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Docket File WM-191 PDR/DCS DBangart, RIV HRose PGarcia TOlsen RBrich EHawkins KHargis, RCPD, NM URFO r/f

URFO:HDR 67 Docket No. WM-191

Mr. John Themelis U.S. Department of Energy Albuquerque Operations Office P.O. Box 5400 Albuquerque, New Mexico 87115

Dear Mr. Themelis:

We have completed our reviews of the Draft Remedial Action Plan and Site Conceptua! Design and working document Environmental Assessment for the Ambrosia Lake site. As we agreed, our review consisted of a broad overview of the documents looking for "fatal flaws," unaddressed areas, and sufficiency of basic data and information. To summarize the enclosed comments, there appeared to be no major problems with the proposed remedial action. The comments tend to address more specific technical questions and issues that should not drastically affect the overall plan. At this point, there does not seem to be much value in meeting to go over these comments. If you feel that a meeting would be beneficial, please let us know. However, we should plan to meet when more detailed designs are submitted for review.

Should you have any questions regarding our review or the items discussed in the enclosure, please contact me at FTS 236-2805 or Howard Rose on FTS 236-2816.

Sincerely,

PJG for

Edward F. Hawkins, Chief Licensing Branch 1 Uranium Recovery Field Office Region IV

Enclosure: As stated

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Ambrosia Lake DRAP NRC Questions and Comments

Surface Water Hydrology and Erosion Protection

1. The riprap toe and apron, which will be constructed to prevent erosion due to flooding in the north and east drainage channels, does not appear to be adequate to prevent erosion of the remediated tailings embankment. Our review of the calculations provided indicates that the riprap was designed using a Manning's "n" value of about .035; this "n" value was based on the roughness (k) associated with the computed average rock size. In effect, the calculations assume a channel completely lined with riprap and underestimate the actual velocities which will occur in an earth channel.

Recognizing that (1) it will likely be impractical to provide erosion protection for a 500'-wide channel and that (2) erosive velocities and scour could occur immediatley adjacent to the riprap toe if this flat-bottomed design is adopted, we suggest that the channel be redesigned such that erosive velocites are not produced near the riprap toe. Revisions should be made to the channel configuration so that the proposed rock will withstand the shear forces produced.

- The riprap thickness proposed for the side slopes of the pile (page B-68) should be at least as large as the maximum D-100 rock size. The riprap thickness should be revised accordingly. Corps of Engineers ETL 1110-2-120 provides acceptable guidance for determining the riprap layer thickness.
- 3. Recognizing that the rock source may not yet be determined, information should, however, be provided to document the proposed durability specifications that the rock will meet and the measures that will be taken to oversize the rock if the proposed durability specifications cannot be met.

Geotechnical and Ground Water

4. Pages 213-214 Ground Water

Discuss whether perched and saturated shallow water zones beneath the site will impact excavation and design construction. If it will, it will be necessary to dewater these areas. Discuss what will become of the excess water.

5. Page 48 Subsurface Conditions

Your proposed plan calls for reforming the tailings in the southwest corner of the site. The plan indicates that a portion of the reformed tailings pile overlies an area where underground mining has occurred. To assure that collapse and/or subsidence possibly resulting from either past or future mining would not adversely affect the pile, it would seem prudent to avoid placing the pile near this area. Demonstration of the design stability of the tailings pile at the proposed location will require considerable additional analysis and documentation. For example, it will be necessary to conduct an analysis of the stability of the proposed tailings pile and the rock mass overlying the mined area when subject to the maximum credible earthquake. Additionally, the location of the proposed pile over a mined area may complicate the implementation of groundwater monitoring because subsurface flow conditions would be influenced by the presence of mine tunnels and by fractures caused by mining activities and possibly by subsidence. Accordingly, we recommend that the tailings be reformed beyond the subsurface projections of possible collapse/subsidence resulting from such existing/future mining. Please discuss.

6. Page 49 Geotechnical Considerations

It is stated that tailings in the north portion of the pile are highly saturated and will need discing. Please discuss how discing will be accomplished since the pile is to be stabilized in place, and what time frame is needed to evaporate the moisture from the tailings? Will the depth of tailings affected by discing be adequate to allow construction activities to take place?

Radon Barrier - DRAP

7. Page B-74, Section B.9.3

The results of the radon barrier materials' long-term moisture content as determined by laboratory capillary-moisture tests should be provided to NRC for confirmation of the estimated long-term moisture content. In addition, according to the SRP, the value chosen should correlate to the 15-bar suction value for the cover material. This value is shown to be about 12 percent, as estimated by the approved empirical methods. Also, the long-term value as estimated by Rogers is 9.86 percent. Therefore, a conservative estimate of the long-term moisture content is 11 percent. A diffusion coefficient of 0.0185 correlates with this moisture content as determined by the relationship in NUREG/CR-3533. Based on this data, a required cover thickness of 112 cm (3.7 ft) is calculated using RAECOM. Therefore, an additional 0.2 feet of cover would be required.

8. Section B.9

The discussion of the tailings and windblown materials' emanating fraction has apparently been omitted from Appendix B. Please briefly describe the rationale for the use of the 0.33 emanating fraction shown in Table B.9.1.

9. Page B-77, Section B.9.7

Please state the diffusion coefficient utilized in the sensitivity analysis.

10. Page B-79, Figure B.9.2

The cited porosity of 0.41 is in contradiction with the value shown in Table B.9.1 (0.44). Please clarify this discrepancy and state the affects on the moisture saturation - diffusion coefficient relationship.

11. Page 8-73, Table 8.9.1

Please correct the thickness of the cover material to correlate to the estimated cover thickness of 107 cm (Section B.9.7).

General

12. Page 81, Section 8.6, 8.8

These sections discuss the availability of records and drawings to DOE. It should be clarified here that the NRC also has the authority to review such records.

13. Page 58

Reclamation of the disposal site for contaminated buildings will need to be addressed and included in any NRC concurrence action.