

# National Ground Water Monitoring Network and Network Portal



***Bill Cunningham***

***Co-Chair, ACWI Subcommittee on Ground Water  
Chief, Office of Groundwater, USGS, Reston, VA***

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**National Ground-Water Monitoring Network**

Advisory Committee on Water Information—Subcommittee on Ground Water

# P.L. 111-11 SECURE Water Act 2009

(B) in coordination with the **Advisory Committee and State and local water resource agencies**—

- (i) assess the current scope of groundwater monitoring based on the access availability and capability of each monitoring well in existence as of the date of enactment of this Act; and
- (ii) develop and carry out a monitoring plan that maximizes coverage for each major aquifer system that is located in the United States; and

# Inventory Results

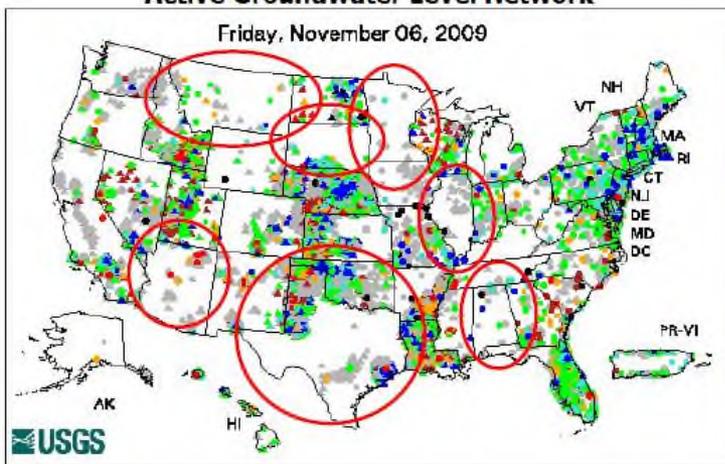
## Lack of Nationwide Availability

### Wells operated by USGS

Groundwater Watch

#### Active Groundwater Level Network

Friday, November 06, 2009



Explanation - Percentile classes (symbol color based on most recent measurement)							
●	●	●	●	●	●	●	○
New	<10	10-24	25-75	76-90	>90	New High	Not Ranked
Low	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal		
							○ Real Time □ Continuous △ Periodic Measurements

Active Well Count

Real-Time: 1,176      Daily: 1,142      Periodic: 23,777

*Water Level example.....*

### Wells operated by States

Results from survey of State networks



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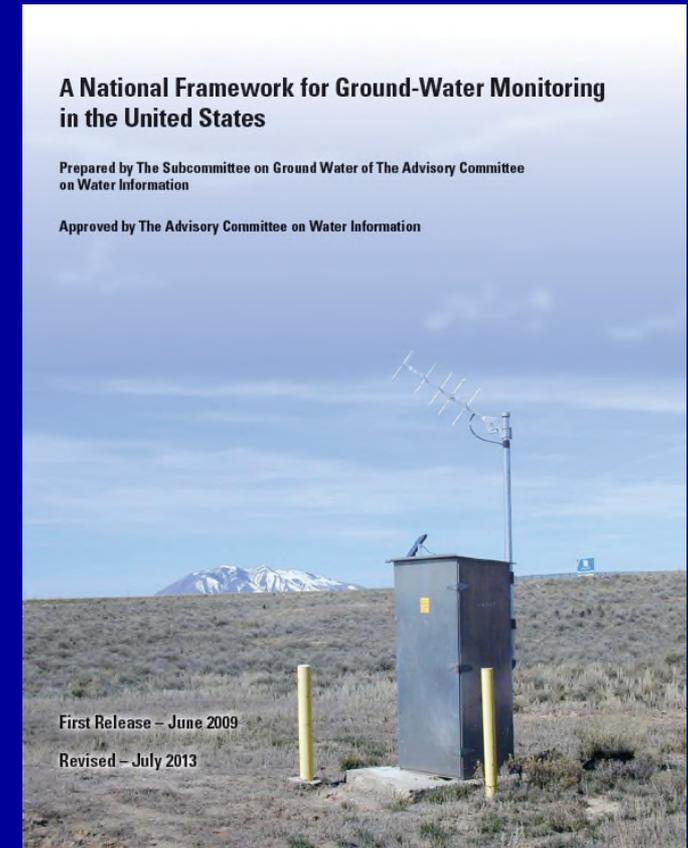
# Major Goals of the NGWMN

- (1) Compile the water-resources data that can be used to define the status and trends of ground-water availability at the regional and national scale;*
- (2) Identify areas where additional monitoring is needed;*
- (3) Provide a data-management framework to receive, manage, and distribute data.*
- (4) Provide data to support regional, interstate, and national management actions; and*

# National GW Monitoring Network

## “Framework Document”

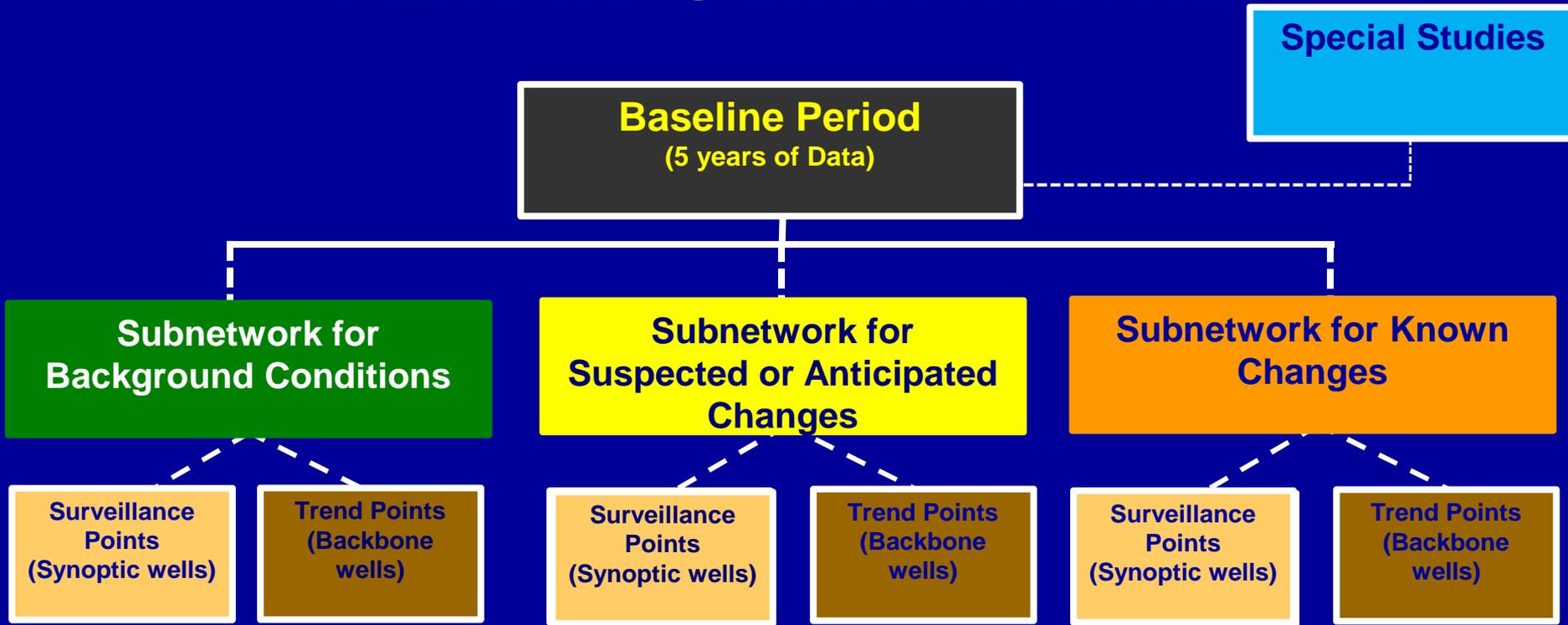
- Design for a collaborative National GW Monitoring Network
- Inventoried Federal and State monitoring programs
- Guidance for Field Methods
- Guidance for Minimum Data Elements, Standards, & Mgmt
- Implementation Plan and Recommendations
- 2009 and 2013



# NGWMN Design Elements

- Groundwater Monitoring Network for the Principal and major aquifers
- Groundwater levels and quality, but focus is availability
- Priority on wells/springs with long-term data. The NGWMN is a network, not a warehouse
- NGWMN is not designed around a specific science question
- Composed of data from willing data providers: State, Federal, Tribes and others
- Sites “classified” by local experts
- Data available to all without restriction or cost via an Internet portal
- Data provider is the authoritative data source. The NGWMN is not a “master database”

# Network Design: Various Subnetworks



“Classified” based on water level or water quality change and on frequency of data collection

# NGWMN User Interface

Search results - wcu... x DEPARTMENT OF TH... x Google Contacts x National Ground-Wa... x

cida.usgs.gov/ngwmn/

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## National Ground-Water Monitoring Network

The **National Ground-Water Monitoring Network (NGWMN)** is a compilation of selected groundwater monitoring wells from Federal, State, and local groundwater monitoring networks across the nation.

The **NGWMN** is a product of the [Subcommittee on Groundwater](#) of the Federal Advisory Committee on Water Information ([ACWI](#)).

The **NGWMN Data Portal** provides access to groundwater data from multiple, dispersed databases in a web-based mapping application. The portal contains current and historical data including water levels, water quality, lithology, and well construction. The NGWMN is transitioning from a pilot phase into full implementation. In the future we will be adding additional data providers to the network.

**CURRENT NETWORK:**  
2806 water-level wells  
x water-quality wells

10 subnetworks

7 contributing agencies  
29 states  
48 principal aquifers

**LEARN** about the Network

Subnetwork for Suspected Changes  
Documented Changes

Surveillance Monitoring Wells  
Trend Monitoring Wells  
Surveillance Monitoring Wells  
Trend Monitoring Wells

Backbone  
Backbone Wells

**EXPLORE** the Network

# Architecture Principles:

**Distributed** → Data stays with owner

**Seamless** → Acts as one virtual database

**Multi-access** → Multiple portals, tools

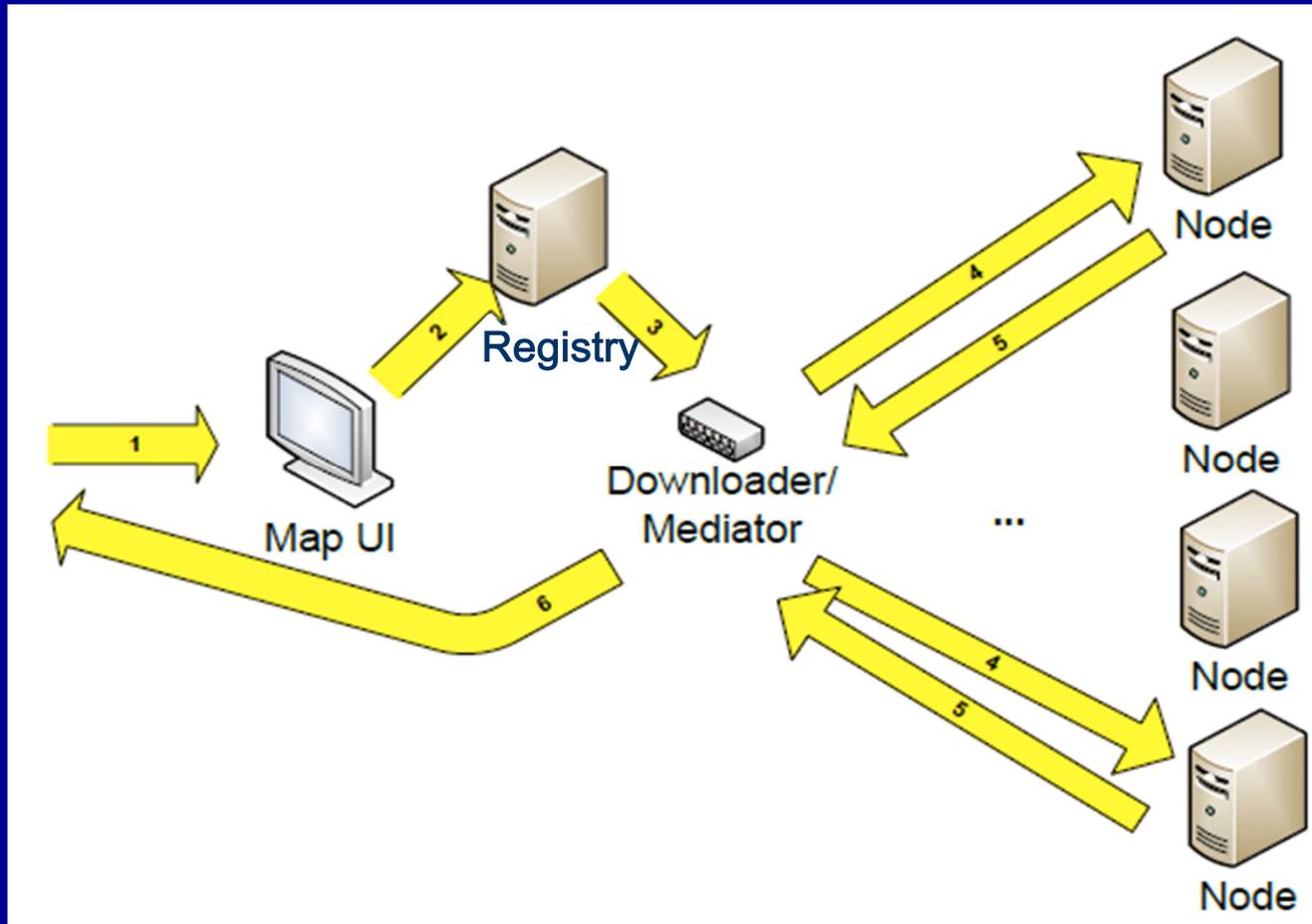
**Standards Based**

- Open Geospatial Consortium (OGC)
- EPA's WQX
- WaterML
- GWML

# NGWMN Portal Strategy:

- A centrally managed well registry (**hub**) contains a minimum set of data elements for all wells
- Mediator (**hub**) transforms data from native to common format and aggregates into a single dataset
- Access state and national datasets (**nodes**) using standard protocols and mediate to common formats
- Incorporate **OGC web service standards** for data exchange
- **Leverage existing data models: GWML, WQX, WaterML2.0**

# Network Portal Data Model



# Future Plans

## Portal

- Accessibility and interoperability are the key to the NGWMN. Continue to advocate for data sharing strategies.
- Maintain NGWMN portal's standards based architectural philosophy
- Expand usability based on customer feedback.
- **Worry less about portal proliferation, and more about how data are collected, analyzed, described, and shared.**

## NGWMN

- Implement the Network in FY2015 as described in the Framework Document. Form the NGWMN Advisory Board.
- Begin a grant or cooperative program to assist data providers
- Expand pilot program that provides EPA analytical services

A map of the United States with numerous blue dots scattered across the landmass, representing groundwater monitoring sites. The dots are most densely clustered in the eastern half of the country, particularly in the Northeast and Southeast. Major cities and state boundaries are labeled. The text 'Check it out!' is overlaid in white on a semi-transparent dark blue background.

**Check it out!**

**<http://cida.usgs.gov/ngwmn/>**

**- or -**

**11:30 – 12:30 pm today at ACWI Booth**

**<http://acwi.gov/sogw/>**