

## An Amendment to the Hypolimnetic Oxygenation Proposal

The concerns raised by members of the Blue Ribbon Committee (BRC) at their meeting on May 25<sup>th</sup>, 2022, about the potential for elevated metals concentrations from the operation of a hypolimnetic oxygenation (HO) system have been addressed in the document, *Summary Report on Metals and Metalloids in Clear Lake Based on the Historical Data*. That report showed that the potential for elevated metal and metalloid concentrations was non-existent, based on 50 years of Clear Lake data.

One of the suggestions made by the BRC to address that perceived potential was to ask the project team to conduct a series of laboratory sediment core flux experiments to quantify the metals' release rates. With the data analysis presented in the Summary Report, **we believe that the fundamental question that such a laboratory experiment could address has already been answered – the addition of dissolved oxygen to Clear Lake will not increase metal concentrations**, and in the most critical cases (mercury and arsenic) will actually decrease in-lake concentrations. However, we have prepared a budget to conduct such an experiment if that is still the wish of the BRC – See **Supplement 1** (below).

The proposal team does, however, believe that both the project and the community would benefit if metals sampling and analysis were conducted during both years of the HO pilot project. This is particularly important as it is our understanding that the routine DWR metals sampling will soon be discontinued. This is described and budgeted in **Supplement 2** (below). The cations included in the analysis would be: Al, B, Ca, Fe, K, Mg, Na, P, Si, As, Ba, Be, Cd, Co, Cr, Cu, Li, Mn, Mo, Ni, Pb, Se, Sn, Sr, Ti, U, V, Zn, Ag, Sb, and Tl. It should be noted that mercury monitoring is already proposed to be conducted by the USGS.

Finally, it was recommended by the BRC that funding be included to help support the costs of the proposed Project Advisory Group that will be focusing on outreach.

### Supplement 1

Laboratory core flux experiments

- 4 cores from the Oaks Arm (3 sites), Upper Arm (1 site), Lower Arm (1 site) → 20 cores
- Duplicate oxic conditions and anoxic conditions for each core
- Overlying water sampled 10 times over 20 days for ICP-MS analysis → 200 samples
- Project has a dedicated technician/graduate student
- **Cost \$135,000**
- Best case scenario is the lab results agree with the lake data.

### Supplement 2

In situ water sampling for metals during the HO pilot

- 3 sites in Oaks Arm and 1 site in each of Upper Arm and Lower Arm
- Top and bottom water samples every 2 months for the two years of the HO pilot
- → 120 samples/year
- Samples collected as part of the proposed monitoring
- **Cost \$40,000**
- **This should be done** whether or not Supplement 1 is conducted

Note: ICP-MS analysis will be performed at the UC Davis Interdisciplinary Center for Inductively-Coupled Plasma Mass Spectrometry. The elements to be analyzed will include the metals and metalloids referred to in the *Summary Report on Metals and Metalloids in Clear Lake Based on Historical Data*.

### **Supplement 3**

Project Advisory Group to Support Community Outreach

- 10 active committee members (estimated 4 meetings/year)
- Annual stipend of \$500
- **Two years, 10 members → \$10,000**

**Our recommendation is that the BRC not pursue Supplement 1, but instead consider adding the funding needed for Supplement 2 and Supplement 3 ( a total of \$50,000).**