



# A National Water Census

**Water Census: Accounts for the changing amount, quality, and use of water resources across the Nation.**

## **Primary Water Census questions:**

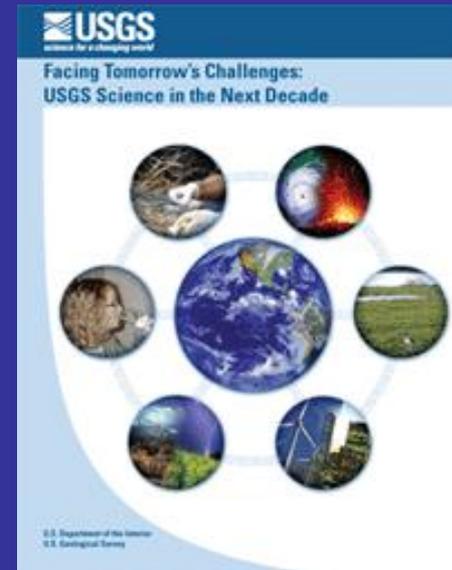
**Does the Nation have an adequate availability of freshwater to meet both human and ecological needs?**

**Will this water be present to meet both existing and future needs?**

USGS objective for the Water Census is to place the technical information and tools into the hands of stakeholders, allowing them to evaluate water availability for the questions that they are facing.

# A Water Census of the United States: Quantifying, Forecasting, and Securing Freshwater for America's Future

- **Status** of freshwater resources and how they are changing,
- **Water use** for human, environmental, and wildlife needs,
- How freshwater availability is related to **natural storage and movement of water** as well as engineered infrastructure,
- **Water sources not commonly thought to be a resource.**
- **Forecasts** of likely outcomes of water availability, quality, and aquatic ecosystem health due to changes in land use and cover, natural and engineered infrastructure, water use, and climate.



**H.R. 146 Subtitle F**  
**(SECURE Water Act as passed by the House March 25, 2009)**

**Section 9501: Findings**

**Section 9502: Definitions**

**Section 9503: Reclamation Climate Change and Water Program**

**Section 9504: Water Management Improvement**

**Section 9505: Hydroelectric Power Assessment**

**Section 9506: Climate Change and Water Intergovernmental Panel**

**Section 9507: Water Data Enhancement by United States Geological Survey**

*Full National Streamflow Information Program.*

*Creates a National Groundwater Resources Monitoring Program and a Brackish Groundwater Assessment.*

**Section 9508: Water Availability Assessments**

*Creates a national program to study water quality and quantity.*

*Requires first report in 2012 and every 5 years thereafter.*

*Grants are available to assist state agencies in developing and integrating state water use data.*

**Section 9509: Research Agreement Authority**

**Section 9510: Effect**

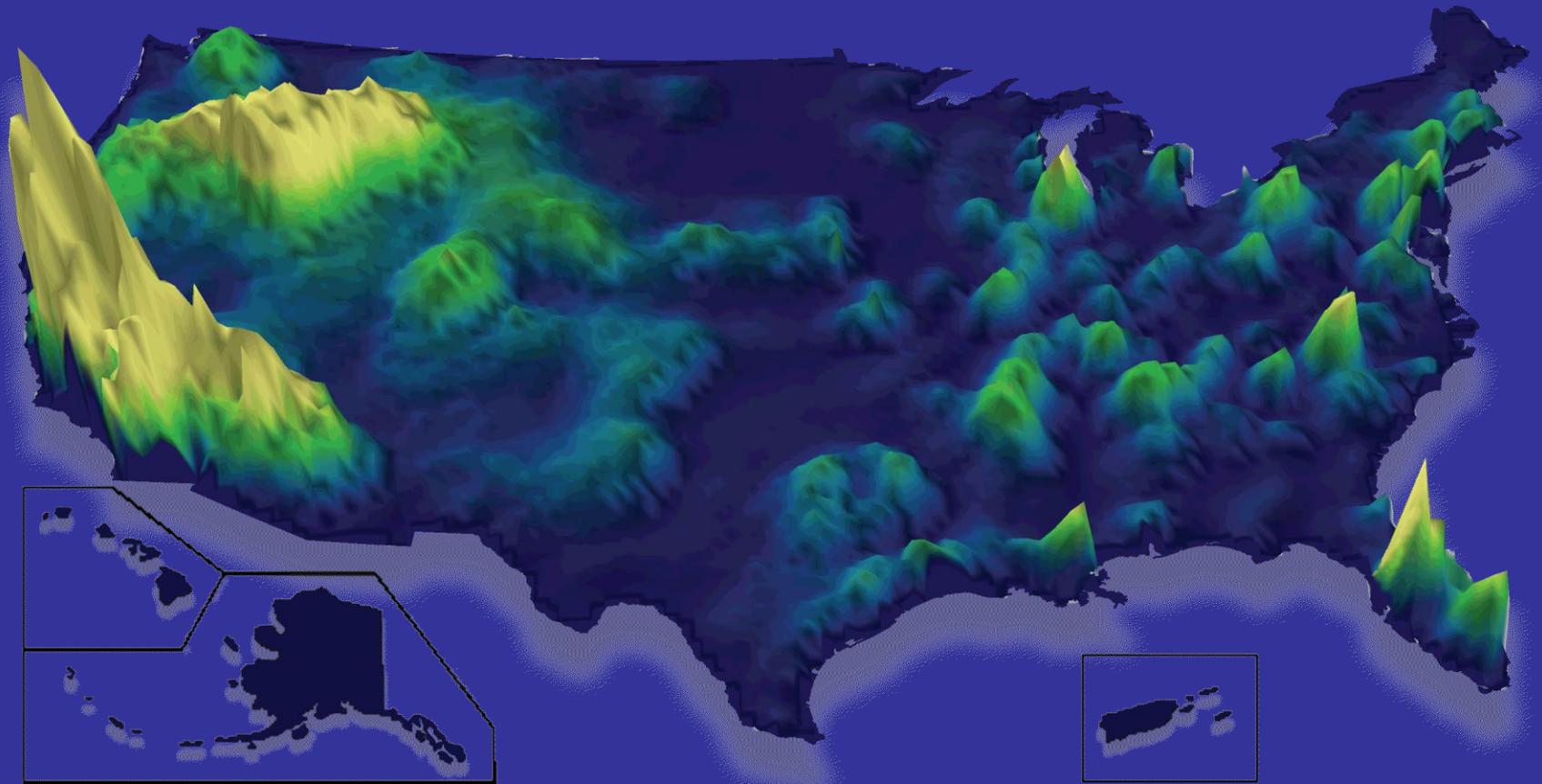
## Section 9508 of SECURE Water calls for a National Water Availability and Use Assessment Program

1. Assessment of the status of the water resources of the United States;
2. Quantity of water that is available for beneficial uses;
3. Quality of the water resources of the United States;
4. Long-term trends in water availability;
5. For each long-term trend - a more accurate assessment of the change in the availability of water
6. Develop the basis for an improved ability to forecast the availability.

## Report to Congress - Every 5 years thereafter:

1. The **current availability** of water resources in the United States,
2. **Significant trends** affecting water **availability**, including documented or projected impacts as a result of global climate change,
3. The **withdrawal and use** of surface water and groundwater by various sectors,
4. **Significant trends** relating to each **water use** sector, including significant changes in water use due to the development of new energy supplies,
5. **Significant water use conflicts or shortages** that have occurred or are occurring,
6. Each **factor** that has **caused**, or is causing, a conflict or shortage.

# Water Use Grants to States



Next Steps?

# USGS Implementation Team

Water Use

Ecological Flow

Groundwater

Water Quality

Biology

Geography

Geology

Climate Change

Pilot Studies

Surface Water

Information Technology

Program  
Integration

Water  
Use

Ecological  
Flows

Availability  
Indicators

Products,  
Info Mgmt,  
Decision  
Support

- Implementation Team produces short “concept papers”
- Team works through ACWI / SWRR to refine the concepts to meet stakeholders goals
- Team develops a draft implementation plan from the work with the ACWI / SWRR committee
- USGS finalizes and publishes a plan for the National Water Census

# We need your help on an ad hoc committee

## Organization

## Acronym

Association of Fish and Wildlife Agencies

AFWA

Association of Metropolitan Water Agencies

AMWA

Association of State Drinking Water Administrators

ASDWA

American Water Works Association

AWWA

Interstate Council on Water Policy

ICWP

National Ground Water Association

NGWA

The Nature Conservancy

TNC

Western States Water Council

WSWC

Bureau of Reclamation

BOR

US Dept. of Energy - Energy Information Administration

DOE - EIA

NOAA National Weather Service

NOAA-NWS

US Army Corps of Engineers

USACE

US Dept. of Agriculture - Economic Research Service

USDA - ERS

US Dept. of Agriculture - NASS

USDA - NASS

US Dept. of Agriculture - NRCS

USDA - NRCS

US Dept. of Agriculture - Forest Service

USDA - USFS

US Environmental Protection Agency

USEPA

# Charge to the ad hoc committee

The ad hoc committee will work with the Implementation Team to improve the concepts, efforts, and products proposed for inclusion in the Water Census so that they best meet stakeholders needs.

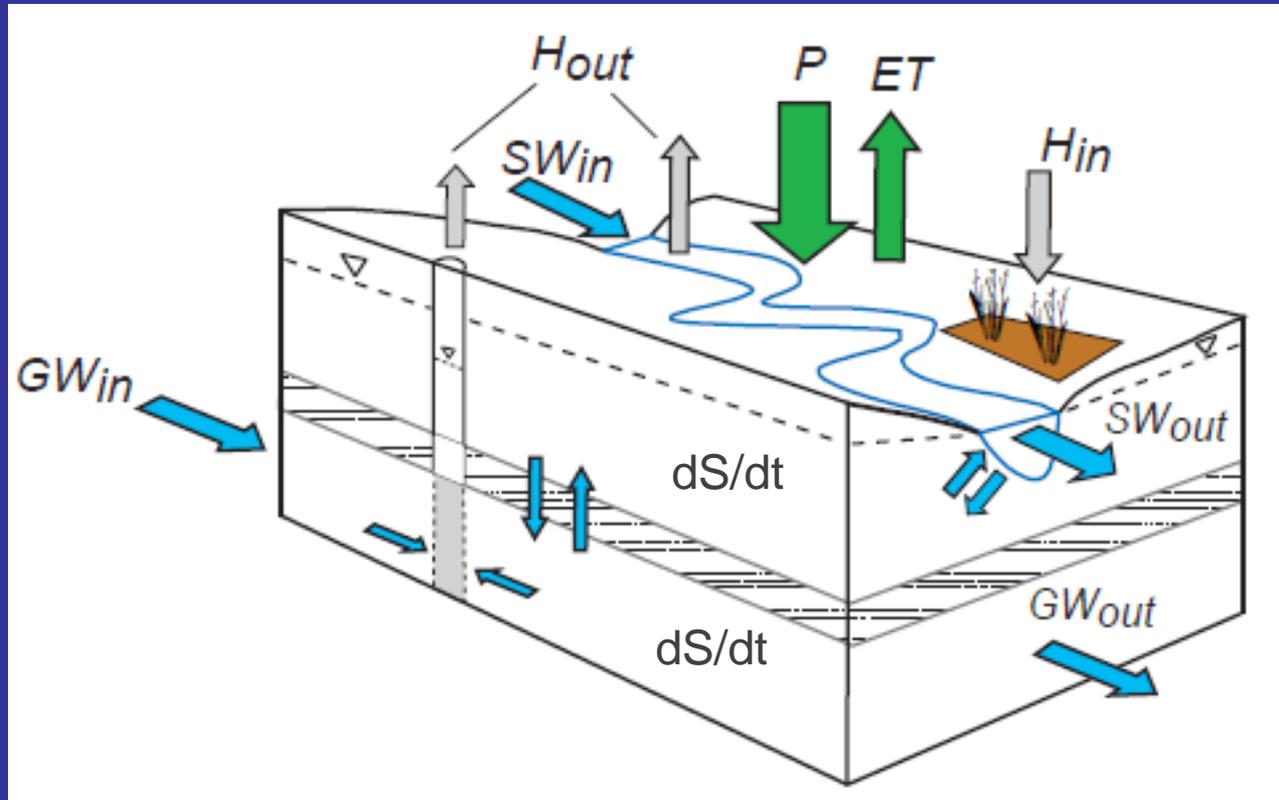
The output from the committee will be brief report to the Associate Director for Water, USGS, on the concensus reached for the Water Census.

The timeframe for this effort is January – June, 2010.

# Integration of programs around the Theme of Water Availability



# Account for water with a “budget”



Water budget components of a bounded hydrologic unit.

$GW_{in}$  and  $GW_{out}$ , groundwater inflows and outflows  $ET$ , evapotranspiration

$SW_{in}$  and  $SW_{out}$ , surface-water inflows and outflows  $P$ , precipitation

$H_{in}$  and  $H_{out}$ , human inflows (return flows) and outflows (withdrawals)

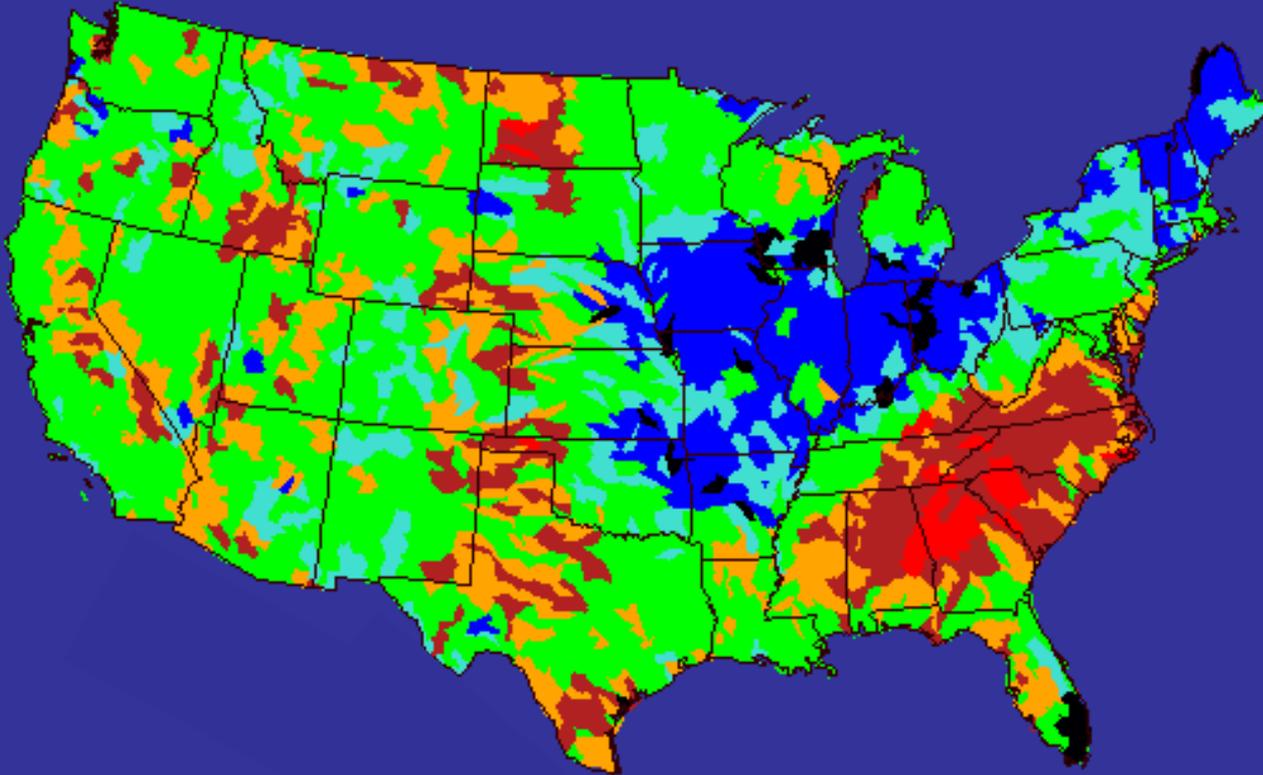
$dS/dt$ , change in storage in both shallow and deep groundwater systems

double arrows indicate exchange.

# A Nationwide System to deliver water accounting information addressing

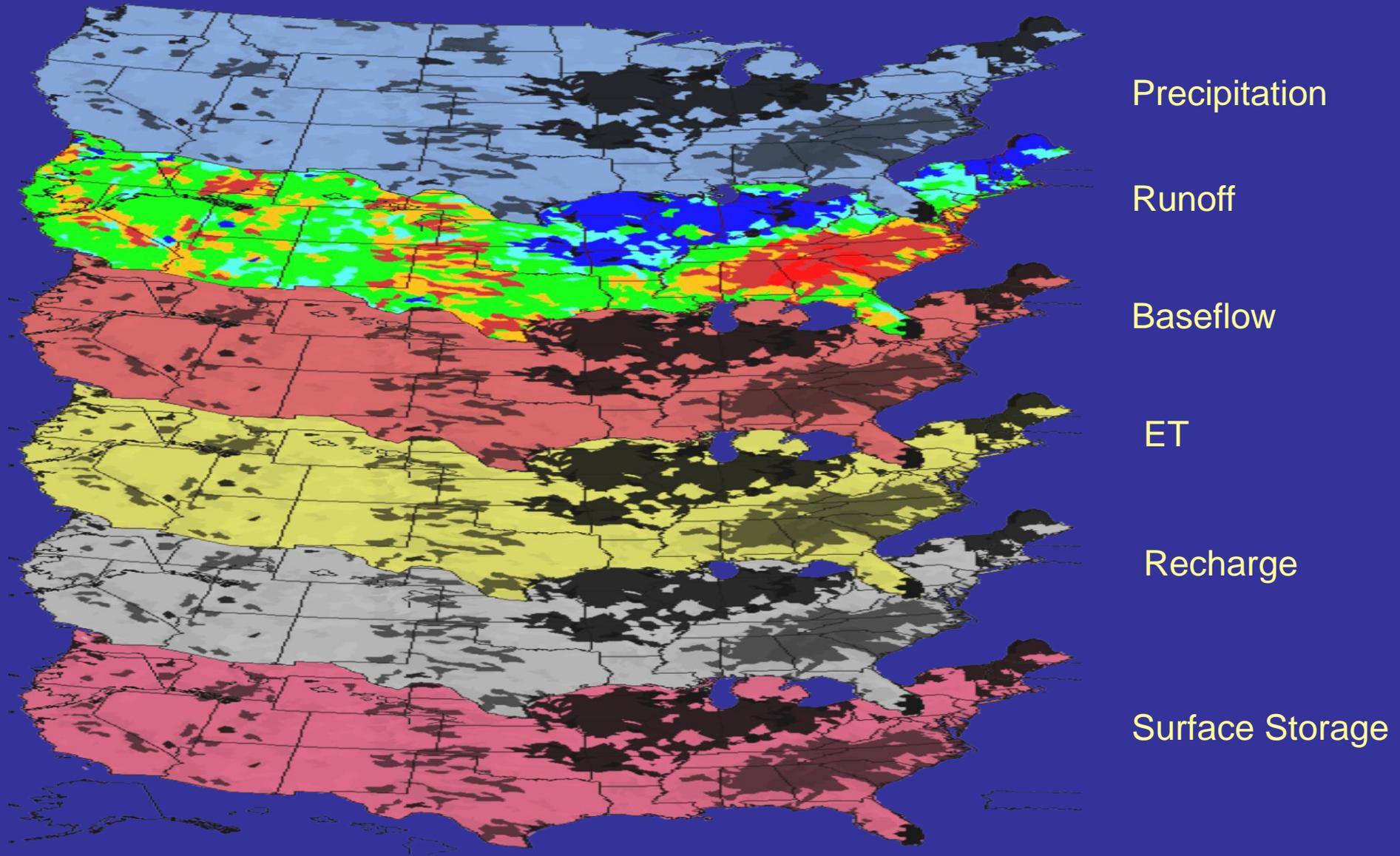
- Precipitation
- Evapotranspiration
- Storage in Reservoirs, Lakes, Snow and Ice
- Surface Water
- Groundwater
  - Recharge rates
  - Water level in aquifers
- Ecological Needs
- Water Withdrawals
- Return Flows
- Consumptive Uses
- Run-of-the-River Uses

# Generating and delivering information for water accounting



Envision a seamless coverage of information for  
a water accounting component

And if you could get that info for all accounting components



# Information Delivery

A web application for delivering water availability information at scales that are relevant to the user

USGS  
Idaho StreamStats

ZoomIn ZoomOut Pan GetInfo FullExtent LastExtent EditBasin FlowStats BasinChar ClearBasin Download GageInfo Print Help

Scale  
Zoom To: water GO  
Enter Water Resource

Map Layers Locator Map  
BASE LAYERS  
WATER  
POLITICAL

USGS Scale 1:7627084

Refresh Map Reset Layers

Accessibility FOIA Privacy Policies and Notices  
U.S. Department of the Interior | U.S. Geological Survey  
URL: <http://streamstats.usgs.gov/idstreamstats/>  
Page Contact Information: StreamStats Help  
Page Last Modified: September 17, 2007

Streamstats Status News

FIRST GOV  
The U.S. Government's Official Web Portal

TAKE PRIDE IN AMERICA

Select the area of interest.

Generate information on water accounting components

Work with the online tool to construct your water budget

Access trend information



# Flows Needs for Wildlife and Habitat

- Classify the streams across the nation for their hydro-ecological type
- Systematically examine the ecological affects of hydrologic alteration
- Develop flow alteration – ecological response relationships by “h-e” type



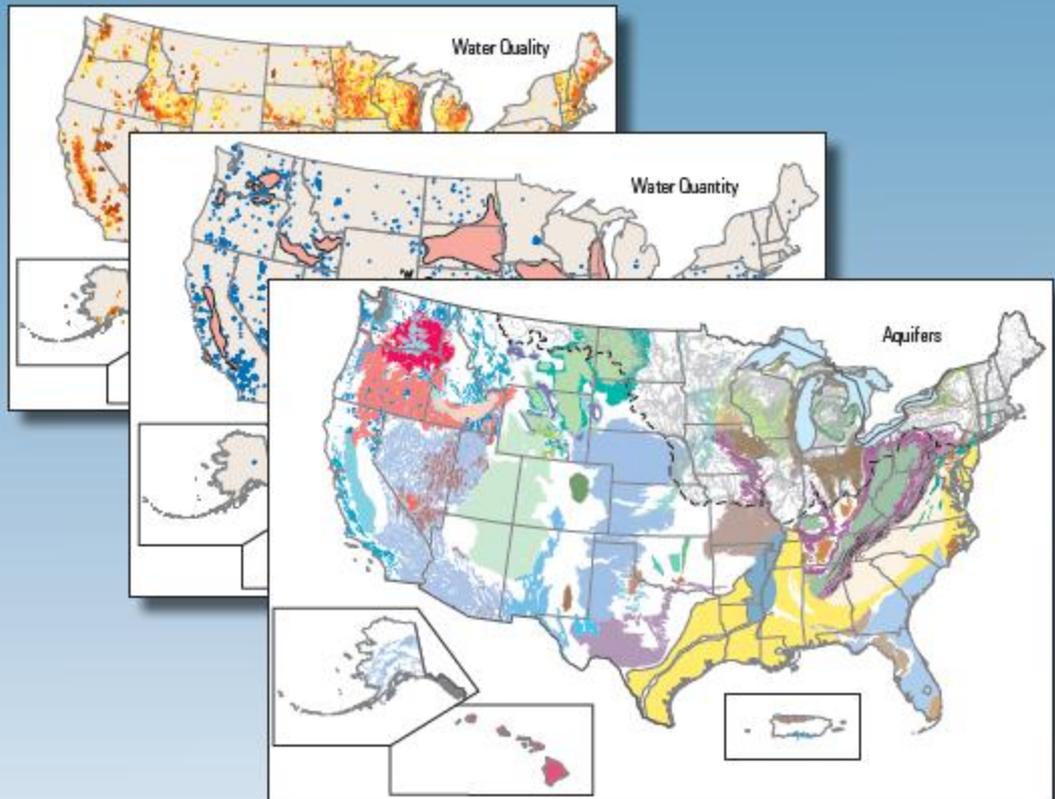
# Assess Groundwater's role in Water Availability

Use the strength of and enhance the resources within this program to provide the information on:

- Recharge
- GW yields
- Changes in storage.
- Saltwater Intrusion
- Trends in GW Indices
- Artificial Recharge
- Brackish and Saline Resources
- GW/SW Interactions

Ground-Water Resources Program

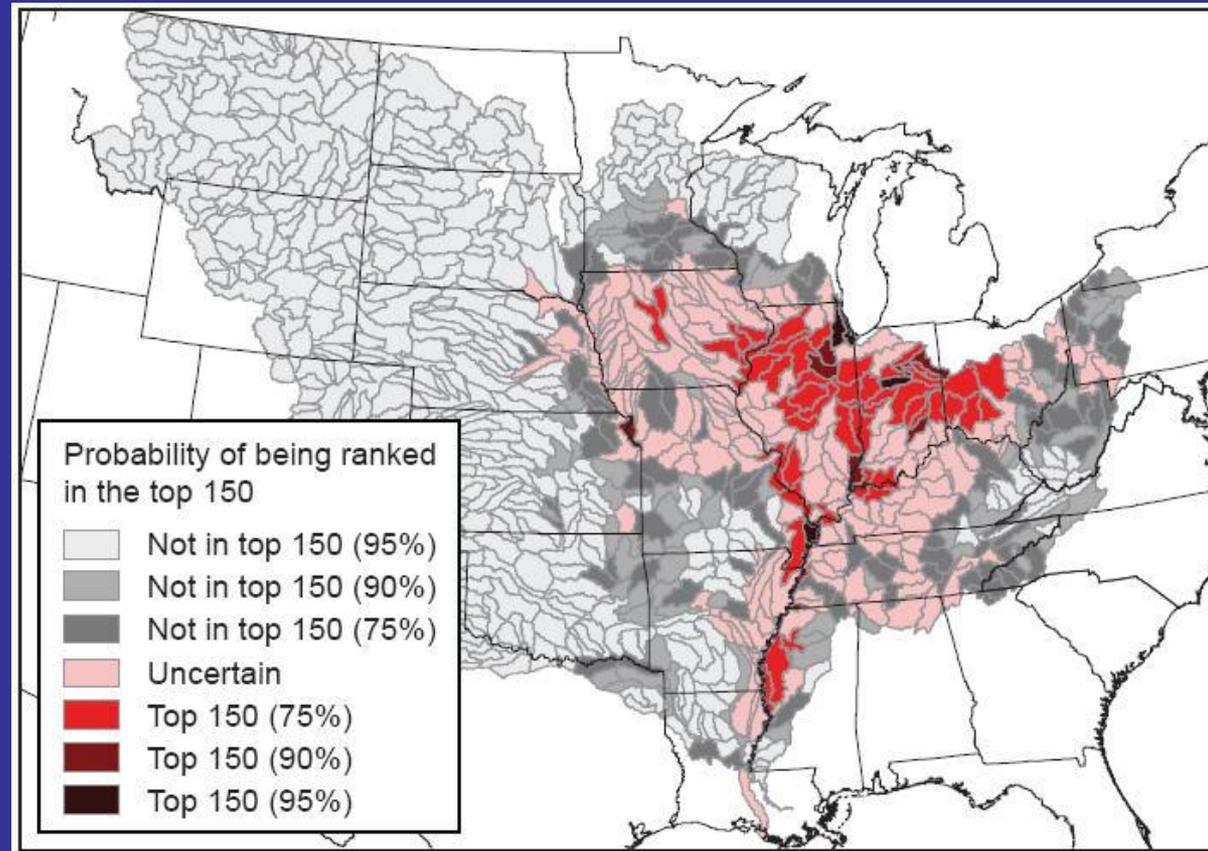
## Ground-Water Availability in the United States



# Assess Water Quality's role in Water Availability

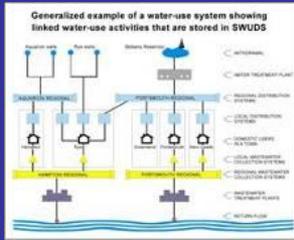
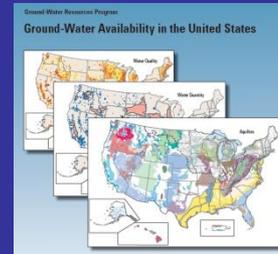
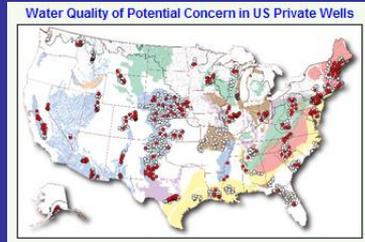
Use the strength of the NAWQA Program and tools like SPARROW to:

- Demonstrate the degree of water quality impairment that limits water availability
- Define the main compounds of importance.
- Relate to water use and return
- Trends



Finally, a series of studies focused on selected watersheds where there is significant competition over water resources. Here, the USGS will work collaboratively with stakeholders to comprehensively assess the technical aspects of water availability.

# Focused Water Availability Assessments



Water Quality

Groundwater Resources

Water Use

SW Trends, Precipitation, etc



Global Change

State, Local, Regional Stakeholder Involvement



Defined Technical Questions to be Answered

The objective is to place the information and tools into stakeholders hands to answer the questions they are facing.



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