# MAR 19710012: CLARK RANGE

Received date: Dec 31, 1971

Public release date: Jan 01, 1973

## INTRODUCTION

Quartz Mineral Exploration Permit 161 lies in the Foothills of southwestern Alberta adjoining northeast of the Clark Range. It comprises 17,920 acres. This report presents the results of a geochemical survey of Permit 161 which was conducted in October 1970.

## SUMMARY AND RECOMMENDATIONS

A total of 86 samples of stream, spring, and lake waters in Permit 161 were collected and analyzed for copper, lead, and zinc. No significant anomalous concentrations were obtained in the lead samples. Fourteen anomalous or slightly anomalous concentrations were obtained for zinc and one slightly anomalous concentration was obtained for copper. They show no easily detectible pattern, and are considered to be due to vagaries in the geochemical mobility of zinc, whose source is in the Precambrian rocks to the south and west.

## FIELD PROCEDURE

Samples were collected in wide mouth 10 oz. or 16 oz. polyethylene bottles with bakelite caps, lined with cardboard and waterproof paper. Before use, each bottle and cap was thoroughly rinsed with the water to be sampled; then the sample was collected; the bottle tightly closed, numbered, and notes made. The notes consisted of recording the temperature of the water, estimating or measuring the breadth of water surface and maximum depth of the stream. The pH was measured by means of alkacid test paper and found to be between $5\frac{1}{2}$ and 6 in all samples. At the field camp most turbid samples were filtered, and then all samples were acidified with concentrated HCl, about 12N at approximately 5 cc of acid per 300 ml of sample.

## LABORATORY PROCEDURE

Samples were shipped to a commercial laboratory for analysis. There 200 ml of sample was evaporated to dryness in carefully cleaned glassware, the residue taken up with 25 ml of HCl and analyzed by standard atomic absorption techniques.

In samples with appreciable concentrations of copper, lead, or zinc, a portion of the sample as received was checked against the concentrated sample. This precaution ensured that any serious contamination of samples occurring in the laboratory was detected, but not contamination during collection or acidification. The detection limits for samples treated as above for copper, lead, and zinc are 2, 9, and 2 ppb respectively, so that zeros in the data mean concentrations below these limits. In spite of this, concentrations as low as 5 ppb for lead have been reported.

## RESULTS

The results of the geochemical survey are shown in Figures 1, 2, and 3. Evaluation of the geochemical survey is based on the concentrations below.

| | BACKGROUND | SLIGHTLY ANOMALOUS | ANOMALOUS |
|---|---|---|---|
| | | Parts per Billion | |
| Copper | Less than 18 | 18 to 27 | More than 27 |
| Lead | Less than 60 | 60 to 90 | More than 90 |
| Zinc | Less than 65 | 65 to 120 | More than 120 |

One copper concentration is slightly anomalous, all the other copper concentrations are background. All lead concentrations are background. One zinc concentration is anomalous; 13 are slightly anomalous; and the rest are background. No pattern for the anomalous and slightly anomalous zinc concentrations is readily detectible. They are regarded as illustrating the vagaries of the geochemical mobility of zinc from its source which is not believed to be in the Cretaceous rocks where the anomalous and slightly anomalous concentrations were found in the stream, spring, or lake waters. The geochemical mobility of zinc is apparently much higher than copper or lead.

## CONCLUSIONS

The geochemical survey has shown three or four areas in or adjacent to Permit 161 with anomalous or slightly anomalous concentrations of zinc. No significant copper or lead anomalies were found. The zinc anomalies show no

detectible pattern; they are believed to be due to the mobility of zinc being greater than that of copper or lead in moving from its sources which are probably in the Precambrian rocks of the Purcell Series to the south and west.

Based on this survey, this Permit is to be terminated.

Respectfully submitted,

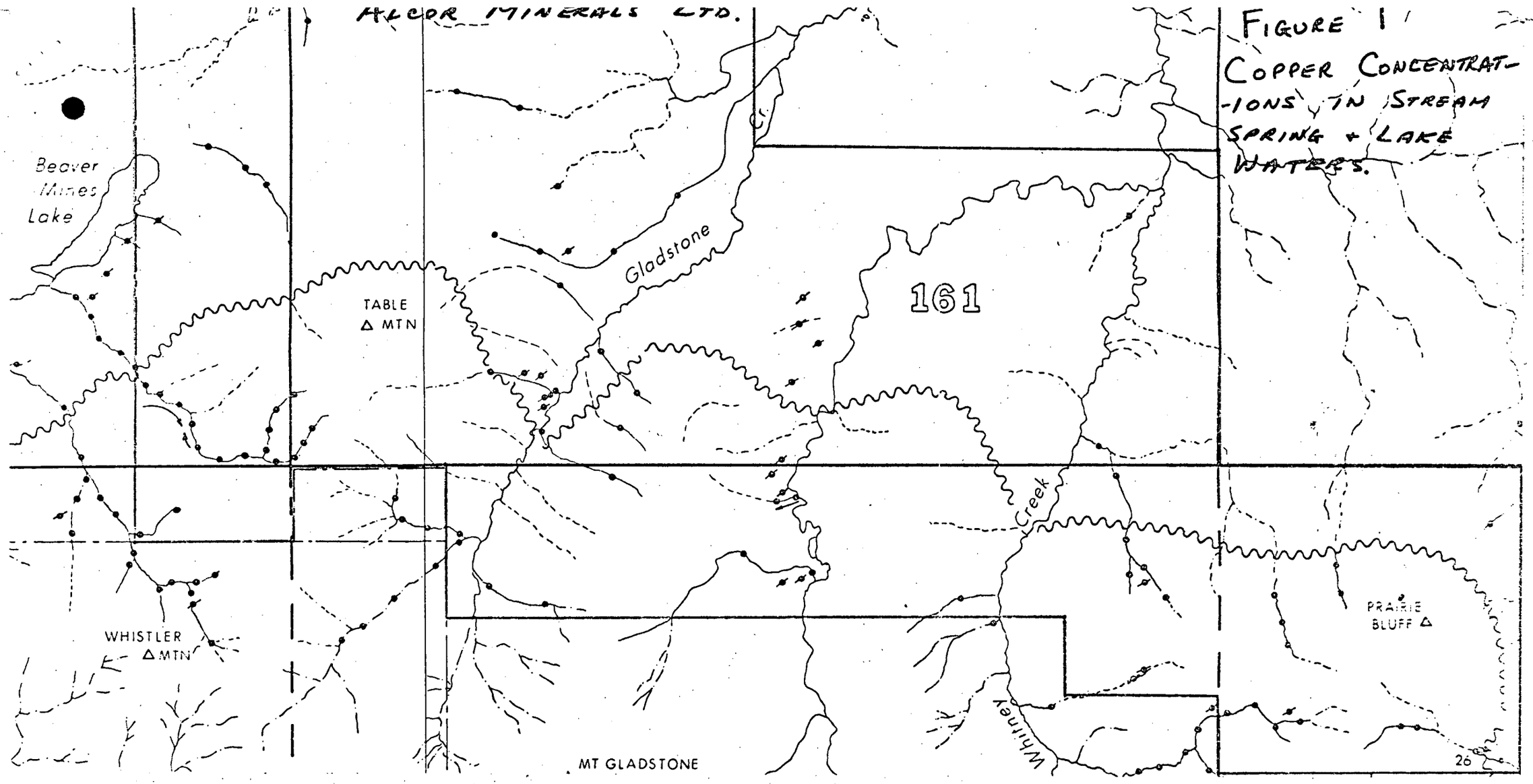
[redacted]

Edmonton, Alberta
August 17, 1971

Alcor Minerals Ltd.
Managing Director

ALCOR MINERALS LTD.

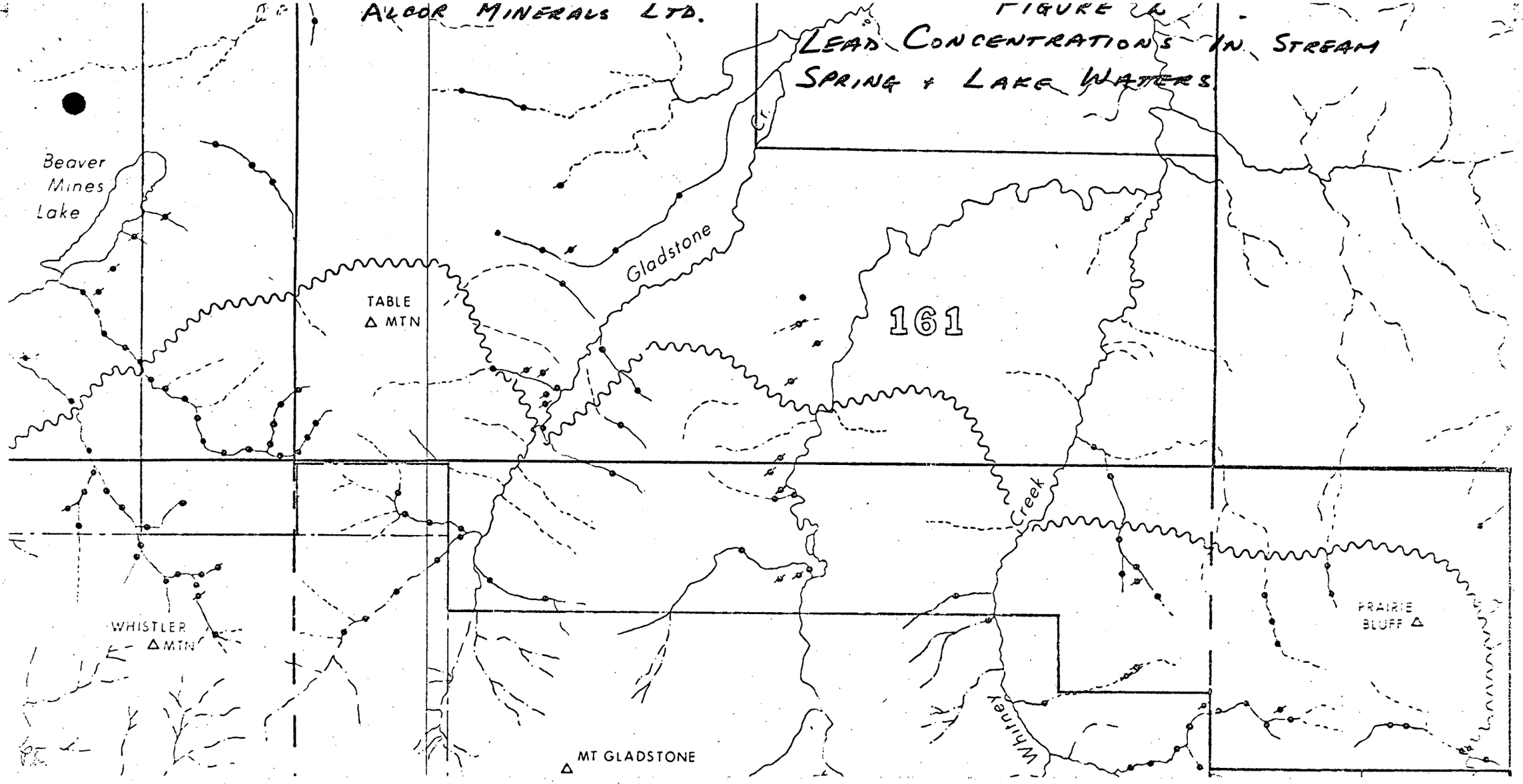
FIGURE 1
COPPER CONCENTRATIONS IN STREAM SPRING + LAKE WATERS.



ALCOR MINERALS LTD.

FIGURE 2

LEAD CONCENTRATIONS IN STREAM SPRING + LAKE WATERS



ALCOR MINERALS LTD

FIGURE 3

ZINC CONCENTRATIONS IN STREAM SPRING + LAKE WATERS.