SAGE
GEOTECHNICAL

October 31, 2025

Transmitted via email to: brandon@themilestonecompanies.com

West Bay Development Group, LLC
P.O. Box 1376
Sumner, WA 98390

Attn: Mr. Brandon Smith

Re: Response to Review Comments
West Bay Yards Shoreline Restoration
Olympia, Washington
Sage Project No. 033001

Dear Mr. Smith:

The Washington State Department of Ecology (Ecology) recently reviewed and commented on the revised *West Bay Yards Draft Shoreline Restoration Design Report* and the *West Bay Yards Portadam Feasibility Assessment.*

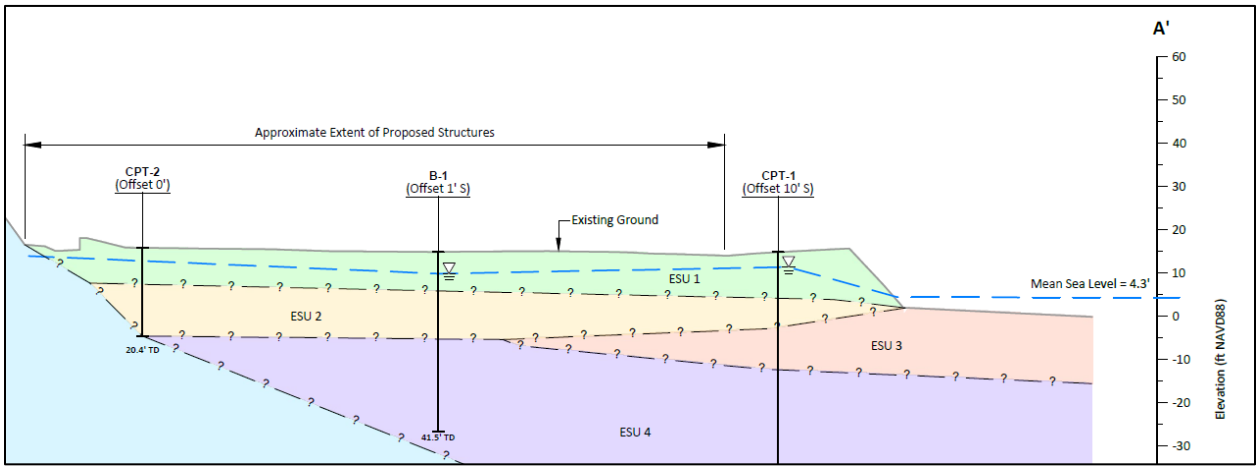
Ecology's review comments were provided via emails sent on September 30 and October 1, 2025. In its emails, Ecology poses the following [paraphrased] questions regarding a temporary cofferdam system:

1. If subsurface explorations have not been completed in intertidal areas, how does the consultant know that the conceptual Portadam® location is underlain by such poor foundation soils (i.e., soils with a low bearing capacity and low shear strength)?
2. How does the consultant justify the stated risk of obstructions to sheet pile installation when no such obstructions appear in explorations advanced along the shoreline (e.g., test pits TP-2 and TP-3 and cone penetration test soundings CPT-1 and CPT-4)?

Sage Geotechnical, LLC (Sage), has considered Ecology's questions and prepared the following responses:

1. In response to the first question, the shoreline is a mudflat that is regularly covered at high tide and exposed at low tide. With the exception of a thin veneer of seashells and pebbles, the shoreline consists of the very soft, plastic, fine-grained material (engineering stratigraphic unit [ESU] 3) characteristic of mudflats. The material sinks under foot traffic, as shown on Photograph 1.

   ESU 3 extends to the depth indicated by the upland explorations, where it is mantled by roughly 20 feet (ft) of fill (ESUs 1 and 2). The fill was placed over the mud. The bottom of the mud, or the contact between ESUs 3 and 4, is located at an approximate elevation of -15 ft, as shown on Cross Section 1. Sage stands by the engineering judgment used to develop the cross section.



Cross Section 1. Reproduced from *Preliminary Geotechnical Engineering Recommendations Technical Memorandum* (Landau 2020).

Regarding the thickness of the mud, Sage is confident that glacial geology in the project area dips toward the center of West Bay. Based on its experience with Budd Inlet and East Bay and a review of vast data collected by the Port of Olympia for environmental projects, Sage interprets the mud to be 15 to 40 ft thick.

Photograph 1. Reproduced from *West Bay Yards: Mitigation Sequencing and No Net Loss Analysis* (Grette 2021).

2. In response to the second question, important aspects of the geotechnical engineering profession include the investigation and interpretation of subsurface conditions. Understanding their implications allows the geotechnical engineer to make design recommendations that are compatible with site geology.

   During the May 2020 field investigation, the following photograph was taken during excavation of test pit TP-2.

5. Test pit TP-2.

Photograph 2. Reproduced from *Preliminary Geotechnical Engineering Recommendations Technical Memorandum* (Landau 2020).

In Sage's opinion, the subsurface conditions exposed in test pit TP-2 present a high risk for sheet pile obstruction. While the wood waste layer in test pit TP-2 measured only a few feet thick, a layer of wood waste more than 15 ft thick was encountered in nearby boring B-2. Cobbles and metal were also observed in the field explorations.

CLOSING

In summary, Sage reaffirms its prior statements regarding the infeasibility of sheet pile shoring systems due to the risk for encountering obstructions, and the infeasibility of a Portadam® system due to the elevated risk associated with very poor foundation soils, which are anticipated to be at least 15 ft thick.

We trust that this letter serves to meet your needs at this time. If you have questions or comments, please contact the undersigned at calvinm@sagegeotechnical.com.

SAGE GEOTECHNICAL, LLC

Calvin McCaughan, PE
Principal Geotechnical Engineer

CALVIN ALAN MCCAUGHAN STATE OF WASHINGTON 44709 REGISTERED PROFESSIONAL ENGINEER

6/6/2025

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REFERENCES

Ecology. 2020. "Re: West Bay Yards." E-mail from Lizzie Carp, President – WFSE Local 872, Wetland/Shoreland Specialist, Washington State Department of Ecology, Southwest Regional Office, Shorelands and Environmental Assistance Program. September 30 and October 1.

Grette. 2021. *Technical Memorandum: West Bay Yards: Mitigation Sequencing and No Net Loss Analysis.* Grette Associates, LLC. June 8.

Landau. 2020. *Technical Memorandum: Preliminary Geotechnical Engineering Recommendations: West Bay Yards.* Landau Associates, Inc. August 27.