CALIFORNIA ASSOCIATION of SANITATION AGENCIES

925 L Street, Suite 200 • Sacramento, CA 95814 • TEL: (916) 446-0388 • www.casaweb.org

February 28, 2025

Submitted electronically to COPCpublic@resources.ca.gov

Ocean Protection Council (OPC)
Jenn Eckerle
715 P Street
Sacramento, CA 95814

Re: 03/03/2025 OPC MEETING – ITEM # 6 Consideration and Adoption of a Resolution Regarding Ocean Acidification & Hypoxia

Dear Ms. Eckerle,

On behalf of the California Association of Sanitation Agencies (CASA), thank you for the opportunity to provide comments on your "Action Item: Consideration and Adoption of a Resolution Regarding Ocean Acidification and Hypoxia" (2025 OAH Resolution) that is scheduled for adoption on March 3. CASA represents more than 135 public agencies and municipalities in California that engage in wastewater collection, treatment, recycling, and resource recovery. As organizations charged with protecting public health and the environment, we share the State's goal of protecting coastal water quality. For over a decade, our managers, engineers, and scientists have engaged in extensive research to understand the impact of nutrient inputs on water quality in California.

We write to convey our support for the 2025 OAH Resolution, and in particular, we appreciate the inclusion of collaborating with stakeholders in the third recital to "Advance and inform nutrient management approaches" and in the fourth recital to "Seek opportunities to advance multi-benefit infrastructure upgrades for water recycling."

In particular, our members are committed to the collaboration and information sharing that the resolution identifies to "increase understanding of effective nutrient interventions, to inform and support improved management of land-based nutrients, and to carefully invest public funds" (Resolution p. 4). Moreover, we are aligned and support the resolution's collaborative approach to advance multi-benefit infrastructure upgrades and water recycling.

As a point of information, in the Resolution's Whereas clause that references the recent Independent Peer Review (IPR) report of the ROMS-BEC model, it does not fully reference the sentence in the report with regard to understanding our certainty in the model's current capabilities when being used to address management questions about how nutrient loads may adversely impact the marine environment. We think it is important to provide it in full on balance to Councilmembers:

> "The robust building blocks and careful configuration of the ROMS-BEC modeling system enable it to successfully capture fundamental physical and biogeochemical impacts induced by treated wastewater discharges in the Southern California Bight; however, there are uncertainties associated with the Model's parameters and their impact should be considered when using modeling scenarios for management-related decisions related to specific subregions or specific components of the ecosystem." (IPR Report p. 17)

We are grateful for your staff's ongoing involvement in the IPR-related meetings with other state and local government agencies and environmental organizations to prioritize the IPR's recommendations. As the OPC is weighing where to invest in and advance monitoring and research per the first recital in the OAH resolution, the IPR guides:

> "The Panel recognizes that all models contain uncertainty. To quantify this uncertainty and increase confidence in the Model's results and potential future uses for addressing management questions related to detailed impacts, such as impacts on specific ecosystem components in particular regions, the Panel recommends two approaches: First, conduct additional evaluation analyses with key observational variables that relate to important modeled physical and biogeochemical processes. Second, conduct sensitivity analyses that are directly tied to specific management questions." (IPR Report p. 18)

In addition, for other prospective investments we submit the IPR's direction to the OPC for future consideration:

> "Modeled impacts should be better placed in the context of California Current-scale patterns and long-term historical and projected trends, including those associated with climate change. It should be possible for the modeling team to compare the impact of a potential intervention to projected future changes in the region, such as climate-induced acidification and ecosystem transformation. It would be useful to see whether areas of seasonal habitat compression linked to anthropogenic nutrients are new spatial features that are solely a result of coastal nutrient inputs, as opposed to an expansion or rearrangement of hypoxic features that are already characteristic of the California Current." (IPR Report p. 23)

Finally, with regard to the precautionary principle which is referenced in the second recital, we want to observe that nitrogen reductions in discharges will have an impact on kelp forests and the associated marine ecosystems which are in the regions arounds ocean outfalls, so we encourage the OPC to evaluate and understand this matter in its ongoing work. Similarly, the IPR observed that "the current focus on two sentinel species is a reasonable pragmatic choice in this stage of the analysis, and it is in keeping with water-quality impact assessment in other regulatory contexts" (IPR Report p. 17). As the model advances into the next stage, we reference the IPR finding about other fundamental ecological questions that should be addressed:

> "Currently, the framework developed to translate seawater chemistry changes into ecological effects focused on two sentinel organisms: pteropods and the Northern Anchovy. Focusing on two indicator taxa is an understandable simplification in the initial stages of model development, and these two taxa are well-chosen as sentinels; pteropods because they are widespread and particularly sensitive to ocean acidification, and Northern Anchovy because it is a central node in the larger food web. However, many fundamental ecological questions remain. For example, are pteropods replaceable in the diet of their predators by other zooplankton that are less sensitive to ocean acidification, or do they play a unique and irreplaceable role? To what extent can anchovy or their predators adapt to compression of habitat in a particular ocean region, and are some offshore regions more crucial as habitat than others? At the same time, an effort to trace food-web consequences comprehensively risks becoming an infinite regression and a barrier to responsible regulatory action." (IPR Report p. 17)

With those insights in mind for the OPC's forthcoming 2026-2030 Strategic Plan, the IPR's consensus conclusion on this issue is, "In the long term, it would be highly valuable to better understand and quantify the population- and ecosystem-level impacts of localized changes in water chemistry: the goal should be a comprehensive description of the biological influence of released treated wastewater on water chemistry over multiple trophic levels, beyond pteropods and anchovy." (IPR Report p. 23) Hence we encourage more collaboration over the next year on that and the variety of other matters to work through efficiently and expediently together.

In closing, we appreciate the OPC's support and interest in our members' efforts to protect public health and the environment. We look forward to sharing a forthcoming Nutrient Management Evaluation report this spring on the coastal agencies in the ROMS-BEC model by HDR, the engineering firm that works with the Bay Area wastewater agencies and the Region 2 San Francisco Regional Water Quality Control Board to track nutrients in permitted discharges to the Bay. We anticipate the report will provide further insights to consider as you are prioritizing future investments. If you would like to schedule a meeting to discuss these comments, please contact me at jvoskuhl@casaweb.org or (916) 446-0388.

Thank you,

Jared Voskuhl
CASA Director of Regulatory Affairs


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February 28, 2025

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

Sent via: COPCpublic@resources.ca.gov

RE: ACTION ITEM 6: CONSIDERATION AND ADOPTION OF A RESOLUTION REGARDING OCEAN ACIDIFICATION AND HYPOXIA

Dear Chair Crowfoot and OPC Council Members:

Last year California Coastkeeper Alliance, NRDC, and the undersigned organizations called on you to take immediate and decisive action to protect our ocean from the alarming development of ocean acidification and hypoxia (OAH) deadzones occurring off the California coast. Our organizations were, and continue to be, deeply concerned with the latest research and state of the science physical/biogeochemical modeling that land-based nutrients discharged to the ocean from coastal sewage treatment plants are causing ocean acidification and the loss of oxygen, creating OAH deadzones. We applaud the OPC for its leadership on OAH and taking this critical step in supporting the state's efforts to stop OAH dead zones with the adoption of this Resolution Regarding Ocean Acidification and Hypoxia.

The time for California to act is now. The California Public Resources Code recognizes that high levels of anthropogenic GHG emissions responsible for climate change are driving major shifts in the chemical properties of the world's oceans.[1] The science has recognized that the chemical properties of the ocean are shifting to a state of less habitability, and the problem is further exacerbated by local stressors such as wastewater discharges. Fortunately, the state has the opportunity to minimize these local stressors and slow major climatic shifts in our ocean's habitability policymaking.

California has the best available science before them. The OAH Resolution explains that the OPC has invested substantial state resources in the development of a Coupled Remote Ocean Monitoring System and Biogeochemical Elemental Cycling (ROMS-BEC)[2] OAH model for the entire West Coast as impacted by the California Current System. That model has demonstrated that during late summer months, coastal sewage treatment plants are creating OAH dead zones that cause marine habitat compression on average of 20% but up to 60% (vertically) for 25% (horizontally) of the Southern California Bight; even at distances of up to 50 miles offshore.

Areas with habitat compression have acidified to the point that planktonic pteropods experience shell dissolution and northern anchovies do not have enough oxygen to thrive. It is time for the state to act to stave off this pending environmental disaster. The best science in the world has concluded that land-based nutrients from wastewater facilities are harming the California coast and making our ocean inhabitable for numerous species of marine life.

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[1] Pub. Resources Code, § 35630(c).
[2] Ho, M., Kessouri, F., Frieder, C.A. *et al.* Effect of ocean outfall discharge volume and dissolved inorganic nitrogen load on urban eutrophication outcomes in the Southern California Bight. *Sci Rep* **13**, 22148 (2023). https://doi.org/10.1038/s41598-023-48588-2.

Yet, the wastewater community – in an effort to question the science and slow the state's progress towards addressing OAH – funded a Peer Review of the ROMS-BEC model despite years of previously peer reviewed scientific journals. Importantly, the wastewater community's own 2024 Peer Review:

> *"Affirmed that the model is capturing fundamental physical and biogeochemical processes in the Southern California Bight that are associated with OAH. The coupled modeling system has been validated and gone through a rigorous scientific peer review process. It can be used to address basic management questions about whether nutrient loads from treated wastewater discharges in the region have impacted the marine environment and ecosystem in the Southern California Bight and what the large-scale and first-order impacts are."*

In recognition of the ROMS-BEC science, state agencies are taking action. In 2019, the State Water Board prioritized the need to set OAH water quality standards to prevent OAH deadzones in its Ocean Plan Triennial Review.[3] In 2024, the State Water Board's Strategic Work Plan includes Action 2.1.4 to "Develop an Ocean Plan amendment to add water quality objectives and a program of implementation to address ocean acidification, hypoxia, and the effects of anthropogenic sources of nutrients in ocean waters." And the OPC's "Strategic Plan to Protect California's Coast and Ocean 2020 –2025" Objective 1.2 directs OPC to minimize causes and impacts of OAH, including Target 1.2.1, "advance adoption of regulations establishing water quality objectives for ocean acidification and hypoxia by 2025."

Therefore, **we strongly endorse the OPC's conclusion – as RESOLVED in the OAH Resolution – to support "the development of one or more water quality objectives and associated program of implementation by the State Water Resources Control Board to address OAH impacts.**"

With the OPC's 2025 water-quality setting goal before us, we ask the OPC to support, and the State Water Board commit to, the adoption of Water Quality Objectives to address OAH impacts by the end of 2026 at the latest. Climate change is not waiting for anyone and OAH continues to negatively impact California's coastal fisheries and biodiversity.

Our organizations have called on the state to act immediately and decisively – and the OPC has rose to the challenge. We applaud the OPC for leading the way to invest in, and support, the research necessary to bring the best available science in the world to advance rulemaking that addresses the threat of OAH to our ocean.

Sincerely,

Sean Bothwell
Executive Director
California Coastkeeper Alliance

Mark Gold, D.Env.
Director of Water Scarcity
Natural Resources Defense Council

[3] See State Water Resources Control Board, Ocean Plan Triennial Review (Dec. 2019); available at: https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/sr_2019opr.pdf.

Bruce Reznik
Executive Director
Los Angeles Waterkeeper

Annelisa Moe
Associate Director of Science & Policy
Heal the Bay

Natalie Caulk
Associate Director
The Otter Project

Susan Jordan
Executive Director
California Coastal Protection Network

Jen Kalt
Executive Director
Humboldt Baykeeper

Natalie Herendeen
Executive Director
Monterey Waterkeeper

Dan Silver
Executive Director
Endangered Habitats League

Don McEnhill
Executive Director
Russian Riverkeeper

Phillip Musegaas
Executive Director and Coastkeeper
San Diego Coastkeeper

Livia Beaudin
Legal Director
Coastal Environmental Rights Foundation

Ashley Eagle-Gibbs
Legal and Policy Director
Environmental Action Committee of West Marin

Garry Brown
Founder & President
Orange County Coastkeeper
Inland Empire Waterkeeper

Ted Morton
Executive Director
Santa Barbara Channelkeeper