



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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TO: Daron Haddock, Permit Supervisor

FROM: Priscilla Burton, Reclamation Soils Specialist

RE: Technical Deficiency Review, Castle Gate Coal Co.,  
Price River Complex, Permit ACT 007/004,  
Carbon County, Utah. Folder #2.

**SUMMARY:**

The Technical Deficiency Review was conducted 10/1 through 10/18/90. A major deficiency which must be adequately addressed prior to permit approval is the lack of information concerning the physiochemical characteristics of the refuse, overburden, and proposed substitute topsoil material. Consequently, estimates of the volume of topsoil (and/or borrowed soil) required can not be determined.

**REVIEW:**  
General Comments.

It is difficult to know what has been done and what is going to be done, since future and past tenses are used (sometimes within the same paragraph i.e. pp24-5, Soils Material Protection).

If the Operator wanted to reduce the volume of text, all soils and reclamation procedures could be condensed into Chap VIII rather than written both in Chap VIII and several times over again in each section of Chap III. If the Operator wants to continue to list soils and reclamation information in Ch III and VIII, then both Ch III and VIII must be updated with each notification of deficiency.

R614.301-200. SOILS

R 614.301-220. Environmental description.

Please list a reference for the sources that are mentioned in paragraph 1, page 1, sec 8.1 of Chap VIII.

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R614.301-221. Prime Farmland Investigation.

Chapter VIII, sec 8.2 pg 19 and Chap III, sec 3.7-4(7), p 38 refer to a letter from the U.S.D.A. Soil Conservation Service dated 7-16-79, pertaining to prime farmland determination. Please make reference to this letter in sec 3.8, p3, also. The map that is referred to in the letter must be given an exhibit number and displayed in the exhibit section for reference.

R614.301-222. Soil Survey.

Soil survey information provided varies markedly with the survey published by the Soil Conservation Service in 1982. (These surveys are available at local field offices of the SCS.) In most cases, the information in the MRP correlates only with the Order of the soils listed in the 1982 Soil Conservation Service Survey, but not the Family or series. Please update the Family and Great-group units that are presented in Chap VIII pp2-4 and on the soil maps as follows:

R 614.222.100. Soil Map.

Submit a graphic, two-dimensional, drawing of the soil survey map (Order 3) encompassing the disturbed areas, i.e. Crandall Canyon, Castle Gate, Gravel Canyon, Hardscrabble Canyon, Sowbelly Canyon, and adjacent undisturbed soils. The map must label soil classifications down to the Family and series providing the reader with an indication of the areal extent of each soil. The location of each soil sampling pit locations mentioned in Chap VIII must be clearly identified and the size of their representative areas delineated. Areas of disturbance must be delineated. The maps must be drawn on a scale of 1" = 200' or greater, labeled according to scale and provided with a legend.

Exhibit 3.8.-1 was referenced on p3, sec 3.8-2, but not placed with other exhibits. Please locate this exhibit with all other maps and submit a clearly legible, two-dimensional, graphic drawing of the original, detailed as described in the above paragraph. The present photocopy of a portion of the Order 3 Soil Survey is not acceptable.

The description that accompanies Ex 3.8-1 contains a typographical error on p16, paragraph 3, with regard to the organic matter percentage.

Figure 8.1. is referenced in Chap VIII, pp 1&2, but it is not shown. Please include this reference.

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Exhibit 3.3-1 is referenced in sec 3.3. pp 1&2, but could not be found in the old MRP. Please submit Exhibit 3.3-1.

R 614-301-222.300 Soil Description

Please correlate soil descriptions and Family names with the most current Soil Conservation Service Survey, 1982.

On page 6, paragraph 2, sec 8.1-2, Chap VIII, the soil description of pit 2 is missing a series name. On the same page, paragraph 3, pit #1 should have an indication of the depths to which plant roots penetrate.

On page 11, paragraph 1, sec 8.1-4, Chap VIII, please reference the map that is mentioned for clarity

R 614-301-224. Substitute Topsoil.

When considering proposed substitute soil sources (on pp 19 & 20, sec 8.3, Chap VIII, p20 sec 3.1 Ch III) the Applicant must be more specific about potential borrow sites, and include results of analyses, trials, and tests as described below under R614-301-233. Topsoil substitutes and Supplements.

Exhibit 8-10 was not referenced, but must be cited on pp 19 & 20, sec 8.3, Ch VIII. The eight borrow sites shown in Ex 8-10 must be described with regard to their potential quantity and their characteristics. i.e. volume estimates, survey, physiochemical analyses to the planned excavation depth.

The information provided in sec 3.2 (as amended 1990) is contradictory. On page 1 of this section, the operator states that, "The surface of the area has been built up with purchased borrow material which is a mixture of silt, sand and gravel...approximate area disturbed is 16 acres." On page 21 of this same section, the Applicant states that, "13.5 acres in Sowbelly Canyon were disturbed ...The existing soils at the site will be used as resoiling material." Please clarify when the regrading (mentioned on page 1, sec 3.2) took place, how many cubic yards were purchased? How many acres were covered? What depth was the coverage? Was the suitability of this material described as per R614-301-233, below?

R614 301-233-200. Topsoil Substitutes and Supplements

On page 20, sec 8.3 (last paragraph), please include in the list of physical and chemical tests that must be performed:

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Electrical conductivity, SAR, pH tests, saturation percentage, particle size analysis, soluble Ca, Mg, and Na, hot water soluble selenium, total N, nitrate-N, hot water soluble boron, maximum acid base potential, organic carbon, available water capacity and % rock fragments. These procedures are mentioned in the MRP Revision of July 1990 on p 21 sec 3.2 for Sowbelly Canyon; p 24, sec 3.3 for Hardscrabble Canyon; p 21 sec 3.4 for Castle Gate Prep Plant and Refuse Disposal Facility; p 9, sec 3.5 for Adit No 1; but not in Chap VIII, p 20, paragraph 2 or on p 58, sec 3.1 for Castle Gate and Utah Fuel No 1. Reference to the these tests and the location of the results must be made in the text on the pages mentioned above and in Chap VIII, p 20, paragraph 2.

The purpose of this testing is to quantify the overburden and determine if it meets the criteria necessary for plant growth. Only partial results of these tests were submitted and found in the Appendix of the July 1990 MRP Revision. In some instances, all samples are represented, but not all tests are reported for each sample (i.e. Castle Gate Refuse site, Hardscrabble, Sowbelly Canyons). In other cases, not all samples are represented (Adit No 1, Castle Gate Prep Plant). It was observed that only 4 pages were submitted of a 6 page submittal, that page 1 of 6 is incorrectly labeled as Location:School House Canyon. Please correct these deficiencies and make certain that all analyses have been reported for each sample at each location. The Division must have a complete report from all sampling locations of "in situ" soils, proposed topsoil borrow areas (2 in Sowbelly, 3 in Hardscrabble and 3 in Crandall Canyon), refuse piles, and topsoil in order to ascertain the ability of the operator to adequately reclaim the disturbed areas. Topsoil and all substitute topsoils must be accounted for in a mass balance determination.

On the basis of the results submitted thusfar, it appears that sampling site S-7 will present a problem for successful revegetation based on the SAR, EC, soluble Na values. The Division requests that further sampling be done in the location of Sample site S-7 to distinguish salvageable material from that location. The additional tests should be located 30 ' from the sample site S-7: 1 upstream, 1 downstream; and 1 at the original location. These three tests should be further subdivided into 0-6" sample, 6-12" sample, 12-24", 24-36", 36-48" for a sum total of 15 more samples from this particular area in Sowbelly Canyon. Tests to be done should be those described in sec 3.2 p 21 (as amended 1990)

Soil sampling locations were omitted on Exhibits 3.4-3 Castlegate and Ex.3.3.3 Hardscrabble, Ex. 3.7-9 Crandall

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submitted with the MRP Amendment 1980. Please correct.

On p 21, sec 3.7 (Amended), How will or how did the Applicant determine whether or not there is suitable material for resoiling in excess of 6" deep in Crandall Canyon?

R614-301-231.300 Topsoil Testing Plan

The plan for testing topsoil nutrients after distribution has been mentioned on p41, sec3.7-5(3). Testing every 3000 cu yds of topsoil that is to be distributed 6" deep equates to taking 1 sample/4 acres. The Division requests that 1 sample for 2.5 acres of topsoil is taken for the following standard fertility tests: texture, nitrate nitrogen (ppm), phosphorus (ppm), potassium (ppm), pH, and EC (mmhos). These tests must be performed all topsoil, regardless of origin, at all disturbed areas after grading.

R 614-301-232. Topsoil and Subsoil Removal

Topsoil handling requirements are now regulated under R614-301-224 through R614-301-252. Please make this change in your reference to the regulations, page 19, sec 8.3, Chap VIII.

Please remove the phrase, "where it is shown by preaffectment investigation to exist in an uncontaminated and accessible condition" from the first paragraph of sec 8.3, pg 19. Under this regulation 614-301-232, all topsoil must be removed unless the Division authorizes and consents to another plan, i.e. R614-301-232-700 (Topsoil and subsoil removal under adverse conditions).

R614-301-234. Topsoil Storage and R614-301-231.400 Narrative Description of Topsoil Handling and Storage Areas

Sec 3.4, p 22 generally identifies Gravel Canyon as the topsoil storage site. This section must refer the reader to Chap VIII for more information. In Chap VIII, sec 8.4, under "Topsoil and Refuse Pile Covering Material Centralized Storage," the sites of storage in Crandall Canyon (mentioned on p21, sec 3.7) also need to be listed and described as for Gravel Canyon. i.e. the pile construction, use and erosion control maintenance.

On p 15,m sec 3.7 (Amended), please delete the mention of the upper topsloil site, since on page 21 of the same section, the text states that the upper pile has been moved. How many

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cubic yards of material from the upper pile was moved to Gravel Canyon?

Also in Chap VIII, p 21, under 'Site Description,' the Applicant must reference Ex 8.7 and 8.8.

The map referred to on p 22 & 23 sec 8.4, Chap 8 needs to be identified by exhibit number.

R614-301-242. Soil Redistribution.

References to "Scarification to a depth of 8-12 inches..." on p 21, sec 3.2; p 25, sec 3.3; p 22 sec 3.4; p 4 sec 3.5; and elsewhere in the text should be replaced with "Deep ripping to a depth of 18-24 inches..." as per the Applicant's Response to the DOGM Technical Deficiency Review, December 4, 1989. Reference to deep-ripping after topsoil redistribution must also be made on p 41, sec 3.7-5(3) for Crandall Canyon.

R614-301-240. Reclamation Plan

Exhibits 3.3-9A and 3.3-9B are referred to on p23, sec 3.3. These exhibits were not found in the Amended MRP submittal. However, Exhibits 3.3-8A and 3.3-8B for Hardscrabble were found. Please make the appropriate corrections in the text.

Reclamation Exhibits 3.2-3 Sowbelly, 3.3-3 Hardscrabble, 3.4-3 Castlegate were not corrected according to the commitment in the Response to Technical Deficiency 1988. These maps must delineate and indicate the number of acres relevant to that specific area and specific reclamation treatment (seed mix, topsoil coverage, borrow area, etc.). Those facilities to be left as part of the post mining land use should also be clearly identified on the drawings.

On page 24, sec 3.3 (as amended), the Applicant states that, "Areas which will not revegetate to support the intended land use of wildlife habitat will be covered with 6" of resoiling material borrowed from Gravel Canyon Storage Site." On page 27 of sec 3.3-6, the Applicant calculates a bond, with the assumption that the parking area will need 6" of additional material from Gravel Canyon. What are the Applicant's plans for removal of the parking surface? Will the surface be broken up and buried or hauled to an authorized landfill? If the hard surface is to remain, than the Applicant must determine bonding amount using 2' of material imported from Gravel Canyon as per R614-301-542-742. Another comment that also pertains to page 27, sec 3.3-6 is that

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there are many typing errors on this page that must be corrected.

On p 31, sec 3.1, Ch III, the Applicant indicates that, 6" of material will be placed as cover in areas of Hardscrabble and Sowbelly Canyons. The Applicant must be more specific about the location of the placement of the topsoil. The Applicant must indicate the placement of this additional material on the Reclamation Exhibits for these Canyons, Ex 3.3-3 Hardscrabble and 3.2-3 Sowbelly.

R 614-301-243 Soil Nutrients and Amendments

On p 14, sec 3.7 (Amended), the Applicant states that, "A nutrient analysis has been performed by the State Lab and is included with this submittal." This analysis was not found in sec 3.7 or the Appendix of this submittal. The applicant was vague on p22, sec 3.7(Amended), as to the soil amendments that will be added to the stockpile to encourage growth of erosion controlling vegetation. The Division can not evaluate this stockpile, since no analytical results were found.

R614-301-244. Soil Stabilization.

The Applicant must add into the Amended Plan his commitment to repair, regrade and reseed gullies and rills greater than 9 inches in depth or greater than one-half the cover depth, where the amount of topsoil or cover material is less than eighteen inches. This commitment is stated in the Response to the Technical Deficiency 1989, but must be incorporated into Chap VIII and Chap III the Plan where reclamation is being discussed.

R614-301-553-250. Refuse Piles

On p30, sec 3.1, Ch III, the Applicant mentions "favorable test results on refuse piles." The Applicant must reference the location in the text of these results.

R614-310-731-300. Acid-and Toxic-Forming Materials.

Information concerning excess spoil (to be used for fill) was referenced on p36, sec 3.7-4(3) Amended, but this Figure 3.7-4(4)(B) could not be found and was listed as being deleted in the Table of contents. Please include a copy of this Figure for review.

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The Applicant has failed to supply a complete analysis of the Schoolhouse refuse site samples in the Appendix with the Amended MRP (1990) and so a complete technical review is not possible. The Applicant must provide a complete lab report. At this time the Division is not convinced of the non-toxic/acidic nature of the refuse.

Please add to p 25, sec 8.5 of the MRP the responses that were written to the Dec 89 Technical Deficiency Review (TDR):

from p 9 of the TDR:

"Any coal waste located on the surface and sediment pond cleanings will be hauled to the refuse site."

from p27 of the TDR:

"if deemed necessary, these materials shall be treated to neutralize toxicity, protect against upward migration of salts, exposure by erosion, formation of acid or toxic seeps and provide an adequate depth for plant growth,...etc"

#### CONCLUSIONS:

The Applicant has not provided the technical information required to complete a technical review of the Mining and Reclamation Plan. A major deficiency which must be addressed prior to permit approval is the characterization of the refuse, overburden and proposed substitute topsoil material (both quality and quantity available).