BF 08707 Hwy 861 Over Battle River
Hydrotechnical Summary

Channel Capacity :

S = 0.0003
B = 15 m, h = 6.0 m, T_h = 35 m
Use AT Equation

At Bank Height : Y = 6.0 m, V = 1.4 m/s, Q = 220 cms
At Channel Capacity : Y = 7.0 m, V = 1.7 m/s, Q = 300 cms

Historical Highwater Data :

HW was noted in April 1948 (0.2m over deck, Y ~ 6.5m), April 1956 (1.2m below deck, Y ~ 5.5m, V ~ 1.2m/s), April 1974 (~1m over deck, some drift, Y ~ 7.5m, V ~ 1.5 – 1.8m/s), and April 1982 (WL 2.8m below deck of old bridge – 6.4m below new bridge, Y ~ 4.0m, V ~ 1.2m/s).

Gauge 05FC001 (DA = 7680km2, 1966 – Now) is located upstream and reports Q = 243cms in April 1974 (7m stage rise, gauges at Q = 160cms). The largest storms in the storm database are about 90 - 100mm of rainfall in June 1944, June 1970, June 1973, July 1982, and July 1990.

Basin Runoff Potential :

d = 15/40mm, T_p = 20hrs, q = 0.3 cms/km^2.
Gross DA = 9360 km^2.
Q_p = 2800 cms (well beyond limit of applicability).

Conclusion :

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

Recommended parameters : Y = 7.0 m, V = 1.7 m/s, Q = 300 cms.