Parametrix
let's create tomorrow, together

Technical Memorandum

DATE:	November 2, 2023
TO:	Steve Miller PE and Chris Holland
FROM:	Paul Fendt
SUBJECT:	Floodplain and Zero-Rise at the Geddes Marina Site
PROJECT NUMBER:	553-2967-005
PROJECT NAME:	Geddes Marina Phase 2

The Geddes Marina site fill proposal requires that fill be placed in areas that are below the ordinary high-water line and in areas that have been mapped by FEMA as special flood hazard areas and designated floodway. The floodplain management code requires that "development", which in this proposal is fill or removal of material, placed in the floodplain or floodway be evaluated for compliance with flood protection standards.

While a portion of the site has been mapped as floodway and there is proposed fill in that area, the zero-rise floodway mapping and designation in this area is unique in the methods that were used in the Flood Insurance Study (FIS) to determine the floodway and unique due to costal tidal influences. A hydraulic model was prepared for the FIS to determine the floodplain, flood stages, and regulatory floodway for Ebey Slough.

The marina is located in an area of special flood hazard (aka the 100-year floodplain) (Figure 1). The designated floodway adjacent to the site is defined and demarked by a "levee" along the shoreline adjacent to the marina. There is no levee present. The site is located between Sections B and C in the model, which appear on Figure 1 in the vicinity of the project site.

There are likely to be some very small grading changes by the project to the shoreline in the mapped floodway. There is no "levee" that will be modified and there is minimal fill or encroachment proposed in the mapped floodway. The zero-rise evaluation is needed because of the code trigger for "development" in the mapped floodway, even if no change is occurring or there is no levee present.

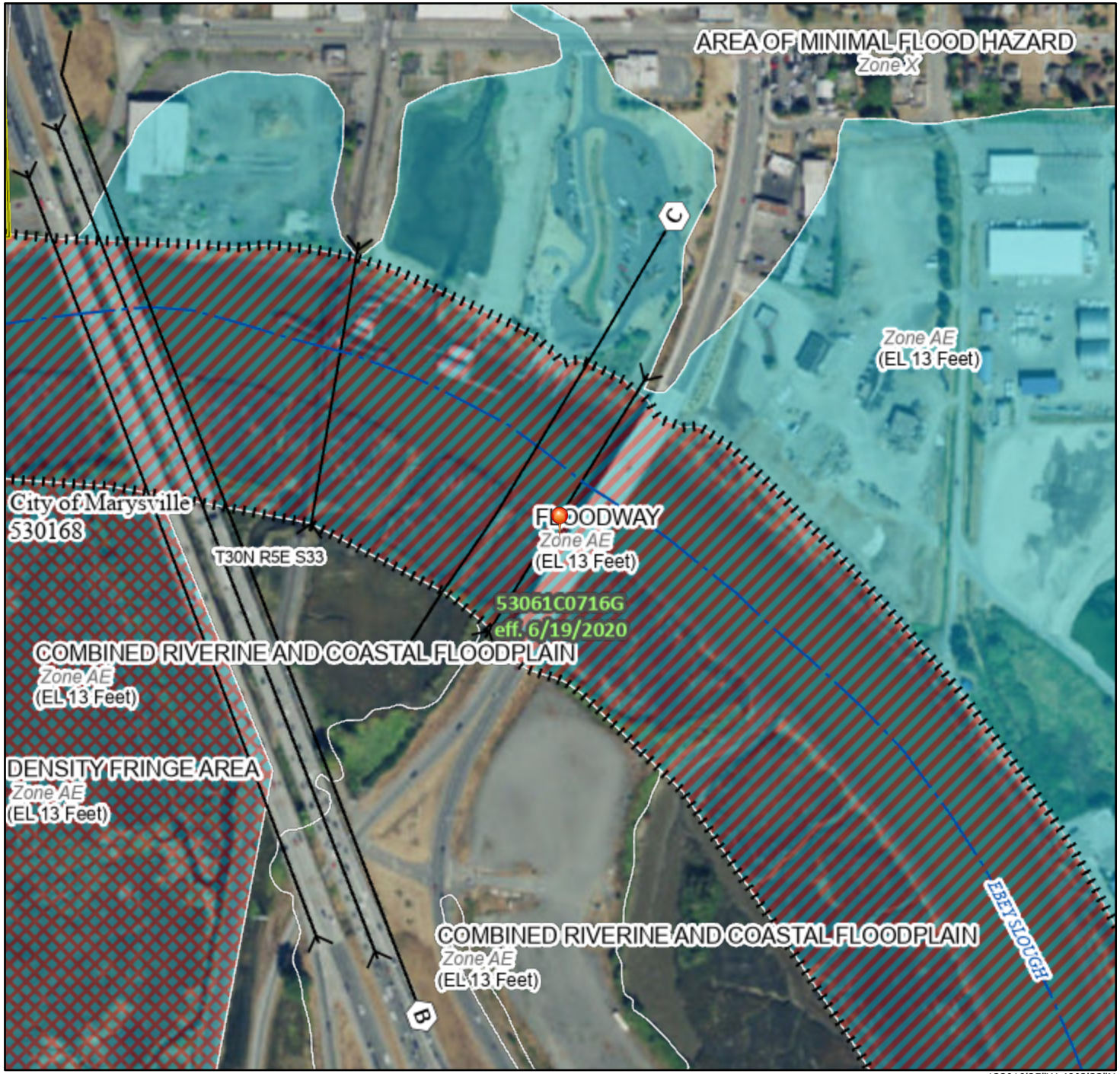
The FIS reports that at sections B through F of the flood study there are no regulatory water surface elevations calculated at the site by the backwater study for this reach of Ebey Slough (Figure 2). The FIS indicates that the flood levels at those sections are "controlled by coastal flooding". This means that, while there is a mapped floodway, there are no flood elevations determined for Ebey Slough against which to compare post-project flood elevations. Also, as demonstrated by the FIS, changes to those flood levels by the project, if any, cannot be calculated using the methods that are used for floodplain/floodway analyses at the site. The flood stages on the maps are regulatory flood elevations that are controlled by coastal flooding, e.g. sea level or tidal levels.

Any proposed shoreline changes to the site would not and could not cause a change in flood level. The water level of the tide at and downstream of the site will control the flood level at the site. Consequently, the site will comply with the zero rise requirements.

Figure 1. National Flood Hazard Layer FIRMette Map

FEMA

122°11'3"W 48°2'57"N



122°10'25"W 48°2'33"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/2/2023 at 5:58 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Figure 2. Table from FEMA Flood Insurance Study, Snohomish County.

Revised June 19, 2020

Table 25: Density Fringe Area Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A[4]								
B	1.65	422	6,973	2.9	*	11.7[3]	11.8[3]	0.1
C	1.83	373	5,928	3.6	*	11.8[3]	11.9[3]	0.1
D	2.40	420	6,488	3.2	*	12.3[3]	12.6[3]	0.3
E	2.87	1,214	9,589	3.7	*	12.5[3]	13.1[3]	0.6
F	3.19	5,113	29,486	3.4	*	12.7[3]	13.6[3]	0.9
G	4.24	900	7,861	3.5	14.0	14.0	14.6	0.6
H	5.54	2,055	21,310	3.5	15.3	15.3	15.7	0.4
I	6.21	2,256	17,790	3.9	15.7	15.7	16.2	0.5
J	6.72	3,080	33,618	2.7	16.1	16.1	16.6	0.5
K	6.85	2,916	36,389	2.6	16.1	16.1	16.6	0.5
L	7.37	345	7,971	4.2	16.2	16.2	16.8	0.6
M	8.75	1,454	19,353	4.4	16.7	16.7	17.3	0.6
N	9.12	1,082	15,311	4.6	16.9	16.9	17.3	0.4
O	9.32	1,218	15,282	5.0	16.9	16.9	17.3	0.4
P	9.40	1,083	14,007	5.3	16.9	16.9	17.3	0.4
Q	10.95	1,648	21,971	7.3	18.9	18.9	18.9	0.0
R	11.46	1,750	27,045	6.0	20.1	20.1	20.2	0.1
S	13.08	2,377	35,749	5.6	22.8	22.8	23.1	0.3

[1]STREAM DISTANCE IN MILES ABOVE MOUTH

[2] WIDTHS TAKE INTO ACCOUNT FLOODWAY FRINGE AND DENSITY FRINGE

[3]ELEVATION COMPUTED WITHOUT CONSIDERATION OF BACKWATER FROM PUGET SOUND

[4]NO DENSITY FRINGE OR FLOODWAY COMPUTED

*CONTROLLED BY COASTAL FLOODING – SEE FIRM FOR REGULATORY BASE FLOOD ELEVATION

TABLE 25

FEDERAL EMERGENCY MANAGEMENT AGENCY

SNOHOMISH COUNTY, WASHINGTON

AND INCORPORATED AREAS

DENSITY FRINGE AREA DATA

FLOODING SOURCE: EBEY SLOUGH