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**COMPREHENSIVE ASSESSMENT OF GROUNDWATER QUALITY
IN AQUIFERS USED FOR PUBLIC SUPPLY, CALIFORNIA, USA**

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ABSTRACT: The US Geological Survey is assisting the California Water Board in implementing California's Groundwater Ambient Monitoring (GAMA) program. Since 2004, the USGS has been the technical lead for GAMA's Priority Basin Project (GAMA-PBP). GAMA-PBP is conducting a comprehensive assessment of groundwater quality in 116 priority basins that collectively account for over 90% of groundwater use and over 90% of the number of contaminant sources in CA. GAMA-PBP is also assessing groundwater quality in areas outside of basins, such as the Sierra Nevada, and in selected "low-use" basins. Between May 2004 and December 2010, the USGS sampled about 2200 wells in 111 priority basins, about 50 low use basins, and several areas outside of basins. All groundwater sampling is voluntary and through extensive outreach hundreds of water suppliers and other well owners have allowed well sampling. The USGS samples for hundreds of constituents and at lower concentrations than required of water suppliers to submit to the California Department of Public Health (CDPH). In combination with CDPH data, the data collected by GAMA-PBP provides a more comprehensive perspective of groundwater quality, trends, and areas of concern. The USGS publishes information in reports available at <http://ca.water.usgs.gov/gama/>. The USGS has made a number of findings in its investigations to date. The USGS evaluates groundwater quality for the GAMA Priority Basin Project in terms of the proportion of the aquifer resource that has chemical concentrations exceeding health-based benchmarks. Some chemicals have regulatory benchmarks and others have non-regulatory benchmarks. From a statewide perspective, naturally-occurring trace elements are more prevalent at concentrations above benchmarks (typically MCLs) than any other constituent; trace elements are high in about 15% to 20% of the resource at the depth zone tapped by public supply wells. In contrast, nitrate typically exceeds benchmarks in about 5% to 10% of the resource. However, high concentrations of nitrate are likely to be more prevalent at shallower depths. Organic compounds, such as solvents, gasoline-related compounds, and pesticides, are generally present at high concentrations in only a small proportion of the resource (<1%). Trace elements occurring at high concentrations include arsenic, uranium, boron, and vanadium.

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