



# Fact Sheet

## Frequently Asked Questions Regarding Clear Lake Algae Blooms

What is causing Clear Lake algae blooms?

Clear Lake has a long history of algae blooms because it is a naturally shallow and warm eutrophic lake. Eutrophic lakes have such an abundant amount of nutrients that they support dense growth of algae and other organisms. Clear Lake naturally has high levels of nutrients because its watershed has naturally phosphorus-enriched geologic formations. However, the frequency of algae blooms escalated starting in the 1920's due to increased earth moving activities in the watershed, which elevated nutrient loads to the Lake. In addition, more than 85% of the watershed's natural wetlands have been lost. This dramatically altered the nutrient balance of the Lake and led to it becoming hyper-eutrophic.

What are the impacts of harmful algae blooms (HABs) on the environment, people, and pets?

HABs can have negative impacts on the environment, people, pets, wildlife, or livestock, as well as the economy. Some HABs can produce cyanotoxins or algal toxins, which can pose a health risk to livestock, wildlife, pets, and humans. Certain other types of cyanobacteria are nontoxic but can impart an unpleasant taste to water and fish, as well as giving off a foul smell. Cyanotoxins and algal toxins pose risks to the health and safety of people and pets recreating in water bodies, eating fish, and drinking water. They can accumulate in fish and shellfish to levels posing threats to people and wildlife.

How are algae blooms in Clear Lake being addressed?

In 1986, Clear Lake was added to the Clean Water Act Section 303(d) List of Impaired Water Bodies because of the HABs nuisance that impacted recreational uses. In June 2006, the Central Valley Water Board took an important first step and adopted a resolution that amended the Basin Plan for the Sacramento and San Joaquin River Basins for the Control of Nutrients in Clear Lake by creating a [control program](#). Existing study results and data analyses suggest that controlling phosphorus is the best approach for addressing the nuisance blooms. Therefore, the control program focuses on reducing phosphorus loading to Clear Lake by including load allocations for point and nonpoint sources. US EPA approved the nutrient control program as a Total Maximum Daily Load (TMDL) in September 2007. See the Clear Lake Nutrient TMDL Control Program [Fact Sheet](#) for more information.

Where is phosphorus coming from?

Most sources of phosphorus to Clear Lake are sediment driven and include erosion from agricultural and urban areas, instream channel erosion, timber harvesting, runoff from roads, construction, gravel mining, wildfires, control burns, off highway vehicle use, and dredging and filling. In addition to phosphorus, studies indicate other factors can affect blue-green algal blooms. These potential factors include nitrogen, iron, sulfate, and temperature. In particular, potential nitrogen loading from the expansion of agricultural lands has caused public concerns in Clear Lake. Further studies are necessary to understand Clear Lake's sediment chemistry, nitrogen cycling processes, and the role of the nitrogen to phosphorus ratio to mitigate the impacts of nitrogen inputs.

What is the State Water Board doing about HABs?

Due to the increasing numbers of HABs occurring across California, the state formed the [California Cyanobacteria and Harmful Algal Bloom \(CCHAB\) Network](#). The CCHAB Network is a partnership of state, federal, and local agencies, tribes, academia, and non-governmental organizations working collaboratively with the State Water Board's Surface Water Ambient Monitoring Program (SWAMP) to implement SWAMP's 2016 Statewide Freshwater [HABs](#) Assessment and Support Strategy.

This strategy includes a framework of actions necessary to address the causes of HABs and identifies tools and resources necessary to support the protection of animal, wildlife, and human health throughout California. These actions include developing a program to respond to HAB events (e.g., monitoring and public notification) and developing new tools such as remote sensing that uses satellite imagery to assess risk of HABs and analyzing trends over time.

Why are conditions worsening in Clear Lake?

The State just endured five years of drought. Frequency and severity of cyanobacteria and other algae blooms tend to magnify during drought periods. Furthermore, the heavy storm events that ended drought conditions may have also contributed to phosphorus-laden sediment eroding into the lake.

In-lake phosphorus concentrations tend to be highest during droughts due to a lack of dilution from the watershed and increased in-lake cycling from sediments. This nutrient pollution and imbalance triggers algae blooms.

In addition, when the algae dies, it decays and contributes to low dissolved oxygen (DO) on the bottom of the lake. Low DO triggers more phosphorus loading from in-lake sediments. The algal decay can also cause strong odors to emit from the lake.

## Other Clear Lake Resources

- Receive regular TMDL implementation activity updates by signing up for the Central Valley Water Board email subscription list by selecting *Clear Lake Nutrient TMDL*: [www.waterboards.ca.gov/resources/email\\_subscriptions/reg5\\_subscribe.shtml](http://www.waterboards.ca.gov/resources/email_subscriptions/reg5_subscribe.shtml)
- Access the latest TMDL information: [https://www.waterboards.ca.gov/centralvalley/water\\_issues/tmdl/central\\_valley\\_projects/clear\\_lake\\_nutrients/](https://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/clear_lake_nutrients/)
- Find monitoring data from the California Department of Water Resources Water Data Library: [www.water.ca.gov/waterdatalibrary/](http://www.water.ca.gov/waterdatalibrary/)

## Additional HABS Resources

- My Water Quality – Are harmful algal blooms affecting our waters? <http://www.mywaterquality.ca.gov/habs/index.html>
- Report a bloom to the State Water Board’s Freshwater HAB Program:
  - Online [Freshwater Bloom Incident Form](#)
  - Call toll-free: 1 (844) 729-6466
  - Email: [CyanoHAB.Reports@waterboards.ca.gov](mailto:CyanoHAB.Reports@waterboards.ca.gov)
- CA Cyanobacteria and Harmful Algal Bloom (CCHAB) Network: [http://www.waterboards.ca.gov/water\\_issues/programs/bluegreen\\_algae/](http://www.waterboards.ca.gov/water_issues/programs/bluegreen_algae/)
- US Environmental Protection Agency: <https://www.epa.gov/nutrient-policy-data/cyanohabs>

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