Illinois Nutrient Loss Reduction Strategy

Nutrient Monitoring Council

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

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

Introductions

Illinois EPA
Gregg Good, Rick Cobb

Illinois State Water Survey
Laura Keefer

~~**Illinois State Geological Survey**~~
~~Richard Berg~~

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
~~Doug Yeskis~~ Kelly Warner (temp assign)

National Center for Supercomputing Apps
Jong Lee

Today's Guests???

“Killing the Dead Zone”

- Anjanette Riley, IWRC

Illinois Environmental Protection Agency
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Illinois Nutrient Loss Reduction Strategy Implementation
Home / Topics / Water Quality / Watershed Management / Excess Nutrients / Nutrient Loss Reduction Strategy
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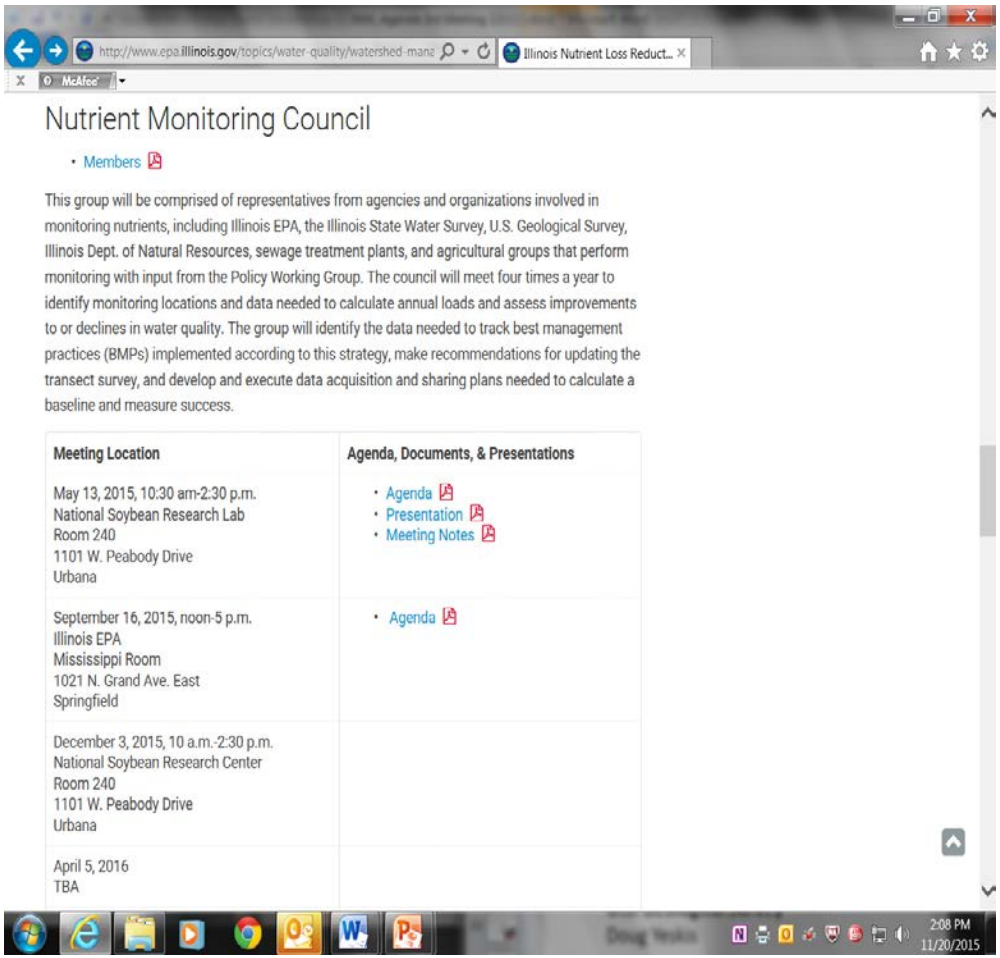
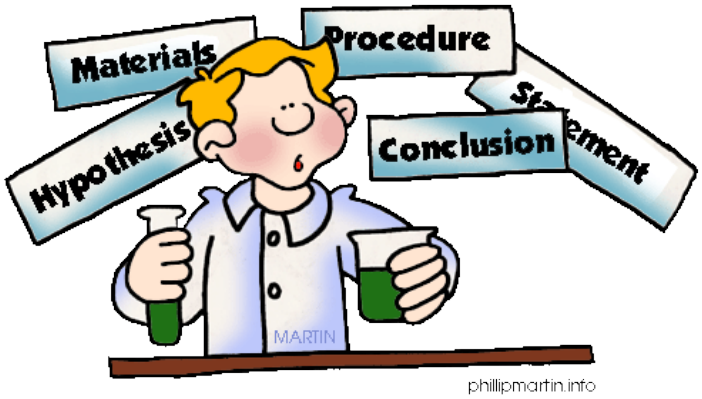
Medication Disposal Locations
E-Waste Collection Sites
Hazardous Waste Collection Sites
Within 10 miles of
The Illinois Nutrient Loss Reduction Strategy guides state efforts to improve water quality at home and downstream by reducing nitrogen and phosphorus levels in our lakes, streams, and rivers. The 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.
ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY
Improving our water resources with collaboration and innovation
The strategy was developed by a policy working group led by the Illinois Water Resource Center-


Nutrient Monitoring Council
Members
This group will be comprised of representatives from agencies and organizations involved in monitoring nutrients, including Illinois EPA, the Illinois State Water Survey, U.S. Geological Survey, Illinois Dept. of Natural Resources, sewage treatment plants, and agricultural groups that perform monitoring with input from the Policy Working Group. The council will meet four times a year to identify monitoring locations and data needed to calculate annual loads and assess improvements to or declines in water quality. The group will identify the data needed to track best management practices (BMPs) implemented according to this strategy, make recommendations for updating the transect survey, and develop and execute data acquisition and sharing plans needed to calculate a baseline and measure success.
Meeting Location
Agenda, Documents, & Presentations
May 13, 2015, 10:30 am-2:30 p.m.
National Soybean Research Lab
Room 240
1101 W. Peabody Drive
Urbana
Agenda
Presentation
Meeting Notes
September 16, 2015, noon-5 p.m.
Illinois EPA
Mississippi Room
1021 N. Grand Ave. East
Springfield
Agenda
December 3, 2015, 10 a.m.-2:30 p.m.
National Soybean Research Center
Room 240
1101 W. Peabody Drive
Urbana
April 5, 2016
TBA

Nutrient Science Advisory Committee (NSAC)

- Members and Chair
- Charge
- Implementation



Nutrient Science Advisory Committee Members

Todd Royer, Indiana University, NSAC Chair
Candice Bauer, USEPA Region V
Walter Hill, Illinois Natural History Survey (retired)
Douglas McLaughlin - National Council for Air and Stream Improvement, Inc.
Paul Terrio, USGS-Illinois Water Science Center
Matt Whiles, SIU-Carbondale

Nutrient Science Advisory Committee Charge

- Determine the numeric criteria for nutrients most appropriate for Illinois waterbodies based on the best science available.
- Consider whether standard should be statewide or watershed specific.

Zoe Zaloudek, Water Is Photo Contest

Implementation process after NSAC completes work

- After NSAC makes its determination, Illinois EPA will work with stakeholders to develop an implementation plan
- Intent is to go to rulemaking with a standards proposal and an implementation plan

NSAC Data Request?

- Chat with Todd Royer, NSAC Chair, on Dec. 1.
- NSAC has only met once, and are trying to get a handle on “what data (and reports) are out there.”
- Shared with him that NMC is doing just that, but that we are not a “data warehouse,” at least not at this point.
- Depending on future NSAC data, study, or report needs, NSAC and NMC may desire a joint meeting at some point in the foreseeable future.

NMC “New Members” Discussion

- Review of current members and recent losses.
- What about adding new members?
  - Process for invitation (e.g., King Gregg decides, NMC voting majority)?
  - What can a new member bring to the table?
  - What is our max membership size?
  - Consideration of current request.

NUTRIENT MONITORING COUNCIL (NMC)

Update for 11/18/15 Nutrient Policy Working Group

Chair: Gregg Good (Illinois EPA)

1st Meeting: May 13, 2015
Champaign

2nd Meeting: Sept. 16, 2015
Springfield

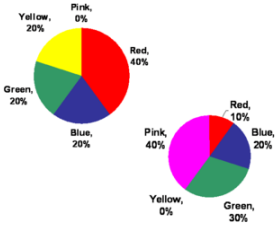
NMC Charges (Revised 10/26/15)

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.



Status of USGS Super Gages Network

Nutrient Monitoring Council
September 16, 2015
Springfield, IL

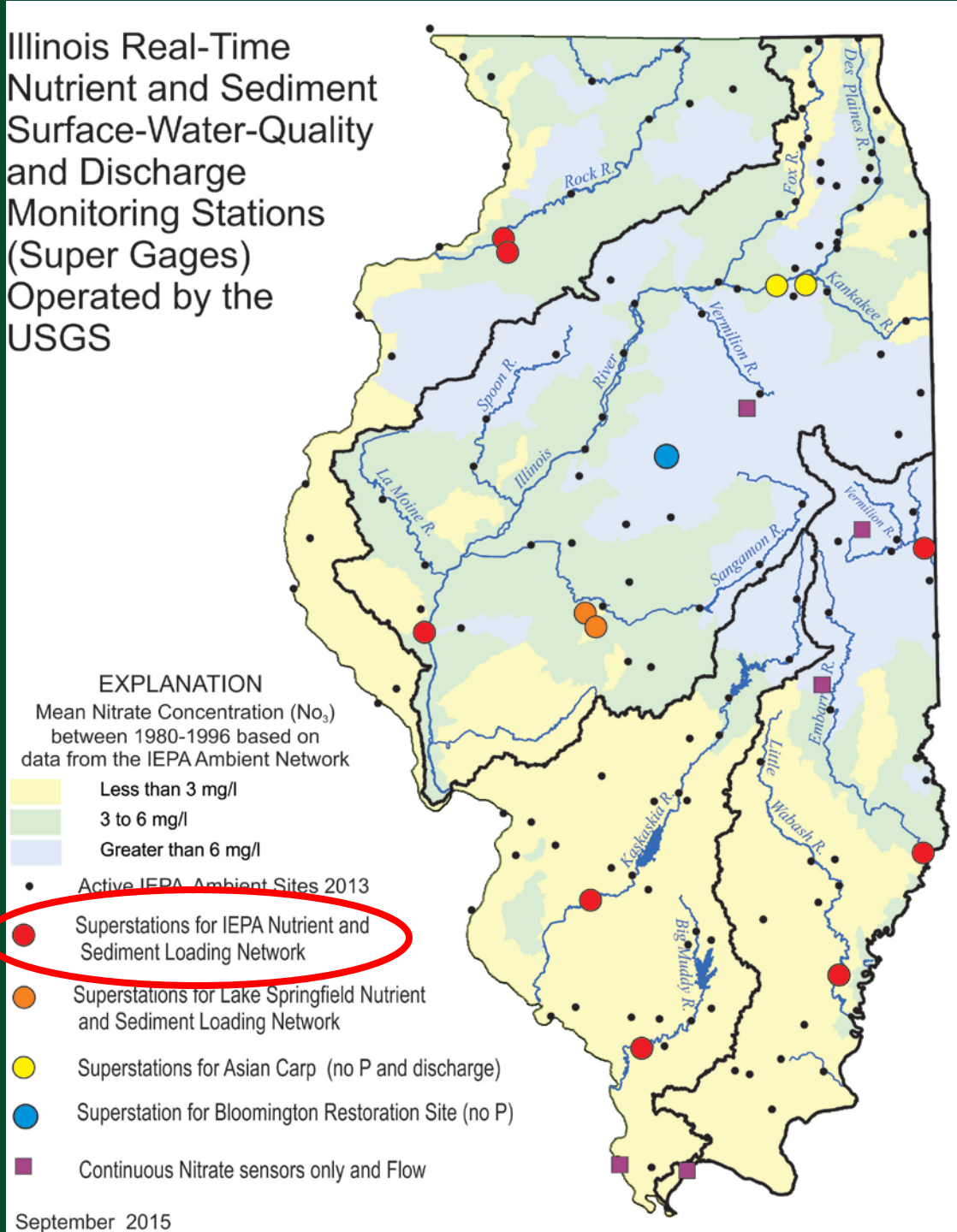
Doug Yeskis

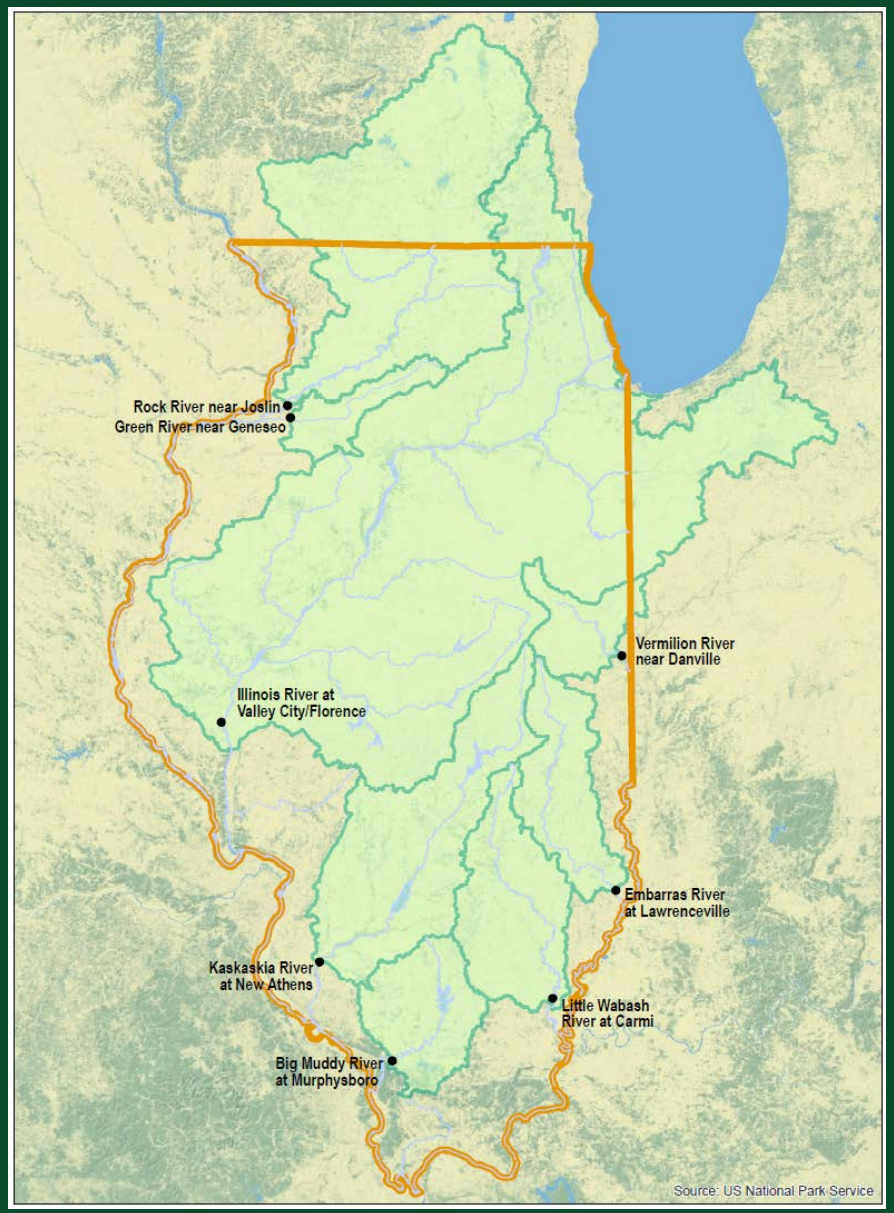
U.S. Department of the Interior
U.S. Geological Survey

The Plan

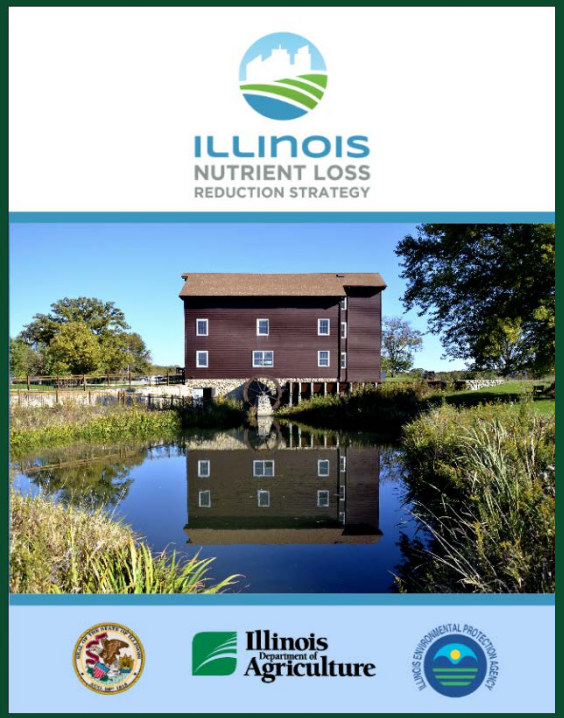
- Basins covering almost 75% of area of the State
  - **Rock River**
  - **Green River**
  - **Illinois River**
  - **Kaskaskia River**
  - **Big Muddy**
  - **Little Wabash**
  - **Embarras River**
  - **Vermilion River**
- Current USGS gaging station (flow)
- Current IEPA Ambient site/Historical Data

USGS





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



USGS

Kaskaskia at New Athens

Little Wabash
at Carmi

Green River at Geneseo

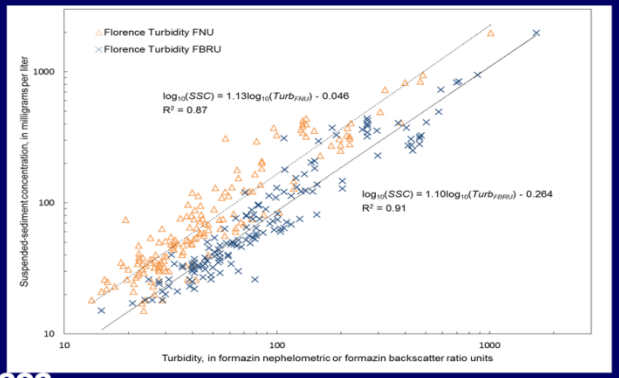
Rock River at Joslin

Future Plans

- Finish rest of installations (end of Sept.)
- Re-engineer where needed (Oct.)
- Build record for surrogates (2015-2016)
- Report w/ surrogate relationships (2016-2017)

Turbidity and SSC at the Illinois River at Florence

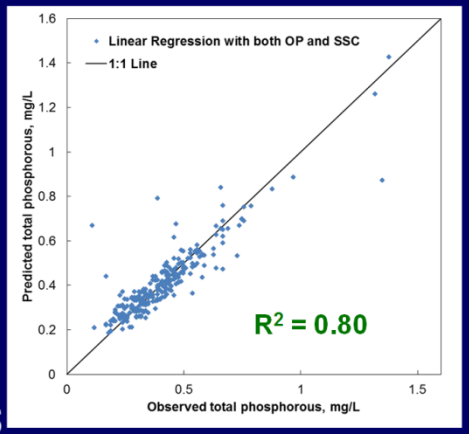
To measure suspended sediment concentration, USGS uses Turbidity as a surrogate



USGS

Total Phosphorus Predicted with Orthophosphorus and Suspended Sediment (IL River Valley City 1991 – 2013)

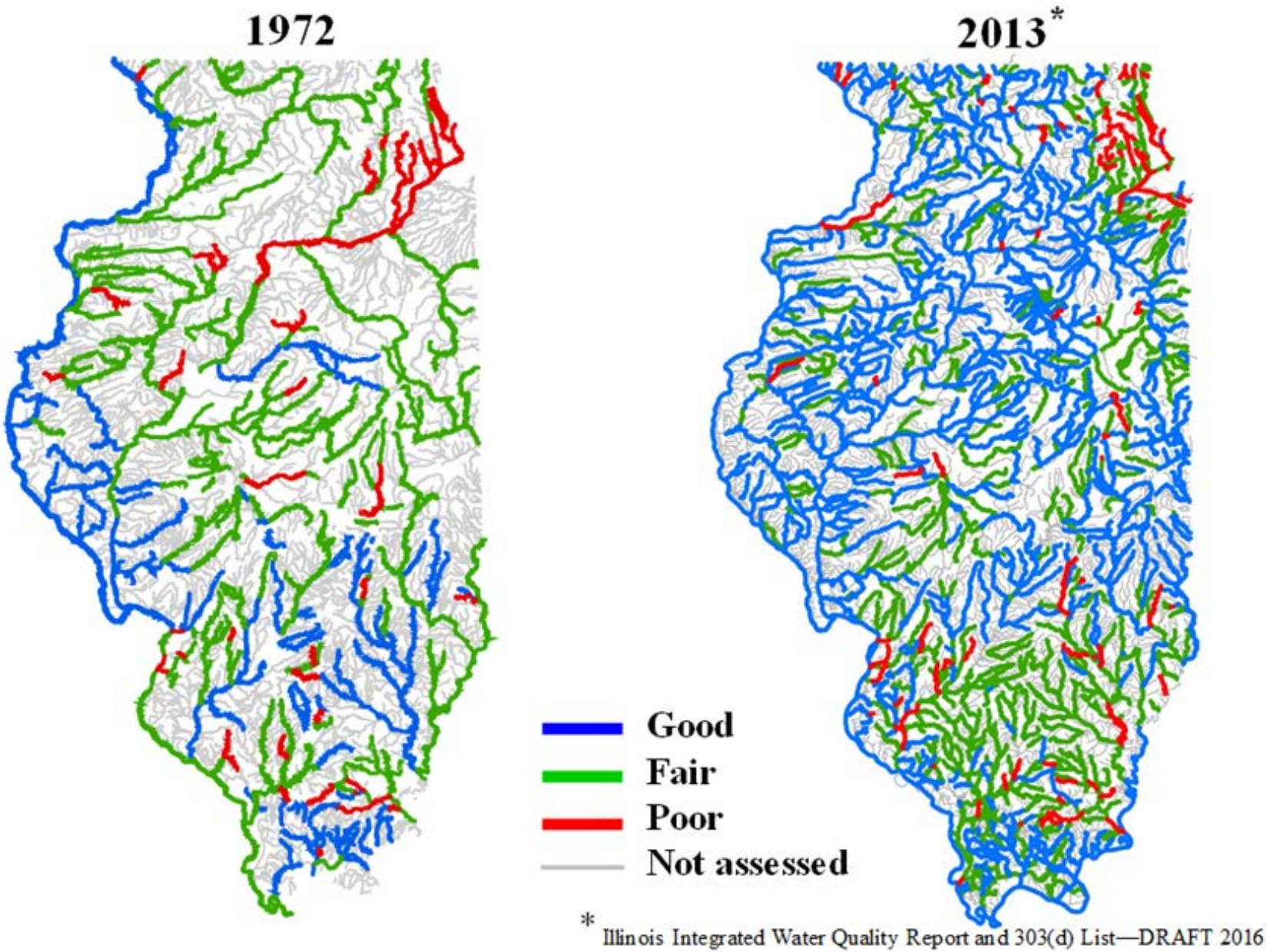
$$TP = 0.109 + 1.1\,OP + 0.00063\,SSC$$



USGS

USGS

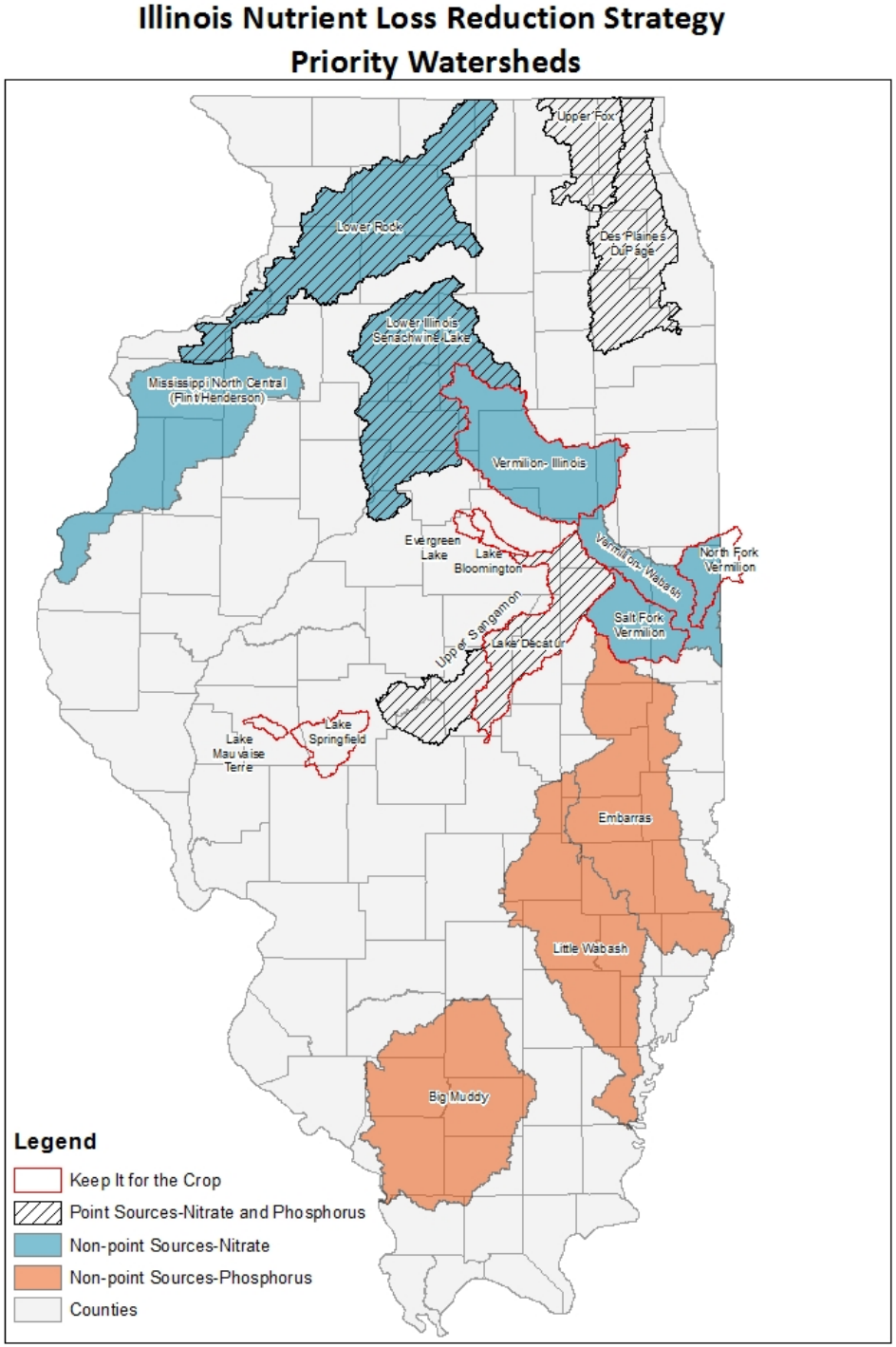
Aquatic-Life Condition of Illinois Streams



* Illinois Integrated Water Quality Report and 303(d) List—DRAFT 2016

But what about:

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



NMC Next Steps

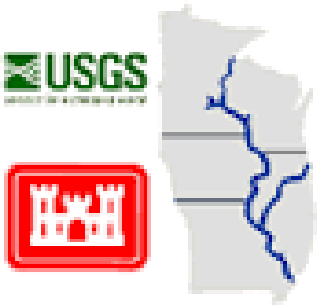
- Next Meeting September 16, 2015.
- In preparation, we've asked NMC members for information and GIS coverages of the who's, what's, and where's of Illinois nutrient monitoring:
  - Ongoing/routine sampling
  - Length of record
  - Collection frequency
  - Information on all forms of P and N, chlorophyll *a*, DO, sediment, fish, bugs, mussels, habitat, chloride, bromide, others
  - Large networks, 8-digit HUC, or smaller NLRS priority watersheds
  - Surface and Ground water

- IWRC is in the process of generating maps and summarizing findings to visualize where monitoring is occurring throughout the state, to identify gaps, and to facilitate data aggregation.
- This will help in the creation of a prioritized list of nutrient monitoring program activities and associated funding needed to accomplish the charges of the NMC (Charge #2).

Individual Organization Monitoring Site Maps

USGS
science for a changing world

ILLINOIS
DEPARTMENT OF
NATURAL
RESOURCES

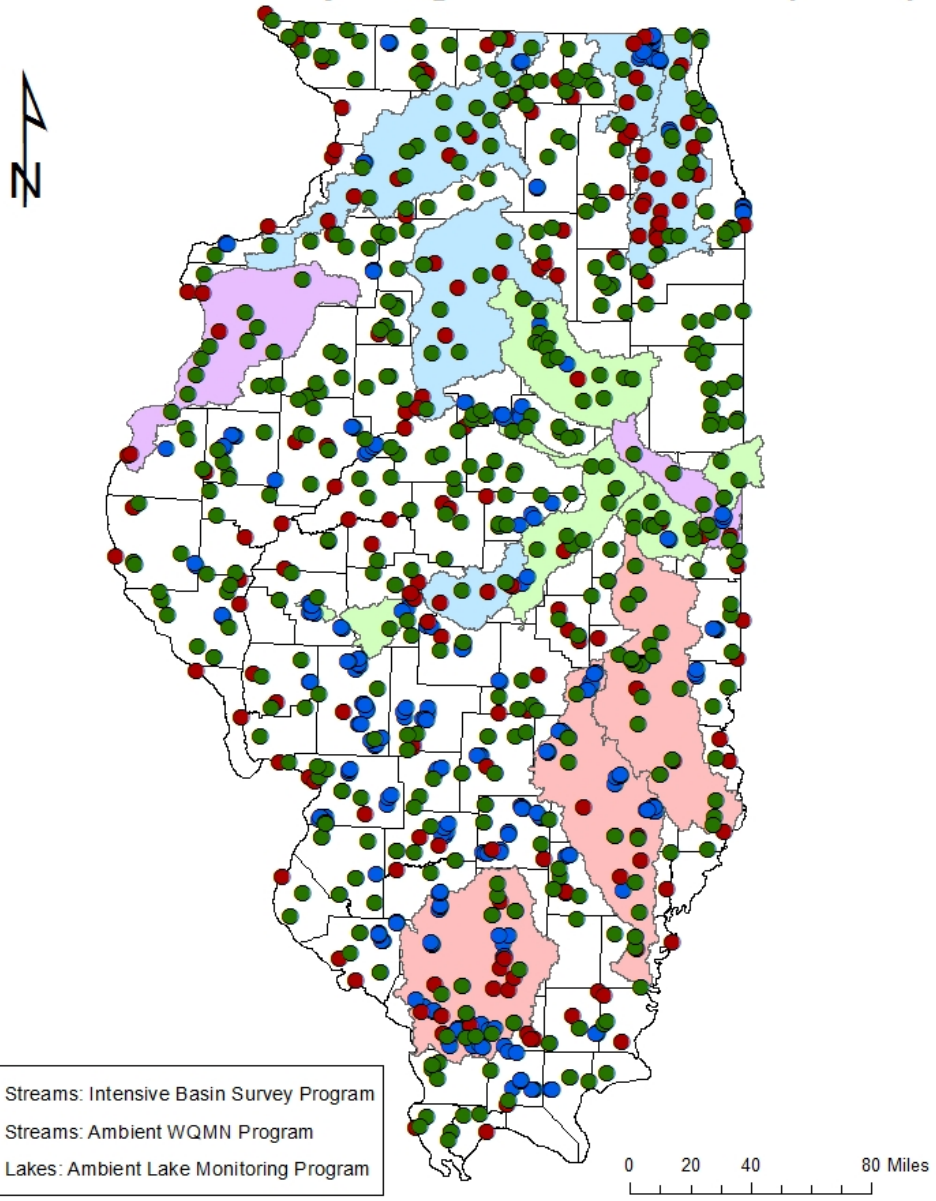


ILLINOIS STATE
WATER SURVEY
PRAIRIE RESEARCH INSTITU

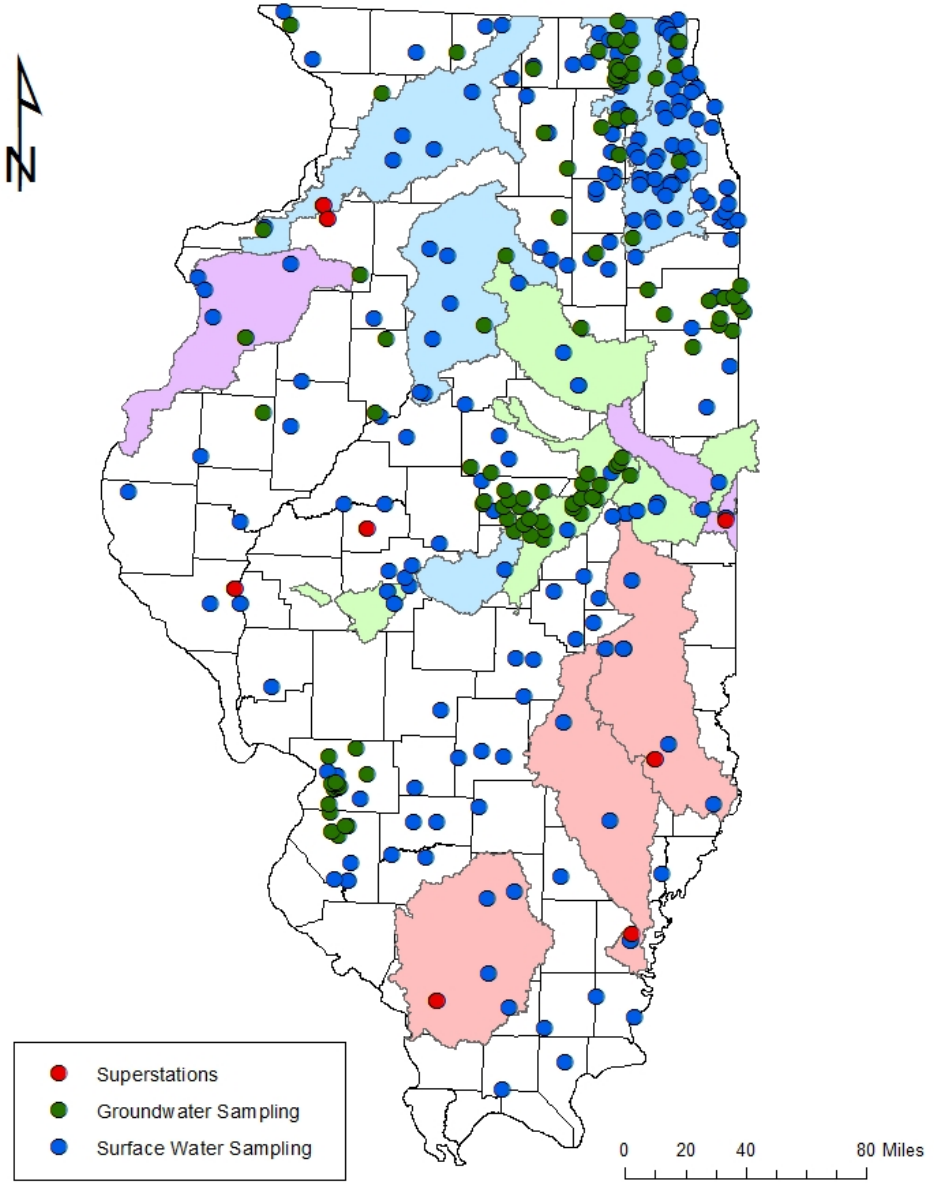
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

.....and others!

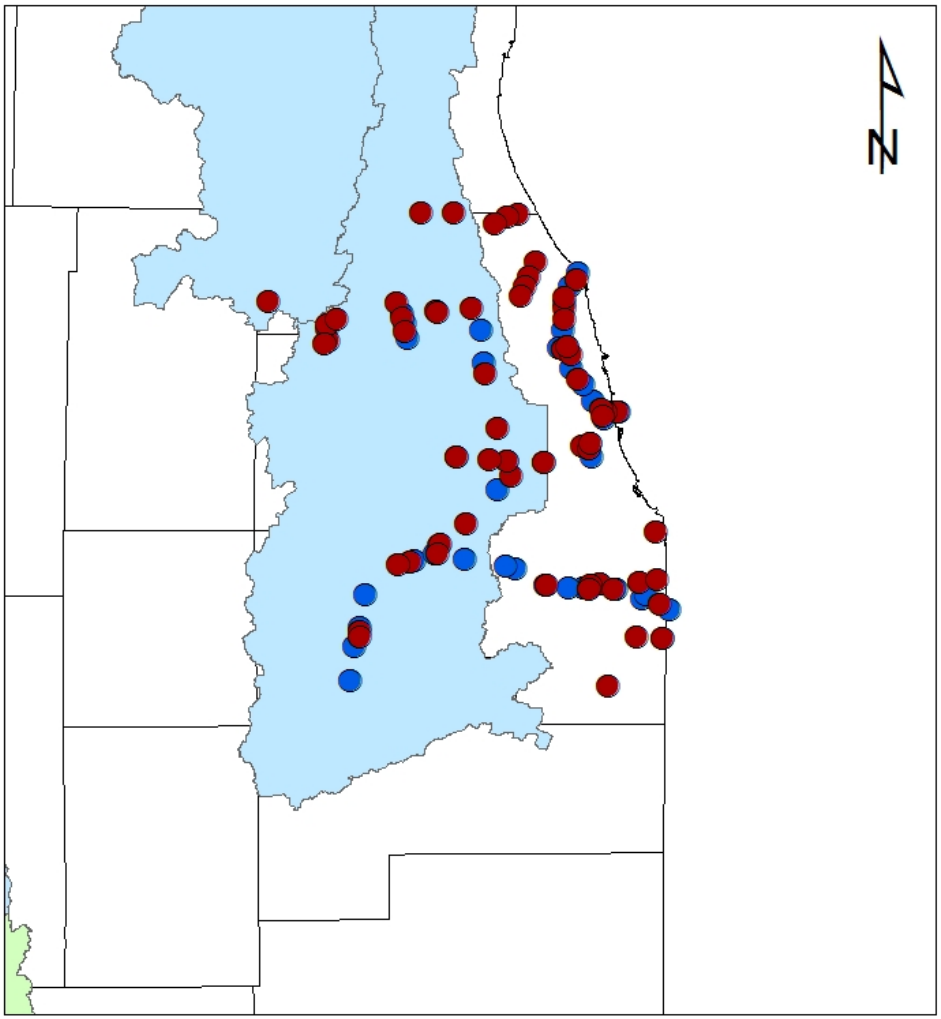
IEPA Sampling Locations (SW)



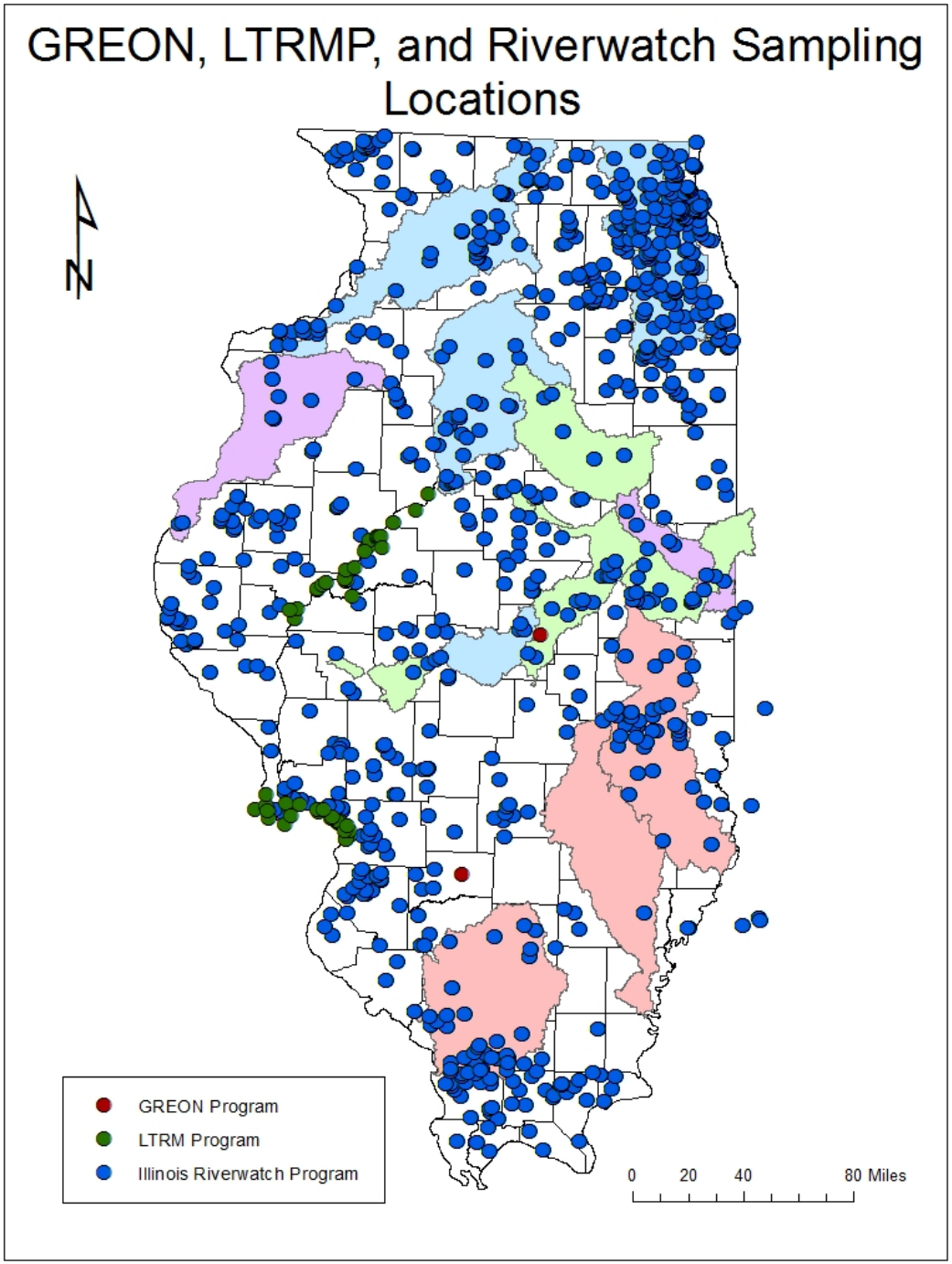
USGS Sampling Locations



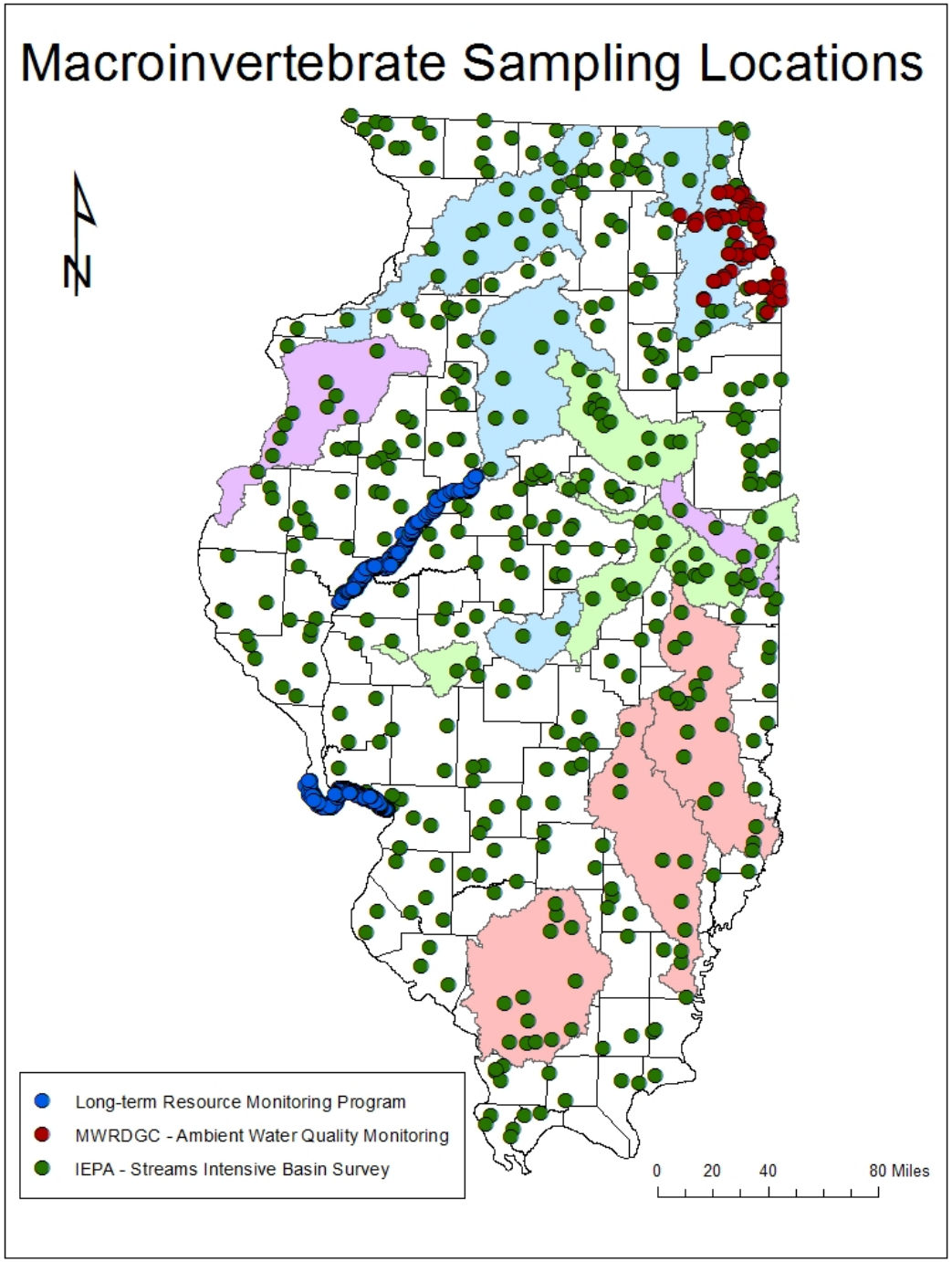
MWRDGC Sampling Locations



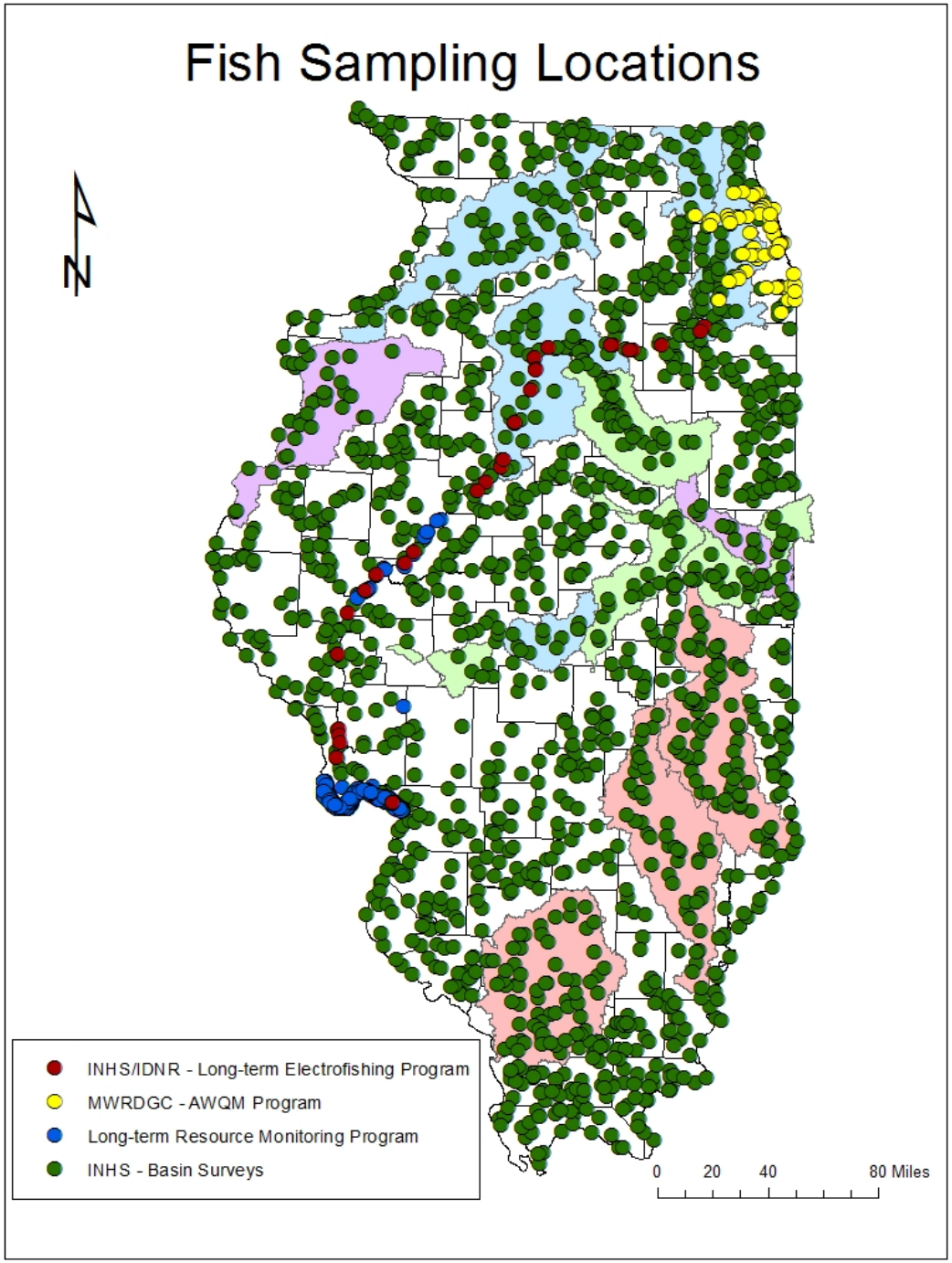
GREON, LTRMP, and Riverwatch Sampling Locations



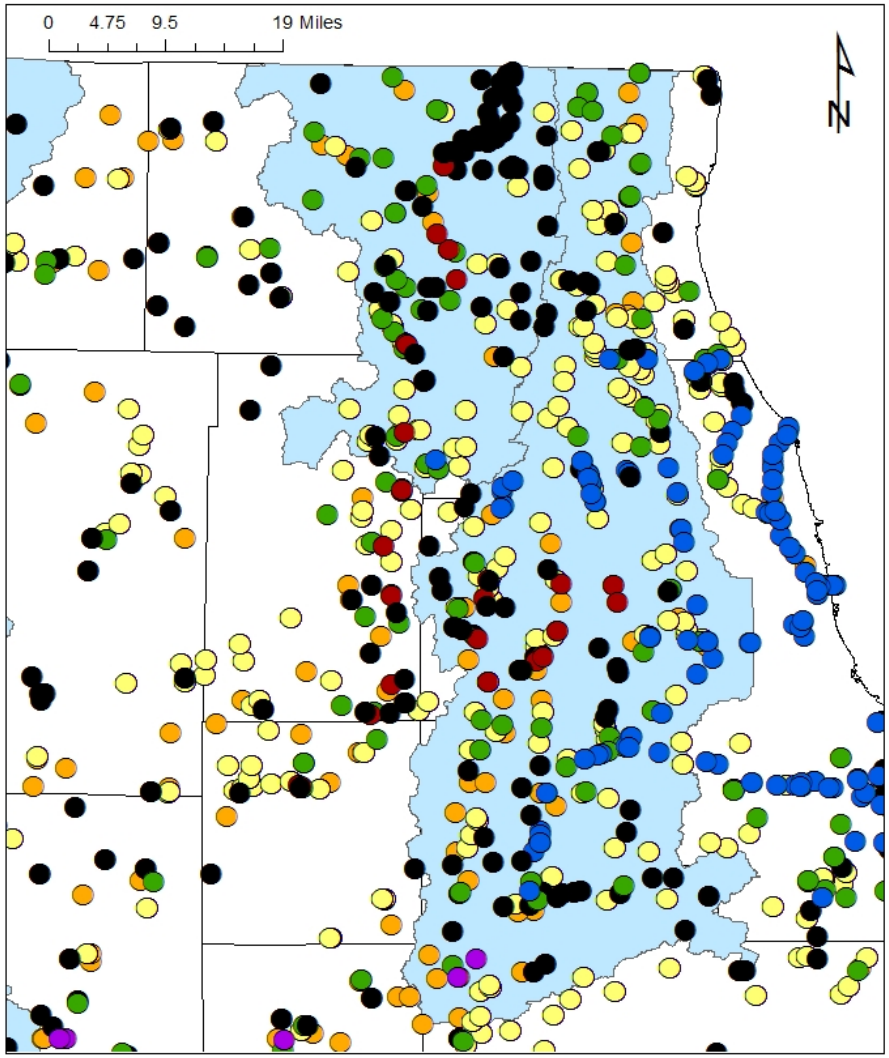
Macroinvertebrate Sampling Locations



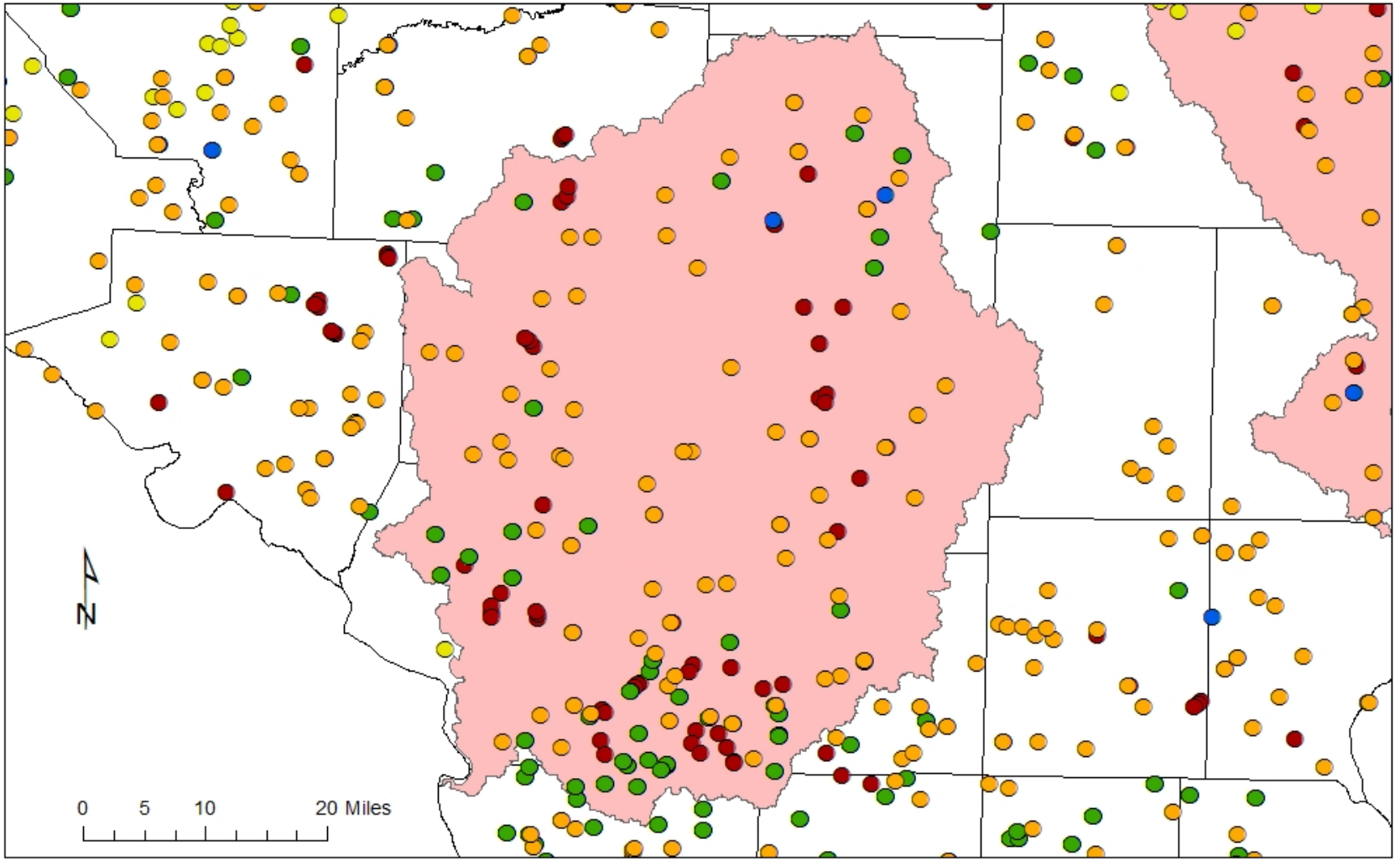
Fish Sampling Locations



Aggregated Organization Monitoring (Upper Fox/Des Plaines/DuPage)

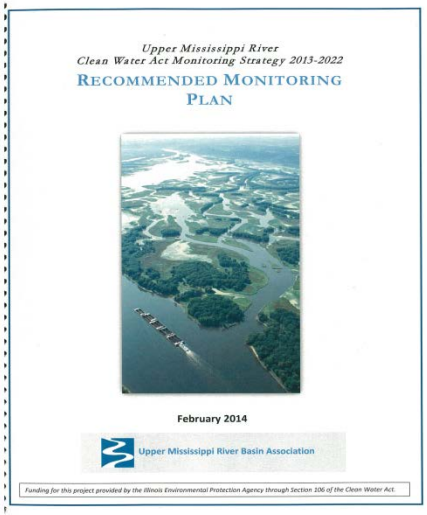


Aggregated Organization Monitoring (Big Muddy)



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



- 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)

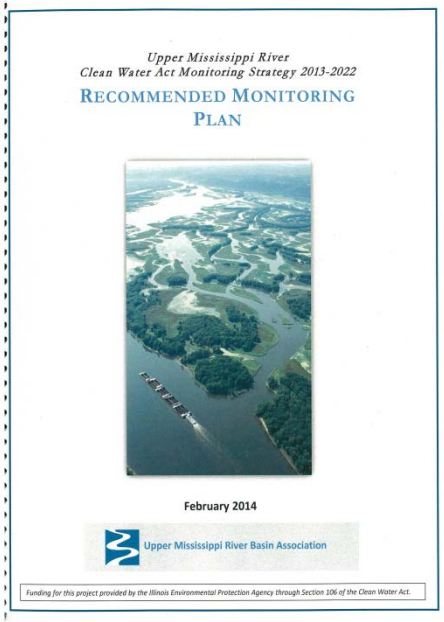
- Lake Springfield
- Lake Decatur
- Rock River
- Chicago/Little Calumet
- Upper Salt Fork
- "Middle Fox" River

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?



- 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

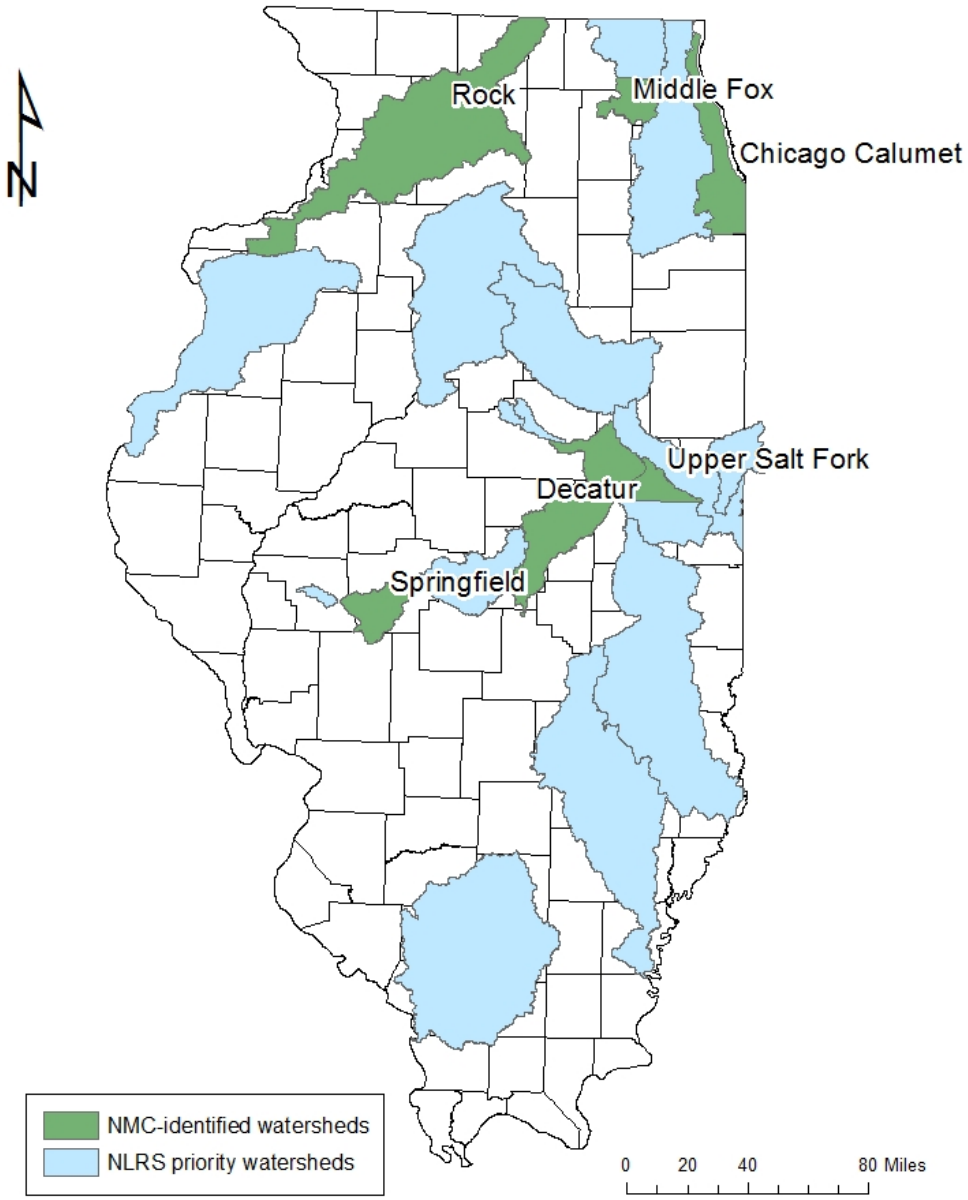
Questions for Future Discussion

- 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 will tell us, right Jong?)
- 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, like "Cindy Skrukrud, what's going on in the Fox River?"

So is coordinating the development of individualized Watershed Nutrient Monitoring Plans where the NMC is going next?

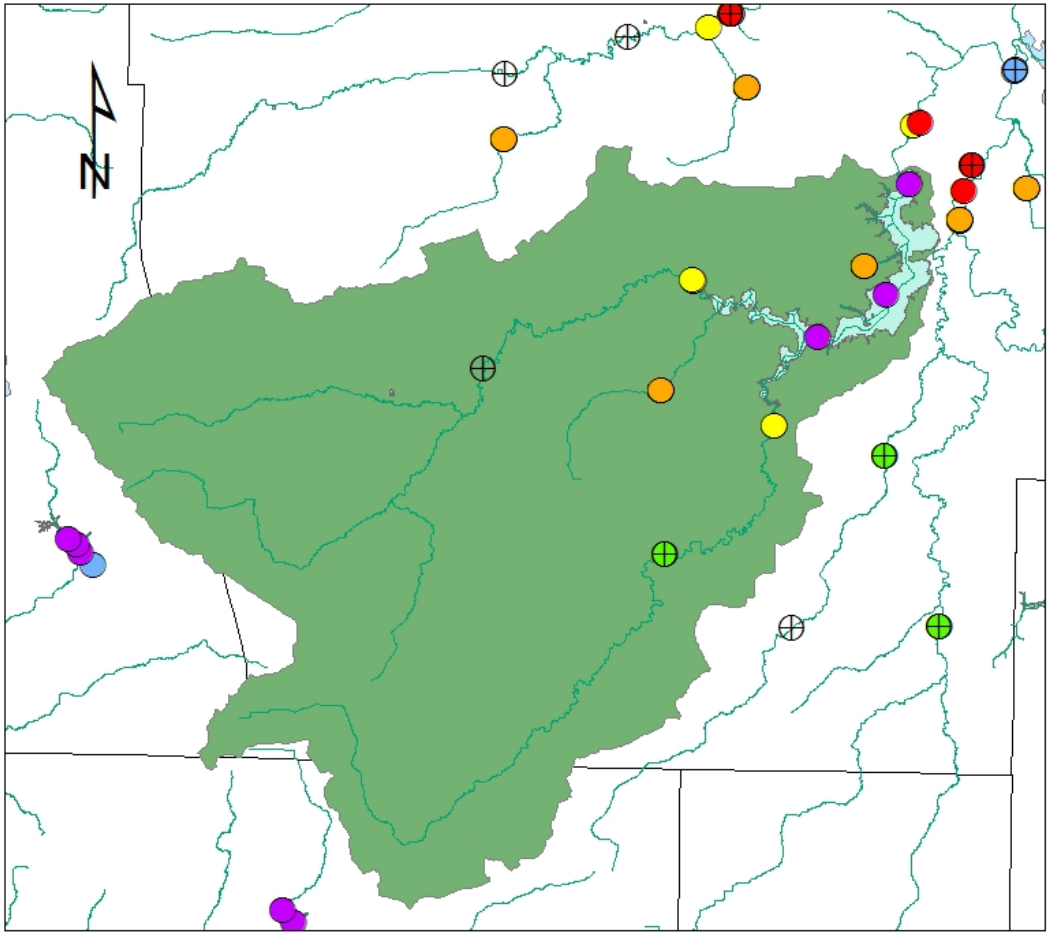
If so, lets look at the “Top 6” NLRS Watersheds with Lots of Ongoing Monitoring

Most Monitored Watersheds



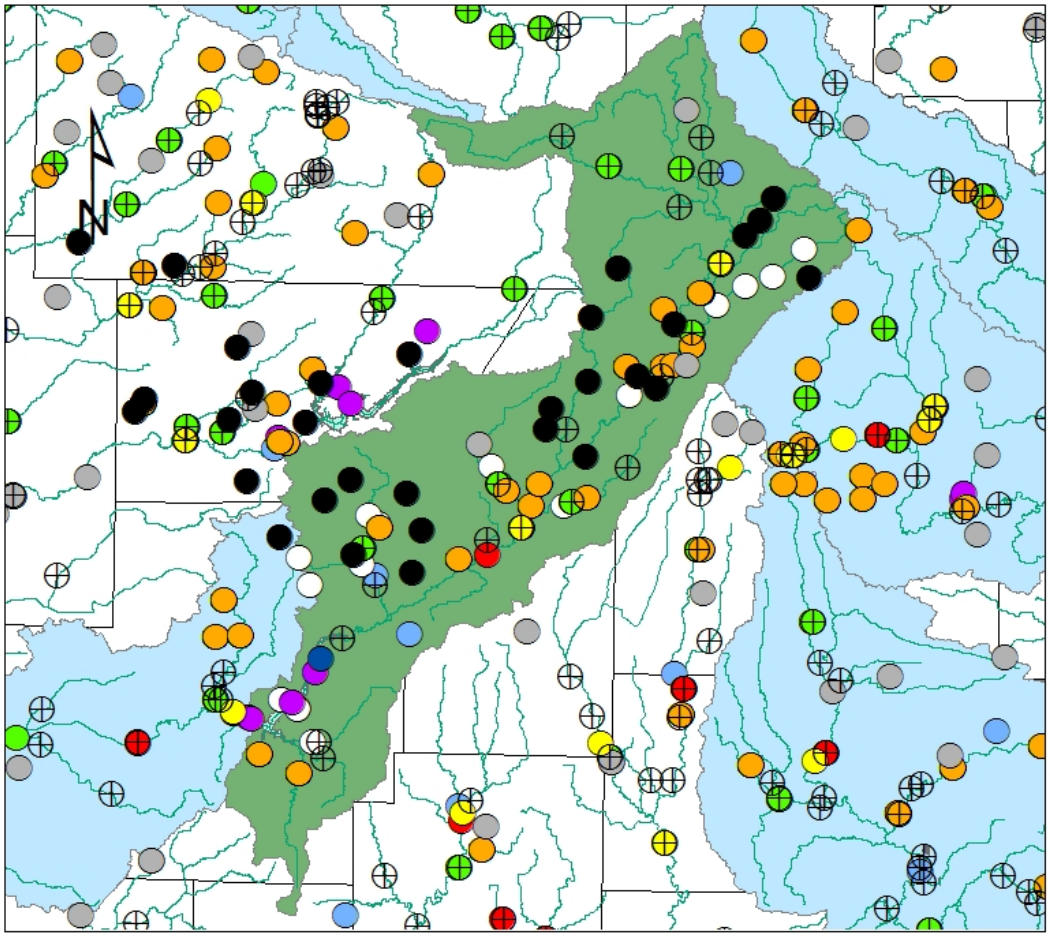
*As identified by the Illinois Nutrient Monitoring Council

Aggregated Lake Springfield Watershed*



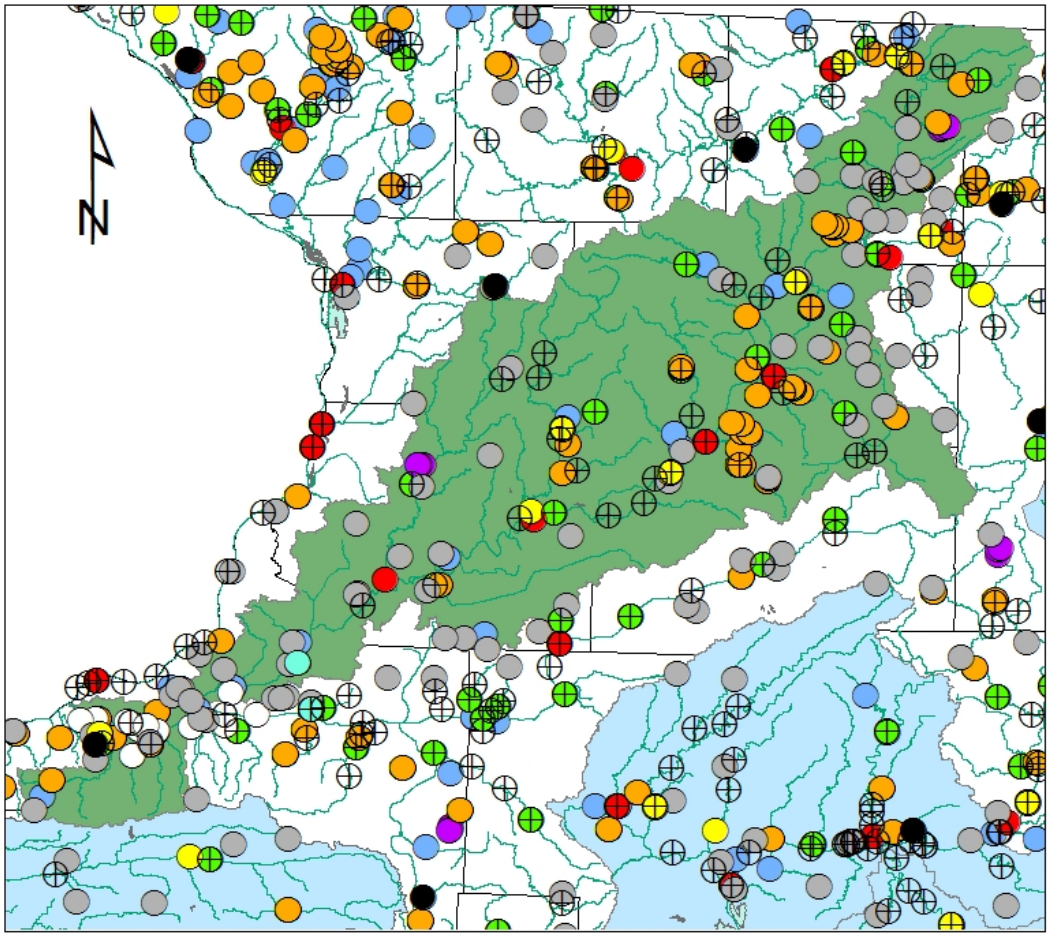
*As identified by the Illinois Nutrient Monitoring Council

Aggregated Lake Decatur Watershed*



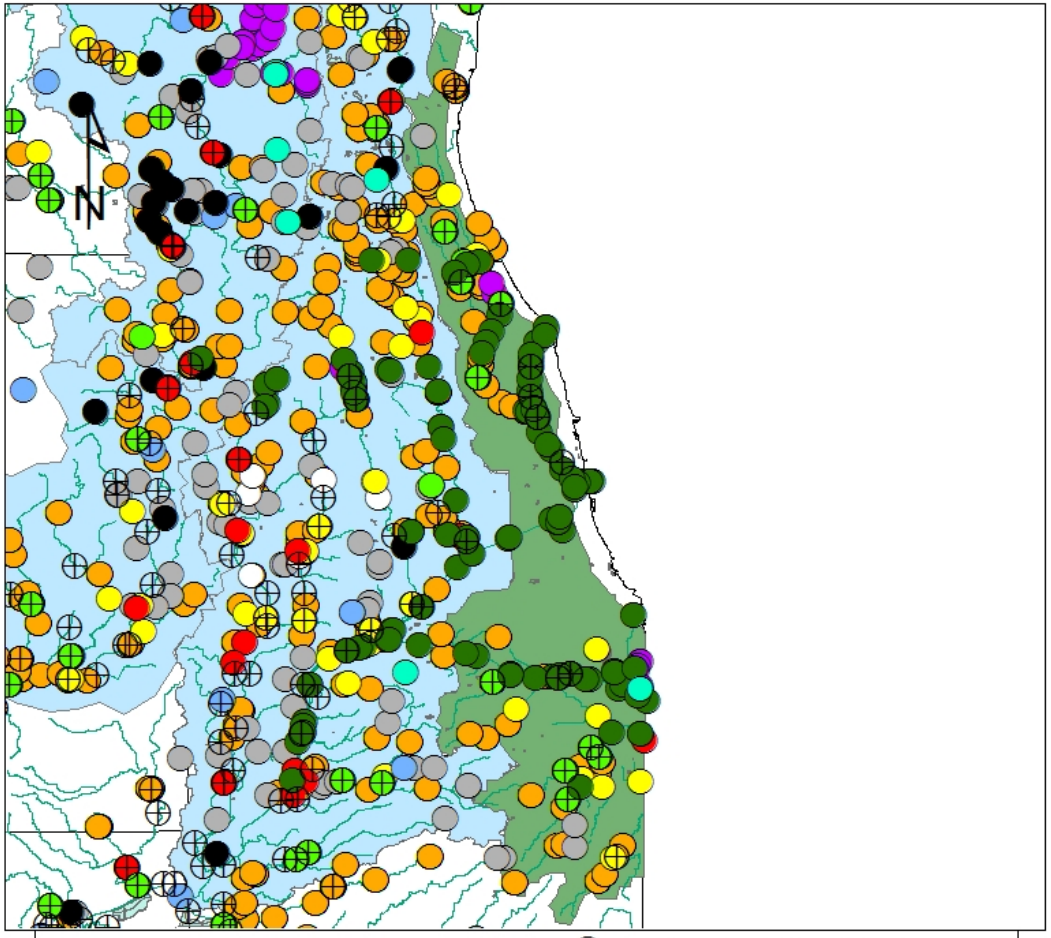
*As identified by the Illinois Nutrient Monitoring Council

Aggregated Rock River Watershed*



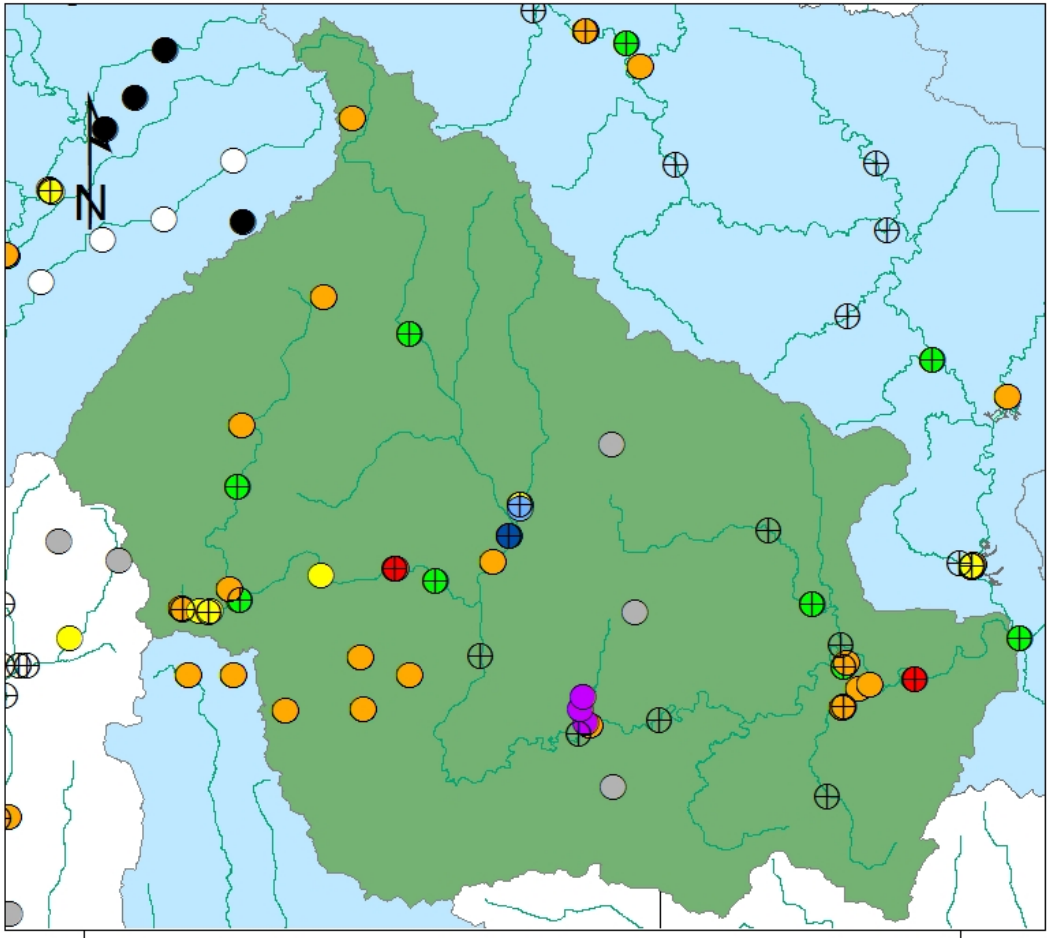
*As identified by the Illinois Nutrient Monitoring Council

Aggregated Chicago/Little Calumet Watershed*



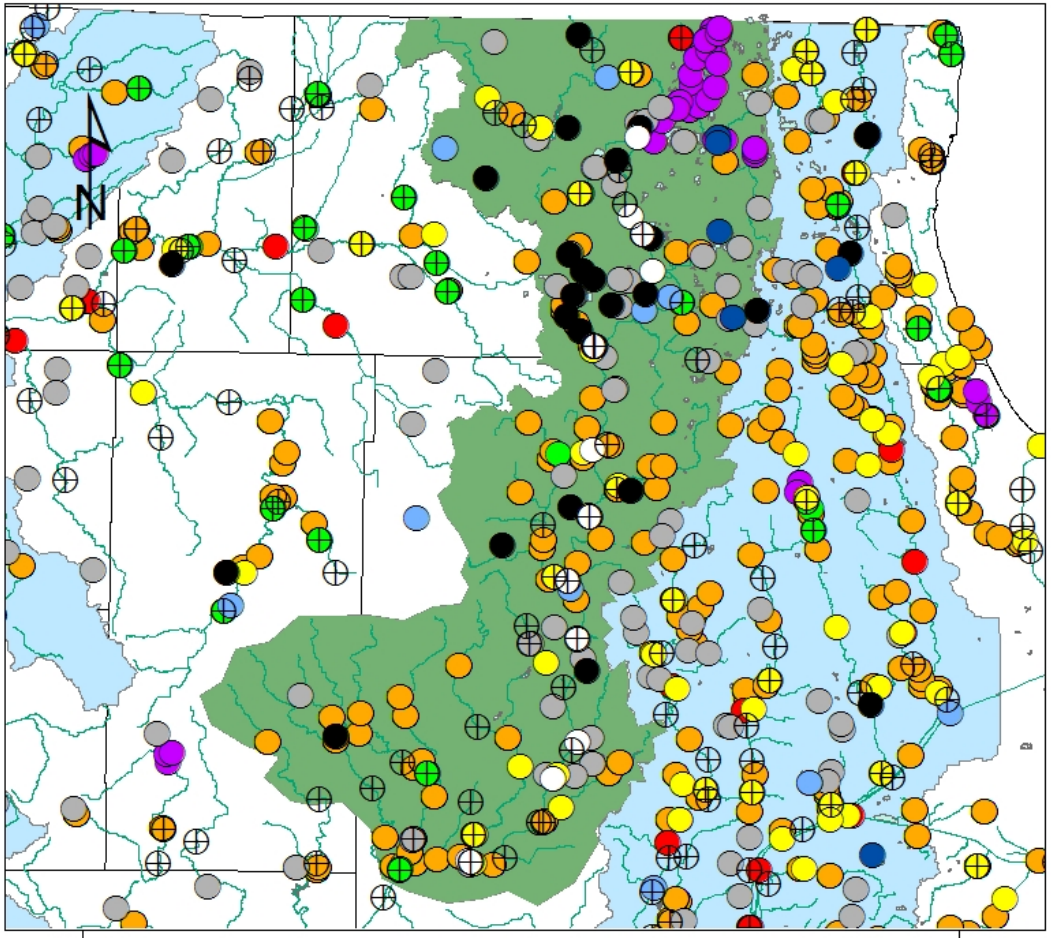
*As identified by the Illinois Nutrient Monitoring Council

Aggregated Salt Fork Watershed*



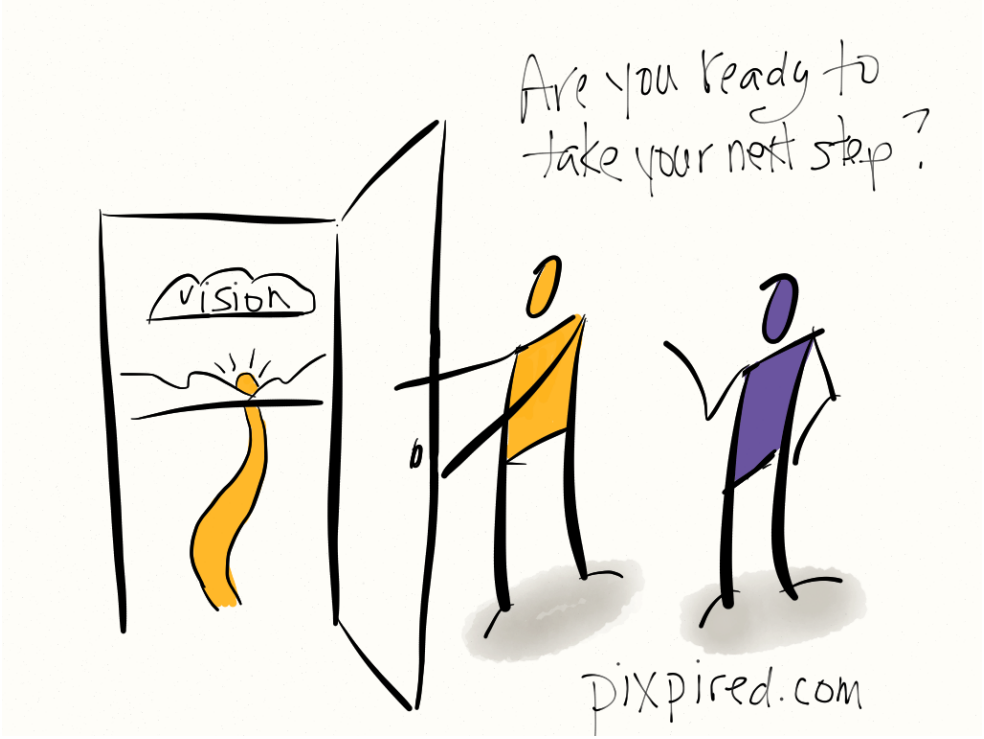
*As identified by the Illinois Nutrient Monitoring Council

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



*As identified by the Illinois Nutrient Monitoring Council

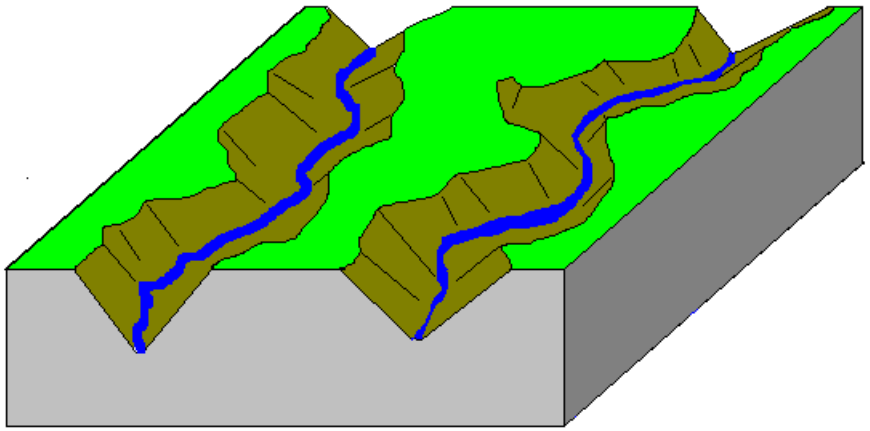
Discussion: Where do we go from here?



WHAT'S
for
LUNCH?

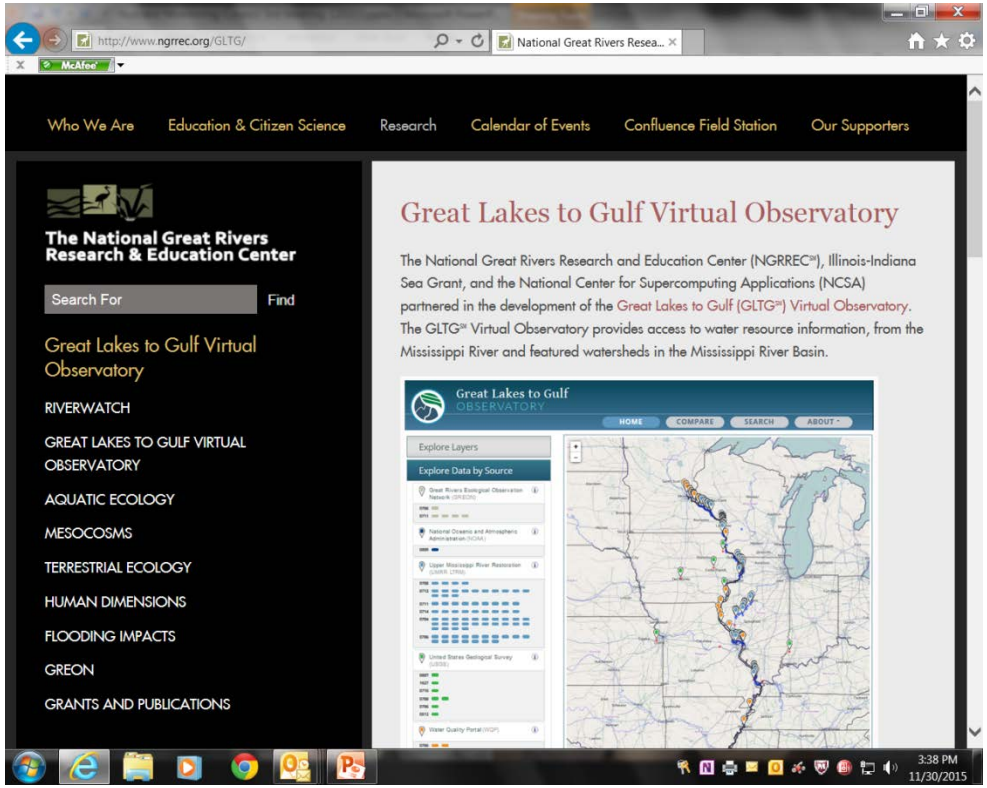
Cindy Skrukrud, Sierra Club

- "Monitoring and Implementation in the Fox River Basin"



Jong Lee, National Center for Supercomputing Applications (NCSA)

- "Great Lakes to Gulf Observatory (GREON) Demonstration"



NMC Charge #3

- "Develop *a prioritized list of nutrient monitoring activities and associated funding* needed to accomplish the charges/goals in (1) and (2) above."
  - (1) loads leaving the state/priority watersheds and trends
  - (2) water quality outcomes

“Next Steps” Summary

(NMC December 3, 2015)

Conclusions

Summarize today’s action items

“Next Steps” Summary
(NMC December 3, 2015)

- Future topics for the April 5, 2016 meeting?
- Other stuff (TBD).

Next NMC Meetings

- April 5, 2016
- September 13, 2016
- December 6, 2016

wishing you a Happy Holiday season!
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