

California Digital Atlas Produces Custom Maps

The California Digital Conservation Atlas was created to be California's comprehensive public Web site for conservation information. It is designed to provide easy-to-use map views of California's natural resources and working landscapes for people who may not be familiar with specialized geographic software.

The atlas brings together data from a variety of local, state, and national sources, and allows users to mix and match those layers of information at different scales to create custom maps such as the one shown at right. A zoom tool is available to focus on any area of interest in the state. Five different map "themes" can be selected, and a variety of layers can be selected under each theme to be shown on the map. For example, under the "aquatic biodiversity" theme, the user can view such coverages as impaired rivers, streams, and water bodies; wild and scenic rivers; federal, state, and local water district boundaries; and 100-year flood zones. Other themes include:

- terrestrial biodiversity, containing data on land cover and species diversity;
- urban open space and rural recreation, with boundaries of parks and recreation areas;
- working landscapes, containing agricultural and tree-seeding designations; and
- stressors, containing solid waste sites, fish contamination, and toxic substances monitoring.



All themes also contain common categories of coverage, including hydrologic information (rivers, lakes, dams, water bodies, river basin boundaries), conservation data (land trusts and conservation plans of various agencies and organizations), land ownership, land use, transportation systems, and political boundaries.

The California Digital Conservation Atlas is produced by the California Legacy Project, which is sponsored by the California Resources Agency. It was developed in coordination with the California Environmental Protection Agency and its Office of Health Hazard Assessment.

The digital atlas currently only works with Microsoft's Internet Explorer browser; visit it at legacy.ca.gov/new_atlas.epl.

New Report Evaluates Geothermal Potential

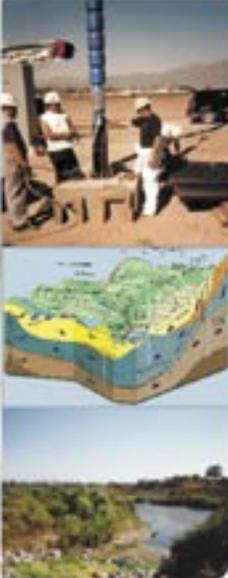
As part of efforts to advance the President's National Energy Policy, the Department of the Interior's Bureau of Land Management (BLM) and the Department of Energy's National Renewable Energy Laboratory (NREL) recently released a report that identifies



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and evaluates geothermal energy opportunities on public lands in the West. The report, "Opportunities for Near-Term Geothermal Development on Public Lands in the Western United States," focuses on areas of the West that provide the best opportunities and highest potential for development of geothermal energy.

BLM and NREL used Geographic Information System (GIS) data to assess geothermal energy potential on BLM lands in the West. The assessment identifies which of BLM's planning units have the highest potential for developing geothermal resources. The assessment of these high-potential areas focuses on BLM's knowledge of and experience with geothermal resources in western states. BLM experts identified 35 top-pick sites in 18 planning units throughout six western states that have high potential for near-term geothermal development, including nine California sites, three New Mexico sites, 10 Nevada sites, seven Oregon sites, three Utah sites, and three Washington sites.

"Top Picks" are areas defined by BLM as having the greatest geothermal potential for rapid development in terms of power generation. "Near-term" development means that geothermal potential is high and conditions are favorable so that power generation could be developed within the next two years. Currently more than two-thirds of the "top pick" areas are addressed in existing BLM land-use plans. Once environmental analysis is complete, these areas would be ready for the geothermal industry to develop.

The report on geothermal opportunities and all supporting documentation can be downloaded from www.nrel.gov/docs/fy03osti/33105.pdf.

Underground Water Storage May Alter Groundwater Quality

U.S. Geological Survey Press Release

As alternative approaches to increasing water supply and availability in Southern California are explored, such as injecting and storing treated water underground, water managers need to be aware of

potential impacts on water quality, according to a new study by the U.S. Geological Survey (USGS).

Research conducted at a test site in the Antelope Valley of Southern California, near Lancaster, found that when treated surface water was used to recharge the aquifer, byproducts of the water disinfection process accumulated in the aquifer. Among the byproducts are trihalomethanes (THMs), which have been listed as carcinogenic by the U.S. Environmental Protection Agency.

"Injection, storage, and recovery projects that integrate surface-water and groundwater supplies are rapidly becoming important parts of California's water supply system," said USGS scientist Miranda Fram, lead author of the study, "However, this study demonstrates that these projects may alter groundwater quality, and thus, potentially may affect the future usability of the water for some purposes."

The USGS study, in cooperation with the Los Angeles County Department of Public Works and the Antelope Valley-East Kern Water Agency, examined the effects of an injection, storage, and recovery test cycle on water quality, with particular emphasis on the formation and fate of THMs.

The study found that THMs continued to form in the aquifer until the residual disinfectant (chlorine) present in the injected surface water was used up, and that bacteria in the aquifer did not consume significant amounts of THMs. Multiple lines of evidence indicated that THM concentrations in the water extracted from the aquifer decreased with time because the injected water was mixed with the native groundwater in the aquifer. Because of this mixing, it was not possible to recover all the THMs in the aquifer.

"Consequently," said Fram, "repeated injection, storage, and recovery cycles in Antelope Valley aquifers would alter groundwater quality there. Accumulation of THMs could be minimized by removal of the residual chlorine in the water

before injection, or by modification of the extraction program."

The USGS report, "Processes Affecting the Trihalomethane Concentrations Associated with the Third Injection, Storage, and Recovery Test at Lancaster, Antelope Valley, California, March 1998 through April 1999" by Miranda S. Fram, Brian A. Bergamaschi, Kelly D. Goodwin, Roger Fujii, and Jordan F. Clark, can be found at water.usgs.gov/pubs/wri/wri034062/.

EPA Identifies Sites, Companies for Year-Long Tests of Arsenic Treatment Technologies

In October 2001, Christine Todd Whitman, then-administrator of the U.S. Environmental Protection Agency (EPA), announced an initiative for research and development of cost-effective technologies to help small systems meet the new arsenic maximum contaminant level of 0.01 milligrams per liter and to provide technical assistance to operators of small systems to reduce compliance costs. As part of that initiative, in fiscal year 2003, Congress appropriated \$5 million for Small System Arsenic Removal research to evaluate the efficiency and effectiveness of drinking water treatment technologies, process modifications, and engineering approaches to meet the new arsenic standard at locations that have varied source water quality. The program will evaluate the reliability of technologies for small systems; gauge simplicity of operation, maintenance, and required operator skills; determine cost-effectiveness; and characterize treatment residuals. Several proven arsenic removal technologies exist, such as activated alumina, ion exchange, conventional coagulation, iron removal, lime softening, and membranes, but they are not easily applied to all systems without significant redesign and testing.

EPA recently announced that 12 volunteer small community water systems (of less than 10,000 customers) have been chosen for full-scale demonstration tests of a selected arsenic treatment technology. The tests will last for one year and participants will have the option of keeping the treatment equipment when the test is complete.

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Five sites in the Southwest will participate in the demonstration program. Rimrock, Arizona and Nambe Pueblo, New Mexico will test the granular ferric oxide technology of Aledge Technologies Inc. The water system of Valley Vista, Arizona will test Kinetico's activated alumina treatment process. In Anthony, New Mexico, Desert Sands Mutual Domestic Water Consumers Association will test Severn Trent's iron media, and the capabilities of U.S. Filter's iron media will be demonstrated in Reno, Nevada at South Truckee Meadows General Improvement District.

The EPA will not provide direct funding for the demonstration program. Instead, the agency will purchase equipment and engineering services and pay for the installation of the equipment at the sites. EPA will also purchase and provide supplies such as chemicals or media if needed.

Visit www.epa.gov/ORD/NRMRL/arsenic/research.htm for more information.