

0037



**CASTLE
GATE**
COAL COMPANY

Mine file #1061
W. Redberg
S. Linn
Act 001/004
file #2

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DIVISION OF
OIL, GAS & MINING

February 11, 1987

Mr. Lowell Braxton, Administrator
Division of Oil, Gas and Mining
Three Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Dear Mr. Braxton:

David Lof has asked me to look into the possibility of changing the drainage on the Castle Gate Refuse Haul Road. David and I both agree that maintaining the ditch (D-4) on the East side is nearly impossible as the 50 ton haul truck runs into the berm and ditch quite often.

The ditch is designed as an overland flow diversion around the property. The attached engineering calculations justify absorbing the overland flow and diverting the water with mine runoff into pond 011.

This will be accomplished by removing the berm dividing between the haul road and ditch and plugging the 12" pipe. The ditch will be extended to flow into the existing drainage pattern which drains into basin 011 (see drawing 3.4-2).

Prompt approval of this minor drainage change will avoid any possible environmental problems due to the present design of the ditch.

Sincerely,

Richard H. Allison, Jr.
Richard H. Allison, Jr., P.E.
Project Supervisor

RHA:sk

cc: Dave Miller
John McCurdy
DOGM File
Chrono

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CC4012

Castle Gate Runoff Calculations

Location: Drainage area above refuse haul road at Castle Gate Prep Plant.

Area: 2.2 Acres

Slope: $\frac{6500 - 6210}{280'} = \frac{290}{380} = .76 = 76\%$ Slope

Curve No.: The area is covered with grasses, juniper and sage. The soil in the area is sand, gravel and boulders on a Southwest facing slope. From page 7-61 of MRP the Curve No. for this area should be between 39 to 61. Average 50.

Rainfall: 10 year-24 hour storm = 1.9". Page 7-66 MRP

Runoff: Using fig. 10.1 of MRP, the runoff coefficient for 1.9" and Cn of 50 does not show any runoff. However, raising Cn to 60 shows @ direct runoff of .15 inches. Use .15 = Q, Total runoff equals Q times area.

Total runoff = .15" x 2.2 Ac
= .0125' x 95,832 ft/2
= 1198 ft/3 — Say 1200

Conclusion: The existing combined capacity of the sediment pond 011 is 65,400 cubic feet. Page 3-185 shows that 50,223 cubic feet is required for the present drainage to this basin. The addition of 1200 cubic feet will not exceed the design capacity of the basin.

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Ditch Design

Peak Flow: $Q = CiA$

Where C factor = .1 (page 7-68 (MRP) for 10 year/24 hour storm.

Time of concentration = $T_c = .007 L^{.77} S^{-.385}$

Where L = Length of watercourse, S = Slope in Ft/ft.

$T_c = (.007)(94.95)(2.87)$
= 1.9 minutes since 1.9 minutes is so short, use 5 minutes.

From Table 7-10 Page 7-69, where $T_c = 5$ min
 $i = 2.52$

Peak Flow = $(.1)(2.52)(2.2) = .55$ CFS

The existing channel D-4 has a design capacity of 124 CFS. Therefore, the existing overland flow ditch will be adequate to handle a peak flow of .55 CFS.

Channel D-4 will be modified by removing the berm between the road and the existing ditch. Culvert C-4 will be sealed and channel D-4 will be extended in order to run this drainage into sediment pond 011 (see revised MAP 3.4-2).

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