

Technical Memorandum

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To: Mark Wolken
Date: October 3, 2008
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Subject: 100-Year Flood Elevations at Cedar Groves Composting Expansion Site

BACKGROUND

Cedar Grove Composting is looking to expand their site on Smith Island, in the lower Snohomish River near Everett, Washington. The site (Figure 1) is located to the east of SR 529, on the south side of Steamboat Slough at its confluence with Union Slough. The proposal (Figure 1) includes filling behind the existing Smith Island levee, and opening up other areas to the tide as mitigation for some wetland filling. While reviewing this project as part of a permit application, the U.S. Fish & Wildlife Service (USFWS) asked the applicant to describe the extent to which this project would change flood elevation conditions in this area of the lower Snohomish River estuary.

In 2001, WEST Consultants, Inc. (WEST) conducted the most-recent Flood Insurance Study (FIS) of the Snohomish River for the Seattle District, Corps of Engineers, with funding from FEMA Region 10. This study became effective in 2005. The hydraulic details of this study are used to assess the impact of the proposed project on flood elevation conditions during the 100-year event.

ANALYSES

The effective FIS developed the 100-year water surface elevations in the Snohomish River as the higher of two conditions:

1. The 100-year tidal height in this region of Possession Sound (Puget Sound)
2. The 100-year flood in the Snohomish River coincident with a tide equal to Mean Higher High Water (MHHW) plus one foot, as modeled using a UNET hydraulic model of the Snohomish River from Monroe to Possession Sound.

In the 2001 FIS (effective in 2005), elevations were reported to the NGVD datum of 1929. In this memo, values from that study report are converted to the NAVD datum of 1988 by adding 3.7 feet to the "NGVD" values.

In the Technical Support Data Notebook prepared by WEST in 2001, the UNET hydraulic model reported a 100-year water surface elevation of 7.2 ft NGVD (10.9 ft NAVD) at the

confluence of Steamboat Slough and Union Slough. The 100-year tidal elevation in Possession Sound was provided by the Corps of Engineers as 8.2 ft NGVD (11.9 ft NAVD). And this higher value (11.9 ft NAVD) was mapped as the Base Flood Elevation (BFE) in this area, representing the 100-year water surface elevation at this location. In addition, Smith Island (modeled as providing only storage because of its levees) was also mapped at an elevation of 11.9 ft NAVD.

This means that, in the vicinity of the Cedar Grove Composting expansion area, the 100-year water surface elevation (or BFE) is controlled by the tidal height in Possession Sound, and is about one foot higher than the corresponding 100-year flood elevation in the Snohomish River. As the tidal elevation is assumed to be horizontal for flood inundation mapping, and not influenced by the shape and nature of the shoreline, and because the project could not reasonably increase the water surface elevation during a 100-year river flood in the Snohomish River, no changes to the shoreline in this area of the lower Snohomish River can cause an increase in the 100-year water surface elevation above the extreme tidal height.



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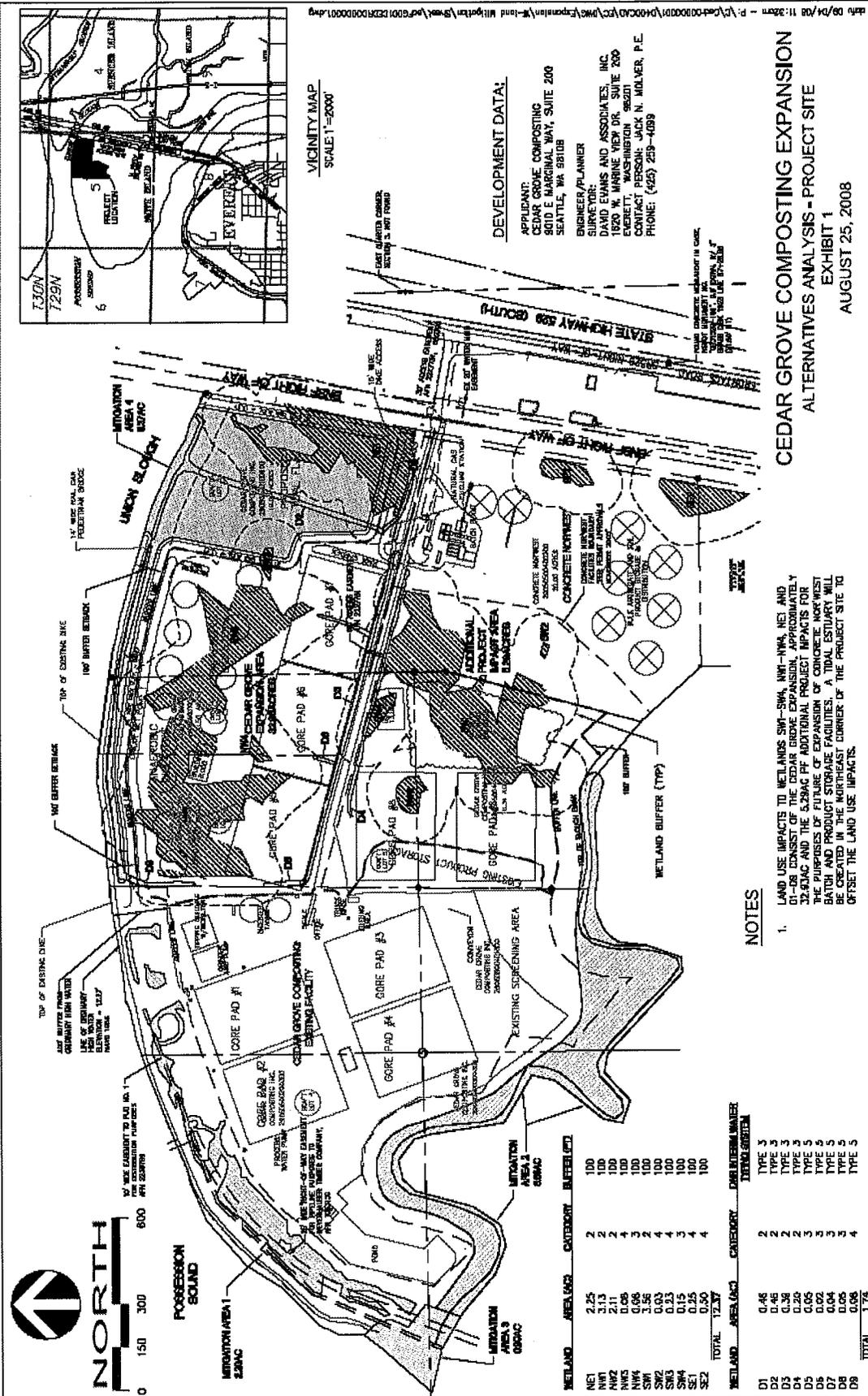


Figure 1. Proposed Cedar Grove Composting Expansion