

MEMORANDUM

February 22, 1977

State of
Washington
Department
of Ecology

To: John Spencer

From: Douglas Houck

Subject: Review of Snohomish County's RWMSCI
Mathematical Model As It Applies to
the Lower Snohomish River

This memo is to reiterate what was discussed at the meeting of February 9.

The model that Snohomish County is using is a highly modified version of the Receiving Water Model (RWM) of the Storm Water Management Model (SWMM). There appears to be nothing unusual in either the RWM or the modifications made to it.

The problem with the model (RWMSCI) are some of the assumptions used in calibrating it. Two surveys were conducted by myself to check those assumptions. The first survey was done on an outgoing tide on January 24 while the second survey was done on an incoming tide on February 3. These two surveys showed the following:

1. Only 50 percent of the Snohomish River goes down the main channel. This contradicts the model which assumed that 80 percent of the total flow goes down the main channel. It's my feeling that the shape of the sandbar which separates the Snohomish River into the main channel and Ebey Slough is responsible for the distribution of the total flow. This sandbar is constantly changing with a resulting changing distribution pattern. It has been reported that as little as 32 percent of the total flow of the Snohomish River flows down the main channel.
2. The model (RWMSCI) used is one-dimensional as it was assumed that there was no saltwater wedge in the main channel or sloughs. The second survey showed a pronounced saltwater wedge in the main channel and both Ebey and Steamboat Slough. The saltwater wedge was apparent approximately 3-4 miles up the main channel and the sloughs.

3. The model assumed that the saltwater boundary was at 100 percent saturation for dissolved oxygen. The second survey showed saturation levels of only 85-90 percent.

Presently I am trying to roughly calculate the difference between these new conditions and the original assumptions. I hope to have the results by the end of the week.

DH:ee

cc: D. Burkhalter
D. Provost
D. Cunningham