

### The Effects of Wastewater Treatment Plant Upgrades, Flow, and Other Basin Influences on Water Quality in the Bow, Red Deer and North Saskatchewan Rivers

Enhanced treatment processes are designed to reduce the amount of nutrients and bacteria released by wastewater treatment plants to rivers. Upgrades to municipal wastewater treatment facilities in Calgary (1997), Red Deer (1999), and Edmonton (1998) helped improve river water quality downstream of these cities until 2003. Resulting water quality improvements are reflected in the Bacterial Sub-Index component of the Alberta River Water Quality Index, as shown below. However, several other sources, including storm sewers, combined sewer outfalls, and surface runoff from agricultural fields or natural ecosystems, can contribute bacteria to rivers. Since 2003, Bacterial Index ratings at downstream sites have been variable, with lower Bacterial Index scores occasionally occurring upstream of major urban centres. In general, lower Bacterial Index ratings correspond to sampling following large precipitation events with their associated runoff.

