

## INTRODUCTION

The University of California, Davis has conducted continuous monitoring of Lake Tahoe since 1968, amassing a unique record of change for one of the world's most beautiful and vulnerable lakes.

In the UC Davis Tahoe: State of the Lake Report, we summarize how natural variability and human activity are affecting the lake's clarity, physics, chemistry, and biology. We also present a portion of the data collected in 2021—presenting all of it would be overwhelming. While Lake Tahoe is unique, the forces and processes that shape it are the same as those acting in most natural ecosystems. As such, Lake Tahoe is an indicator for other systems both in the western United States and worldwide.

Our goal is to understand the lake's complexity and to use the knowledge gained to provide the scientific underpinnings for ecosystem restoration and management actions. Choosing from those options and implementing them is the role of management agencies that also need to account for a host of other considerations.

This annual report is intended to inform non-scientists about the variables that affect lake health. One indicator of Lake Tahoe's health status—the annual clarity—is reported earlier each year. In this report, we publish many other environmental and water quality factors that serve as other indicators of the lake's condition and help explain the lake's changing clarity. This report sets the context for understanding both the year-to-year changes and those that are observed over decades.

Some of the important parts of this report are the updates on research taking place independently of the long-term monitoring. These updates highlight some of the most exciting and promising findings of work that is still in progress. The new insights gained through this research will help keep Lake Tahoe at the cutting edge of science for years to come. Many of the sections explore new ideas and approaches to address the ever-evolving challenges at Lake Tahoe.

The data we present are the result of efforts by a great many scientists, engineers, students, technicians, and educators who have worked at Lake Tahoe throughout the decades since sampling commenced. I would, however, like to acknowledge (in alphabetical order) the contributions to this year's report by Brant Allen, Karen Atkins, Kian Bagheri, Carmen Bedke, Brandon Berry, Fabian Bombardelli, Mike Bruno, Tom Burt, Samantha Campisi, Luciana Cardoso, Yuan Cheng, Bob Coats, Troy Corliss, Alicia Cortés, Cole Dickson, Stephen Drake, MJ Farruggia, Helen Fillmore, Alex Forrest, Nick Framsted, Susan Frankel, Drew Fredrichs, Scott Hackley, Tina Hammell, Simon Hook, Camille Jensen, Yufang Jin, Melissa Kibbee, Jessica Landesman, Kenneth Larriau, Anne Liston, Kevin Livingston, Patricia Maloney, Elisa Marini, Jasmin McInerney, Antonina Myshyakova, Aaron Ninokawa, Holly Oldroyd, Anne Nolin, Kanarat Pinkanjananee (Job), Gerardo Rivera, Steve Sadro, Heather Segale, Katie Senft, Steven Sesma, Noah Shapiro, Samantha Sharp, Roland Shaw, David Smith, Sheri Smith, Adrienne

Smits, Micah Swann, Lidia Tanaka, Ruth Thirkill, Raph Townsend, Alison Toy, Sean Trommer, Sergio Valbuena, Aaron Vanderpool, Lindsay Vaughan, Shohei Watanabe, and Erik Young to this year's report. In particular, Shohei Watanabe was responsible for the majority of the data analysis, and Alison Toy led the compilation and layout of the final report.

Funding for the actual data collection and analysis has come from many sources over the decades. While many additional water quality variables could be tracked, funding ultimately limits what we measure and report on. Current funding for the long-term monitoring and analysis is provided by the California Tahoe Conservancy, Lahontan Regional Water Quality Control Board, Tahoe Regional Planning Agency, U.S. Geological Survey, and UC Davis.


Sponsors for current projects include the following: California Natural Resources Agency, California Tahoe Conservancy, Incline Village General Improvement District, Nevada Department of Tourism and Cultural Affairs, Nevada Division of Environmental Protection, Nevada Division of State Lands, Parasol Tahoe Community Foundation, Tahoe Fund, and Tahoe Truckee Community Foundation.

Our monitoring is frequently done in collaboration with other research institutions and agencies. In particular, we would like to acknowledge our collaborators at UC Davis, the Desert Research Institute (DRI), the National Aeronautics and Space Administration

(NASA), the National Oceanographic and Atmospheric Administration (NOAA), the Tahoe Resource Conservation District (TRCD), the U.S. Forest Service, (USFS), the U.S. Geological Survey, the University of Miami at Ohio, and the University of Nevada, Reno (UNR).

We are very proud to recognize the funding support for actual production of this annual report from the following organizations: California Tahoe Conservancy, Incline Village Waste Not Program, Lahontan Regional Water Quality Control Board, Lake Tahoe Marina Association, Mountain Workspace, Parasol Tahoe Community Foundation, Tahoe Fund, Tahoe Lakefront Owners' Association, Tahoe Regional Planning Agency, Tahoe Truckee Airport Community Partner, Tahoe Water Suppliers Association, and True Point Solutions. We sincerely thank these organizations for their dedication in supporting science to save the lake.

Sincerely,



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