NORTHERN TERRITORY ADMINISTRATION.

WATER RESOURCES BRANCH.

FIELD TRIP REPORT.

INVESTIGATION OF POLICEMAN'S CROSSING - ROSE RIVER.

Report No. 1962/5.

Compiled by C. M. Friel - Technical Assistant.

November, 1962.
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Preamble.

Policeman's Crossing is a vehicle crossing place on the Rose River, on the track joining Rose River Mission and Roper River Mission. These two Missions are operated by the Church Missionary Society.

The crossing is approximately 11 road miles upstream of Rose River Mission which is located on the western side of the Gulf of Carpentaria at the mouth of the Rose River. No settlement exists at the crossing.

The country generally consists of light powdery soils and sand. The country rock is a medium grained sandstone. Vegetation consists generally of cypress pine, stunted and sometimes dense, with eucalypts and dense undergrowth. Grasses were not in abundance, probably because of the parched nature of the country.

Just below the crossing a large creek empties into the Rose River. This creek was dry and because of the poor wet season, did not run last year.

Aim of Investigation.

The investigation was a preliminary reconnaissance of the area to determine, primarily, the possibility of a water supply for a proposed extension or outstation of Rose River Mission. It was also intended to investigate the possibility of controlling the tidal influence and stream flow of the Rose River at the crossing, and to inspect the area generally with a view to further settlement.

Access.

Access is obtained by road through Roper River Mission. At the time of the visit, it was only suitable for four-wheel drive vehicles. No petrol stocks are carried by the Mission. The Mission is serviced weekly by air from Darwin and periodically by the "Corara", a freight vessel which visits Gulf ports.
Existing Water Resources.

The only supply of water is the Rose River. Above the crossing, which is a rock bar, a connected series of holes up to 28 feet in depth occur for a distance of some seven miles. Submerged rock bars and narrows occur. The river appears to be affected by tides over this distance; although the tide was noticeable at the crossing, it was not noticeable on the upper reaches, but marks on the banks indicated that larger tides had some influence.

Flood channels parallel with the main stream existed at the upstream extremity of the investigation.

Drinking water was obtained from a point some 3½ miles upstream of the crossing. This water was slightly brackish but quite drinkable. The water at the crossing was saline. Results of analyses are appended.

Datum.

Zenith: Assumed R.L. 50.00 feet. Nail in blazed ironwood tree at road junction on north side of crossing.

Azimuth: Magnetic bearing. Station A to B 298° 15'.

Investigation of Area.

A cross-section and strip traverse were surveyed just upstream of the crossing at the suggested low wall control point. This showed that an effective control would require a length of not less than 460 feet at a height above the invert level of the stream of 4.5 feet. This would be 0.3 feet above the highest visible tide mark.

A line of levels was established between the bench mark at the crossing and the watering place previously mentioned. The water level here was at R.L. 26.79, which is below the tidal mark of R.L. 29.66 at the crossing.

The watering place consisted of a rocky constriction in the river over which the water was passing at an estimated 18 - 20 cusecs. It was this high flow which suggested that this was not the extremity of the tidal influence as had been supposed. The river was further investigated for approximately 3½ miles upstream of this point. Shallows and rock bars prevented further progress by boat. An attempt was made to investigate the surrounding country here on foot but the density of the scrub was such that it was found impossible to penetrate without considerable lacerations to the person. The country, as far as inspected, consisted of sandy soils with occasional conglomerate and limestone floaters. In the river bed at this point, limestone underlies the sandstones which appeared to form the country rock. The stream appeared to have been burnt out giving the country a desolate appearance.

The scrub outside of the flood channels consisted of rock-stunted cypress pines with thick undergrowth, the trees having the appearance of suffering from a prolonged drought. The river at this point had an estimated flow of
Below the watering place to the crossing, thirteen
such cross-sections were sounded, to give an indication
the capacity of this stretch of the river. These con­
structed of five depths across each cross-section, which were
located by sketching the river with the aid of a compass as
work progressed. Any results obtained should, therefore, be
regarded as indicative only.

By this method, an approximate capacity of 170 million
accuracies there. Later, increasing to 250 million
accy. with a 4-foot wall at the crossing and ignoring any
accuracies on the river above the watering place.

The location of the watering place was determined by
map and compass in conjunction with the levelling.

Temporary bench marks were established at the crossing
and the watering place, both being nails in blazed ironwood
posts.
Conclusions and Recommendations.

Water analyses indicated that the intrusion of the saline waters of the estuary was already affecting the quality of the water at the watering place.

The erection of a wall at the crossing of sufficient height and strength to prevent the tidal influence and withstand the effects of flooding would involve considerable expense and materials.

Because of the above two factors, it is recommended that any such control measures take place at the watering place, for economy and ease of construction.

In the absence of definite tidal information, the maximum height to be expected at this point cannot be determined, but a wall of three feet above the existing low water level at the watering place would be in excess of the highest tidal mark at the crossing by 0.1 feet. It is unlikely that the tidal variation at this point would be as great as it is at the crossing. A wall of this height would pond a considerable body of water on the upstream side.

It is recommended that the Mission should consider this area for any proposed extension of their activities if the soil proves to be at all suitable for agriculture or other required purposes in preference to the area surrounding the crossing.

The creek on the northern side of the river, entering below the crossing was inspected but not considered because of the more suitable available sites. This creek was reputed to have had no flow this year because of the poor season and its recharge is therefore not reliable.

The section of the river investigated, and downstream of the crossing, appears to contain suitable sites for storage and control measures capable of holding a volume of water well in excess of any foreseeable requirements of Rose River Mission.

Because of this, and because of the recurrent shortage of water at Roper River Mission with the attendant possibility of its removal to another site, it is felt that the area is worthy of a more detailed investigation, both from the point of view of water capacity and recharge and from the point of view of the capacity of the surrounding country to support a moderate population.

Any party carrying out such an investigation would have to be completely self-sufficient in fuel, food and medical supplies. Radio communication was bad in the area.

(Signed)

O. M. Friel
Technical Assistant
APPENDIX I.

RESULTS OF WATER ANALYSES.

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<th>Chloride as NaCl</th>
<th>Total Hardness as CaCO₃</th>
<th>Alkalinity as CaCO₃</th>
<th>pH</th>
</tr>
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<tbody>
<tr>
<td>Sample from crossing after two days' continuous run-out</td>
<td>24,500</td>
<td>2,850</td>
<td>240</td>
<td>8.0</td>
</tr>
<tr>
<td>Sample from watering place, no visible discoloration</td>
<td>1,200</td>
<td>300</td>
<td>245</td>
<td>8.0</td>
</tr>
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