Illinois Nutrient Loss Reduction Strategy Nutrient Monitoring Council

14th Meeting, October 22, 2019, Champaign, IL

Welcome/Housekeeping Important Stuff – bathrooms, other Member and Guest Introductions Newsworthy Notes: Hold the Date – NLRS Partnership Conference

12/3-4/19

Discuss Method to Estimate Annual Statewide Nitrate and Total Phosphorus loads

- USGS "Super Gages" capture approximately 75% of Illinois' drainage area
- Super Gages reports do not subtract loads contributed by other states

Science Assessment Update

- Dr. McIsaac's updated NLRS Science Assessment update
 - Calculated loads and yields on a HUC 8 basis using Illinois EPA Ambient Monitoring Network data
 - Nitrate-Linear Interpolation from 6 years of data
 - Total Phosphorus- WRTDS method from 6 years of data
 - Subtracted contributions from other states
 - Estimated loads where there are no monitoring stations
 - Statewide loads based on 8 major river systems

Nitrate-N yield (2012-17) at monitoring locations



HUC-8 Challenges

Drainage areas of the monitoring locations do not match HUC boundaries.

Extrapolating from monitored area to HUC area introduces uncertainty and probability of inaccurate estimates

For 16 HUCs, monitored drainage area is between 85% and 115% of HUC area.

For another 9 HUCs, monitored drainage area is between 65% and 135% of HUC area.

For 15 HUCs, monitored drainage area differs from HUC area by more than 35%.

For 9 HUCS there is no monitoring data

2 HUCs draining to Lake Michigan are ignored

(Aaron Hoyle-Katz, NCSA)

Appendix 2. HUC 8s for which water and nutrient yields were estimated from neighboring HUCS due to lack of adequate monitoring data within the HUC.

IL HUC 8		Area in IL	Basis of water and nutrient yield estimates
ID #	Name	(sq. mi.)	
04040002	Pike-Root		None (Lake Michigan drainage)
04940001	Little Calumet-Galien		None (Lake Michigan drainage)
05120108	Middle Wabash-Little Verm	205	Avg. of Embarras (Camargo) and Vermilion (Wabash)
05120111	Middle Wabash- Busseron	888	Equal to Embarras (Lawrenceville)
05140202	Highland-Pigeon	27.5	Equal to Saline
05140206	Lower Ohio	622	Avg. of Cache, Saline, Big Muddy and Lower Ohio-Bay
07080101	Copperas-Duck	509	Avg. of Flint-Henderson, Lower Rock and Apple- Plum
07090001	Upper Rock	7	Rock at Rockton minus Pecatonica
07090004	Sugar	63	Equal to Pecatonica
07110009	Peruque-Piasa	329	Avg. of Macoupin and Cahokia-Joachim
07130003	Lower Illinois-Lake Chautauqua	1623	Avg. of Lamoine, Spoon, Lower Sangamon, Mackinaw, Lower IL Senachwine, Lower Illinois
07140105	Upper Miss/Cape Girardeau	727	Avg. of Big Muddy, Cache and Lower Kaskaskia







Can we use annual data from "Green" areas to calculate load? Should we adopt a method to estimate annual loads from the "Pink" areas? How do we subtract loads from other states?

Green: Illinois EPA Ambient Drainage Blue Outline: NHD HUC 8 Watersheds Pink: HUC 8 Boundaries-IL only Purple: USGS Super Gage Drainage



Questions to Consider

- Can the Illinois EPA Ambient data provide a "good enough" estimate for nutrient loads on an annual basis (8-9 samples per year)
- How to estimate for the remaining areas?
 - Science Assessment estimated loads based on nearby HUC 8s.
 - Calculated yield then applied yield to acres of unmonitored areas
 - Need to account for point sources
 - Adopt a watershed model to estimate nutrient loads from these HUCs?
 - Other?
 - What was the percentage of estimated loads contributed by these areas based on the updated Science Assessment?
- How to subtract Wisconsin and Indiana nutrient load contributions?
 - Use data from select Illinois EPA Ambient stations?

• OR.....

DO NOTHING.....

- Will subtracting other states' contributions and adding ungagged areas come close to canceling each other out?
- Who will do the work?
- Who will pay for it?
- Maybe the USGS gages alone are good enough?