BF 70534 Hwy 858 over La Biche River
Hydrotechnical Summary

Channel Capacity :

S = 0.00015 (est. from hydraulics)
B = 20 m, h = 2.0 m, T_h = 35 m
Use AT Equation

At Bank Height : Y = 2.0 m, V = 0.6 m/s, Q = 30 cms
At Channel Capacity : Y = 3.0 m, V = 0.8 m/s, Q = 70 cms

Historical Highwater Data :

HW was noted in September 1960 (Y = 2.7m), and July 1970 (Y ~ 1.2m). A 1952 report noted a high ice mark with Y ~ 4m. The 2006 design was based on Y = 2.7m and Q = 70cms.

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 = 4810 km^2 (near outlet to Lac La Biche)
Peak flow 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 = 3.0 m, V = 0.8 m/s, Q = 70 cms.