

CHAPTER 2

CANADIAN BENEFITS

2.1 Review of U.S. Corps of Engineers Estimates

The basic source of data used by the U.S. Corps of Engineers to estimate Canadian benefits for their 1972 report was a 1964 report to the International Joint Commission by the International Pembina River Engineering Board entitled "Joint Investigation for Development of the Water Resources of the Pembina River Basin, Manitoba and North Dakota". The Canadian flood damage data in the 1964 report was, in turn, based on the 1958 report of the Manitoba Royal Commission on Flood Cost Benefit. Damage estimates in the 1964 report reflected the impact of protective measures taken between 1958 and 1964, but damages were expressed in terms of 1957 prices. Manitoba provided the Corps with discharge-flooded area relationships for the Gretna-Altona reach of the Pembina River and the Emerson-St. Norbert reach of the Red River that reflected the impact of protective measures taken up to the time of the most recent Corps study. Based on this information the Corps estimated frequency-damage relationships for each reach both with and without the proposed Pembilier Dam. The discharge-damage curves and frequency damage curves for each reach are shown in Plates C-15 to C-18 in Appendix C of the 1972 Corps report. The estimated average annual flood damages, in 1957 prices, as derived from these curves, were \$35,800 for the Gretna-Altona reach and \$493,800 for the Red River Reach.