

San Francisco Estuary Institute

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MEMORANDUM

Date: March 15, 2010

To: RMP Technical Review Committee

From: Susan Klosterhaus, SFEI

Subject: RMP support for the NOAA Mussel Watch Contaminants of Emerging Concern (CECs) Early Warning Network: California Pilot Project

Background

In collaboration with SCCWRP, the State Water Board, US EPA, and USGS, RMP staff have provided some technical, logistical, and field support to the NOAA Mussel Watch CECs Early Warning Network: California Pilot Project, which is being conducted in 2010. The goal of the project is to determine which CECs should be added to the list of analytes for the national NOAA Mussel Watch Program by first conducting a pilot study focused on mussels and passive samplers exposed to coastal California surface waters. A list of CECs to be analyzed in the project was developed in October 2009 and includes over 100 pharmaceuticals and personal care products (PPCPs), and suites of polybrominated diphenyl ethers (PBDEs), polybrominated biphenyls (PBBs), alternative flame retardants, perfluorinated compounds (PFCs), alkylphenols, and pesticides (pyrethroids, organochlorines, organophosphates, other current use pesticides), as well as the standard 'legacy' list of organic chemical analytes (PCBs, PAHs, butyltins).

Up to 80 sites will be selected, of which at least 25 have been selected from the core Mussel Watch sites. Resident mussels were collected from the four core sites in San Francisco Bay (Yerba Buena Island, Dumbarton Bridge, San Mateo Bridge, and Emeryville) in January 2010. The remaining sites will be selected from a variety of strata to provide information on the relative influence of different land uses and chemical pathways on chemical contamination in coastal waters. These strata include municipal wastewater, agricultural, urban, nonurban, stormwater discharges, and protected areas such as Areas of Special Biological Significance (ASBS), National Marine Sanctuaries, and National Estuarine Research Reserves. At each site, resident mussels (*M. californianus* or *Mytilus* sp. aka bay mussel) will be collected, if present, otherwise passive samplers (POCIS and SPME) and/or mussels will be deployed. Mussel collection is on-going and the first set of data is expected in the summer of 2010. The remaining strata sites will be sampled in the spring and summer of 2010 with the remaining data expected by the end of 2010.

San Francisco Bay strata sites

In addition to the four core NOAA Mussel Watch sites in San Francisco Bay, samples from 2-3 wastewater and 2-3 agriculturally influenced sites in San Francisco Bay are needed. The goal is to include 10 sites for each of these strata statewide. Collecting resident mussels is preferred because they have been exposed to chemical contaminants for a minimum of several months and the field work for collections is less labor intensive than deployments. To minimize costs we are proposing to have Applied Marine Sciences conduct this work at the same time as the 2010 RMP bivalve deployments (May-September). The wastewater influenced sites selected are Yerba Buena Island (east side of island near EBMUD outfall), Coyote Creek (City of San Jose outfall), and the tributary receiving effluent from the Palo Alto Regional Water Quality Control Plant. The agriculturally influenced sites selected are Mallard Island (Central Valley runoff), Petaluma River (Port Sonoma), and Napa River (Cuttings Wharf or Vallejo); these were selected by USGS using land use maps.

Request for support

We are seeking funding and assistance from the RMP for logistical and field support for the mussel collections and mussel and passive sampler deployments at the wastewater and agricultural sites. By supporting sampling at these sites we will receive a wealth of data on CECs entering the Bay from wastewater treatment plant effluents and agricultural runoff in the Bay. The data will be publicly available but it is not necessary to report WWTP names or locations on a map if this is an issue.

Costs

Funding for the chemical analysis is being provided by the NOAA Mussel Watch Program and most of the analytical laboratories (AXYS Analytical, USGS/US EPA, Cal EPA/DTSC) are providing additional pro bono analyses and/or matched resources. NOAA Mussel Watch is using their entire national budget for this year (approximately \$360,000) on this California pilot study, so this represents an opportunity to significantly leverage RMP funds. USGS is providing the POCIS samplers at a reduced cost. SCCWRP is providing SPME samplers and analysis of these samplers at no cost. The State Water Board, SCCWRP, and the Multiagency Rocky Intertidal Network (MARINe) are conducting the sampling statewide pro bono.

The tables below list the estimated costs associated with conducting the sampling at the wastewater and agricultural strata sites in San Francisco Bay.

WWTP Strata -- Resident Mussel Collections or Deployments

Task	Description	Cost
Palo Alto Outfall	Passive samplers only	\$5,107
San Jose Outfall (Coyote Creek)	Passive samplers only	\$4,382
EBMUD Outfall	Harvest resident mussels at YBI	\$1,062
Project Management		\$1,675
Contingency		\$2,820
Total		\$15,046

Agricultural Strata -- Resident Mussel Collections or Deployments

Task	Description	Cost
Napa River	Passive samplers only	\$4,277
Napa River (diving option)	Passive samplers only	\$8,059
Petaluma River	Passive samplers only	\$4,277
Petaluma River (diving option)	Passive samplers only	\$8,059
Project Management		\$1,675
Total (no diving)		\$13,049
Total (with diving)		\$17,793

USGS has indicated that they will conduct site surveys for resident mussels at Mallard Island and the Napa and Petaluma River sites. They have confirmed that they will be able to deploy the passive samplers at Mallard Island and may also be able to conduct passive sampler deployments at the river sites, though at this point this is not certain.

The cost for chemical analysis of these samples to be performed at NOAA's expense is approximately \$360,000 (NOAA Mussel Watch analytical budget for 2010). Labor and costs associated with field work, logistics/management, data QA, reporting, etc. are being provided by the Water Board, SCCWRP, SFEI, and USGS.

The collaborators have not yet discussed management and reporting of these data. RMP staff will seek to avoid further RMP expenditures, but may bring a request for funding for these tasks to the TRC and SC at a later date.