

007526

YUKON TERRITORY WATER BOARD

MINING SUBCOMMITTEE

06 MARCH 1981

200 RANGE RD

WHITEHORSE, Y. T.

MINUTES

PRESENT:

P. H. Beaubier	Acting Chairman
C. Wykes	Member
M. Stutter	Member
P. Dean	Cyprus Anvil Mining Corporation
N. Cornish	Cyprus Anvil Mining Corporation
J. K. Carrington	Cyprus Anvil Mining Corporation
V. Garga	Klohn Leonoff
E. A. Portfors	Klohn Leonoff
J. M. Scharer	Klohn Leonoff
R. Smith	Klohn Leonoff
Dr. D. Russell	Consultant to Board
G. Whitley	Controller, Water Rights
B. McAlpine	Administrator, Water Rights
G. Bethell	EPS
G. Lendrum	Secretary
N. Vincent	Assistant Secretary

MEETING OPENED

9:00 a.m.

Mr. Beaubier welcomed and introduced all present.

The minutes of the meeting held 20th January, 1981, between Cyprus Anvil, Klohn Leonoff and the Mining Subcommittee were read and adopted as written.

REVIEW OF PHASE 1
REPORT - FARO ABANDON-
MENT PLAN

Mr. Garga suggested rather than reviewing the full report he would concentrate on the section of most importance to the Subcommittee--namely the Proposed Abandonment Schemes. All agreed.

Mr. Garga stated three main objectives were taken into account when the schemes were being developed.

1. The water quality in Rose Creek was the prime consideration. (Fish and aesthetics were mentioned at the 20th January meeting but the water quality is placed first).
2. The factors affecting water quality were considered.

- leaching contaminants and their transport in water.

- physical transport of tailings

- wind or air transport

- water transport (would imply a failure of structure to meet the requirements designed for).

3. The abandonment scheme must be maintenance free.

In answer to a question, Mr. Garga said sites other than the "down valley" site were not considered as this was outside their Terms of Reference.

The proposals for the Secondary Facilities were briefly reviewed and the three abandonment schemes were then reviewed in detail.

Scheme 1 -Rose Creek Diversion Canal.

Considerations

1. The canal would have to be increased to carry the PMF.
2. Channel infilling as a result of slope wash, bed load (not enough information at present), tributary sedimentation (there are two main tributaries) and glaciation in the channel or tributaries would have to be eliminated.
3. The exposed tailings would have to be covered to prevent wind erosion.

Advantages

1. The stream would direct flow away from the tailings.
2. The scheme is economically attractive.

Discussion

In answer to questions from Mr. Bethell, Mr. Portfors said the PMF has not yet been calculated. The values used so far are only estimates. The PMF will be calculated in the next phase of plan development.

Mr. Garga agreed this option would necessitate re-designing the present channel and possibly re-lining the channel, etc.

Problems have been found with the method of earthquake projection used by EMR. Klohn Leonoff will carry out seismic tests for long-term stability. The PMF design will agree with the findings.

Mr. Garga noted a dike failure (catastrophic-wash out) was unlikely. Hydraulic failure in the channel is more likely, however if a wash out did occur the water would flow to the tailings (covered).

Scheme 2: Abandonment Reservoir

Considerations

1. A stable overflow structure would be required.
2. Increased infiltration in the tailings can affect water contaminant transport and water balance in the reservoir.
3. Fish passage could be provided but may require some maintenance.

Advantages

1. The water will provide a barrier against diffusion of oxygen.
2. The reservoir will act as a sedimentation basin.
3. The reservoir will route floods.
4. The reservoir eliminates wind erosion problems.

Discussion

1. Overflow Structure

Mr. Garga said the major consideration for the rock filled dam is the downstream face. The slope is dependent on the maximum flow. The effect of the water on the downstream side as well as the effect of the water flowing through the dam must also be considered.

In this case, the crest will have to be much wider than a normal dike. The downstream face will have to be a very easy slope (not steep) and will have to be armored.

In answer to a question from Mr. Stutter regarding the possibility of icing over the dam and channeling, Mr. Portfors replied that if the tailings were only flooded to the 2 metre depth it would probably freeze to the bottom--however the 2 metres is only quoted as the minimum depth.

Dr. Russell noted there has been very little experience with this kind of dam and "state of the art" methods would be used.

Mr. Portfors replied the alternative would be to construct a concrete spillway channel around the dam. This would pose problems re maintenance. The concrete channel would also not be as flexible in the event of an earthquake. Using the whole rock-filled dam as the spillway is considered better.

2. General

In answer to a question from Mr. Wykes, Mr. Smith said they did call Fisheries. They have also contacted Beak Consultants.

Mr. Cornish said he had understood the Subcommittee was to arrange the meeting with Fisheries.

Mr. Garga stated the allowance for fish passage could be provided but would probably require some maintenance. Mr. Portfors noted that although the requirement for fish passage was not listed as a primary consideration, by ensuring the water quality standards are maintained, the fish resource is being protected. Mr. Garga noted that fish can not now go upstream past the dam, but are present both above and below. Scheme #2 would provide the same situation.

In answer to a question from Mr. Bethell, Dr. Scharer said flooding the tailings reduces oxidation and the transport of heavy metals and sulphides. There is documentation of this which is open to the public (Elliot Lake).

Mr. Wykes asked if there were any mines in the Northern hemisphere presently flooding their tailings that would allow us to see the long-term results.

Dr. Scharer replied Nanisivik Mine is presently using this method. For long term he cited Benson Lake and Bottle Lake in B.C.

Dr. Scharer explained the process of oxidation and

acid generation and how the water cover impedes these processes.

In answer to a question from Mr. Bethell, Dr. Scharer said the estimated minimum depth of water cover would be 2 metres.

Mr. Cornish noted any acid present in the tails at the time of flooding can be neutralized with lime or a layer of silt can be put over the tails before flooding.

Mr. Garga stated they do not have sufficient data on groundwater movement at present.

Dr. Scharer said they will be modelling for long-term problems. Zinc could be a major long-term problem.

It was noted Scheme #2 is a viable option worth studying further.

Scheme #3 Tailings Removal

Advantages

1. Restores Rose Creek to the valley bottom.
2. The probability of long-term water contamination is minimized.
3. Fish access is brought back to the pre-mining stage.

Disadvantages

1. The high capital cost of implementation after mining has terminated.

Discussion

Mr. Beaubier asked if the cost of removing the tails in stages could be estimated.

Mr. Garga replied this will be studied.

Both the Company and the Consultants consider this a "last resort" alternative to be used only if other options are eliminated.

General

Mr. Garga stated the field investigations (Phase 11) will start Monday.

* Mr. Whitley will arrange a meeting between Cyprus

Anvil and Fisheries so the Company can present these options and discuss fish passage.

X A letter will be sent to the Company outlining the Board's comments on these proposals (especially Scheme #2).

X All agreed a further meeting will be arranged when the Company knows which option they will be pursuing. (Now favour Scheme #2)

MEETING CLOSED

11:15 a.m.

DEC 5 1979

PROTECTED INFORMATION

YUKON TERRITORY WATER BOARD

MINING SUBCOMMITTEE

20 November 1979

200 RANGE ROAD

WHITEHORSE, YUKON

M I N U T E S

PRESENT

K. Byram	Chairman
N. Olsen	Member
P.H. Beaubier	Water Board Member
M. Stutter	Water Board Member
G. Whitley	Controller of Water Rights
B. McAlpine	Administrator Water Licencing
G. Bethel	Environmental Protection Service
N. Cornish	Cyprus Anvil
J. Carrington	Cyprus Anvil
B. Smith	Cyprus Anvil

CYPRUS
ANVIL

Cyprus Anvil have not yet submitted the application for renewal of their water licence. The concerns are tailings impoundment and water quality. Mr. Carrington stated that the construction of down valley does not appear to be practical this winter and work at the Grum deposit will not start until spring when the feasibility study is finished. Cyprus Anvil propose that the work will be completed to satisfaction next year; they will get permits and build in 1981/82. They plan to raise the pond 15 feet to increase retention time to 50 or 60 days, and therefore increase effluent quality. There will be no seepage problem by continuing with the same pond.

The Chairman summarized that no details yet on Grum and can't go ahead on down valley so the plan is to renew the licence as it stands for five years and amend it when it becomes necessary. Mr. Beaubier concurred and mentioned that Public Hearings would be necessary if amendments were to be made. The Chairman pointed out that if the application was received now, there could be a Public Hearing at the end of January and the licence could be issued in late February or early March. Mr. Carrington replied that the application would be provided by the end of the week. Mr. Cornish mentioned that the gazetting had been done in September.

Mr. Cornish stated that, if the company continues with down valley, the plans would be finished in the fall of 1981 and amendment to the licence would be submitted to the Water Board in the spring. It was indicated that details of the design should be given to the Board as soon as possible to facilitate preparations. Mr. Whitley also asked that any possible changes in the application be pointed out.

Mr. Von Kursell inquired about the time frame needed by the Board to assess the down valley proposal. Mr. McAlpine replied that plenty of time was needed. Mr. Beaubier concurred and urged Cyprus Anvil to forward plans at the earliest possible date.

MEETING
CLOSED

3:30 p.m.