DEPARTMENT OF ECOLOGY
Northwest Regional Office

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TO: File

FROM: Charles L. Steele
Floodplain Management Specialist

SUBJECT: Meeting to Discuss Skagit Hydraulic Modeling

I attended a meeting of the Corps of Engineers and Skagit County on October 10, 2002 at the Skagit County Public Works Building. The meeting was requested by the Corps to discuss in detail the methodology, assumptions, average conditions, risk and uncertainty that have gone into development and calibration of the hydraulic models for the Skagit River Flood Damage Reduction Feasibility Study. Participants included:

Steve Babcock, Project Manager
Ted Perkins, Chief Modeler
Mike Deering, Hydraulic Engineer
Bruce Sexauer, General Investigations Manger
Jim Smith, Chief Economist

Dave Brookings, Public Works Administrator
Don Dixon, Surface Water Manager
Lorna Ellstad, Feasibility Study Project Coordinator

The hydraulic modeling work of the Corps is most important, since it will drive the economic cost-benefit work the Corps will now have to re-do (earlier work was based on more rudimentary modeling), and it will also be the basis for the sedimentation and geomorphic analyses. The hydraulic analysis was redone because the Chief Modeler, Ron Malmgren, left the agency and his successor, Ted Perkins, had to submit the work through the Corps processes for detailed reviews and cross checks. This resulted in changing many assumptions, etc., and in a more or less complete revision of the earlier work. The meeting lasted three hours, reflecting the many questions and uncertainties expressed during this time. However, the summary below will only highlight a few major issues of concern to us:

Credibility of the Map. A map that was shown at this meeting had been circulated earlier to the County. They felt it lacked credibility because it did not show either the City of Mt. Vernon or Fir Island as being in the floodplain. This is not credible since people in the Skagit have seen flooding on Fir Island twice in recent years, and have seen that flood fighting has been the only reason Mt. Vernon has not flooded. The corps explained that the lack of flooding in Mt. Vernon was a mistake. There were many reasons why this map will not look like more familiar maps of

floodplains in the Skagit. This is because the methods used by the Corps to establish feasibility for their projects are very different from the conventional methods used to delineate floodplains. The purpose of the Corps models is to develop an average annual damage estimate for existing conditions. The intended use of the models and model output data is to evaluate the performance of the current and modified flood damage reduction features under a range of hydrologic conditions. The hydraulic models are used for developing risk-based analyses, which determine expected annual damage through the Corps model for performing flood damage reduction analyses, the HEC-FDA (Flood Damage Analysis) model. Thus, the maps from this part of the Feasibility Study will not look like conventional floodplain maps.

Concern About FEMA Maps. The County thought that the revised FEMA maps were several years off. After discussion, they were referring to the final effective date of revised maps, since FEMA has provided funding to do the revisions, and attendees were reminded that FEMA expected them to be completed shortly. However, there are concerns I have re how they may be prepared, and the answers I get are not very reassuring. The 1985 FEMA maps were done by averaging the risk over the entire Delta, thereby showing virtually the whole Delta as floodplain but with lower elevations than could be expected at a point where levees might break (which is exactly what happened on Fir Island in 1990, where flooding exceeded the BFEs by 2-3 feet). I did not get a good sense for how the Corps will approach its definition of the 1 percent chance flood, and did get the impression that there may be more than a single one percent chance flood depicted on the maps. That was exactly what the Corps did in 1980, which became the subject of countless public hearings and objections. FEMA took the study over from the Corps at that time, injecting two PHds and other very seasoned Headquarters types into the study, and it is suggested that FEMA step in early in this effort since I do not get the sense the Corps has thought out how they will proceed to meet the FEMA standard.

Padilla Bay Concern. Corps project leaders raised a very serious concern regarding effects of a bypass project on Padilla Bay. Their concern is with the basis for the Padilla Bay NERR Management Plan. Corps legal staff believe the law designating estuarine sanctuaries throughout the Country **does** give PBNERR special protection and that NOAA could use the Reserve as a "show stopper" for the project. This concern was expressed at meetings on July 26 and August 9, and is still haunting the background of the project. Countering the negative connotations were recognition of the Governor's support for the project (such as through $1 million in FCAAP grants), and discussions of impacts on eelgrass that may be considered minimal (even the Corps ongoing dredging of the Swinomish Channel can produce as much or more sediment to the eelgrass beds as the project eventually might). The legal opinion is due shortly.

Cost-Benefit Considerations. Jim Smith gave a good description of what can and what cannot be included in ascertaining benefits from a flood reduction project. In short, only National benefits can be included. Strong Regional benefits, such as keeping Highway 20 open, keeping refineries open, and factoring major costs for keeping I-5 and the railroads running, are not factors in the National Economic Development (NED) account. Attached is a sheet the Corps provided that show what actually can be counted as part of the NED. The other items, such as Highway 20, should be used to show local Regional benefits; they are factored into NEPA.

cc: Pat Massey, FEMA