

Water and Environmental Monitoring Program

Mission and Authority

The Department's mission is to manage the water resources of California in cooperation with other agencies to benefit the State's people, and to protect, restore, and enhance the natural and human environments. In addition, DWR has a public trust responsibility and mission to protect and restore resources dependent on water. This program is in response to those goals. The authority includes the Department of Water Resources' Strategic Business Plan, and the California Water Plan, and California Water Code (Section 229 and 231).

Basic, timely and accurate hydrologic data is required for sound policy and planning decisions. The Water and Environmental Monitoring program provides water data for development, monitoring, regulation, management, evaluation and planning of the State's water resources.

Data Collected

- Surface Water

 - Stage and Flow

- Groundwater

 - Water level measurements

 - Ground surface displacement

- Water Quality

 - Chloride as Cl, Conductivity, Water Temperature, Dissolved Oxygen, Practical Salinity (PSS-15), Total Chlorophyll, pH

- Climate

 - Air Temperature, Barometric Pressure, Precipitation

- Well Completion Reports

 - DWR Report 188

Funding for the Water and Environmental Monitoring Program supports five different activities (surface water monitoring, groundwater monitoring, well completion reports, water quality monitoring, and a volunteer climate network). The Department has four regional offices, each of which has some combinations of the five activities. Funding is not sufficient to support all the regional office for all their respective data collection activities.

Data Management

Surface water data has been collected at 424 different sites by DWR. The program has collected 3,917 site-years of data. Data is collected at the site in a data logger and down-loaded by hand for most sites.

Data is stored in a proprietary time-series data base, Hydstra.

For sites at which only stage is measured, data is checked and assigned a quality code when it is brought into the office. For sites at which a full range of flow is measured, data is assessed at the end of the water year according to USGS standards.

Groundwater data is collected by DWR and local cooperators. Periodic measurements by DWR and local cooperators are stored in Oracle, and available through Water Data Library. DWR does not monitor wells south of the Tehachapis. These wells are monitored by local cooperators, which provide the data to DWR. There are over 38,500 wells in this data set, with over 1.5 million measurements going back to the 1890s. Not every well is measured every year. And DWR does not have groundwater level measurements for all regions of California. Most notably, there are gaps in the Santa Clara Valley, Alameda County, Monterey County, San Luis Obispo County and LA County. Data is checked when it is entered into Water Data Library.

Continuous measurements by DWR are stored in Hydstra. DWR collects "continuous" measurements from 392 different sites, and has 2,082 site-years of data. Data is checked in the field, and when it is entered into Hydstra.

Though state law mandates that well completion reports be submitted to DWR, we do not have the staff or budget to enforce submission of the reports. Through 2008, the Department had received approximately 574,000 well completion reports. Most of these have been scanned as PDF, and are stored as files. The four regional offices maintain their own Microsoft Access databases of well completion reports in their respective area. This data is proprietary, and not available for public distribution.

Water Quality data is collected by DWR and stored in either Oracle or Hydstra. Water quality data stored in Oracle are grab samples collected by regional office staff, and analyzed by Bryte Laboratory. The samples were collected from approximately 2,500 different sites. The program has collected approximately 61,000 samples. Approximately three-fourths of these sample analyses are publically available on Water Data Library.

Water quality data stored in Hydstra were collected from 539 sites, including some surface water and groundwater sites. The program has 4,261 site-years of data. Data is checked in the field, and when it is entered into Hydstra.

Climate data is collected by volunteers and submitted to DWR. The number of volunteers has diminished over time, and is now less than 150. The number of measurements is unknown. Some regional offices maintain paper records, while other enter the data in a Microsoft Access database.

Data Publication

Periodic groundwater level data is available through Water Data Library (<http://www.water.ca.gov/waterdatalibrary>). Products include hydrographs, and summary statistics of depth to water below ground surface by month. In addition, this information is used to estimate change in ground water storage by basin for the California Water Plan.

Water quality data in Oracle is available through Water Data Library. Reports include results of analyses and QA/QC information. This information is used to evaluate individual projects, evaluate the State Water Project, and shared with the State Water Resources Control Board.

Data from Hydstra (surface water data, continuous groundwater level measurements, and some water quality data) is available through Water Data Library. Reports include hydrographs and CSV data. This information is used to evaluate individual projects, evaluate water supplies and flood planning.

Climate data is available only through the regional offices. This data, in addition to other climate data, is used to produce depth-duration-frequency curves for rainfall analysis.

Well completion reports are available to individual land owners, and agencies in some circumstances. DWR shares these reports with the State Water Resources Control Board and the US Geologic Survey for work on the GAMA program.