Strategy to Assess the Nation’s Ground-Water Availability

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Ground-Water Resources Program

Ground-Water Availability in the United States

Circular 1323

U.S. Department of the Interior
U.S. Geological Survey
Challenges Facing the Nation with Respect to Ground-Water Resources

- Demands from increasing populations
- Competition between surface water (instream) and ground water (pumping) uses
- Water quality requirements
- Ecological needs
- Economic changes—agriculture, urbanization, and energy
Awareness Leads to Basic Questions

• How much ground water do we have?
• Are we running out?
• Where are ground-water resources most stressed by human development?
• Where are resources most available for future supplies?

Questions seems simple—Providing answers complex
Regional Aquifer-System Analysis (RASA) Program
What do we need to know to assess the Nation’s ground-water availability?

• Quantify resource (supply) and
• Information about its use (demand).
Framework for GW Availability at a Regional Scale--Principal Aquifers

Total Withdrawals by Aquifer in US--2000

Source: Maupin and Barber, 2005
Regional-Scale Approach to a National Assessment
Priority Aquifers for a
National Assessment of
Ground-Water Availability

Source: Reilly and others, 2008
Objectives

• Quantify current groundwater resources

• Evaluate how these resources have changed over time

• Provide tools to forecast system responses to stresses from future human and environmental uses.
Study Design

- Build on foundation of previous studies
- Regional scale and multidisciplinary
- Share common national objectives
- Studies are NATIONALLY directed but need to be REGIONALLY executed.
Study Design-Regional/Local Flexibility

- GW/SW interactions
- Salt-water intrusion
- Impacts of GW depletion
- Subsidence
- Ecological flows
- Geologic consistency
- Water legislation
- Conjunctive use
Outcomes

• Water budgets of major aquifers systems
• Trends in ground-water use, storage, recharge, and discharge
• Ground-water models that provide
  – Regional context for more local studies
  – Tools to make future projections of ground-water availability
• Region-wide estimates of key hydrologic variables
• Evaluation of existing networks for monitoring ground-water availability
Central Valley Ground-Water Budget

Budgets not yet approved for release

Pre-development

Post-development
In Conclusion...

- Will take 3 decades to complete
- Regional studies build on previous and ongoing studies
- Ground-water availability studies will compliment the national assessment of water availability proposed by the Water for America Initiative
For More Information

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