

Water Quality Report Card

Mercury in the Guadalupe River Watershed

Regional Water Board: San Francisco Bay, Region 2

Beneficial Uses Affected: REC-1, RARE, WILD

Implemented Through: California Water Code Section 13267 and Section 13304 cleanup and abatement order

Effective Date: June 1, 2010

Attainment Date: December 31, 2028

STATUS Conditions Improving

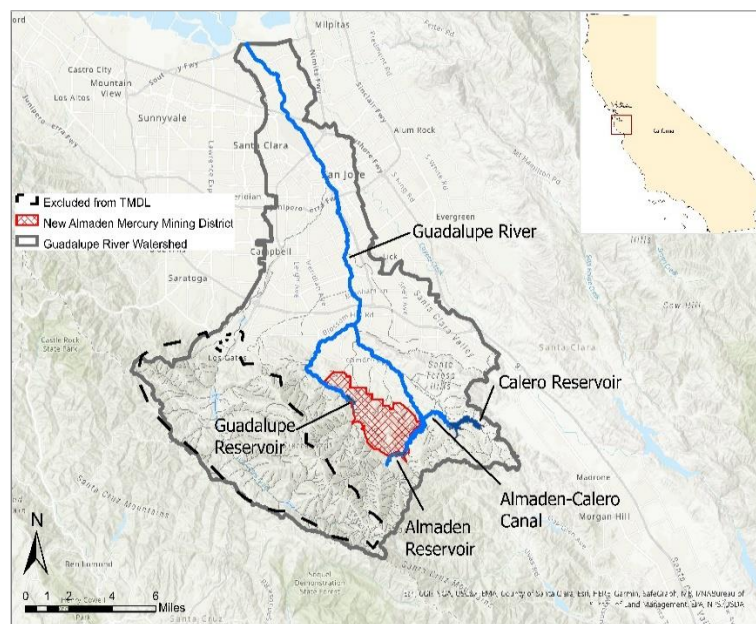
Pollutant Type: Nonpoint Source Legacy

Pollutant Source: Abandoned Mines

Water Quality Improvement Strategy

New Almaden Mine, at the top of the Guadalupe River Watershed, was the largest-producing mercury mine in North America. Consequently, downstream waters are impaired by mercury. Fish in these waters have extremely high mercury concentrations that exceed the objectives set to protect wildlife and human health (0.05 and 0.1 mg/kg in fish 50–150 and 150–350 mm length). To address the high mercury levels, the San Francisco Bay Regional Water Board developed the [Guadalupe River Watershed Mercury TMDL](#). The TMDL established mercury load reductions from mine activities and action in reservoirs and lakes to achieve fish tissue objectives. Mercury load reductions are accomplished by cleanup of mercury contaminated mining waste. The local water district (Valley Water) is conducting pilot tests of hypolimnetic oxygenation systems (HOS) in reservoirs. HOS reduce the methylation of mercury and are being tested for reducing fish mercury levels. As of September 2019, monitoring data indicate a significant decrease in fish mercury concentrations at Almaden and Calero Reservoirs, with no significant change at Guadalupe Reservoir.

Guadalupe River Watershed Map



Water Quality Outcomes

- Implementation actions resulted in improvement in young-of-year Largemouth bass fish mercury concentrations at Almaden and Calero Reservoirs (reduction by about half). This is an early indicator that we might see reductions in adult sport fish.
- Guadalupe Reservoir fish mercury concentrations remained unchanged.
- We attribute improvements to the 2010 mining waste removal from Jacques Gulch, a creek that drains New Almaden to Almaden Reservoir, and flows through a canal to Calero Reservoir.
- All three reservoirs received HOS treatment over 2016–2019. HOS was Guadalupe Reservoir’s sole implementation action during this period, and fish mercury levels did not change. The effectiveness of HOS on the reservoirs is inconclusive.
- Valley Water staff are conducting a food web (bioaccumulation) study that should explain where HOS could be effective.

Changes in Fish Mercury Concentrations

Guadalupe River Watershed Fish-Tissue Mercury Concentrations

