Station Evalution
Kechika River at the Mouth

A.G. Smith

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Station Evaluation

Kechika River at the Mouth

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A.G. Smith

Planning and Studies Section

Water Resources Branch

Vancouver, B.C.

December 1986

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1. Introduction

Station Description

The station was established on October 15, 1962, as part of Water Power Resource inventory of Northern British Columbia. It is one of three stream gauging stations in the Kechika basin. These are listed below.

Kechika River at the Mouth	(10BB001)	22700 km^2
Kechika River above Boya Creek	(10BB002)	11200 km^2
Turnagain River above Sandpile Creek	(10BA001)	6580 km^2

See Figure 1 for the location of these basins.

An automatic recorder was installed in a walk-in shelter, on a 42" diameter wood stave well, seven miles above the confluence with Liard River. Open water measurements are made from a cableway and ice measurements below the gauge. The intake pipes do not operate below the gauge height of 2.4 feet. This gauge level is seldom reached in open water periods.

The control at the station has been quite stable throughout the period of record. Only four rating curves have been used with two shifts at the low end of the curve and one at the high end. The top of the rating curve was adjusted in 1972, by a minus 8 percent, when a high water measurement was obtained.

Ice period duration usually averages between 5 and 6 months per year. Periods of gauge record have been lost due to clock stoppages which seem to occur quite frequently. Flushing corrections are another source of error which are adjusted between measurements. Open water measurements average less than 4 per year.

2. Information Transfer

A correlation study has been carried out to assess the ability of the upstream stations to produce a synthetic record for this station. The correlation coefficients and regression equations are shown in Table 1 for selected streamflow characteristics. A sample correlation is shown in Figure 2.

The open water routing study between the two upstream stations and Kechika River at the Mouth indicates that daily records can be produced with acceptable accuracy as shown in Figure 3. A hydrograph is shown in Figure 4 for comparison purposes.

3. Summary

The reliability of the stage-discharge relationship is good. Some shifting has occurred in the lower range of stage. The upper end of the rating curve appears to be adequately defined. Adequate measurements have been made during open water with the only problems appearing to be clock stoppages and silting of the intake pipes.

Synthetic record can be produced for a range of streamflow characteristics with suitable accuracy. The sum of the discharge from the upper two stations is equal to that of this station. This means that there is very little inflow between the stations.

4. Recommendations

This station has been designated as a major stream station to inventory the discharge pattern and volumes from the basin. It also serves as a sample point for regional equations sampling spatial and temporal parameters.

This station is seen to be redundant by W.M.O. standards as the sum of flow at the two upstream stations is nearly equal to that of the Kechika River at the Mouth. In other words, these stations are too close

together.

Since there is 22 years of record and the data can be reproduced with sufficient accuracy there is no need to continue monitoring the flow at this location.

Table 1

Streamflow Characteristics for Stations in the Kechika Basin

	Station			Sum	Correlation Coefficient
Streamflow Characteristic	10BB002 11200	10BA001 6580	10BB001 22700	10BB002 plus 10BA001	10BB001 10BB002
Monthly Mean					
January	29.5	15.4	55.9	44.9	.883
February	26.6	13.2	48.8	39.8	.900
March	26.1	12.0	47.4	38.1	.884
April	33.1	15.8	61.1	48.9	.849
May	128	99.9	256	228	.951
June	410	312	776	722	.933
July	346	196	591	542	.984
August	242	124	383	366	.964
September	165	109	292	274	.907
October	119	82.8	215	202	.983
November	64.2	37.5	112	102	.843
December	38.3	20.4	72.3	58.7	.809
Annual Mean	136	86.4	245	222	.964
Low Flow 1 Day	23.4	11.0	42.9	34.4	.821
High Flow Max. Daily	642	535	1240	1180	.973
Maximum Instantaneous	661	560	1270	1220	.975

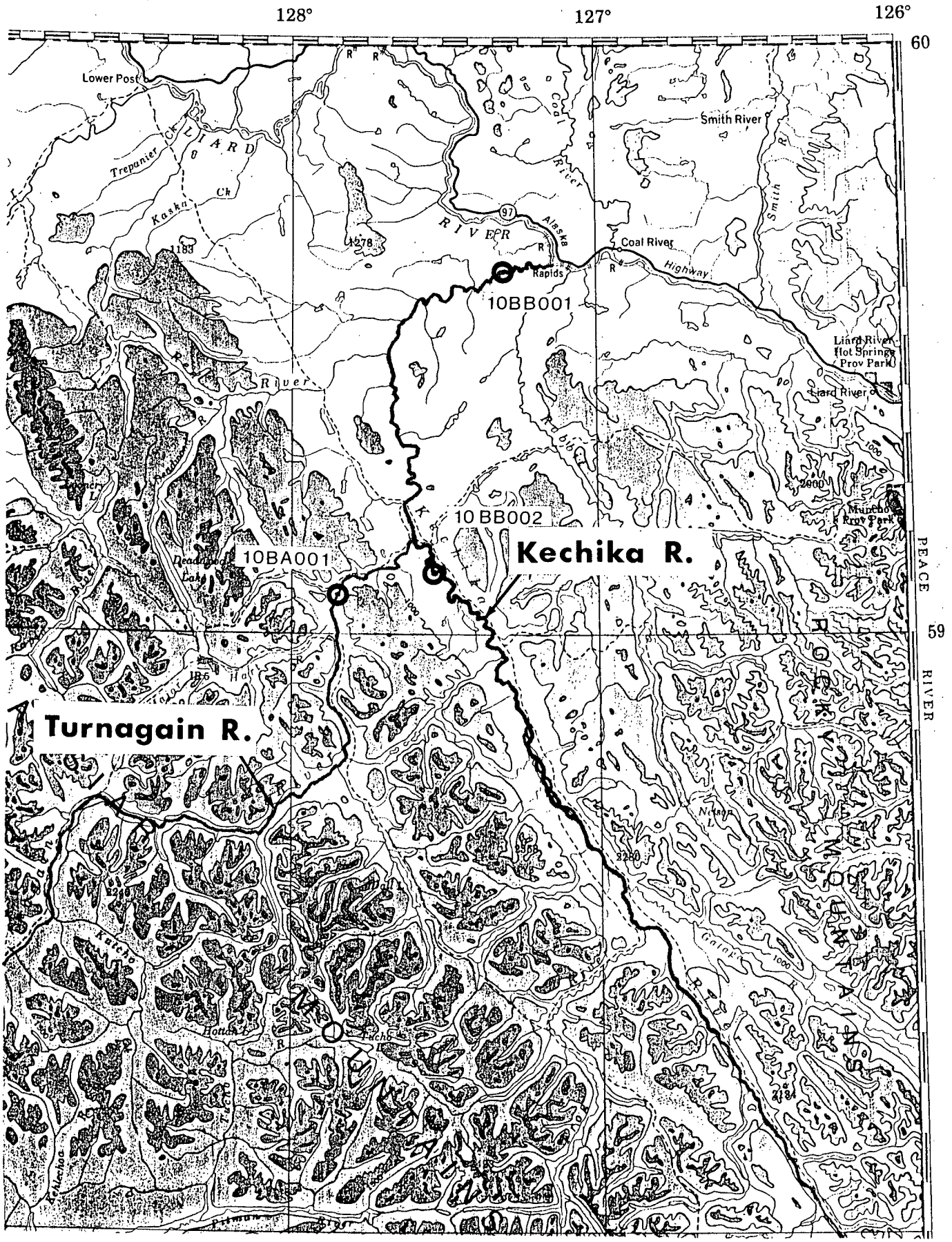


Figure 1 Location Map

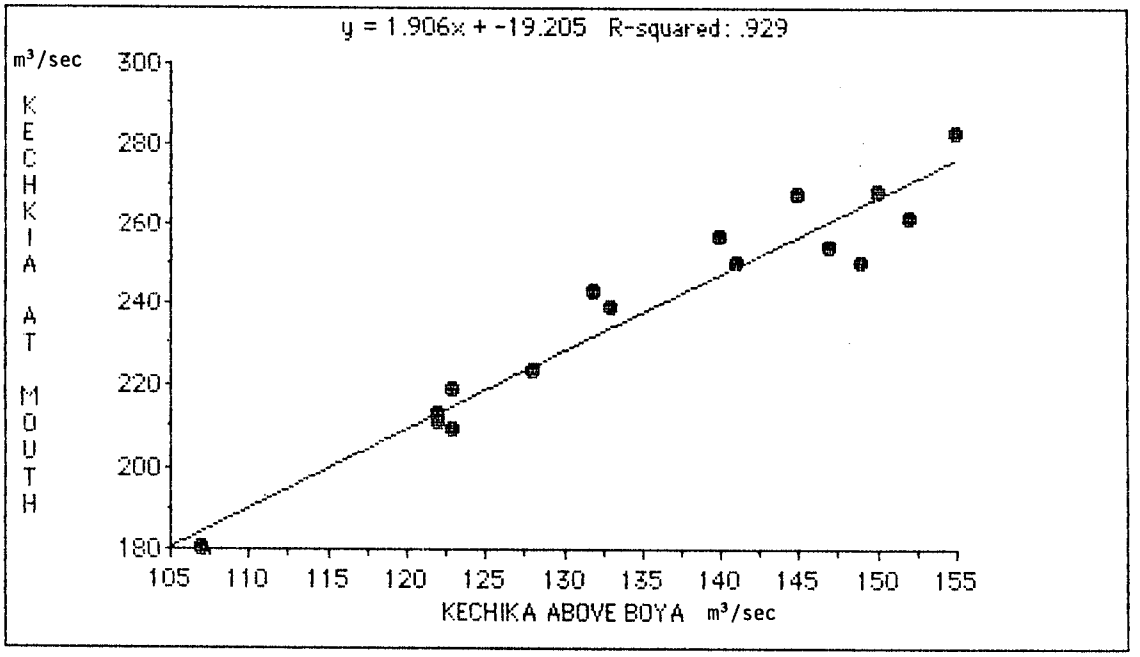
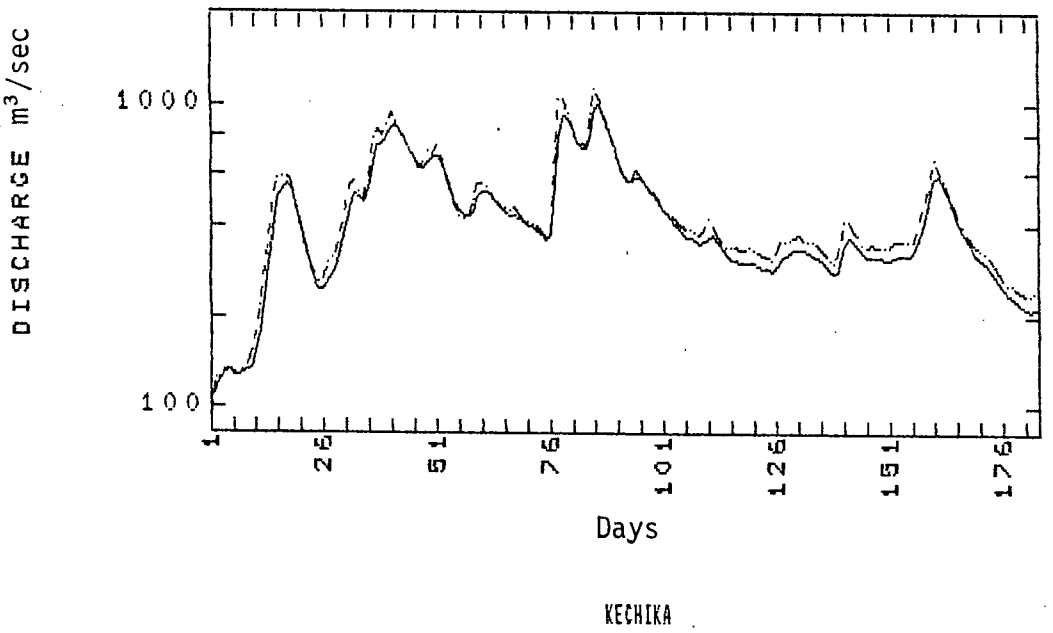


Figure 2 Sample Correlation



No. of observations (historic)= 184
No. of observations (routed) = 184

Mean historic discharge = 457.168
Mean routed discharge = 426.7
Percentage difference of means= 6.66453
Absolute difference of means= 30.4681
Root-mean-squared error = 45.3042

Figure 3 Open Water Routing Study

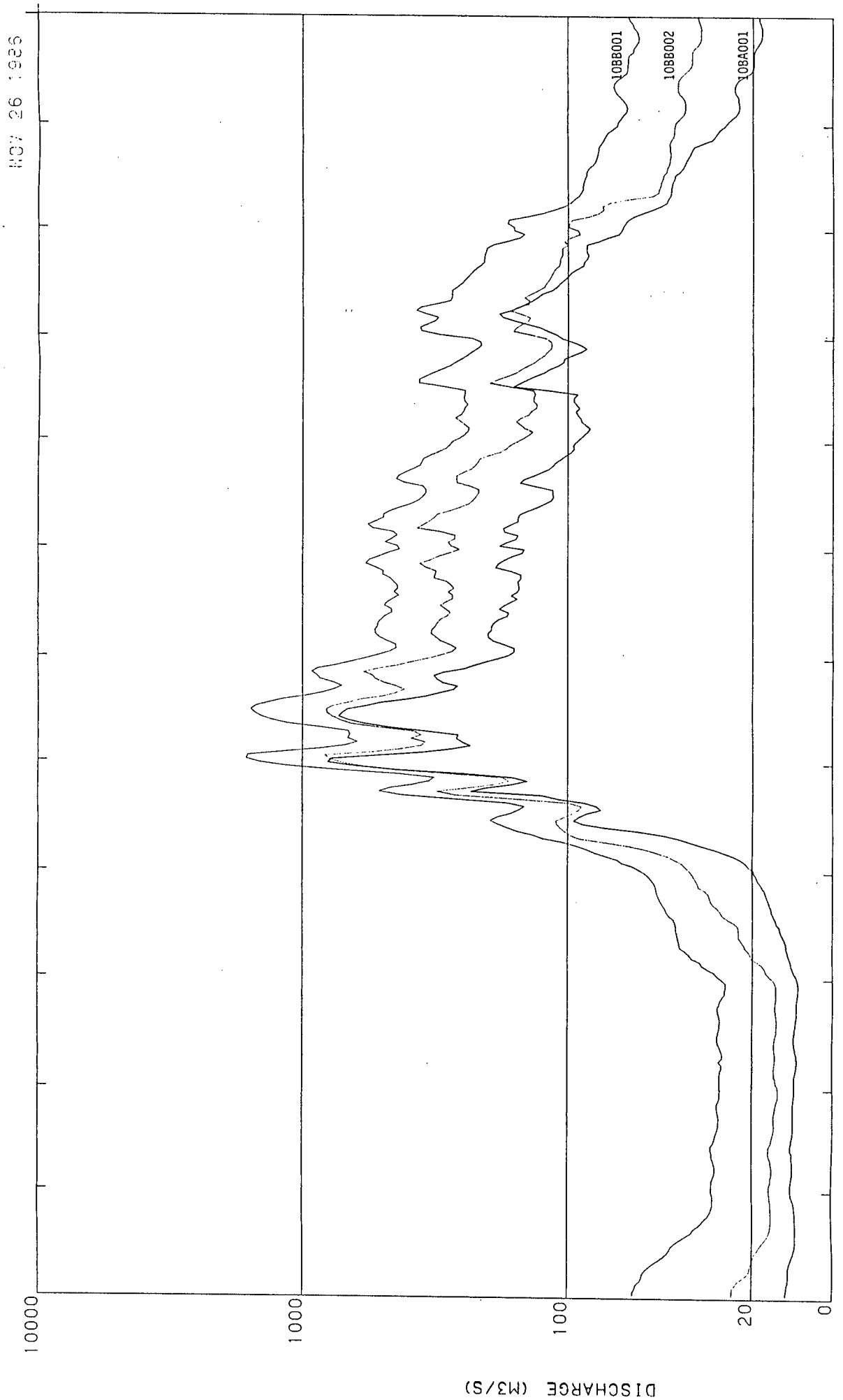


Figure 4 Hydrograph