Panel Session A6

Meeting the Nation's Needs for Water-Quality Information in the Next Decade:

Planned Contributions from the NAWQA Program

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NAWQA Program established by Congress in 1991 to answer:

- ✓ **"What is the current quality of the Nation's surface water and groundwater?" (Status)**
- ✓ **"Is water quality getting better or worse?" (Trends)**
- ✓ **"What are the natural and human factors that control water quality?" (Understanding)**

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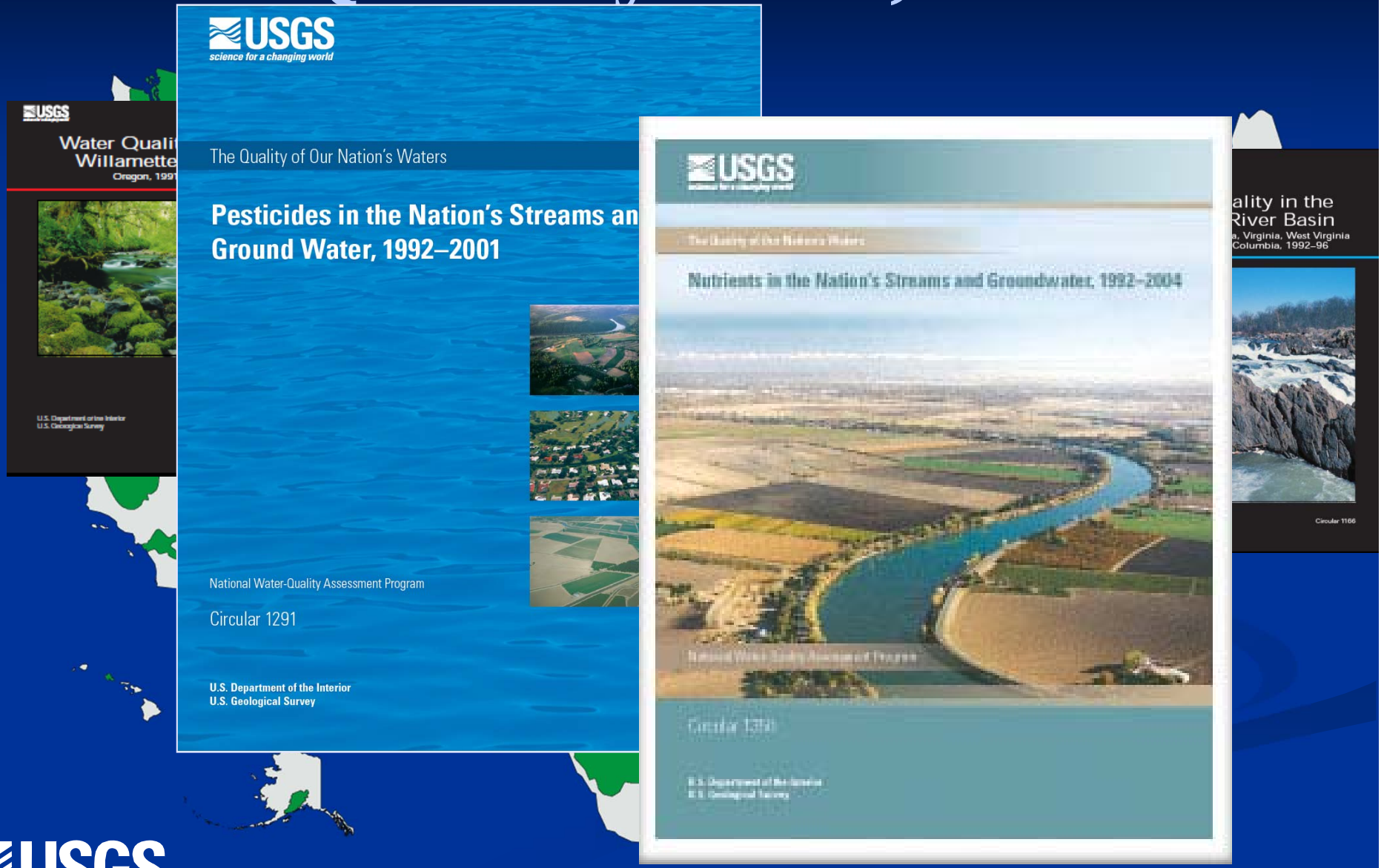
Important Features of NAWQA

- **Operates perennially on a decadal time-scale**
  - **Cycle 1 (1991-2001)**
  - **Cycle 2 (2002-2012)**
  - **Cycle 3 (2013-2023)**
- **Consistent sampling and analytical methods**
- **Targeted design (based on land and water use)**
- **Multidisciplinary—hydrology, chemistry, ecology**
- **Multiple scales—local, regional, national**

51 NAWQA Study Areas, 1991 - 2001



Transition from Cycle 1 to Cycle 2

Study units to…

Regional assessments

Status to…

Trends and Understanding

Monitoring to…

Monitoring and Modeling

NAWQA Data…

NAWQA & Other Agency Data

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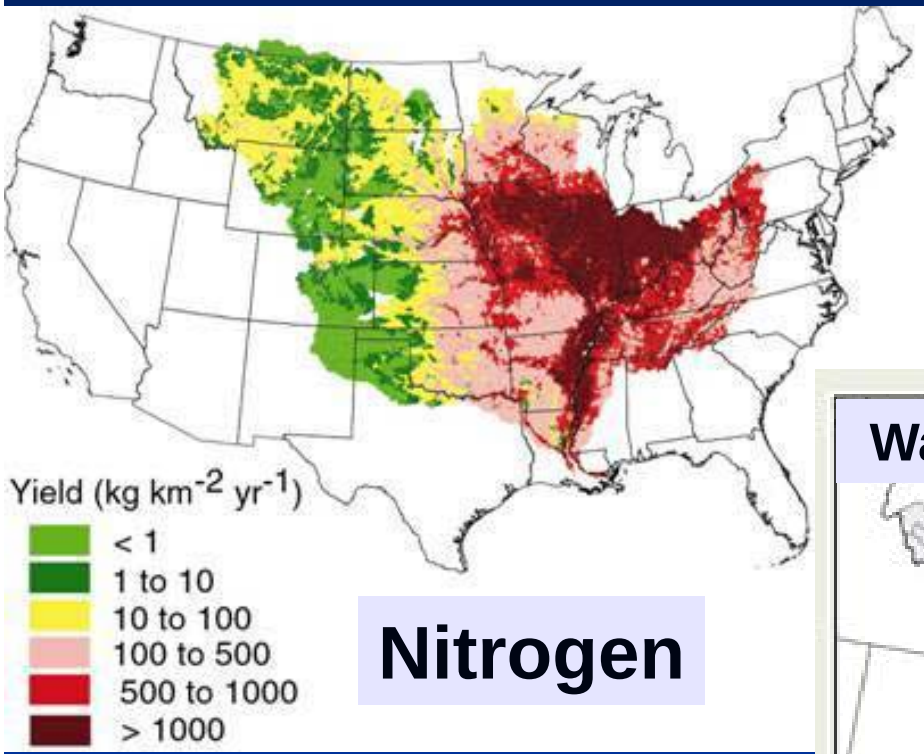
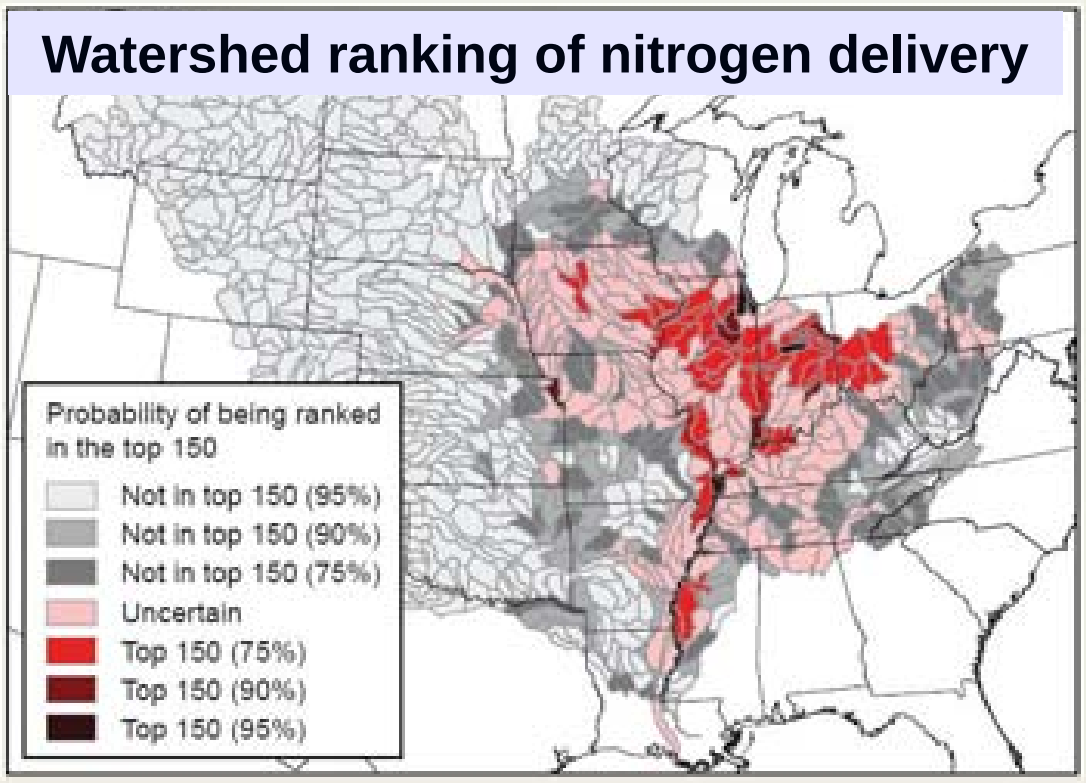
Use of steady-state water-quality models like SPARROW to estimate nutrient delivery to Gulf of Mexico



Nitrogen

Watershed ranking of nitrogen delivery



Priorities for Cycle 3

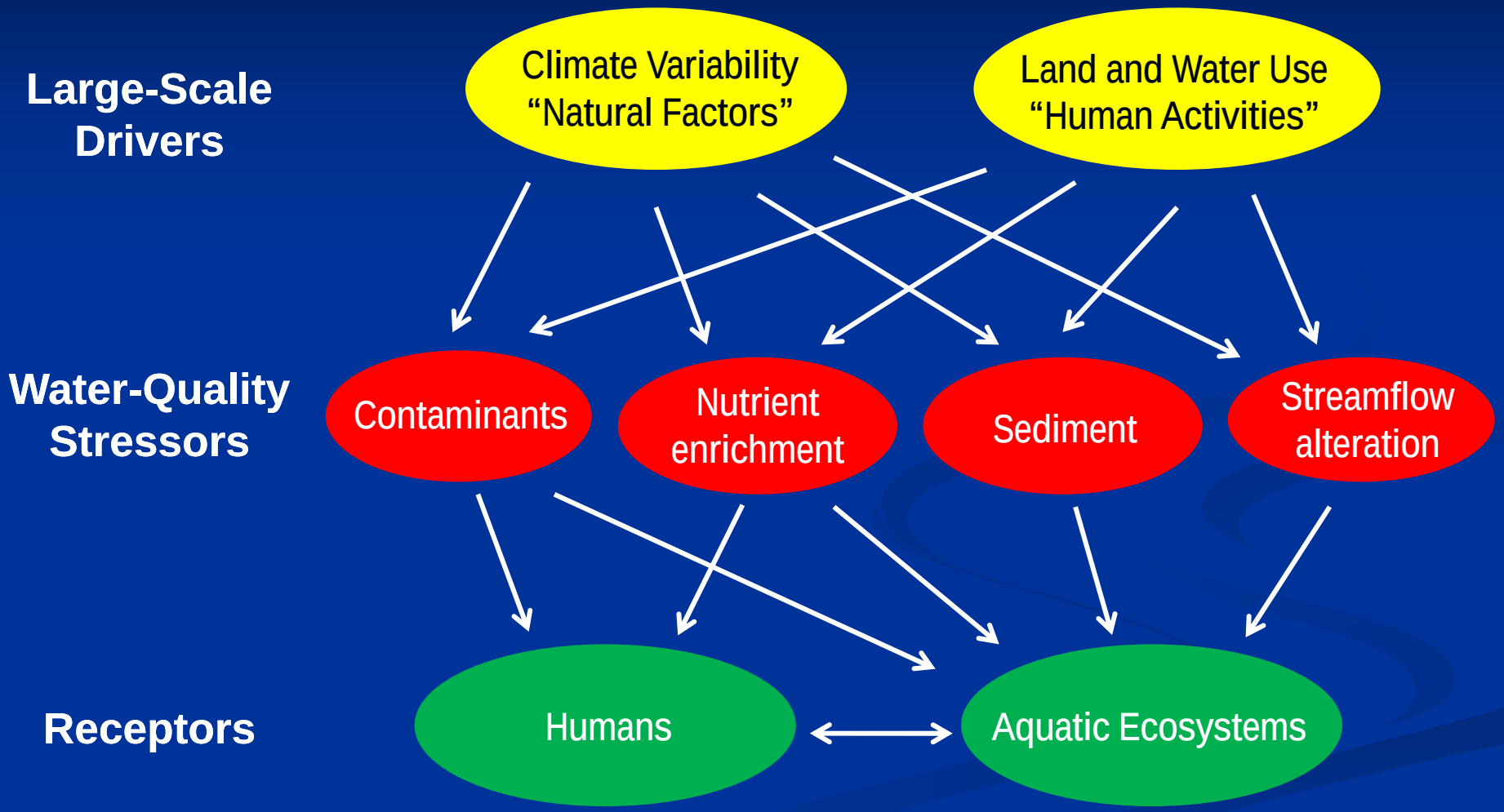
Nutrients

Contaminants

Sediment

Streamflow Alteration

Cycle 3 Design Framework



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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)

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Expected Contributions

- ✓ 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

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Two Budget Scenarios

- **"Science Plan" Scenario**
  - Developed to meet national needs identified by NAWQA stakeholders and NRC Committee
  - Full implementation cost would be about 4 times current (FY12) funding level (~$63M)
- **"Current Funding" Scenario**
  - Starts at current funding level in 2013
  - Assumes flat budget over 10 years w/ 4% annual inflation rate
  - ~30% loss in spending power by 2023

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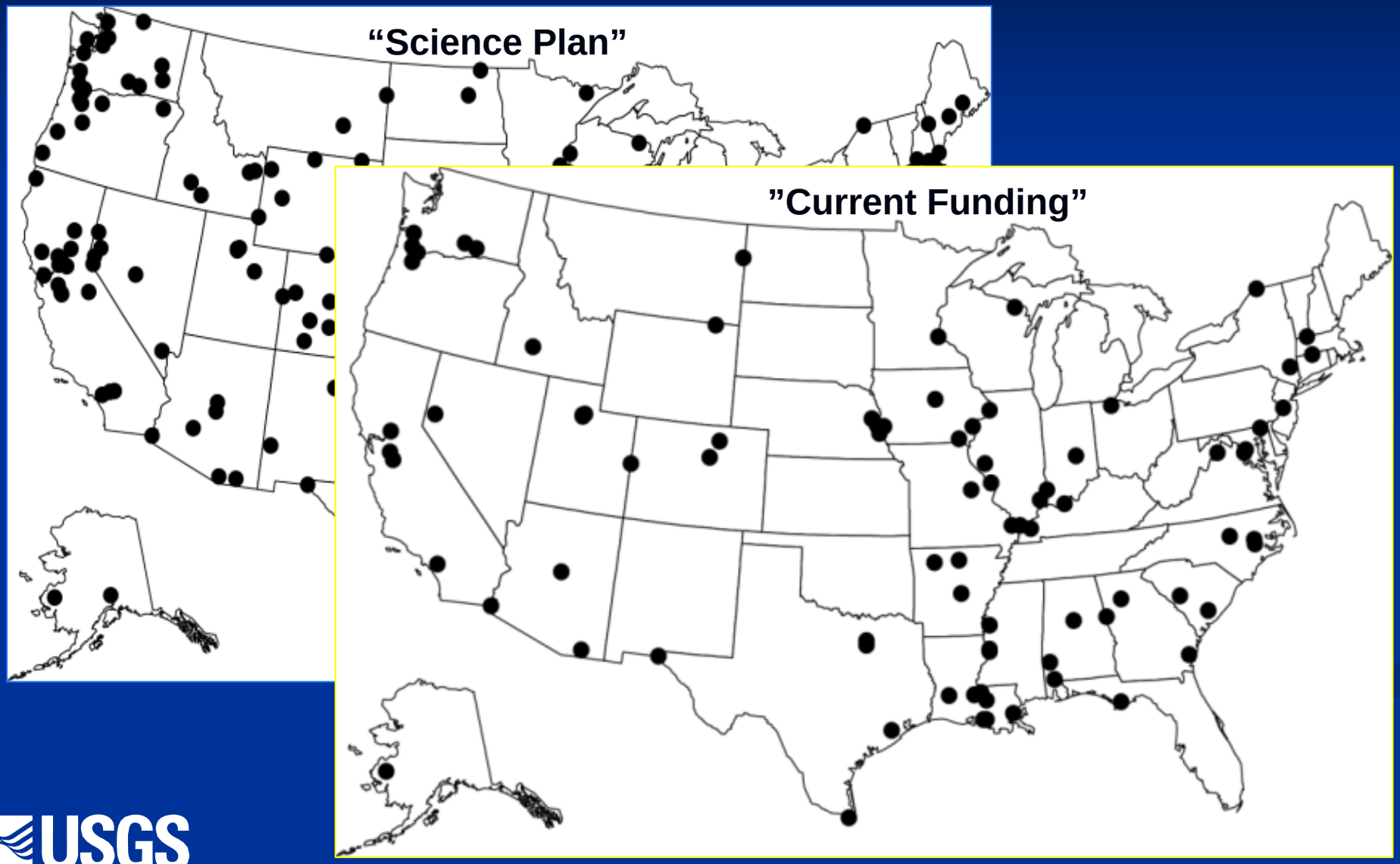
Two Stream and River Water Quality Networks



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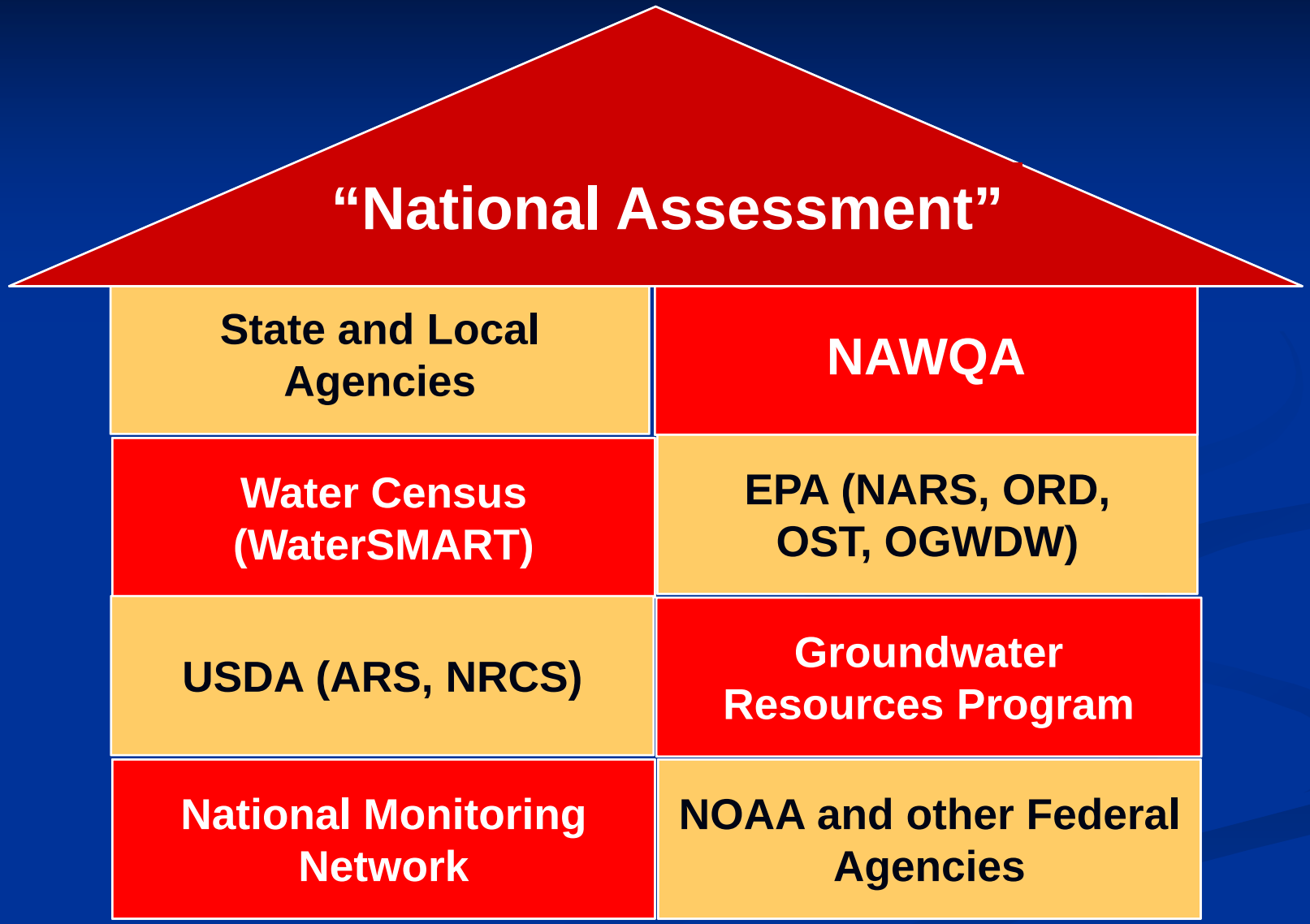
Integration and Partnering are Critical



What You'll Hear about Today: Approaches and Contributions

- Surface Water Status & Trends Assessment (Bob Gilliom)
  - NARS Wadeable Streams Survey (Ellen Tarquinio)
  - Temperate Plains Synoptic Study (Pete VanMetre)
- Stressor Effects on Stream Ecosystems (Mark Munn)
- Groundwater Monitoring and Modeling (Ken Belitz)
- Integrated Watershed Studies (Paul Capel)
- Forecasting Studies (Dave Wolock)

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