BF 09695 Local Road over La Biche River
Hydrotechnical Summary

Channel Capacity :

S = 0.0001
B = 20 m, h = 3.0 m, T_h = 30 m
Use AT Equation

At Bank Height : Y = 3.0 m, V = 0.6 m/s, Q = 50 cms
At Channel Capacity : Y = 4.0 m, V = 0.8 m/s, Q = 85 cms

Historical Highwater Data :

HW was noted in September 1960 (Y = 3.0 – 4.3m, very low V), July 1970 (Y ~ 1.8m), and July 1919 (HWM with Y = 4.3m above ice level). Ice damage was noted in 1961, with high ice reported to be in the Y = 2.4 – 3.0m range. The 1996 design (DD1174) was based on Q = 66cms and Y = 4.5m, and associated with a July 1983 event reported at gauge 07CA011.

Gauge 07CA004 (DA = 4330km^2, 1930 – Now) reports the highest elevation (and therefore highest outflow) in September 1960 (Q_{est} ~ 70 cms). Gauge 07CA011 (DA = 4860km^2, 1983 – 1995) located at BF76186 d/s, reports Q = 66cms in July 1983. Although this event was preceded by a storm (~90mm), there was no associated rise in lake level, so the hydrograph would have required 70mm of runoff from the ~ 200km^2 d/s of the lake, which far exceeds any observations for this area. The largest storms in the storm database are 115mm of rainfall in June 1970, about 100mm in August 1980 and June 1962, and about 90mm in September 1958, July 1960, and July 1983.

Basin Runoff Potential :

d = 40 mm, T_p = 20 hrs, q = 0.55 cms/km^2.
Gross DA = 5000 km^2 (Lac La Biche u/s has DA ~ 4810km^2)
Peak flow likely governed by u/s lake routing.

Conclusion :

The channel capacity estimate is consistent with historic observations and is within the basin runoff potential.

Recommended parameters : Y = 4.0 m, V = 0.8 m/s, Q = 85 cms.