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STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
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AUGUSTA, MAINE
04333-0021

PATRICK C. KELIHER
COMMISSIONER

July 2, 2024

Stacey M. Jensen
Director, Oceans, Wetlands, and Communities Division
Environmental Protection Agency
Washington, DC 20460

RE: EPA Docket ID Nos. EPA-HQ-OW-2023-0591 and EPA-HQ-OW-2024-0189

Dear Director Jensen,

The Maine Department of Marine Resources (Maine DMR) provides the following comments on the U.S. Environmental Protection Agency's (EPA) public notice for tentative research permit determinations regarding the Woods Hole Oceanographic Institution (WHOI) Locking Ocean Carbon in the Northeast Shelf and Slope (LOC-NESS) Project, Docket ID Nos. EPA-HQ-OW-2023-0591 (Phase 1) and EPA-HQ-OW-2024-0189 (Phase 2). The proposed research would study a marine carbon dioxide removal (mCDR) technique known as ocean alkalinity enhancement in two locations: south of Martha's Vineyard off the coast of Massachusetts (Phase 1) and in the Wilkinson Basin in the Gulf of Maine (Phase 2).

Overall, Maine DMR has concerns about this research based on our knowledge of these oceanographic regions, the species that inhabit them, and their importance to fisheries and protected resources. While specific concerns are outlined below, our overarching recommendation is that the impacts of Phase 1 be fully considered and analyzed before permitting the Phase 2 area. DMR understands there is a process to alter and adapt Phase 2 if the outcomes of Phase 1 are undesirable, but we encourage an opportunity for public review and input on any such alterations prior to implementation of Phase 2. The two proposed research sites support important commercial and recreational fisheries which support our coastal communities. Further, the area south of Martha's Vineyard has become an important foraging ground for the endangered North Atlantic right whale in recent years. As a result, any research which may impact the water quality and/or marine environment of these regions should be carefully considered.

Ability to Measure Impacts and Goals

Phase 1 and Phase 2 of the proposed project are designed to: 1) evaluate the effectiveness of the applicant's approach to monitoring changes in alkalinity and any subsequent carbon dioxide (CO₂) uptake by the ocean resulting from the sodium hydroxide additions into surface waters; and 2) collect scientific information to better understand any potential adverse impacts to human health, the environment or other uses of the ocean resulting from the alkalinity enhancement activity. Maine DMR is concerned these project goals may be unachievable while maintaining

water quality appropriate for marine life since the alkalinity change must be limited due to the admitted need for quick dilution. With that in mind, as well as the fact that CO₂ uptake to sea water is a slow process, Maine DMR is concerned that goal 1 of this research evaluating effectiveness of the approach may not be measurable.

Future wide-scale projects will need to cover large regions of the ocean to be functionally effective in carbon sequestration. Maine DMR cautions the EPA to avoid setting any potentially consequential precedent which may impact already impaired ocean communities and economically important species populations.

Impacts to Protected Species and Species of Commercial and Recreational Significance

While Maine DMR understands the fully stratified nature of the ocean during summer is needed for success of this project, conducting activities which alter the pH of the ocean during the summer months is concerning for user conflict, destratification due to potential hurricane events, schooling marine species, larval fish, and phytoplankton blooms. Both phases of research need a plan for how to address negative impacts on the environment and other users during research activities.

The proposed study areas were selected based upon the specific conditions needed for the research activities, while minimizing potential adverse impacts to the marine environment, human health, and other uses of the ocean. WHOI noted no Habitat Areas of Particular Concern or Essential Fish Habitat areas protected from fishing were identified. However, the Phase 1 area has been recently noted as an important North Atlantic Right Whale habitat. Additionally, the Phase 2 area provides forage grounds and a migration corridor for many commercially and recreationally important species as well as protected species. Maine DMR would like to emphasize the importance of protected species monitors during all stages of research. Further, efforts should be made to monitor the presence of schooling species prior to materials entering the water. Monitoring efforts should be used to limit negative impacts on marine species.

Potential for Phytoplankton Blooms

Maine DMR also emphasizes the importance of local species composition analysis of plankton communities, especially speciation of larval fish, needs to occur at all stages of the project. This is especially important in Phase 2 sampling as the amount of bicarbonate solution and research footprint increases. Additionally, the makeup of phytoplankton communities prior to research could have a significant impact on the effectiveness of this research as well as the possible negative environmental responses.

To that extent, phytoplankton community makeup and its response are a vital part of this research. Maine DMR believes planned on-deck incubation studies would be beneficial prior to ocean inoculation. Knowing how plankton communities respond to exposure to the bicarbonate solution should be known prior to the initial testing. Further, the true long-term effects to exposures one or more years following this research are unknown. This is especially concerning for larval fish which are abundant during the summer. These regions are important to larval stages of many commercially and recreationally important species. Negative impacts on recruitment could be detrimental to the future of these fisheries.

In 2023, a large dinoflagellate bloom occurred in the Gulf of Maine. Dinoflagellate blooms thrive at a pH between 8 and 9. If materials are added to the Gulf of Maine to achieve this range

of pH for an extended time and the dinoflagellates community is already at elevated levels, this research could cause or contribute to seeding another large bloom of a species not found to be biologically beneficial for forage species in the area.

Coordination

Maine DMR encourages an open and transparent process with WHOI and the EPA, and welcomes reporting and data as they are collected. By coordinating with Maine DMR, all parties may better ensure their respective priorities are fully considered and addressed in a timely manner. Maine DMR reiterates that results from Phase 1 should be publicly available prior to the start of Phase 2 so that other users of the marine environment can understand and evaluate the data collected and provide public comment.

Thank you for the opportunity to comment on these permits. Maine DMR looks forward to future consultation and communication regarding this project. Please do not hesitate to contact Corrin Flora at corrin.flora@maine.gov if there are any questions.

Sincerely,



Patrick Keliher
Maine Department of Marine Resources Commissioner