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Norman H. Bangerter
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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
801-538-5340

February 15, 1990

Mr. John Palfy
Kaiser Coal Corporation
P. O. Box 1107
Raton, New Mexico 87740

Dear Mr. Palfy:

Re: **NOV N89-26-23-2, 1 of 2, Coarse Road Refuse and Sanitary Landfill Area,
Kaiser Coal Corporation, Horse Canyon Mine, ACT/007/013-90B, Folder
#5, Carbon County, Utah**

Attached is a Technical Memorandum that reviews the above-referenced response to NOV N89-26-23-2, 1 of 2. The changes to the plan outlined in the memorandum must be submitted as soon as possible because implementation is required by March 17, 1990.

Sincerely,

A handwritten signature in cursive script that reads "Pamela Grubaugh-Littig".

Pamela Grubaugh-Littig
Permit Supervisor

djh
Attachment
cc: D. Drago, Fabian & Clendenin
D. Guy, BCCC
B. Malencik, DOGM, PFO
T. Munson, DOGM
H. Sauer, DOGM
AT45/150



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February 14, 1990

TO: Pamela Grubaugh-Littig, Permit Supervisor
FROM: Tom Munson, Reclamation Hydrologist *TM*
RE: NOV #89-26-23-2, 1 of 2, Coarse Road Refuse and Sanitary Landfill Area, Kaiser Coal Corporation, Horse Canyon Mine, ACT/007/013-90B, Folder #5, Carbon County, Utah

Synopsis

The Division received a hydrologic plan for the Coarse Road Refuse and Sanitary Landfill Area on January 25, 1990 to abate NOV #89-26-23-2, Part 1 of 2.

Analysis

The plan involves construction of two ditches and one culvert for the undisturbed drainage and a berm and outlet for the perimeter of the remaining disturbed area. The peak flow numbers generated using the Division "Peak" program are as follows for the undisturbed drainage designs:

	<u>Division</u>	<u>Kaiser</u>
Peak Flow / 10 (cfs)	11.41	11.10
Peak Flow / 25 (cfs)	17.71	23.78
Peak Flow / 100 (cfs)	30.56	40.42

Using the Division's design flow for the 100-year, 24-hour peak flow of 30.56 cfs and routing that flow through ditches UD-1 and UD-2, a flow depth of 1.0 foot was calculated for both ditches. The total depth of ditch as shown on Figure 2, including the berm, is three feet. The total depth of flow including freeboard would be 1.3 feet, using Division calculations. Velocities of 7 feet per second were calculated through these reaches. Riprap of 9 inches as proposed is adequate to handle bottom velocities of 8 feet per second. The following riprap gradation must be used by the operator and included in his plan.

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<u>% Smaller Than Given Size By Weight</u>	<u>Intermediate Reach Diversion (Inches)</u>
70-100	14
50- 70	12
35- 50	9
2- 10	3

The depth of flow and riprap depth will be accurately shown on Figure 2 of the submittal.

The installation of the 36-inch culvert is acceptable to the Division, but the outlet protection and the headwall construction are not adequately defined by the operator. The Division calculated an outlet velocity of 16 feet per second, and a tailwater depth of .9 feet, based on the following assumptions of a 150-foot long culvert at a 13 percent slope (see attached computer run). Therefore, until the operator submits details to define culvert slope, installation procedures (details on burial, etc.), the Division will assume the submittal is not complete. The location of the culvert outlet in relationship to Horse Creek is to be better defined and the apron dimensions on the culvert outlet, also shown or described.

Recommendations

The following items need to be completed (Additions or corrections):

1. Figure 2 must be corrected to accurately show riprap depth (14 inches), gradation and an accurate depth of flow (1.3 feet).
2. The installation of the undisturbed 36-inch culvert lacks detail and must have the following information submitted.
 - (a) headwall and apron dimensions;
 - (b) culvert length and slope;

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- (c) details on installation procedure as it is a buried culvert;
 - (d) outlet protection in the form of riprap of adequate size for culvert specifications; and
 - (e) location of outlet and apron in relation to the Horse Creek channel.
3. Protection for disturbed berm in area where it comes off the refuse pile and crosses the undisturbed culvert to prevent erosion of the pile and exposure of the buried culvert.

djh

Attachment(s)

AT46/35-37

TAILWATER RATING CURVE

NO.	FLOW(CFS)	T.W. C. (FT)	VELL. (FPS)	SHEAR(PSF)
1	0.00	0.00	0.00	0.00
2	4.00	0.23	5.58	2.27
3	8.00	0.41	6.89	3.34
4	12.00	0.51	7.76	4.15
5	16.00	0.60	8.41	4.83
6	20.00	0.67	8.95	5.43
7	24.00	0.73	9.41	5.96
8	28.00	0.79	9.81	6.45
9	32.00	0.85	10.17	6.90
10	36.00	0.90	10.50	7.31
11	40.00	0.95	10.79	7.71

TYPE :

- (P) TO PLOT RATING CURVE
- (R) TO RELIST CROSS-SECTION DATA
- (RET) TO CONTINUE
- (ESC) FOR TAILWATER MENU

CUIVERI # 1 PERFORMANCE CURVE
FOR 1 BARRELS

Q	H ₉	TWC	ICH	OCH	TWH	VO
(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(fps)
0.00	20.00	0.00	0.00	-20.00	0.00	0.00
4.00	20.76	0.23	0.76	-19.22	0.34	8.74
8.00	21.10	0.41	1.10	-18.80	0.48	10.71
12.00	21.35	0.51	1.35	-18.46	0.61	11.66
16.00	21.60	0.60	1.60	-18.17	0.69	12.84
20.00	21.86	0.67	1.86	-17.90	0.78	13.67
24.00	22.10	0.74	2.10	-17.64	0.86	14.28
28.00	22.34	0.80	2.34	-17.40	0.93	14.89
32.00	22.58	0.85	2.58	-17.17	1.00	15.51
36.00	22.82	0.90	2.82	-16.94	1.06	16.07
40.00	23.07	0.95	3.07	-16.72	1.13	16.66

PRESS (V) TO PLOT PRESS (ENTER) TO CONTINUE

CULVERT FILE: MORSECYN 2/13/90
Plot of Performance Curve

30

20

10

0

○ I. C. ELEV.
■ O. C. ELEV.



0

10

20

30

40

50

Discharge, CFS