

June 10, 2011

Mr. Donald R. Metzler  
Moab Federal Project Director  
U.S. Department of Energy  
200 Grand Avenue  
Grand Junction, CO 81501

SUBJECT: REVIEW OF PROPOSED CHANGES TO REMEDIAL ACTION PLAN AND  
REMEDIAL ACTION INSPECTION PLAN FOR THE MOAB, UTAH, URANIUM  
MILL TAILINGS REMEDIAL ACTION PROJECT

Dear Mr. Metzler:

On September 13, 2010, the U.S. Department of Energy (DOE) submitted proposed changes to the Moab Uranium Mill Tailings Remedial Action (UMTRA) Project Remedial Action Inspection Plan (RAIP) to the U.S. Nuclear Regulatory Commission (NRC) for review. On September 15, 2010, DOE also submitted a request for revisions to the specifications for the Crescent Junction Disposal Cell. The NRC staff has completed its review of both submittals.

In the September 15, 2010, letter, DOE requested revisions to the following specifications:

- Specification 31-00-30 Placement and Compaction of Final Cap Layers, Section 2.1, Radon Barrier Layer
- Specification 31-00-30 Placement and Compaction of Final Cap Layers, Section 2.1, Radon Barrier Layer, Table 1
- Specification 32-11-23 Aggregate and Rip Rap, Section 2.1.6.1, Biobarrier and Cover Top, Table 3
- Specification 31-00-30 Placement and Compaction of Final Cap Layers, Section 3.6.1, Material Tests

DOE requested revisions to Table 3 in Section 2.1 to allow for a maximum particle size of 3 to 4 inches of Mancos material in the radon barrier instead of the 1-inch maximum particle size in the current specifications. DOE stated that within the weathered Mancos material, there are unweathered Mancos particles in excess of the 1-inch maximum particle size that would be difficult to break up or remove. DOE expects that if the unweathered particles are kept from accumulating, it will not impact the cover performance. Hence, as part of this revision, DOE committed to ensuring that the unweathered particles will not be allowed to accumulate in a concentrated location within the radon barrier layer. The staff visited the site on November 17, 2010, and observed the 3-4 inches particles and found them to be dispersed within the radon barrier layer. The staff finds this revision acceptable. In addition, DOE will still be required to ensure that the radon barrier layer meets the compaction specifications, and that its performance will not be affected.

DOE requested revisions to Table 1 in Section 2.1, to increase the acceptable liquid limit from a minimum of 35, to a range of 30 to 50 limits for the radon barrier material. The revision is based on current test results in the field using the radon barrier material. The staff finds this revision acceptable since it is based on current field data, and the classification of soil was not changed, and, as such the design of the radon barrier is not affected.

DOE also requested to revise sections of Specifications 32-11-23 and 31-00-30 to broaden the acceptable range of biobarrier material. Specification 32-11-23, Section 2.1.6.1, Table 3 is to be revised to broaden the acceptable range from 40 to 50 percent to 40- to 60-percent for biobarrier material passing the 1.5-inch sieve. DOE also proposed to revise the second paragraph in Specification 31-00-30, Section 3.6.1 to allow broadening the acceptable percentage band by 5-percent for material in size greater than a number 4 sieve, and 3-percent for smaller than a number 4 sieve. The reason for these changes is the tendency for fines to segregate from the gravels during the testing process. The proposed revisions do allow for a wider range of grain diameter material.

DOE provided additional information to support the biobarrier specification revisions in a letter dated December 20, 2010. Section 6.8 of the RAIP states, "...above the Radon Barrier, a 6-inch thick infiltration and biointrusion layer of gravel will be placed to provide a barrier to burrowing animals, and a pathway for drainage of water that has infiltrated through upper layers of the cap. The gravel will be sandy gravel with a gradation in accordance with project plans and specifications."

In the December 20, 2010, letter, DOE noted that the layer's function of providing a barrier to burrowing animals will not be affected since the percentage of larger rocks remains sufficient to prevent a small population of burrowing animals from penetrating the layer. DOE also stated that the layer's function of "...preventing infiltration of water will not be affected by the minor change in rock size because the layer will still have permeability several orders of magnitude greater than the underlying radon barrier." The letter further stated that only a fraction of the precipitation (approximately 9 inches annually) will infiltrate the frost protection layer, but will flow laterally through the rock layer instead of penetrating into the radon barrier.

Based on its review and analysis, NRC staff agrees that rock quality is not altered, and the requested revisions would allow for reasonable adjustments in rock size within the biobarrier which will not have a negative effect on cover performance. Hence, NRC staff concurs with DOE's request to revise Specification 32-11-23, Section 2.1.6.1, Table 3 and Specification 31-00-30, Section 3.6.1 as noted in the September 15, 2010 letter.

As an enclosure to the September 13, 2010, letter, DOE provided a red line/strike out version of the RAIP indicating proposed changes. The RAIP is Addendum E to the Moab UMTRA Project Remedial Action Plan. DOE requested updating the RAIP in order to reflect field practices that are currently in use by the Moab UMTRA Project. Such revisions include the selection of the type of equipment used for placement and compaction and the specification change for radon barrier particle size that was discussed earlier in this response. There were also numerous editorial changes throughout the document. The staff has reviewed DOE's proposed revisions to the RAIP and found them acceptable.

D. Metzler

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If you have any questions concerning this letter, please contact the NRC project manager, Kim Conway, either by telephone at (301) 415-1335, or by e-mail at [kimberly.conway@nrc.gov](mailto:kimberly.conway@nrc.gov)

Sincerely,

**/RA/ by K. Kline for**

Lydia Chang  
Chief, Special Projects Branch  
Decommissioning and Uranium Recovery  
Licensing Directorate  
Division of Waste Management  
and Environmental Protection  
Office of Federal and State Materials  
and Environmental Management Programs

Docket No. WM-110

cc: J. Berwick, DOE

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