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AUG 11 1987

Mr. James R. Anderson, Project Manager
Uranium Mill Tailings Project Office
U.S. Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87115

Dear Mr. Anderson:

Enclosed are our comments in the area of geotechnical engineering for the draft Remedial Action Plan and the draft Environmental Impact Statement for the UMTRA sites at Rifle, Colorado. With the receipt of the enclosed, our comments on the DRAP and DEIS are complete.

If you have questions regarding these comments, feel free to contact me at FTS 427-4799 or George Pangburn of my staff at FTS 427-4160.

Sincerely,

Paul H. Lohaus, Acting Chief
Operations Branch
Division of Low-Level Waste Management
and Decommissioning

Enclosures: As stated

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GT1 - dRAP - Figure 3.3, Page B-7 - Characterization of Vanadium Ponds

Figure 3.3 on page 14 shows three areas labeled as Vanadium Ponds on the New Rifle processing site. Page B-7 of Appendix B discusses the estimation of the depth of contamination beneath these ponds of 5 feet. It is stated that no boreholes were drilled during site characterization because the ponds were filled with process liquor at the time the site characterization was done. It is explained that the ponds have been dredged since the time of site characterization, and the depth of contamination has been re-estimated as 3.5 feet. This new estimated depth of contamination should be supported by field data. Additionally, the disposition of the dredged material should be described. If the dredged material is to be moved with the tailings and other contaminated materials, it may be necessary to characterize it since it may exhibit properties different than the tailings and the other contaminated materials.

GT2 - dRAP - Pages 56, Pages D-144 and D-145; Figures D.4.51 thru D.4.61; Figures d.5.40a thru D.5.40d; Figures D.5.57a thru D.5.61c
dEIS - Page D-1 - Shear Strength Tests and Values

(a) Figures D.5.40a to D.5.40d and Figures D.5.57a to D.5.61c report results of "staged" triaxial shear strength tests performed on in-situ and remolded radon cover soil at three different densities and three different moisture contents. These results are questionable because the laboratory samples were tested at densities and moisture contents which are different from the planned design values. It is standard engineering practice to perform triaxial compression tests on several samples of the same material at the same density and moisture content. The staff recommends that the stability analysis use shear strength values determined by this standard engineering practice, or that clear justifications be given as to why these staged triaxial tests give results that are as representative as the test results are when employing the standard engineering practice.

(b) Figures D.40a to D.40d report the results of 1 laboratory test for shear strength conducted on the in-situ soils at the Estes Gulch site. The staff recommends that additional tests be conducted or that a justification be given that substantiates the use of only 1 test for shear strength on the in-situ soils.

(c) Figures D.4.51 through D.4.61 report results of triaxial shear strength tests performed on tailings at three different densities and moisture contents. Therefore, the staff has the same comments and recommendations that are discussed in GT2 (a) directly above.

(d) Page D-145 reports the results of one unconsolidated-undrained triaxial test for the sand-slime tailings. As discussed in (b) above, the staff recommends more testing, or a discussion that justifies the use of one test result for determining this property of the tailings. Also, the results from

this test should be displayed graphically like the other test results in Appendix D.

(e) The text on page D-144 admits that none of the tests for strength reported in Figures D.4.51 through D.4.61 were conducted with moisture contents and dry densities that replicate field conditions. Additionally, although some of the tests were conducted on sand-slime mixtures, there were no strength tests performed on a sample with the expected typical field mixture of 55% sand -- 45% slime. The staff is concerned that the strength parameters resulting from these tests are not representative compared to strength parameters resulting from tests that could be conducted on samples with field condition sand-slime mixtures, densities, and moisture contents.

GT3 - dRAP - Figure 4.3, Pages 48 and 72 - Disposal Site Characterization

Figure 4.3 shows an area of small debris flow partially within the approximate site location. On page 72 of the text, the discussion on this debris flow says that this area will be completely covered by the pile and thus is eliminated as a problem. The site plan on page 48 that displays the locations of borings and test pits shows that this area was not characterized. The staff feels that this area should be characterized because it may exhibit properties significantly different from soils tested at the Estes Gulch site. Such differences may be significant when considering the long-term stability of the site.

GT4 - dRAP - Page B-15 and Table B.1.5 - Radon Cover Long-Term Moisture Content

The long-term moisture content of the radon barrier has been identified as 17.4% in Table B.1.5. The staff is concerned that this value may not be representative of the actual long-term moisture content. The staff's concerns are based on two reasons. First, the average of the in-situ moisture content values for soils from the Estes Gulch site is only 8.2%. Second, the semi-arid climate of the site vicinity (average annual precipitation is 11.02 inches and there is "high evaporation" (dEIS, page 71)) would indicate that the maximum placement moisture content of 17.9% (Table D.5.2) would be reduced to a lower value than 17.4%. The staff recommends that values that have been measured for the near surface material existing at the borrow site should be correlated to the conditions at the actual disposal site to aid in the selection of a conservative long-term moisture value for the cover.

GT5 - dRAP - Page D-67 and Figure D.3.9 - Geomorphic Characteristic

Figure D.3.9 shows two areas of landslide or slump deposits within 1000 feet of the proposed Estes Gulch site. These areas are briefly discussed on page D-67 and the conclusion reached is that the deposits do not affect the proposed tailings disposal area. While this may be true, there should be additional information that describes why other nearby areas are not susceptible to similar processes and why a continuing minor slumping of the northeast deposit

will not become larger and affect the stability of the pile. Characterization of these movements may be required, or a justification of why some characterization is not needed.

GT6 - dRAP - Table D.4.1 and Page D-145 - Parameter Value Discrepancies

(a) The parameters reported in Table D.4.1 for maximum dry density and optimum moisture content for the placed tailings are reversed. Therefore, the values for density and moisture content currently listed under "Old Rifle" are supposed to be under "New Rifle," and vice-versa.

(b) The parameter for phi reported in Table D.4.1 for the short-term strength of the placed tailings does not agree with the text on page D-145. This discrepancy should be corrected.

(c) The assumed parameters for phi reported in Table D.4.1 for the other "contaminated materials" are not justified with any discussion in the text. The references that were used to obtain these assumed values and a discussion about why these assumed values are representative should be included, at a minimum, to substantiate the choices of parameter values.

GT7 - dRAP - Page D-155
dEIS - Page A-40 - Tailings Pile Construction

Strength test values for the relocated tailings and the assumptions that no extensive lenses of slimes would exist in the compacted tailings are both based on the expected uniform mixing of sands and slimes of the two existing Rifle tailings piles. Because of this uniform mixing assumption, it is stated that no appreciable differential and total settlement will occur. Procedures and operations that will be specified to give the expected uniform mixing should be described.