

## APPENDIX "3"

## FISHERIES RESEARCH BOARD OF CANADA

Water Pollution Research on the Pacific Coast,  
including reference to effects of logging on fisheries

Reply to question by Mr. Howard, M.P.

Reference: Minutes of Meeting of Fisheries Committee  
dated May 12, 1966, Page 206

The Board conducts research to determine the effects of changes of the environment on aquatic life and, where such changes are deleterious, research is undertaken to determine feasible and economic means of alleviating the situation. Consideration is given to the effects of physical structures such as dams, etc.; the effects of noxious chemicals, sewage, industrial waste, etc. (man-made pollution) as well as secondary effects such as eutrophication, silting due to excessive land erosion resulting from logging, construction, etc. All these are termed "Water Pollution Research".

As it is written, the Fisheries Act forbids any modification of waters inhabited by fish. However, in an industrial civilization some degree of pollution (environment modification) must be accepted. The Board's task is to define the limits of "tolerable degrees" of pollution; observe or forecast what degree of pollution is or will occur in any situation; define limits of development that may be accepted and, in cases where the acceptable limits are likely to be exceeded, to devise and define economic means of reducing the pollution within the tolerable limits.

*Sewage disposal in the sea*

Where fresh water enters a coastal seaway (harbour, inlet, etc.) it moves to and fro with the tides but progresses seaward in the surface layer. This layer entrains sea water from below and so becomes more saline to seaward. In the deep zone below the surface layer the sea water progresses persistently inward toward the river mouth. Fisheries Research Board scientists discovered this flushing mechanism, related the surface seaward transport to land drainage, and applied it to predict the fate of freshwater-borne sewage. Using sea and air survey techniques and hydraulic models, they have been able to forecast the path in the sea, rate of diffusion and concentration of the pulp mill effluent, its oxygen demand and the residual oxygen in the water at Port Alberni, Nanaimo (Harmac), Prince Rupert, Crofton, Burrard Inlet and Seymour Narrows. In all these cases they were able to assist with sewer outfall design and location. In consequence, there is no pollution problem from these installations.

The techniques were used to forecast the consequences of municipal sewage disposal from Vancouver, Nanaimo and Victoria and to determine the optimum location of sewer outfalls.