Photo-Interpretational Environment Analysis of the LIMESTONE RAPIDS AREA

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PHOTO INTERPRETATIONAL ENVIRONMENT ANALYSIS OF THE LIMESTONE RAPIDS AREA

INTRODUCTION

This work was carried out on request of the System Planning Division of Manitoba Hydro by J. Thie, Chief, Forestry Sector, Resource Projects. As this work does not fall within the work objectives of Resource Projects only a minimum amount of time was spent on it; mostly at night. This minimum effort is reflected in the results, report and map. No ground data were used in the study but experience obtained in surrounding areas was extrapolated.

OBJECTIVE

The analysis of aerial photographs had as goal to map and describe the most common ecosystems in the study area, their soil materials, vegetation, permafrost and drainage. For this reason a number of these are mapped separately on overlays.

METHOD AND MATERIALS

A simple mirror and pocket stereoscope was used for the analysis of photographs. Scale of the aerial photographs is approximately 1:68,000, black and white panchromatic. They are somewhat outdated. Use was also made of the most recent Remote Sensing coverage for the area flown

in 1972. Color photographs and color infrared transparencies are covering the area. However, as some problems exist in the side overlap the complete study area could not be analyzed on this material.

Most of the interpretation work was carried out on the panchromatic material (A14126-38/37) (1:68,000) because it would save some time. The lines drawn on the maps could easily be made more detailed with the larger scale photographs available. One set of low altitude color photographs (RS A30584-36/37) was interpreted for a small area in detail. Because of the insufficient overlap (40%) only a part of the area of interest to Hydro could be interpreted.

RESULTS

On the basis of photo interpretation, 5 overlays were produced. Respectively:

No. 1 Drainage flow analysis
No. 2 Soil materials and drainage condition
No. 3 Permafrost, depth and ice content
No. 4 Linear feature analysis (fractures)

All of the above are made on overlays for the stereopair of small scale photographs. Original overlays are in an envelope at the back of this report.

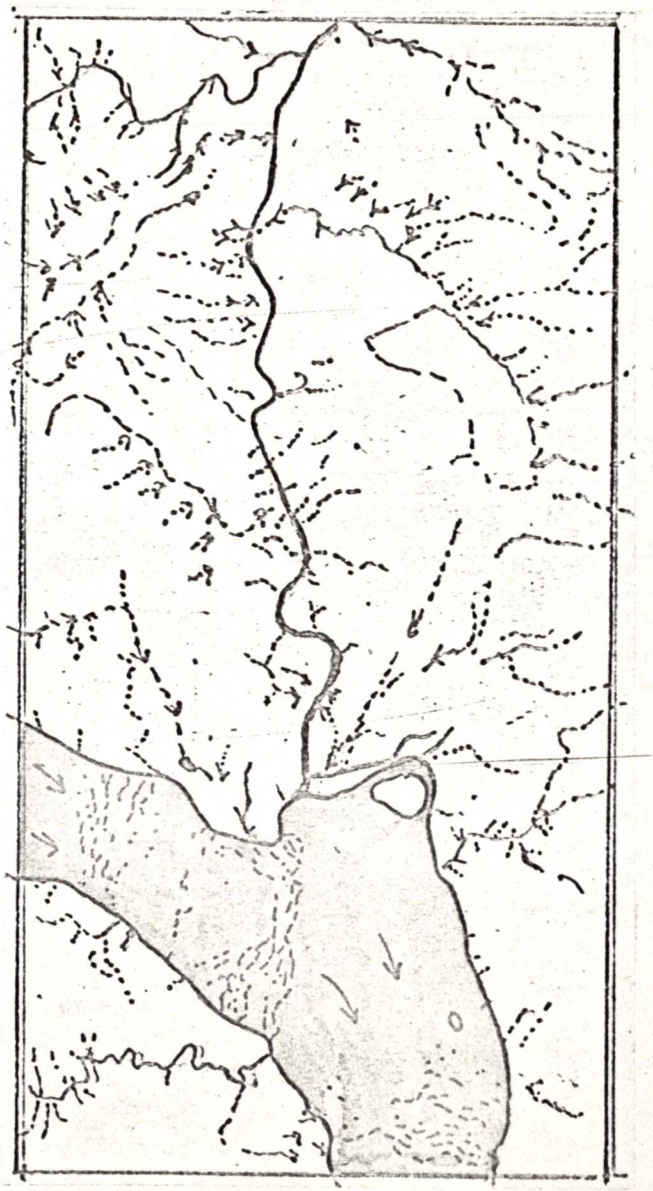
No. 5 Permafrost and soils in detail for part of the dam site.

This last overlay is made on the lower altitude color photographs. Each of the overlays will be discussed on one of the following pages. It cannot be emphasized enough that the lines drawn and classification are only based on photo interpretation, without the use of ground data. Therefore the interpretation should be used as a guideline for field work during the next season. Only then, with a small amount of work, a good and dependable map can be made. Each of the units drawn at present can be considered as relatively uniform in its characteristics. Also no statements are made related to the geomorphology of the area. For that purpose an area considerably larger has to be analyzed.

DRAINAGE FLOW ANALYSIS

Overlay No. 1

On this overlay an attempt is made to outline all surface and some sub-surface water movements in the area. Also a direction of flow indication is given. Sub-surface flows are usually only defined in organic soils. If desired this information could be made available in quite a bit more detail from larger scale aerial photographs.



SOIL MATERIALS AND DRAINAGE CONDITIONS

Overlay No. 2

In general lines the main materials are identified and the drainage classes on the map the following legend was used:

O - organic soils
S - sandy soils
T - glacial till

To symbols of organic soils are added depth classes: s = shallow; m = medium. To all symbols drainage classes are added according to the following principle:

1 - dry (rapidly drained)
2 - fresh (well drained)
3 - moist (imperfectly drained)
4 - wet (poorly drained)
5 - saturated (very poorly drained).

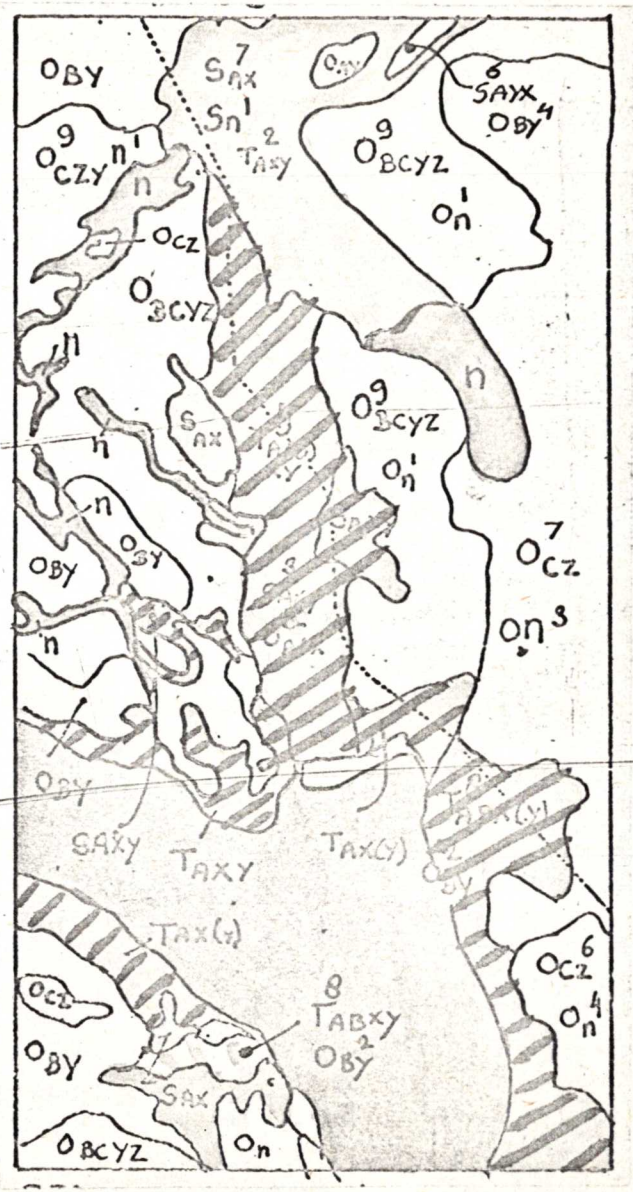
PERMAFROST, DEPTH AND ICE CONTENT

Overlay No. 3

Results as related to distribution, depth and ice content are rather preliminary. However, they can be used as a comparison between site conditions and the difficulties related to each of these. The following symbols are used:

S = Sand
T = Till
O = Organic
N = Non-frozen
A = Shallow permafrost
B = Medium deep permafrost
C = Deep permafrost
X = Low ice content
Y = Medium ice content
Z = High ice content

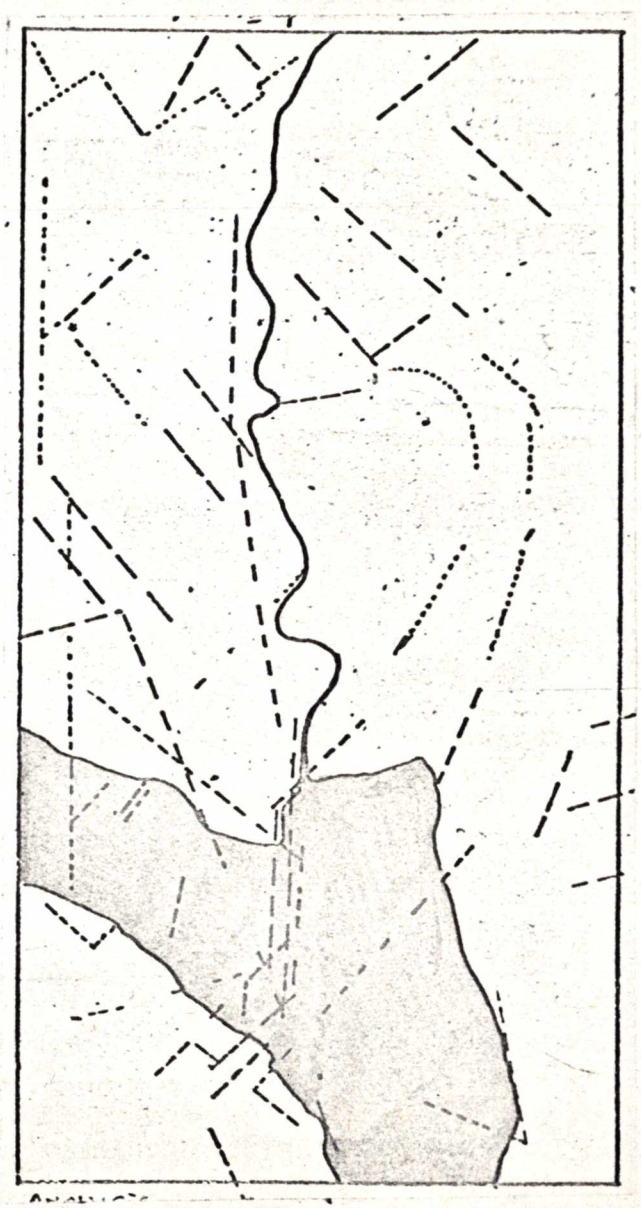
It should be stressed that the depth and ice content symbols cannot be quantified at the moment. If an area is indicated as OBY then it means that this area will likely have a medium deep permafrost with a medium ice content as compared to the rest of the study area.



LINEAR FEATURE ANALYSIS

Overlay No. 4

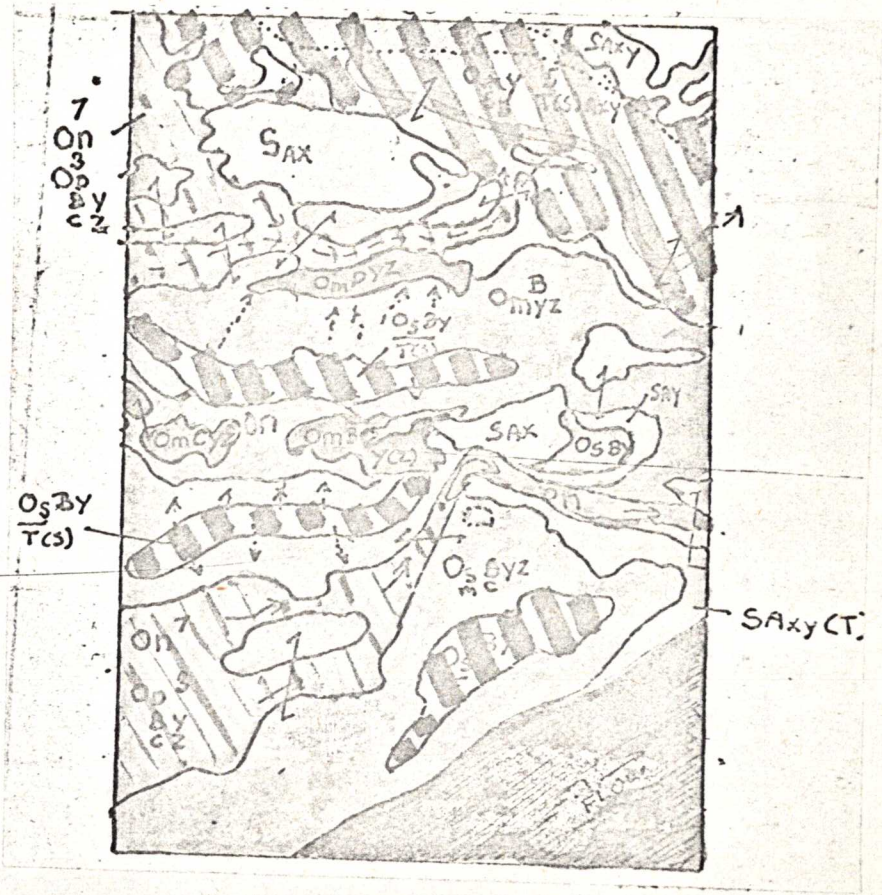
Fracture or possible fractures are analyzed on the basis of linear features occurring in landforms, drainage patterns and conditions, etc. It is not certain how meaningful the lines are. However, if they may cause construction problems further investigations may be warranted.



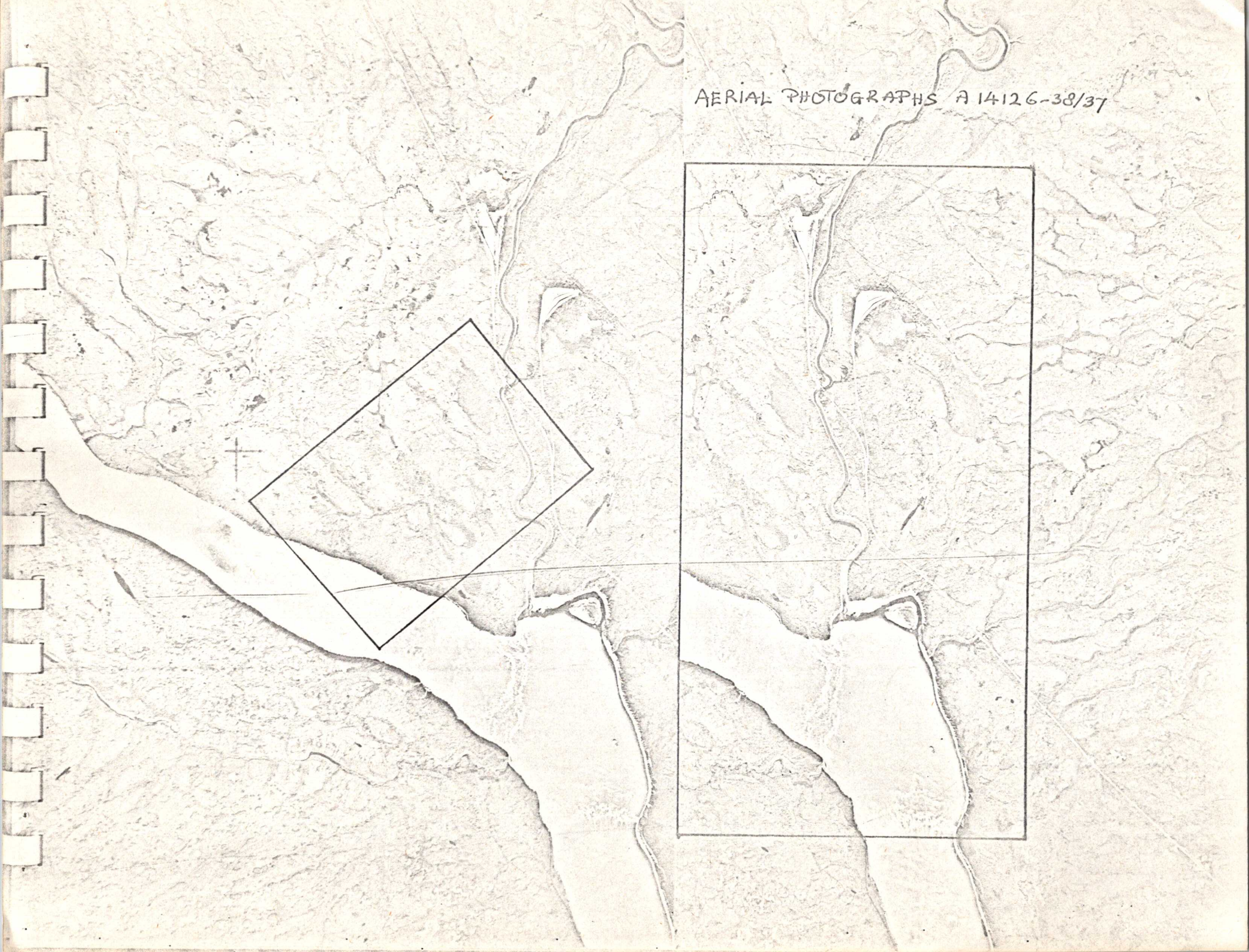
PERMAFROST AND SOILS,
DETAILED ANALYSIS OF SMALL AREA

Overlay No. 5

The symbols used on this map are a combination of the ones discussed under overlays No. 2 and 3. The complete area of interest could not be analyzed as a result of a lack of coverage. A vegetation analysis could be added, based on interpretation of the color photographs.



AERIAL PHOTOGRAPHS A 14126-38/37




RSA 80-84-37

DVERLAYS FOR STUDY AREAS.
LIMESTONE RAPIDS.