

Alberta River Water Quality Bacterial Sub-Index: The Effects of Wastewater Treatment Plant Upgrades, Flow, and Other Basin Influences on Water Quality in the Bow, Red Deer, and North Saskatchewan Rivers

Upgrades to municipal wastewater treatment processes in Calgary (1997), Red Deer (1999), and Edmonton (1998) have resulted in general improvements to river water quality downstream of these cities. Enhanced treatment processes are designed to reduce the number of bacteria released by wastewater treatment plants to rivers. Improvements are reflected in the bacterial sub-index component of the Alberta River Water Quality Index, as shown below. During the summer of 2005, however, unusually intense rainfall events likely led to increased introduction of bacteria from other sources to the three rivers. Potential sources of bacterial contamination can include non-point source runoff from agricultural lands, urban areas, and natural landscapes. Elevated bacterial concentrations resulted in a downward shift in the 2005-2006 Bacterial index at Cochrane (Bow), Highway 2 (Red Deer), Morrin Bridge (Red Deer), and Devon (North Saskatchewan). The North Saskatchewan River at Pakan, on the other hand, has been experiencing relatively low bacterial index ratings since the 2003-2004 reporting period. Alberta Environment has been closely monitoring this latter situation and is actively investigating the source of bacteria in the river.

