



CASGEM: California Statewide Groundwater Elevation Monitoring



The CASGEM program was created by the California Legislature as SBx7 6, a part of the 2009 Comprehensive Water Package. The SBx7 6 legislation is being implemented by the Department of Water Resources (DWR) under the California Groundwater Elevation Monitoring Program, or CASGEM Program. The intent of the CASGEM program is to establish a permanent, locally-managed program of regular and systematic monitoring in all of California's 515 alluvial groundwater basins. This established for the first time, a statewide program to collect groundwater elevations, facilitate collaboration between local monitoring entities and the (DWR), and report this information to the public. The program relies on voluntary local agencies to monitor and report groundwater elevations that demonstrate seasonal and long-term trends. Collection and evaluation of such data on a statewide scale is an important fundamental step toward improving management of California's groundwater resources.

Groundwater in California

The occurrence, use, and reliance on groundwater varies throughout the California. There are 515 alluvial groundwater basins and subbasins identified in DWR Bulletin 118, underlying approximately 40 percent of the area of the State. Groundwater accounts for about 30 percent of the total water supply. In dry years, this increases to over 40 percent. Some coastal basins, cities, and rural areas are entirely dependent upon groundwater for their water supply. Groundwater is used for agricultural, industrial, domestic, and municipal purposes. With a projected population of 46 million by the year 2020, California's reliance upon groundwater will increase significantly.

Implementation of the CASGEM Program

Implementation of the CASGEM Program began in early 2010 and is continuing. Information about the CASGEM Program is available on the CASGEM website at

<http://www.water.ca.gov/groundwater/casgem/>. Efforts to implement the program included:

- ◆ Developing program information and conducting outreach to local agencies and other interested parties
- ◆ Developing and implementing an online system (OS) with the following capabilities:
 - ✓ Local agencies can submit notifications to DWR to become designated as the Monitoring Entity for their basin or subbasin
 - ✓ Monitoring Entities can submit Monitoring Plans, CASGEM well information, and groundwater elevations for their CASGEM wells
 - ✓ Public access to the groundwater elevation data in tabular format and a map based interface http://www.water.ca.gov/groundwater/casgem/online_system.cfm
 - ✓ Tools for data submittal and for public access to groundwater data

- ✓ Map for viewing and searches
- ✓ Help manuals for using the online system
<http://www.water.ca.gov/groundwater/casgem/help/OnlineSystemPublic.pdf>
- ◆ Reviewing notifications and working with local agencies to designate them as Monitoring Entities
- ◆ Implementing Alternate Monitoring (AB 1152)
- ◆ Submitting the Report to the Legislature and Governor
<http://www.water.ca.gov/groundwater/casgem/pdfs/2012%20CASGEM%20Report%20to%20the%20Legislature.pdf>
- ◆ Uploading groundwater elevation data

As of February 1, 2013, the CASGEM Program has resulted in the following:

- ◆ 143 distinct designations for 115 Basins and Subbasins
- ◆ 63 unique Designated Monitoring Entities
- ◆ 7845 CASGEM wells statewide
- ◆ 438 Notifications in OS – ranging in status from Open to Designated that represent 339 Basins and Subbasins

Continuing Efforts

DWR continues to review submittals and work with local agencies to designate additional Monitoring Entities. Section 10933 of the CASGEM legislation requires DWR to prioritize the California groundwater basins and to identify the current extent of groundwater elevation monitoring within each basin or subbasin (basins). DWR is developing a basin prioritization tool using available statewide datasets for the following criteria specified in the Water Code:

1. The population overlaying the basin,
2. The rate of current and projected growth of the population overlying the basin,
3. The number of public supply wells that draw from the basin,
4. The total number of wells that draw from the basin,
5. The irrigated acreage overlying the basins,
6. The degree to which persons overlying the basin rely on groundwater as their primary source of water,
7. Any documented impacts on the groundwater within the basin, including overdraft, subsidence, saline intrusion, and other water quality degradation, and
8. Any other information determined to be relevant by the department.

Contingent on funding, DWR's further implementation of the CASGEM Program includes:

- ◆ Expanding and maintaining the statewide network of voluntary Monitoring Entities

- ◆ Maintaining and enhancing the CASGEM Online System for data submittal and public access to groundwater data
- ◆ Evaluating extent of statewide groundwater monitoring
- ◆ Monitoring groundwater elevations in basins where no local entity has agreed to perform the monitoring functions
- ◆ Conducting groundwater basin assessments and identifying regional trends
- ◆ Identifying basins subject to overdraft based on pattern of pumping and recharge

Why is groundwater elevation monitoring important?

The depth of groundwater changes in response to natural seasonal and long-term fluctuations in recharge, as well as variations caused by pumping. In order to protect and sustain the state's precious groundwater supply, proper management of this limited resource is imperative. Groundwater elevations are needed for the evaluation of the groundwater resource as well as well interference, overdraft, conjunctive use projects, and effects of drought conditions on groundwater. The baseline data collected under the CASGEM program can help to detect potential problems such as subsidence and overdraft in a groundwater basin. The data can also be used to plan for future water supply demands. Monitoring groundwater elevations in the state's 515 alluvial groundwater basins and subbasins is a fundamental component of successful groundwater management.

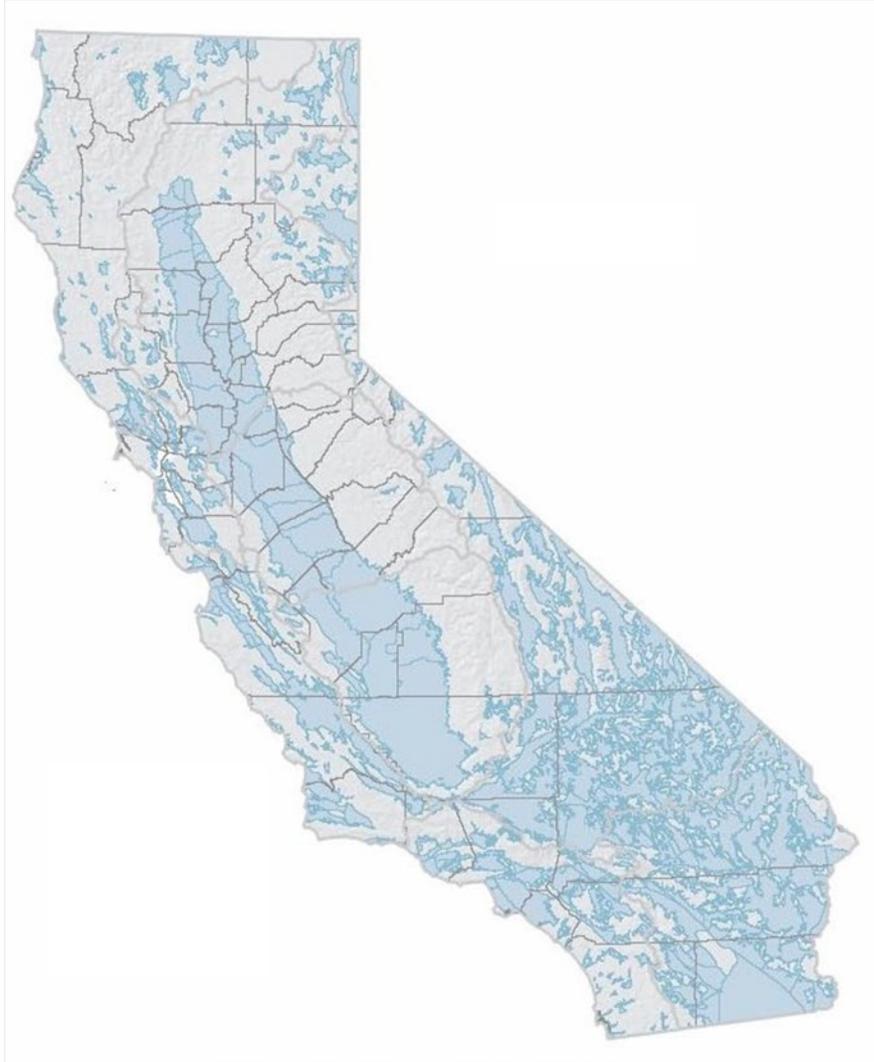
How can groundwater elevation data be used?

Groundwater elevation measurements can be used in many ways to evaluate groundwater conditions within a basin. Two of the most common ways the data are used are to create hydrographs and groundwater elevation contour maps. Hydrographs depict changes in groundwater elevations in a well or wells over the measurement period, which can demonstrate seasonal and long-term trends. Groundwater elevation contour maps depict groundwater elevations and flow directions, which can show the effect of pumping and recharge.

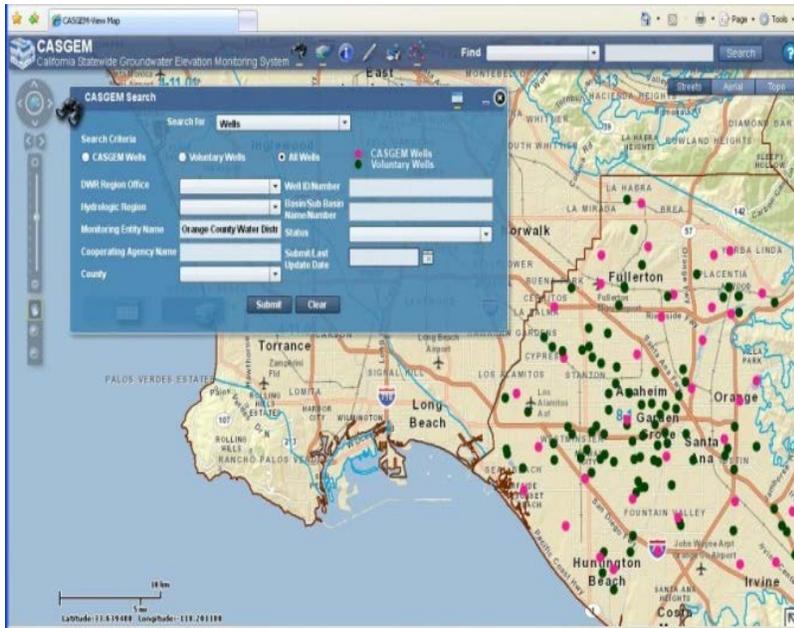
What does the future hold for CASGEM?

Groundwater data collected by local agencies will increase over time, providing information essential to protect and sustain California's groundwater resources. The greatest obstacle to CASGEM continuation and success is the lack of dedicated funding for program execution by DWR and the local agencies participating as Monitoring Entities and cooperating agencies. The legislation enacting the program did not include funding. Current funding for the CASGEM program within DWR will end after FY 13/14. The program is underfunded for the scope of the work mandated in the Water Code. Local agencies also struggle to comply with CASGEM requirements due to budget constraints and cutbacks. Success of this program is dependent on securing long-term funding at the State and local levels. Although the CASGEM program has made tremendous progress over the past three years, there is still a long way to go. Continuation of the program is critical to accumulate data over time that will show fluctuations and long-term trends in groundwater basins throughout California. Since the inception of the CASGEM

program, there have only been three mandatory sets of data collected, over a period of a year and a half, which is not sufficient to evaluate trends and fluctuations. The CASGEM program is a step in the right direction, but assessment of groundwater resources such as evaluation of overdraft, subsidence, and sustainability of the resource requires more information than just groundwater elevations.



California's 515 groundwater basins and subbasins (shown in blue) from DWR Bulletin 118, *California's Groundwater, Update 2003*



Sample screenshot from CASGEM OS showing CASGEM wells in pink