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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

June 14, 1991

Mr. James W. Buck, Manager  
Amax Coal Industries  
One Riverfront Place  
Evansville, Indiana 47708-1258

Dear Mr. Buck:

Re: Notice of Violation #N90-19-2-1, Castle Gate Coal Company, Castle Gate Mine, ACT/007/004, Folder #2, Carbon County, Utah

Enclosed is a review of the proposed abatement plans received February 7, 1991, for N90-18-2-1. These plans require additional information in order to meet regulations R614-301-732, -733, -742, -743, -744. Please read the attached memo.

In order to meet the abatement date identified in the NOV, the revised abatement plans or a request for extension must be approved by the Division before Sunday, June 30, 1991.

Please send two additional copies of the entire abatement package for routing to other authorizing agencies. If you have any questions, please call me or Sharon Falvey, Reclamation Hydrologist.

Sincerely,

A handwritten signature in black ink that reads "Daron R. Haddock".

Daron R. Haddock  
Permit Supervisor

jbe  
Enclosure  
BT007004.002



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June 13, 1991

**TO:** Daron Haddock, Permit Supervisor

**FROM:** Sharon Falvey, Reclamation Hydrologist SKF

**RE:** Castle Gate Coal Company, NOV #N90-18-2-1 Abatement,  
ACT/007/004, Folder #2, Carbon County, Utah

## Summary

On February 27, 1991 the Division received proposed pond designs to abate Notice of Violation (NOV) N90-18-2-1. Two additional maps for ponds 007 and 012 were submitted on March 20, with a labeling correction. The following text describes the operators proposed changes to address R614-301-732,-733,-742,-743,-744 and, regulation deficiencies noted in my review. The deficiencies should be addressed as soon as possible so abatement can be completed. Complete abatement of the NOV or, related abatement procedures must be received on or before June 30, 1991.

## Operator's Proposal

### Sowbelly Canyon

No Pond design changes are proposed, in Sowbelly Canyon, to address the regulation requirements associated with this NOV. These ponds were originally designed to meet prior State regulations but, were not designed according to the present R614 regulations. The operator submitted pond designs to contain the 10-year 24-hour precipitation event. Those pond designs included accumulated sediment volumes contained in the ponds at the time of the survey. The operators submitted designs to pass the 25-year 24-hour precipitation event through their spillways. No additional calculations were submitted to indicate whether the 25-year 6-hr peak flows produced equal or smaller flows and flow velocities. The spillways include drop inlets in pond 003 and 004 and a riprap lined open channel spillway on pond 005. Ponds 003, 004 and 005 are connected in series. The applicant and the Division are expecting this area to be reclaimed in the near future (1-2 years).

R614-301-732,-733,-742,-743,-744

### Compliance

Ponds 003, 004, and 005 are connected in series. Although Ponds 003 and 004 were not mentioned in the NOV, they do not meet the requirements of the regulations identified in the NOV. Because they are hydraulically connected to pond 005 they should be addressed.

### Recommendation

It is the Divisions preference that reclamation proceed as soon as possible. Therefore, I believe the applicant should be given a variance for Ponds 003, 004 and 005 with modification of the NOV. The Division Order dated December 18, 1990 has provisions that require site specific reclamation plans. The Division Order will provide a means to assure that immediate reclamation proceeds. This will better serve the goals of the Division and the public by moving toward reclamation and, it will better serve the operator through wise use of time and funding.

### Operator's Proposal

#### Hardscrabble Canyon

Note: The ponds in Hardscrabble canyon are connected in series.

#### Pond 007

1. Clean out existing pond to a minimum elevation of 6788 ft according to the submitted "Stage Capacity Curve," page 28, section 3.3-2.
2. Add an emergency spillway sized for the 25-year 6-hour event. (This spillway would pass flow over the road at the south end of the pond).

#### Pond 008

1. Raise embankment and re-design pond by cleaning out bottom.
2. Raise the elevation of the primary spillway 1.6 ft.
3. Add an emergency spillway to the proposed pond design sized for the 25-year 6-hour event.

4. Upgrade riprap from the present D50 = 1 inch to a D50 = 9.6 inches, 15 to 18 inches deep at the outlet of the primary spillway.

Pond 009A (upper pond)

1. Clean sediment out of the existing structure to a minimum elevation of 6310 ft.

Pond 009B (lower pond)

1. Raise embankment, and re-design pond.
2. Add emergency spillway to the proposed pond design.

R614-302-732

**Maps  
Compliance**

1. The operator determined a volume for pond 007, Exhibit 11.4, to be approximately 10,000 cubic feet greater than the Division's calculated value. I noticed that all of the variance occurred in the lower elevations of the pond. The existing pond contours do not match the proposed design or current design of the pond but instead the existing contours show the pond design with an existing sediment accumulation estimated to be 8,200 cubic feet.
2. Exhibit 7.3A incorrectly labeled one of the downstream watersheds. This map is not certified. No certified map of the Hardscrabble drainage area exists in the plan submitted July 11, 1990. The watersheds on Exhibit 3.3-4A do not match up with watersheds on 7.3A. All watersheds should be identified within the area covered on the drainage area map even if the full boundary is not located on the map. According to this map the area above pond 009 does not report to a sediment pond.

**Abatement Requirements**

1. The operator must commit to submit certified, accurate As-Built designs within 30 days following completion of construction for pond 007, in the proposed abatement plan. Note: All ponds undergoing construction changes will require certified As-Built designs as required by R614-514-310.
2. Correct Watershed identification and provide a certified map for Exhibit 7.3A. Provide a

certified, legible drainage area map for Hardscrabble Canyon identifying and label all watershed boundaries to the extent that they appear on the map. Watershed boundaries should be comparable between maps.

R-616-302-742

**Pond sizing  
Compliance**

All ponds in Hardscrabble Canyon are based on a fairly "tight" designs. Pond 007, 008, and 009 are proposed to detain the 10- yr 24-hr run off event (in series) and contain 2yr and 3yr sediment volumes. Additionally they propose to pass the peak design through the pond containing the maximum sediment volume. The submitted designs do not reflect those statements.

The applicant uses curve numbers based on vegetation mapping and plot surveys to determine curve numbers and runoff for undisturbed areas. Analysis of a small sample area is then applied to the whole area. This methodology results in a tighter less conservative value. A widely used curve number for undisturbed Watershed in this area is 75. The applicant has also misused the curve number (CN) at pond 009. The operators weighted CN used in undisturbed watershed HC-15 results in a curve number of 68. In this example for an undisturbed conifer forest estimated to have 70% cover the curve number used to weight the areas runoff is 60. The lowest value for a forested area in soil type C according to the referenced table is 70 (Appendix 3.3A, page 3). This variance would change the CN to 72 (rounded up from 71.5) and results in an additional runoff volume of 6271.72 cubic feet. Assuming every thing else is equal this brings the final pond volume to 33,379.72 ft<sup>3</sup>. The pond is designed to provide detention time for 31,140 ft<sup>3</sup>. Therefore detention time is not met in Pond 009A.

Pond 007, and 008 contain the runoff volume only if the maximum sediment volume is at the 60% clean out elevation. Pond 009A is designed to be used completely for sedimentation while, Pond 009B is designed to pass the peak event, retain the runoff volume and the remaining sediment volume. The operator passes the peak event through pond 009B but uses a stage capacity curve 0.5 ft. from the bottom of the pond. This indicates that the pond will not contain the peak event unless minimal sediment volume, equal to 243.5 cubic feet according to the operator's calculation, is retained in

pond 009B. That decreases the total sediment volume for pond 009. The actual maximum sediment volume for the proposed ponds are approximately equal to a 1.2 yr., 1.8 yr, and 1.2 yr (Upper and lower) for each consecutive pond and associated watershed areas.

#### **Abatement Requirements**

The operator has submitted "tight" designs. It is debatable whether the applicant has met the requirements of adequate sediment volume and detention time.

##### **Option 1.**

The operator will commit to changing the text to reflect actual sediment level used in the design and, the operator will commit to survey the ponds (007, 008, 009A and 009B) annually to assure that adequate sediment storage and runoff volume is maintained as required by R614-302-742.222.31, in addition the operator will commit to cleaning out pond 009B annually to assure adequate containment of the design event as required by R614-302-742.221.33.

##### **Option 2.**

The operator may redesign the ponds to provide a sediment volume and a runoff design that is conservative in design.

#### **Dewatering Devices Compliance**

The Operator does not include any proposal to provide a non clogging dewatering device adequate to maintain the detention time as required by R614-301-742.221.34.

#### **Abatement Requirements**

The operator must submit designs for dewatering devices on all ponds or demonstrate maintenance of detention time required.

614-301-743, -744

#### **Spillways Compliance**

The operator has submitted a proposal to add emergency spillways to Ponds 007 and 008. These

submitted changes have not included a design flow for the spillway. Therefore no demonstration of a need for or, lack of, energy dissipation to reduce erosion was included.

### **Abatement Requirements**

R614-301-743.300 requires spillways of temporary impoundments to pass a 25-yr-6-hr precipitation event. Because the sediment pond is considered a temporary impoundment, the emergency spillway must also be able to pass the design event and according to R614-301-744, must provide adequate protection from erosion.

### **Operator's Proposal**

#### Castlegate Area

##### Pond 010 Adit Area

1. Increase pond capacity by raising the embankment and lowering the pond bottom from 6168 ft. to 6166 ft.
2. Raise the spillway crest.
3. Install a 12 inch half-culvert to direct flow away from the embankment.

##### Pond 011

1. Increase pond capacity by lowering the pond bottom and raising the embankment.
2. Decrease height of riser on the primary spillway.

##### Pond 012A

1. Decrease the height of the primary spillway. Because the pond has excess sediment storage, decreasing the primary spillway still allows for adequate detention time for the 10 yr. 24 hr event and sediment storage according to the methodologies used by the applicant.
2. Add an emergency spillway to the south east end of the pond. The spillway outlet is along the north side of the road separating ponds 012A and 012B. The Spillway will direct the flow over the road. No defined channel design is included.

**Pond 012B**

1. Increase pond volume.
2. Remove the existing primary drop inlet spillway and replace it with a single open channel spillway.

**Pond 013**

No proposed changes.

**R614-302-732**

**Maps  
Compliance**

Pond 010 the culvert inlet is not indicated on Exhibit 11.7. In addition, if it is extended past the pond, the culvert should also be placed in the drainage design, Exhibit 3.4-2. The complete area of disturbance (the portal area) above pond 10 is not indicated on Exhibit 3.4-2.

**Abatement Requirements**

If the culvert is strictly within the perimeter of the pond, the culvert must be placed in the As-Built design maps. If the culvert extends into the surrounding disturbed area, it must be indicated on the drainage design map.

**R614-301-742**

**Dewatering Devices  
Compliance**

The Operator does not include any proposal to provide a non clogging dewatering device adequate to maintain the detention time as required by R614-301-742.221.34.

**Abatement Requirements**

The operator must submit design for dewatering devices on ponds 010, 011, 012A, and 012B or demonstrate maintenance of detention time required.

**Erosion protection  
Compliance**

1. The overland flow drainage contributing to Pond 010 was determined to have an erosive velocity of 8 ft/second as it enters the pond page 5 section 3.5-3.
- 2a. The West inlet to pond 011 has rip rap for erosion control methods but, the present riprap is undersized by 2". The permittee proposes to monitor and maintain the channel if erosion occurs page 12, section 3.4.
- 2b. The submitted design indicates the west inlet channel of pond 013 presently has under-designed riprap sizing. The existing riprap has a median diameter (D50) of 12" the required median diameter is 16.8" with the submitted design. The operator made no proposed changes.

**Abatement Requirements**

1. The erosive overland flow entering pond 010 indicates a need for additional design in the form of a protected ditch conveyance system or other velocity control measures to reduce the potential for pond destabilization and in order to minimize erosion to the extent possible as required by R614-301-742.113.
2. In order to meet the requirements of R614-301-742.311 the indicated design rip rap sizing must be used to protect all channel inlets and outlets.

**Spillways  
Compliance**

Pond 013 meets MSHA 30 CFR size requirements because it is designed to impound water 22.3 ft above the upstream toe. The Pond presently has a single open channel spillway. The spillway was designed for the 25-year, 24-hour storm event.

**Abatement Requirements**

According to R614-301-742.222 the operator must provide two spillways that, in combination, will safely pass the 100-year, 6-hour storm event.

614-301-743, -744

**Compliance**

The operator has included a submittal to add emergency spillways to Ponds 011 and 012A. These submitted changes have not included a design flow for the spillway. Therefore, no demonstration of a need for, or lack of need for, energy dissipation to reduce erosion was included.

**Abatement Requirements**

R614-301-743.300 requires spillways of temporary impoundments to pass a 25-yr-6-hr precipitation event. Because the sediment pond is considered a temporary impoundment, the emergency spillway must also be able to pass the design event and according to R614-301-744 to provide adequate protection from erosion.