

CALIFORNIA GROUND WATER CONDITIONS

Ground Water Importance: Ground water has played a leading role in transforming California into the nation's top agricultural producer, most populous state, and the 7th largest economy in the world. Today, ground water supplies about 40 percent of the water California uses or about 16 million-acre feet per year. The Golden State is home to a population of 32 million people (projected to increase to over 50 million by 2020) of which 16 million people are dependent on ground water for their drinking water. Public water supply systems alone use over 16,000 wells to supply the public water.

Advantages

Ground water has numerous advantages over surface water:

- Aquifers act as natural conveyance systems.
- The land above a ground water basin can be put to other uses.
- Because ground water is not exposed to the elements, it is protected from evaporation losses and some forms of pollution.
- Aquifers function as natural water-purification systems. Sediment, disease-causing organisms, and some other pollutants are filtered out of the water as it percolates through the soil.
- Aquifers are also a convenient source of water for use during droughts, when surface water supplies are not replenished.

Where is it? California's ground water is stored in 450-ground water basins throughout the State. Most of the ground water used in California is pumped from 30 to 40 alluvial basins in the San Joaquin Valley, Salinas Valley, Santa Clara Valley, Sacramento Valley, and many parts of Southern California, including Ventura, Los Angeles, Riverside, Orange, and San Bernardino counties. The amount of usable, pumpable ground water in storage is estimated to be about 250 million acre-feet. This volume is about six times the amount of water stored in all the State's surface water reservoirs combined.

How good is it? Overall ground water quality in California is good. However as California's population grows and its landscape continues

to be more intensely altered and developed, the quality of the State's ground water resources is threatened. Ground water pollution presents a serious challenge in California. A variety of contaminants have been found in ground water and most are the result of human activities. Principal contaminants come from both nonpoint and point sources and include nitrates, pesticides, and industrial chemicals such as solvents. Most contamination sites are local in scale. Of greater concern from a statewide perspective are areas of regional ground water contamination-such as volatile organic chemicals in the San Gabriel and San Fernando Valley's and nitrates in the San Joaquin Valley, Salinas Valley, and Chino Basin. Nitrates (primarily from use of chemical fertilizers, animal feeding operations and septic systems) have caused the shutdown of more public supply wells than any other contaminant. Water quality is also negatively affected by overuse. In the Salinas Valley, considered one of the richest farming regions in the world, over pumping of ground water has resulted in salt-water intrusion. Both irrigation wells on the coastal plain and drinking water wells in the City of Salinas have been closed because of high salt content.

Cost of Contamination: The total cost for cleaning-up California's ground water will be in the billions of dollars. One of many projects to halt seawater intrusion in Monterey County's Salinas Valley is the recently completed Salinas Valley Reclamation Project which cost \$78 million. Estimated clean-up cost for the San Gabriel Valley Ground Water Basin Superfund site in Los Angeles County is in the hundreds of millions of dollars. Over one million people depend on the San Gabriel Basin for their drinking water.

Efforts to Protect Ground Water: Protecting and managing California's ground water is a multi-agency, public-private partnership effort. In California, eight State agencies have a role in managing and protecting ground water. Add more than 1000 local and regional agencies, special districts, and finally federal agencies and one quickly understands how complex the

job becomes. Principal agencies include the State (SWRCB) and Regional Water Quality Control Boards (RWQCBs) and the Department of Health Services (DHS). The SWRCB and RWQCBs administer programs designed to protect and if necessary clean-up contaminated ground water, under programs such as *Waste Disposal to Land Regulations, Underground Storage Tank Program, Nonpoint Source Pollution Control Program, and the Spills, Leaks, Investigation, and Cleanup Program.*

In April 1999 California became the first state to receive unconditional approval of its source water assessment program as required by the 1996 Safe Drinking Water Act Amendments (SDWA). Developed and now being

implemented by the DHS, California's *Drinking Water Source Assessment and Protection Program* will evaluate contamination threats to over 16,000 public supply wells.

What else is needed? In California funds for ground water program coordination and for assessment and preventive protection programs are in short supply. For example the DHS estimates that funds provided by the SDWA State Revolving Loan Fund will provide less than half of what is needed to do adequate source water assessments. There are no specific funds to support a formal protection program. The federal Clean Water Act (CWA) grant funds that historically supported preventive types of ground water work in California were lost several years ago.

Resources to run an effective statewide ground water assessment and protection program are estimated to be \$10,600,000* per year/3 years, thereafter \$8,200,000* per year. This money would fund a dedicated State ground water protection program that would provide for:

- ◆ State/Federal coordination of programs affecting ground water;
- ◆ Grants to local communities for ground water protection activities such as establishment of Well Head Protection Programs;
- ◆ Enhanced mapping and database tools to further delineate ground water resources, especially areas sensitive to contamination;
- ◆ Public education efforts such as ground water components for natural resource curriculum for grades K-12; and
- ◆ Ground water quality monitoring to support activities mandated by the SDWA and CWA.

*Cost estimates based on survey of SWRCB, RWQCBs, DHS, and California Department of Water resources.