file ACT/007/007 #2/#3

0009

KAISER COAL

KAISER COAL CORPORATION
Sunnyside Coal Mines
P.O. Box D
Sunnyside, Utah 84539
Telephone (801) 888-4421

RECEIVED
DEC 12 1985
DIVISION OF OIL
GAS & MINING

December 11, 1985

John Whitehead
Division of Oil, Gas & Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

RE: East Slurry Cell, Sunnyside Mines, ACT/007/007, Carbon County, Utah

Dear Mr. Whitehead

A new stability analysis for the East Slurry Cell was conducted by Rollins, Brown and Gunnell, Inc. (RBG) at Kaiser Coal's request. Data from three piezometers installed by RBG and monitored by Kaiser was used to determine "steady seepage saturation conditions". Monitoring of the observation wells showed no saturated conditions in the refuse fill. Water levels were found to be a foot or more under the fill in the alluvium. Based on these observations, the embankment was found to have a safety factor of 2.2.

The previous study in Appendix III-5 of the Mining and Reclamation Plan (MRP) used a model with a completly saturated embankment which resulted in a safety factor of 0.5. Most embankments modeled under this condition will fail because the friction angle approches 0. We are requesting that the previous study be replaced with the new information derived under operational conditions and that the restrictions on using the East Slurry Cell be lifted under the following conditions:

1) Use of the East Slurry Cell be limited to times when SP1 and SP2 are not available due to cleaning cycles. This is stated in the second paragraph of page 38 of the MRP, Chapter III. The word "overflow" in the first paragraph of page 38 of the MRP, Chapter III will be replaced with the word "substitute".

2) Inspections of the East Slurry Cell will be conducted on a weekly basis as outlined on page 38 of the MRP, Chapter III.

3) The fourth paragraph of page 38, Chapter III of the MRP will be replaced as follows:

Evaluation of the ESC embankment with steady seepage saturation conditions shows a safety factor of 2.2. Soil conditions encountered during soil testing and the installation of piezometers showed that the coarse refuse material in the embankment is not saturated.

A copy of the map showing the location of the piezometers and a listing of field data used by RBG is attached for your review. Fourteen copies of the letter from RBG dated December 9, 1985 and replacement page 38 of Chapter III are attached for inclusion in the MRP. The new letter from RBG is to replace a previous letter from RBG dated February 18, 1985 in Appendix III-5.

Sincerely,
Kaiser Coal Corporation

Douglas C Pearce

Douglas C Pearce
Mine Engineer

attachments

CHAPTER III

Construction of the East Slurry Cell on the east side of WSC was in 1974. Coarse refuse was placed and compacted in dikes to contain the refuse. After the dikes were completed and covered with soil material, the impoundment was filled with slurry. Disposal of slurry continued until 1983. Presently, the impoundment is used as an substitute for SP1 and SP2.

Slurry Pond One and Two were constructed in 1978 to the north of the other slurry cells. These ponds were constructed by excavating a depression in the colluvium on a gentle slope. Material from the depression was spread out down slope of the ponds for 50 to 100 feet. SP1 and SP2 are used in rotation. Slurry is introduced into a pond where it settles and is then filtered (Plate III-13). During the use of the first pond, the second pond is decanted and the dried slurry removed by truck to the WSC. After the second pond in cleaned, the cycle is reversed. If both ponds are in the drying and cleaning cycle, the slurry will be diverted to the ESC. Water (NPDES 004) from SP1 and SP2 is used to irrigate alfalfa fields or discharged into Icelander Drainage. Discharged water meets all State and Federal water quality standards (see Chapter VII.). The east and west slurry cells are shown on Plate III-37.

Design and construction of the slurry ponds was conducted pre-law, consequently, some of the current design standards required in UMC 817.91-.93 and UMC 817.49 are not met. A geotechnical evaluation, certification of the alternate methods of construction and current static and seismic safety factors was conducted to determine compliance with UMC 817.92-93. Results of the evaluations are found in Appendix III-7. It was found that the impoundment dikes constructed of coarse refuse are stable with the exception of the west dike of WSC. This dike will become stable as the current coarse refuse pile level reaches the level of the west dike. Present plans are to continue to stabilize the dike. The coarse refuse pile is being specifically constructed in this site to stabilize the dike wall to meet MSHA requirements. Water samples from the seep below the coarse refuse disposal pile meet State and Federal water quality standards (see Section 3.4.9.1(b)). The West Slurry Cell will not be used as an impoundment until the coarse refuse pile level reaches the level of the west side dike or obtains a static safety factor of 1.5.

Evaluation of the ESC embankment with steady seepage saturation conditions shows a safety factor of 2.2. Soil conditions encountered during soil testing and the installation of piezometers showed that the coarse refuse material in the embankment is not saturated.

ROLLINS, BROWN AND GUNNELL, INC.
PROFESSIONAL ENGINEERS

December 9, 1985

Kaiser Steel
P.O. Box D
Sunnyside, Utah 84539

Attn: Doug Pierce

Gentlemen:

In accordance with your request, we have completed a stability analysis for the East Refuse Pond. Several weeks ago three observation wells were installed along the downstream slope of this structure and a stability analysis has been performed using the elevation of the ground water in the observation wells.

It should be noted that the elevation of the ground water in each of the observation wells was at a few feet below the interface of the refuse material and natural soil. In performing the stability analysis, the same friction angles and unit weight as determined previously for this site were used. A friction angle of 35 degrees and 0 cohesion were used for the refuse material while a friction angle of 36 degrees and 0 cohesion were used for the foundation material. Unit weights of 80 pounds per cubic foot and 105 pounds per cubic foot respectively were used for the refuse and foundation material. The results of the stability analysis indicate a factor of safety of 2.2 which is satisfactory for the existing slope.

Please advise us if there are any further questions regarding this information.

Yours truly,

ROLLINS, BROWN AND GUNNELL, INC.

Ralph L. Rollins

Ralph L. Rollins

RLR/dcp

REGISTERED PROFESSIONAL ENGINEER
RALPH L. ROLLINS
2306
State of Utah

1435 West 820 North ■ P.O. Box 711 ■ Provo, Utah 84603 ■ (801) 374-5771