August 14, 2024

Gayle Garbush
Southwest Region Office
PO Box 47775
Olympia, WA 98504-7775

Dear Ms. Garbush:

Thank you for the Department of Ecology's continued attention to the health of our natural environment and to the department's forthcoming determination regarding Project Macoma. I am writing to express my support for Project Macoma's National Pollutant Discharge Elimination System (NPDES) Wastewater Discharge Permit.

As an environmental social scientist and the Director of Research at American University's Institute for Responsible Carbon Removal, much of my work at present focuses on ocean alkalinity enhancement and marine carbon dioxide removal. At the Institute, our social, ethical, and legal research as well as translational and policy work begin from the understanding — drawing on extensive modeling and analysis from the Intergovernmental Panel on Climate Change (IPCC) — that it will no longer be sufficient to reduce carbon dioxide emissions. In addition to emissions reductions, it will be necessary to find ways to remove, and durably store, atmospheric carbon dioxide to keep climate change to 1.5 or 2-degree warming levels. Reducing emissions must continue to be the top priority and primary focus of global decarbonization efforts, but some amount of carbon dioxide removal will be necessary—and it is our view at the Institute that research on these technologies must begin now in order to ensure that these are developed and governed responsibly.

Marine carbon dioxide removal approaches, particularly ocean alkalinity enhancement, offer promising opportunities for atmospheric carbon removal at scale, but much more research is needed on these to determine whether these techniques work and the conditions under which they can be deployed responsibly. **Rigorously designed and evaluated small-scale field trials like Project Macoma are urgently needed to explore—in ways that are unlikely to have any broader impacts—if and under what conditions ocean alkalinity enhancement could one day be deployed safely at larger scales**. Field-based research is necessary to develop a deeper, more accurate understanding of the efficacy of such approaches, and any effects that might occur to humans and ecosystems if such approaches were to be deployed at larger scales. This kind of information on efficacy and ecological impacts, advanced by field trials like Project Macoma, is essential to determining whether technologies like this should be further explored at larger scales. The National Academies of Science, Engineering and Medicine agree that pilot projects like Project Macoma are critical for advancing the field of marine carbon dioxide removal.

This kind of field trial research also supports broader public and community engagement regarding these technologies, as it produces important information that communities want and

need to know about the prospect of deploying such approaches in the future. Through my research conducting focus groups with communities (including Tribal staff and First Nations) on ocean alkalinity enhancement and marine carbon dioxide removal, including on the Olympic Peninsula, I have observed that local community groups and rightsholders have important questions about these projects that require small, rigorously designed pilots like Project Macoma to answer.

I have full confidence in the Project Macoma team's expertise to ensure that the proposed pilot project is conducted safely and in ways that contribute much-needed knowledge to this important area of research.

Thank you for the opportunity to provide feedback on this important matter.

Sincerely,

Sara Nawaz, PhD
Director of Research
Institute for Responsible Carbon Removal
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