

## **WATERSHED HYDROSIMULATIONS GRANT**

**Recommended Action:** Adopt Resolution 20-09-07 (Attachment 1) authorizing a grant to the Desert Research Institute (DRI) for up to \$80,000 to complete watershed hydrosimulation modeling and analyze the vulnerability of catchment areas in the Lake Tahoe Basin (Basin) to climate change.

**Executive Summary:** Climate change affects the California Tahoe Conservancy's (Conservancy) land management, forestry, watershed restoration, recreation and public access, and livable communities programs. The Conservancy and partners recently completed an Integrated Vulnerability Assessment of Climate Change in the Lake Tahoe Basin (IVA). The IVA highlighted the likely impacts of climate change to Basin streams at a broad geographic scale. However, it is difficult to translate this broad information into management actions. The proposed watershed modeling grant will enhance Basin managers' understanding of climate change impacts on the Lake and its subbasins, and enable more effective adaptation planning. The DRI will model the hydrology and assess the climate vulnerability for roughly 60 watersheds around the Basin. This level of specificity will allow utility districts and land and resource managers to effectively plan for the impacts of climate change when designing storm water infrastructure and watershed restoration projects, and managing water resources and flooding. The work will address State of California and State of Nevada climate adaptation mandates; help achieve the goals of California Proposition 68; advance Goals 1, 2, and 4 of the Conservancy's Strategic Plan (Protect Basin Communities, Restore Basin Watersheds, and Foster Basinwide Climate Change Adaptation and Sustainable Communities); and position the Basin at the forefront of climate science and adaptation in the western United States.

**Location:** Basinwide

**Fiscal Summary:** Staff seeks authorization to award up to \$80,000 of Proposition 68 funding.

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### **Overview**

#### **History**

Climate change is central to the Conservancy's work because it impacts so many programs, including land management, forestry, watershed restoration, recreation and public access, and livable communities. The Conservancy's Strategic Plan highlights

the Conservancy's commitment to advance California's efforts on climate change planning and adaptation. The Conservancy has been working to integrate climate change into all of its programs, and serve in a collaborative leadership role in Basinwide climate initiatives. In 2017, the Conservancy launched the IVA and Climate Adaptation Action Portfolio (CAAP) process with California and Nevada partners to update key information on climate impacts to the Lake, forests, watersheds, communities, and infrastructure. The Conservancy released the IVA in spring 2020, and will release the CAAP in 2021.

Based on results from the IVA, Basin partners identified additional information needed to help communities and the natural environment better adapt to likely climate impacts. For example, climate projections show more frequent extreme droughts and storms. However, partners lack sufficient information to design storm water infrastructure or stream restoration projects that account for these changes in precipitation patterns. Although the IVA identified hydrological impacts and vulnerabilities at the Basin scale, it did not identify them at the subbasin (or stream) scale. This is important because hydrological impacts will vary depending on topography, slope, aspect, soils, and other factors. For example, the steep and narrow Incline Creek and Third Creek watersheds will drain very differently than the sloping and broad Upper Truckee River watershed. Detailed information about expected changes to stream hydrology will assist managers and engineers in designing appropriate actions and projects.

### **Detailed Description of Recommended Action**

#### **1. Major Elements and/or Steps of the Recommended Action**

The DRI has already developed hydrologic models of the river basins and groundwater systems that encircle Lake Tahoe. Under the grant, the DRI will use these models to simulate how surface water and groundwater respond to climate change based on land-surface variation (e.g., soils, vegetation, topography) in the Basin. This will provide data on surface and groundwater flows, groundwater recharge, and soil moisture.

These models will produce simulations of climate responses at the scale of the roughly 60 subbasins in the Basin (representing all the various streams that flow into the Lake individually). The DRI will analyze the resulting spatially detailed simulations to determine the vulnerability of each subbasin based on climate responses such as amount and timing of streamflow, maximum amount of snow, and soil moisture. In addition, the DRI will produce graphics (maps, charts, and tabular summaries) that display these climate responses visually for the entire Basin. Agencies can use these maps at the regional- and local-planning scale to help determine priorities and risks for future planning and implementation efforts.

The DRI will gather stakeholder input before, during, and after the modeling to ensure that the scientific results will be useful to Basin managers. The DRI will thus identify the most pressing questions and concerns, and target simulations and analyses to address these needs. The DRI will then present and explain results, and identify useful and compelling examples that managers can apply to their own situations with the data produced. The project will also include an online, publicly accessible archive of model

results for use by the Conservancy and other public agencies, stakeholders, and the public.

## 2. Overall Context and Benefits

This grant helps address California and Nevada mandates regarding climate adaptation planning. It helps achieve the goals of Proposition 68 and the Conservancy’s Strategic Plan.

The proposed grant offer a way to supplement and improve the usability of the IVA. Public agencies, utilities, and communities will be able to use the modeling results to gain insights into the risks they face from climate change, and how to adapt to them.

The DRI will develop and provide data and analyses that public utility districts, public works departments, and land management can use to incorporate climate change impacts into storm water and restoration projects, and water resource and flood management. The high-resolution projections from this project allow for localized and specialized information at a scale that will be more useful for planning, design, and management efforts.

Agencies can also use the information to compare the vulnerability of different streams and watersheds, and thus identify overall hotspots in the Basin. Such comparative analyses can help public agencies prioritize their work.

## 3. Schedule for the Recommended Action

If authorized by the Board, staff anticipates the following approximate schedule.

<b>Task</b>	<b>Timeline</b>
Initial Stakeholder Engagement and Tahoe Science Advisory Council Review	Fall 2020
Model Simulations	Winter 2021
Analysis & Documentation	Spring 2021
Online Archiving	Spring 2021
Final Stakeholder Engagement	Spring 2021

## **Financing**

The recommended action will result in the expenditure of up to \$80,000 of Proposition 68 funds.

## **Authority**

### **Consistency with the Conservancy’s Enabling Legislation**

Implementation of this project/program is consistent with the Conservancy’s enabling legislation. Specifically, Government Code section 66907.7 authorizes the Conservancy to award grants to nonprofit organizations for purposes consistent with the Conservancy’s mission.

### **Consistency with the Conservancy's Strategic Plan**

The recommended action supports the Conservancy's Strategic Plan Goals 1, 2, and 4 (Protect Basin Communities, Restore Basin Watersheds, and Foster Basinwide Climate Change Adaptation and Sustainable Communities).

### **Consistency with the Conservancy's Program Guidelines**

The recommended action is consistent with the Conservancy's Grant Guidelines.

### **Compliance with the California Environmental Quality Act**

Pursuant to the California Environmental Quality Act (CEQA) Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.), certain classes of activities are statutorily exempt from CEQA or are exempt because they have been determined by the Secretary of the California Natural Resources Agency to have no significant effect on the environment. One such exemption applies to information collection. (Cal. Code Regs., tit. 14, § 15306.) Staff has evaluated the underlying activities related to the grant and has found them to qualify for this exemption because they involve data collection and research related to modeling, which do not result in a serious or major disturbance to an environmental resource. Staff prepared a notice of exemption (NOE) for the grant (Attachment 2). If the Board approves the grant, staff will file the NOE with the State Clearinghouse pursuant to CEQA Guidelines, section 15062.

### **List of Attachments**

Attachment 1 – Resolution 20-09-07

Attachment 2 – Notice of Exemption

### **Conservancy Staff Contact**

Whitney Brennan, Senior Environmental Scientist      whitney.brennan@tahoe.ca.gov