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## ***Project 6: Implementing Nutrient Management in the Santa Margarita River Watershed***

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### **I. Introduction**

#### **Project Sponsor**

The County of San Diego, in partnership with the Riverside County Flood Control and Water Conservation District, is the project sponsor for the *Implementing Nutrient Management in the Santa Margarita River Watershed* project, a joint project between the San Diego IRWM Region and the Upper Santa Margarita Watershed IRWM Region.

#### **Project Need**

Nitrogen and phosphorous loading from the Santa Margarita River Watershed can result in low dissolved oxygen (DO) and increased algal blooms in the estuary and stream segments, several of which have been 303(d)-listed for nitrogen (N), phosphorus (P), or eutrophication. Addressing these adverse effects requires use of appropriate water quality objectives (WQOs) based on the level of nutrients a waterbody can sustainably assimilate. This level varies greatly due to site-specific factors such as hydrology, shading, and temperature, which modulate biological response to nutrients. Current N and P WQOs are problematic, in part, because they do not consider site-specific factors. The Nutrient Numeric Endpoint (NNE) framework, an alternative regulatory approach advocated by State Water Resources Control Board (SWRCB) staff and U.S. Environmental Protection Agency (USEPA) Region 9, is currently under development. The *Implementing Nutrient Management in the Santa Margarita River Watershed* project will address data gaps inherent in the NNE framework and refine nutrient WQOs for the watershed.

Depending upon the results of the studies, it is possible that a broader range of discharges to the Santa Margarita River may be naturally sustained, such as recycled water, if the nutrient levels are protective of the beneficial uses.

#### **Project Purpose**

The *Implementing Nutrient Management in the Santa Margarita River Watershed* project aims to establish nutrient WQOs for the Santa Margarita River estuary (Phase I) and ultimately watershed (Phase II) that will lead to the implementation of nutrient reduction and water conservation practices in the watershed.

#### **Project Objectives**

The *Implementing Nutrient Management in the Santa Margarita River Watershed* project seeks to accomplish the following objectives:

- Create and facilitate a Santa Margarita River watershed stakeholder group that will provide feedback, critical review of technical work products, and achieve consensus on WQOs;
- Conduct monitoring and special studies to address data gaps in data required to develop WQOs for the River; and
- Develop proposed nutrient WQOs or nutrient numeric targets for Santa Margarita River estuary based on the NNE approach and local data.
- Maximize stakeholder and community involvement in the Santa Margarita watershed by establishing a stakeholder group
- Develop nutrient WQOs for SMR watershed that are protective of beneficial uses thus encouraging the implementation of BMPs to reduce nutrient runoff from wet and dry weather sources

Table 3-9 provides an overview of the San Diego IRWM Plan objectives that are expected to be directly (●) achieved through implementation of the *Implementing Nutrient Management in the Santa Margarita River Watershed* project. The Upper Santa Margarita Watershed IRWM Prop 84 Implementation Grant Proposal includes an overview of the region's IRWM Plan objectives that are expected to be achieved through the project.

**Table 3-9: Contribution to IRWM Plan Objectives**

Proposal Projects	Contribution to IRWM Plan Objectives								
	A	B	C	D	E	F	G	H	I
Implementing Nutrient Management in the Santa Margarita River Watershed	•	•	•				•		

• = directly related; ◦ = indirectly related

This project contributes to the IRWM Plan objectives in the following ways:

- **A: Maximize stakeholder and community involvement and stewardship.** Stakeholder involvement is central to the goals of the project. The stakeholder group will guide project objectives, identify data gaps, review technical outcomes, participate in water conservation outreach, and achieve consensus on recommending WQOs for the lagoon that are protective of beneficial uses that include protecting current habitats.
- **B: Effectively obtain, manage, and assess water resources data and information.** The project will utilize and expand the existing watershed-wide hydrology and water quality database, leveraged from existing partnerships, to further obtain, manage, and assess water resource data and information.
- **C: Further the scientific and technical foundation of water management.** The project will demonstrate an innovative approach to establishing nutrient WQOs by using open source models, publishing results in peer-reviewed scientific literature, and making presentations to stakeholders, thus improving the technical foundation of water management.
- **G: Effectively reduce sources of pollutants and environmental stressors.** This project will develop nutrient WQOs that will help reduce sources of pollutants, specifically nutrients, and other environmental stressors associated with point and non-point source runoff.

**Project Partners**

Project partners in the *Implementing Nutrient Management in the Santa Margarita River Watershed* project include: the Counties of San Diego and Riverside; the Cities of Temecula, Murrieta, Wildomar, and Menifee; Riverside County Flood Control and Water Conservation District (RCFCWCD); Rancho California Water District (RCWD); Camp Pendleton; U.S. Bureau of Reclamation; San Diego Regional Water Quality Control Board (SDRWQCB); Caltrans; Fallbrook Public Utilities District; Southern California Coastal Water Research Project (SCCWRP); Mission Resources Conservation District; Elsinore Murrieta Anza Resource Conservation District (EMARCD); and Trout Unlimited.

The project is also a partnership between the Upper Santa Margarita RWMG and the San Diego RWMG, as partners in the Tri-County Funding Area Coordinating Committee (Tri-County FACC) of the San Diego Funding Area.

**Project Abstract**

The project consists of three major activities (listed in Task 4) as described below. Please note that this project is part of a joint application between the San Diego IRWM Region and the Upper Santa Margarita Watershed IRWM Region. The *Upper Santa Margarita IRWM Implementation Grant Proposal* includes the same project. While the project descriptions are identical (as each proposal partially funds the whole project), the Department of Water Resources has agreed to transfer the Upper Santa Margarita Watershed IRWM Region grant award for this project to the San Diego IRWM Region to facilitate fiscal management of the project (please refer to Attachment 4). The County of San Diego will serve as the administrator for the overall project. Completion of design is not relevant to this project, because it will not include final design efforts.

The key tasks are summarized below:

**Subtask 4A: Form and Facilitate Stakeholder Advisory Group**

The purpose of this subtask is to form and facilitate discussions among a Santa Margarita River

watershed stakeholder group to guide project activities, review technical work products, and achieve consensus. The group will guide project activities, and review and provide feedback on technical and policy elements. The group will be formed from the existing Santa Margarita River Executive Management Team (EMT), which is comprised of key agencies and land owners in the watershed who meet quarterly to address water management issues.

One of the group's first tasks will be to develop a monitoring program to support the development of nutrient WQOs. This will be done by identifying key questions and conceptual approach, determining specific technical activities and information required, evaluating existing data and identifying data gaps. The resulting products will be the monitoring plan and Quality Assurance Project Plan (QAPP) to be funded by County of San Diego and USMC Camp Pendleton.

This task includes funding for the Principal and Senior Scientist for the field and special studies to attend ten four-hour Stakeholder Advisory Group Meetings, scheduled approximately bimonthly initially and then as needed from June 2012 through December 2016 (10 meetings). Their purpose would be to take input from the stakeholder group regarding the project and provide updates, grant reports, and other information.

#### **Subtask 4B: Conduct Field and Special Studies**

The purpose of this subtask is to conduct monitoring and special studies to address data gaps identified by stakeholders to achieve project objectives. Pending the analysis of data gaps, potential studies will include core field data collection and special studies.

The goal of core field data collection will be to measure ambient nutrient concentrations and conduct algal bioassessment studies. The core studies will focus on site-specific factors controlling algal response that include canopy cover, substrate types, flow rates, and others. Pending the outcome of task 4A, approximately 10 to 15 sites will be sampled a minimum of 1 time per year over a period of 2 years. The studies may include hydrology measurements as well as water quality sampling. Elements of the SWAMP *Standard Operating Procedures for Collecting Stream Algae Samples and Associated Physical Habitat and Chemical Data for Ambient Bioassessments in California* (May 2010) protocol will be followed (includes water chemistry, algal biomass, cover, biovolume, and PHAB).

The special studies will include a characterization of the "natural background" conditions of nutrient concentrations and algal growth. The studies will provide information needed to select appropriate algal thresholds and to determine "background" indicator variability (the margin of error). The special studies may also further address important nutrient sinks (e.g., denitrification), sources (e.g., groundwater), and rates of nutrient transformation processes. They will help characterize the variability in numeric targets. The specific studies required will be better defined during work plan discussions.

The deliverables will include data uploaded to Santa Margarita River watershed database, technical report summarizing data quality and conditions by reach, and technical report summarizing the outcomes of the special studies.

The specific distribution of stations for monitoring and special study between the two regions will be determined from the data gap analysis. Funding of the data collection and special study will be based on the attached budget worksheets independent of station/study location as the project, as a whole, benefits both the Upper Santa Margarita Watershed and San Diego regions. The San Diego and Upper Santa Margarita Watershed IRWM Regions have therefore agreed to a fixed percentage distribution of costs for this project.

#### **Subtask 4C: Develop Nutrient WQOs for Santa Margarita River Estuary**

The approach for developing nutrient WQOs for the Santa Margarita River estuary leverages two major activities: 1) data collection to support modeling in the estuary and watershed to develop TMDLs and 2) ongoing research to develop the estuarine NNE framework, based on dissolved oxygen and macroalgae as endpoints.

In 2007, the SDRWQCB issued a Monitoring Order to San Diego Co-Permittees to collect data to support the calibration and validation of watershed loading and lagoon water quality models, with the specific

purpose of calculating the “maximum load” of nutrients that the estuary can sustain and establishing the Total Maximum Daily Loads (TMDL) (load and waste load allocations, implementation plan, etc.). To assist in this effort, SCCWRP received funding from a Prop 50 grant to conduct special studies to complement the monitoring order. Data collection is now completed and the final baseline report was issued in December 2010. In addition, SCCWRP is providing technical support to the SWRCB by conducting literature review and studies to refine estuarine water column dissolved oxygen objectives and to develop NNE thresholds for macroalgal blooms in mudflats. Final deliverables for this statewide estuarine NNE project will be available in the spring of 2012.

This project will build on these existing efforts by reviewing, with stakeholders, the available data for selection of a macroalgal NNE target, and calibrating and validating an estuarine hydrodynamic water quality model in order to estimate the “maximum sustainable load” of N and P. This work will form the basis for selecting N and P WQOs for the estuary and will inform the river nutrient WQOs by determining nutrient concentrations required to protect downstream (i.e. estuarine) beneficial uses. Estuarine modeling work is being paid for by USMC Camp Pendleton, while project funds will support technical support for selection of numeric targets, stakeholder coordination, and funding for the completion of the Regional Board staff report on the Estuary TMDL.

#### Linkages and Synergies between Projects

The *Implementing Nutrient Management in the Santa Margarita River Watershed* project is also linked to the following:

- Santa Margarita River Conjunctive Use Project (receiving Prop 50 funding through the San Diego IRWMP)
- San Diego Lagoon TMDL Project (receiving Prop 50 funding through SCCWRP)
- Technical Support for Estuarine Nutrient Numeric Endpoint (SWRCB-funded project to SCCWRP)
- Water Augmentation Study (proposed by U.S. Bureau of Reclamation for Upper Santa Margarita IRWMP funding)
- Murrieta Creek Phase II (proposed by RCFCWCD for Upper Santa Margarita IRWMP funding)
- Murrieta Creek Phases III and IV (proposed by RCFCWCD for Upper Santa Margarita IRWMP funding)
- San Mateo Creek Fish Habitat Restoration (proposed EMARCD partnered with Trout Unlimited for Upper Santa Margarita IRWMP funding)
- Reclaim and Recycled Anza Farming Irrigation Runoff Water and Other Nearby Contaminated Water (proposed by Anza/Aguanga IRWMP community for Upper Santa Margarita IRWMP funding)
- Agricultural Waiver Project (proposed by RCWD for Upper Santa Margarita IRWMP funding)
- Sustainable Agriculture (proposed by RCWD for Upper Santa Margarita IRWMP funding)
- Salt and Nutrient Groundwater Management Plan (proposed by RCWD for Upper Santa Margarita IRWMP Funding)
- Implementation of Wildomar Master Drainage Plan (proposed by RCFCWCD for Upper Santa Margarita IRWMP funding)
- Retrofit Public Property with Water Quality Measures (proposed by RCFCWCD for Upper Santa Margarita IRWMP funding)
- Stream Restoration (Santa Margarita Watershed) for Steelhead Trout (proposed by Trout Unlimited for Upper Santa Margarita IRWMP funding)
- Agricultural Lands Stewardship (proposed by EMARCD for Upper Santa Margarita IRWMP funding)

### Existing Data and Studies

This project type, scope and focus and, in some instances, location type is also identified specifically in the following watershed and TMDL implementation plans:

- CDM Federal Programs Corporation. June 2009. Santa Margarita River Lagoon Monitoring Project: Data Usability and Assessment Review, Field Measured Data.
- CDM Federal Programs Corporation. June 2009. Santa Margarita River Lagoon Monitoring Project: Data Usability and Assessment Review, Laboratory Data.

These documents are contained on a supplementary CD that was submitted as part of this Implementation Grant Proposal.

### Project Timing and Phasing

The project is a multi-phased project:

- Phase I (*the subject of this Work Plan*) will involve forming and facilitating discussions among a Santa Margarita River watershed stakeholder group to guide project activities, review technical work products, and achieve consensus. This Phase will support technical support for selection of numeric targets, stakeholder coordination, and funding for the completion of the Regional Board staff report on the Estuary TMDL. Estuarine modeling work is being paid for by USMC Camp Pendleton. The group will identify key study questions, outline the conceptual approach, evaluate existing data, identify data gaps, and determine specific technical activities and information required. Based on this, the group will develop a monitoring program that will include the monitoring plan and QAPP. Field data collection will be used to further refine Phase II.
- Phase II will involve conducting additional monitoring and special studies to address data gaps identified by stakeholders, and develop proposed nutrient WQOs for Santa Margarita River based on the NNE approach using local data.

Phase I of the project can operate on standalone basis because once the consensus is reached, data gaps are identified and required activities are determined, they may be used as guidance for future studies. This will be documented in the work products: monitoring plan and QAPP. Additionally, data are already available to conduct the nutrient modeling of the Santa Margarita River estuary that is being funded by USMC Camp Pendleton. Phase I will support technical support for selection of numeric targets, stakeholder coordination, and funding for the completion of the staff report on the Estuary TMDL.

Phase II of the project can also operate on a standalone basis because it focuses on developing the WQOs of nutrients in the Santa Margarita River watershed. Additional monitoring may be required to develop the Santa Margarita River WQOs and that will be determined in consultation with the stakeholder group.

### Project Map

Figure 3-7 provides a project site map for the *Implementing Nutrient Management in the Santa Margarita River Watershed* project, showing boundary of project, surface waters, groundwater basins, DACs layer, and any proposed monitoring locations.

## **II. Proposed Tasks**

### Grant Administration (GA)

SDCWA will be responsible for administration and processing of the Implementation Grant contract, including tasks associated with compiling and submitting project invoices, quarterly reports, and completion reports for DWR.

#### A. Direct Project Administration Costs

**Task 1 – Project Administration:** This task involves project administration, coordination, and review of all following project tasks. This task is not included within the budget for this project, because funds to support this task will come from the County of San Diego's General Fund.

**Task 2 – Labor Compliance Program:** This project will not involve construction activities or any other activities that would necessitate a Labor Compliance Program.

**Task 3 – Reporting:** In order to assess progress and accomplishments of the project, the following submittals will be completed by each indicated date.

Project Administration Submittals	Date	Status
<b>BEFORE September 1, 2012</b>		
Sample and Analysis Plan	August 31, 2012	Not started.
Quality Assurance Project Plan (QAPP)	August 31, 2012	Not started.
Project Assessment Evaluation Plan (PAEP)	August 31, 2012	Not started.
<b>AFTER September 1, 2012</b>		
Quarterly Reports and Invoices	Quarterly as determined by Start	Not started.
Project Completion Report	October 1, 2016	Not started.

**B. Land Purchase Easement**

A land purchase easement is not required for implementation of this project.

**C. Planning/Design/Engineering/Environmental Documentation**

**Task 4 – Assessment and Evaluation:** Subtasks 4A, 4B, and 4C listed within the Budget for this project (refer to Attachment 4) include the following assessments and/or evaluations. Note that portions of Subtask 4C Develop Nutrient WQOs for Santa Margarita River Estuary, and the entirety of Subtask 4A Form and Facilitate Stakeholder Advisory Group will be completed prior to initiation of the Grant Agreement (June 1, 2012). Deliverables that will result from this task include Monitoring and Special Studies Report (draft and final), and Proposed Nutrient WQOs for Santa Margarita Estuary Report (draft and final).

- Subtask 4A: Form and Facilitate Stakeholder Advisory Group:** This task will be completed by August 31, 2012, and will involve forming and facilitating a stakeholder advisory group. The stakeholder group will guide project activities, and review and provide feedback on technical and policy elements of the project. Stakeholders will also identify key questions and a conceptual approach, and determine specific technical activities and information required to carry out that approach. The group will also evaluate existing data and identify any current data gaps.

The group will develop a monitoring program to support the development of nutrient water quality objectives (WQOs), the products of which will be a Sample and Analysis Plan, QAPP, and PAEP as outlined in Task 3 above.

Data collected during this process include technical evaluations and feedback from stakeholders, which were used to identify data gaps. In addition, stakeholders will provide input on the modeling effort to develop WQOs and assist in development of the QAPP and PAEP.
- Task 4B: Conduct Field and Special Studies:** This task will be completed, after initiation of the Grant Agreement, by October 1, 2016. The studies conducted for this task will address site-specific factors controlling algal response. Approximately 10 to 15 sites will be sampled a minimum of 2 times per year for two year's time. Data generated will include an algal bioassessment, water quality data, and site-specific physical and hydrological data. Monitoring and special studies will address data gaps identified by the stakeholder group (as part of Subtask 4A) necessary to achieve project objectives. Potential studies will include core field data collection and other special studies. Historical data such as collected by the County of San Diego and other stakeholders from tributaries will be used in the overall analysis.
- Task 4C: Develop Nutrient WQOs for Santa Margarita River Estuary:** Before the Grant Agreement, the project team completed the *Santa Margarita River Estuary Investigation* (June

**Comment [JW1]:** Jo Ann, I did not change this but should I have?

2009). In response to Order 13267 from the San Diego Regional Water Quality Control Board, a Santa Margarita River Estuary Investigation was conducted by a subgroup of stakeholders between 2008 and 2009. The data collected during this time will be used to conduct estuary modeling.

The Southern California Coastal Water Research Project (SCCWRP), under a Proposition 50 grant, collected additional information from the Santa Margarita River Estuary to address nitrogen sources within the lagoon. Additionally, the San Diego Municipal Stormwater Co-Permittees contributed funds to the field equipment and data collection of information for the *Bight '08 Estuaries and Coastal Wetlands Eutrophication Study* (December 2008, attached) that included extensive work done at the Santa Margarita River Estuary. The results of that study are currently being analyzed and will be considered for the modeling of estuary processes to be funded by USMC Camp Pendleton.

Proposed future work tasks will be completed by October 1, 2016. These tasks will involve using existing data mentioned above, as well as data collected from the Bioassessment Program, which includes algal and benthic macroinvertebrate bioassessment data, water quality measurements, flow measurements, and other site specific data.

The approach for developing nutrient WQOs for the Santa Margarita River estuary leverages two major activities:

- 1) data collection to support modeling in the estuary and watershed to develop TMDLs, and
- 2) ongoing research to develop the estuarine NNE framework, based on dissolved oxygen and macroalgae as endpoints.

Based on the NNE approach and local data, the nutrient WQOs for the Estuary will be developed by staff of the San Diego RWQCB, as appropriate.

Study Performed	Date	Status
<b>BEFORE September 1, 2012</b>		
4A: Form and Facilitate Stakeholder Advisory Group	August 31, 2012	In process
4B: Santa Margarita River Tributaries Investigation	August 31 2012	Complete
4C: Bight '08 Estuaries and Coastal Wetlands Study (Santa Margarita River Estuary data collection)	August 31, 2012	Complete
<b>AFTER September 1, 2012</b>		
4B: Monitoring and Special Studies Report	October 1, 2016	Not started
4C: Proposed Nutrient WQOs for Santa Margarita River Estuary Report	October 1, 2016	Not started

**Task 5 – Final Design:** Not applicable.

**Task 6 – Environmental Documentation:** This project qualifies as a planning study according to Section 15262 of the California Environmental Quality Act (CEQA) Guidelines, because it will identify programs and projects for possible future actions, but does not have a legally binding effect of the participating agencies. As such, this project will be issued a CEQA Categorical Exemption in August 2012. This project does not require NEPA-related analysis.

Environmental Documentation	Submittal	Status
CEQA Categorical Exemption	August 31, 2012	Not Started

**Task 7 – Permitting:** This project will not involve construction, and was issued a CEQA Categorical Exemption. Therefore, permitting is not applicable to this project.

**D. Construction/Implementation**

**Task 8 – Construction Contracting:** This project will not require construction contracting.

**Task 9 – Construction:** This project will not involve construction.

**E. Environmental Compliance/Mitigation/Enhancement**

**Task 10 – Environmental Compliance/Mitigation/Enhancement:** This project was issued a CEQA Categorical Exemption, which renders it compliant with CEQA. All tasks carried out for this project (studies) will be conducted in a manner that ensures environmental compliance with all other environmental statutes.

**F. Construction Administration**

**Task 11 – Construction Administration:** Construction administration will not be completed as part of this project.