

## SKAGIT RIVER H&H TECHNICAL REVIEW SUMMARY

### Technical Review of Hydrology and Hydraulics for the Skagit River Flood Damage Reduction Study History

<u>Date Completed</u>	<u>What was reviewed</u>	<u>Reviewer</u>	<u>Comments by reviewer</u>
Jan-02	Hydrology	Seattle District of USACE by Ken Brettmann	"I believe that all of the initial review comments have been satisfactorily resolved"
Sep-02	Hydraulics	West Consultants by Anand Raman and John Howard	
Jun-03	Hydrology	FEMA through Consultant Michael Baker Associates by Will Thomas	"We believe the proposed base flood discharge for the Skagit River near Concrete is reasonable and appropriate for use in the hydraulic analysis...the procedures...are consistent with accepted engineering practices"
Aug-04	Hydrology	Corps' Hydrologic Engineering Center by Tom Evans	"HEC finds that the approach taken in the hydrologic analysis of the Skagit River is sound and appropriate to the data available."
Aug-04	Hydraulics	Corps' Hydrologic Engineering Center by Michael Gee	"The logic and model application strategy are sound and the calibration results are solid."
Aug-04	Hydrology and Hydraulics	Pacific International Engineering for Skagit County by Albert Liou	Not resolved
Aug-04	Hydrology and Hydraulics	USGS Headquarters by William Kirby	"I concur with the Corps analysis and the resulting flow frequency curve for low-magnitude events... I concur with the concepts used to define the T-year peak regulated flows and with the resulting regulated frequency curve for high-magnitude events. I also concur with the concept of defining the regulated frequency curve in two segments and with the resulting overall regulated frequency curve."
Aug-04	Hydrology and Hydraulics	Puget Sound Energy through their consultant Tetra Tech coordinated by Jay Smith (probably 5 reviewers total)	26 pages of comments responded to.
Aug-04	Hydrology and Hydraulics	Seattle City Light by Mike Haynes	(not a complete review just looked at comments related to Seattle City Light Projects)
Aug-04	Hydrology and Hydraulics	Private citizen, Larry Kunzler	"Your answers were very professional. There are some obvious areas that we will just have to agree to disagree on."

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### Review of USGS's Historic Flows Determination by James E. Stewart

<u>Date Completed</u>	<u>What was reviewed</u>	<u>Reviewer</u>	<u>Comments by reviewer</u>
1961	Originally Published	USGS - James E. Stewart and G. Lawrence Bodhaine	
Aug-05	Verification Study	USGS - M. C. Mastin and D. L. Kresch	USGS's policy concerning the revision of previously published peak discharges is to revise them only if the revised discharge is...different from the original discharge by more than 10%. Therefore, Stewart's 1921 peak discharge...was not revised. The peak discharges of the 1897, 1909, and 1917 floods were not revised
Feb-05	Review of Mastin, Stewart and County consultant (PIE) work	USGS - Robert D. Jarrett, Ph.D., National Research Program	the USGS has every reason to believe that the 1921 value is as good as could be obtained
Feb-06	Review of USGS, Corps and PIE Hydrology	FEMA through Consultant Michael Baker Associates by Will Thomas	Corps' analysis using USGS numbers more reasonable than PIE's for 7 reasons
Oct-06	Review of Larry Kunzler's criticisms	USGS - Matthew C. Larsen, Chief Scientist for Hydrology	It would be wrong to eliminate the data (historical). There is good evidence these floods were large floods...There is little more that could be done to verify data
Aug-07	USGS Re-evaluates with November 2006 Flood Info	USGS - M.C. Mastin	The accuracy of the peak discharge of the four historic floods at this site is essential to the current flood-reduction study by the U.S. Army Corps of Engineers and the Skagit County Flood Insurance Study Update by FEMA. In order to provide the best data available for the current flood studies, the USGS revised historic floods at Skagit River near Concrete despite the fact that their estimates are all less than 10 percent from the currently published discharges

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### Technical Review of Hydrology and Hydraulics for Skagit River Flood Insurance Study

<u>Submissions</u>	<u>What was reviewed</u>	<u>Reviewer</u>	<u>Comments by reviewer</u>
Jun-06	Initial Runs Completed and Mapped as Worst Case Levee Failure		
Feb-07	Adjusted for official Levee Failure Decision		
Nov-07	Adjustments for revised USGS flows		
May-08	FLO-2D Fix and adding 1924-43 unregulated data		
Reviewed	Hydrology	FEMA through Consultant Michael Baker Associates by Will Thomas	"The NSP is in agreement with USACE on the hydrology"
	Hydraulics	FEMA through Consultant Michael Baker Associates by Zhida Song-James	"Zhida believes <b>the June 2008 FLO-2D model is reasonable and suitable for floodplain mapping</b> "