

NEARSHORE QUALITY RELATED RESEARCH SINCE 2005

Project Title	Description	Funding Source	Amount
Nearshore Clarity At Lake Tahoe: Status and Causes of Reduction	This project used an instrumented boat to measure turbidity and chlorophyll in the near-shore zone, allowing investigation of the spatial and temporal variability of near-shore clarity. Particle samples were also collected at selected locations to determine if the particles were primarily organic or mineral material. Furthermore, the project evaluated and documented issues with existing nearshore indicators, standards and monitoring protocols.	Lake Tahoe License Plate	\$ 87,679
Predicting and Managing Changes in Near-Shore Water Quality	Develop a process-based understanding of the controls on four primary water-quality issues impacting the near-shore zone: near-shore clarity, periphyton (attached algae) growth, distribution and factors facilitating the spread of nonnative plant and fish species, fate of pollutants in the near-shore zones	SNPLMA Rd 7	\$ 312,959
Monitoring Past, Present and Future Water Quality Using Remote Sensing	The intent of this project was to demonstrate the use of Remote Sensing for measuring water quality parameters at Lake Tahoe. One of the major benefits of this approach would be that a whole-lake view of water quality changes would be possible, even extending into the nearshore where discrete sources of pollutants could be identified. Linked to this was the possibility that through using archived satellite data, long-term trends in other parts of the lake (beyond the two sites currently monitored by UC Davis) would be feasible.	SNPLMA Rd 7	\$ 162,414
NICHES: Nearshore Indicators for Clarity, Habitat and Ecological Sustainability	This project evaluated conditions of the nearshore fishery and tested and developed traditional and novel metrics to determine long-term and short-term changes to the nearshore habitat of Lake Tahoe.	SNPLMA Rd 8/ Lake Tahoe License Plate	\$ 343,484
Development of a risk model to determine the expansion and potential environmental impacts of Asian clams in Lake Tahoe	The rapid expansion of Asian clam in one year combined with the demonstrated potential to alter the ecology of the lake via unprecedented levels of algal biomass in the near shore represents a major new threat to Lake Tahoe. This proposal is motivated by concerns of agency staff requests for assistance in developing control methods, predicting likely future locations for clam colonization, and assessing the impact of clams on both a local and entire-lake scale. The major objectives of this project proposal are to advance the state of the science for freshwater bivalve invasion, and to develop a longer-term risk assessment of Asian clam growth, spread and impact.	SNPLMA Rd 9/ Lake Tahoe License Plate	\$ 430,452
Warm-Water Non-Native Fishes in Lake Tahoe	The primary goal of this project is to minimize and control the proliferation of nonnative warmwater fish species within Lake Tahoe. This project includes the assessment of the current distribution of nonnative species and their association with native species within the lake. Temperature data will be coupled with observational data to determine critical temperatures causing behavioral shifts. In addition, fish habitat survey information and fish survey data will be used to develop a GIS layer displaying fish distributions in the littoral zone of Lake Tahoe. This project comprises year one of a three year project. The remaining components of the project (not funded as part of this proposal) include the development of a prediction model and the removal of nonnative fish species.	Lake Tahoe License Plate Program	\$ 62,134
Potential for Pathogen Growth, Fecal Indicator Growth and Phosphorus Release under Clam Removal Barriers in the Lake Tahoe Basin	The project seeks to measure the impact of clam barriers –rubber sheets that are spread on the bottom of Lake Tahoe to create anaerobic conditions to kill Asian clams – on the survival and re-growth of fecal indicator bacteria (FIB) and potential bacterial pathogens, and the release of soluble reactive phosphorus (SRP) from the anaerobic sediments that are produced through the treatment. This information is critical to helping agencies make an informed decision about both the benefits and risks of using bottom barriers to contain the spread of priority invasive species, and will be required as part of permitting associated with large-scale deployments of this technology.	SNPLMA Rd 10	\$ 99,395
Natural and human limitations to Asian clam distribution and recolonization—factors that impact the management and control in Lake Tahoe	The understanding of the interaction between the ecology and management of an invasive species is key toward a successful control program. The major objectives of this proposal are to (1) understand the life history (including reproduction and growth) of deepwater clam populations and their relationship with associated benthic macroinvertebrate communities, chlorophyll concentrations, temperature, water currents and nearshore clam populations as a potential source or sink of recruits, (2) develop the relationship between treatment site selection (i.e., low population density site versus high density population center site) and rate of Asian clam recolonization, and (3) perform a cost efficiency analysis of rubber bottom barrier application that is dependent on recolonization rate and site selection.	SNPLMA Rd 10/ Lake Tahoe License Plate	\$ 293,236
Evaluation of Nearshore Ecology and Aesthetics	Project is intended to synthesize and review current and recently completed projects to inform and derive suitable environmental/ecological indicators, standards and monitoring plans to assess nearshore conditions. In addition, a conceptual model will be produced which links specific sources of pollutants affecting nearshore condition and characterizes relative loading rates, transport mechanisms, impacts and effectiveness of controls.	SNPLMA Rd 10	\$ 112,559
Linking On-Shore and Near-Shore Processes: Nearshore Water Quality Monitoring Bouy at Lake Tahoe.	The objective of this project was to address several practical questions pertaining to the construction, operation, and maintenance of an autonomously deployed near-shore buoy capable of providing continuous water clarity measurements. These results were used to assess where current Lake Tahoe near-shore water quality standards are deficient, providing basin managers with six points to consider when discussing future threshold updates. A cost-effective near-shore monitoring plan was suggested, comprised of shorter-term compliance monitoring using turbidimeter-based systems and longer-term threshold monitoring using transmissometer-based systems.	Lake Tahoe License Plate/ Desert Research Institute	\$ 96,021
Nearshore Water Quality Monitoring at Lake Tahoe	This project is designed to build off of previous research funded by the LTLP which tested the feasibility of using buoys to measure near-shore water quality conditions. This work will address and solve operational issues previously discovered during the initial study. Specifically, the project will include: 1) a continuous one-year long buoy deployment to assess seasonal operations; 2) to test a new anti-biofouling design for the light transmissivity and chlorophyll fluorescence sensors and; 3) the addition of a temperature string and multi-level sampling to assess depth-dependent changes in temperature, transmissivity, and relative chlorophyll. Project report is expected in November of 2011	Lake Tahoe License Plate/ Desert Research Institute	\$ 64,349
The ecology of curly leaf pondweed (Potamogeton crispus) and the potential for control using bottom barriers in Lake Tahoe	This project directly addresses the need for control and management of this new and aggressive invasive plant species. The major objectives of this proposal are to: (1) identify the role the "turion bank" of curly leaf pondweed plays in Lake Tahoe waters and the potential for this bank to contribute to the spread of the invasive species, (2) the susceptibility of this bank to the treatment of three kinds of bottom barriers, and (3) recommend and outline the method which should be employed at the lake to prevent further expansion of the plant.	SNPLMA Rd 11	\$ 103,729
Science to assist policy decisions regarding the prevention of invasive species: testing the survival and growth of quagga mussel in Lake Tahoe	The proposed research will directly assess the habitat suitability of Lake Tahoe and its watershed to support the establishment of quagga mussel by testing the survivability of veliger to sub-adult stage using Lake Tahoe water. This information will be important for supporting the current efforts related to inspection and washing of boats entering Lake Tahoe.	SNPLMA Rd 11	\$ 314,182
Total Estimated Funding			\$ 2,482,593