

April 29, 2022

City of Lake Elsinore
130 South Main St.
Lake Elsinore, CA 92530

Attention: Ms. Nicole Dailey

**Subject: Scope of Work and Cost Proposal for the City of Lake Elsinore Prop 1 Grant Entitled
“Physical Harvesting of Algal Biomass in Lake Elsinore – Pilot Study”**

1.0 PROJECT DESCRIPTION:

Water quality in Lake Elsinore is vulnerable due to periodic and seasonal algae blooms, especially during hot summer months. This proposal effort is designed to determine the feasibility of improving water quality in Lake Elsinore through treatment or physical removal of algal. The effectiveness, feasibility, and cost-effectiveness of potential abatement strategies will be evaluated through this Prop 1-funded grant opportunity.

2.0 PROPOSED SCOPE OF WORK

Wood Environment and Infrastructure Solutions, Inc. (Wood) will assist the City of Lake Elsinore with services relating to supporting the objectives of this grant. Descriptions of the project tasks are as follows:

- a. **Tasks 1 and 2. Project Administration and Reporting** – Administrative support will include a variety of project management activities in close coordination with the City. This task will include general project management support including coordination meetings, contracting, invoicing, and progress reporting as required by the grant. This will include administrative and contracting support related to the selected vendors, and other sub-contractors (e.g., laboratories) to conduct in-lake treatability studies. Progress reports detailing the work completed during the reporting period (as outlined in Exhibit G of the Prop 1 Agreement) will be provided quarterly. These reports will be submitted to SAWPA for review and inclusion in a program-wide progress report to be submitted to DWR. At project completion a draft and final progress report summarizing activities and the outcome of the full study will be prepared as well.

- b. **Task 3. – Not applicable for this Project**

- c. **Task 4 – Feasibility Studies**

Task 4.1 Pilot Study Vendor/Contractor Selection – Wood will work with the City to review any proposals received following a Request for Qualifications (RFQ) that was issued April 11, 2022 with a due date of May 4th, 2022. The RFQ was submitted to a list of qualified firms/vendors to assist in improving water quality within Lake Elsinore through the treatment of algae in-situ, and/or removal of algal biomass. Following a thorough review of any proposals received, an estimated 3-5 vendors will be selected to participate in the pilot study. Wood will assist with the technical review and selection process, as well follow up feedback to vendors on proposals submitted.

Task 4.2.1 Vendor Meeting/Coordination – Wood will lead and work closely with the City on coordination meetings with the 3-5 selected vendors to conduct the proposed pilot studies.

Task 4.2.2 Master Work Plan – A project-specific Work Plan will be developed catered to each of the different technologies selected to be tested. The proposed work will include two primary objectives: 1) Pilot testing to evaluate the feasibility and effectiveness of a variety of techniques to

remove algal biomass in the short-term (i.e., annual dampening of the bloom cycle); and 2) Pilot testing to determine the feasibility of improving water quality conditions in Lake Elsinore long-term via pilot/small-scale demonstrations that will focus on treating the sources/causes of algal blooms. Empirical data collection will occur for each of these tests including analysis of nutrients, chlorophyll-a, algal communities, and a common cyanobacteria toxin (Microcystin) in samples collected prior to, during, and after each pilot treatment period. Field measures of pH, dissolved oxygen, temperature, conductivity, and water clarity will also be recorded at regular intervals during each pilot study demonstration. The Work Plan will provide descriptions of the algal treatment technologies to be evaluated, as well as field procedures for algal removal as applicable. Sample collection procedures and appropriate analyses required to assess effectiveness of in-situ treatments or removal techniques will be described. A Health and Safety Plan will be prepared for field activities and included as part of the Work Plan.

Task 4.2.3 Algae/Data Collection – This Task will include all field and laboratory-related efforts to perform the selected pilot studies at Lake Elsinore for the selected vendors participating in the study. We currently propose evaluating each vendors technology over a maximum 2-3 week period at different or staggered time windows. Wood staff will work closely with the City leading overall coordination, logistics, and all testing aspects for each technology. Technologies may be tested in cordoned off areas of the lake (up to 10m x 10m), or in small mesocosms set up on the shoreline in designated areas. This task also includes all costs from the vendors selected to participate in the study in response to the RFQ.

Task 4.2.4 Field Report – This task will consist of a preparing a comprehensive report that will summarize the findings of each pilot treatment tested. Analytical, field, and observational results will be summarized, graphically displayed, and described. Photographs of each treatment at different stages will also be provided and described. Full analytical reports and associated raw data will be provided electronically and in Appendices of the report.

- d. **Task 4.3 Feasibility Report** - This task will consist of preparing a comprehensive report that will summarize the overall findings of each pilot treatment tested and the extrapolated feasibility of applying each treatment on a full-scale approach to reduce and maintain low algal concentrations lake-wide. Some technologies may only be applicable to treating smaller cordoned off areas at specific times, while others may provide lake-wide long term solutions. A summary of labor, equipment, infrastructure, and/or chemical needs for the treatments on a proposed full-scale application will be provided. These costs will include expected annual maintenance and the expected lifespan of any equipment required. A number of broad assumptions on lake water quality, variability, and algal bloom dynamics will be drafted (based on existing information) to assess feasibility of any given treatment, as well as provide comparisons among the different proposed approaches. Feasibility will also include an evaluation of the space required and considerations with regard to impacts on recreation in the lake. For any treatments that physically remove algae, the report will also include an evaluation of the logistics for handling the harvested biomass and options for re-use of the harvested algal biomass to help offset the cost of a full-scale remediation program including how the biomass may be used for agricultural soil amendments. Additionally, the potential impacts of full-scale algal biomass harvesting in Lake Elsinore, including potential ecological consequences on existing aquatic life will be provided, as well as the scale of algal biomass effort needed to have a significant impact on water quality in the short-term (intra-annual).
- e. **Task 4.4 Community Engagement** – Community engagement is an important component of this program. Wood will work with the City to provide public announcements about the purpose of the project, the timing and types of treatability studies, and opportunity for the public to visit and possibly participate in the pilot effectiveness studies. A strategy will be developed to educate the

community about the complexities of Lake Elsinore, its vulnerability to algae blooms, and the scope and cost of potential remediation techniques. A public-friendly summary of the final project outcome will also be prepared and shared through various media including the City website and social media.

- f. **Task 8 Project Performance Monitoring Plan** – This task will include the development of a monitoring approach to specifically evaluate the performance of each selected technology and make comparisons among the technologies to assess effectiveness at algae removal, both short and long term. This Plan will then be referenced and included in the Master Project Work Plan (Task 4.2.2)

3.0 PROPOSED SCHEDULE OF CONTRACT

The proposed term of the contract is from May 24, 2022 to June 30, 2023 with an optional one-year extension.

Key Milestone Task Deliverables:

Vendor Selection: July 1, 2022

Final Master Work Plan: July 22, 2022

Pilot Study Demonstrations: August 1 – October 31, 2022

Pilot Study Demonstration Field Final Report: February 28, 2023

Technology Feasibility Final Report: April 31, 2023

Final Project Progress Report: April 31, 2023

4.0 COST PROPOSAL

The total proposed cost to support this effort is \$236,920, inclusive of all labor, supplies, subcontractors, and vendors. A cost proposal itemized by task is provided in **Attachment A**.

If you have any questions, please contact me or John Rudolph at your convenience. We look forward to supporting this critical first step to help identify and test viable solutions to directly address algae blooms and associated water quality impairment in Lake Elsinore.

Sincerely,




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ATTACHMENT A - COST PROPOSAL

TASK SUMMARY – ALL COSTS

Wood Environment & Infrastructure Solutions, Inc.

PHYSICAL HARVESTING OF ALGAL BIOMASS IN LAKE ELSINORE - PILOT PROJECT				
Proposed Budget				
Budget Item Description	Computation			Total Cost
	\$/Unit (Avg)	Unit	Quantity	
Category (a) Project Administration				
Task 1 - Project Management	\$ 148	Hour	45	\$6,650
Administrative/Staff Costs. Includes..				
Task 2 - Reporting	\$ 148	Hour	45	\$6,650
Administrative/Staff Costs. Includes...				
Subtotal				\$13,300
Category (b) Land Purchase/ Easement				
Task 3 - Not Applicable				\$0
Subtotal				\$0
Category (c) Planning/Design/Engineering/Environ. Documentation				
Task 4 Feasibility Studies				
Task 4.1 Selection of Qualified Consultant/Contractors				
Task 4.1.1 Develop Request for Proposals (RFP)/Request for Statement of Qualifications (RFQS)/Award Contracts	---		0	\$ -
Task 4.1.2 Kick-Off Meeting	---		0	\$ -
Task 4.1.3 Pilot Study Vendor/Contractor Selection	\$ 47	Hour	90	\$ 4,200
Task 4.2 Work Plan/Sampling Plan/Field Activities				
Task 4.2.1 Vendor Meeting/Coordination	\$ 151	Hour	46	\$ 6,960
Task 4.2.2 Master Work Plan	\$ 143	Hour	120	\$ 17,120
Task 4.2.3a Algae/Data Collection (Wood Labor)	\$ 130	Hour	320	\$ 41,700
Task 4.2.3b Algae/Data Collection (Analytical)	\$ 439	Each	45	\$ 19,740
Task 4.2.3c Algae/Data Collection (Vendor Costs)	\$ 10,000	Each	5	\$ 50,000
Task 4.2.4 Field Report	\$ 126	Hour	192	\$ 24,140
Task 4.3 Feasibility Report	\$ 135	Hour	292	\$ 39,500
Task 4.4 Community Engagement	\$ 131	Hour	80	\$ 10,480
Task 5 CEQA Documentation				\$0
Task 6 Permitting - Not Applicable				\$0
Task 7 Design - Not Applicable				\$0
Task 8 Project Performance Monitoring Plan	\$ 144	Hour	68	\$9,780
Subtotal				\$ 223,620
Category (d) Construction/Implementation				
Task 9 Contract Services - Not Applicable				\$0
Task 10 Construction Administration - Not Applicable				\$0
Task 11 Construction/Implementation Activities - Not applicable				\$0
Subtotal				\$0
Total Project Costs				\$236,920
Percentage Contribution by Funding Source				100.0%

ATTACHMENT A - COST PROPOSAL

TASK DETAIL – WOOD LABOR ALONE

Wood Environment & Infrastructure Solutions

WOOD STAFF, TITLE	HOURLY RATE	Tasks 1 and 2 - Project Management and Reporting		Task 4.1.3 Pilot Study Vendor/ Contract Selection		Task 4.2.1 Vendor Meeting/ Coordination		Task 4.2.2 Master Work Plan		Task 4.2.3 Algae/Data Collection		Task 4.2.4 Field Report		Task 4.3 Feasibility Report		Task 4.4 Community Engagement		Task 8 Project Performance Monitoring Plan		Project Total	
		HRS	COST	HRS	COST	HRS	COST	HRS	COST	HRS	COST	HRS	COST	HRS	COST	HRS	COST	HRS	COST	HRS	COST
Chris Stransky, Principal (Aquatic Sciences & Toxicology Group Manager, CA)	\$ 185.00	16	\$ 2,960	12	\$ 2,220	8	\$ 1,480	24	\$ 4,440	20	\$ 3,700	16	\$ 2,960	40	\$ 7,400	8	\$ 1,480	12	\$ 2,220	156	\$ 28,860
John Rudolph (Project Manager, Senior Scientist)	\$ 165.00	24	\$ 3,960	12	\$ 1,980	24	\$ 3,960	40	\$ 6,600	100	\$16,500	32	\$ 5,280	80	\$13,200	16	\$ 2,640	24	\$ 3,960	352	\$ 58,080
Nicholas Jernack (Staff Aquatic Scientist)	\$ 110.00	0	\$ -	0	\$ -	0	\$ -	24	\$ 2,640	60	\$ 6,600	60	\$ 6,600	80	\$ 8,800	16	\$ 1,760	16	\$ 1,760	256	\$ 28,160
Kate Buckley (Staff Aquatic Scientist)	\$ 115.00	0	\$ -	0	\$ -	8	\$ 920	16	\$ 1,840	60	\$ 6,900	60	\$ 6,900	60	\$ 6,900	40	\$ 4,600	16	\$ 1,840	260	\$ 29,900
Terry McNabb (AquaTechnics)	\$ 100.00	4	\$ 400	0	\$ -	6	\$ 600	16	\$ 1,600	80	\$ 8,000	24	\$ 2,400	32	\$ 3,200	0	\$ -	0	\$ -	162	\$ 16,200
Marissa Cuevas (Senior Project Coordinator, CA)	\$ 130.00	46	\$ 5,980	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	46	\$ 5,980
		90	\$ 13,300	24	\$ 4,200	46	\$ 6,960	120	\$17,120	320	\$41,700	192	\$24,140	292	\$39,500	80	\$10,480	68	\$ 9,780	1232	\$ 167,180