

**MEMORANDUM**

TO Mr. R. G. Harris, Chief  
 Water Supply and Investigations Div.  
 Water Investigations Branch

FROM

G. Waberski, Technician

May 18

1972

SUBJECT Thompson River Cross-section  
 Project No. 71-23

OUR FILE 0263750-A

YOUR FILE

The enclosed computation is the summary of 55 cross-sections for Thompson River, compiled as follows:

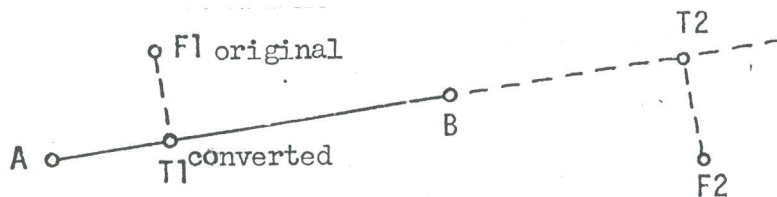
Thompson River, Volume 1, cross-sections 1 - 15  
 Thompson River, Volume 2, cross-sections 16 - 26  
 Thompson River, Volume 3, cross-sections 27 - 39  
 South Thompson River, Volume 4, cross-sections 1 - 9  
 North Thompson River, Volume 5, cross-sections 1 - 7

The location of all cross-sections are shown on drawing No. 4412, sheet 1-4.

The data obtained for the above mentioned cross-sections are presented as follows:

The first page of each cross-section begins with the title and the number of the cross-section for identification purposes, while the following is a listing of coordinates and elevations of all sounding fixes and break points including topography of Station Rig horizontally, established by the Surveys and Mapping Branch, Lands Service, Field Operations Division. Elevations are referred to Geodetic Datum. Coordinates are polyconic rectangular and are referred to 51° N and 121° W.

Following the basic references as mentioned above, the first phase of computation is performed by the "PERP" Operation. In brief, a point T1 is coordinated on a line AB at the foot of a perpendicular from a point F1. The distance along the line from A to T1 and the off set distance T1 to F1 are also computed.



A dash in front of an off-set value indicates that the original coordinate is to the left of line AB. The next page shows the new coordinates of the PERP Operation and its bearing and distance between each break point. It should be noted that all original station numbers are increased or decreased by a unit of 100. This change of numbering is a must for mechanical tabulation. For the final presentation of the profile plot of a cross-section or river bank, the original break point number will be reinstated again for the profile tabulation.



The next phase of information supplied is a written profile for each cross-section. The profile sheet is divided into five columns, the station number, (converted and original number to execute the written profile), distance between break points, the chainage of the cross-section, elevation of the break point and for the second last column the total number of break points. The Name or Remark column is self-explanatory.

With all the previous computations completed, the final phase of operation is performed by computing the hydraulic elements at certain elevations and the plotting of the cross-sections. The information of the hydraulic elements will be recognized by the following prefix letters EL, WP, A, RB, SR, LB, SL, and W. Those abbreviations in turn represent for "EL" the surface elevation in square feet, "R" the hydraulic radius, "RB" the horizontal distance to the right bank river side at given surface elevation from break point 0 (Zero), "SR" the slope at right bank river side below given surface elevation, "LB" the horizontal to the left bank river side at given surface elevation from break point 0 (Zero), "SL" the slope at the left bank river side below given surface elevation and "W" the width between right and left bank of the river or "W" is equal to the value of "LB" minus the value of "RB".

A cross-section, which is not a simple concave curve, may be divided into more than one section by a given surface elevation. In this case, all data will be computed for each section separately from right to left bank and then the total for all sections. Cross-section No. 2 in volume 1 shows a typical example where the information of the hydraulic elements are listed in two sections for a given surface elevation.

At present, data for the hydraulic elements have been compiled in 1 foot intervals from close to the river bottom elevation to top of bank either right or left whichever has the lower elevation of the two tops of embankment. This is for preliminary study only. If requested, this could be changed up to a maximum of 350 surface elevation with one interval range to a tenth of a foot. The data obtained in the field, two methods were used in order to obtain the information:

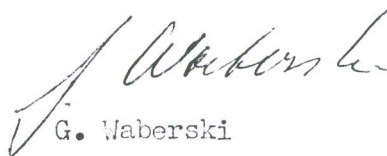
- a) sounding for the river, and
- b) topography for the ground adjacent to the river.

To (a) a raytheon sounder, model DE - 119D, was used and the fix observations were made entirely from shore by two angles. To (b) the portion of the embankment was carried out by stadia. Both survey data were combined as one cross-section, and the result of the two combinations, the final coordinates are listed on page 1 for each section.

The plot of the cross-section was defined by using all break points as chainage stations including their elevations, or the X and Z coordinates of each break point. (See PROF tabulation) The X coordinate is the distance from some point of origin on the right side of the river. The numbers as printed on the plot are the original break point identifications but its value is based on the "PROF" Operation. The only horizontal line for each cross-section on the plot located above all break points is called the surface elevation or reference line.

The surface elevation for all cross-sections is given to the even foot and printed only once per plot at the right side of the drawing. The cross-section drawing produced by the computer at a scale - horizontal 1 inch = 100 feet and vertical 1 inch = 10 feet are attached at the end of each cross-section tabulation. It should be noted that all cross-sections are looking downstream.

The survey, which was carried out during the months of July and August, 1971, was supervised by R. G. Fernyhough.

  
G. Waberski

GW/bjm

*APM  
1 May 1972*