Meeting the Nation's Needs for Water-Quality Information

Liaison Activities and Planned Contributions from the NAWQA Program

Advisory Committee on Water Information

July 11, 2012

Mike Yurewicz
U.S. Geological Survey, NAWQA Program
Reston, VA

Review of the NAWQA Program

- The USGS has taken deliberate steps to seek external stakeholder input on the design of future activities of the NAWQA Program.
- Advice has been sought for Cycle 3 which covers the period 2013 – 2023
- The NAWQA Liaison Committee has met 3 times to review and provide advice on priority issues that should be addressed during Cycle 3

NAS-NRC Review Status

- NRC Cycle 3 Committee has provided recommendations and technical advice on:
  - **Priority issues for Cycle 3**
  - **Monitoring and modeling activities that should be included in the Cycle 3 design**
- Recommendations on these topics given in two interim letter reports released January 2010 and January 2011
- Final report scheduled for release by end of July/early August

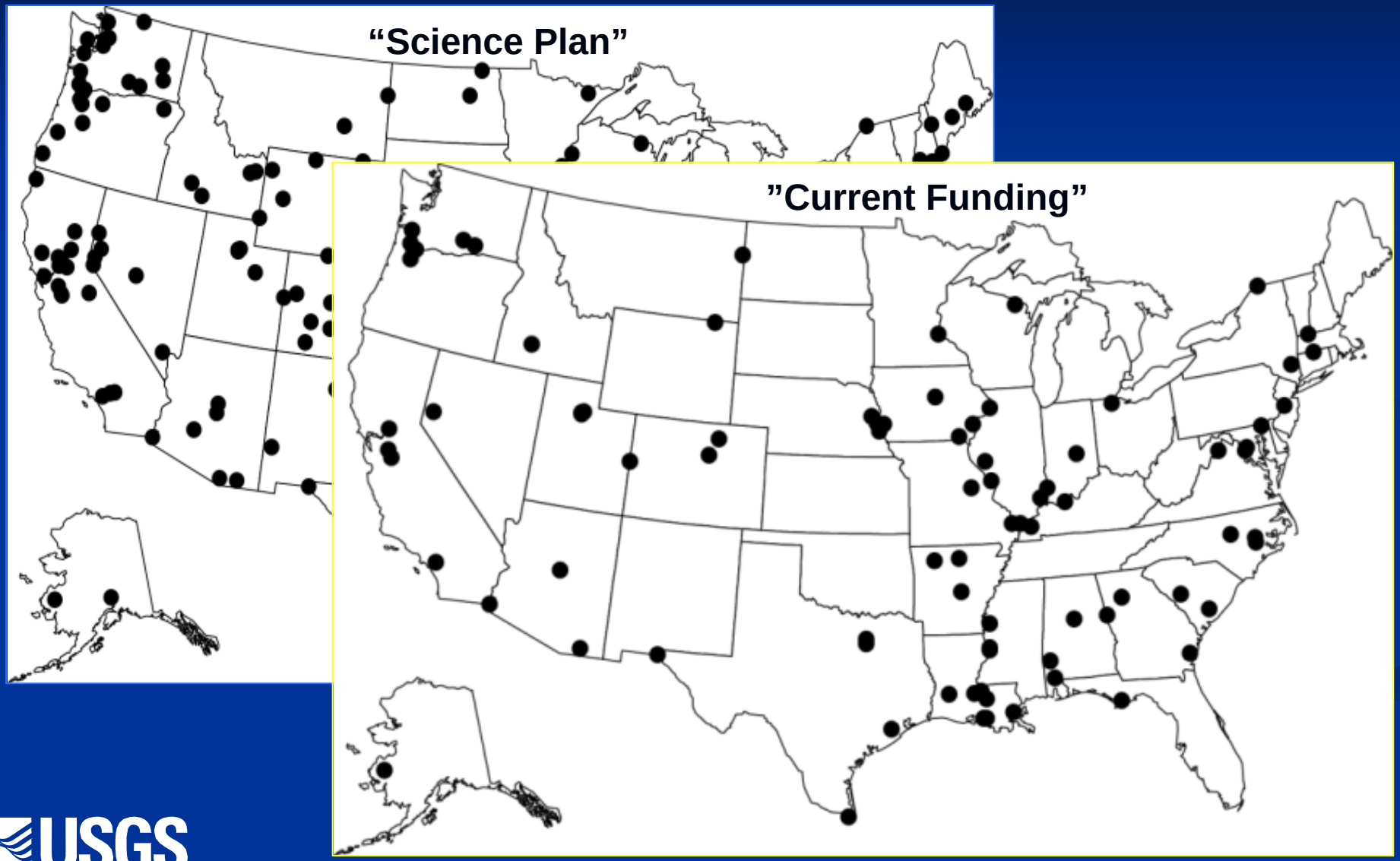
Cycle 3 Science Plan Goals

- Goal 1 -Assess the current quality of the Nation's freshwater resources and how water quality is changing over time (status and trends)
- Goal 2 -Evaluate how human activities and natural factors, such as land use and climate change, are affecting the quality of surface water and groundwater (understanding causes)
- Goal 3 -Determine the effects of contaminants, excessive nutrients, sediment, and streamflow alteration on aquatic ecosystems (assessing effects)
- Goal 4 -Predict the effects of human activities, climate change, and management strategies on water quality and ecosystem condition (forecasting)

Expected Outcomes

- ✓ Restoration of monitoring networks
- ✓ Reliable and timely trend analyses
- ✓ Models and decision-support tools
- ✓ Understanding relations between critical stressors and stream ecosystem condition
- ✓ Forecasts of future conditions

Two National Networks for Water Quality in the Nation's Streams and Rivers



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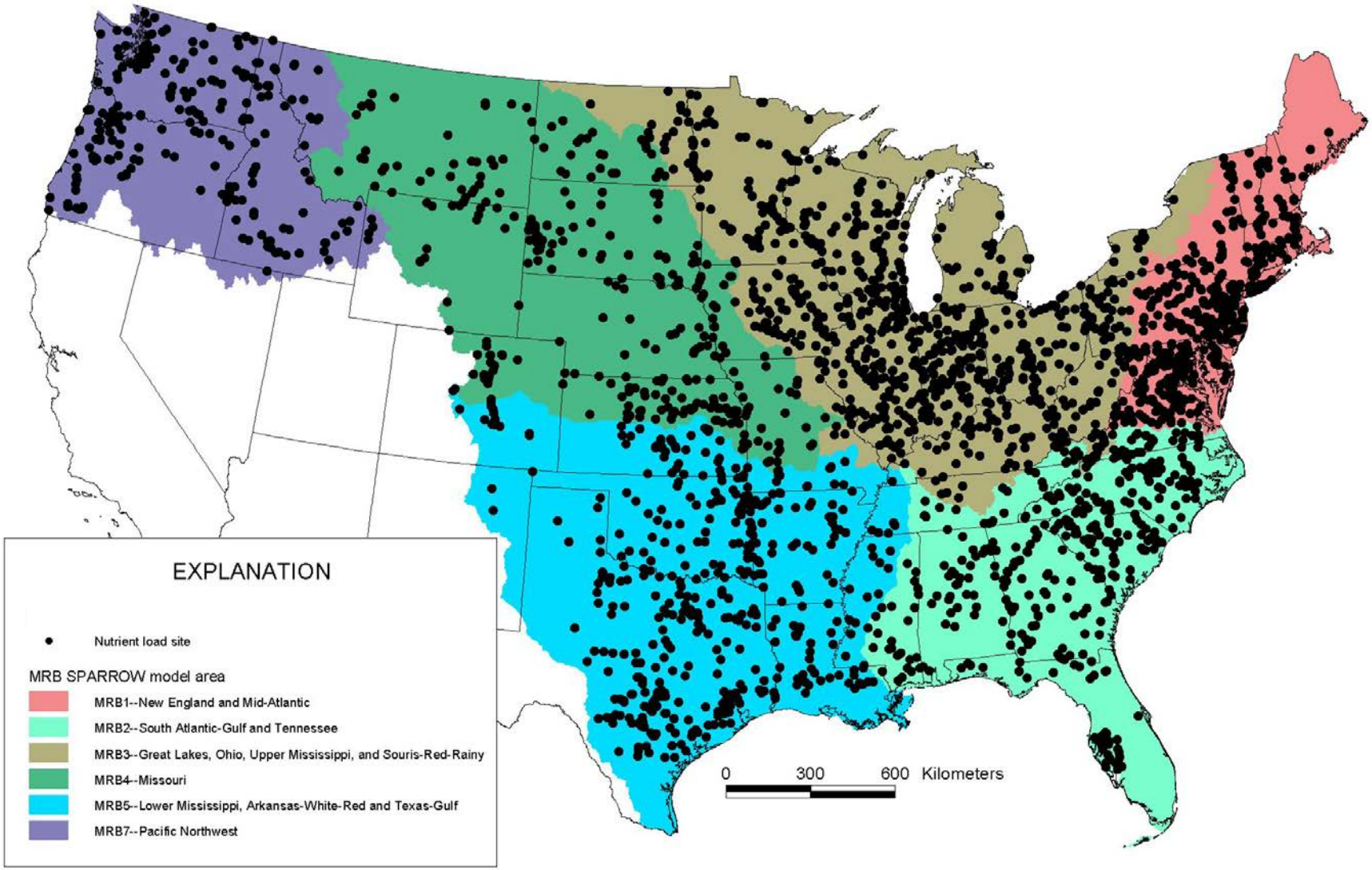
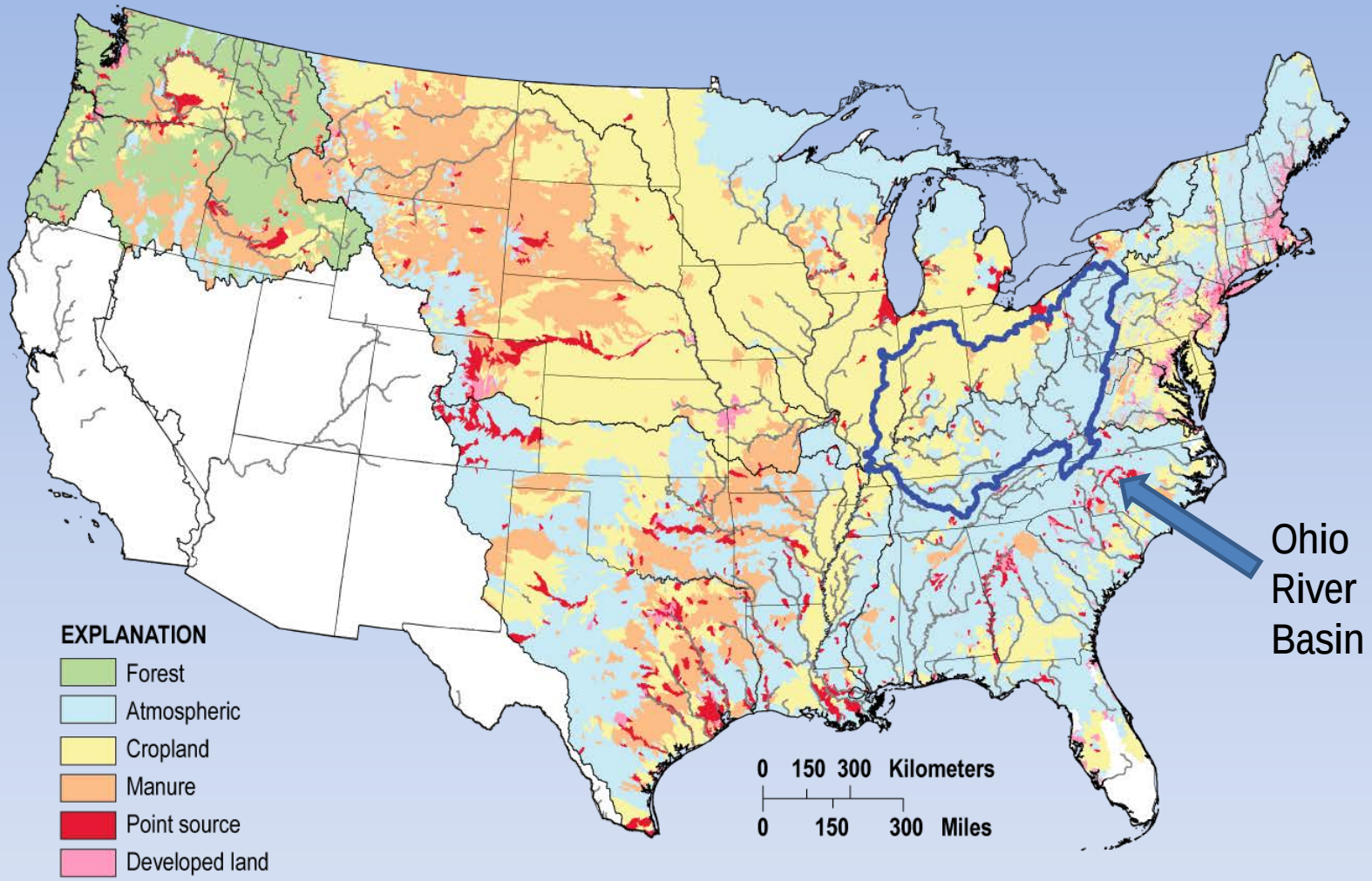


Location of nutrient load sites included in regional nutrient SPARROW models.

Predominant sources of nitrogen to streams vary



Estimates of nutrient sources from regional SPARROW models, available at http://water.usgs.gov/nawqa/sparrow/mrb/

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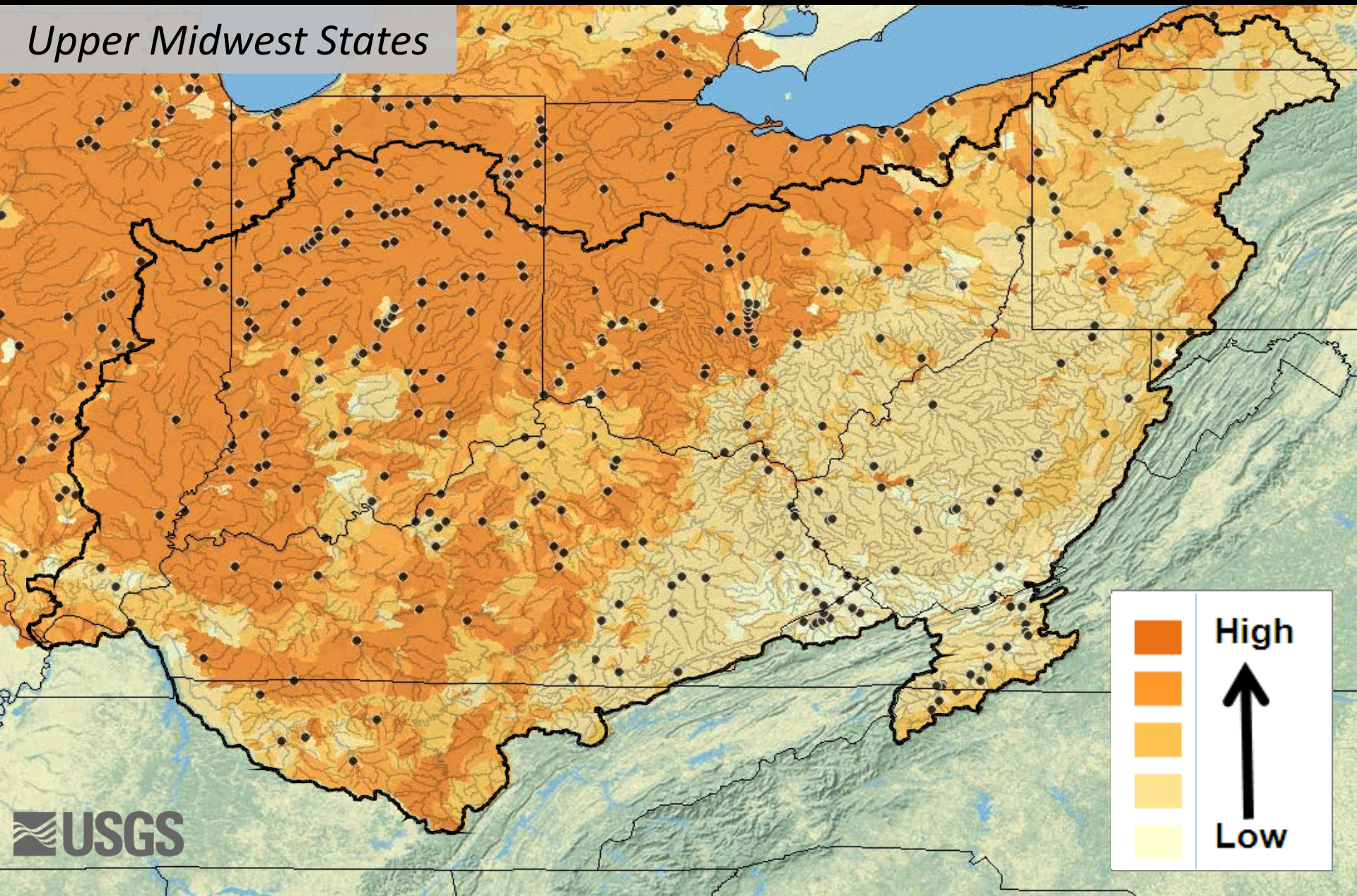
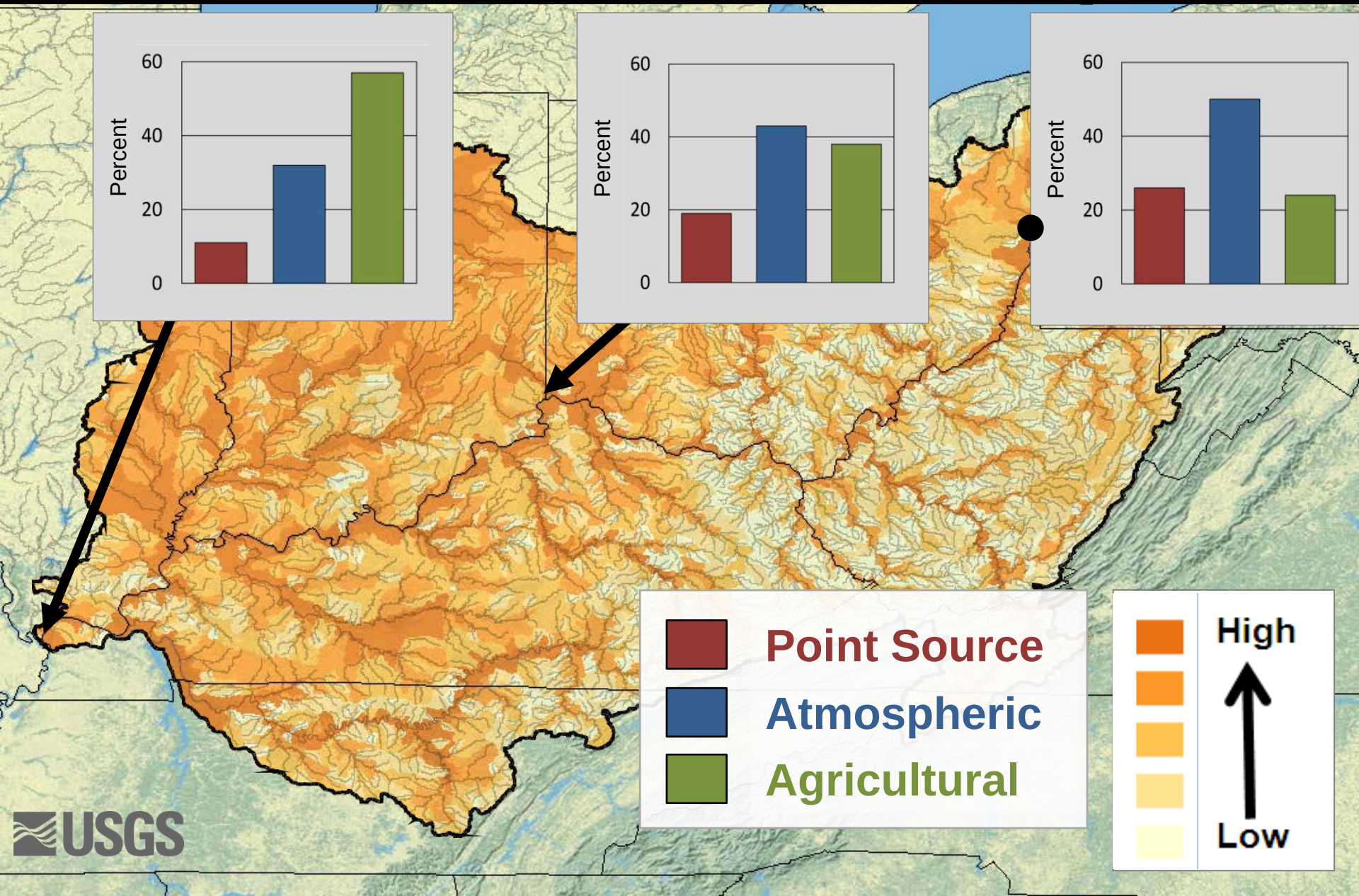
TN Incremental Yield – All Sources



TN Delivered Load – Ohio River Basin



National synthesis for suspended sediment

- Sediment synthesis is overdue
- There are unanswered questions
  - How much sediment is moving (and when) to key receiving waters?
  - Where, and to what degree, have natural sediment loads been altered by humans
  - Have agricultural management practices altered downstream flux?
- There is:
  - A widely distributed network of streamflow and sediment sites through time and space
  - Relatively good, accessible data to analyze
  - Substantial ongoing work

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Ongoing, planned, and possible sediment synthesis products

- Ongoing
  - Quality assured USGS sediment database
  - National-scale summaries of sediment and ancillary data
- Planned
  - NAWQA QW Data portal
  - Analysis of data and methods to compute constituent flux
  - Spatial analysis – SPARROW modeling
  - Trend analysis in key settings
- Possible
  - Sediment specific data portal
    - Real-time national sediment network
    - Multi-agency data
    - Incorporation of ancillary data
    - Tools to query and analyze data

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Conclusions

- We think that a national-scale sediment synthesis can:
  - Improve the visibility and utility of sediment data
  - Provide guidance to local data collection and studies
  - Provide tools that allow agencies to answer important questions
  - Help managers through decision support tools
- We would like feedback
- Seeking other partners for cooperation
- Contact John Gray regarding ideas/interest in collaboration (jrgray@usgs.gov 703-648-5318)

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Effects of Contaminants and Other Stressors on the Ecology of Midwestern Streams:

Midwest Stream-Water Quality Assessment

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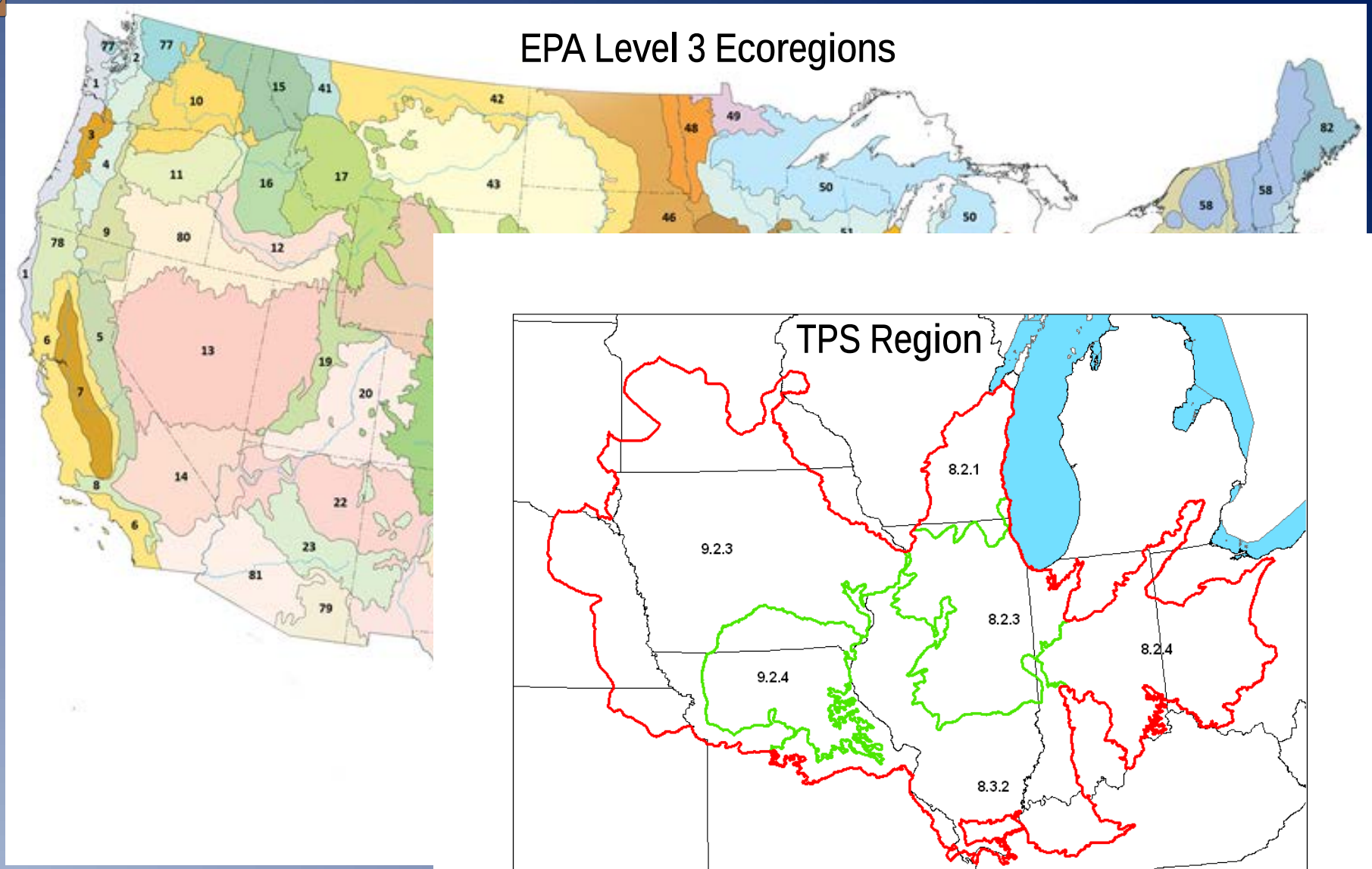
USGS–USEPA Collaboration

Regional Water Quality Studies

- **Short-term** (1-2 year), targeted water-quality assessment of a region or issue
- **Multiple objectives:** status and trends of stressors (pesticides, nutrients, sediment) *and* biological response
- **Typically, 50-100 sites** monitored for a season
- **Spatially intensive**
- **Complement to fixed sites**


EPA Level 3 Ecoregions
TPS Region
8.2.1
9.2.3
8.2.3
8.2.4
9.2.4
8.3.2

Goals and approach

- Geographic distribution and seasonal changes in nutrient and contaminant stressors
  - Contaminants and nutrients in water over seasonal index period (NAWQA)
  - Sediment and water toxicity at all sites (NAWQA/CERC)
  - Fall low-flow water sample (NAWQA)
- Relations between chemical condition and ecological condition: relative risk from stressors, contaminant-specific risk
  - Ecological sampling at all sites (NRSA/States)
- Spatially explicit predictions of stressors and ecological responses

Toward Sustainable Water Information: Can our water monitoring programs answer policy questions

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Project Goals and Objectives

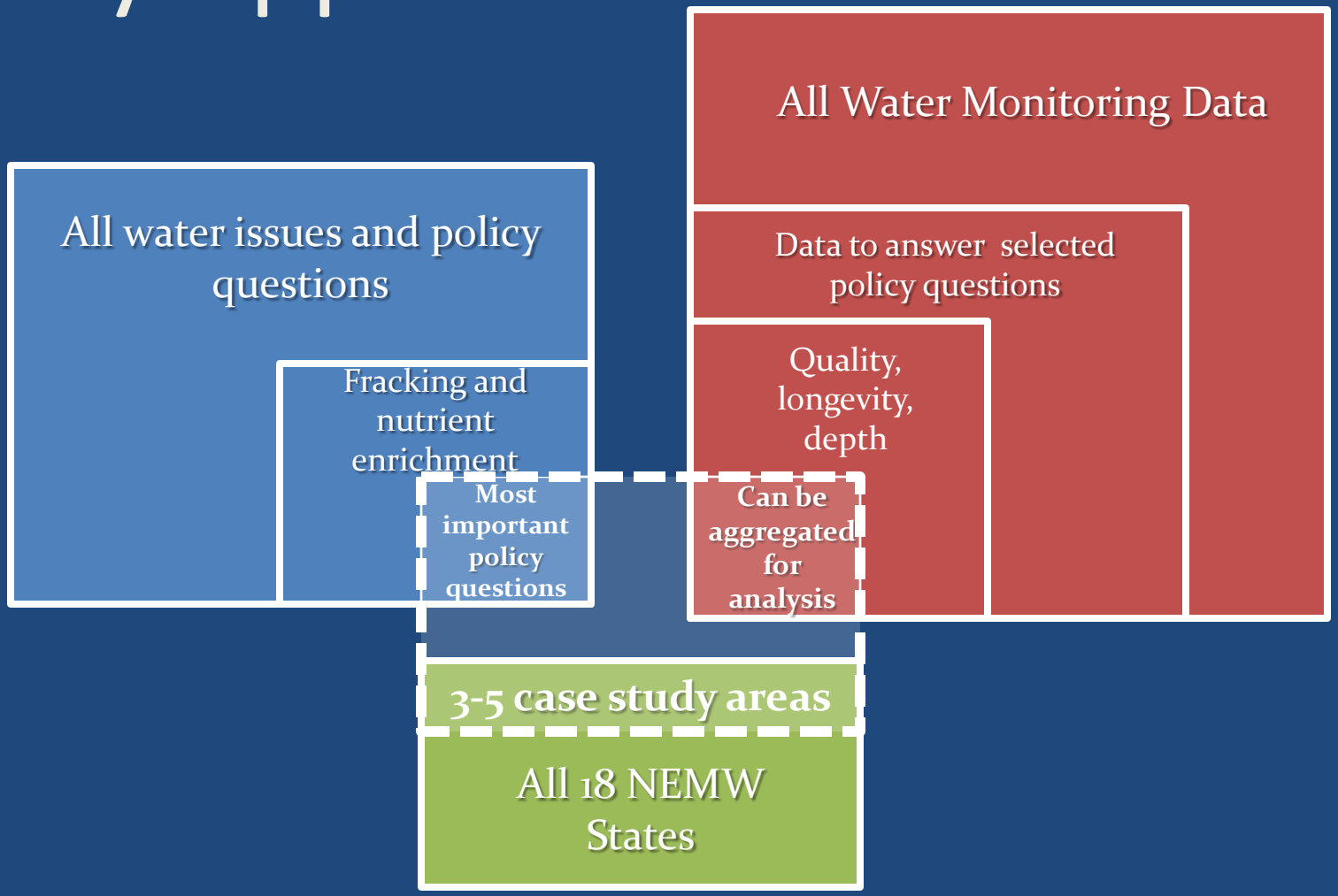
- Draw attention to the role and value of water monitoring
  - Characterize benefits of water monitoring
- Evaluate the region's existing water monitoring capacity
  - Identify data gaps
- Develop options for improvement

Steering Committee Role

- Keep the project relevant to the most pressing concerns and policy issues facing the region
- Select policy questions to be evaluated

- Help us answer:
  - How can water monitoring investments better align with management objectives?
  - How can our project best improve the water information you receive as a decision maker?

Study Approach



Project Schedule

2013 Report: State of the NEMW Region's Water Information

2014 Develop Collaborative Blueprint

2015 Implement Collaborative Blueprint

2017 Evaluate Progress

Integration and Partnering are Critical

"National Assessment"

State and Local Agencies	NAWQA
Water Census (WaterSMART)	EPA (NARS, ORD, OST, OGWDW)
USDA (ARS, NRCS)	Groundwater Resources Program
National Monitoring Network (ACWI)	NOAA and other Federal Agencies

For Additional Information please contact:

Bill Wilber, Chief NAWQA Program

703-648-6878, wgwilber@usgs.gov

or

Gary Rowe, Chair-Cycle 3 Planning Team

303-236-1461, glrowe@usgs.gov

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