BF 09943 Hwy 841 Over Rosebud River
Hydrotechnical Summary

Channel Capacity :

S = 0.002
B = 15 m, h = 4.5 m, T_h = 30 m
Use AT equation

At Bank Height : Y = 4.5 m, V = 2.6 m/s, Q = 270 cms
At Channel Capacity : Y = 5.5 m, V = 3.1 m/s, Q = 410 cms

Historical Highwater Data :

HW was noted in 1969 (erosion at north headslope), and 1971 (nose of slope protection undermined). A 1925 cross section notes Y = 3.3m, a 1938 note suggests ice has been to the bottom chord (Y = 3.5 – 4m), a 1955 report notes a HWM over the deck (Y = 5.5m), and a 1999 BIM report notes a HWM with Y = 4.5m. The 1965 design was based on Y = 6m (1948 event) and Q = 420cms.

WSC Gauge 05CE003 (DA = 4000km^2, 1922 – 1930, 1936) reports Q = 80cms in March 1925. Gauge 05CE005 (DA = 3580km^2, 1966 – Now) reports Q ~ 200cms in April 1971 (gauged at Q = 170cms with 4.5m stage increase). The largest storm for this area in the database is June 1970, with about 100mm of rainfall over the basin.

Basin Runoff Potential :

d = 35mm, T_p = 40 hrs, q = 0.25 cms/km^2.
Gross DA = 3760 km^2, beyond the scope of the runoff depth.

Conclusion :

The channel capacity estimate is consistent with historic observations.

Recommended parameters : Y = 5.5 m, V = 3.1 m/s, Q = 410 cms.