TECHNICAL EVALUATION OF REVISED SPECIFICATIONS

In a letter dated August 29, 2011, the Department of Energy (DOE) submitted proposed changes to riprap specifications for the Crescent Junction disposal cell. These changes are necessary to accommodate the rock characteristics that are currently being produced at the quarry, and to have an acceptable riprap construction specification that meets gradation and rock size requirements.

Staff review indicates that the proposed changes are acceptable. The technical basis for the acceptability of the changes is discussed below.

1. Reduction of Fines. The requested change reduces the amount of fines allowed for several of the smaller rock sizes from 15 percent to 5 percent and eliminates several of the smaller bands. This change was first reviewed by the staff when DOE submitted proposed changes to the gradations on June 15, 2011. During that review, the staff concluded that DOE's proposed change allowed too much fine material to be produced and placed on the cell. In several conference calls, the Nuclear Regulatory Commission (NRC) staff suggested to DOE that the gradations were generally acceptable, other than the amount of fines, which should be no more than 5 percent. Following those discussions, DOE agreed to NRC staff suggestions.

Based on review of the gradations submitted by DOE, the staff concludes that the riprap layers for the smaller rock sizes are properly graded for easy placement and that the minimum D_{50} rock sizes in the layers are at least as large as the required D_{50} rock size. In addition, the layer thicknesses are at least twice as large as the required D_{50} rock size to assure easy placement. Due to the potential for segregation of materials during placement, fines in the gradation have been kept to a minimum. Further, based on review of the gradations, the staff concludes that the proposed gradations meet the suggested criteria of NUREG-1623.

2. Gradation Change for 11.8-inch Rock. The proposed change requests approval of larger rock sizes than currently required for the 11.8-inch riprap. DOE proposes to provide rock that has a D_{50} of about 20 inches, which is larger than the required size of 11.8 inches. This larger rock is needed for the aprons, toes, and diversion channel areas of the site. Staff review of the gradation indicates that the riprap layers for the smaller rock sizes are properly graded and that the minimum D_{50} rock sizes is at least as large as the required D_{50} rock size. In addition, the layer thicknesses are at least twice as large as the D_{50} rock size to assure easy placement. Fines in the gradation have been kept to a minimum to reduce the potential for segregation of fine material. Based on these considerations, the staff concludes that the proposed gradations are acceptable and meet the suggested criteria of NUREG-1623.

Enclosure