The U.S. National Ground Water Monitoring Network
History, Development, and Progress
2007-2017

Bill Cunningham
U.S. Geological Survey
Co-Chair, Subcommittee on Ground Water

ACWI-SOH
Streamflow Information Collaborative
May 1, 2017

U.S. Department of the Interior
U.S. Geological Survey
National Ground Water Monitoring Network Portal

http://cida.usgs.gov/ngwmn/
Background

• Why?
  – USGS Network “not adequate for national reporting” (Heinz Center, 2006)
  – Legal requirement (SECURE Act)

• How?
  – Leadership (Federal, in this case)
  – Advocacy (NGO’s, “Data Providers”)
  – Participation; Value Proposition

• Timeline
  – 2006 Idea “re-hatched”
  – 2007 SOGW formed
  – 2009 SECURE Act; “Framework”
  – 2010 Pilots begin
  – 2013 “Framework” re-issued
  – 2015 $$; Implementation begins
  – 2016 23 States via 3 PA’s
  – 2017 4th PA. Awards in progress

Subcommittee and Work Groups:
70 people from 54 organizations
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.

NGWMN purpose framed by questions (manage expectations):
• “Questions that can be addressed using NGWMN data”
  – What is baseline? Status and trends of water levels/quality?

• Questions that can be addressed using NGWMN data, plus supplemental data
  – What are the impacts of land use change?

• Questions that can be addressed using NGWMN data, supplemental data, and additional resources
  – What are impacts to GW and SW due to pumping?
**Scope**

- **Scope**: This national framework for ground-water monitoring and collaboration will be developed to assist in assessments of the **quantity** of U.S. ground-water reserves, as constrained by ground-water quality.
  - Levels + quality, focus is levels
  - Selected wells (versus “warehouse”)
  - Defined by “Framework” plus “tip sheets”
  - Framework contains (a) network designs, (b) limitations (questions), (c) standards, (d) minimum data elements.
Approach – Key Concepts and Lessons

• Leadership needed at many levels
• Consensus building is critical to buy-in
• Roll local expertise into National design

Key tripping points
• Data ownership vs master database
• Regulatory concerns
• Security issues
  – Data available without restriction
Key Concepts:

Field/Lab Standards; Minimum Data Elements

• Consensus approach
• Fundamental principle – data provider **must** have documented standards.
• Result = data consumer obtains data of *known quality*, but not *uniform quality*.
• Enough information to locate the site (well/spring) in 3 dimensions, and provide basic information.
• Basic standards, but typically not so strict as to preclude participation.
Known Quality

- The NGWMN portal will provide a series of pages for each Data Provider
- Site Selection/Classification
- Data Collection Techniques
- Data Management
- Other Agency Information
Implementation Responsibilities

Data Providers: Potentially, anyone with a database connected to the internet
- Monitoring at a relevant scale or key site(s)
- Respond to the annual Program Announcement (RFP)
- Select sites (Framework/Tip Sheets)
- Set up data sharing with portal
- Maintain portal connection (and do normal work)
Funds for Data Providers

• Annual “Program Announcement” – solicitation for NGWMN proposals

• Provides support for:
  – New data providers:
    • Select wells/springs
    • Classify wells/springs
    • Establish database connection to NGWMN portal using web services
    • Document Field Techniques
  – Ongoing support to existing data providers
    • Maintain portal connection and site list
    • Fill site information gaps
    • Maintain sites
    • Drill wells
2016 NGWMN Collaboration Status: Water Levels

Background
Purpose
Scope
Approach
Standards
Implementation
Funds
Status

CURRENT NETWORK:
5781 water-level wells
1325 water-quality wells

10 subnetworks
19 contributing agencies
52 states
60 principal aquifers
In past year

- 51 states (+12)
- 60 Principal Aquifers (+7)
Acknowledgements

Advisory Committee on Water Information, Subcommittee on Ground Water
Co-Chair: Bob Schreiber, CDM-Smith
Executive Secretary: Lauren Schapker, National Ground Water Association
Members and Collaborators
NGWMN Data Providers

U.S. Geological Survey
Doug Yeskis, GWSIP Coordinator
Daryll Pope, NGWMN Manager