

**SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT**  
**REQUEST FOR QUALIFICATIONS: CLEAR LAKE FIELD SAMPLING, LABORATORY**  
**ANALYSIS, AND MODELING**

**SECTION 1. INSTRUCTIONS TO BIDDERS**

The Bidder's complete qualification package (Package) to provide the services detailed are to be enclosed in a sealed envelope marked "Clear Lake Sampling and Analyses" and addressed to:

Bryan Nece  
Administrative Officer  
3535 Harbor Blvd., Suite 110  
Costa Mesa CA 92626

All supplemental materials requested within this RFQ must be attached to the Package. Any unauthorized conditions, limitations, or provisions attached to this RFQ may be cause for rejection.

All Bidders should inform SCCWRP in writing of their intention to submit a qualification package by December 28, 2019 via email ([bryann@sccwrp.org](mailto:bryann@sccwrp.org)), FAX (714-755-3299) or letter mail. Although this notification is not mandatory, it is necessary to ensure receipt of future updates to the bid notification. SCCWRP will hold an optional bidder meeting via conference call at January 4, 2019 at 10 am PDT. Access to teleconferencing information will be sent out to those to have sent an intent to bid and will also be posted on the RFP page of SCCWRP's website ([www.sccwrp.org](http://www.sccwrp.org)). This meeting is intended to provide Bidders the opportunity to ask questions and request clarifications about this document. SCCWRP's responses to will be sent to the Bidders by E-mail and posted on the SCCWRP web site.

If a bidder wishes to withdraw its Proposal, the Bidder may do so without prejudice sending an email to Bryan Nece ([bryann@sccwrp.org](mailto:bryann@sccwrp.org)) at any time before the time established for the opening of qualification packages.

Sealed qualification packages must be received at SCCWRP's offices, 3535 Harbor Blvd. Suite 110, Costa Mesa CA, by the hour of 5:00 pm on January 18, 2019, at which time, the Administrative Officer will open the qualification packages. Packages received by facsimile or E-mail will not be accepted.

This solicitation for qualifications shall not be construed as obligating SCCWRP to award a contract or to pay any compensation for the information solicited.

SCCWRP anticipates awarding a contract based on the qualifications packages received to provide the following technical support services to assist in one or more of the following for Clear

Lake in Lake County, California: 1) conduct high resolution temporal and spatial sampling, 2) conduct laboratory analyses, and 3) conduct data analyses modeling of Clear Lake (see details below).

## **SECTION 2. EXPERTISE SOUGHT**

Harmful cyanobacterial blooms (cyanoHABs) have gained international attention over the past decade due to increased frequency and severity of these events, particularly in lakes and reservoirs, which contain a large fraction of the world's drinking and irrigation water supply. CyanoHABs cause many water quality issues such as impairment of recreational uses, reduced aesthetics, low dissolved oxygen concentrations, and taste and odor problems in drinking water. However, the production of cyanotoxins is the most concerning issue due to the health impacts these substances pose to humans, domestic pets, wildlife and livestock. Clear Lake, located in north-central California, is emblematic of this cyanoHAB problem. Well-documented cyanobacterial blooms occur throughout much of the year, characterized by planktonic and benthic cyanobacterial species capable of producing toxins. Multiple cyanotoxins have been documented in the lake, but except for microcystins, their spatial and temporal distributions are poorly understood. Despite the occurrence of significant concentrations of cyanotoxins, the lake is a source of drinking water for 18 municipal drinking water companies. There is a potential for several cyanotoxins to be present including, but not exclusive to, microcystins, anatoxins, cylindrospermopsins, saxitoxins and nodularin.

SCCWRP anticipates receiving an award from the State Water Board to conduct the first phase of proposed research in Clear Lake. Our research entails extensive new chemical, physical and biological measurements in Clear Lake, with the long-term goal in a subsequent phase of understanding and synthesizing into a predictive model how environmental factors drive the annual rhythms of cyanobacterial community structure, blooms, and the production of cyanotoxins. We will deploy a combination of cutting-edge sensing and observational technologies to obtain high-resolution mapping of the vertical and horizontal spatial and temporal patterns, and small-scale heterogeneity, of water column physics, chemistry and biology. Observations will be conducted from February through October to characterize bloom distributions and successions. Our technologies will include an autonomous, continuously recording, vertically-profiling instrumented device (a Wirewalker) to characterize the water column centrally in the lake, an autonomous underwater vehicle (EcoMapper) that will characterize subsurface vertical heterogeneity in the three major lobes of the lake, and a small Unmanned Aerial System (sUAS) to remotely sense the surface heterogeneity of algae/cyanobacteria throughout the lake. We will characterize plankton community structure, cyanobacterial species composition and cyanobacterial physiology from molecular (genomic) scales to the scale of the whole community to document succession within the cyanobacterial community and gene expression to identify the specific environmental triggers of cyanotoxin production. Our work will focus on 5 cyanotoxin groups (microcystins, anatoxins, cylindrospermopsins, saxitoxins and nodularin).

SCCWRP is requesting qualifications from consultants to work as a team with SCCWRP to conduct field sampling and laboratory analyses of Clear Lake.

Specifically, the objectives of this technical assistance are as follows:

- Provide expertise in molecular approaches to sampling, identification, and description of lake phytoplankton and cyanobacteria cyanoHAB species composition;
- Deploy and map high-resolution water column chemical and physical patterns and heterogeneity will be determined using: 1) a Wirewalker and 2) EcoMapper or similar technology. Additional descriptions of these technologies are found in Appendix I.
- Provide expertise in analysis of the above data to investigate drivers of cyanotoxin production and in the development of predictive models (empirical or mechanistic) to link environmental drivers to ecosystem responses.

The successful bidder will provide the scope of services described in this RFP for up to a period of seven years on an annual renewal basis. This work is not guaranteed, and the quantity of these task orders is currently unknown.

### **SECTION 3. PROPOSAL SUBMISSION**

#### *Qualification Packages*

**Bidders are required to submit a cover letter that is single sided, 12-point font, not to exceed 3 pages. The cover letter summarizes the collective qualifications and experience of the consultant team they are proposing as support.** This cover letter should specify up to three co-principal investigators for the contract, plus a lead investigator. For each consultant on the team, a curriculum vitae of maximum length of 10 pages, one sided page, 12-point font Roman, which demonstrates their qualification and experience. Included in this curriculum vitae should be a narrative description of expertise and qualifications. In addition, billing rates should be provided in an additional table in the cover letter for each lead or co-principal investigator of the team.

In addition, the following information must be included on the cover page (Table 2).

Table 2. Additional information that must be included in the cover page (cut, paste and complete)

Name of corporation, partnership, or individual in whose behalf the bid is submitted:	
Address: _____	
City/State/Zip: _____	
Phone: _____ FAX: _____ E-mail: _____	
Tax Identification No.: _____	
Name	Title

I certify under penalty of perjury under the laws of the State of California that the foregoing representations are true and correct. Further, I certify that I have carefully examined the proposed qualifications, and hereby propose to perform and complete all the work for this project as specified to the satisfaction of SCCWRP, at the price(s) indicated within this document. In the event that this proposal is accepted by SCCWRP and the said work is awarded to the undersigned bidder, the said bidder agrees to sign and date, within seven (7) calendar days after it has been delivered or mailed to the bidder or its authorized agent, the Agreement for the performance of the work.

Signature of Bidder: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

#### **SECTION 4. QUALIFICATION PACKAGE EVALUATION PROCESS AND CRITERIA**

Following the opening of qualification packages, SCCWRP will evaluate and score them. Each package submitted will be evaluated using the following criteria and scoring system, with a maximum possible score of 100. Each qualification package will be rated on a scale of 0 to 100 points, based upon the bidder's demonstrated expertise in the area sought.

- Qualifications (50 points): Qualifications among team members should include:
  - 1) academic background(s) in (a) ecological and physiology of aquatic ecosystems, with demonstrated expertise in freshwater harmful algal blooms, (b) development of tools and techniques for distributed robotic systems, with experience in deployment and use of Wirewalker and EcoMapper or equivalent technology to investigate high resolution spatial data patterns, (c) genetic barcoding, metagenomics and metatranscriptomics science, with a focus on aquatic microbial communities, and (d) data analyses and/or empirical or dynamic modeling of microbial populations.
  - 2) Experience working interdisciplinary teams to conduct research on physical, chemical and biological drivers on harmful algal blooms and a strong track record of publication of such scientific research in peer-reviewed journals.
- Experience (40 points): Points for experience will be awarded based on the extent of experience highlighted in the qualifications above.
- Cost (10 points): Points will be awarded on cost based on the average billing rate of the top four (or fewer) team members identified as principal investigators in the cover letter of your qualifications package.

The bidders receiving the highest score will be awarded a contract to perform the work. SCCWRP does not anticipate splitting or awarding work among multiple teams.

## Appendix I: Description of Wirewalker and EcoMapper Technology

**Wirewalkers (delmarocean.com)** are devices that actively move an instrument package up and down a moored line using only wave power. Because these devices require no power, they can be deployed for long periods of time without service, for up to 1-month deployments. The device provides a platform for attaching sensor packages that record continuously as the instrument moves up and down in the water column, yielding high-resolution 2-D information (vertical profiles through time) of water column chemistry and physics at the location of the mooring that carries the Wirewalker. The vertical excursion of the instrument in this study will be near-surface to below the euphotic zone. The Wirewalker will need to continuously and simultaneously records depth, conductivity, temperature, chl-a fluorescence and dissolved oxygen (DO); RBR Concerto (<https://rbr-global.com/>). A reagent-free optical nitrate sensor and a phosphate sensor will also be attached to the Wirewalker. It will be deployed at a single location, near the southeast end of the northwest lobe of the lake, as blooms originating in this largest lobe and accumulating towards the southeast lobes due to wind movement should be captured most effectively at this location. The instrument will be deployed February through October. The information provided by the Wirewalker and its instrumentation will be exceptionally important in characterizing the daily, weekly, monthly and seasonal changes in chemistry and water column dynamics and will constitute an essential dataset for modeling.

**An EcoMapper (www.ysi.com)** is an untethered, propelled autonomous underwater vehicle that can perform preprogrammed missions. The EcoMapper carries continuously recording sensors similar to the Wirewalker (temperature, conductivity, chl-a fluorescence, DO). The instrument will continuously rise and sink as it moves through the water on its mission, creating high-resolution, 2-D spatial maps (vertically and horizontally). The EcoMapper will be deployed during each of the field campaigns during Year 1 of the project with the goal of characterizing the spatial heterogeneity of the lake around our main sampling site (location of the Wirewalker). Three transects lines will be conducted from the location of the Wirewalker to the farthest end of each of the three major lobes of the lake.