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CONSULTANTS GROUP

GEOLOGY ENGINEERING ENVIRONMENT HYDROLOGY

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Copy Pam, Susan

September 18, 1992

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DIVISION OF
OIL GAS & MINING

Ms. Pamela Grubaugh-Littig
Permit Supervisor
Utah Division of Oil, Gas and Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180

SUBJECT: Hidden Valley Coal Company Vegetation Surveys

Dear Ms. Grubaugh-Littig:

JBR Consultants Group, as Hidden Valley Coal Company's representative, will be conducting vegetation cover surveys at the Hidden Valley Mine site beginning September 26, 1992. We will be utilizing the following methods stated in the approved Reclamation Plan for the site, and stated in the Division's Vegetation Information Guidelines, revised 1989 version. Methodology is outlined below in this letter for your information.

The disturbed area at the Hidden Valley site will be divided into two sections for survey purposes: the roadway and the remaining area. Separate surveys will be conducted on each section, with statistical adequacy being assessed separately. This will provide the means to evaluate success on the roadway separately since it has recently been questioned by the Division. As necessary, the data sets may also be combined to provide a single, encompassing survey result as well.

For each section, random, 100-foot transects will be chosen as follows. A closely space grid will be placed on the 1-inch=100-foot Final Reclamation Map from the Reclamation Plan. Points at grid intersections within the disturbed area will be numbered sequentially. A random number generator on a hand calculator will be used to choose grid numbers for starting transect locations. Once the starting location for a given transect is chosen, orientation of the line from that point will be done. For the roadway, due to its narrow length, the transect will simply be placed parallel to road alignment; direction up or down the roadway will be chosen randomly. For the remaining disturbed area, direction of the transect from the starting point will be chosen by determining a random angle from due north. If the 100-foot distance is longer than can fit within the disturbance, another random angle will be chosen from the edge of the disturbance, resulting in an angled transect.

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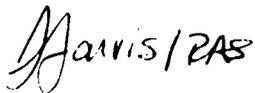
A 100-foot survey tape will be laid out along the randomly determined transect. Two types of cover determinations will be done along the line. First, a line-intercept method will be used, where percent cover of each species, litter, bare ground and rock are obtained by adding the distances along the transect that each occurs.

Next, an ocular method will be used because that was used in the original survey of the vegetation reference area. Along the 100-foot transect line, 10 randomly spaced 1-yard square quadrats will be placed. The percent ground cover by species, litter, rock and bare ground will be visually estimated.

The number of transects in each of the two sections will be dependant upon the sample adequacy calculations as described in the Division Guidelines. (Testing will be done to meet a 90 percent confidence level with a 10 percent change in the mean.) It is anticipated that a large number of transects will be needed due to the apparent variability in cover at the site. Therefore, permanent marking of the transects will not be done.

If you have any comments on the survey, please provide them to us in time that we may consider them before initiating the survey. Thank you very much.

Sincerely,



Joseph M. Jarvis
President, JBR Consultants Group

Copy: Lee Edmunson, CalMat
Karla Knoop, JBR Consultants Group