

# An Update on Planning the Third Decade (Cycle 3) of the NAWQA Program

Advisory Council on Water Information Meeting  
Reston, VA

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Reston, VA

# Cycle 3 Vision

NAWQA will be a leading source of scientific information for the development of effective policies and management strategies that protect and improve water quality for human and ecosystem needs. NAWQA data, water-quality models, and scientific studies will characterize where, when, why, and how the Nation's water quality has changed or is likely to change in the future.

# Critical Issues

Excess nutrients

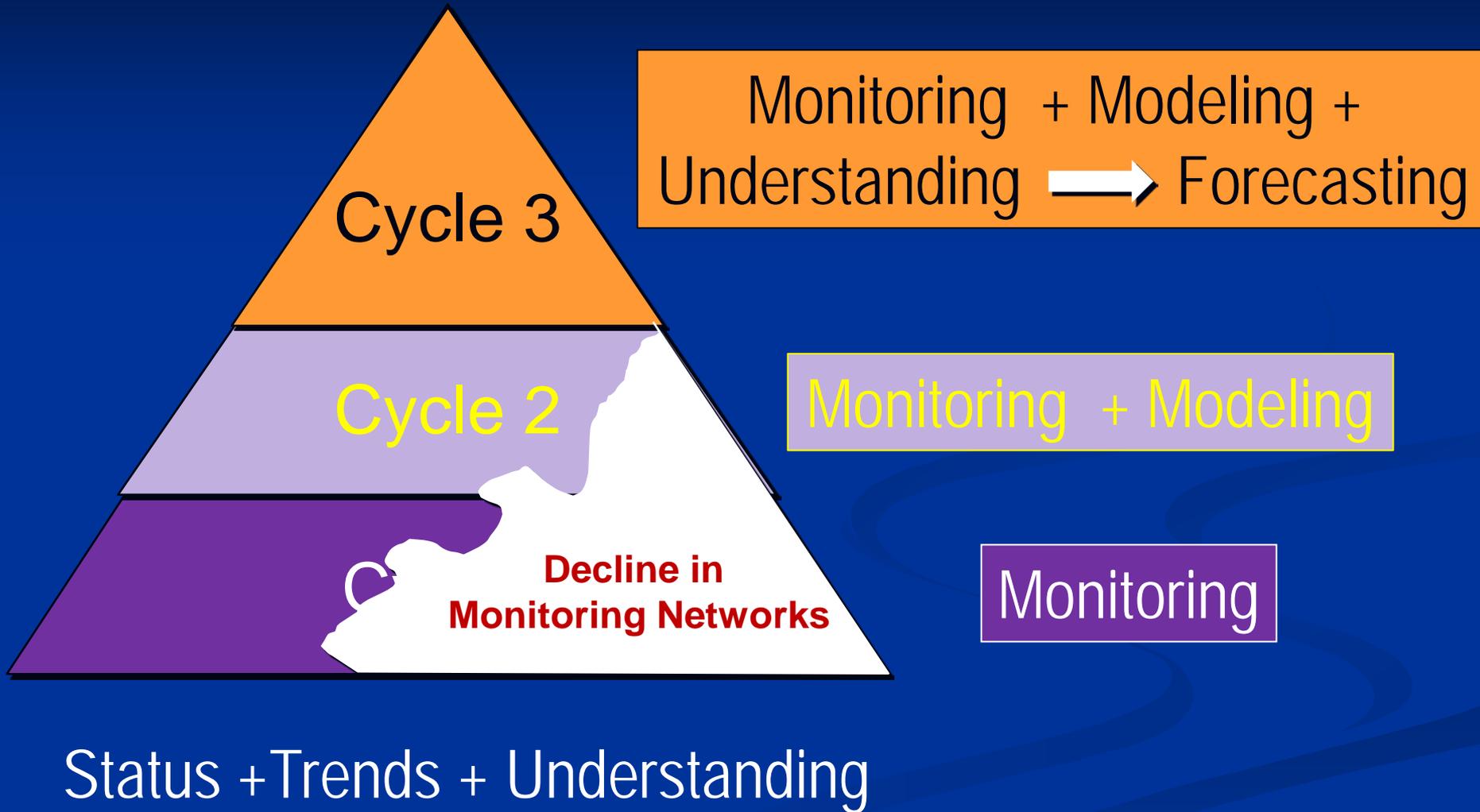
Contaminants

Sediment

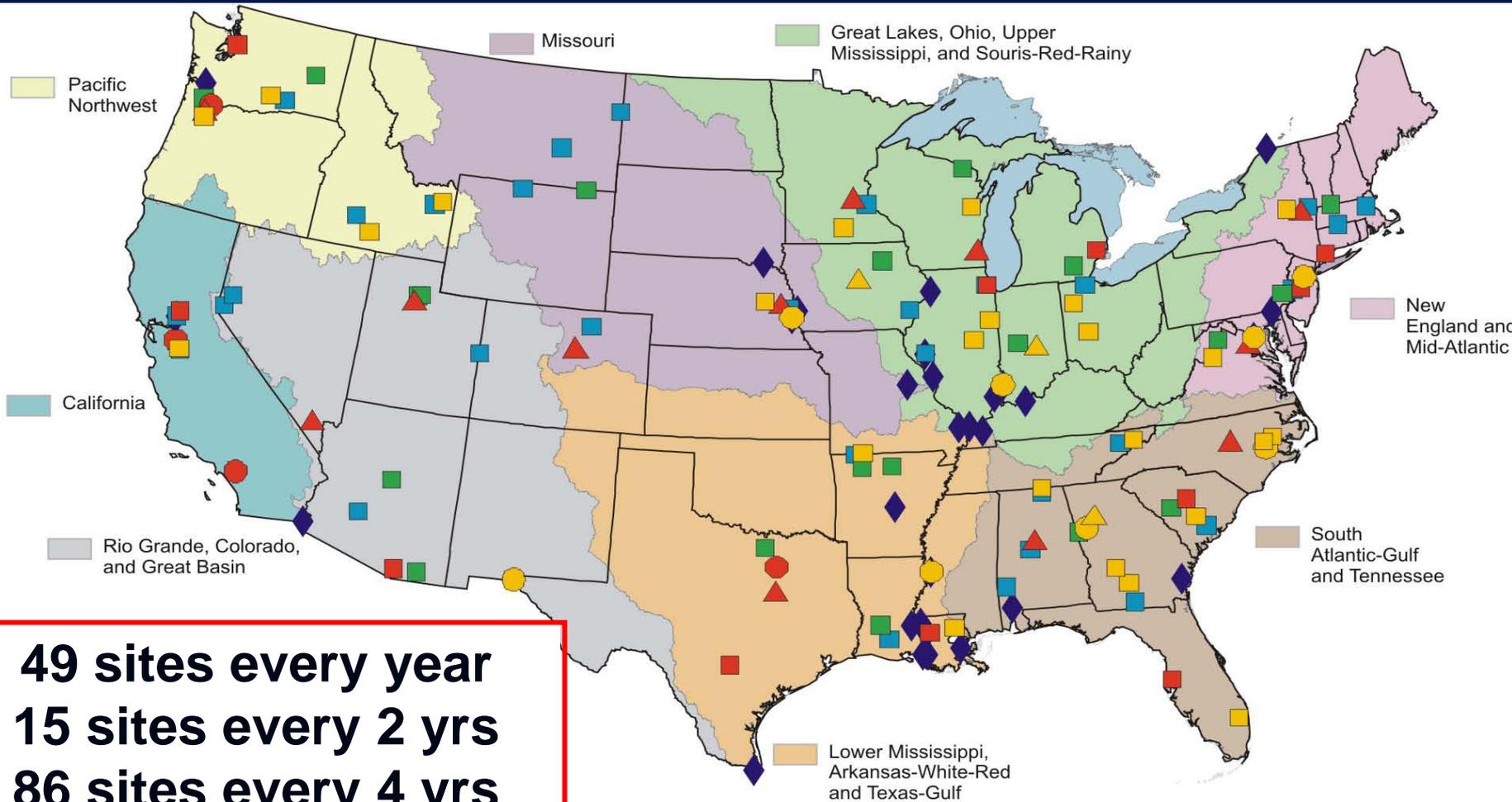
Streamflow Alteration



# Rebuilding the Foundation



# Current Fixed-Site Network



# Possible Changes for Fixed-Site Network

## Current Network

150 sites

Most only sampled every 2 or 4 yrs

No continuous monitors

58 ecological sampling sites

Single-year intake sampling

No lake or reservoir sites

Existing contaminant analyses

Minimal suspended sediment

## Cycle 3 Network

⇒ ~350 sites

⇒ All sites sampled all years

⇒ Most with real-time monitoring

⇒ 225 ecological sampling sites

⇒ 25 stream or river DW intake sites

⇒ 50 lake or reservoir DW intake sites

⇒ Expanded contaminant coverage

⇒ Expanded suspended sediment with turbidity monitoring

# New Design Features

## Real-Time Water-Quality Monitoring

Continuous monitoring of temp, spec cond, DO, and turbidity

Provides surrogates for sediment, bacteria

Improved temporal resolution (storms)

More accurate load estimates

Richer data sets for calibration

### Real-Time Turbidity Stations



# New Design Features

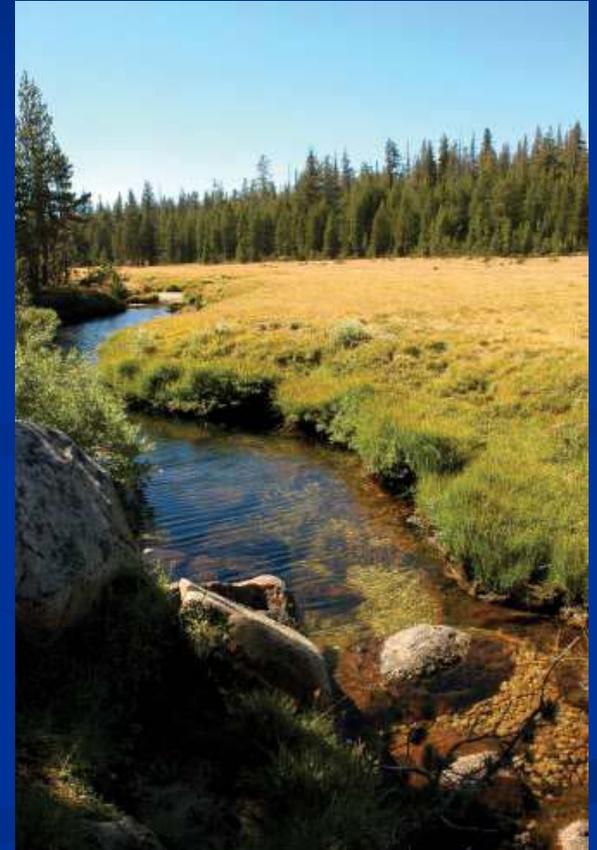
## More Reference Sites

Provides benchmarks for evaluating:

- biological condition
- background concentrations
- effects of changing climate

All sites sampled annually

Build and maintain a National Reference Site monitoring network



# New Design Features

Dynamic Models  Forecasting

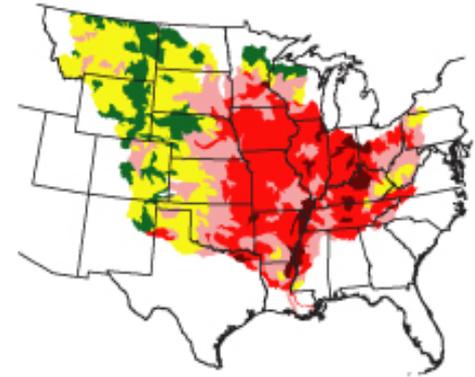
Go from “average” conditions to “time-varying”

Range of time scales: (monthly, seasonal, annual)

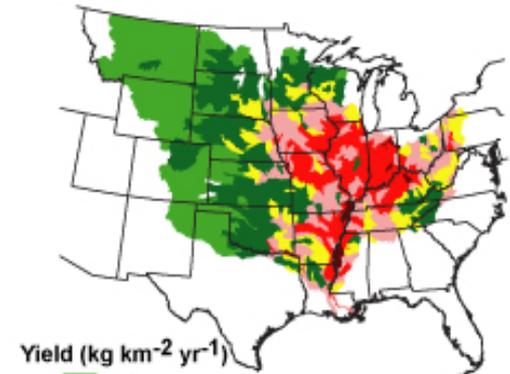
To do this we need:

- contaminant concentrations/loads over time
- ancillary data over time (satellite data?)
- understanding studies

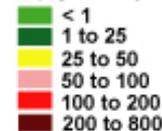
Phosphorus Yield to Gulf of Mexico (spring)



Phosphorus Yield to Gulf of Mexico (fall)



Yield ( $\text{kg km}^{-2} \text{ yr}^{-1}$ )



# New Design Features: Lake and Reservoir Intake Monitoring

Important source-water category

Start with drinking-water intakes

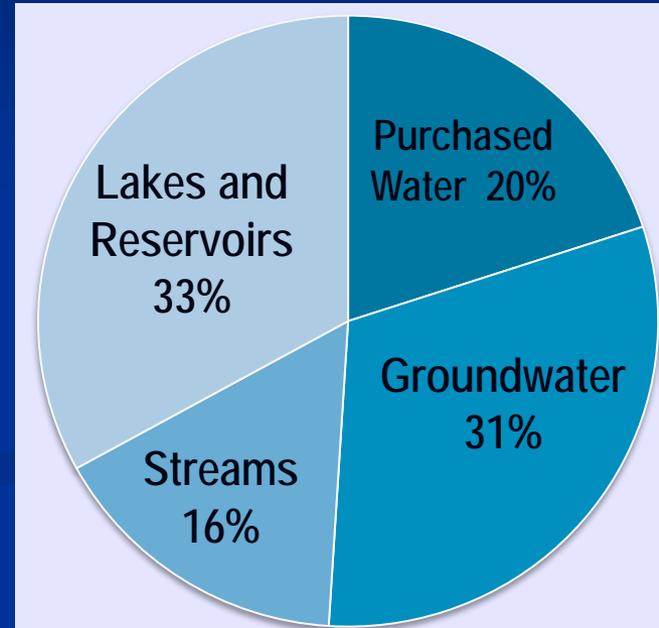
Pilot understanding studies

Human health focus:

Organic contaminants

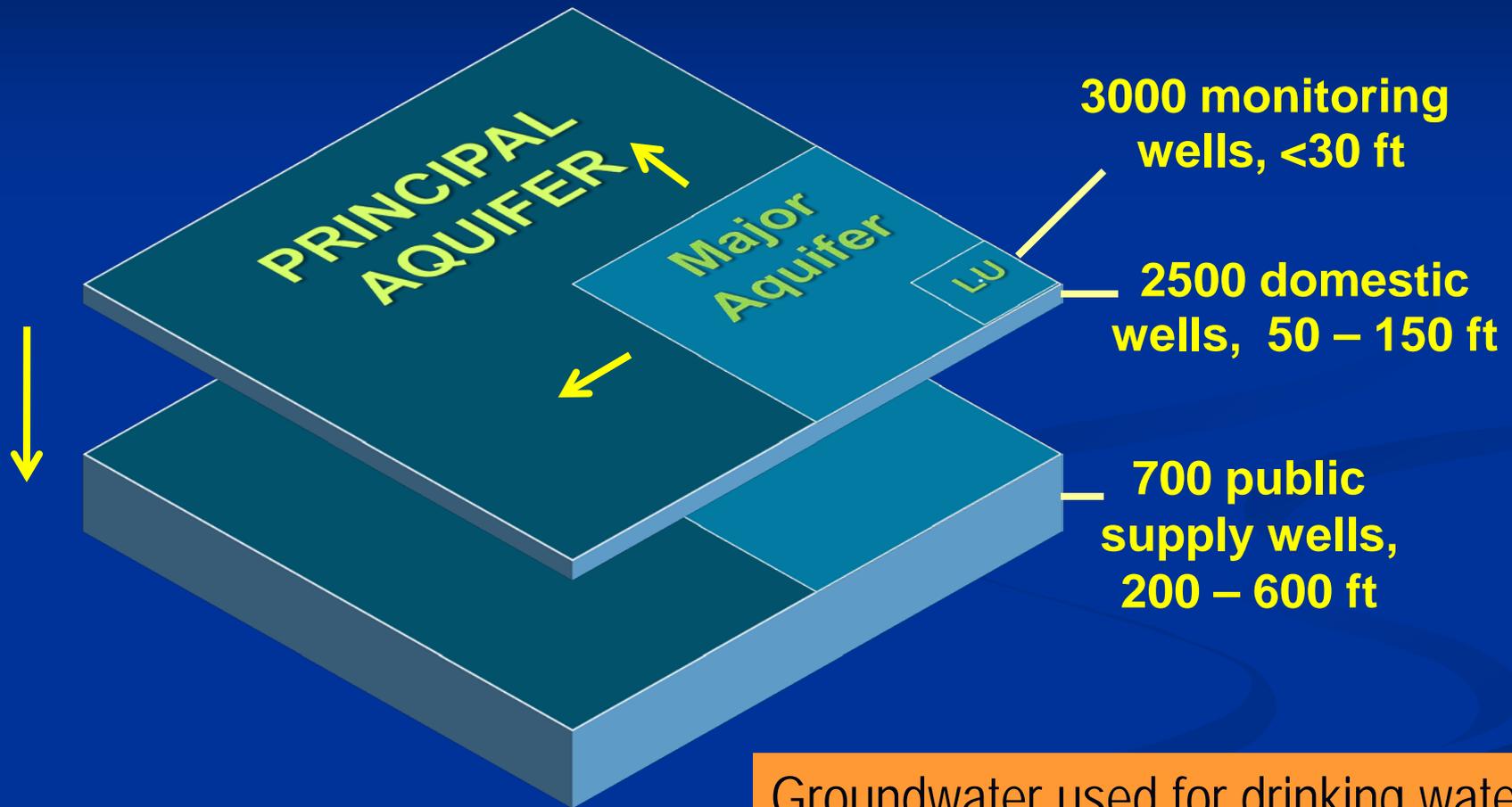
Algal toxins,

Pathogens



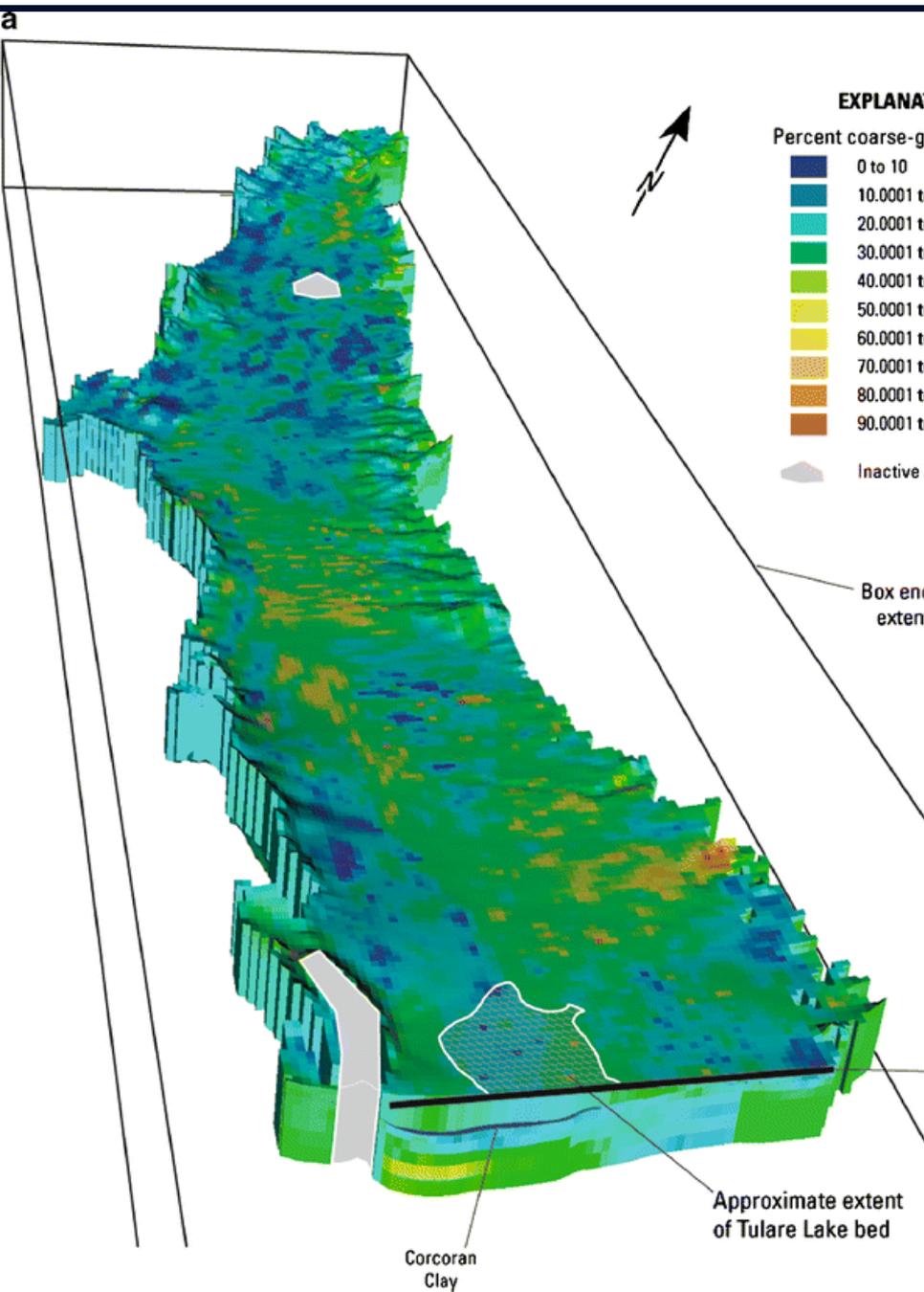
# New Design Features

## Deep Groundwater and Public Supplies

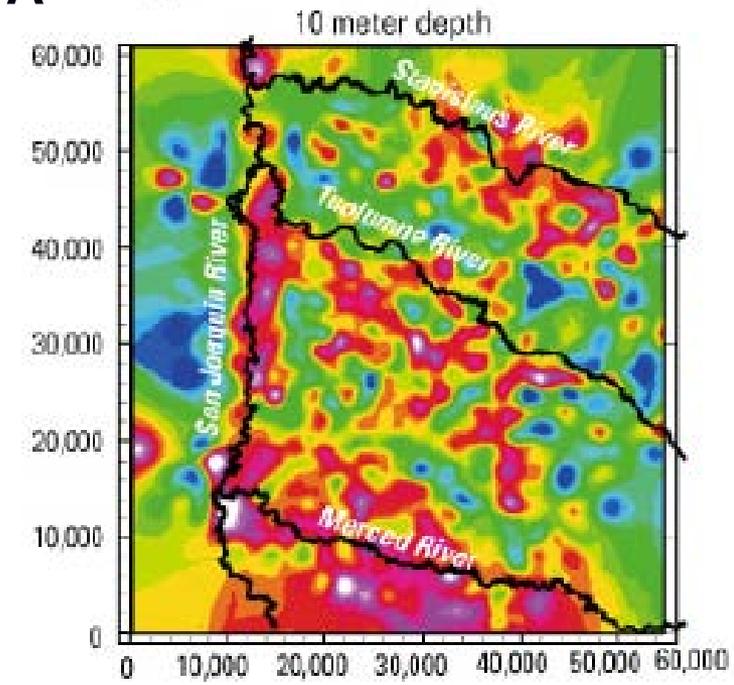


Groundwater used for drinking water:  
82% Public supply, 18% Domestic

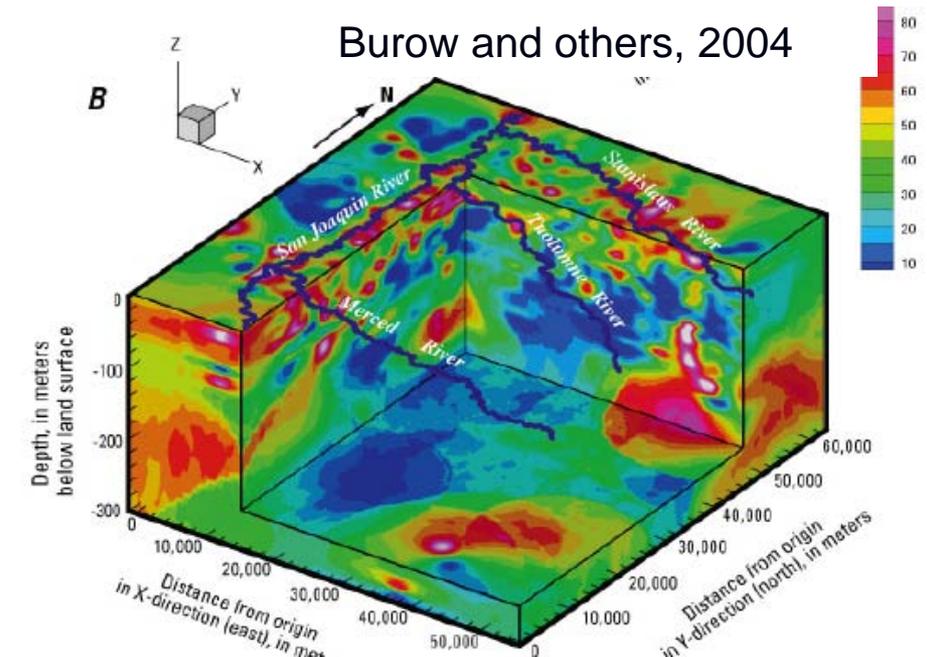
# 3-D modeling of San Joaquin Valley aquifer, CA



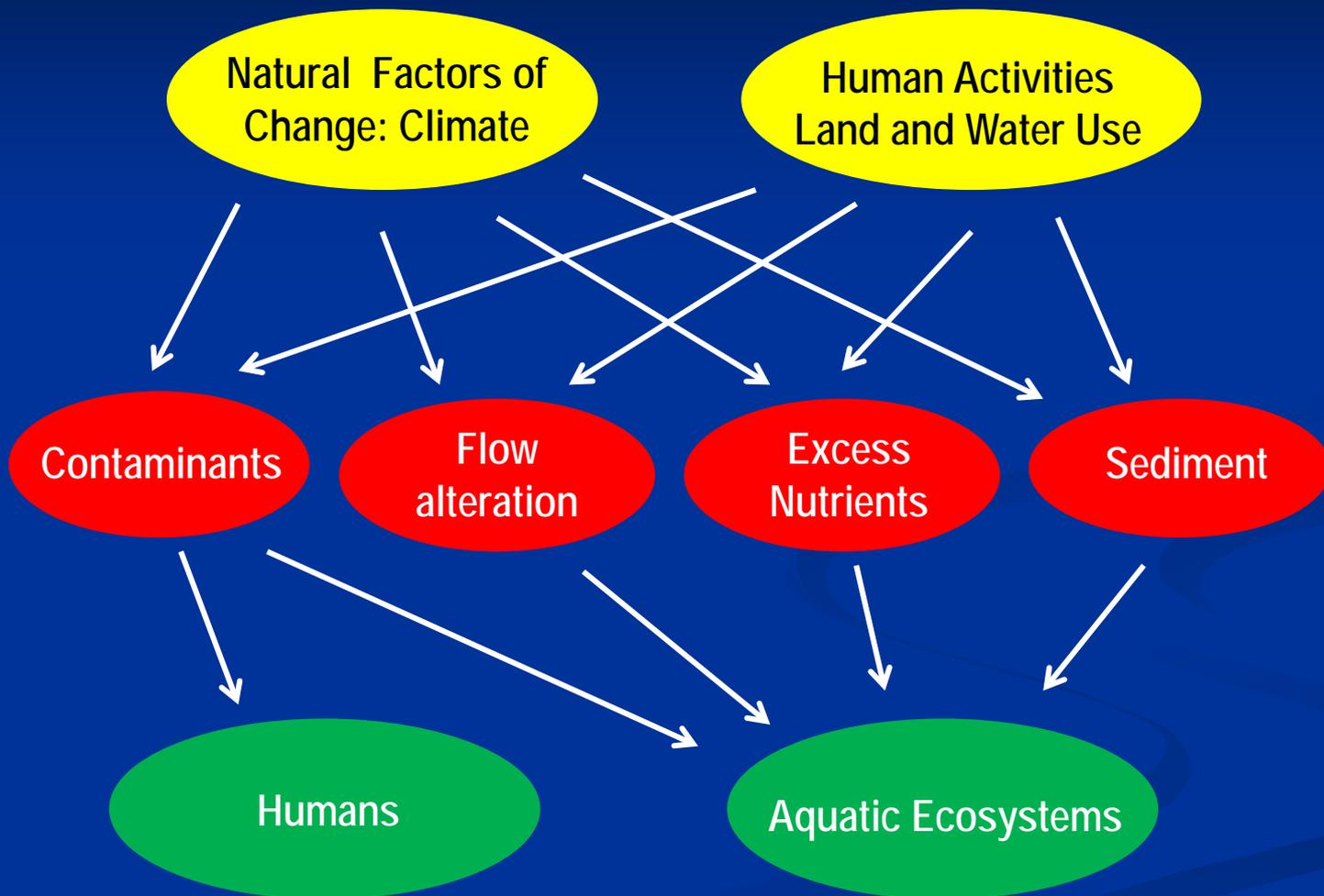
**A**



Burow and others, 2004



# Cycle 3 Design Framework



# We can't do this alone!

## “National Assessment”

**EPA**

**NAWQA**

**WaterSMART**

**NOAA**

**USDA**

**Groundwater  
Resource Program**

**National Streamflow  
Information Program**

**State and Local  
Agencies**

# Next Steps

Finalize details of draft Cycle 3 design

Evaluate options under different budget scenarios

Discuss priorities with stakeholders and advisory groups

Finalize science plan and begin implementation plan

For further information :

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<http://water.usgs.gov/nawqa/>

# **SCHEDULE as of July 1, 2010**

## **National briefings**

Nutrient circular briefing – September 17, 2010

Studies of National Priority

**Transport of anthropogenic and natural contaminants to public supply wells  
-circular briefing - February 2011.**

**Effects of Urbanization on Stream Ecosystems - Briefing – Summer 2011**

**Ecological Synthesis Circular briefing – Summer 2011**

## **Liaison Meetings**

Cycle 3 Liaison meeting – November 19, 2010