4/26/2018

BF 73899– Waiparous Creek Bridge on Provincial Highway 40:14 near Cochrane
Hydrotechnical Summary

Channel Capacity:

S = 0.0075
B = 14 m, h = 1.8 m, T_h = 26
Use AT equation

At Bank height: Y = 1.8 m, V = 2.5 m/s, Q = 90 cms
At Channel Capacity: Y = 2.7 m, V = 3.4 m/s, Q = 210 cms

Historical Highwater Data:

There is no design data on file for this structure, however there are two watercourse crossings about 100 m upstream (BF 00664) and 900 m downstream (BF 70508) of this structure.

For upstream crossing BF 00664, HW was noted in April 1974 with the 1.5 x 2.1m culvert running full. A 1958 design was based on Q = 6cms and Y = 1.5m (prior to AENV enhancement in 1974). AENV design based on Q = 15cms. The 2001 design was based on Y = 2.3m and Q = 42cms.

For downstream crossing BF 70508, a 1953 design was based on Q = 6cms and Y = 1.8m (prior to AENV enhancement in 1974). 1974 AENV design based on Q = 15 - 19cms and Y ~ 2.0m.

There are no WSC Gauges on this stream. Gauges in the area suggest HW events in April 1974, 1982, and 1997. The largest storms in the storm database are 160mm of rainfall in July 1953, and about 100mm in 1937, 1952, 1965, and 1986.

Basin Runoff Potential:

d = 40 mm, T_p = 20 hrs, q = 0.55 cms/km^2.
Gross DA = 232 km^2 (133 km^2 u/s of Manawan Lake)
Q_p = 125 cms

Conclusion:

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

Recommended parameters: Y = 3.0 m, V = 1.0 m/s, Q = 35 cms