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# State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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January 5, 1994

Mr. Joe Fielder, General Manager
Sunnyside Coal Company
P.O. Box 99
Sunnyside, Utah 84539

Re: Redesign of Hoist House Pond, Violation #N93-32-3-8 (2 of 8), Sunnyside Coal Company, Sunnyside Mine, ACT/007/007-93CC, Folder #2, Carbon County, Utah

Dear Mr. Fielder:

Information submitted November 22, 1993, regarding this amendment has been reviewed. This plan must be denied until the operator can prove that the spillway will be capable of passing the 25 year-6 hour peak flow safely with adequate freeboard.

Enclosed please find the technical memo that outlines the deficiencies relative to this amendment. Please respond to this deficiency by January 26, 1994.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor

Enclosure
cc/enc: Tom Munson
Joe Helfrich

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December 27, 1993

TO: Pam Grubaugh-Littig, Permit Supervisor

From: Tom Munson, Senior Hydrologist

RE: Redesign of HoistHouse Pond, NOV #N93-32-3-8 (2 of 8), Sunnyside Coal Company, Sunnyside Mine, ACT/007/007-93CC, File Folder #2, Carbon County, Utah

## Synopsis

The Division received on 11/22/93 the HoistHouse Pond submittal addressing the concerns of NOV #N93-32-3-8 (2 of 8). This memo will provide a technical review of this submittal.

## Analysis

The following pond volumes were calculated from the No. 3 Hoist House Sediment Pond Revised Design Plate.

| Elevation (feet) | Storage (Acre-Feet) | Comments |
|---|---|---|
| 6730.0 | 2.822 | Top of Embankment |
| 6728.5 | 2.165 | Emergency Spillway |
| 6727.7 | 1.854 | 100 year-6 hour |
| 6723.6 | 0.612 | Sediment Level |
| 6720.0 | 0.0 | Bottom of Pond |

The operator has presented the following volumes.

| Elevation (Feet) | Storage (Acre-Feet) | Comments |
|---|---|---|
| 6730.0 | 2.812 | Total storage volume |
| 6728.5 | 2.178 | Emergency Spillway |
| 6727.7 | 1.888 | 100 year-6 hour |
| 6723.6 | .647 | Sediment Level |
| 6720.0 | 0.0 | Bottom of Pond |

Although the operator has not presented a Stage Discharge curve for the emergency spillway, the operator states that the 36" culvert is capable of safely passing the 25 year-6 hour storm event of 15.74 cfs. The problem with this analysis is that the 36" culvert does not control the flow and therefore the analysis is incorrect. The 12" riser is the controlling culvert and it is capable of passing only 5.48 cfs, not the 15.74 cfs required. An analysis of the data presented for the pond is shown below.

| VARIABLE | VALUE | UNITS |
|---|---|---|
| X AXIS TITLE = | ELEVATION | (FT) |
| Y AXIS TITLE = | DISCHARGE | (CFS) |
| SPILLWAY ELEV. (FT) = | 6728.50 | |
| HEAD INCREMENT (FT) = | 0.10 | |
| TOP EMBANKMENT (FT) = | 6730.60 | |
| RISER DIA (FT) = | 1.00 | |
| BARREL DIA (FT) = | 3.00 | |
| HT. RISER (FT) = | 5.00 | |
| BARREL LENGTH (FT) = | 60.00 | |
| CREST TO OUTLET (FT) = | 8.00 | |
| ORIFICE COEF. = | 0.6 | |
| KB = | 0.5 | |
| KE = | 1 | |
| KC = | 0.116 | |
| MANNING N BARREL = | 0.024 | |
| AREA RISER (FT2) = | 0.79 | |
| AREA BARREL (FT2) = | 7.07 | |
| CIRCUM. RISER (FT) = | 3.14 | |

| ELEVATION (FT) | HEAD (FT) | QWEIR (CFS) | QORIFICE (CFS) | QPIPE (CFS) | QCAPACITY (CFS) |
|---|---|---|---|---|---|
| 6728.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6728.60 | 0.10 | 0.33 | 1.20 | 46.34 | 0.33 |
| 6728.70 | 0.20 | 0.92 | 1.69 | 46.70 | 0.92 |
| 6728.80 | 0.30 | 1.70 | 2.07 | 47.07 | 1.70 |
| 6728.90 | 0.40 | 2.62 | 2.39 | 47.43 | 2.39 |
| 6729.00 | 0.50 | 3.68 | 2.67 | 47.78 | 2.67 |
| 6729.10 | 0.60 | 4.84 | 2.93 | 48.14 | 2.93 |
| 6729.20 | 0.70 | 6.12 | 3.16 | 48.49 | 3.16 |
| 6729.30 | 0.80 | 7.49 | 3.38 | 48.84 | 3.38 |
| 6729.40 | 0.90 | 8.96 | 3.59 | 49.19 | 3.59 |
| 6729.50 | 1.00 | 10.52 | 3.78 | 49.53 | 3.78 |
| 6729.60 | 1.10 | 12.17 | 3.97 | 49.88 | 3.97 |
| 6729.70 | 1.20 | 13.90 | 4.14 | 50.22 | 4.14 |
| 6729.80 | 1.30 | 15.71 | 4.31 | 50.56 | 4.31 |
| 6729.90 | 1.40 | 17.60 | 4.47 | 50.89 | 4.47 |
| 6730.00 | 1.50 | 19.57 | 4.63 | 51.23 | 4.63 |
| 6730.10 | 1.60 | 21.60 | 4.78 | 51.56 | 4.78 |
| 6730.20 | 1.70 | 23.72 | 4.93 | 51.89 | 4.93 |
| 6730.30 | 1.80 | 25.90 | 5.07 | 52.21 | 5.07 |
| 6730.40 | 1.90 | 28.16 | 5.21 | 52.54 | 5.21 |
| 6730.50 | 2.00 | 30.48 | 5.35 | 52.86 | 5.35 |
| 6730.60 | 2.10 | 32.87 | 5.48 | 53.18 | 5.48 |

Recommendation

Approval of this plan be denied until the operator can prove that the spillway will be capable of passing the 25 year-6 hour peak flow safely with adequate freeboard.