SACRAMENTO - SAN JOAQUIN
DELTA CONSERVANCY
A California State Agency

PROP 1
GOVERNOR EDMUND G. BROWN, JR.
WATER BOND 2014
RELIABILITY | RESTORATION | RESILIENCE

Proposition 1 Grant Program

2016-17 Staff Recommendation

I. Project Overview

Project Title	Investigations of Restoration Techniques that Limit Invasion of Tidal Wetlands		
Applicant	Regents of the University of California, Davis		
Project Number	Prop 1-1612		
Category	1	**Funding Request**	$107,650.22
County	Contra Costa	**Total Project Cost**	$161,470.22
Score	85.0	**Funding Recommended**	$107,650.22
Staff Recommendation	Approval of funds conditional upon submittal and approval of: (1) A revised budget.		

II. Staff Recommendations

Delta Conservancy staff recommends that the Board approve the Investigations of Restoration Techniques that Limit Invasion of Tidal Wetlands planning project (#Prop 1-1612) proposed by the Regents of the University of California, Davis (UCD) conditional upon the applicant submitting, by May 2017:

(1) A revised budget that addresses the clarifications noted in the budget section, below.

This is a category 1 planning project for a study that will aid in a future, on-the-ground project. This project will provide benefit for the Dutch Slough Tidal Marsh Restoration Project – Revegetation (Phase 2) (#Prop 1-1602), which is also being recommended for funding. Further, this study will provide direct ecological benefit by eliminating invasive plant species on site and reestablishing appropriate vegetation.

Staff has prepared the text below based on staff's best understanding of the information provided in the application. The Conservancy has received comments on the proposal from the Professional Review Panel, the Delta Stewardship Council, the Office of the Delta Watermaster, and any local governments and districts, water agencies, and tribes that responded to the local notification process. Prior to entering into a grant agreement, staff will work with the applicant to further refine the project's scope of work and to address any remaining comments.

III. Project Overview

Project Description: The Investigations of Restoration Techniques that Limit Invasion of Tidal Wetlands planning project will investigate several revegetation techniques to deter colonization of invasive species on restoration sites in tidal wetlands to improve the potential for successful restoration efforts. Thousands of acres of Delta restoration projects are underway or in the planning phase; however, a major constraint on restoration success is invasive species. Conventional control approaches, such as pesticides and mechanical removal, only provide temporary relief to invaded sites. Competition by native species can be a more sustainable management tool; however, this strategy has not been

investigated in a tidal wetland environment. In order to plan for and directly address climate change impacts, restoration project designs and project monitoring frameworks must incorporate robust invasive species management plans. This project will aid in responding to climate change effects by informing restoration managers about revegetation techniques for deterring invasive species at tidal wetlands restoration sites

The project will provide restoration strategies that limit invasion of vulnerable tidal systems, which will be put to immediate use by the Department of Water Resources (DWR) in the planning and implementation of restoration projects, including the adjacent Dutch Slough Tidal Marsh Restoration Project, as well as several other regionally significant efforts. The results of this study will be provided to the Dutch Slough Tidal Marsh Restoration project team and will inform their planting plans for at least the latter portions of the Revegetation Phase of that project.

The University of California Cooperative Extension will lead this project, working with California Conservation Corps (CCC) staff for vegetation management; DWR staff will provide technical assistance. All involved parties have extensive experience estimating and deploying experiments and managing projects across short and long time scales.

Location & Site Description: This study will take place in Dutch Slough, near Oakley, California, Contra Costa County, in complement to the Dutch Slough Tidal Marsh Restoration Project occurring immediately adjacent to the south of the site. The site is owned by the East Bay Regional Park District, and is currently tidal habitat that has a significant population of water primrose and invasive non-native plants. See Attachment 1 for project location map.

Consistency with State Priorities: The benefits of the Investigations of Restoration Techniques that Limit Invasion of Tidal Wetlands project will help implement the priorities of the State. The project's consistency with State plans is listed below. The list below was provided by the applicant and has been reviewed and edited by staff to include consistencies that agree with the intent of the project.

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- Section 79732(a)(12): Assist in the recovery of endangered, threatened, or migratory species by improving watershed health, instream flows, fish passage, coastal or inland wetland restoration, or other means, such as natural community conservation plan and habitat conservation plan implementation.

<u>California Water Action Plan</u>

- Action 3: Achieve the Coequal Goals for the Delta.
- Action 4: Protect and Restore Important Ecosystems.

<u>Delta Conservancy's enabling legislation</u>

- Section 32322(b)(1): Protect and enhance habitat and habitat restoration.

<u>Delta Conservancy's Strategic Plan</u>

- Goal 3: Lead efforts in protecting, enhancing, and restoring the Delta ecosystem in coordination with other governmental and non-governmental entities and citizens in the Delta.
    - Objective 3.2: Lead Delta ecosystem restoration activities consistent with Conservancy authorities, the Delta Plan, and other regional plans and guidance, through a voluntary Delta Restoration Network, and based on adaptive management.

- Goal 4: Establish the Conservancy as a leader in gathering and communication scientific and practical information about the Delta ecosystem and economy.
    - Objective 4.4: Promote shared understanding of key issues related to agriculture, the Delta economy, and restoration based on accurate information.

Delta Plan

- ER P5: Avoid introduction of and habitat improvements for invasive nonnative species.
  ER R7: Prioritize and implement actions to control nonnative invasive species.

Budget: The applicant is requesting $107,650.22 from the Delta Conservancy in Proposition 1 funds. The total cost of the Investigations of Restoration Techniques that Limit Invasion of Tidal Wetlands project is $161,470.22. The applicant is contributing $6,870.00 cash match to the project. Additionally, the Department of Water Resources is contributing $46,950.00 ($21,000 cash, $25,950.00 in-kind) to complete funding for the project.

Staff recommends approval of the project that is conditional upon submittal and approval of:

- Revised budget tables that have consistent cost share amounts, and that include two subcontractors not listed in the budget, along with separate subcontractor budgets tables.

Readiness: The applicant, serving as the Lead Agency, has determined that the CEQA Categorical Exemption (Class 6) for scientific research covers the environmental compliance for the project and has a Notice of Exemption on file with the State Clearinghouse (#2016068323). As required under Section 7 of the Endangered Species Act, all actions under the proposed projects fall under the existing U.S. Fish & Wildlife Biological Opinion for the Dutch Slough Tidal Marsh Restoration Project. This project will be covered under the Incidental Take Permit acquired under the Dutch Slough Tidal Marsh Restoration Project. Additional permits are in progress, and are expected to be complete by April 2017. The property owner, the East Bay Regional Park District (District), is providing access to properties and permission to execute the experiment for the duration of the grant term. The District has agreed to work with the applicant to obtain the necessary District permits to formalize access to the site for the installation of test plots and three years of monitoring, through 2020. If approved, the project will begin shortly after execution of the grant agreement with the Delta Conservancy.

Long Term Management & Maintenance: This category 1 project is designed to inform an on-the-ground ecosystem restoration project at Dutch Slough. The proposed project will provide critical information for the adaptive management of the Dutch Slough Restoration Project. The management of invasive species will be a primary issue of concern once the Dutch Slough Site is introduced to tidal flows. Empirically supported methods for deterring invasive species will be imperative for the long-term sustainability of the project. The project site is part of the Dutch Slough Tidal Marsh Restoration Project, and as such will be maintained in perpetuity after the study proposed in this project is complete.

IV. Scientific Merit

A project's scientific merit is based upon its use of best available science, adaptive management approach, performance measures, and monitoring and assessment plan.

Extensive information in the scientific literature, and broad practical knowledge, supports the idea that wetlands are susceptible to invasion because these aquatic habitats are characterized by dynamic processes that mimic disturbance. Historic and recent simplification of habitat structure and altered flow patterns have facilitated the increase of non-native species throughout the Bay Delta. Some of these species have become harmfully invasive. The objective of this project is to compare the utility of

three revegetation treatments (stage, stock, and species) for providing invasion resistance to water primrose species as measured by invasion rate and fecundity at the Dutch Slough experimental site. Based on best available science, project proponents hypothesize that invasion rate and invasive species fecundity will be slowest and lowest in experimental treatment plots planted with adult stages of native species functionally equivalent to the expected invader that have been collected from already invaded sites. Results will directly inform the adaptive management of the Dutch Slough Tidal Marsh Restoration Project. If invasive species become problematic in the tidal regions of the restored area, native species will be planted utilizing methods optimized from this study.

The project's performance measures, excerpted below, indicate how the project will meet its stated objectives. If the project is approved, staff will work with the applicant to refine performance measures during the negotiation of the grant agreement.

Outputs:

- Experimental treatments are installed by the end of 2017.
- Monthly monitoring has been conducted between 2017 and 2020.
- Three field days for stakeholders held at the project site between 2017 and 2020.
- All data is analyzed and a final report submitted by 2020, at the end of the project period.

As a Category 1 planning project, the proposed project is exempt from providing a monitoring and assessment plan. However, since implementation of restoration techniques is involved, the applicant did include performance monitoring assessments in the experimental plan. Plots will be closely monitored during the first few months post treatment deployment to ensure that the transplanted native species have fully established. During this time, invasive species will be removed from all plots (excluding controls) at an equal rate until the natives species dominate coverage and exhibit healthy growth. Once experimental plots are planted and established, UCD and DWR will conduct monitoring monthly at a minimum through April 2020 for invasive plant metrics (e.g. invader stem density, above ground biomass, species of invader, and fecundity of invader) as well as native plant community metrics (e.g. community richness and diversity, survival of transplants). No treatment for invasive species will occur during the monitoring period.

Environmental data collected under this grant will be managed by a UCD postdoctoral scholar, and made visible, accessible, and independently understandable to general users for free in a timely manner via Figshare and EcoAtlas. The information and data gained in this project will be published in scientific publications (available online) and conference presentations (available to the public).

V. Local Support

The project team has been actively coordinating with affected local agencies, including the East Bay Regional Park District, Ironhouse Sanitary District, Contra Costa County Board of Supervisors, Friends of Marsh Creek Watershed, The City of Oakley, Reclamation District 2137, DWR, UC Cooperative Extension, and California Invasive Plant Council, to discuss issues of mutual interest. However, the applicant did not submit a Contra Costa County Board of Supervisors resolution or proof of consultation with the Delta Protection Commission. Both entities have been notified about the project by the Conservancy; no concerns have been raised. The proposal includes 10 letters of support from State agencies, local districts, non-profit organizations, the academic community, and a County supervisor.

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Attachment 1: Project Location Map