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Liard Highway, N.W.T.
Potential Alternate Alignment
km 179.5 To km 200.5
km 206.5 To km 211.0
Proposed 1979 Geotechnical Investigation
December 1978

TO : Mr. G.D. Reid
Director, Transportation Program
Design and Construction
Public Works Canada
Ottawa, Ontario

FROM : DE

Manager Highways Program
Highways Program
Public Works Canada
Edmonton, Alberta

SUBJECT / OBJET

LIARD HIGHWAY, N.W.T.
POTENTIAL ALTERNATE ALIGNMENTS
KM 179.5 - KM 200.5 AND KM 206.5 - 211.0
AND 1979 PROPOSED GEOTECH INVESTIGATIONS

Enclosed are six copies each of a report outlining two alternate alignments we plan to complete survey and geotechnical investigations on this winter.

The results of the previous geotechnical investigations show that there are some sections of the highway where there is a lack of good borrow materials. Therefore, in addition to geotech work on the proposed revisions, we propose to perform additional geotechnical investigations in areas where a lack of proven borrow exists. We also propose further granular materials testing in areas where previous centreline and borrow logs show granular materials.

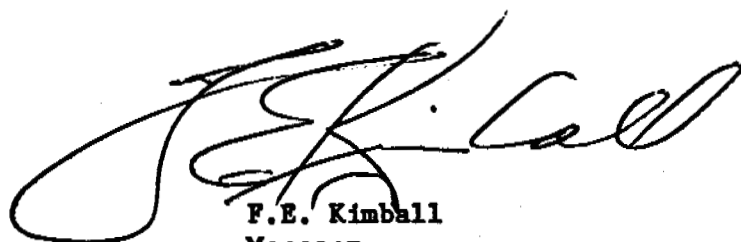
Estimated cost of the survey and geotechnical work is \$100,000.00.

Four copies of the report should be forwarded to the Department of Indian and Northern Affairs in Ottawa for their review.

The distribution of the Potential Alternate Alignment Report is shown on the attached distribution list.

Encl.

SECURITY - CLASSIFICATION - DE SÉCURITÉ
OUR FILE - N/RÉFÉRENCE 6220-A1-A 6220-A1-B
YOUR FILE - V/RÉFÉRENCE
DATE 1979-01-02



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(1 copy plans and specs)

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(1 copy plans and specs)

Mr. E. Viddal, Edmonton
(1 copy plans and specs)

Liard Highway

Potential Alternate Alignment

Kilometre 179.5 (Mile 111.8) to Kilometre 200.5 (Mile 124.8)

Kilometre 206.5 (Mile 128.5) to Kilometre 211.0 (Mile 131.3)

and

Proposed 1979 Geotechnical Investigation

Public Works Canada

Western Region

Edmonton, Alberta

December 1978

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- 1.0 Introduction
- 2.0 Route Location
- 3.0 Geotechnical Investigation

Appendix I - Route Maps

Sheet 1 of 2 - Liard Highway and Potential Alternate
Alignment Scale 1:250,000

2 of 2 - Potential Alternate Alignment Revised
Drainage Areas

Sheet 2 of 2 - Liard Highway with Potential Alternate
Alignment Scale 1:50,000

Appendix II - Air Photo Mosaics (Uncontrolled)

Sheet 1, 2, 3 4, 5, 8, 6 of 7
- Alternate Routes Scale 1:10,000

Appendix III - Sheet 1 of 1 - Profiles of Comparison
Alternate Alignments
km 179.5 to km 200.5

1.0 Introduction

With the completion of the geotechnical investigation along the Liard Highway location in the spring of 1978, two areas were identified where the preliminary design indicated deep grade cuts through bedrock or wet common excavation materials.

The areas identified were in the vicinity of Rabbit Creek, kilometre 189 and Muskeg River, kilometre 208, where a potential alternate alignment should be investigated.

In order to adapt an overall re-alignment to fit the revised stream crossings, it was necessary to involve considerable extra relocation.

- kilometre 179.5 to 200.5 or 21.0 kilometres
- kilometre 206.5 to 211.0 or 4.5 kilometres.

2.0 Route Location

The potential alternate alignment was selected from airphoto study supplemented with an uncontrolled profile of the alternate Rabbit Creek crossing approach banks. The selected crossing of Rabbit Creek will depend on geotechnical investigation results, therefore, two alternate creek crossings have been shown on the maps and mosaics in the Appendix.

A hand cut field survey has been completed along the Muskeg River crossing re-alignment in the fall of 1978.

In addition, a hydraulic consultant has completed a study of the proposed 1978 Muskeg River crossing, which in the report recommends the acceptance of the revised crossing.

The alternate and existing alignment are shown on the maps and airphoto mosaics included in the Appendix.

2.1 Projected Alignment

Revision Kilometre 179.5 to 200.5 (Rabbit Creek Crossing)

The potential alignment departs from the 1970 survey line at approximately km 179.5 and generally parallels the existing location by 2 km separation to the east.

A section of the alternate alignment is through a fairly open burned over area with a series of northeast trending ridges comprised of glacial till from km 197 to km 108. The terrain along the other sections of the alternate alignment is slightly rolling, well drained with shallow creek crossings. A comparison profile has been included in the Appendix.

Revision Kilometre 206.5 to 211.0 (Muskeg River Crossing)

This alternate location was established in the vicinity of two previous alignment surveys for an improved Muskeg River crossing, and avoid a wet common excavation encountered in the 1977 alignment at the river valley wall on the south approach.

2.2 Estimated Cost Comparison

The following construction cost reduction are expected, using the alternate alignment as compared to the existing alignment.

Kilometre 179.5 to 200.5

- reduced common excavation by approximately 300,000 m³ (avoids waste excavation at Rabbit Creek);
- elimination of rock excavation between km 179.5 to 181 by approximately 50,000 m³;
- reduced drainage areas as shown on the drainage area map in the Appendix;
- avoids rock excavation for culvert installation in Rabbit Creek;
- reduced culvert size and length for Rabbit Creek crossing.

The estimated cost saving for the above construction items will be a minimum \$1,500,000.

The potential alternate alignment will be approximately the same length as the present route.

Kilometre 206.5 to 211.0

There is no estimated construction cost saving for this revised alignment, but it is expected to have better usable common materials in the upper valley wall on the south approach to the Muskeg River. In addition, the revised alignment will reduce the haul distance to an aggregate source at km 208.

This revision will be approximately the same length as the present alignment.

3.0 Geotechnical Investigation

Before either of the alternate routes can be firmly established, a comprehensive geotechnical investigation will be required, though it is expected the soils to be an improvement over those encountered along the present route.

A geotechnical investigation program is scheduled for early 1979 to cover the following areas required to complete the final design sections.

1. Potential Alternate Alignment Revisions:

Kilometre 179.5 - 200.5
206.5 - 211.0

2. Centreline and Borrow Materials:

Mile	60 - 64	Mile	67.5
Kilometre	113	Kilometre	146
	117		150 - 151
	121 - 122		159 - 160
	124		174 - 179
	128 - 129		210 - 217
	135		250 - 251
	142 - 144		

3. Gravel Pits:

Mile	66.5		
Kilometre	132	Kilometre	163
	138 - 139 (Netla River)		208 (Muskeg River)
	156 (Liard River)		230 - 233
			(Pettitot River)

4. Access Roads:

Mile 61 (to Liard River)
Kilometre 156 (to Liard River)

5. Bridge Sites:

Kilometre 207.5 (Muskeg River).

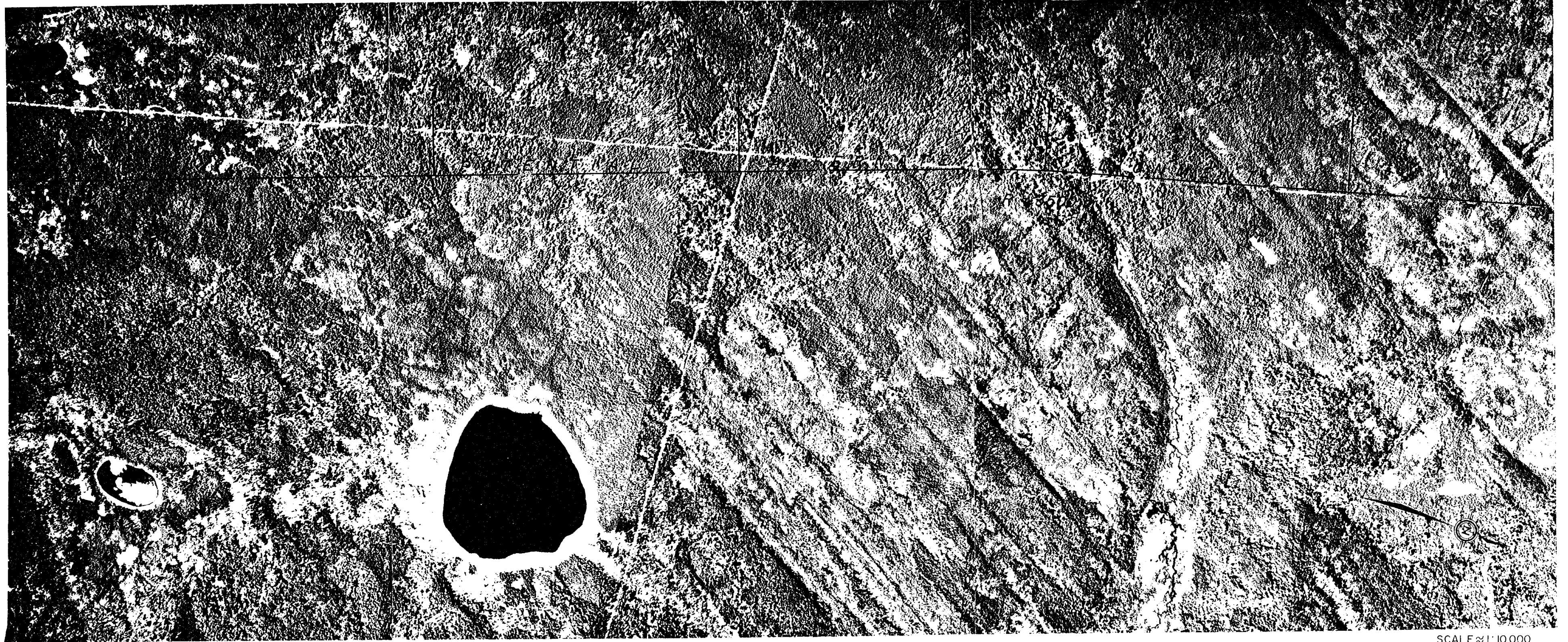
The estimated cost for the above geotechnical investigation and alternate alignment surveys is referred to in the covering letter.



COMPILATION PHOTOS : A 24872 193-196
A 24873 3-5
MAY/78

SCALE: $\approx 1:10\,000$

PAALH 9.



COMPILATION PHOTOS: A 23764 38-43A
7/6/74

SCALE $\approx 1:10,000$

PAA LH 7

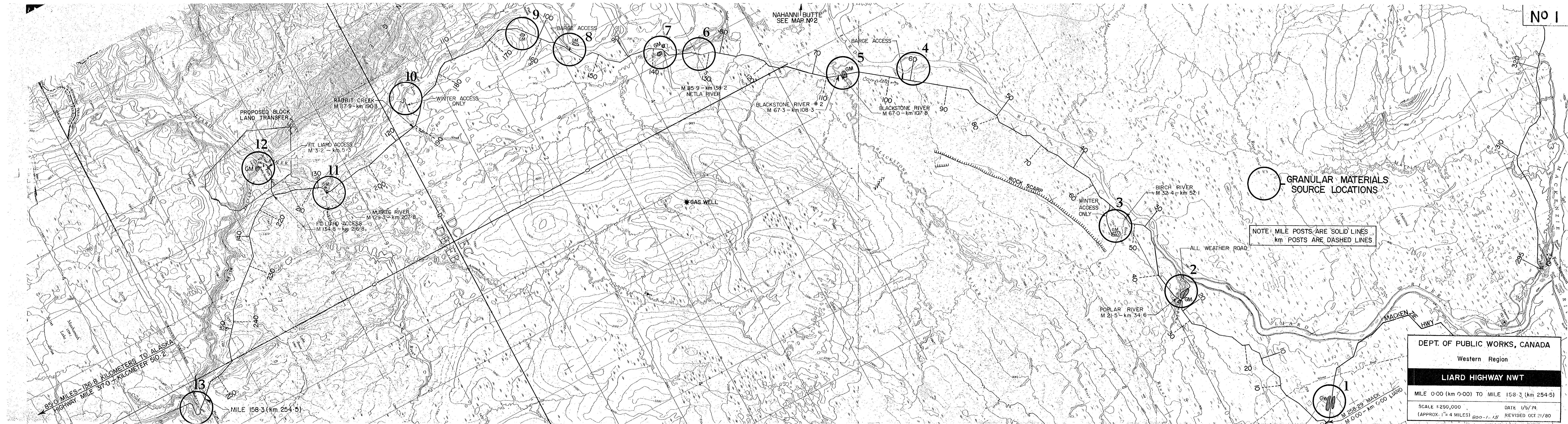


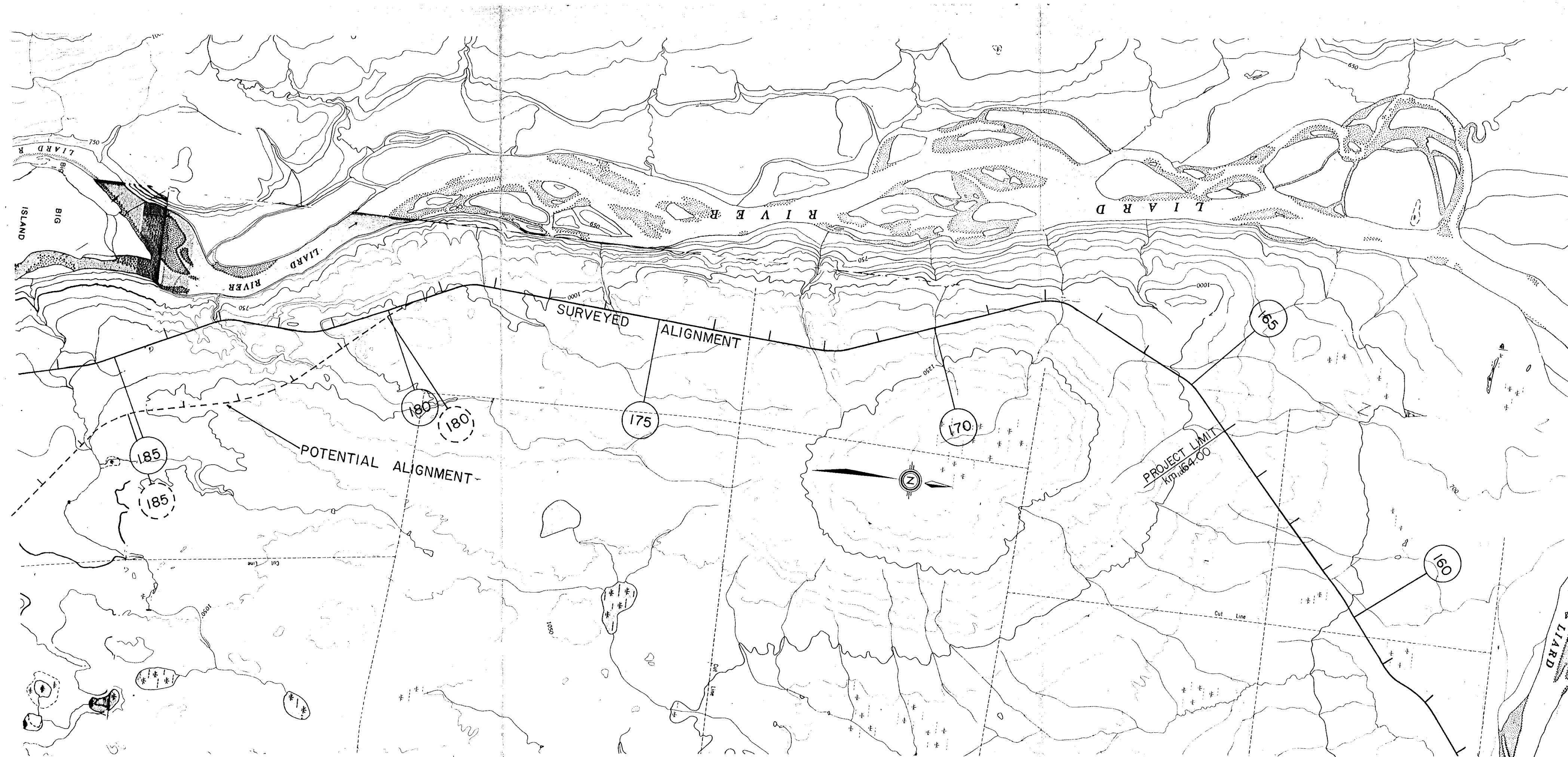
LINE 12-NW (15-32)
ICAS 78-17, ITEM 2, MCKENZIE HWY 5900 ASL
1500G 290, 152.001 Hm 23/5/78

COMPILATION PHOTOS: A 24873 15-19
23/5/78

SCALE ≈ 1:100

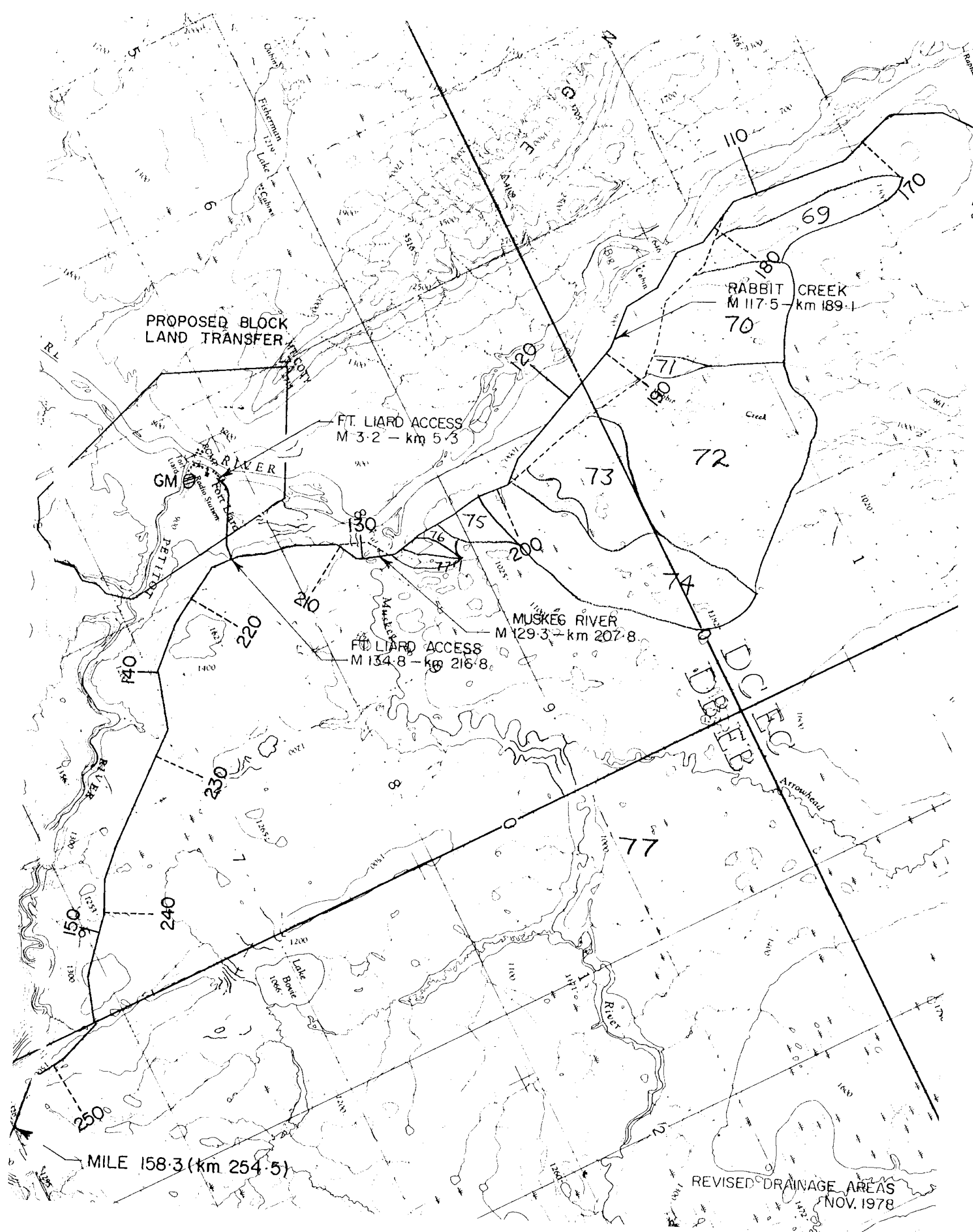
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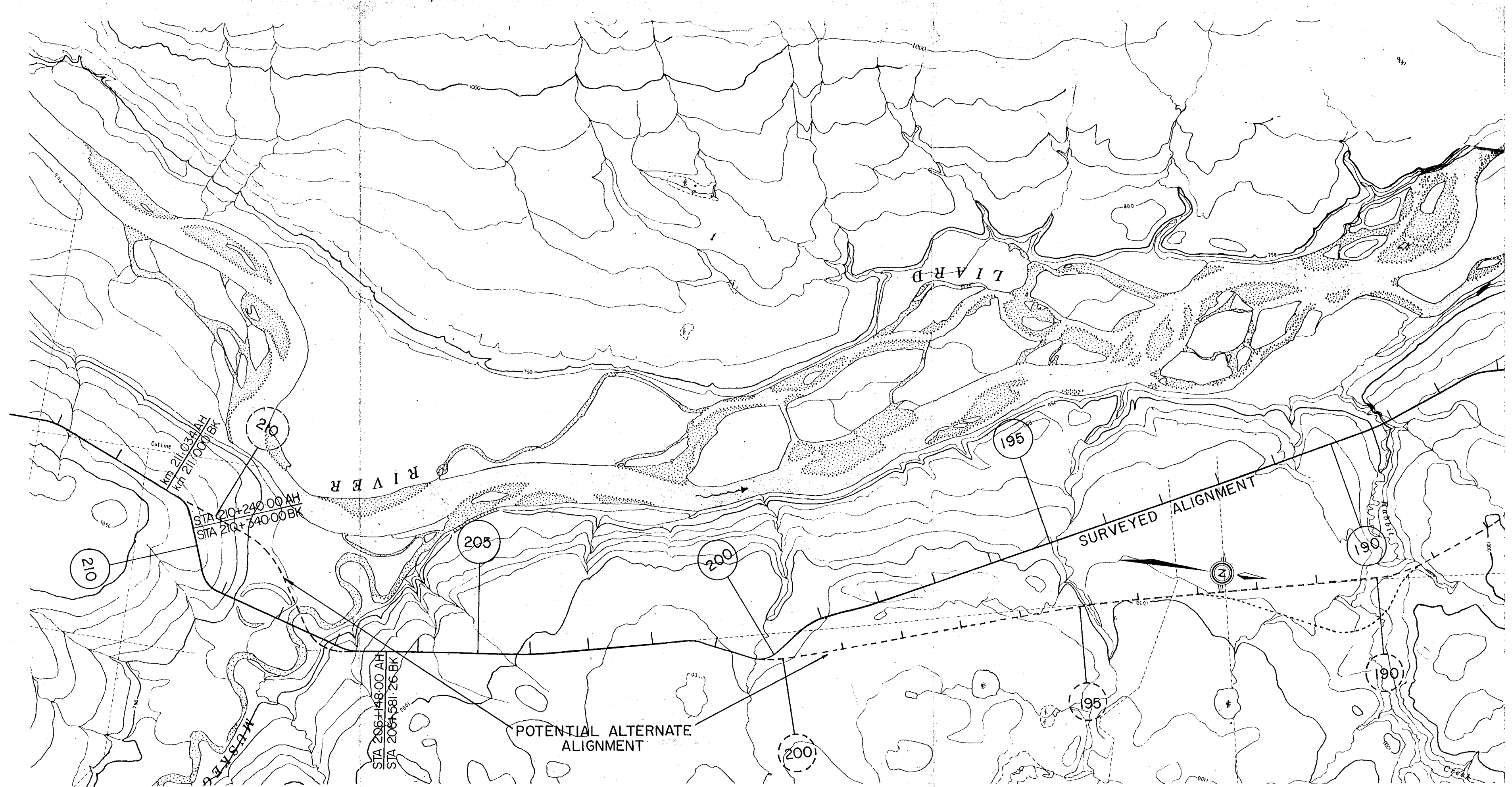




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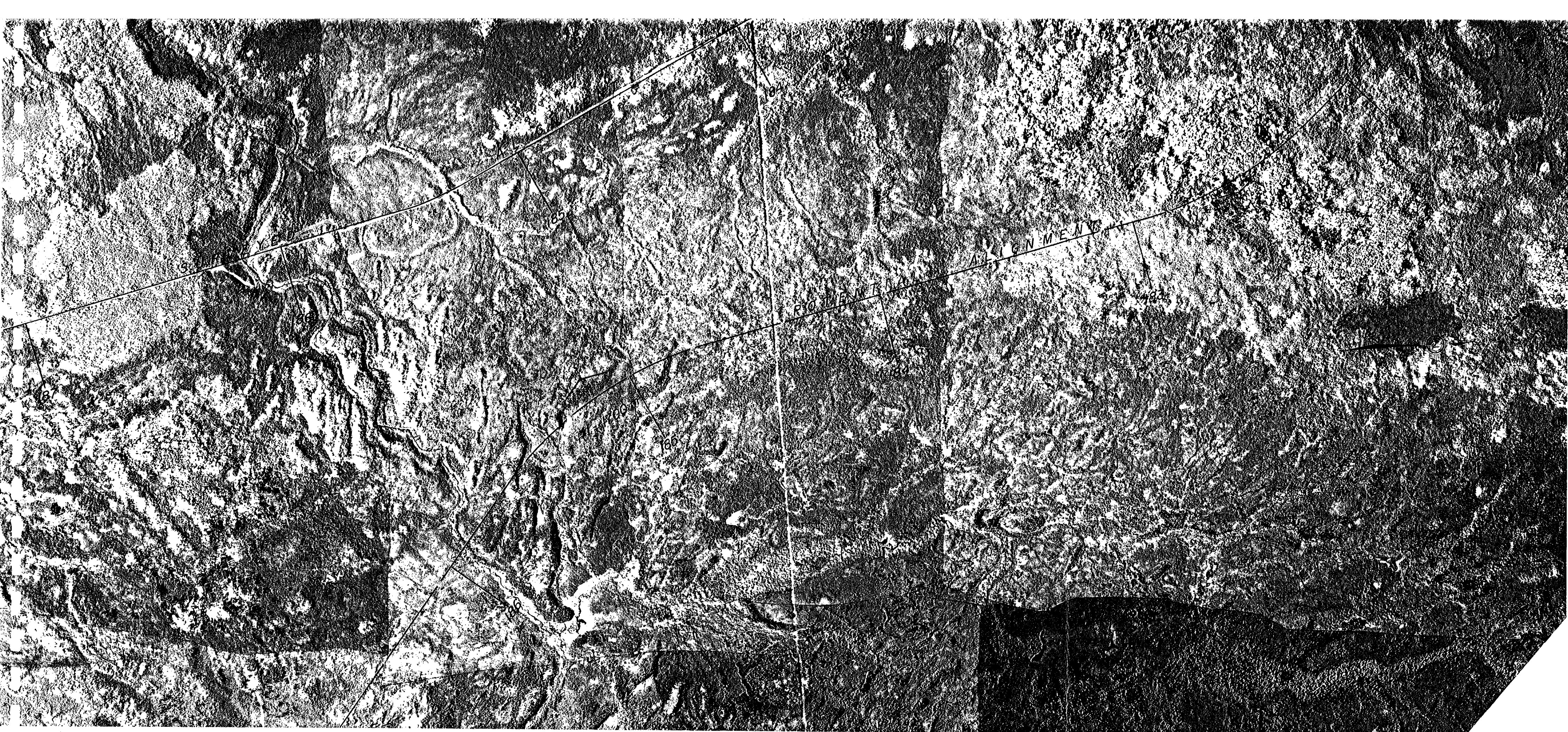


A24873 - 41

COMPILATION PHOTOS: A24873 41-45; 179-182

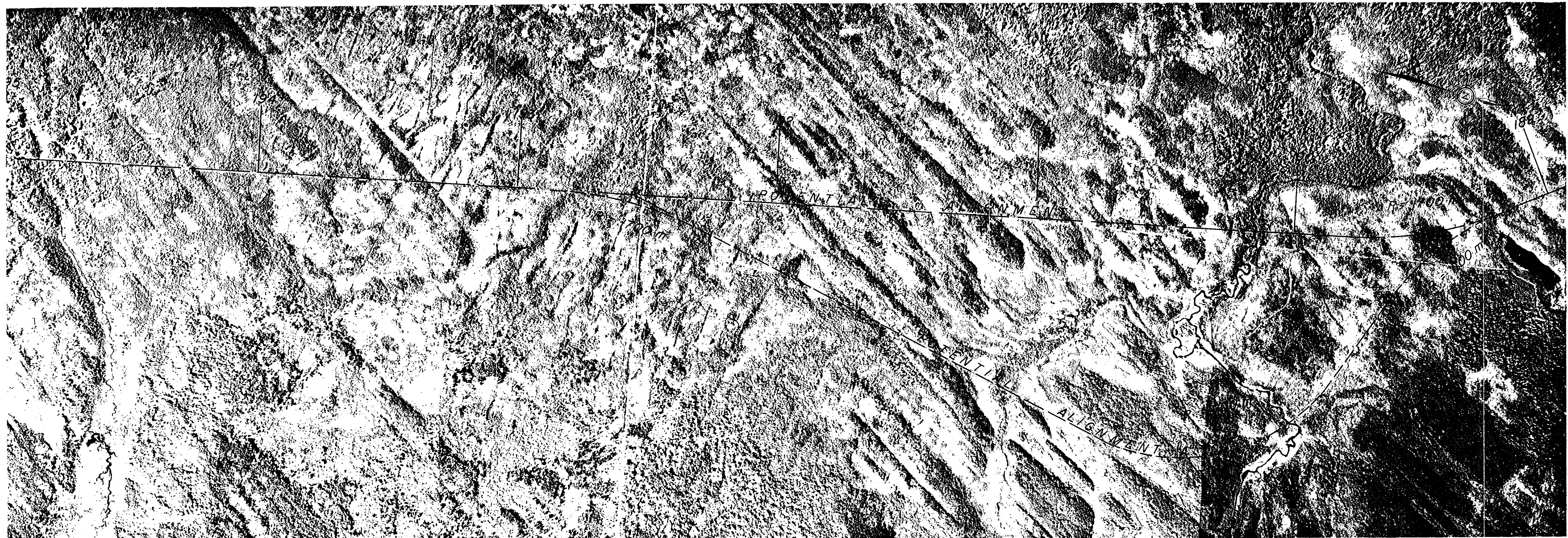
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COMPILATION PHOTOS: A 23573 185-190; 210
A 23574 60-64
A 23574 45-47
15/9/73



PILOTATION PHOTOS: A 23764 190-195; 40-43A 7/6/74

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