

California's Water Quality Challenges

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► California faces multiple and diverse water quality challenges.

Ensuring adequate and safe water supplies for homes, businesses, and the environment requires managing a variety of water quality challenges across the state. Local challenges vary and are caused by both human actions and naturally occurring processes. Some contaminants come from past activities, such as mercury from mining, but many sources of pollution are ongoing. Additional pollutants continue to be identified. Treatment can be cost-effective in some cases, but preventing pollution at the source is often less costly.

► Water quality regulations protect public health and the environment.

Water quality regulation was kick-started in the 1960s and 1970s with the passage of California's Porter-Cologne Water Quality Control Act and the federal Clean Water and Safe Drinking Water Acts, which prevent discharges of pollution into water bodies and control the quality of water that comes out of the tap. The State Water Resources Control Board and nine regional boards set and enforce these standards. In the following decades, state and federal laws and regulations have been passed to address additional challenges including the use of pesticides and other toxic substances, water pollutants from farming, abandoned hazardous waste sites, and the impacts from hydraulic fracturing (fracking).

► Some small communities face chronic water quality problems.

Almost 400 small rural water systems and schools are unable to provide safe drinking water. In some areas, nitrate—produced by nitrogen fertilizers and manure—is polluting local groundwater basins. Chemicals such as arsenic and chromium-6 are also a challenge. Treatment to remove contaminants is costly for small systems that do not benefit from economies of scale. Solutions for at-risk communities statewide would require additional expenditures of \$30–\$160 million annually, and this number is likely to grow as requirements are tightened. Effective wastewater management is also a challenge in many of these communities. New state funding and administrative support—including more flexibility to encourage consolidation with larger systems—will help, but durable funding for system operations is needed.

► Cities need a new round of investments in pollution control.

Every year roughly \$10 billion is spent on water pollution control in California, with the vast majority for site-specific sources of pollution (known as “point sources”) such as wastewater treatment. Cities are now also required to limit or clean up pollution from stormwater and other runoff (“non-point sources”). Rising costs and constitutional constraints on raising funds have led to an annual funding gap of at least \$500–\$800 million for stormwater programs. As detection technology and scientific understanding of contaminants improve, a new round of investments will be needed for wastewater—for example, to limit substances such as nitrogen and phosphorus from polluting San Francisco Bay.

► Salt buildup is a major water quality concern for cities and farms.

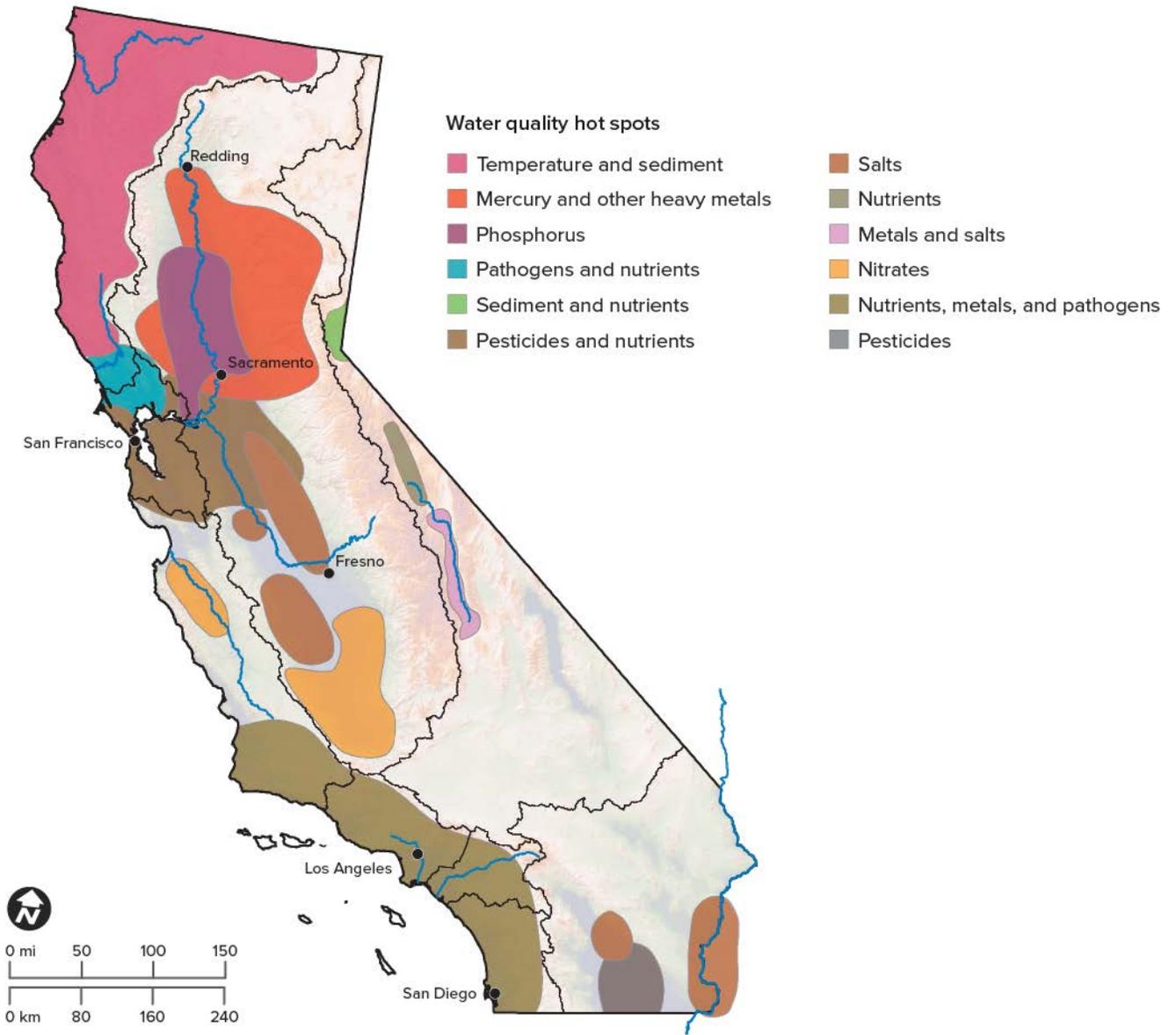
One of our most common pollutants, salt occurs naturally in some soils and is also found in fertilizers, animal waste, and urban wastewater. In some coastal areas, the intensive use of groundwater has caused saltwater to intrude from the ocean into underground basins. Salinity in many streams and basins has increased urban water-treatment costs and reduced the productivity of farmland.

► Water quality has declined with the extended drought.

River flows and reservoir releases help maintain water quality for aquatic species. During this drought, low flows and extended heat have raised water temperatures and lowered oxygen levels in rivers and streams. These conditions significantly threaten already-vulnerable fish species and can cause harmful algal blooms. Low flows also increase salinity. But the drought has also raised interest in projects that provide both water quality and supply benefits, such as capturing and reusing treated wastewater and stormwater.



Water quality challenges affect most regions of California



SOURCE: Hanak et al., *Managing California's Water: From Conflict to Reconciliation* (PPIC 2011).

NOTE: The map highlights only major regional problems, including those for which total maximum daily loads (TMDLs) of pollutants have been set by water quality regulators.

SOURCES: Hanak et al., *Paying for Water in California* (PPIC 2014), for funding estimates; State Water Resources Control Board data on rural drinking water systems.

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