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WM-048/RFB/86/08/26/0

AUG 26 1986

URFO:RFB
Docket No. WM-048
040WM48801E

John G. Themelis, 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. Themelis:

This letter is our conditional concurrence on the Final Remedial Action Plan and Site Design for Stabilization of the Inactive Uranium Mill Tailings Site at Durango, Colorado. This conditional concurrence would allow remedial action activities to include excavation and construction of the disposal cell (excluding radon barrier placement and cell closure) and transfer and placement of contaminated tailings within the disposal cell. The conditional concurrence is based on review and acceptance to date of the following documents:

- Final Remedial Action Plan and Site Design for Stabilization of Inactive Uranium Mill Tailings Site at Durango, Colorado, dated June, 1986, to include letter of response dated March 21, 1986, to NRC review comments on the draft RAP dated February 25, 1986;

- Subcontract Documents, Final Design for Review, three volumes dated April, 1986, and Revision Volume dated June, 1986, transmitted from Morrison-Knudsen Engineers, Inc., San Francisco, California.

Exceptions and outstanding items that still need review and concurrence by NRC are as follows:

- Final design of the radon barrier. This concurrence will follow after quantification of applicable tailings parameters and all locations for radon barrier material have been selected, the soil properties tested, the design completed in final form considering these actual soil properties, and the final design submitted for

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approval. Placement of radon barrier should not proceed prior to our concurrence in the design.

° Ground-water strategy and cleanup. Construction of the disposal cell, transport of contaminated materials, and cleanup of the processing site, vicinity properties and windblown tailings can proceed without resolution of this item.

° Erosion Protection. A commitment is needed from DOE that the erosion protection which will be keyed into bedrock in several locations must be keyed into competent bedrock. Changes in the final design require NRC approval prior to construction of this aspect of the erosion protection.

° Geotechnical. Final design approval is required once the pertinent cover soil properties are determined.

If you have any questions, please contact Randy Brich at FTS 776-2819 or Harry Pettengill or me at FTS 776-2805.

Sincerely,

HJP for

R. Dale Smith, Director
Uranium Recovery Field Office
Region IV

Enclosure: Copy of Signature/Concurrence

Case Closed: 040WM48801E

OFC	URFO RFB	URFO HP	URFO RDS				
NAME	RBrich/lv	HPettengill	RDSmith				
DATE	86/08/26	8/26	8/26				

NRC REVIEW COMMENTS
ON
PRELIMINARY FINAL REMEDIAL ACTION PLAN
FOR THE
DURANGO, COLORADO UMTRA SITE

1. Signature Page - Please note that the proper designation for this NRC regional office is the roman numeral "IV" not the arabic number "4". Thank you for your attention to this minor detail.

Radon Barrier

2. Page 55, Section 7.2.4 - The detailed final design must be submitted to, and concurrence received from, NRC prior to placement of final cover.

3. Page B-7, Section B.2.1.2, second paragraph - The results of the drilling and sampling program shall be submitted to NRC at the time the final design is submitted.

4. Page B-13, first paragraph - The results of measurements made to determine site-specific values for the Ra-226 concentration, Rn-222 emanating fractions, diffusion coefficients, dry bulk density, porosity, particle size distribution and long term moisture content for the contaminated materials shall be submitted to NRC along with the final design for review and approval.

5. Page B-13, Moisture Contents - Please indicate the value for the calculated long term moisture content for the cover material and specify the suction value this corresponds to.

6. Page B-13, Cover radon diffusion coefficients - Please indicate the radon diffusion coefficient value for the cover material.

7. Page B-14, calculation - In the calculation on the theoretical average Ra-226 concentration for the tailings the conversion factor for pCi to Ci is mis-typed.

8. Page B-14, fourth paragraph - Verification of the actual required cover thickness which will be performed when site-specific tailings data become available must receive NRC written concurrence.

9. Appendix B - Review of this appendix indicates that Table B.1.6 titled "RAECOM Input for the Bodo Canyon Disposal Site" previously contained on page B-36 of the Draft RAP dated June 1985 has been omitted. Please include this table or explain its absence.

Ground Water

10. Page B-31, Figure B.3.3 - Figure B.3.3 does not specifically show the shallow alluvial wells referred to in the text on page B-30, 1st paragraph. This figure should indicate which wells referred to in the text are the shallow alluvial wells.

    In addition, the fault that traverses the raffinate pond area should be shown in this figure, as the location of the fault is important as it is probably the main factor controlling the direction of ground-water flow.

11. Page B-36,
    Section B.3.3.2, Remedial Action and Post-Remedial Action Conditions, third paragraph - The text references five feet for the radon barrier thickness. This conflicts with information in other sections. Figure 5.1 on p. 36 indicates six feet for the radon cover and the text on page B-40, 2nd paragraph indicates that the cover system will be "at least three feet thick." Clarification as to the thickness of the radon barrier is necessary.

12. Pages B-38 through B-51, Section B.3.4, Chemical Conditions - Several methods are used in demonstrating (modeling) the expected conditions. Two comments are directed at the use of these methods.

    (A) When a method is used, a reference should be given as to where the method was obtained and why this particular method is being used.

    (B) Consistent units of measurement should be used in the text and in deriving values in the method formulas. If previous documents contain different units, these values should be converted to consistent units.

13. Page B-39, Table B.3.3 - Several of the values given for the estimated maximum concentration in Table B.3.3, as derived by using the formula for factor F (p. B-38) and the values for the small tailings pile in Table B.3.2 (p. B-39), appear to be incorrect. For example, using the formula for factor F, aluminum should be 384, rather than 380, as shown.

14. Pages B-46, B-51 and B-52, Section B.3.4.2 Post-Remedial Action Conditions, Distribution Coefficient - Estimated field distribution coefficients (K_d) are calculated using the formula on the top of page B-46. Using the values of the three parameters (uranium, sulfate and vanadium) from Table B.3.2 (p. B-39) in the formula

results in different values than shown at the top of page B-46. Additionally, the statement on page B-51 that the distribution coefficient for non-reactive contaminants, such as uranium, sulfate and chloride, are very low (approaching zero) contradicts the values given on page B-46 for the field K_d's.

The reference on pp. B-52-B-53 that arsenic has a distribution coefficient on the order of 100 ml/g does not correlate with the field value of K_d that can be derived from Table B.3.2 (p. B-39). The field value of K_d for arsenic is calculated to be 10 ml/g. For the sake of conservatism, the field K_d value for arsenic should be used in the calculation on the top of p. B-52. Using the field K_d, the value for the residual arsenic plume would increase from .7 feet per year to 7 feet per year.

15. Pages B-38 through B-43, Section B.3.4 Chemical Conditions - There is inadequate discussion of the background water quality for Bodo Canyon or the Durango processing sites. This is particularly important to understanding of the geohydrology of the Bodo Canyon site which appears to have only water quality analysis results for one sampling. A discussion should be included as to how one-time sampling compares with any previous analysis.

16. Page B-29, fourth paragraph - It is indicated that the cut slope No. 2 bedding planes dip away from the cut at apporximately 4 to 7 degrees. It is also stated that a geologist will map the joint system, bedding planes, and identify any unstable conditions associated with the slope cut.

Geotechnical

17. Page B-21, Soil profiles and properties - Tailings strength parameters must be based on actual test samples from the Durango site. This test data must be transmitted to the NRC upon completion.

18. The letter of March 21, 1986, contained responses to NRC comments. Item No. 19 stated that data from petrographic analyses of rock sources would be transmitted to the NRC. This data has not yet been transmitted to the NRC.

19. Additional laboratory testing of the swell and dispersivity characteristics of prepared radon barrier soils must be performed to allow independent evaluation of the suitability of the soils.

Erosion Protection

20. A commitment from DOE that the erosion protection which will be keyed into bedrock in several locations (southeast and northwest) will be keyed into competent bedrock is needed. In this regard, assurance is needed that the bedrock is capable of resisting erosion and that the rock is not highly-weathered or highly-fractured. Appropriate changes to the final remedial action plan should be made and submitted to NRC for review and approval.