C) will combine acreage by buffer and wetland practice and (hopefully will) pull out info by watershed. Report on Mar 29.
Buffers on all applicable crop land (reduction only for water that interacts with active area)	Acres of buffers	FSA and IDNR will coordinate data. 319 also has usable data.		
Perennial/energy equal to pasture/hay acreage from 1987	Perenial/ energy ac	FSA has usable data. Will ask question on NASS survey.		Determine list of perennial/energy crop per method above for cover crop. FSA will report on Mar 29.
Perennial/energy crops on 10% of tile-drained land	Perennial / energy acres	FSA has usable data. Will ask question on NASS survey.		FSA will report on Mar 29.
Drainage water management* *being considered	Acres effected	EQIP & 319 have usable data. Add NASS survey question. Check with LICA about question on industry survey.		Query the science assessment group whether this practice should be included.

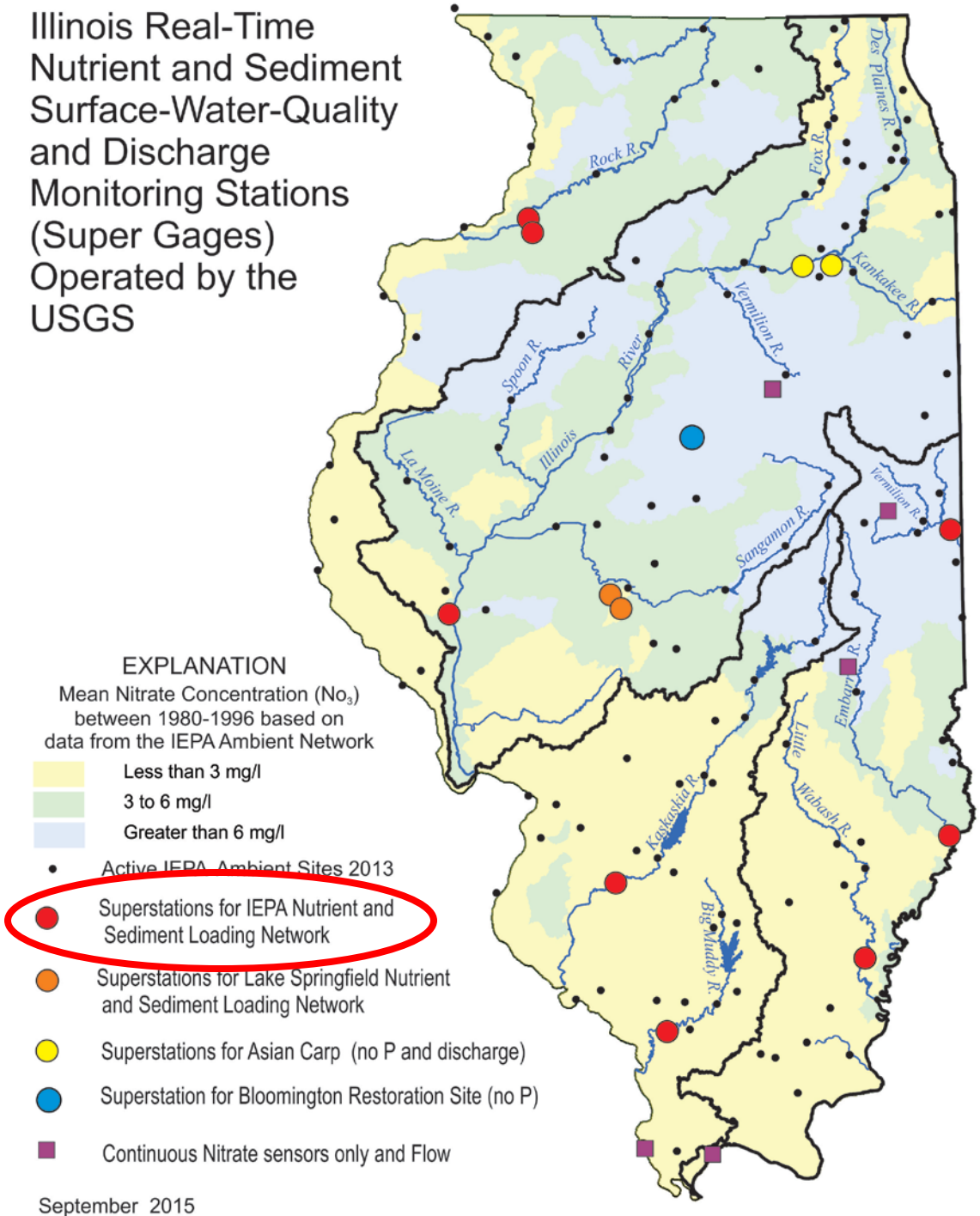
Tracking BMP Implementation – Iowa Logic Model

Water

- Calculated load reduction
- Measured loads in priority watersheds
- Organized watersheds reported load changes
- Measured loads at existing monitoring stations

The Plan

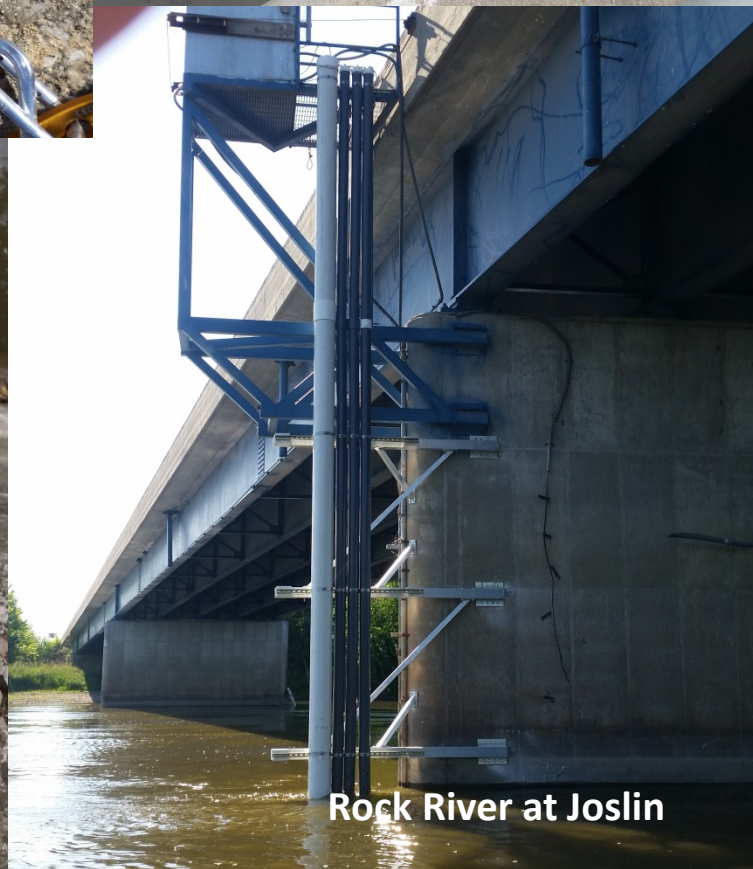
- Basins covering almost 75% of area of the State
  - Rock River
  - Green River
  - Illinois River
  - Kaskaskia River
  - Big Muddy
  - Little Wabash
  - Embarras River
  - Vermilion River
- Current USGS gaging station (flow)
- Current IEPA Ambient site/Historical Data



Kaskaskia at New Athens

Little Wabash
at Carmi

Green River at Geneseo



Rock River at Joslin

Committee Charge

Agriculture Water Quality Partnership Forum

- Steer and coordinate outreach and education efforts to help farmers address nutrient loss and select the most appropriate BMPs:
  - Identify needed education initiatives or training requirements for farmer and technical advisors.
  - Strengthen connections between industry initiatives, certified crop advisor continuing education requirements, state initiatives, and other technical services.
- Track BMP implementation
- Coordinate cost sharing and targeting
- Develop other tools as needed
  - Consider an agriculture water quality certification program.

NRCS AND STATE TECH SUBCOMM UPDATE – *ERIC GERTH*

Next Steps

Schedule of future AWQPF meetings

Mar 29, 2016 (Tech Subgroup)

May 17, 2016

Jun 14, 2016 (Tech Subgroup)

Sep 27, 2016

Oct 11, 2016 (Tech Subgroup)

Comments from the Floor (time permitting)