





February 28, 2024

Wade Crowfoot, Secretary for Natural Resources
Chair, California Ocean Protection Council
California Natural Resources Agency
715 P St., 20th Floor
Sacramento, CA 95814

Sent via: COPCpublic@resources.ca.gov

RE: Agenda Item 5: Support for Funds to Advance Modeling of Ocean Acidification Drivers and Impacts on the Central Coast

Dear Secretary Crowfoot and members of the Ocean Protection Council:

On behalf of California Coastkeeper Alliance, the Natural Resources Defense Council, and the below signatories, we thank you for the opportunity to support OPC funding to advance modeling of ocean acidification drivers and impacts on the Central Coast. Coastal nutrient pollution and rising CO₂ levels in the atmosphere and ocean have led to habitat degradation at an unprecedented spatial scale off of California. We must act quickly to stem the growing impacts of ocean acidification and hypoxia (OAH) on the state's fisheries and marine biodiversity. The OPC's funding of this research is critical for the State Water Board to take bold action, in accordance with the OPC's Strategic Plan, to set OAH water quality objectives based on the latest scientific research.

Recent research, thanks to OPC's scientific investments, has shown that land-based nutrients discharged to the ocean from large coastal wastewater facilities are linked to ocean acidification and the loss of oxygen, creating ocean acidification and hypoxia hot spots. During late summer months, magnified by daily coastal sewage treatment plant discharges, ocean acidification and hypoxia hot spots form that cause marine habitat compression on average of 20% but up to 60% (vertically) for 25% (horizontally – over 1,000 square miles) of the Southern California Bight; even at distances of up to 50 miles offshore.

Under current climate change conditions, and getting worse with the growing amounts of CO₂, shell-forming organisms including Dungeness crab larvae and oysters are having a tougher time building their shells, and fish are experiencing behavioral changes that make them more vulnerable to predation. California's OAH hot spots have acidified to the point that some plankton – tiny marine snails called pteropods – and Dungeness Crab larvae can experience “shell dissolution”. In common language, in these hot spots, ocean water has become so acidic that it causes shells to dissolve. Further, northern anchovies do not have enough oxygen to thrive in large swaths of southern California's coastal waters.

OPC has previously invested substantial resources to develop a coupled physical-biogeochemical OAH model for the entire West Coast. The model is considered a state-of-the-art global example and has resulted in numerous peer-reviewed scientific publications. Previous investments have focused on model application and management decision support to better understand the relative impact of coastal anthropogenic sources and different management strategies, including increased water recycling and reduced nutrient loading, on OAH and biological impacts at different spatial and temporal scales in the Bight.

Addressing nutrient pollution is a priority within the Central Coast region, a unique region influenced by both urban and agriculture-dominated watersheds. This proposed funding will provide necessary research to improve the characterization of riverine inputs from agriculture-dominated rivers, extend model

simulations to understand the effects of nutrient inputs and climate variability on OAH, comprehensively validate the model, and to apply OAH thresholds to quantify biological impacts. Ultimately, the proposed augmentation will provide the required higher resolution work that is needed to understand system dynamics, attribution of local nutrient sources, and biological effects in the SFMC in the same level of detail completed for the Bight.

Sincerely,

Sean Bothwell
Executive Director
California Coastkeeper Alliance
The Otter Project

Dr. Mark Gold
Director of Water Scarcity
Natural Resources Defense Council

Mike Lynes
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State Water Resources Control Board

February 22, 2024

Wade Crowfoot
Secretary for Natural Resources
Ocean Protection Council Chair
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Dear Chair Crowfoot and Members of the Ocean Protection Council:

RE: FEBRUARY 29, 2024 OCEAN PROTECTION COUNCIL MEETING – SUPPORT FOR BUDGET AUGMENTATION OF THE OCEAN ACIDIFICATION AND HYPOXIA MODELING PROJECT IN SAN FRANCISCO BAY AND MONTEREY BAY

On behalf of the State Water Resources Control Board (“State Water Board”), I am writing to express our support for the budget augmentation of the ocean acidification and hypoxia (“OAH”) modeling project in San Francisco Bay and Monterey Bay. The Ocean Protection Council’s (“OPC”) and Southern California Coastal Water Research Project’s (“SCCWRP”) proposal to extend the current project an additional two years will result in robust analysis to better understand the relative impact of coastal anthropogenic sources of OAH and extend the Regional Ocean Modeling System and Biogeochemical Elemental Cycling (“ROMS-BEC”) modeling effort to waters in and around San Francisco and Monterey bays.

The OPC’s previous investment in model development and validation has resulted in groundbreaking research to inform environmental management. The State Water Board continues to work with both the OPC and SCCWRP discussing how the ROMS-BEC model may better serve regulatory purposes. The augmented proposal will provide scientific information to further develop new OAH nutrient loading standards and implementation programs to minimize biological and chemical impacts of OAH in coastal waters along the Central Coast, as well as support additional California Integrated Report analysis. For the Water Quality Control Plan for Ocean Waters of California, having modeled ocean outputs that provide source attributions for anthropogenic inputs and rivers surrounding wastewater treatment plants will also be critical in developing nutrient reductions plans for those plants. For the California Integrated Report, modeled data that expands on the impacts of OAH to water quality and provides additional evidence of waterbody condition will support possible ocean acidification Clean Water Act section 303(d) assessments in the future.

E. JOAQUIN ESQUIVEL, CHAIR | ERIC OPPENHEIMER, EXECUTIVE DIRECTOR

Additionally, having a better understanding of the terrestrial nutrient inputs from the Salinas River Valley, attribution pathways, and impacts to marine life and marine habitat will be useful in framing the problem statement, source analysis, and, possibly, the program of implementation for the Biostimulatory, Cyanotoxins, and Biological Integrity Provisions standards-setting project, which is focused on nutrients for inland freshwaters statewide.

We look forward to continuing our close work with both the OPC and SCCWRP and encourage your full support of this timely proposal.

Sincerely,



Karen Mogus, Deputy Director
Division of Water Quality

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