Arizona Department of Water Resources

USGS National Ground-Water Monitoring Network
New Data Provider

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National Ground-Water Monitoring Network Data Providers Meeting
Las Vegas, NV
December 5-8, 2016

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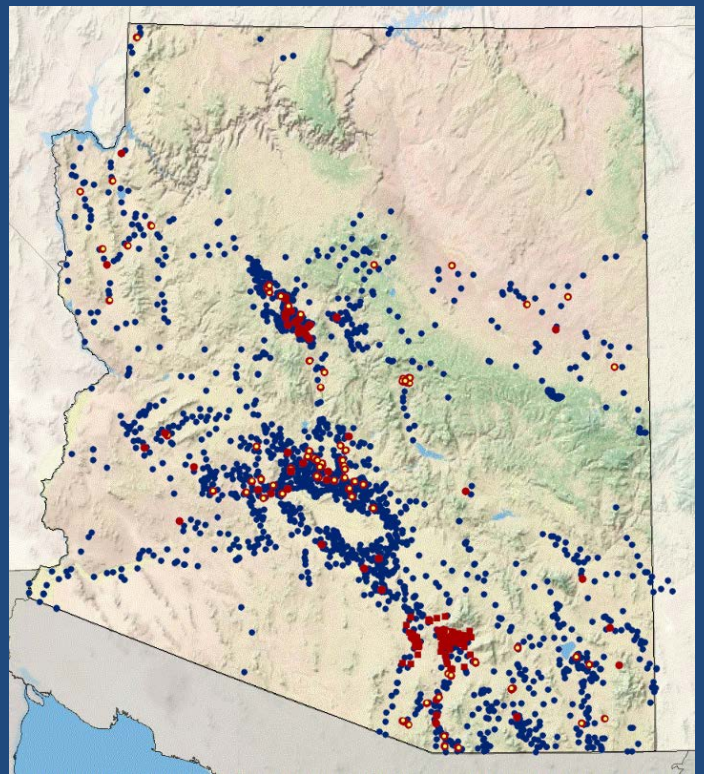
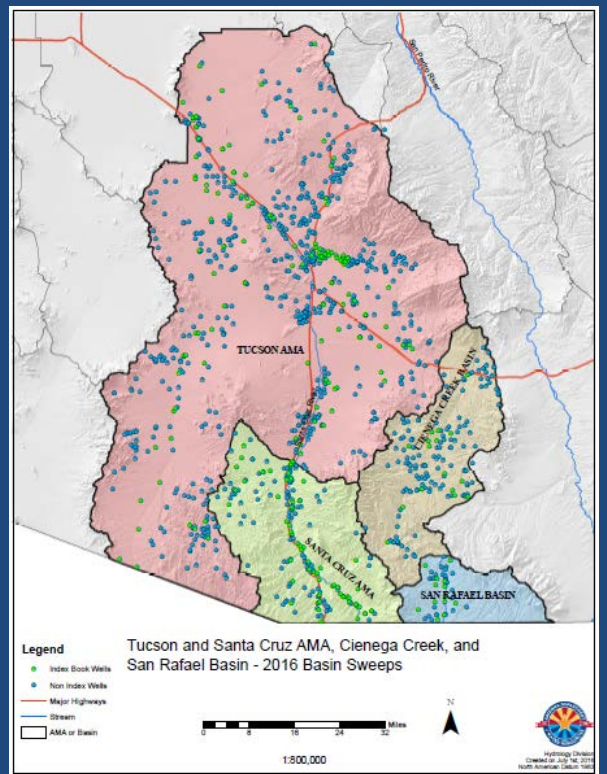
Groundwater-Level Monitoring Network(s) and Goals

- Statewide, currently collect water levels at wells:
  - 1,450 annual
  - 100 semi-annual
  - 50 quarterly
  - 130 daily (75 real-time)
- Groundwater Basins (typically 4 or 5 Basins per WY)





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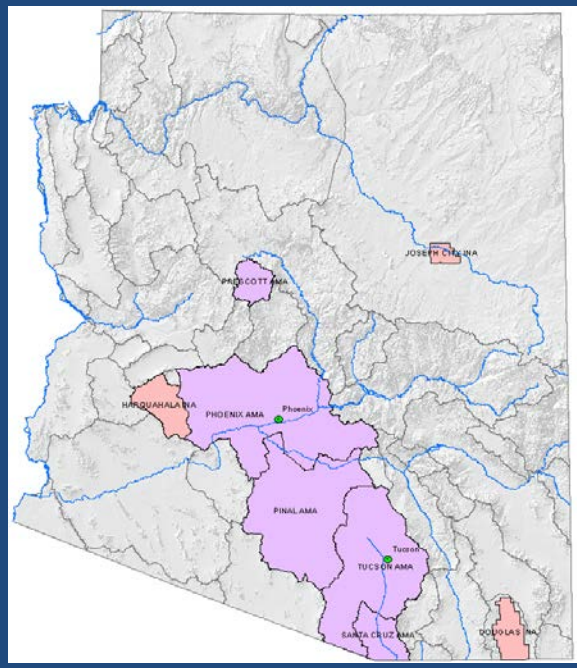
Describe how your agency uses the data from your network

Who uses the data?

- ADWR as well as other state and federal agencies
- Numerous municipalities and power providers
- Consultants
- Universities / students
- Developers / real estate
- Farmers / ranchers
- Drillers
- General public



What is the Data Used For?

- Resource management – AZ Groundwater Act of 1980
- Preparation of groundwater models
- Water level change, aquifer storage, map construction
- Development of annual water budgets
- Determining assured water supply
- Growth and development planning

Trans-Boundary Issues (State/International): Network Influences

- Ground Water / Surface Water Interactions
  - Santa Cruz River (multiple ADWR Groundwater Basins and Mexico)
  - Colorado River (multiple States, GW Basins, and Mexico)

- Groundwater Basins do not stop at State or International Boundaries
  - Virgin River Groundwater Basin (UT, NV)
  - Morenci and Duncan Valley Groundwater Basins (NM)

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Example of Agency Data Helping to Answer Management Question

- Water Level Change Data – Declining Water Levels, Aquifer Depletions, Safe Yield in AMAs

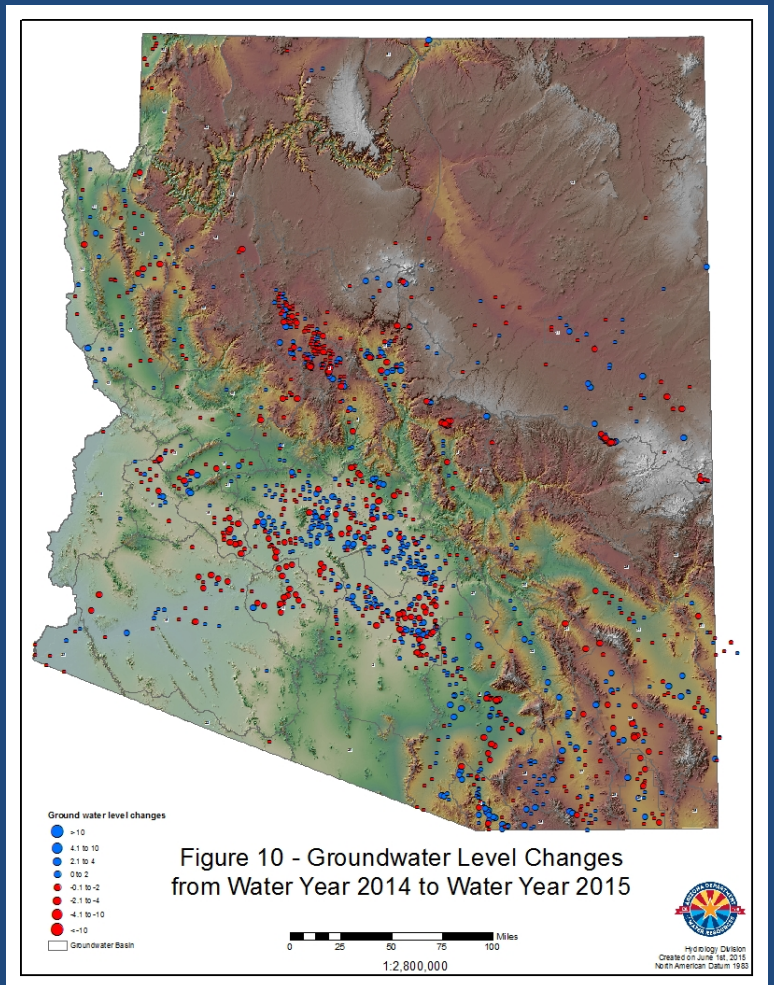

Figure 10 - Groundwater Level Changes from Water Year 2014 to Water Year 2015

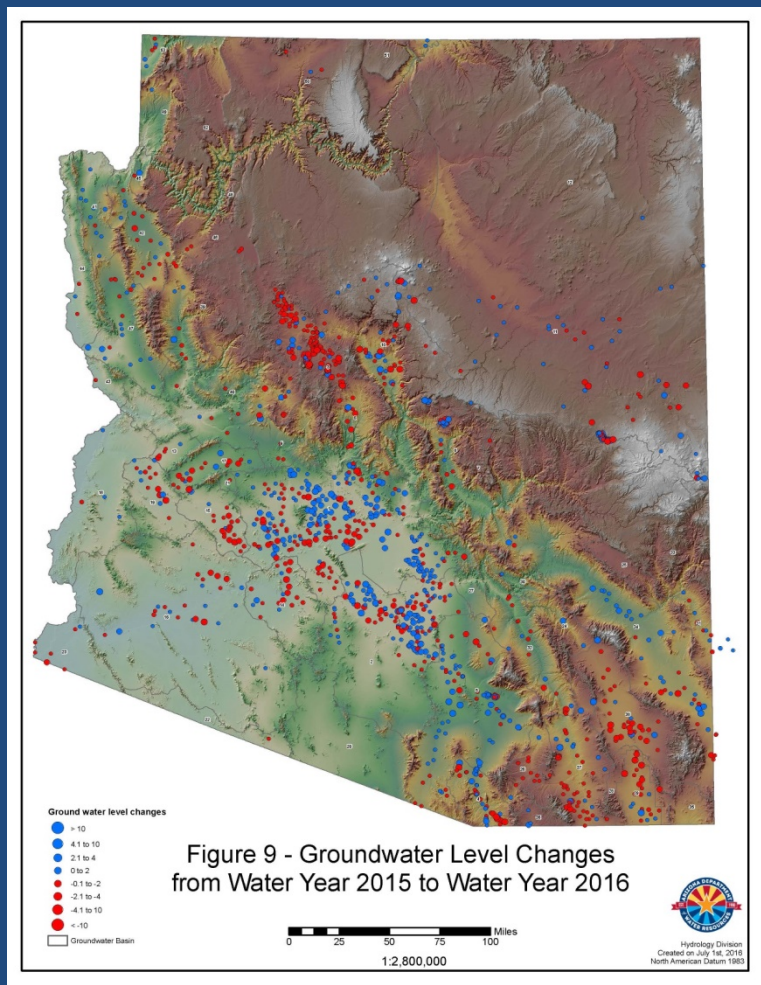

Figure 9 - Groundwater Level Changes from Water Year 2015 to Water Year 2016

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Scope of ADWR Project to Become a New NGWMN Data Provider

- **Status:** **Began October 1, 2016 – Two Year Project**
- **Plans:** **Data is Expected to be Available – September 2018**

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Describe Number and Type of Sites Expected to Add to the NGWMN

About five sites, some with continuous monitoring equipment to provide daily water levels and a few discrete water level "Index" wells measured either annually, semi-annually or quarterly

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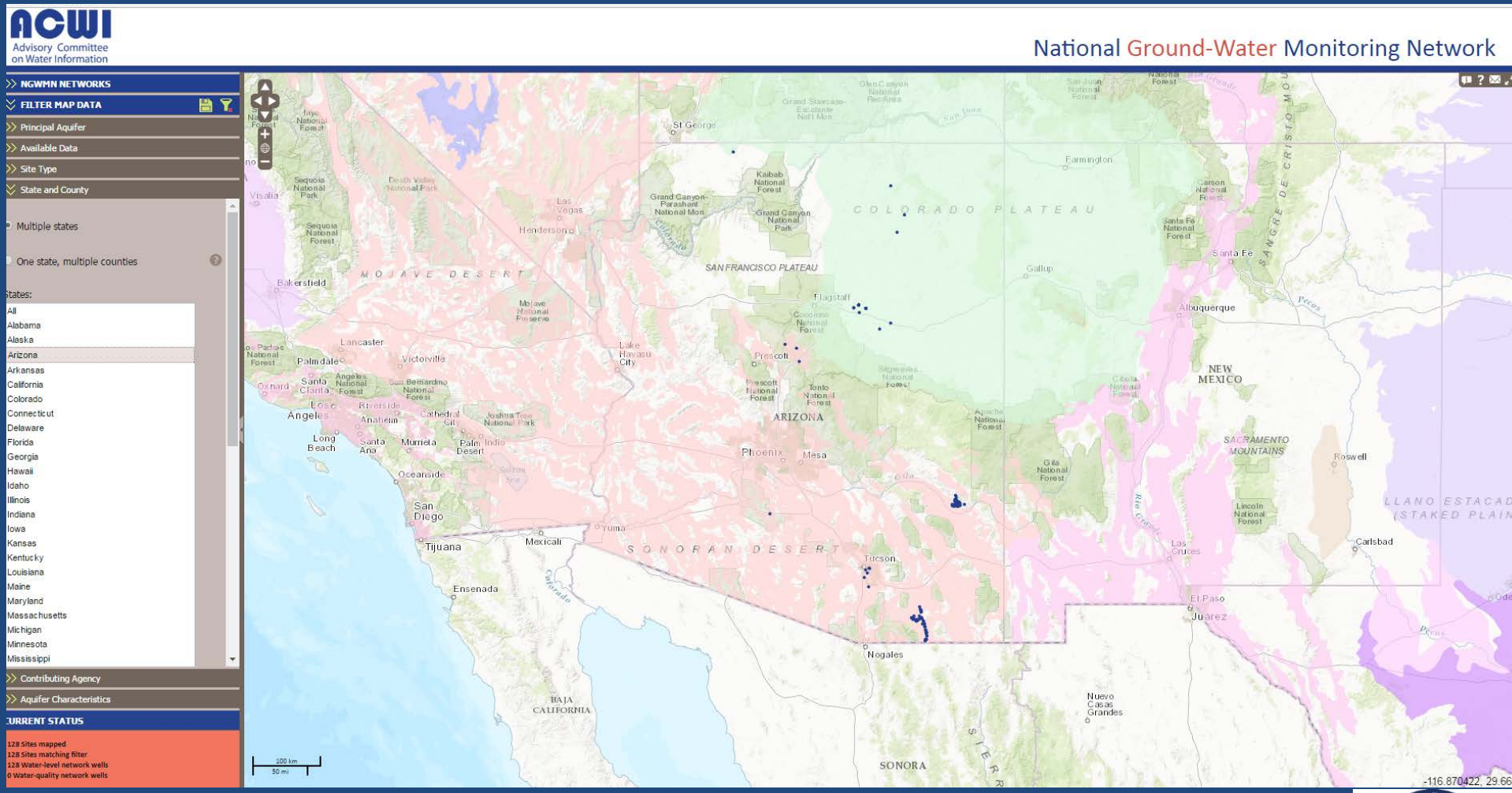
National Ground-Water Monitoring Network Portal

Well Sites Currently in Arizona Provided by USGS



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National Ground-Water Monitoring Network Portal

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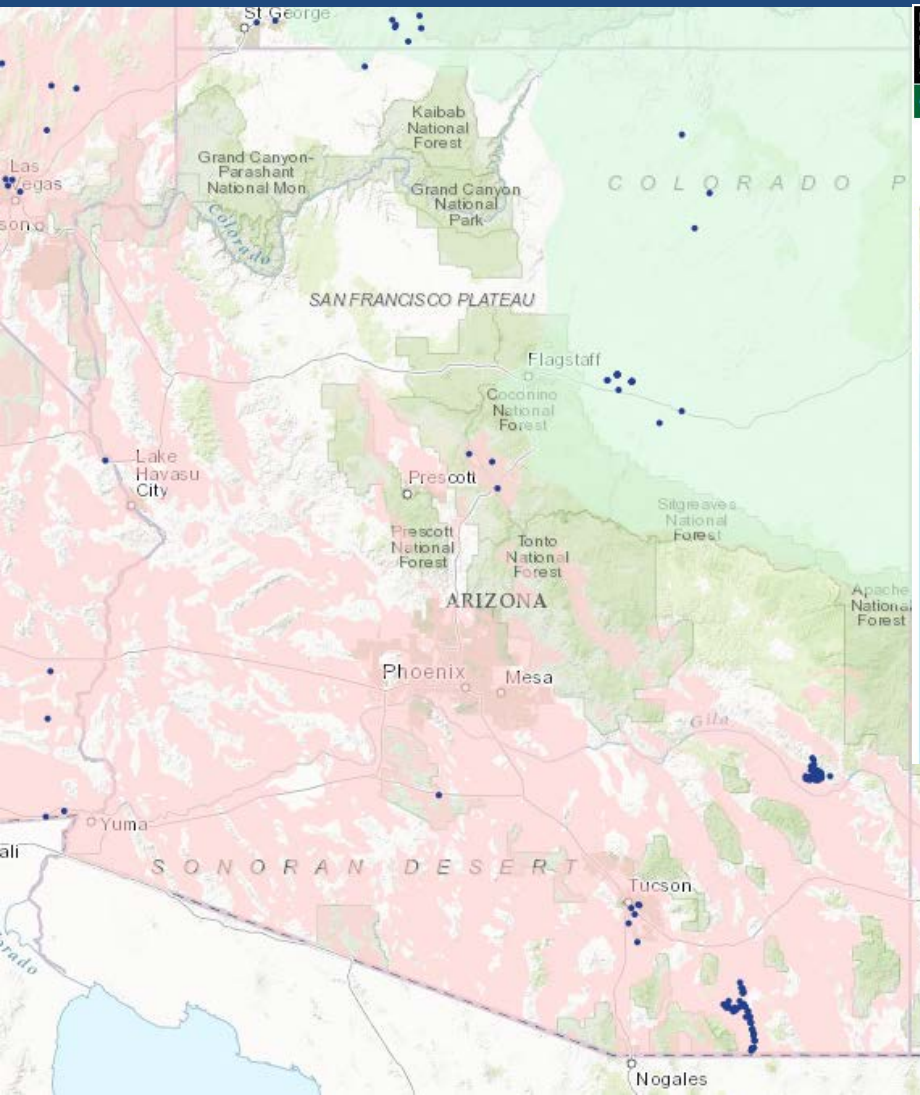

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Regarding the site selection and classification process:

Use the Framework document/ tip sheets and other guidelines provided by NGWMN

Regarding any differences between your agency's data collection methods and NGWMN protocols:

ADWR was trained by and adopted all USGS data collection protocols for well and spring site inventories, water-levels, water quality, and well discharge measurements.

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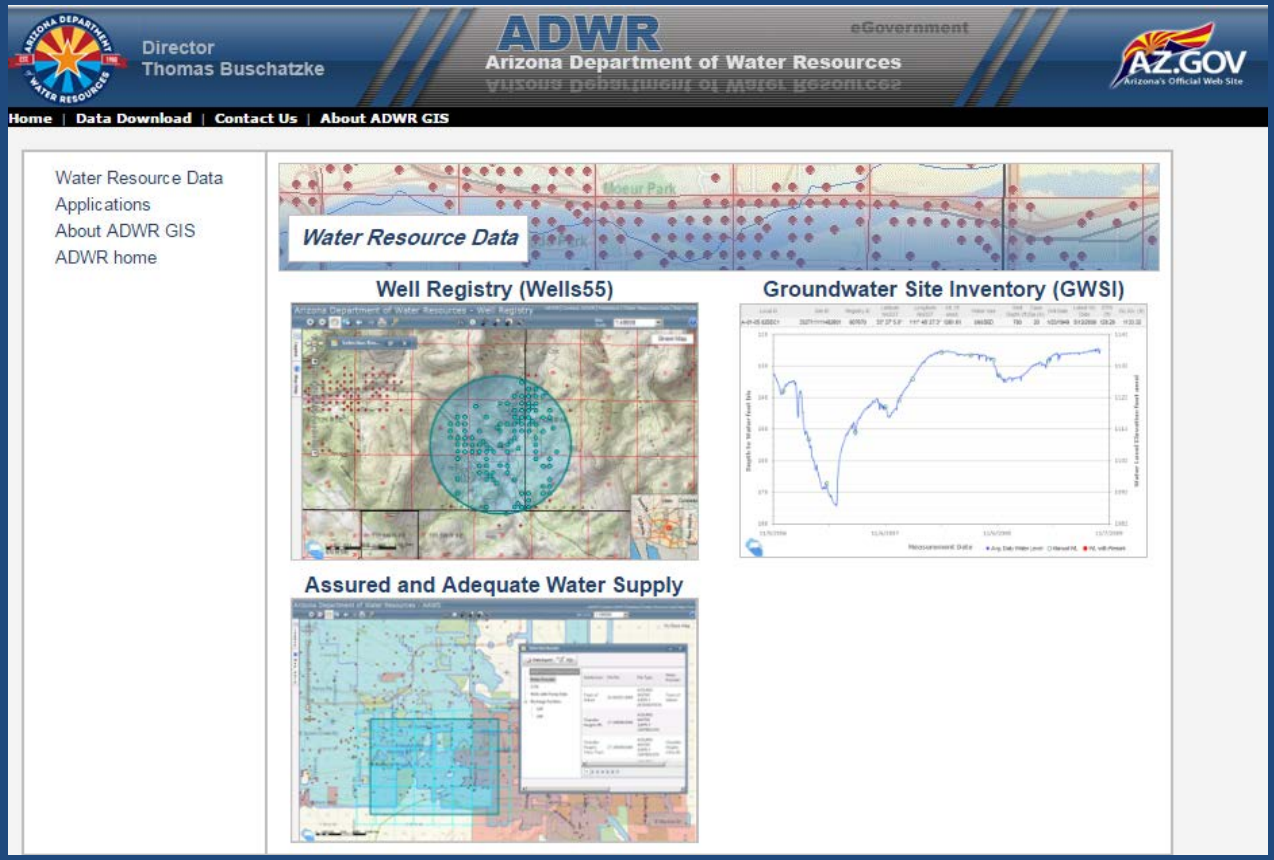
Other data available on ADWR's website:

- Groundwater data, pumping data, and well logs are available through ADWR's website



https://gisweb.azwater.gov/waterresourcedata/

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Other data available on ADWR's website:

About Us | ADWR News | Data Center | Divisions | Management/ Planning | Permits/ Reporting | Programs | Water Resources

Director
Thomas Buschatzke

ADWR
Arizona Department of Water Resources
eGovernment

AZ.GOV
Arizona's Official Web Site

Securing Arizona's Water Future

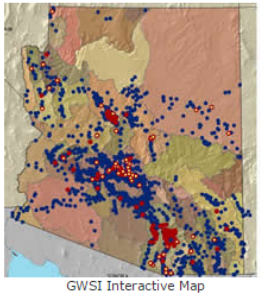
Google™ Custom Search | Search

Questions and Answers

Hydrology Division

Groundwater and Land Subsidence Information

Groundwater Information



GWSI Interactive Map

ADWR is the State Agency responsible for managing and allocating the State's groundwater supplies. This is accomplished through **data collection**, data management, and data analysis, resulting in groundwater policies and management for the entire State, including Active Management Areas and rural groundwater basins of the State.

ADWR has developed interactive maps and simple search wizard of ADWR's entire **Groundwater Site Inventory database (GWSI) and Wells Registry database** including automated sites and index wells. The interactive map can be used to identify groundwater levels and well information as well as to create custom hydrographs and locate wells around the State.

ADWR's **Groundwater Modeling Unit** of the **Hydrology Division** is responsible for building, calibrating, and updating groundwater flow models for the Active Management Areas as well as other areas around the State. groundwater modeling allows water resource planners to make long-term management decisions based on the potential impacts of future water uses on the state's groundwater resources.

Land Subsidence Information

Active Land Subsidence Areas in Arizona
Identified by ADWR

Land subsidence has been occurring across Arizona since the early 1900's. Millions of people live in active land subsidence areas around the United States and are unaware. Most of the time, there is no clear and identifiable sign that land subsidence has occurred in an area. Areas in Maricopa and Pinal Counties have subsided more than eighteen feet since the early 1900's.

ADWR is the State Agency responsible for identifying and monitoring active land subsidence areas around the State. ADWR is the only State Agency in the Country that has developed and made available to the public **land subsidence maps** for the active subsidence features identified by ADWR. ADWR is also the only State Agency that has developed and collected extensive Statewide satellite data using **Synthetic Aperture Radar** to identify and monitor these land subsidence areas.

Hydrology Division Navigation Links

Hydrology Division Home Page | eLibrary | Basic Data Unit | Geophysics Surveying Unit | Modeling Section | Regional Planning Section

http://www.azwater.gov/AzDWR/Hydrology/GroundwaterandLandSubsidence.htm/

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Other data available on ADWR's website:

Land Subsidence Website

- Interactive land subsidence map using a Google Maps interface
- 241 subsidence maps are available for download
- Maps cover various periods of time between 1992 and the present

NEW! Interactive Arizona Land Subsidence Map

Arizona Land Subsidence Areas

Scottsdale/NE Phoenix	McMullen Valley	Picacho/Eloy	Fort Grant Rd
West Valley	Harquahala Valley	Maricopa-Stanfield	Kansas Settlement
Hawk Rock	Ranegras Valley	Tucson	Elfrida
Buckeye	Gila Bend	Green Valley	Bowie/San Simon
Holbrook Sinks	East Valley		

What is Land Subsidence

Active Land Subsidence Areas in Arizona Based on ADWR InSAR Data

Land subsidence has been occurring across Arizona since the early 1900's. Millions of people around the world live in active land subsidence areas and are unaware. Most of the time, there is no clear and identifiable sign that land subsidence has occurred in an area. Areas in Maricopa and Pinal Counties have subsided more than eighteen feet since the early 1900's.

Land subsidence in the basins of Arizona is generally due to compaction of the alluvium caused by lowering of the water table. As the water table declines, pores in the alluvium once held open by water pressure are no longer supported and collapse. Collapse and subsequent lowering in elevation of the land surface is defined as land subsidence. This subsidence is generally not recoverable. If this subsidence occurs over areas of bedrock, differential subsidence can occur.

Differential subsidence is when adjacent areas subside at different rates. Bedrock will not compress like the surrounding alluvium, creating a subsurface platform. Differential subsidence occurs where shallow bedrock and deep bedrock are adjacent to each other, creating a zone of differential change in surface elevation. Because of these different amounts of subsidence, tension can build in the alluvium layer at this differential subsidence zone, forming an earth fissure.

ADWR Land Subsidence in Arizona Fact Sheet (<1 MB)


QUESTIONS ?
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