

cc: Mr. J.A. Brown
Mr. D.H. Cochran
Mr. F.E. Edlund
Mr. J.T. Ling
Mr. H.S. Parkinson

May 15, 1962

R.C. Collins

MINNESOTA MINING & MANUFACTURING COMPANY
GEOLOGY DEPARTMENT

Report No. 61-22
Supplement

Subject: Pond sealant study

Introduction: We have been requested by the Water and Sanitary Engineering Department to run a couple of additional filtration columns in regard to their Engineering study for the Woodbury dump site.

Last December various sealant materials were studied and it was found that a 10% Bentonitic clay mixed with the top one foot of the sandy glacial drift would give an effective pond seal for plain water. This study was made to evaluate the "wet scrap" currently being dumped at the Woodbury site. The "wet waste" contains a high percentage of volatiles "principally acetone" and a very little water. This study was conducted to determine if the "wet scrap" would react with the bentonitic clay and give an effective seal.

Reference: Geology Report 61-22, December 18, 1962
Geology Report 62-9, March 27, 1962
"Wet Scrap" supplied by J.L., May 2, 1962

Conclusions:

A. The standard filtration column consisting of a 33 mm. diameter glass tube (see drawing attached to report 62-9) was charged with one foot of sandy glacial drift material and filled with wet scrap to head height of three feet. It was determined that the wet scrap would percolate at a rate in excess of 250 gallons per day per square foot of site area.

B. The standard filtration column was charged with a one foot mixture of 10% Bentonitic clay and the sandy glacial drift and slightly packed. The first 72 hours with a wet scrap head of three feet, the material seeped only one inch. The column was then extended and a 7 foot wet scrap head was maintained for five days. The wet scrap only seeped an additional 3/4ths of an inch in the sand-clay mixture. For the last 24 hours of the 5-day period, no visual increase was noticed.

C. A series of sample tests were made using Acetone and Bentonitic clay and it was found that there was a slight reaction or swelling but not nearly to the extent as a water and Bentonitic clay.

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Trial Exhibit 491

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May 15, 1962

Recommendations:

From the above tests, it is concluded that a temporary solution in the wet waste scrap problem can be made by sealing the pond or trenches with a 10% mixture of Bentonitic clay and sand. The construction of these pits or trenches would be of the utmost importance and in their operation so as not to break down the sides of the trenches, it is suggested that before the trenches are actually put into operation that they be sprayed with water to react the Bentonitic clay.

It still is the consensus of the Geology Department in regard to safeguarding the underground water supply of the area, that the company seriously consider the installation of an incinerator or other means whereby this wet waste material will not have an opportunity to seep into the soil.

RCC/eb