TAHOE: STATE OF THE LAKE REPORT 2010

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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 have affected the lake's clarity, physics, chemistry and biology over that period. We also present the data collected in 2009. The data shown here reveal a unique record of trends and patterns – the result of natural forces and human actions that operate over time scales ranging from days to decades. These patterns tell us that Lake Tahoe is a complex ecosystem, and it behaves in ways we don't always expect. While Lake Tahoe itself is unique, the forces and processes that shape it are the same as those that apply in all natural ecosystems. Consequently, Lake Tahoe provides an analog for many other systems both in the western US and worldwide.

Our role as scientists is to explore that complexity and to use our advancing knowledge to suggest options for ecosystem restoration and management. Choosing among those options and implementing them is the role of those outside the scientific community and needs to take account of a host of other considerations beyond just the science. The annual UC Davis Tahoe: State of the Lake Report is intended to inform non-scientists about the most important variables that affect lake health. Until recently, only one indicator of Lake Tahoe's health status was widely used: the annual clarity (often called the Secchi depth, after the instrument used to collect the clarity data). In the Tahoe: State of the Lake Report, the UC Davis Tahoe Environmental Research Center (TERC) publishes many other environmental and water quality parameters that all provide indicators of the lake's condition.

This report is not intended to be a scorecard for Lake Tahoe. Rather, it sets the context for understanding the changes that are seen from year to year and those that are observed over a time scale of decades: How much are invasive invertebrates affecting Lake Tahoe? Was Lake Tahoe warmer or cooler than the historical record last year? Are the inputs of algal nutrients to the lake declining? And, of course, how do all these changes affect the lake's famous clarity? The data we present are the result of efforts by a great many scientists, students and technicians who have worked at Lake Tahoe throughout the decades since sampling commenced. I would, however, like to acknowledge (in alphabetical order) the contributions of Veronica Alumbaugh, Brant Allen, Nancy Alvarez, Stephen Andrews, Patty Arneson, Sudeep Chandra, Bob Coats, Jill Falman, Bill Fleenor, Alex Forrest, Charles Goldman, Scott Hackley, Tina Hammell, Alan Heyvaert, Simon Hook, Debbie and Peter Hunter, Anne Liston, George Malyj, Dan Nover, Allison Oliver, Andrea Parra, Kristin Reardon, John Reuter, Bob Richards, Heather Segale, Travis Shuler, Todd Steissberg, Collin Strasenburgh, Raph Townsend, Katie Webb, Monika Winder, and Marion Wittmann to this year's report.

Funding for this enormous undertaking comes from a great many sources, spanning federal, state and local agencies, as well as UC Davis itself. While many other water quality variables could be tracked, funding ultimately limits what we measure. Current funding for the long-term monitoring and analysis is provided by the Lahontan Regional Water Quality Control Board, the Tahoe Regional Planning Agency, the U.S. Forest Service and the U.S. Geological Survey. TERC's monitoring is frequently done in collaboration with other research institutions and agencies. In particular we would like to acknowledge the U.S. Geological Survey (USGS), the National Aeronautics and Space Administration (NASA), the Desert Research Institute (DRI), and the University of Nevada, Reno (UNR). This monitoring data is also an integral part of many basic research projects funded by multiple sources. Without this data there are many questions that could not even be asked let alone answered.

This year we are also featuring some research highlights of 2009, taken from current projects where TERC is working in close and productive partnership with other researchers. The funding sources for those projects and additional researchers involved are acknowledged within those particular sections of the report.

We hope you find this report helpful and interesting. I welcome your comments.

Sincerely,

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