CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION

REVISED PROJECT APPLICATION FORM

Name of Project: Santa Margarita River Estuary Water Quality and Habitat Assessment

Project Applicant: California Trout

Applicant Contact Person: Sandra Jacobson, Ph.D.

Applicant Phone Number: (858) 414-1518

Applicant Email Address: sjacobson@caltrout.org

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 <u>Application</u> <u>Checklist</u> 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 goal of this project is to better define existing water quality conditions of the Santa Margarita River estuary (SMRE) that can impact habitat quality of endangered Southern California steelhead. The SMRE and some SMR tributaries are 303(d) listed as impaired for nutrient levels and eutrophication. Eutrophication is particularly relevant to steelhead habitat conditions because dissolved oxygen levels vary with eutrophication severity and macroalgal abundance. Recent efforts have focused on establishing a working model that meets San Diego Regional Water Quality Board water quality objectives while preserving beneficial uses for the watershed. The Nutrient Numeric Endpoint framework used by state agencies to track water quality compliance translates water quality objectives into numeric ecological response endpoints for which macroalgal abundance and dissolved oxygen levels are proposed endpoints. To meet water quality objectives, different management scenarios are being considered. Some of these will affect the physical characteristics of the estuary and potential steelhead habitat. Based on historical presence of steelhead in the Santa Margarita River and the importance of estuary residence in the steelhead life cycle, a higher resolution view of habitat potential for steelhead (species O. mykiss) in the SMRE is warranted. Data generated from this project will not only fill data gaps for SMRE water quality to help guide nutrient management actions, but will generate a recent data set to further calibrate the receiving water models used by the Santa Margarita River Nutrient Initiative Group, and clarify linkages between nutrient load and biological endpoints. This project is also consistent with the priorities of the emerging Santa Margarita River Water Quality Improvement Plan to "Incorporate monitoring, assessment and adaptive management programs."

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

Task 1: Deploy continuous data loggers in SMR estuary for temperature, dissolved oxygen, conductivity and water level. Suspend loggers in PVC housing @ 8 sites and 2 water levels (surface and near bottom) according to previous logger deployment spatial coverage.

Deliverable: Database and technical report with materials and methods, graphs showing water chemistry values as a function of time and depth, discussion and recommendations.

Task 2: Macroinvertebrate sampling and analysis.

Deliverable: Technical report presenting macroinvertebrate population data and discussion.

Task 3: Macroalgae and Chlorophyll A sampling and determination of macroalgae percent cover, Total Phosphorus and Total Nitrogen sampling using Generalized Random Tessellation Stratification (GRTS) sample design or similar.

Deliverable: Database and technical report presenting water chemistry data, sampling design, results, discussion and recommendations.

Task 4: Rainfall and USGS discharge data graphing for SMR watershed at select gages (e.g. Ysidora 11046000, Sandia 11044350, Temecula - headwaters 11044000)

Deliverable: Technical report showing rainfall and discharge data aligned with sampling data.

Task 5: Data compilation and analysis

Deliverable: Technical Memorandum as in Task 6 that integrates and assesses data from Tasks 1-4.

Task 6: Technical Memorandum

Deliverable: Technical Memorandum that synthesizes data from Tasks 1-5.

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Task 7: Project Management and Coordination Deliverables: Sandra Jacobson, Project Manager for CalTrout, will work with USMCB-Camp Pendleton Water Quality Personnel and Consultants and SCCWRP to provide project management, generate Interim and Final Reports, Invoice Preparation and Submission; Data Presentation to Santa Margarita River Nutrient Initiative Group and one Public Workshop.

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

TASK	TIMELINE		
Task 1: SMRE Water Quality Data Collection	T=0 deploy; download every two		
	months through T = 24 months		
Task 2: Macroinvertebrate sampling and analysis	T=2 months and 9 months;		
	T=13 months and 20 months		
Task 3: Macroalgae and Chl A sampling, MA % cover	T= 0 – 24 months (duration of grant)		
Total Phosphorus, Total Nitrogen sampling			
Task 4: Graph rainfall and USGS discharge data for SMR	T = 0-24 months (duration of grant)		
watershed at select gages			
Task 5: Data compilation and analysis	Quarterly		
Task 6: Technical Memorandum	T = 9 months (interim); Milestone 1		
	T= 24 months (final); Milestone 2		
Task 7: Project Management and Coordination	T = 0 – 24 months		
PROJECT COMPLETE (24 MONTHS)			

Budget broken down into tasks.

Consultant #1 (under contract by Camp Pendleton)

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Task 1	Placing and monitoring data loggers in estuary	\$ 43,400
Task 2	Macroinvertebrate sampling and lab work	\$ 22,872
Task 3	Macroalgae, ChIA, TP, TN sampling and lab work	\$ 81,592
Task 4	Rainfall and USGS gage discharge data graphing	<u>\$ 2,222</u>
Subtotal (Tasks	5 1-4)	\$ 150,086

Consultant #1 / SCCWRP / CalTrout collaboration

Task 5	Data compilation and analysis	\$ 40,800
Task 6	Technical Memorandum and Model Database	\$ 26,400
Task 7	Project Management	<u>\$ 53,000</u>
Subtotal (Tasks	5-7)	\$120,200

Equipment/Supplies/OpEx (Amounts detailed in spreadsheet below)

Eight PME minidot DO/Temp data loggers or similar (\$15,920 included in Task 1) Eight LTC Conductivity and Water Level logger or similar (\$17,840 included in Task 1) Logger accessories, software, anchoring (\$3,000 included in Task 1) Admin Expenses (\$5,000 included in Task 7) Travel and Related Expenses (\$7,000 included in Tasks 1-4 and 7)

Total (no indirect costs)

See Spreadsheet below for detail.

\$ 270,286

Expense Estimates for SMRE Study			24 month	S		
Consultant #1	Field Lead	Field	Field	Scientist	Principal	Admin/Lab
	- Biologist	Tech I	Tech 2	L1		Tech
Rate/hr	\$150	\$95	\$95	\$80	\$190	\$72
Task 1	24	24	0	0	4	0
Task 2	32	32	32	88	8	6
Task 3	192	208	208	20	4	96
Task 4	0	0	0	20	1	6
Total hrs	248	264	240	128	17	108
Total Exp	\$37,200	\$25,080	\$22,800	\$10,240	\$3,230	\$7,776

Subtotal Tasks 1-4 \$106,326

Consultant #1/SCCRP/Ca	ITrout labor	
Ave Rate/hr	\$120	
Task 5	340	
Task 6	220	
Task 7	400	
Total hrs	960	
Total Exp	\$115,200	

Subtotal Tasks 5-7 \$ 115,200

Equipment/Supplies/ OpEx	units		cost/uni	total	
PME Minidot DO/Temp Logg	ers	16	\$995	\$15,920	
LTC Conductivity/Water Leve Loggers	I	16	\$1,115	\$17,840	
Logger Accessories Software,	Anchoring		\$3,000	\$3,000	
Admin Supplies			\$5,000	\$5,000	
Travel Exp			\$7,000	\$7,000	
				\$48,760	
Subtotal Equip/Supp	\$ 48,760				

Total (no indirect	\$270 286	
	<i>Ş</i> 270,200	
included)		

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

These monitoring studies do not involve streambed alteration or incidental take of endangered species in Santa Margarita River estuary. 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.

Santa Margarita River watershed.

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

Yes, additional funding can be pursued from other sources, particularly as it relates to water quality monitoring to better understand water quality and aquatic species habitat in estuaries in Southern California. Moreover, funding to integrate LiDar data into the estuary water quality monitoring will be important to link climate change impacts to estuary structure and function.

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

This project is focused on monitoring to augment earlier water quality monitoring in Santa Margarita River estuary according to standard protocols and QA/QC framework. Measure of success will be based on i) accuracy and precision of data from the continuous loggers, given environmental variability of estuary; ii) integration of water chemistry data with macroalgal density and cover measurements, rainfall and discharge data; iii) contribution to data set used for EFDC and WASP modeling that can inform management actions to decrease nutrient loads in the SMRE to meet water quality objectives and improve aquatic species habitat; iv) generation of an acceptable sampling framework for the estuary which is grid-based; v) clear understanding of seasonal stratification of estuary as a function of space and time.

Measureable Outcomes:

1_Data generated on water temperature, dissolved oxygen, salinity and water depth readings at eight locations in the Santa Margarita River estuary, at both surface and bottom water level; generated continuously over 2 years. This will give quantifiable information on key water quality parameters as a function of time and spatial location in the estuary.

2_Data generated on macroalgae abundance, Chlorophyll A concentrations, total phosphorus (TP) and total nitrogen (TN) concentrations; and macroinvertebrate population number and composition; generated periodically over 2 years. This will give quantifiable information on key nutrient loads and biological endpoints which can inform models of dry-weather nutrient generation *in situ* in the SMRE. 3_Determine whether SMRE is stratified spatially or temporally.

4_Determine if water temperature, dissolved oxygen and salinity values are within acceptable range (Fair – Good) for steelhead viability, the percent of time these values fall within an acceptable range, and under what estuary conditions (tidal influence, freshwater input, estuary mouth open/closed status) water quality conditions change.

5_Data provided to further calibrate EFDC and WASP models

Description of how this project is resilient to climate change.

Estuaries are the front line in terms of climate change impact and potential for resiliency to sea level rise. Along the Southern California coast, people and diverse sensitive species co-exist in a fragile environment that is changing due to nature and urbanization; management of these areas for multiple beneficial uses is a major challenge for resource managers.

The Santa Margarita River estuary is vulnerable to increased inundation, flooding, and erosion with future projected sea level rise. 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 assessment will also provide data for modeling the anticipated change in the frequency and timing of natural and breached open estuary conditions when steelhead can access the estuary and watershed. 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. This study will also recommend 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 Santa Margarita River estuary is also vulnerable to broader 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.

Overall, this project provides a significant opportunity to quantify habitat characteristics for an endangered, climate-change adaptable species of rainbow trout acclimated to higher water temperatures and Mediterranean climate of Southern California.

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

California Trout (CalTrout) is a leading nonprofit organization whose mission is to protect and restore wild trout, steelhead, salmon and their waters throughout California. Abundant wild fish indicate healthy waters, and healthy waters mean a better California for all. Established in 1971, CalTrout solves complex resource issues throughout California - driving innovative, science-based solutions that work for diverse interests.

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Six regional offices with expert staff across the state work at the grassroots level to identify conservation goals and priorities and then implement solutions with stakeholders. The organization is well-positioned to receive and disburse funds, with an annual budget of >6M. We are pleased to offer our significant experience in managing large implementation projects and particularly those that sustainably solve ecobased challenges throughout the state of California.

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 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