

LAKE ELSINORE AND CANYON LAKE NUTRIENT TMDL WATERSHED-WIDE STORM MONITORING PROGRAM

Cost Estimate

Start Date: 11/18/10

End Date: 6/30/11

Task Number		Managing Scientist	Supervising Scientist/Engineer	Senior Scientist/Engineer	Scientist/Engineer II	Sr. Field Technician	Sr. Field Technician	Field Technician	Project Assistant	Word Processor	Total Hours	Subtotal Cost	Total Cost
#	Description of Task												
1	Project Management and Coordination												
	General Project Management	24.0							12.0	8	44.0	\$6,620.84	6,620.84
2	Conduct Watershed-Wide Monitoring												
	Monitoring Site Repair, Preparation and Equipment Reinstallation (includes ensuring adequate site access and pre-storm maintenance)	4.0			24.0	24.0					52.0		5,347.76
	FY 2010-11 Monitoring (3 Events - includes team of 2, 12 hours on 1st day, 12 hours on 2nd day and 12 hours on 3rd day, plus 4 hours of preparation per event)*	16.0			48.0	48.0	48.0	48.0			208.0		20,204.48
	False Starts (Assumes 2 per year, total of 4, team of 2, 8 hours per false start)	4.0			8.0	8.0	16.0	0.0			36.0		3,716.24
												\$29,268.48	
3	Attend LECL-TAC Meetings												
	Attend total of 3 meetings (per year)	18.0									18.0		3,819.24
												\$3,819.24	
4	Draft and Final Annual Report and Phase 2 Monitoring Plan												
	Prepare Draft FY 10-11 Report	16.0	8.0		32.0					12.0	68.0		8,928.04
	Prepare Final FY 10-11 Report	4.0	3.0		12.0					4.0	23.0		2,886.06
	Prepare Phase 2 Monitoring Plan	16.0								2.0	18.0		3,545.26
												\$15,359.36	
	Total Hours by Employee	102.0	11.0	0.0	124.0	80.0	64.0	48.0	12.0	26.0	467		
	Loaded Hourly Rate	212.18	170.98	144.20	101.97	85.49	85.49	77.25	77.25	75.19			
	Total Labor Cost for Prime Consultant												\$55,067.92

Total Cost	
Labor	\$55,067.92
Travel	\$450.00
Contingency*	\$4,000.00
Other Direct Costs	\$3,975.00
Subconsultants	\$495.00
Total Cost	\$63,987.92

*Contingency is the estimated cost to sample the San Jacinto River at Ramona Expressway. This task will only be used if specifically authorized by LESJWA.

Lake Elsinore and San Jacinto Nutrient TMDL Watershed-Wide Storm Water Monitoring, FY 2010-2011 Scope of Work

Brown and Caldwell will implement the Lake Elsinore and Canyon Lake Nutrient TMDL Watershed-Wide Storm Monitoring Program during wet-weather season 2010-11 in accordance with the existing Sampling and Analysis Plan (SAP) prepared for this project. Storm water samples will be collected during 3 storm events at the following locations in the watershed:

- ◆ Salt Creek at Murrieta Road
- ◆ San Jacinto River at Goetz Road
- ◆ Canyon Lake Spillway
- ◆ San Jacinto River at Ramona Expressway

The TMDL sampling methodology described in the SAP requires the collection and analysis of 8 – 12 discrete, samples over the duration of the hydrograph. Three of these streams drain large tributary areas and tend to flow for two days or more, resulting in a need to deliver bottles to the analytical laboratory in batches over the course of the event to meet sample holding times. The fourth location (San Jacinto River at Ramona Expressway) does not flow at all unless Mystic Lake overflows (this has not occurred for approximately 10 years). The samples will be analyzed for the following field and laboratory parameters:

- | | |
|---|--|
| ◆ pH (field measurement) | ◆ Ammonia Nitrogen (NH ₄ -N) |
| ◆ Turbidity (field measurement) | ◆ Total Phosphorous |
| ◆ Water Temperature (field measurement) | ◆ Soluble Reactive Phosphorous (SRP/ortho-P) |
| ◆ Total Organic Nitrogen (Org-N) | ◆ Total Suspended Solids (TSS) |
| ◆ Nitrite Nitrogen (NO ₂ -N) | ◆ Chemical Oxygen Demand (COD) |
| ◆ Nitrate-N (NO ₃ -N) | ◆ Biochemical Oxygen Demand (BOD) |

Approach/Work Plan

Brown and Caldwell's approach to the Watershed-wide Storm Monitoring Program is to provide the Lake Elsinore and San Jacinto Watershed Authority (LESJWA) with the necessary expertise and experience to successfully complete the dry and wet weather monitoring and reporting proposed for fiscal years 2010 and 2011. Based on our current assignment with LESJWA for this same work, we have the experience and a complete understanding of the issues from initial planning through sampling and reporting. The Brown and Caldwell approach to the project is set forth in the following summary of tasks/work activities.

Watershed-Wide Monitoring

In accordance with the SAP, Brown and Caldwell will conduct water quality monitoring for up to three storm events during fiscal year 2010-11. As mentioned above, we anticipate monitoring at three of the four sites listed in the plan (but have included a small contingency task to cover monitoring of the fourth site in the event that Mystic Lake overflows and triggers a sampling event).

As in fiscal year 2009-10, all samples will be collected this year using automated (ISCO) samplers. The ISCO samplers will be programmed to take samples on a time-weighted basis in order to collect the required 8 – 12 samples over the duration of the hydrograph. Brown and Caldwell will install the samplers at each location prior to conducting sampling. Because some of the monitoring sites sustained damage during high flow conditions last winter (e.g., undermining of the concrete pad due to soil washout), repairs will be necessary to make the sites operational.

Prior to conducting any monitoring, we will deliver all sample tubing and strainers to Babcock Laboratories for decontamination and cleaning. We plan to use new poly bottles for each storm event to eliminate the need for bottle cleaning. Throughout the wet-weather season (November through May), we will continually monitor the weather forecast to keep up to date on upcoming storm events. We will coordinate with RCFC&WCD staff (Steve Clark or Arlene Chun) to determine which storms to mobilize for. In general, the criteria for storm sampling will be a Quantitative Precipitation Forecast (QPF) of one inch (however, smaller events may be pursued depending on the time of the season and number of successful sampling events collected to date). Prior to anticipated storm event, we will send out a sampling crew (two staff persons) to

each site to program the autosamplers, ensure all equipment is functioning, and conduct any maintenance required. We will also ensure that all required sampling gear/equipment, sample bottles, labels, field data sheets, and chain-of-custody forms are prepared for use in the sampling event. When the decision is made to conduct monitoring, we will mobilize an initial sampling crew consisting of two trained staff persons. Because the three sites (Salt Creek at Murrieta Road, San Jacinto River at Goetz Road, and Canyon Lake Spillway) are geographically close together, one crew is sufficient to check on the sites during the initial part of the monitoring event. The initial sampling crew will visit each site to ensure it is functioning correctly and drawing water samples as expected. This crew will record field measurements (pH, turbidity, and water temperature) and complete the field data sheets for each location. They will also troubleshoot problems as they arise (e.g., clearing debris blocking sample intake strainer, adjusting sampler settings). If samplers are operating correctly and no problems arise, the initial crew will return to the office after a normal (approximately 8-10 hour) day. If, however, the samplers are not functioning properly, we will mobilize a relief crew to return to the sites and monitor the progress of sample collection. As needed during the storm event, we will communicate with RCFC&WCD staff regarding the progress of sampling and any issues that arise in the course of performing the work.

In order to meet laboratory holding times for certain analyses (i.e., within 48 hours of sample collection for several analyses), we propose to deliver sample bottles to the laboratory at least once per 24-hour period of monitoring. Sample bottles will be properly labeled and stored in coolers on ice for delivery to Babcock Laboratories. All samples will be handled following strict Chain-of-Custody procedures.

At the conclusion of each monitored storm event, a Brown and Caldwell sampling crew will visit each site to remove the final sampling bottles, download the rain gauge and flow information recorded by the autosampler, and turn off the equipment. We will also communicate with RCFC&WCD staff regarding the completion of sampling activities and overall assessment of the event.

We assume a standard laboratory turnaround time (7 days) to receive analytical results for the storm event. Brown and Caldwell will review and summarize the results using a tabular format.

Attend Selected Lake Elsinore and Canyon Lake TMDL Technical Advisory Committee Meetings

Brown and Caldwell staff will attend up to 3 meetings of the LECL-TAC to provide updates on monitoring activities and present the quarterly summaries of monitoring results. When appropriate, we will develop a PowerPoint presentation that presents the results in a clear format that is easy to understand.

Draft and Final Annual Report

Brown and Caldwell will prepare a draft and final Annual Water Quality Monitoring Report (one report per fiscal year). This report will summarize the results of watershed-wide monitoring activities conducted by Brown and Caldwell and the US Forest Service, along with in-lake monitoring data collected by Montgomery Watson Harza (MWH). We will provide up to fifteen hard copies and an electronic CD of the draft report to the LECL-TAC for review and comment. We will allow six weeks for review of the draft report prior to preparing the final report (this will enable us to distribute the draft report at least 2 weeks prior to a scheduled LECL-TAC meeting, discuss the draft report at the meeting, and discuss the comments and revisions at the subsequent month's meeting). Once all comments have been addressed and the document has been finalized we will deliver up to fifteen hard copies and a CD of the final Annual Report to the LECL-TAC.

Phase 2 Monitoring Plan

Brown and Caldwell will prepare a Phase 2 Monitoring Plan as required by the TMDL. The *Approved Lake Elsinore and Canyon Lake Nutrient TMDL Monitoring Plan* dated February 15, 2006 outlined an intensive watershed study that proposed to expand the existing watershed-wide monitoring to include 13 stations. This document states that the objective of the expanded monitoring was "to address compliance monitoring as well as addressing key data gaps in the watershed." However, based on data collected for the watershed-wide monitoring to date, it is unclear whether expanding the monitoring program to this large degree will produce meaningful results that will better track compliance with TMDL targets or guide future management actions. Brown and Caldwell will meet with staff from the Regional Water Quality Control Board and selected LECL-

TAC members to review the data collected to date, revisit the current goals and objectives of Phase 2 monitoring, and evaluate the feasibility of using alternative monitoring methods (e.g., satellite imagery showing nutrient levels). Based on these discussions, Brown and Caldwell will prepare a draft and final Phase 2 Monitoring Plan for consideration by the Regional Board and LECL-TAC.