PROPOSED NATIONAL GROUND WATER MONITORING PROGRAM

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Acknowledgment

Dr. David Wunsch
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Why & How We Designed a Plan

Why?
- Importance of ground water
- Previous surveys
- Request by OSTP

How
- Meeting at Summit 2005
- Input from Government Affairs and its subcommittee/task force
Importance of Ground Water

- 47.9% of America’s population uses ground water as drinking water source
  - 75% of community water systems
  - Nearly all of rural America
- 42.4% of country’s irrigation water is ground water
- 25% of total fresh water is ground water; 1% is surface water and rest is locked in polar ice and glaciers
The Survey: What We Asked

- Type of organization
- Expected groundwater supply shortage?
  - Why?
- How good is your information?
  - Supply estimates and various types of data
- What types of additional information are most important?
- What should the federal government do to help meet information gaps?
Groundwater Shortage Forecasts: Combined Survey Responses

- Statewide now
- Statewide future
- Urban & rural now
- Urban now, both future
- Urban now
- Urban future
- Rural Now
- Rural now, both future
- Rural future
- Urban and rural future
- No problems/other
State Survey Knowledge Summary

- **Most information**
  - Water level monitoring network (3.36)
  - Statewide aquifer maps
  - Hydraulic properties
  - Water quality
  - Water use data
  - Consumptive use data (2.96)

- **Least information**
  - Quality monitoring network (2.78)
  - Groundwater Flow models
  - On-line data
  - Recharge rates
  - 3-D aquifer maps/models
  - Artificial recharge opportunities (1.96)

5=met goal
1=no information
Knowledge of Groundwater Availability

% of Respondents

- Very Conf. all
- Very Conf. Major
- Reas. Est. All
- Reas. Est. Major
- Know all Locs
- Know Major Locations
- Limited Info

State Geologists vs NGWA Members
Most Important Types of Data to Expand

- **State Surveys**
  - Hydraulic properties of major aquifers
  - Groundwater level monitoring network
  - Statewide aquifer maps
  - Accurate water use data
  - Water quality for all aquifers
  - Groundwater recharge rates

- **NGWA Members**
  - Accurate water use data
  - Water quality for all aquifers
  - Hydraulic properties of major aquifers
  - Groundwater level monitoring network
  - On-line aquifer data
  - Groundwater recharge rates
Top 5 Desired Federal Actions

1. Increase funding for cooperative ground water quantity data collection

2. Increase funding for cooperative ground water quality data collection

3. Increase funding for aquifer mapping

4. Increase ground water availability research
State geologists’ #5: Fund public education and outreach on water conservation

NGWA members’ #5: Develop a national ground water clearinghouse
Survey Conclusions

1. Most states are experiencing at least local shortages now.

2. Most states have at least a reasonable estimate of the potential yield of major aquifers.

3. Few states have met any goals in collecting any type of ground water data.

4. Priorities for collecting more data parallel types of data already being collected, perhaps because goals are not met.

5. Cooperative federal and state programs for ground water data collection favored
OSTP Subcommittee on Water Availability and Quality

- Report released early 2005
- Questions posed to NGWA by OSTP
Questions Posed to NGWA

1. What information needs does long-term ground water quality and quantity monitoring address?
2. What are the long-term ground water monitoring needs?
3. What should the federal role be as regards long-term quality and quantity ground water monitoring?
4. How does the federal government integrate its role with private sector, local and state government monitoring efforts?
5. What are the priority actions that the federal government should take relative to long-term quality and quantity ground water monitoring?
Summit 2005 Committee

William M. Alley, USGS, San Diego, CA
Raymond Brady, Panhandle Ground Water Conservation District, White Deer, TX
John Bredehoeft, PhD, The HydroDynamics Group
Michael E. Campana, PhD, University of NM
Lee Clapp, PhD, Texas A & M University
Elizabeth Corr, U.S. EPA, Washington DC
John A. Daniel, PhD, U.S. Department of Agriculture, El Reno, OK
Amy Hardberger, Lubbock, TX
Beverly Herzog, Illinois State Geological Survey
Larry A. Lyons, Lyons Well Drilling Co. Inc.
Robert E. Mace, PhD, TX Water Development Bd
Dave Mercer, Westbay Instruments Inc.
Michael Paque, Ground Water Protection Council, Oklahoma City, OK
Timothy K. Parker, CA Department of Water Resources
Glenn G. Patterson, USGS, Reston, VA
Craig Pederson, URS Corp
Kenneth M. Tyrrell, URS Corp.
Venki Uddameri, PhD, Texas A & M University
David Wunsch, PhD, NH Geological Survey
Why Undertake Long Term Ground Water Monitoring?

1. Assess the resource’s ability to support population growth and development
2. Help design and assess effectiveness of mgmt and protection programs
3. Identify short and long-term changes to ground water
4. Identify artificial ground water recharge opportunities
5. Assess ground water and surface water interactions
6. Provide data for modeling
7. Provide a more accurate estimate of actual ground water withdrawals
What Are the Long-Term Monitoring Needs?

National ground water quality monitoring network

National ground water level monitoring network
What Are the Long-Term Monitoring Needs?

- **Ambient ground water monitoring**
  - long-term response of aquifers in “natural conditions”

- **Impacted areas monitoring**
  - impacted by withdrawals
  - various land uses

- **Targeted monitoring**
  - answer specific management questions
What Should the Federal Role be?

1. Support a collaborative framework

2. Develop guidelines for data collection, quality control, storage and retrieval

3. Provide federal funding for cooperative monitoring network development and operation

4. Establish a national clearinghouse
How to Integrate Various Roles?

- Federal government is “glue” to hold collective efforts together
- States should develop state ground water availability and quality picture
- Private sector firms should perform exploratory drilling and install monitoring wells
What Should Federal Priorities Be?

- Federal funding of cooperative ground water quantity monitoring
- Federal funding of cooperative ground water quality monitoring
- Additional priorities
  - Demonstrating a commitment to collaborative ground water quality and quantity data collection
  - Ensuring the availability of quality data at appropriate scale
  - Supporting research and development
  - Promoting public education and outreach
What’s Next?

- OSTP Subcomm. on Water Avail. and Quantity is considering this paper in their water strategy papers
  - Their Priorities:
    - Knowing water supply and use
    - Increasing water supply
    - Draft long-term strategy for water R&D due out this summer

- National Ground Water Monitoring Ad Hoc Task Force Tuesday at 5:15
Thank You!

Questions?