



State of Utah

Department of Natural Resources

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December 5, 2005

Gary E. Gray, Resident Agent
West Ridge Resources, Inc.
P.O. Box 1077
Price, Utah 84501

Subject: Division Order DO 4-6-00, West Ridge Resources, Inc., West Ridge Mine, C/007/0041, Task ID #2233, Outgoing File

Dear Mr. Gray:

The above-referenced amendment has been reviewed. The following deficiencies must be address before approval. Those deficiencies are as follows:

R645-301-742.310, .320, The Permittee must modify the stream reconstruction plan presented in Appendix 5-9 as described below.

- 1) The average slope of the channel reconstruction design is presented in the text as the same as the original/restored channel average slope of 6.4%. The average slopes of the first 350 feet (upstream) and final 150 feet of the channel reconstruction are 5.71% and 9.33%, respectively, as presented in the text and on Plate 3 of Appendix 5-9. However, the reconstruction design allows for an overall straightening of the channel that would increase the average slope. Based on the slopes of the 50-foot sections of the channels as presented in Plate 3, the average slope of the channel reconstruction should be 6.8%.
- 2) As outlined on page 10 of Appendix 7-4 and referenced in both "Applied Hydrology and Sedimentology for Disturbed Areas" (Barfield, Warner & Haan, 1983), and "Design Hydrology and Sedimentology for Small Catchments" (Haan, Barfield, Hayes, 1994) the limiting velocity for unlined channels is 6.0 fps. The natural channel outlined a velocity of 7.7 fps, however that assumed the natural sinuosity and armoring of the channel. Based on information provided in Appendix 5-9, the first 350 feet (upstream portion) of the channel reconstruction exceeds the limiting velocity of an unlined channel. Appendix 5-9 needs to provide a channel reconstruction design that will either allow for the installation of armor where calculated flow velocities are greater than 6.0 fps, or allow for the installation of

additional dam or drop structures to reduce the velocity below 6.0 fps. Supporting calculations should be appropriate for the proposed velocity control structures.

- 3) The text in the Hydrologic Design section of Appendix 5-9 states that bedrock will likely be encountered to provide natural armor on the lesser sloped and non-rip rapped portion of the channel. The plan should discuss how the bedrock will affect the designs use of riprap and dams or drop structures, and that the final design is contingent upon the bedrock encountered.
- 4) More information regarding efforts to make riprap portions of the channel appear natural is needed in the plan.

R645-310-731.720, -760, The Permittee needs to update plates and figures of Appendix 5-9 where necessary to reflect the design modification requested by the Division.

In order for us to continue to process your application, please respond to these deficiencies by February 3, 2006.

We would like to meet with you and discuss these deficiencies at your earliest convenience. Please call Wayne Western at (801) 538-5263.

Sincerely,

Pamela Grubaugh-Littig
Permit Supervisor