Generic Problem 2 - Channel Stabilization through Jetty Construction

Problem - Jetty construction is being considered to stabilize a natural or deepened navigational channel.

Discussion of Natural System - In the natural system, waves arriving at an angle to the shoreline cause a transport of sand along the shoreline. The transport rate is Q. Upon reaching this inlet, the transport occurs over a broad flat sand body termed an ebb tidal shoal.

The Altered System - Since the shallow depths over the ebb tidal shoal are not suitable for navigation and dredging without jetty construction may be considered as too temporary a solution, jetties are planned to: (1) maintain the channel alignment, (2) to limit sand deposition from adjacent areas, and (3) to jet the deposited sand seaward from the channel.

Physical Effects - The updrift jetty will cause impoundment of the sand arriving at the jetty. Downdrift of the inlet, the waves have the same transporting capacity and thus will cause erosion at the same rate as the sum of the deposition on the updrift side, and accumulation of sand farther seaward.

Figure 2. Generic Problem 2 - Jetty Construction.