EQUITY SILVER MINES LIMITED

17 May, 1988

MEMORANDUM

TO: ENGINEERING SUPERVISOR
FROM: Mine Geologist
RE: STATUS REPORT ON FEASIBILITY OF USING LIMESTONE IN NEUTRALIZATION OF ACID MINE WATER

INTRODUCTION

Three sources of limestone for use at the minesite in neutralization of acid mine water are currently being investigated. They are: marl prospect of Paul Wadsworth near Usk, B.C.; old quarry of Terrace Calcium Products (now in the process of being owned by Equity Silver Mines) on Copper Mountain at Terrace, B.C.; and the Dahl Lake limestone quarry, owned by Star Equipment Ltd. of Prince George. The method most likely to be used is to raise the pH of the acid mine water to about 7 or 7.5, then raise it to pH 8.5 by the addition of an incremental amount of lime (CaO). Estimated requirements of limestone are 8000t per year based on a current annual consumption of 4000t to 5000t of lime.

SUMMARY

Initial examination of these prospects has given the following:

1. Marl prospect near Usk: This deposit appears to contain the required tonnage and is at surface which makes it amenable to mine. The deposit is located, however, on the west side of the Skeena River. The material would have to be mined, spread and dried, trucked to the CNR railway siding at Ritchie, stored, loaded into a box car and transported to Knockholt where it would have to be off-loaded and trucked to the mine. Factors discouraging this source of limestone are the various handing and storage facilities required, plus the transportation cost which the CNR would charge. A positive factor for this source of limestone is that no drilling, blasting or grinding would be required.

2. Limestone from the Terrace quarry: Not much is known of the extent of this deposit. Initial acid

neutralization test gave a result of 19.0 meq HCl/g (compare to 17.5 meq HCl/g of marl). This material would have to be drilled and blasted and trucked down the mountain where it could be stored and crushed. At present the road would not handle any vehicle larger than a pickup truck. Given the width of the road, a considerable amount of time and money would probably be spent upgrading it to meet the haulage requirements necessary to supply the mine's estimated 8000t annual consumption. This supply would have to be obtained in the late spring to early autumn months when the road is free of snow. A postive factor, however, is that the limestone could be backhauled from the bottom of the road to the minesite in concentrate trucks for approximately $10 per tonne.

3. Dahl Lake limestone quarry: This quarry is located approximately 38 Km west of Prince George and 9Km south of highway 16. Here, the limestone is crushed down to 6 inches in a primary crusher, then down to -2 inches in a cone crusher. It is then screened to -1/4 inch which is rejected. Initial inquiries have revealed that there is enough of the -1/4 inch material to meet our annual 8000t requirements. A cost to us of $4.40 per tonne loaded at the site was quoted.
Inquiries into cost of transporting this limestone gave the following results:

Kode Contracting of Prince George quoted $24 to $26 per tonne based on an average haul of 40t per day. A guaranty to meet our yearly tonnage requirements was given for the same cost even if it meant hauling up to 160t per day.

Motorways of Prince George quoted $550 per round trip of 600Km, which works out to $13.75 per tonne for an average daily haul of 40t. This seems abit low.

Lomak Transport (Prince George) quoted $19.40 per tonne for a 40t per day haul. They indicated that the price could be cheaper if more tonnes per trip were hauled.

PRESENT COURSE

Tests have been conducted on the marl and on the Terrace limestone to determine their calcium content and their acid neutralization capability. Tests are now being conducted on each of the three limestone samples to determine reaction rates, sludge properties and quality of final effluent. This will determine the best limetone to use which will satisfy our acid mine

water treatment requirements. The next step will be to conduct tests which will determine the size of plant required to use the selected limestone plus an incremental amount of lime in order to bring the pH of the acid water up to 8.5. If this cannot be determined here, samples will be sent to the Cominco Research facility in Trail, B.C. for further testing. Transportation and/or quarrying costs can be firmed up at the same time.

J. Cyr

cc Mine Manager
Environmental Co-ordinator

Mine Geologist