



State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Norman H. Bangert
Governor

Dec C. Hansen
Executive Director

Dianne R. Nielson, Ph.D.
Division Director

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

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TO: File

FROM: Mike DeWeese, Reclamation Hydrologist *MD*

RE: Technical Deficiency Comments, Mid-Term Permit Review,
Castle Gate Coal Company, Price River Complex, ACT/007/004,
Folder 2, Carbon County, Utah

UMC 771.23 Permit Applications - General Requirements For Format and
Contents

The operator is not in compliance with this section. Information presented in the MRP is not current and references cited in the text are inconsistent in each section reviewed by the Division. The MRP basically needs to be reorganized and updated to present the required current information in a clear and concise manner. In it's present condition, the reviewer can locate specific information only by a trial and error methodology. A thorough technical analysis is not practical at this time because of the MRP's general state of disorder. The following deficiencies must be corrected before a technical analysis can be properly conducted:

1. Narratives must be updated and corrected to provide a consistent and accurate description of the current operational facilities. Inconsistencies were found in various structural design descriptions which referred to the same structures as both proposed and existing.
2. The tables of contents presented in chapters 3 and 7 are not accurate. These must be updated to reference the correct page numbers for the listed sections.
3. References made to tables, figures, exhibits, etc. in the text are frequently inaccurate. These must be corrected and updated.

UMC 783.16 Surface Water Information

Water quality data sheets submitted in the MRP are of such poor general quality that they are illegible. These must be replaced with copies that clearly present the data in a legible form.

UMC 783.25 Cross-Sections, Maps, and Plans

Page 262 of the MRP states that the operational surface water quality monitoring program will consist of eight sample stations depicted on exhibit 7-3. UMC 783.25 (b) requires that the elevations and locations of monitoring stations be shown on the appropriate maps. This information is not discernable from exhibit 7-3 because contours are not legible in most of the map. Furthermore, the map scale is too small to adequately determine individual sub-watershed physiographic parameters necessary for design calculations. The operator must submit a revised map which clearly identifies all water quality monitoring stations and their elevations, and in which contour lines are clearly shown for the entire map area. In addition, all permit area maps shall be of scale 1:6000 or larger and all map labels shall be legible.

Maps of existing sediment ponds do not contain sufficient elevation contours or surface areas to determine the configuration of the surrounding land surface and/or in some instances pond capacity. Each map must include measurements extending at least 100 feet beyond the disturbed area perimeter to allow determination of the surrounding land slope and configuration. Surface elevation contours of the surrounding areas must be depicted at no greater than a 5 ft. interval. Contours of the actual pond structures should be at one or two foot intervals. Some maps in the MRP do not depict level contours of the pond structure. Pond capacity can not be determined accurately from these representations. All maps must consist of level contours for a single given elevation. Pond cross-sections and plan views must depict the entire spillway structure, including energy dissipation structures, with dimensions for width or diameter, length, height, side slopes, and bed slope. Maps of the pond structures and surrounding areas must be of scale 1 inch = 10 feet or greater.

Disturbed area boundaries should be clearly delineated on maps of each watershed. Sediment control structures such as berms, straw bale dikes, and sediment fences should be clearly depicted on the appropriate disturbed area maps.

UMC 784.13 Reclamation Plan: General Requirements

Detailed timetables of the reclamation operational sequence relative to the start of reclamation activities should be submitted for each disturbed area. Channel reclamation should be included in addition to the activities listed on the operator's submitted reclamation timetable.

UMC 784.14 Reclamation Plan: Hydrologic Balance

The operator must submit a detailed description of measures to be implemented after mining activities have ceased to protect the quantity and quality of surface and ground waters in each area. This description should include detailed designs for any diversions to be constructed and any alternative sediment control measures to be implemented as part of the final reclamation process. The locations of these structures must be included on an appropriate map of the post-mining land configuration, which shows the reclaimed surface contours and any permanent structures in detail.

The water quality monitoring plan described in section 7.5 of the MRP commits to sampling on a quarterly basis on designated dates. There is no reference to the duration of the monitoring program, however. The operator should commit to continuing the operational monitoring program for two years after all reclamation activities have ceased, at which time a post-mining monitoring plan may be implemented. The following additional constituents should be added to the list of surface water analyses in section 7.5-1:

- Dissolved Oxygen (perennial streams only)
- Total Hardness (as CaCO₃)
- Acidity
- Carbonate
- Total Manganese
- Cation-Anion Balance

Section 7.5-2 of the MRP states that analyses for ground water will be identical to the proposed surface water constituents. The operator should add the following constituents to the list of groundwater analyses:

Total Hardness (as CaCO₃)
Carbonate
Manganese

Groundwater constituents should be analyzed in dissolved form while surface water constituents should be analyzed in both dissolved and total forms.

Section 7.5-2, page 262 states that groundwater sampling will occur at five stations located on exhibit 7-3. Only four stations are located on this exhibit for groundwater monitoring. This discrepancy should be corrected. Detailed sampling procedure descriptions for surface, groundwater (both wells and springs), and in-mine analysis must be included in the text.

UMC 784.22 Diversions

Designs for each diversion within the permit area must be submitted demonstrating that compliance with UMC 817.43-817.44 has been achieved. Diversion cross-sections submitted in the plan are not adequate to determine design dimensions. Map cross-sections are not of a large enough scale and cross-section worksheets are not legible. Detailed diversion channel cross-sections of scale 1 inch = 1 foot or greater must be submitted showing top width, bottom width, depth, side slopes, and maximum and minimum bed slopes. Designs shall incorporate calculations for riprap and energy dissipators for each diversion or a demonstration (with calculations) that these measures are not necessary..

Culvert design calculations could not be found for some areas of the mine operation. Culvert designs must be included in the MRP for all culverts in the permit area, demonstrating that existing culverts are adequate to safely convey the design storm runoff.

The operator must include complete information on inputs used to calculate design peak flows for all areas (disturbed and undisturbed). This information consists of:

1. Watershed maps of each area. These maps should delineate sub-watershed areas used in calculating peak flows and differentiate between disturbed and undisturbed areas. Maps shall be of scale 1:6000 or greater and depict structural and/or topographic watershed boundaries and contour intervals of 10 feet or less.

2. Curve number calculations for each area. Calculations for areas other than Hardscrabble Canyon could not be found in the MRP. These calculations shall be presented for each watershed or sub-watershed with references to soil and vegetation information contained in the permit.
3. Precipitation and time of concentration values for each watershed area. These are included in table 7-12 of the MRP for undisturbed areas. However, no values for disturbed area inputs could be found.
4. Referenced calculation assumptions and methodologies for peak flow calculations in all areas.

This information is necessary to conduct analyses of diversion, culvert, and sedimentation pond designs. Certain areas such as Hardscrabble Canyon appear to contain the required information. However, information presented for other areas is inadequate.

cc: S. Linner
R. Summers
D. Darby
BT47/31-35