

Improving the Value of Toxicity Testing: Steps Necessary to Initiate the SMC Toxicity Quality Assurance Study

Background

The [Southern California Stormwater Monitoring Coalition](#) (SMC) completed a [series of intercalibration studies](#) in 2016 examining reproducibility of stormwater toxicity tests among nine laboratories that produce water-quality data for State regulatory purposes. The intercalibration exercise involving the *Ceriodaphnia* reproduction test identified an unexpected and alarming degree of variability in results among the participating labs, with labs unable to reproduce consistent data during multiple rounds of testing. Consequently, the SMC recommended a follow-up study to investigate the causes of variability in the *Ceriodaphnia* reproduction test to improve the quality and confidence in test results.

The proposed follow-up intercalibration study is critically important to the SMC and to stormwater management agencies across Southern California. Stormwater management agencies cumulatively spend nearly \$1 million annually conducting toxicity testing, and the results are used to make management decisions with key regulatory implications. SMC members and other stormwater managers need assurance that they can generate consistent, reproducible results using the *Ceriodaphnia* reproduction test.

Proposal

The SMC is proposing to conduct a quality assurance study for the *Ceriodaphnia* reproduction test that will identify and eliminate the largest sources of toxicity testing variability. The SMC will use the findings of the quality-assurance investigations to provide specific guidance to laboratories. The final round of the intercalibration study will be dedicated to pre-qualifying laboratories for future SMC sample testing using the *Ceriodaphnia* reproduction test.

In total, this project will cost \$700,000. Approximately half of this cost is for laboratory testing and half of the cost is for study coordination and technical support including sample collection and distribution, sample verification, and data management and analysis, and updates to the SMC Laboratory Guidance Manual.

To minimize costs, agencies that participate in the study will seek a temporary tradeoff from their routine, permit-mandated toxicity testing, and then redirect these resources to the intercalibration follow-up study. In this way, an estimated \$350,000 of in-kind monitoring services will be freed up for improving the testing and building confidence in results through an essentially cost-neutral tradeoff.

Additionally, the SMC will require \$350,000 to cover the coordination and technical support of the study. This cost will be shared equally by the SMC members that participate in the study. The cost to each participant will depend on how many agencies opt into the study, and will be broken out over two years:

| If the number of participating agencies is ... | ... then the cost per agency will be ... | | |
|--|--|----------|----------|
| | Year 1 | Year 2 | Total |
| 10 | \$17,500 | \$17,500 | \$35,000 |
| 9 | \$19,444 | \$19,444 | \$38,889 |
| 8 | \$21,875 | \$21,875 | \$43,750 |
| 7 | \$25,000 | \$25,000 | \$50,000 |
| 6 | \$29,167 | \$29,167 | \$58,333 |

Because of the cost, the SMC will administer the study through a Supplemental Implementation Agreement (SIA), which is permissible under the SMC's Master Agreement for just such a purpose. One advantage of using the SIA is the ability to add SMC non-member agencies to the project. Wastewater treatment agencies who also commonly utilize the *Ceriodaphnia* reproduction test have expressed a desire to partner on this study, which would help to offset costs for SMC member agencies.

Next Steps

SMC members interested in participating in the stormwater toxicity testing quality assurance study should complete the following three steps prior to September 5, 2017 in order to make a fund/no fund decision at our next SMC Steering Committee:

- 1) **Review the draft Supplemental Implementation Agreement:** The agreement needs to be reviewed for accuracy and acceptability. This may require preliminary management or legal review, and:
- 2) **Propose your monitoring tradeoffs to your regulator:** Your regulator will only consider approving a tradeoff plan if you articulate specifically what monitoring you are proposing to temporarily suspend. You should identify exactly which sites, how many storm events, and which test species and endpoints, and:
- 3) **Commit to your share of the study's coordination cost:** The cost per study participant will depend on the number of participants. You should confirm how much funding your agency will be able to commit to providing for the study over the next two years.