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TERRY R. LASH
DIRECTOR

October 30, 1989

Regulatory Publications Branch
Division of Freedom of Information
and Publications Services
Office of Administration
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Draft NRC Staff Technical Position, "Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites"; 54 Federal Register 33101 (August 11, 1989).

Dear Sir:

The Illinois Department of Nuclear Safety (IDNS) hereby submits its comments on the above-identified document. The following comments apply to the specified portions of the document.

1. Subsection 2.1.3 (pages 2 and 3). This section addresses Criteria 1 and 12 of 10 CFR 40, Appendix A, which, among other things, states that ongoing, active maintenance cannot be relied upon to preserve conditions of the site or to preserve isolation of the tailings. However, NRC staff does not elaborate on what they consider to be "active maintenance." Illinois modified the definition found in Part U of the Conference of Radiation Control Program Directors' Suggested State Regulations for its proposed rules as follows:

> "Active maintenance" means any activity, other than minor custodial activities, needed to preserve isolation of the byproduct material. Active maintenance includes ongoing activities such as the pumping and treatment of surface water or groundwater or one-time measures such as replacement of a disposal area cover.

Does NRC staff agree with this definition? Staff should elaborate on what they mean by "active maintenance," and how they will determine when a design will or will not require "active maintenance."

2. Subsection 2.2.1 (page 5, paragraph 1). The wording regarding the probable maximum flood (PMF) and probable maximum precipitation (PMP) events appears inappropriate because there is some probability that the PMF or the PMP could occur in the 1000-year period. Possible alternate wording would be "... there is reasonable assurance that larger events will not occur during the 1000-year design life."

3. Subsection 2.2.2 (page 6, paragraph 2). The intended meaning of the following sentence is unclear: "All of these events combined could erode an unstable slope in a manner which will ultimately lead to the formation of a stable slope configuration and could expose or release tailings to the environment." Suggested alternate wording is: "All of these events combined could erode an unstable slope in a manner which could expose or release tailings to the environment before leading to the formation of a stable slope."

4. Subsection 2.2.5 (page 9, paragraph 6) and Appendix A, Section 2.1 (pages A-2 to A-4). Published values for allowable tractive force may not be applicable to compacted soils which exhibit dispersive or "slaking" behavior (see reference below). Candidate cover soils should be compacted and immersed to identify whether significant slaking occurs. Dispersivity of candidate soils should also be checked. Reference: Shaikh, A., et al, May 1988, "Erosion Rate of Dispersive and Nondispersive Clays," Journal of Geotechnical Engineering, American Society of Chemical Engineers, Volume 114, No. 5, page 589.

5. Appendix A, Section 2.5 (pages A-8 to A-9). As practiced during actual construction, planar slope tolerances (e.g., plus or minus 0.1 foot) may vary in grade downslope significantly when compared to the very gentle slopes that could be required using the NRC derivation of the Horton equation. Therefore, staff should make some statement regarding actual construction practices and the tolerances that would be allowed in the slope specifications. Would staff consider an average slope acceptable for a design basis or must localized variations be considered? If localized variations are considered, the use of soil covers may be severely restricted.

6. Appendix A, Section 3.1 (page A-9). If drainage swales are deep enough, then velocity methods such as those described in Reference A4 (rather than sheet flow methods) would be appropriate for use.

7. Appendix C., Step 4 (page C-2). Staff uses vague terminology, namely, the words "significantly" or "significant," without explaining what they really mean. The judgment of what would be meant, therefore, would be entirely subjective, e.g., the licensee may consider twice the average cost to be significant while the regulatory agency might consider that a cost is not significant until some other multiple of the average cost of other projects is exceeded. In order to avoid possibly major misunderstanding, staff needs to provide further guidance to help determine what is "significant" and what is not "significant."

8. Appendix C (General Comment). Staff needs to factor the costs of long-term care into the analysis. Costs of a 1000-year design may appear to exceed significantly the costs of a 200- or a 500-year design until the total costs for long-term care are examined and taken into consideration. If the long-term care costs are greater for designs of less than a 1000 years, then it would be more appropriate to use the 1000-year design.

9. Appendix D., Section 2.2, Step 2 (page D-3). Kirpich's Formula was not developed for planar flow on riprap-covered slopes, and will generally result in overly conservative (short) t_c values, particularly for relatively gentle slopes. Other methods (e.g., based on Mannings' Formula) should be considered acceptable.

10. Appendix D., Section 2.3 (page D-4). We suggest that staff add a recommendation to extend the side slope riprap at least ten feet upslope beyond the top slope/side slope break point to avoid problems at the point of slope change.

11. Appendix D., Section 2.4, Step 4 (page D-6). A runoff coefficient of 0.8 is highly unlikely to be appropriate for a riprap-protected cover that is designed to minimize infiltration for the purpose of compliance with groundwater standards. Antecedent moisture from most large storms will also eliminate credit that might be taken for depression storage or storage in the bedding layer. The example should be revised to use a runoff coefficient of 1.0.

12. Appendix D., Subsection 4.2.2, Item 2 (page D-17). Depth of "scour" (Reference D8) is not necessarily the same as "... expected depth of gully erosion in the natural gully;..." Is the depth of scour expected in the natural gully intended as a minimum depth of rock protection? The staff should provide specific guidance on this point.

IDNS believes that this document, with incorporation of our suggestions, would provide good guidance to those states with mill tailings facilities. Thank you for the opportunity to provide comments.

Sincerely,

Terry R. Lash
Director

TRL:wds

cc: Vandy Miller, NRC/SLITP
Roland Lickus, NRC/Region III