CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION

REVISED PROJECT APPLICATION FORM

Name of Project: San Juan Creek Estuary Restoration Opportunities Assessment

Project Applicant: Trout Unlimited

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REQUIRED INFORMATION

Applications that do not contain a discussion regarding each of the following items will not be considered for inclusion. If the item is included in a detailed supplemental report, please include the report and indicate where the information is located.

ADDITIONAL INFORMATION

Please provide additional information that addresses any of the items on the Application Checklist if it applies to your project. This information will be used for project ranking on the SEP/ECA List. Responses can be provided on separate/additional paper or, if the item is included in a detailed supplemental report, please include the report and indicate where the information is located.

Problem Statement:

The San Juan Creek Estuary Restoration Opportunities Assessment will evaluate opportunities to enhance the San Juan Creek estuary at Doheny Beach State Park to support recovery of regional coastal wetland habitat and endangered Southern California steelhead. This two year project will synthesize historical and current baseline data into an analysis of potential restoration opportunities for future estuary projects, environmental review and permitting, project design and implementation in the San Juan estuary. This project is timely in addressing regional water quality objectives and groundwater issues, sea level rise threats and coastal impact, multiple species habitat and migration plans and the proposed South Orange County Desalination Plant Project at Doheny State Beach.

The San Juan Creek estuary is subject to anthropogenic influences that threaten its ecological integrity. This in turn affects estuary function in terms of resiliency to impacts of sea level rise and climate change, flood control, recreational opportunities, wetland habitat continuity, and aquatic species viability. Restoration and conservation of the San Juan Creek estuary is a priority project within the Southern California Wetlands Recovery Project (WRP) Work Plan and will enable Southern Orange County to address water quality, groundwater management and recreational objectives. Furthermore, the National Marine Fisheries Service identifies developing and implementing an estuary restoration and management plan for San Juan Creek as a high priority action in its Southern California Steelhead Recovery Plan (2012). However, studies and planning for providing critical estuarine habitat for adult and juvenile endangered steelhead have not been performed. This project is likewise timely to address plans of the South Coast Water District for the South Orange County Desalination Plant Project at Doheny State Beach.

The goal of the San Juan Creek Estuary Restoration Opportunities Assessment is to rehabilitate estuarine and associated wetland habitat functions that have been impacted by the development of historic estuarine wetlands. An essential foundation for achieving this goal is to collect and integrate diverse data sets relating to the physical conditions of the San Juan estuary. Towards this end, the Trout Unlimited team including ES Associates as lead technical consultant, will gather and review available data and information on existing and historic conditions, conduct field surveys, prepare topographic GIS maps and LiDar based elevation maps, collect hydrologic and water quality data, and survey habitat conditions. Review of existing conditions of San Juan Creek estuary will include data review of the recently released “Lower San Juan Creek and Seasonal Costal Lagoon Habitat Assessment: Orange County, California” prepared by Chambers Group for South Coast Water District and Municipal Water District of Orange County, to identify data gaps for the Restoration Opportunities assessment. The technical review synthesis will identify opportunities and constraints for potential restoration actions that address regional water quality objectives and groundwater issues, sea level rise threats and coastal impact, multiple species habitat and migration plans and the proposed South Orange County Desalination Plant Project.

One of the main objectives from a fisheries perspective is to characterize estuary conditions due to the fact that estuaries are critical parts of steelhead life history and will support endangered steelhead recovery. There is limited data on Southern California estuary conditions that support steelhead rearing and smoltification. Data from this Assessment will not only benefit anadromous fish and other aquatic species in the San Juan Creek watershed, but will be a model for restoration of other steelhead recovery watersheds with impacted estuaries, and will leverage multi-agency fish passage barrier remediation projects upstream in San Juan and Trabuco Creeks.

Work Plan containing tasks and deliverables compartmentalized into partial funding opportunities, if applicable.

Task 1: Historic and Existing Conditions and Data Gaps Assessment TU and ESA will a) gather and review relevant, available existing data and information on historic and existing Creek habitat and hydrology; b) identify relevant data gaps and confirm the baseline data collection plan; c) gather and review available information from authoritative agencies on potential future conditions with climate change including projected sea level rise, projected flooding and erosion, and projected precipitation, temperature, and hydrological data sets generated from downscaled global climate models. *Deliverable: Draft and Revised Historic, Existing, and Potential Future Conditions Technical Memorandum.*
Task 2: Baseline Data Collection TU and ESA will develop a baseline data collection plan based on the data gaps assessment from Task 1 and in coordination with the South Coast Water District's baseline data collection effort for the South Orange County Desalination Plant Project. Baseline data collection will include as needed: additional topographic/bathymetric survey data and water level recordings in the estuary, monthly depth-integrated water quality data for salinity, temperature and dissolved oxygen and other water quality data; sediment grain size analysis; fish surveys. *Deliverable: Topographic/bathymetric transect survey data; estuary water level data; sediment grain size data; salinity, temperature and dissolved oxygen data.*
Task 3: Prepare GIS database ESA will request and coordinate with the County and relevant stakeholders (i.e., utility agencies and landowners) to gather relevant available existing GIS data (e.g., parcel boundaries and ownership, and infrastructure) available topography data, including the Ocean Protection Council 2010 coastal LiDAR topography data. This task includes additional topography/bathymetry data collection for subtidal portions of the Estuary as well as focused ground elevation transect surveys to supplement and ground-truth available topography. ESA will prepare a topographic base map in GIS using available topography data and topography/bathymetry data and will develop a GIS map of existing habitats based on field reconnaissance and aerial photographs. *Deliverable: GIS database of relevant available existing GIS data; GIS topographic base map; GIS map of existing habitats*
Task 4: Identify Estuary Restoration Objectives TU and SCCWRP will convene a Science and Stakeholder Advisory Committee to provide guidance and input on the goals and objectives for the San Juan Creek Estuary Restoration Assessment project consistent with the WRP Regional Strategy and NMFS Steelhead Recovery Plan. The TU team will facilitate a Restoration Objectives meeting led by Dr. Eric Stein of SCCWRP and will then prepare a San Juan Creek Estuary Restoration Objectives Technical Memo deliverable based on the meeting, which will serve as a section in the Restoration Opportunities Assessment. *Deliverable: Draft and revised Restoration Objectives Technical Memo*
Task 5: Hydrology and Water Quality Assessment TU and ESA will perform an assessment of existing and future hydrology and water quality that considers the appropriate hydrology and water quality conditions for steelhead habitat and estuary habitat including assessments for: watershed hydrology, sediment transport; estuary hydrodynamics, sediment transport, water balance and inlet dynamics; climate change/sea level rise; and water quality focused on steelhead factors of temperature, dissolved oxygen and salinity. Analysis will include review and integration of sediment erosion/accretion data provided in the Chambers 2016 report. *Deliverable: Draft and revised Hydrology and Water Quality Assessment Technical Memo*

Task 6: Habitat Assessment TU and ESA will assess estuary habitat conditions to document existing conditions and identify restoration opportunities. The TU team will work with members of the Science and Stakeholder Advisory Committee to establish estuary habitat criteria for Southern steelhead including target depths and water quality conditions (e.g., salinity, dissolved oxygen and temperature). ESA will compare existing habitat conditions against these criteria based on an assessment of seasonal fluctuations in depth and water quality (salinity, dissolved oxygen and temperature) within the estuary from the results of the baseline data collection (Task 2) and hydrology and water quality assessment (Task 5). ESA will also use the results of the hydrology and water quality assessment for future conditions with climate conditions and potential restoration scenarios to assess potential improvements in habitat conditions for steelhead. TU and ESA will also assess opportunities for steelhead to access the watershed under existing and potential future/enhanced conditions and will predict the future incidence of adult steelhead access to the watershed for the purposes of migration and spawning considering changes in run off patterns from climate change along with sea level rise. *Deliverable: Habitat Assessment Technical Memo and Map.*
Task 7: Opportunities and Constraints Assessment The TU team will identify and assess restoration opportunities and constraints for the San Juan Creek Estuary, including: Identify restoration opportunities and constraints in coordination with project stakeholders including site landowners, adjacent landowners, regulatory agencies, and other relevant groups. This effort is intended to obtain additional background information from stakeholders on opportunities and constraints to guide development of restoration actions. The TU team will assess information from the above efforts to identify opportunities and constraints for potential restoration actions, and prepare a San Juan Creek Estuary Restoration Opportunities Report to summarize restoration opportunities and constraints. *Deliverables: Draft and revised San Juan Creek Estuary Restoration Opportunities Report.*
Task 8: Project Management/ Coordination TU will provide project coordination, contract oversight, invoice and progress report review, stakeholder outreach and coordination, deliverable review, meeting planning and participation. This task also includes TU's travel expenses/mileage and indirect costs (phone, internet, office supplies, postage). TU's support will also include: -Administrative support/assistance: Contract fulfillment, invoice processing, task appropriation, CPA coordination. -CPA accounting service: Invoice processing and contract justification, budget verification, task balances, communication w/ management. Contract closure. *Deliverables: Progress reports and invoices; written meeting summaries.*

Timeline (from funding approval) with milestones and end dates.

TASK	**TIMELINE**
Task 1: Historic and Existing Conditions and Data Gaps Assessment	Months 1 - 4
Task 2: Baseline Data Collection	Months 5 – 12 ♦ Milestone 1: Technical Memo for Baseline Data
Task 3: Prepare GIS database	Months 3 - 7
Task 4: Identify Estuary Restoration Objectives	Months 6 - 9
Task 5: Hydrology and Water Quality Assessment	Months 6 – 18 ♦ Milestone 2: Final - Hydrology and Water Quality Assessment Technical Memo
Task 6: Habitat Assessment	Months 12 – 20
Task 7: Opportunities Assessment	Months 20 – 23 ♦ Milestone 3:

	Final - San Juan Creek Estuary Restoration Opportunities Report
Task 8: Project Management	Months 1 – 24
PROJECT COMPLETE (24 MONTHS)	

Budget broken down into tasks.

Task Number	Task	Amt Requested
1	Existing Conditions	$20,000
2	Baseline Data Collection	$65,000
3	GIS Database	$10,000
4	Restoration Objectives	$20,000
5	Hydro/WQ Assessment	$70,000
6	Habitat Assessment	$40,000
7	Opportunities Assessment	$20,000
8	Project Management/ Coordination	$30,000
TOTAL		**$275,000**

Discuss all permitting requirements, including CEQA, and their status. If exempt, cite applicable statute.

The San Juan Creek Estuary Restoration Opportunities Assessment is a planning study that will inform subsequent planning, design and CEQA analysis for implementation.

As per Article 19 Categorical Exemptions for Title 14 California Code of Regulations, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act (CEQA).

Section 15306. Information Collection

Class 6 consists of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.
Note: Authority cited: Section 21083, Public Resources Code; Reference: Section 21084, Public Resources Code.

Watershed(s) affected.

San Juan Creek watershed.

Describe if this project can be a basis for additional funding from other sources.

Yes, this assessment will yield a prioritized list of estuary enhancement projects that can be implemented in a timely manner with additional funding. This project is multi-benefit to i) protect and increase the economic benefits arising from healthy watersheds, fishery resources and in-stream flow; ii) protect and restore aquatic, wetland and migratory bird ecosystems including fish and wildlife corridors and the acquisition of water rights for in-stream flow; iii) protect and restore rural and urban watershed health to improve watershed storage capacity, forest health, protection of life and property, storm water resource management, and greenhouse gas reduction; iv) protect and restore coastal watersheds including but not limited to bays, marine estuaries, and near shore ecosystems; v) assist in the recovery of endangered, threatened, or migratory species by improving watershed health, in-stream flows, fish passage, coastal or inland wetland restoration, or other means, such as natural community conservation plan and habitat conservation plan implementation.

This project provides significant restoration opportunities for the San Juan Creek watershed that converge on the estuary. This leads to long-term effective management of issues that are specific to San Juan Creek and other watersheds regionally. The San Juan Creek Watershed Workplan (2013) conveys management as an approach to water quality planning that places an emphasis on the "watershed" as the planning area for which solutions to problems that cut across programs and jurisdictions are identified…through utilizing watershed-specific management actions focused on priority constituents of concern and which are supportive of a goal of watershed system integrity. Here, the issues of flood control, groundwater recharge, erosion and sediment dynamics, water quality, endangered and threatened species recovery converge.

Monitoring, success criteria and other tools to track long-term success.

The San Juan Creek Estuary Restoration Opportunities Assessment builds off of the best-available science from the WRP Work Plan and Regional Strategy and Southern California Steelhead Recovery Plan, all of which specify the need for estuary restoration to support wetland and steelhead recovery. Dr. Eric Stein of SCCWRP will convene and lead a Science and Stakeholder Advisory Committee to guide the development of restoration goals, objectives, and opportunities that are consistent with the WRP Regional Strategy. The restoration goals and objectives will be informed by regional objectives from the WRP Regional Strategy, including quantitative habitat targets based on historic habitats at the San Juan Creek estuary and similar archetypes and potential estuary capacity with sea level rise. The restoration objectives will be quantifiable, spatially-explicit, science-derived, and time-bound metrics that will be used to identify and evaluate restoration opportunities.

Measuring success includes:

- Generating a rigorous and user-friendly historical record of relevant data and studies for San Juan estuary as baseline for determining needed improvements.
- Collecting relevant field data to inform estuary restoration strategies and synthesize the data into a Restoration Opportunities analysis.
- Providing a prioritized list of estuary restoration objectives and projects informed by WRP Regional Strategy, NMFS Steelhead Recovery Plan and a Science and Stakeholder Advisory Committee.
- Developing a list of habitat properties and projects to manage/restore estuary habitat to support Southern California steelhead.

Further, this project successfully addresses a priority recovery action of the Steelhead Recovery Plan: "Develop and implement restoration and management plans for estuaries in steelhead bearing watersheds. To the maximum extent feasible, the plan should restore the physical configuration, size and diversity of the wetland habitats, eliminate exotic species, control artificial breaching of the sand bar, and establish effective buffers to restore estuarine functions and promote *O. mykiss* [steelhead] use (including rearing and acclimation) of the estuaries." The San Juan Creek Estuary Restoration Opportunities Assessment will identify and develop feasible opportunities to enhance/restore estuarine habitat per the Recovery Plan's priority actions.

This project also has regional significance by implementing a number of statewide and federal funding priorities identified in a) Coastal Conservancy Prop 1 Chapter 6, b) Coastal Conservancy Mission Statement, c) California Water Action Plan, d) California @50Million Plan, e) CA Climate Adaptation Strategy Plan, f) California Wildlife Action Plan, g) NMFS Southern California Steelhead Recovery Plan and h) San Juan and Trabuco Creeks Watershed Steelhead Recovery Plan. This project will integrate into a popular regional recreational trail use system and surfing area; and provides excellent opportunities for further steelhead signage, climate change awareness and public outreach/education meetings during the planning process as stated in the Work Plan.

Description of how this project is resilient to climate change.

The San Juan Creek estuary is vulnerable to climate change impacts from changing precipitation, runoff, and stream flow patterns as well as species population and food web disruptions, disease, and extinction risk. Estuary dynamics and steelhead migration are controlled by the occurrence and timing of precipitation and rainfall runoff storm events that open the estuary and allow steelhead to access the estuary and migrate upstream. The hydrology of Southern California creeks is such that storms that allow fish to access streams need to occur during the period steelhead would be available for migration (typically December-April). With climate change, changes in the occurrence of droughts and the frequency and timing of significant storm events have the potential to change steelhead access and migration.

The San Juan Creek Estuary Restoration Opportunities Assessment includes an assessment of steelhead to access the watershed under existing and potential future/enhanced conditions (see Task 6 – Habitat Assessment). This assessment will use projected precipitation, temperature, and hydrological data sets from downscaled global climate models to analyze changes in potential steelhead access between the recent past and projected future conditions. Important considerations include the number of years the watershed is accessible as well as the seasonal timing of the access.

In terms of preparing coastal Orange County for seal level rise, the San Juan Creek estuary and Doheny State Beach shoreline are vulnerable to increased inundation, flooding, and erosion with future projected sea level rise. The U.S. Geological Survey's Coastal Storm Modeling System 3.0 (CoSMoS 3.0) results at the San Juan Creek estuary show that with over 6 feet (2 meters) of sea level rise (expected by after 2100 under a high sea level rise scenario), beach erosion will reach the State Beach parking lot and campground. The ability of the beach and berm forming the estuary to migrate landward will affect how the estuary responds to sea level rise. Changes to the dynamics of the estuary are likely to have a profound effect on steelhead and other aquatic organism population dynamics. With adequate sand supply and restoration opportunities that allow for managed beach realignment, the bar-built estuary and associated habitat conditions can be maintained.

The Opportunities Assessment will analyze how the estuary would respond to sea level and climate change without restoration compared to the expected estuary response and evolution under different restoration scenarios. The assessment will also analyze the anticipated change in the frequency and timing of open estuary conditions when steelhead can access the estuary and watershed without restoration and under

restoration scenarios. This analysis will consider the effects of sea level rise on coastal processes as well as on increasing the area, depth, and volume of the estuary.

The Opportunities Assessment will also identify adaptive management and climate change adaptation strategies consisting of triggers and phasing in response to monitoring of project performance relative to established criteria and observed increases in sea level rise and coastal erosion. The goal of the Opportunities Assessment will be to develop approaches that sustain estuary and steelhead habitat beyond 2100 and planning will therefore consider the timeframe through 2100.

Applicant's ability/authority to receive and distribute funds.

Trout Unlimited was formed in 1959 and has since grown to be the largest coldwater fisheries conservation organization in the U.S. TU has over 140,000 members, represented in 150 chapters and 36 State Councils. The South Coast Chapter of TU was founded by the applicant's member George Sutherland in 1989 and has successfully applied for and been granted over $2.2M over the last ten years with successful grant completion. The San Juan Watershed is considered the chapter's home waters so many of the grant funded projects have been within this watershed. Provision for an accountant to track payables and receivables associated with grant activity is included in Project Management.

Is the project to conduct work that is required by agency/entity?
No.

Eligibility Requirements:

1. This project promotes preservation and restoration of aquatic ecosystems in the San Diego / South Orange County region.

2. This project furthers the monitoring and assessment framework in the San Diego Water Board's Practical Vision Chapter 2.

3. This project provides data to inform estuary management decisions that impact a sustainable local water supply