
News Release

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San Diego County Area Groundwater Quality Assessed in New Report

SAN DIEGO, RIVERSIDE, and ORANGE COUNTIES, Calif. - High concentrations of natural and man-made compounds were found in aquifers used for drinking supply in Temecula Valley, Warner Valley, and 12 other groundwater basins in San Diego County. Scientists determined that concentrations of these substances in untreated groundwater are above regulatory and nonregulatory health standards for drinking water. Scientists analyzed untreated groundwater from wells, not treated tap water, which may be disinfected, filtered, mixed, and/or exposed to the atmosphere to create safe levels for consumption before it is delivered to consumers.

Trace and minor elements were detected at high concentrations in 14 percent of the aquifer systems in the San Diego study area. Vanadium, arsenic and boron were the constituents detected most frequently at high concentrations. The primary source of these constituents to groundwater comes from the natural dissolution of rocks and soils. Potential anthropogenic sources include fossil fuel burning, and municipal and industrial waste disposal. Concentrations are considered "high" if they are above Federal and California regulatory or non-regulatory benchmarks for protecting human health. High concentrations of vanadium, arsenic and boron most often occurred in relatively deep wells tapping alkaline (high pH) groundwater. Groundwater with high concentrations of these constituents also were predominantly classified as mixed age, which indicates that a component of the groundwater being tapped entered the aquifer system prior to 50 years ago.

Radioactive constituents were present at high concentrations in 3 percent of the primary aquifer system. Most of the radioactivity in groundwater comes from decay of naturally occurring isotopes of uranium and thorium present in minerals in the aquifer sediments.

Concentrations of organic constituents, generally man-made compounds such as gasoline additives and solvents, were found at high concentrations in 3 percent of the aquifer systems in the San Diego study area. Of the 217 organic constituents tested for in this study, 33 were detected. Only the discontinued gasoline additive methyl tert-butyl ether (MTBE) was detected at concentrations above a health-based benchmark. MTBE is not added to gasoline in California.

Some naturally occurring constituents that affect the aesthetic properties of water, but do not have health-based benchmarks associated with them, were found in the San Diego study area aquifer systems. Total dissolved solids, an indicator of salinity, was detected at high concentrations in 14 percent of the aquifer system. Manganese and iron were detected at high concentrations in 14 and 7 percent of the aquifer systems respectively. These constituents affect the taste, color, and odor of water, or may create nuisance problems, such as scaling and staining.

"This aquifer assessment shows that trace elements, from naturally occurring sources, are the constituents most often detected at concentrations above health-based thresholds in the primary aquifer systems in the San Diego study area." said Michael T. Wright, a hydrologist and author of the U.S. Geological Survey report prepared in collaboration with the California State Water Resources Control Board.

The new report provides an assessment of groundwater quality in the San Diego study area aquifers used for drinking water. Scientific analysis was based on USGS data collected from 58 public-supply wells and a comprehensive review of more than 16,000 water quality records in a California Department of Public Health database.

"The work done by the Priority Basin Project in the San Diego study area groundwater basins is important because we are providing, for the first time, a quantitative assessment of the extent to which deeper groundwater may have high concentrations of both natural and man-made constituents," said co-author Dr. Kenneth Belitz, chief of [USGS' Groundwater Ambient Monitoring and Assessment program](#). "This information can be used by managers to insure that our drinking water supply remains safe."

The [State Water Resources Control Board's GAMA](#) program is collaborating with the USGS to monitor and assess water quality in 120 groundwater basins and in areas outside of basins across California over a ten-year period. The main goals of GAMA are to improve comprehensive statewide groundwater monitoring and to increase the availability of groundwater-quality information to the public.

The report was prepared in cooperation with the [California State Water Resources Control Board](#) and can found at <http://pubs.usgs.gov/sir/2011/5154>. Accompanying non-technical summaries can be found at <http://pubs.usgs.gov/fs/2011/3111>.

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