

# Challenges for Long-Term Implementation of a National Ground Water Monitoring Network



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*Co-Chair of Subcommittee on Ground Water (SOGW)  
Federal Advisory Committee on Water Information (ACWI)*

*National Water Quality Monitoring Conference 2010  
“Data and Information for Decision Making: More Important Than Ever”  
Session D3:*

*“Elements of a Long-Term National Ground-Water Monitoring Network  
and a State-Scale Example”*

*April 27, 2009 – 10:00-11:30 AM – Room 16*

# Objectives

- **Explain National Network Efforts**
- **Link to Other Presentations**
- **Encourage You to Participate**

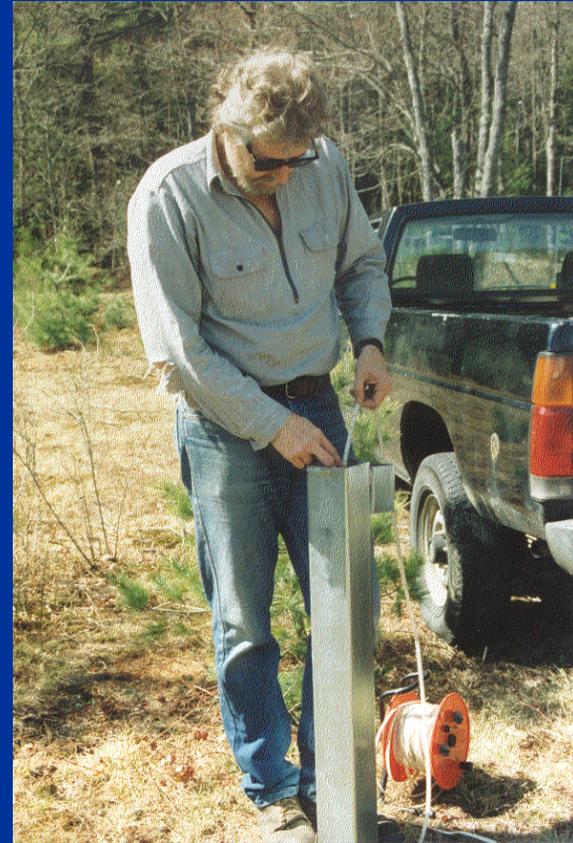
Acknowledgements: All participants and contacts, including and especially Chris Reimer of NGWA, Tom Patton (Montana) for slides, and many other folks present today at the Conference and at upcoming events.

# Acknowledgements

- **Bill Cunningham, USGS**
- **Chris Reimer, NGWA**
- **Tom Patton, Montana**
- **Rick Copeland, Florida**
- **Many, many others:**
  - **USA**
  - **Abroad**

# Outline

- **SOGW Overview**
- **Work Group Reports**
  - Inventory
  - Framework Design
  - Field Practices
  - Data Standards/Management
- **ACWI Approval**
- **Pilot-Testing**
- **Funding Issues**
- **How You Can Help**



# Linkages to Coastal Network

- Initial Inspiration
- Companion Efforts
- Lessons Learned
  - Real-Time Data
  - Data Mgt Hurdles
- Leveraging Partners & Funding
- “Success Stories” & “Data Gap ID”

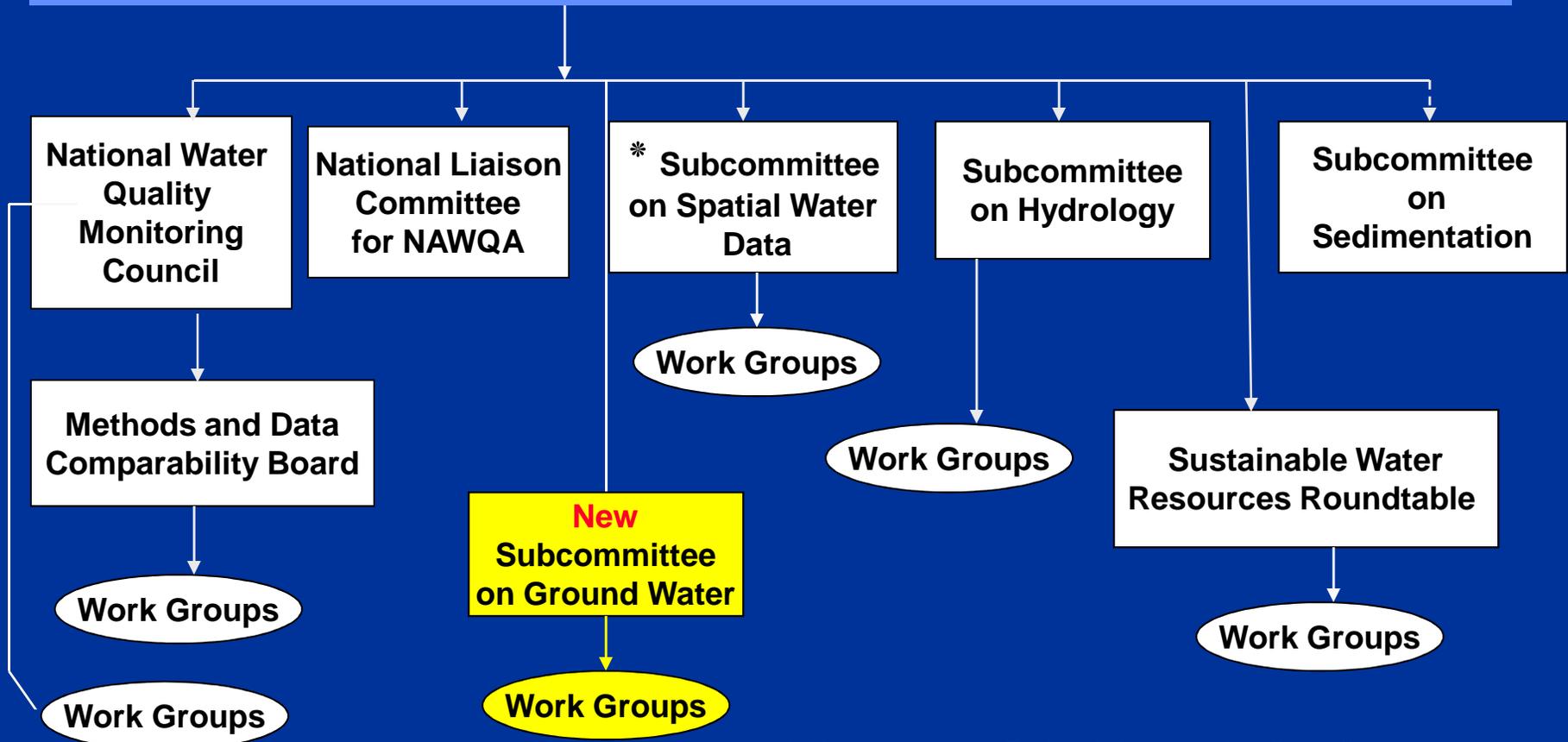
**WICP**

Water Information Coordination Program

**ACWI**

Advisory Committee on Water Information

# ACWI GROUPS



\* Also reports to Federal Geographic Data Committee

**You Know You're Getting Old  
When You See Signs Like.....**

**ACWI Subcommittee on Ground Water  
(established 2007)**

# Benefits of National Groundwater Network

## Natural and Man-Made Drivers:

- Drought
- Climate change
- Population increases
- Eco-habitat loss
- Energy development
- Agricultural demand



# Prior Efforts and “Drivers”

- Multi-Agency Committee – 1990s
- White House → NGWA GW Summit / White Paper
- 2003 GAO Report → 36 states expecting shortages
- SWAQ Report → “Need ‘Water Census’ ”
- Heinz Center: “State of the Nation’s Ecosystems”  
→ Ground-water data “*inadequate for national reporting*”
- Coastal Monitoring Network (ACWI & NWQMC)

# ACWI Charge to SOGW

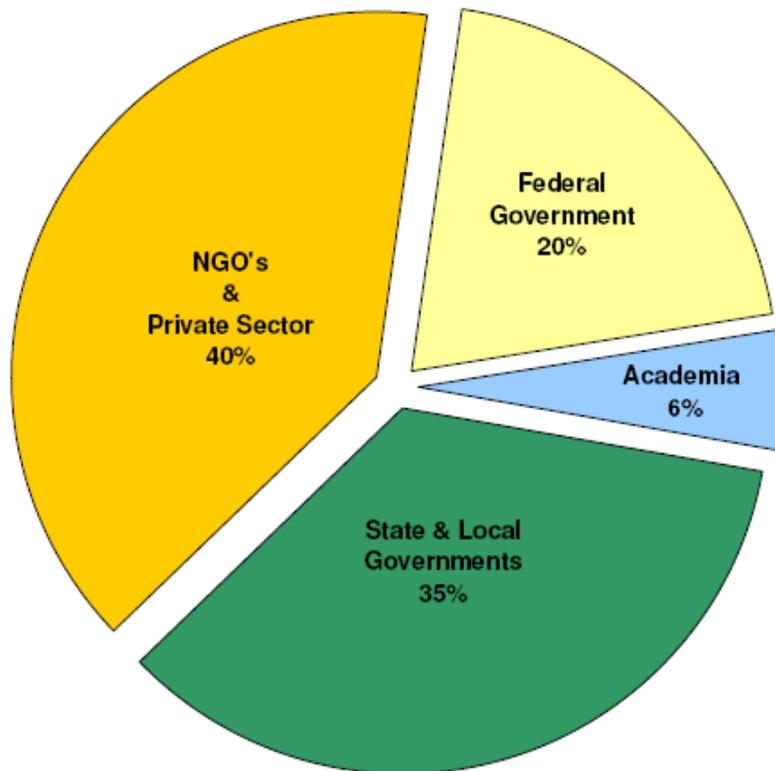
Purpose: “...develop and encourage implementation of a nationwide, long-term ground-water quantity and quality monitoring framework that would provide information necessary for the planning, management, and development of ground-water supplies to meet current and future water needs, and ecosystem requirements.”

Scope: “...will be developed to assist in assessments of the **quantity of U.S. ground-water reserves**, as constrained by ground-water quality.”

# SOGW Members & Helping Hands

Subcommittee and Work Groups:  
70 people from 54 organizations

## Subcommittee Members

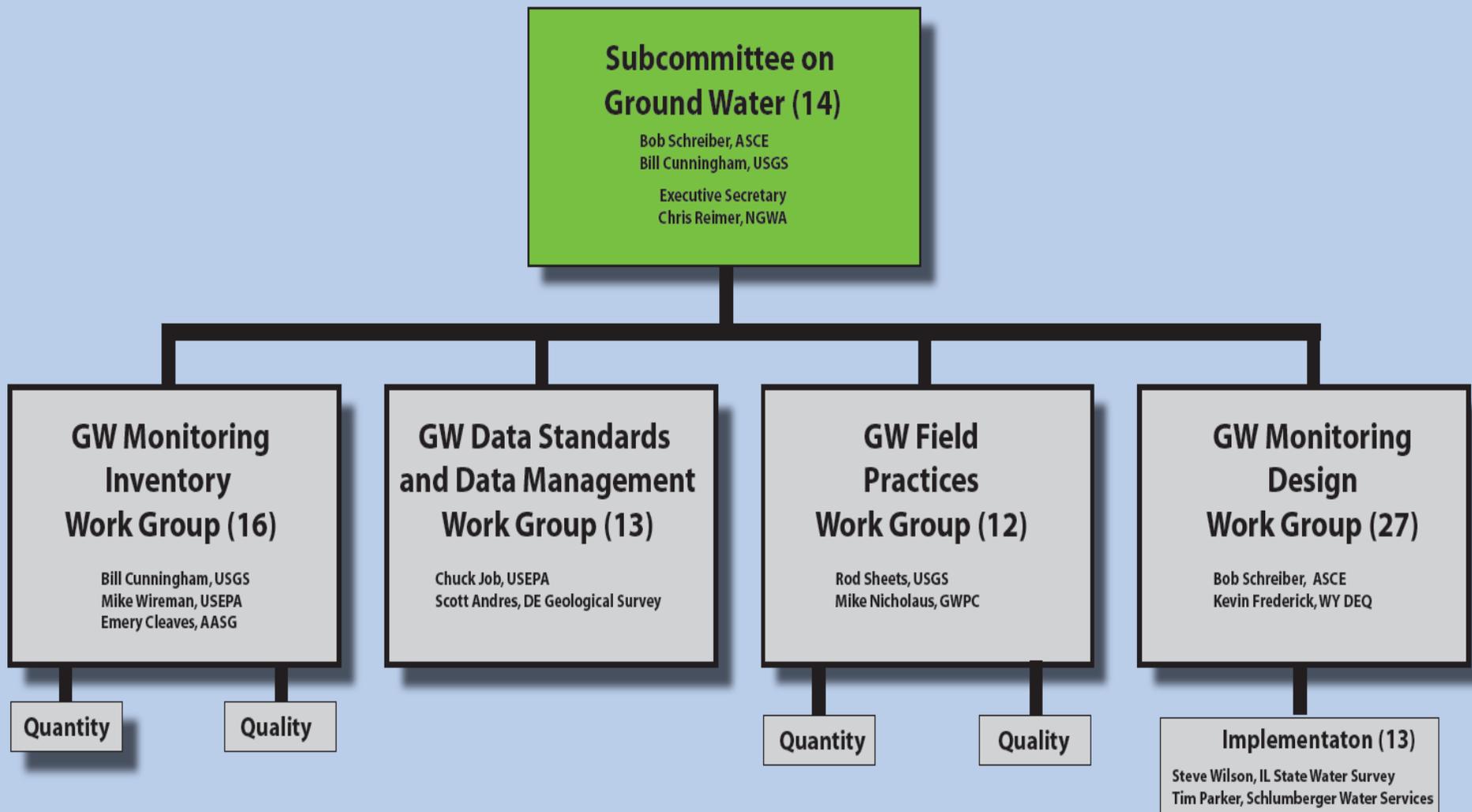


- ASCE
- GWPC
- ICWP
- AASG
- NGWA
- TCEQ
- USGS
- USEPA
- ASDWA
- WEF
- USDA NFS
- ASIWPCA
- ASTM

# **SOGW Approach**

- **“Current picture” of GW monitoring**
- **Consensus on:**
  - **Network design principles**
  - **Field methods and data standards**
  - **Data mgt and serving**
  - **Implementation plan**

# SOGW Organization



# Framework Report to ACWI

- Submitted Jan 2009
- ACWI approval Feb 2009
- <http://acwi.gov/sogw/pubs>



**Draft Report**

**A National Framework for Ground-Water Monitoring  
in the United States**

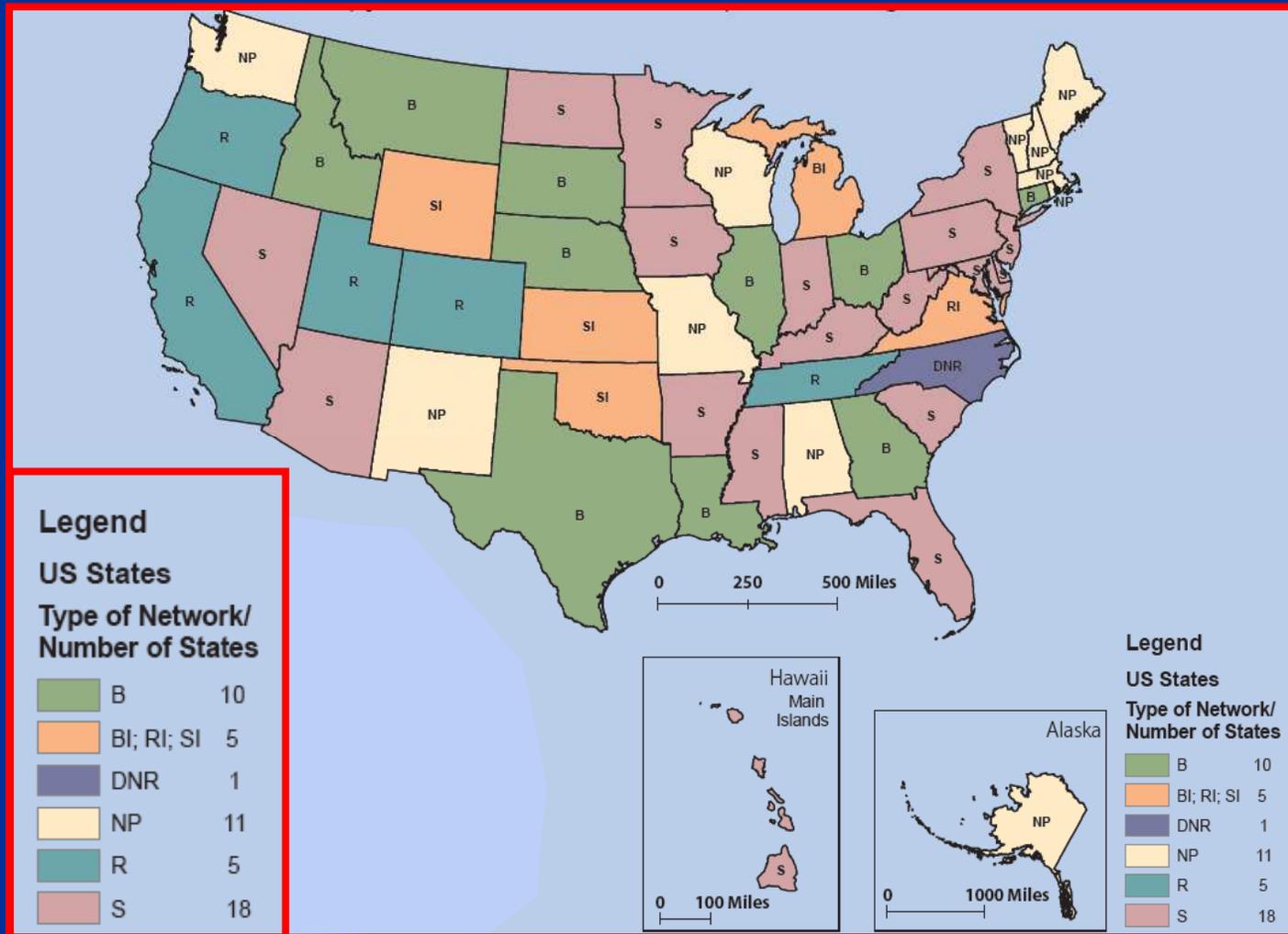
**Prepared by**

**The Subcommittee on Ground Water  
of the  
The Advisory Committee on Water Information**

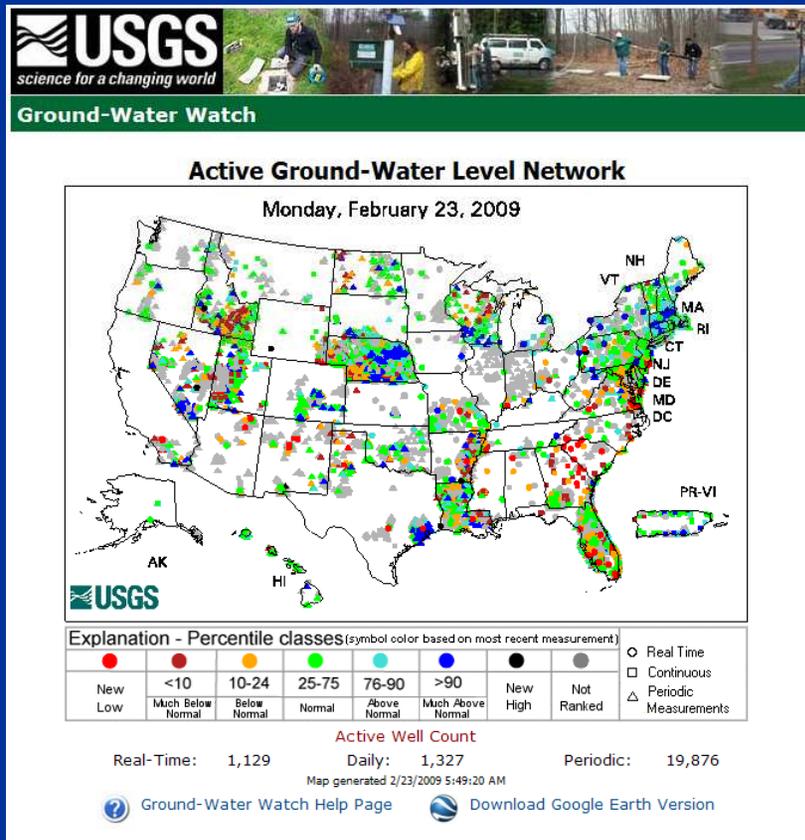
**December 2008**

Subcommittee on Ground Water Draft for the Advisory Committee on Water Information- Do not cite or release.

# Inventory Workgroup - Quality:



# Inventory of Monitoring Programs: Federal Networks



**National Water Information System: Web Interface**

[USGS Water Resources](#)

Data  
Wa

News: [Recent changes](#)

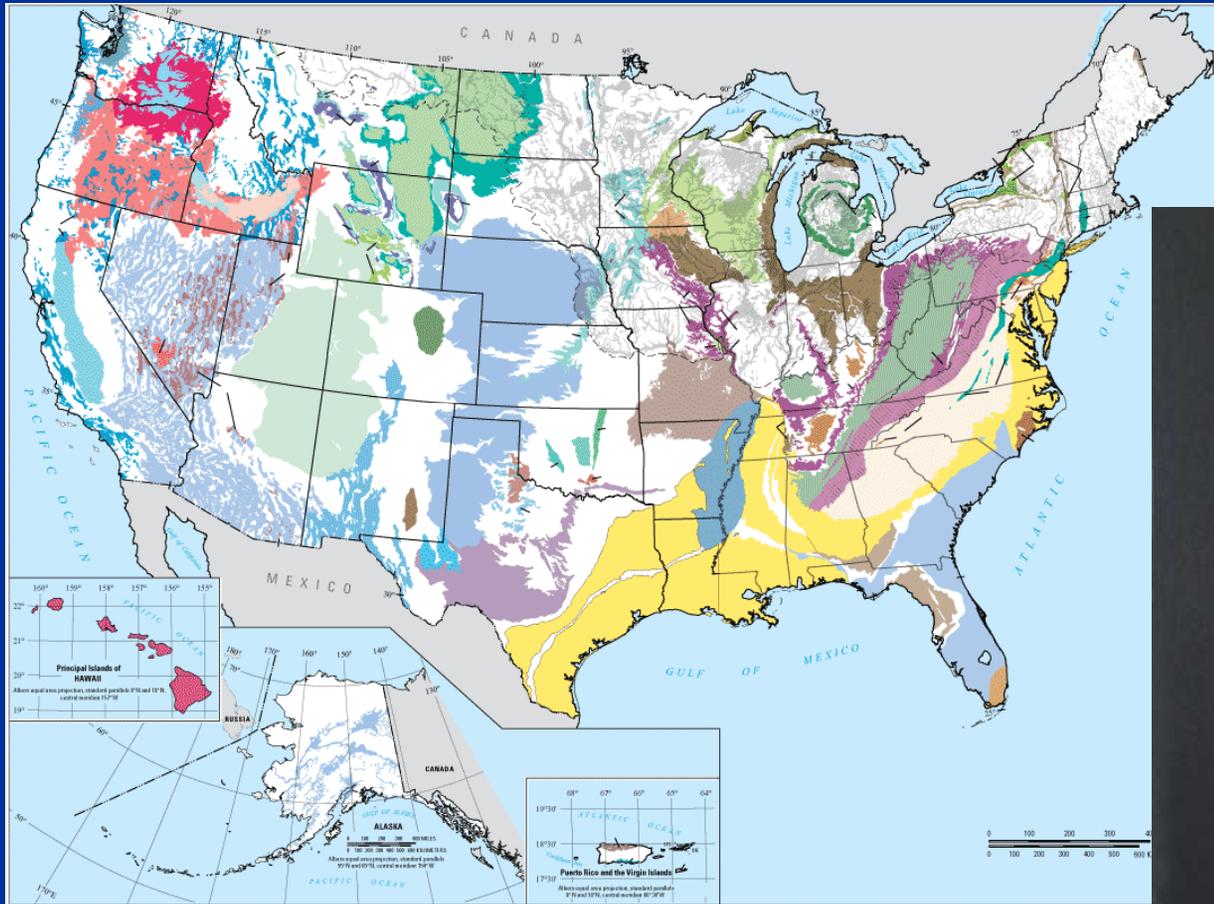
**Water Quality Samples for the Nation**

# Summary of Existing Monitoring

- Many networks
- Multiple agencies
- More for levels
- National gaps in both
- Gap analysis work needed



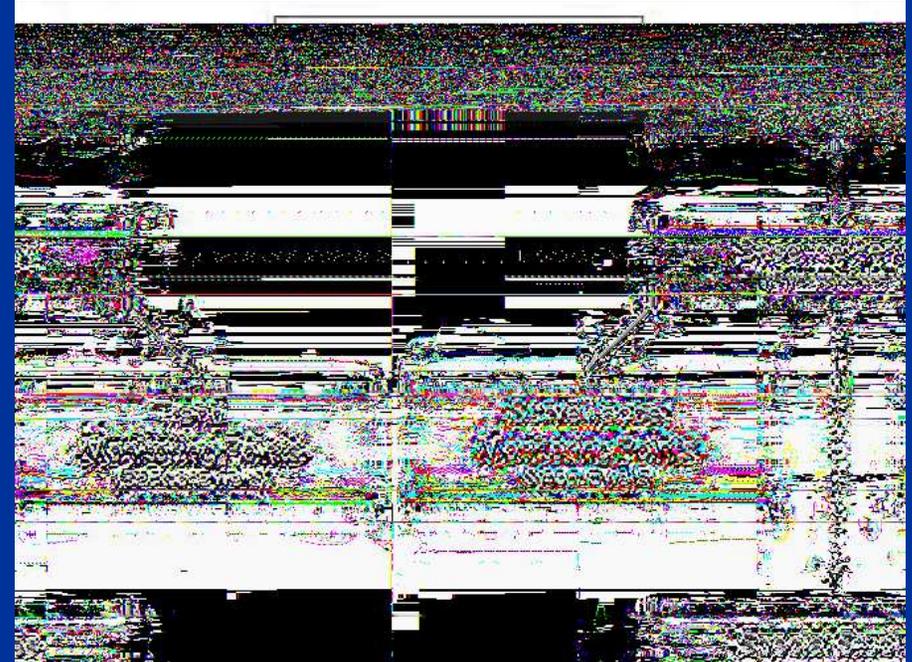
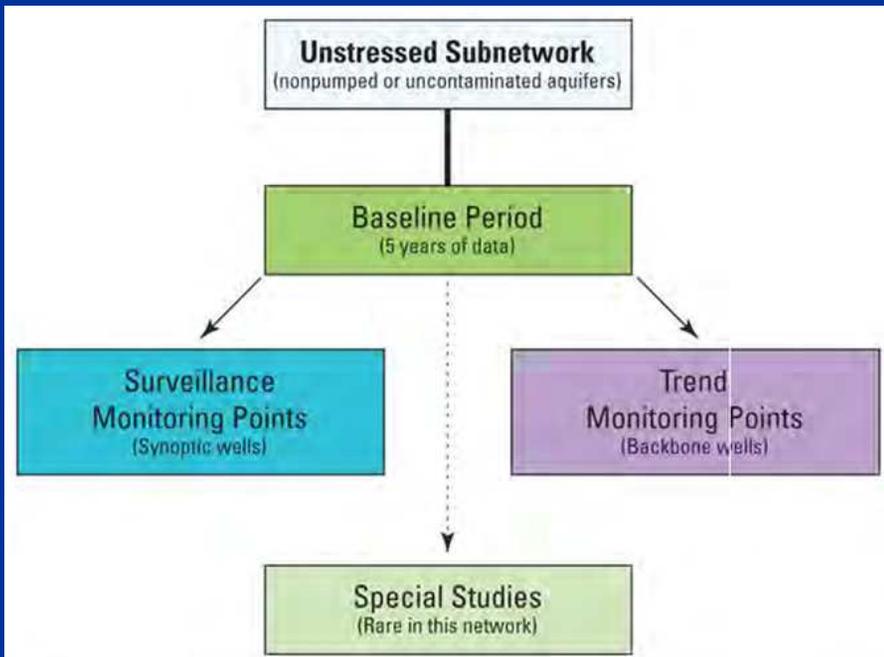
# Network Goals and Design: *Principal and Major Aquifers*



## GROUND WATER ATLAS OF THE UNITED STATES

U.S. Department of the Interior  
U.S. Geological Survey

# Unstressed (Ambient) and Targeted Networks and Types-Frequencies of GW Monitoring

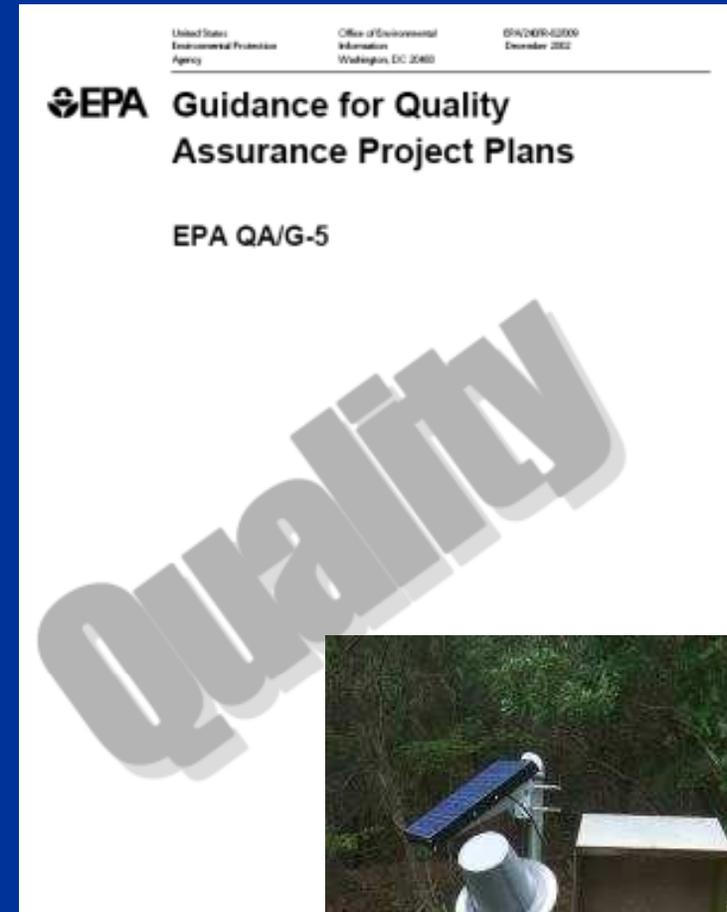


## EXPLANATION

-  At least 5 years of data are collected to establish background conditions
-  Periodic census of ground-water levels and/or quality (i.e., "mass measurements" for potentiometric surface mapping)
-  Fewer wells monitored regularly (i.e., seasonal variability of water levels and/or quality)
-  Smaller areas to evaluate ground-water resources at risk of depletion or impairment

# Field Practices

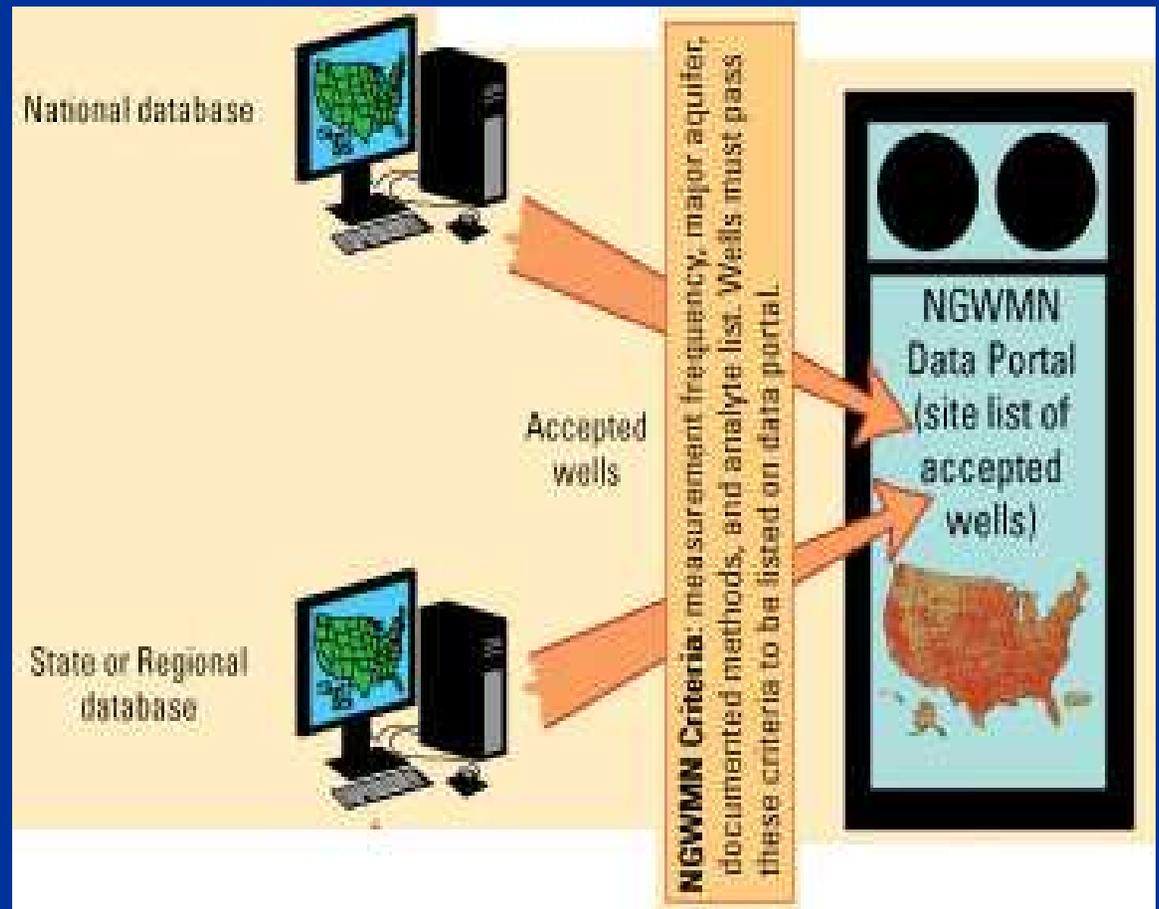
- Few strict requirements
- Flexible and adaptable.
- Documentation for:
  - Comparability
  - Technical quality
- New technologies encouraged



# Data Standards and Management

- Comparable Data
- Minimum Data Elements\*\*
- Data Portal:
  - **Critical component**
  - Needed early

\*\* ACWI's Methods Development Board



# ACWI Resolution, Feb 2009

- Accepts **Framework Document**
- Approves **Implementation plan**
- Tells SOGW: Conduct **pilot testing**

# **Network Implementation:**

## ***A Stepwise Approach***

- **Pilot Programs**
- **Portal System**
- **Management Structure**
- **Federal funding:**
  - **Data providers**
  - **Web portal**

# Management Structure

## Management of the National Ground-Water Monitoring Network (NGWMN)

### Data Providers

[Networks and Individual Sites That Meet NGWMN Criteria]

Federal

State

Tribal

Regional

Local

Other

Advisory Committee on Water Information  
Subcommittee on Ground Water

[Federal Interface]

U.S. Geological Survey  
Management and Operations Group

[Day-to-day operations]

NGWMN Program Board  
[Representatives from Data Providers]

[Guidance and Direction]

# Anticipated Schedule

- **Pilot-Testing RFP → Summer 2009**
- **Evaluation and Selection → FY10**
- **Pilot-Testing → FY10 or early FY11**
- **Reporting → FY11**
  - **Recommended Updates**
  - **Suggested “Next Steps”**
- **Full-Scale Implementation → FY12?**

# Funding Opportunities

- **Federal Government:**
  - **SECURE Water Act**
  - **Water Census**
  - **Other Possibilities**
- **Non-Federal Sources**
- **“What If No Funding?”**

# How You Can Help

- **Funding:**
  - **Advice, Ideas, Connections**
  - **Direct Participation**
  - **Facilitating Involvement of Other Professional Organizations**
- **SOGW Feedback**
- **SOGW Participation**
- **Other Ideas?**

# Opportunities Today

- **NWQMC-SOGW Lunch Session**
- **SOGW 5:00 Ad Hoc Meeting**
- **Discussion in this Session D3**
- **Talk with SOGW members anytime**

# Wrap-Up

- **Discussion & Questions**
- **Following Talks:**
  - **SOGW Key Participants**
  - **FL Experience – Instrumental**
  - **Piloting Progress**