



Snohomish River Flood Insurance Study for the U.S. Army Corps of Engineers, Seattle District

WEST Consultants completed a Flood Insurance Study (FIS) with the Seattle District Corps of Engineers. The study was conducted for approximately twenty miles of the Snohomish River between the mouth, near the City of Everett, and the USGS stream gaging station, near Monroe, using both UNET and HEC-RAS.

The UNET model consisted of over 200 cross-sections and 17 bridge sections. The model was constructed with a downstream tidal boundary, an upstream boundary hydrograph, and inflows from the Pilchuck River. The lower portion of the model contained numerous reaches and split flows including Ebey Slough, Steamboat Slough, and Union Slough. The channel portion of the model was calibrated to reproduce observed highwater marks from the 1988/89 event which was essentially a bankfull condition. The overbank portion of the model was calibrated to high water marks obtained from the 1990 flood, which was a large event that caused significant overbank flooding and a levee breach.



*Leveed portion of the Snohomish River near the City of
Snohomish, Washington*

Synthetic hydrographs of the 10-, 50-, 100- and 500-year events were developed from flood frequency analyses of both flow volume and observed and historic peaks. These hydrographs were then specified at the boundary conditions of the UNET model. A 1-ft maximum water surface rise floodway was modeled in accordance with existing FEMA guidelines and mapping conducted using the new FEMA criteria. The floodway was developed using both a “floodway fringe” and “density fringe” and through collaboration with representatives from FEMA, Snohomish County, and the affected cities.

Project Owner:

*US Army COE, Seattle District
P.O. Box 3755
Seattle, WA 98124
Contact: Wayne Wagner
(206) 764-3542*

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