

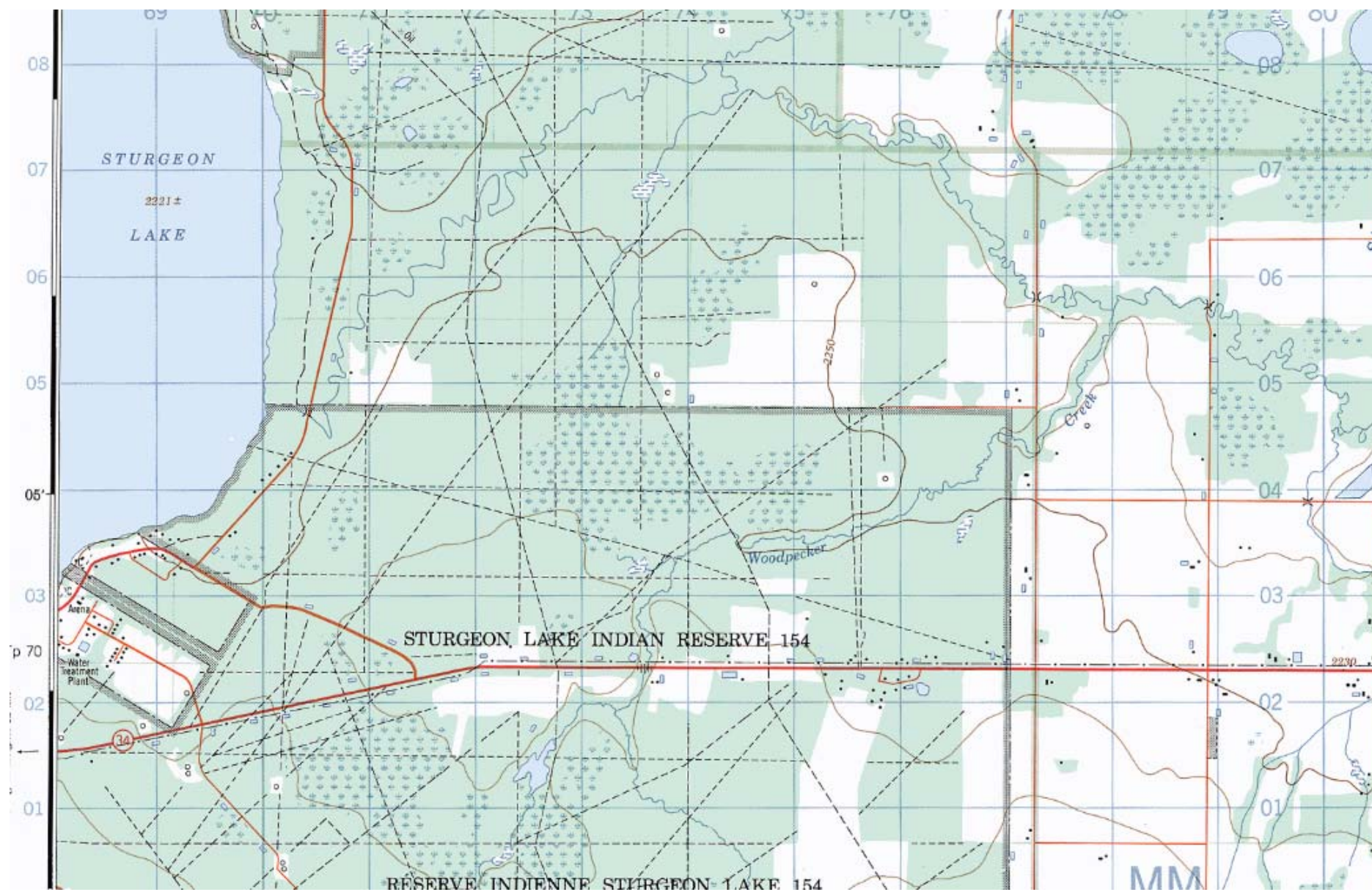
Bridge Planning Practitioners Workshop, April 2012
Case Study #1: BF 71631 Woodpecker Creek



Upstream end



Pipe outlet



File 71631 – Woodpecker Ck

Hydrotechnical File History

1931 3 – 18' bridge built, dh = 20'.

1944 4 – 18' bridge built.

1953 Report : Y = 5 – 8', Q ~ 200cfs, B = 10', T = 18', h = 4'.

1954 96" SP x 224' installed, 30' fill height, 3' drop, no burial.

1963 HW (Apr) : 0.6m > u/s crown.

1966 HW (Apr) : Y ~ 0.5 – 1.0m < u/s crown, Y ~ 1m d/s.

1979 Erosion at both ends repaired with rock.

1988 BIM HWM Y = 1.6m.

1992 Photo : B = 3m, h = 1.5m, T = 6m, lots of drift.

1993 Report : Q = 27cms, Y = 2.1m, V = 1.5m/s.

1996 Photo : drift to ~ 0.5 – 1.0m below u/s crown.
Note : DA = 54km², Q = 18cms, S = 0.005, rec. 4.3m SP.

1999 Design : DA = 56km², Q = 23cms, S = 0.005, Y = 2.0m, rec. 4.3m SP x 110m.
Photo : B = 3m, h = 1.5m T = 6m, ponding u/s behind beaver dam at inlet, scour hole d/s.

BF 71631 Hwy 43 Over Woodpecker Ck Hydrotechnical Summary

Channel Capacity :

S = 0.0033
B = 3 m, h = 1.5 m, T_h = 6 m
Use n = 0.05

At Bank Height : Y = 1.5 m, V = 1.1 m/s, Q = 7 cms
At Channel Capacity : Y = 2.3 m, V = 1.6 m/s, Q = 18 cms

Historical Highwater Data :

HW was noted in April 1963 (0.6m > u/s crown, Q ~ 15cms) and April 1966 (~ 0.8m < u/s crown). A 1988 BIM HWM was noted with Y = 1.6m, and a 1996 photo shows drift to about 0.8m < u/s crown. Past designs have been based on Q = 17 – 27cms.

There are no WSC gauges on this stream. Gauges in the area suggest HW in July 1971 and June 1996. The largest storms in the database for this area are about 130mm in July 1987 and about 100mm in Jun 1961, August 1976, July 1982, and June 1993.

Basin Runoff Potential :

d = 70mm, T_p = 20hrs, q = 1.0 cms/km².
Gross DA = 54 km².
Q_p = 54 cms.

Conclusion :

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

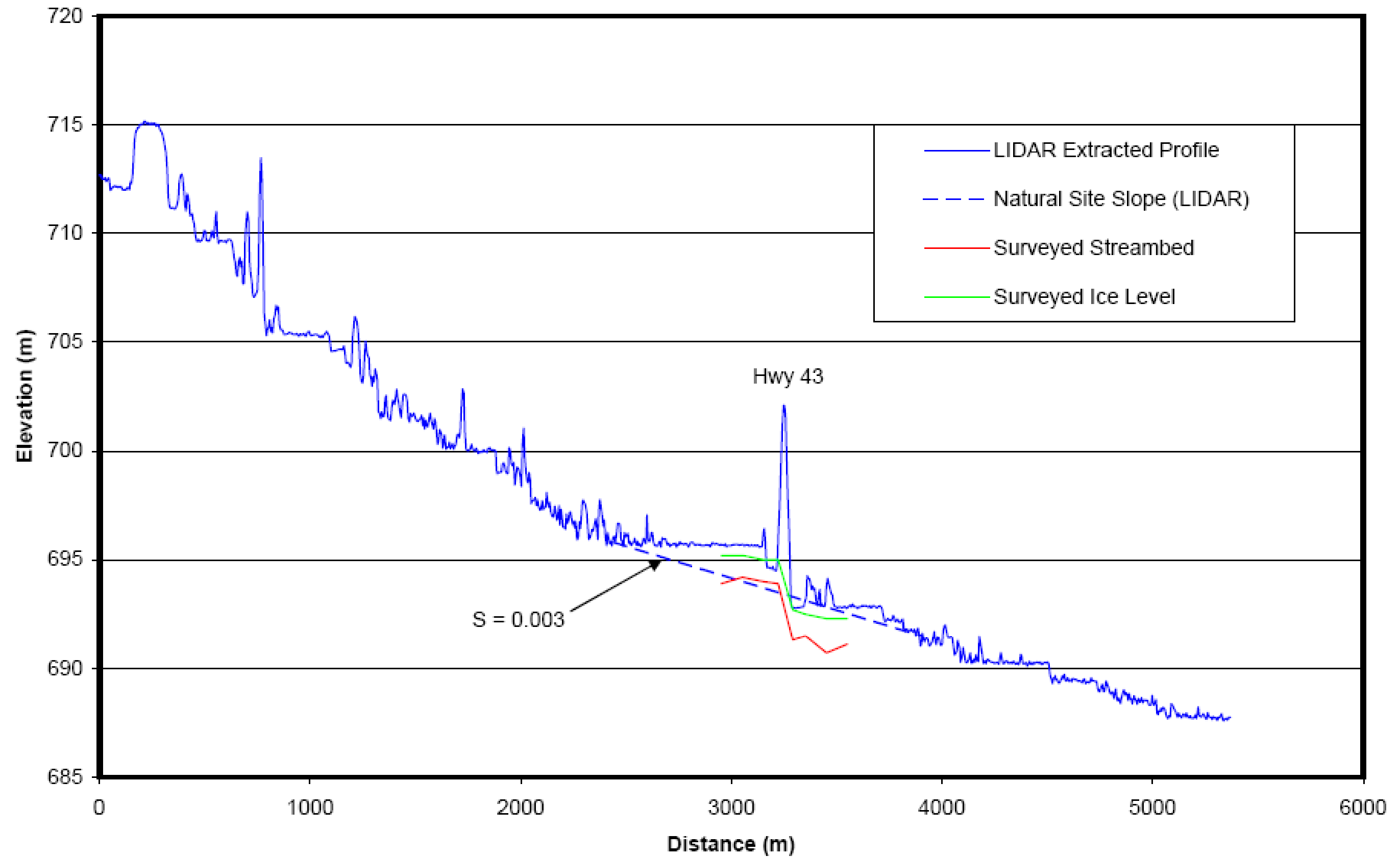
Recommended parameters : Y = 2.3 m, V = 1.6 m/s, Q = 18 cms.



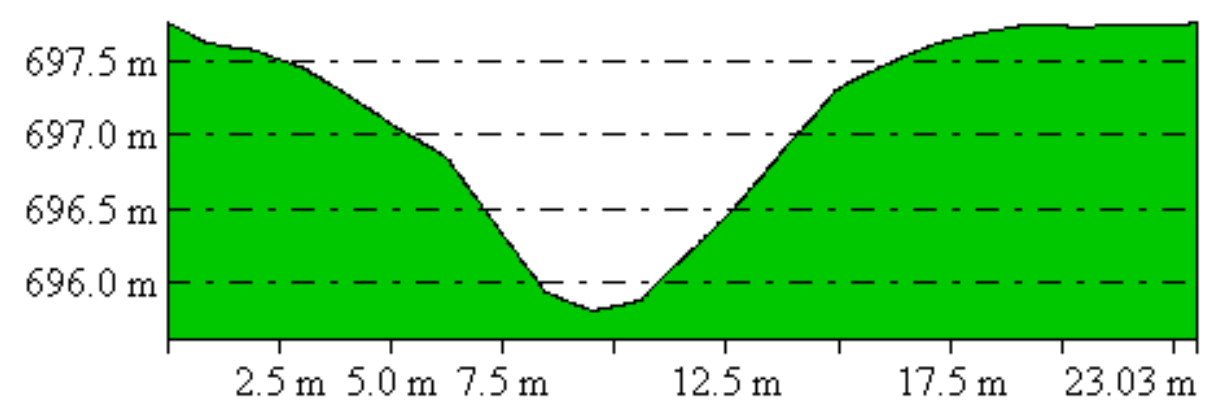
Sattelite Image



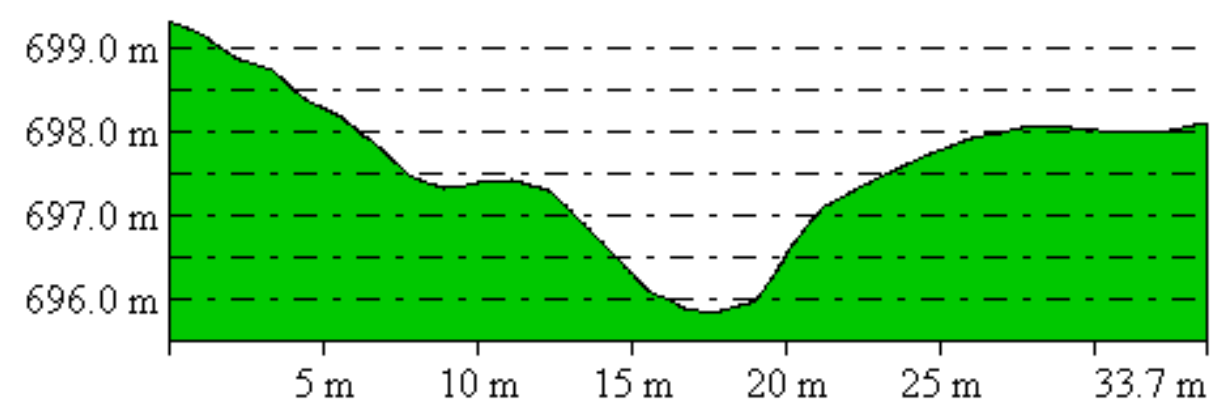
1:50 000 Aerial Photo



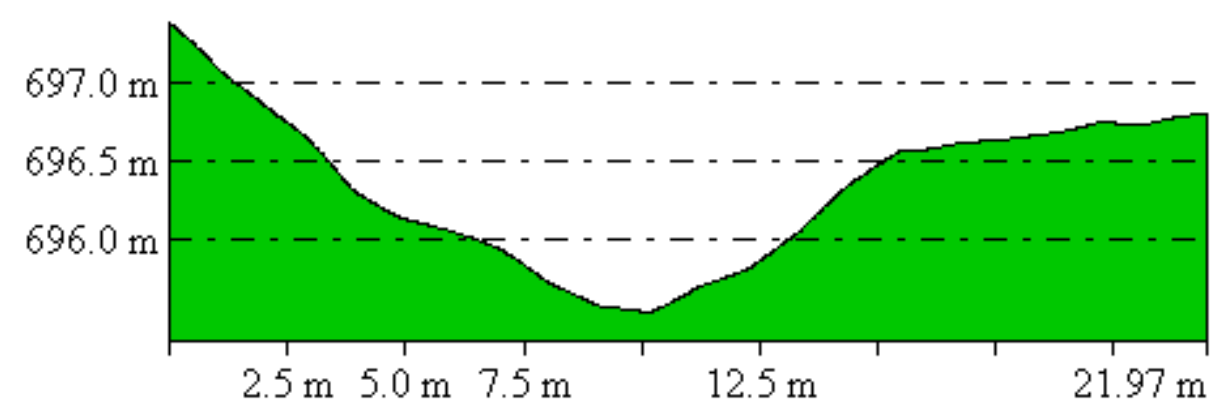
From Pos: 473319.109, 6101870.281 To Pos: 473340.339, 6101879.193



From Pos: 473316.897, 6101858.489 To Pos: 473346.989, 6101873.535



From Pos: 473253.242, 6102056.979 To Pos: 473274.075, 6102063.923



Channel Sections