

Attachment 4. NRC Correspondence

Letter dated 10/26/09 to NRC from DOE – RE: Possible voids caused by polypropylene sheets.

Email dated 11/13/09 to DOE from NRC – RE: Response to DOE letter dated 10/26/09.

Letter dated 11/23/09 to DOE from NRC – RE: Response to DOE letter dated 10/26/09.

Letter dated 03/18/10 to NRC from DOE – RE: Requested a size variance for demolition debris.

Letter dated 04/20/10 to NRC from DOE – RE: Discrepancy in designed thickness of a portion of the cover.

Letter dated 06/03/10 to NRC from DOE – RE: Provided additional information regarding calculations of radon emanation.

Letter dated 09/13/10 to NRC from DOE – RE: Proposed revisions to RAIP.

Letter dated 09/15/10 to NRC from DOE – RE: Proposed revisions to RAP.

Letter dated 11/15/10 to DOE from NRC – RE: Approved size variance requested in DOE letter dated 03/18/10.

Letter dated 11/15/10 to DOE from NRC – RE: Accepted changes proposed in DOE letters dated 04/20/10 and 06/03/10.

Letter dated 11/29/10 to NRC from DOE – RE: Recompletion of boreholes.

Letter dated 12/20/10 to NRC from DOE – RE: Requested changes to two RAP specifications.

Letter dated 05/09/11 to NRC from DOE – RE: Monitoring wells and withdrawal of letter dated 11/29/10.

Letter dated 06/10/11 to DOE from NRC – RE: Accepting changes requested in DOE letters dated 09/13/10, 09/15/10, and 12/20/10.

Letter dated 06/15/11 to NRC from DOE – RE: Proposed revisions to RAP specifications.

Letter dated 06/20/11 to NRC from DOE – RE: Radon emanation wording in RAP.

Email dated 08/01/11 to Project Staff from DOE – RE: Conveyed NRC verbal acceptance of DOE letter dated 06/20/11.

Letter dated 08/29/11 to NRC from DOE – RE: Proposed revisions to a RAP specification.

Letter dated 09/29/11 to DOE from NRC – RE: Accepted changes requested in DOE letter dated 08/29/11.



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

October 26, 2009

Mr. Richard Chang, Engineer/Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Notification of De Minimus Polypropylene Placed in the Crescent Junction
Disposal Cell

The purpose of this letter is to inform you that the Moab Uranium Mill Tailing Remedial Action (UMTRA) Project is now using plastic liners in many of its containers being shipped to the disposal cell at Crescent Junction, Utah. The plastic liner is dumped into the cell along with the tailings.

The Moab UMTRA Project is working to the Remedial Action Plan dated July 2008, for which we received a letter of conditional concurrence that same month. The conditional concurrence was related to not having a final ground water compliance action plan in place.

The project has been experiencing some difficulty with tailing materials being retained by the containers at dumping. Several methods to minimize the held material have been tried including shaking the containers more aggressively at dumping, spraying the containers with a surfactant prior to filling, painting the inside surface of the containers with a Teflon-like coating to reduce the resistance to emptying, and lining the containers with plastic sheeting which is dumped with the material into the disposal cell. We are currently using all four methods as we determine operational parameters for our varying conditions both tailings and seasons.

The Remedial Action Plan states in the specifications "in the waste cell, non-soil materials will be placed in the contaminated tailings fill in a manner that will not result in voids in the waste mass" (Addendum B -31-00-20-page 5, RAP).

The characteristics of the liners being used include 2.5 micrometers thickness made of high density polypropylene (HPDE). Sheets placed in individual containers are approximately 1,000 square feet and weigh less than 12 pounds compared to the more than 60,000 pounds of tailings per container. Consequently, the weight of the tailings and compaction equipment being utilized easily prevent any voids associated with adding some plastic.

RECORD COPY

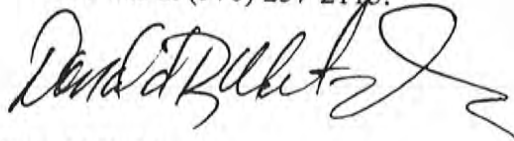
110509 *AK* 2.12

Mr. Richard Chang

-2-

October 26, 2009

Therefore, our conclusion is that the HPDE liners do not prevent us from adequately compacting the materials placed of in the disposal cell. If you have any questions or require additional information, please contact me at (970) 257-2115.



Donald R. Metzler
Moab Federal Project Director

cc:

J. Berwick, DOE
G. Majors, DOE
A. Murphy, DOE
K. Wethington, DOE
B. Wethington, DOE
E. Baker, RAC
L. Brede, RAC
J. Ritchey, TAC 2.12 Ke 10/26/09
Project File MOA 2.5 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\PlasticLiners.doc

Cindy Smith

From: Metzler, Donald [Donald.Metzler@gjem.doe.gov]
Sent: Monday, November 16, 2009 7:26 AM
To: Kym Bevan; Cindy Smith; Larry Brede; Brent Anderson; Joel Berwick
Subject: FW: October 26, 2009 Letter

[For the record.](#)

[Don](#)

From: Chang, Richard [mailto:Richard.Chang@nrc.gov]
Sent: Friday, November 13, 2009 11:29 AM
To: Metzler, Donald
Cc: Chang, Lydia; Gillen, Daniel
Subject: October 26, 2009 Letter

Sir,

The NRC staff reviewed your letter dated October 26, 2009, and based on the information submitted, does not have any concerns that the high density polypropylene sheets will result in voids in the waste mass. A formal letter stating this will also be sent following this e-mail.

If you have any questions or concerns, please feel free to call me.

Regards,

Richard Chang
Project Manager
FSME/DWMEP/SPB
301-415-7188

November 23, 2009

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

SUBJECT: REVIEW OF THE USE OF HIGH DENSITY POLYPROPYLENE LINERS AT
THE MOAB URANIUM MILL TAILING REMEDIAL ACTION PROJECT

Dear Mr. Metzler:

By letter dated October 26, 2009, the U.S. Department of Energy (DOE) informed the U.S. Nuclear Regulatory Commission (NRC) that the Moab Uranium Mill Tailing Remedial Action Project is now using plastic liners, and provided information that supported the conclusion that the high density polypropylene (HDPE) liners described in the letter will not prevent DOE from adequately compacting the materials placed in the disposal cell. This letter is to acknowledge receipt of the October 26, 2009, letter. As DOE will be following the approved specifications in the Remedial Action Plan, which addresses placement of non-soil materials in the cell, NRC does not have any concerns with the use of plastic liners and understand that the HDPE sheets will not result in voids in the waste mass. If you have any questions, feel free to contact me at (301) 415-7188, or by e-mail at richard.chang@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC "Rules of Practice," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

/RA/

Richard Chang, Project Manager
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



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

March 18, 2010

Mr. Richard Chang, Engineer/Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Request of Size Variance of Material to be Disposed in the Crescent Junction Cell, Moab Uranium Mill Tailings Remedial Action (UMTRA) Project

Dear Mr. Chang,

The Department of Energy Moab UMTRA Project requests a variance to dispose of oversized debris from the Moab site to be disposed in the Crescent Junction cell. We request a variance from the Remedial Action Inspection Plan Specification 06.4.4 – Demolition Debris for the following items:

- One (1) steel rail road vibrator approximately 12 feet (ft) long by 4 ft high by 5 ft wide
- One (1) steel red storage tank approximately 14 ft long by 6 ft high by 5 ft wide
- Two (2) steel I-beams approximately 22 ft long by 2 ft high by 2 ft wide
- One (1) steel tan storage tank approximately 7 ft long by 5 ft high by 5 ft wide
- One (1) steel square storage container approximately 16 ft long by 6 ft high by 7 ft wide
- One (1) transmission box approximately 4 ft long by 2 ft high by 2 ft wide

These items are too large to size reduce through shearing activities. The project proposes to fill the storage tanks with controlled low-strength material (also known as flowable fill) with a compressive strength of approximately 200 pounds per square inch (psi) to create monolithic units. Each item will be placed separately in the disposal cell with residual radioactive material placed around it and compacted in place. This approach negates future settling. If this variance is approved, the Moab UMTRA Project will record the cell areas where these items are placed for future tracking.

The following enclosures provide additional information. If you have any questions or require additional information, please contact me at (970) 257-2115.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

elec ✓
RECORD COPY

042810 [initials]

Via Email

cc:

J. Berwick, DOE

A. Murphy, DOE

K. Wethington, DOE

B. Wethington, DOE

B. Anderson RAC

E. Baker, RAC

L. Brede, RAC

Project File CRJ 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\BoneYardSizeVariance.doc



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

April 20, 2010

Mr. Richard Chang, Engineer/Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Moab Uranium Mill Tailings Remedial Action (UMTRA) Project Remedial Action Plan

Dear Mr. Chang:

The Department of Energy (DOE) recently identified a discrepancy in the designed thickness of a portion of the cover as presented in the final Remedial Action Plan (RAP). The plan received conditional concurrence in July 2008. The discrepancy pertains to the thickness of the planned disposal cover over a 14-foot-wide section of the residual radioactive material (RRM) located on the eastern, western, and southern edges of the cover (See Figure 1).

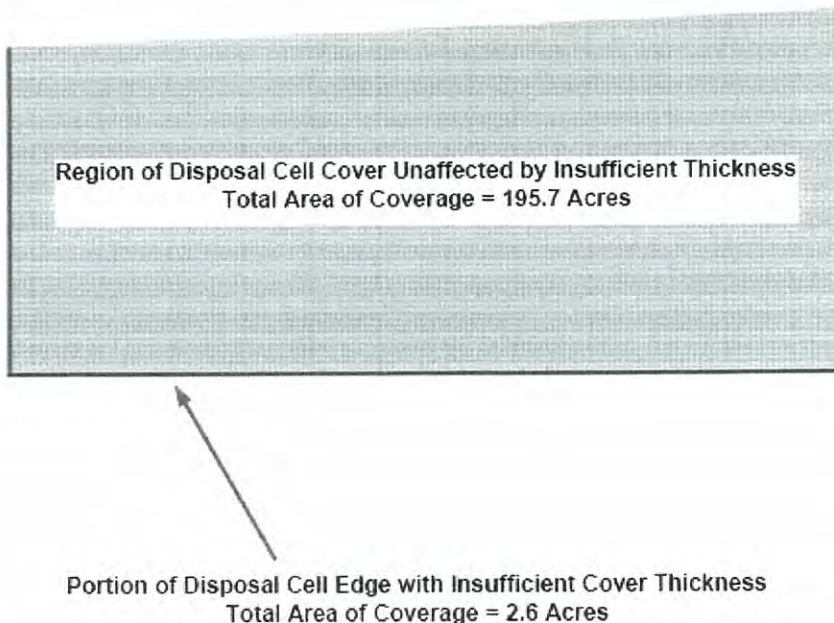


Figure 1. Location of portion of disposal cell with insufficient cover.

elec
RECORD COPY

05/21/10 *BAAD*

As designed, the sloping cell cover creates a section that is less than the intended full cover thickness as shown on drawing E-02-C-501 section B (see Figure 2). Approximately 2,400 linear feet of RRM has been placed to the design elevation which when the cover materials are placed will have approximately 6 feet of total cover thickness rather than the intended 8.5 feet. In this area the frost protection layer would be reduced.

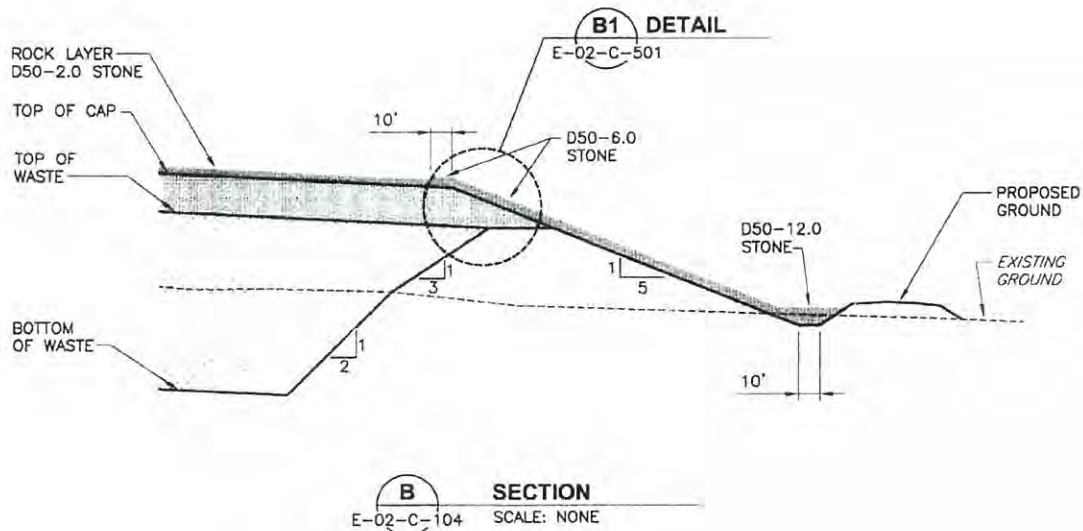


Figure 2. Radon barrier at edge of cell as per E-02-C-501.

To evaluate the impact on radon emanation of the cell cover having a reduced thickness, the DOE has performed an evaluation of the radon emanation assuming a reduced frost protection layer. The evaluation showed that though the radon flux exceed the Nuclear Regulatory Commission (NRC) radon limit of 20 pCi/m²/sec in the area of concern, the overall average flux from the eventual completed cell did not change and is under the NRC limit.

As a result, the DOE is requesting concurrence to leave the RRM already placed to the design elevation. As a best management practice, the DOE may reduce the thickness of RRM placed along the yet-to-be-filled portion of the cell, which would allow an associated increase in the thickness of the final cover to the design of 8.5 feet as shown in Figure 3. Along with this request, we would like to leave the existing drawing set in the RAP as submitted. Appropriate adjustment to the cell as-built drawings will be made and submitted with the completion report.

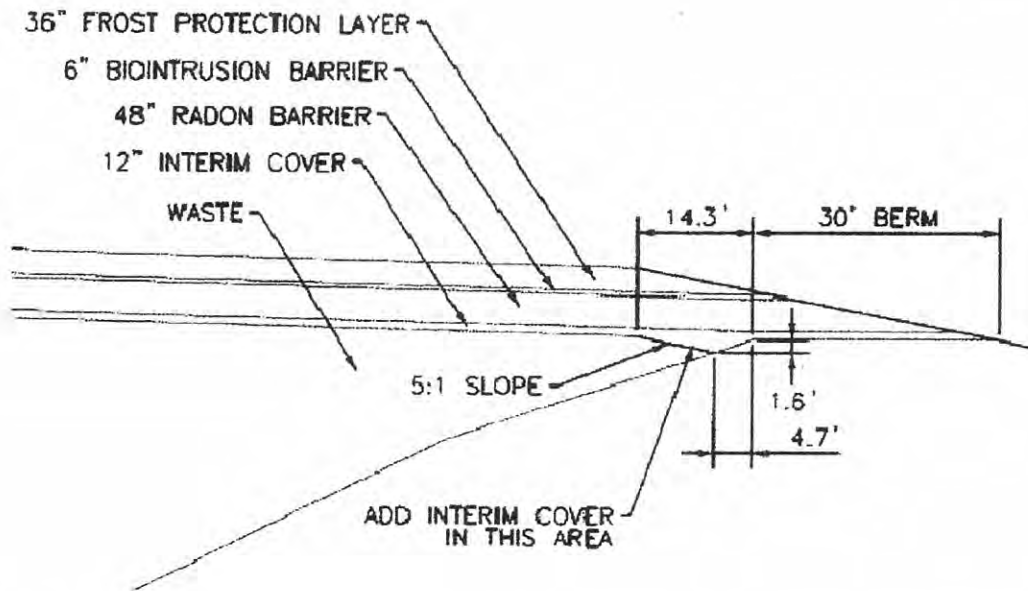


Figure 3. Profile showing reduced RRM placement and additional interim cover.

Thank you for consideration of our request. If you have any questions or require additional information, please contact me at (970) 257-2115.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

- cc:
K. Conway, NRC (e)
J. Berwick, DOE (e)
K. Wethington, DOE (e)
L. Brede, RAC (e)
J. Ritchey, TAC (e)
Project File MOA 2.12 (C. Smith)



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

June 3, 2010

Mr. Richard Chang, Engineer/Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Request for Additional Information from the Moab Uranium Mill Tailings
Remedial Action (UMTRA) Project

Dear Mr. Chang:

As per our telephone conference call today, we are providing additional information regarding calculations of the radon emanation from the Crescent Junction disposal cell. The Department of Energy (DOE) Moab UMTRA Project submits four copies each of the enclosed reports in reference to our conversation. These reports are titled: *Evaluation of Insufficient Cover Thickness at Crescent Junction Disposal Cell Edge*, *Assessment of the Design of the Crescent Junction Disposal Cell Cover*, and the *Crescent Junction Disposal Cell Average Radon Flux Supplement Calculation*.

A brief explanation of each document is provided.

The Remedial Action Contractor's lead engineering company, Jacobs Engineering (Jacobs) prepared an explanation of the impact of the reduced thickness of frost protection layer that would be placed over a portion of the tailings with interim cover already in place if the cover was completed as designed. Their evaluation included four options. Note that the Jacobs' evaluation only considered the radon emanation in the area of thinned frost protection layer, not over the entire cover as an average rate.

In response to this evaluation DOE requested the Technical Assistance Contractor, S&K Aerospace (S&K), to evaluate the alternatives considered by Jacobs. S&K used MACTEC, to perform the evaluation which was reported on March 31, 2010. The MACTEC report showed that although locally the radon exceeds the limit, the area is small compared to the rest of the disposal cell. This assessment and calculation only evaluated a reasonable portion of the cell where interim cover had already been placed (and would be placed during NRC review time). Because the results showed that the reduced thickness of frost protection layer did not significantly impact the overall radon emanation, a further request was made of MACTEC to consider the affect of completing cell construction with the larger area having the reduced frost layer. This calculation was summarized in a letter dated April 7, 2010.

RECORD COPY
W 6/23/10

Mr. Richard Change

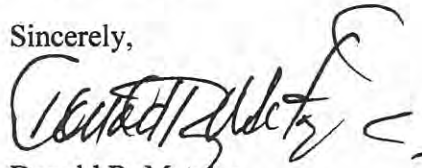
-2-

June 3, 2010

You may recall that I asked a question of the participating project staff of the modeled condition. This is described on page 4 of the MACTEC report dated March 30, 2010. Essentially the area was modeled as ignoring the entire frost protection layer as if it was completely ineffective by repeated freeze thaw cycles. The concern was that then the radon barrier was further damaged by freeze thaw cycles.

We trust this information will satisfy your review. If you have any questions or require additional information, please contact me at (970) 257-2115.

Sincerely,



Donald R. Metzler
Moab Federal Project Director

cc w/ enclosures:

K. Conway, NRC (e)
J. Berwick, DOE (e)
K. Wethington, DOE (e)
L Brede, RAC (e)
C. Niemeyer, RAC (e)
J. Ritchey, TAC (e)
Project File MOA 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\AddtnlRadonBarrierInfo.doc



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

September 13, 2010

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Proposed Changes to the Moab Uranium Mill Tailings Remedial Action
(UMTRA) Project Remedial Action Inspection Plan

Dear Ms. Conway:

Pursuant to our teleconference on August 11, 2010, the U.S. Department of Energy (DOE) submits for your review and approval a red line/strike out version of the Remedial Action Inspection Plan (RAIP) indicating proposed changes. The RAIP is Addendum E of the Moab UMTRA Project Remedial Action Plan.

DOE would like to amend the document to update the RAIP to reflect field practices that are currently in use by the Moab UMTRA Project. Examples of the proposed changes are the selection of the type of equipment used for placement or compaction, a specification change for radon barrier particle size, as well as numerous editorial changes.

Four copies of the RAIP with the proposed changes indicated are enclosed for your review and approval.

Thank you for considering this request. If you have any questions feel free to call me (970) 257-2115.

Sincerely,

A handwritten signature in blue ink, appearing to read "Donald R. Metzler", is written over a large, stylized blue scribble.

Donald R. Metzler
Moab Federal Project Director

cc w/enclosure:

J. Berwick, DOE

K. Wethington, DOE

C. Nakahara, UDEQ

B. Anderson, RAC

L. Brede, RAC

K. Turvy, RAC

Moab Records CRJ 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\RAP changes - RAIP.doc



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

September 15, 2010

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Proposed Changes to the Remedial Action Plan – Specification Revisions
Related to the Crescent Junction Disposal Cell, Moab, Utah, Uranium Mill
Tailings Remediation Project (UMTRA)

Dear Ms. Conway:

As discussed with NRC staff during our teleconference on August 11, 2010, U.S. Department of Energy (DOE) submits for your review and approval proposed revisions to the specifications in the Remedial Action Plan as listed below. Four copies of the proposed revised specifications are enclosed.

Specification 31-00-30 Placement and Compaction of Final Cap Layers, Section 2.1, Radon Barrier Layer

Section 2.1, to include Table 3, has been revised to allow for a maximum particle size of 3 to 4 inches provided that particles accumulated in a concentrated location will not be permitted. The current approved specification stipulates a 1-inch maximum particle size. The reason for the specification change request is that it has been discovered that with the weathered Mancos material there are particles of unweathered Mancos that would be difficult to break up or remove. If the unweathered Mancos particles are kept from accumulating, it is expected that they will not impact cover performance.

Specification 32-11-23 Aggregate and Rip Rap, Section 2.1.6.1, Biobarrier and Cover Top, Table 3

In Table 3, the gradation for the cover biobarrier has been revised to broaden the acceptable range for passing the 1.5-inch sieve to 40- to 60-percent. The current approved specification stipulates a 40- to 50-percent passing the 1.5-inch sieve. Due to tendency for fines to readily segregate from the gravels during the testing process, it has been determined that the additional flexibility is need for the 1.5-inch material in order to meet the testing in place requirements.

Specification 31-00-30 Placement and Compaction of Final Cap Layers, Section 3.6.1, Material Tests

The second paragraph has been revised to allow widening the band for acceptable percentage passing the sieves by 5-percent for material greater in size than a number 4 sieve, and 3-percent for smaller than a number 4 sieve. In particular these revised gradation tolerances apply to the biobarrier described in Section 32 11 23, Table 3. Similar to the 1.5-inch material, it's been determined from field testing that the relaxed tolerances are needed to meet in place testing of the biobarrier material. This is due to the tendency for fines to segregate from the gravels during testing which leads to repeatability problems when doing the tests. DOE is confident that the proposed specification revisions will not negatively affect the performance of the biobarrier.

Specification 31-00-30 Placement and Compaction of Final Cap Layers, Section 2.1, Radon Barrier Layer, Table 1

The specification revision changes the range of acceptable liquid limits to 30 to 50 for the radon barrier material. The currently approved specification requires a minimum liquid limit only of 35. The requested revision is based on test results in the field using the radon barrier material.

Thank you for your review of the proposed changes to the specifications described above. If you have any questions, do not hesitate to call me at (970) 257-2115.

Sincerely,



Donald R. Metzler
Moab Federal Project Director

cc w/enclosures:

J. Berwick, DOE

K. Wethington, DOE

L. Brede, RAC

M. Oaks, RAC

J. Ritchie, TAC

Project File CRJ 2.12 (C. Smith)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 15, 2010

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

SUBJECT: REVIEW OF SIZE VARIANCE REQUEST FOR DEMOLITION DEBRIS TO BE
DISPOSED IN THE CRESCENT JUNCTION CELL

Dear Mr. Metzler:

The U.S. Nuclear Regulatory Commission (NRC) has completed its review of the request for size variance submitted by the U.S. Department of Energy (DOE) in your letter dated March 18, 2010. DOE requested variance from Remedial Action Inspection Plan Specification 06.4.4 – Demolition Debris. During transport and placement of residual radioactive material (RRM) at the Crescent Junction Disposal Cell, DOE identified several items that appear to be too large to allow for adequate size reduction. These items are as follows:

- One steel rail road vibrator approximately 12 feet (ft) long by 4 ft high by 5 ft wide
- One steel red storage tank approximately 14 ft long by 6 ft high by 5 ft wide
- Two steel "I" beams approximately 22 ft long by 2 ft high by 2 ft wide
- One steel tan storage tank approximately 7 ft long by 5 ft high by 5 ft wide
- One steel square storage container approximately 16 ft long by 6 ft high by 7 ft wide
- One transmission box approximately 4 ft long by 2 ft high by 2 ft wide

DOE plans to fill the storage tanks with a compressible low strength material (CLSM). The CLSM will have a compressive strength of approximately 200 pounds per square inch. The staff notes that CLSM is often used in place of compacted fill, as pipe backfill, or in other situations where minimization of settlement is critical. All of the above items will be placed separately in the disposal cell. RRM will be placed and compacted around the identified materials.

The staff has reviewed DOE's proposal and considers it acceptable. DOE has identified and selected a reasonable alternative to the original specification that will minimize the potential for differential settlement within the RRM.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Procedures and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html>.

RECORD COPY

030311 *WAD*

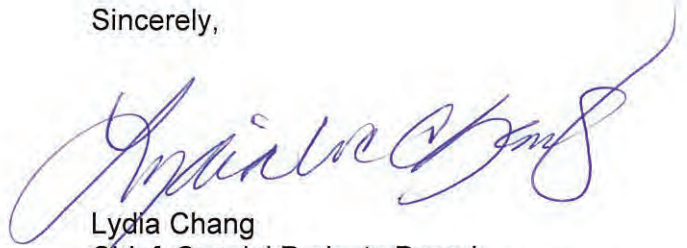
2.12

D. Metzler

2

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.

Sincerely,



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



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

MOA 015891

November 15, 2010

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

SUBJECT: REVIEW OF REQUESTED MODIFICATION TO THE REMEDIAL ACTION PLAN
FOR THE MOAB URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

Dear Mr. Metzler:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of the U.S. Department of Energy's (DOE's) request for a modification to the Remedial Action Plan (RAP) for the Moab Uranium Mill Tailings Remedial Action (UMTRA) Project, which was submitted to the NRC in a letter dated April 20, 2010. Additional information regarding calculations of radon emanation was requested by the NRC, and DOE provided the requested information in its letter dated June 3, 2010.

The April 20, 2010, letter requested NRC concurrence to leave residual radioactive material (RRM) already placed to the design elevation along the eastern, western, and southern edges of the cover. DOE also proposed, as a best management practice, a modification related to a revised detail for RRM placement in the yet to be filled portions of the cell. DOE noted that they would like to leave the existing drawing set in the RAP as submitted, and that appropriate adjustments to the cell as-built drawings will be made and submitted with the completion report.

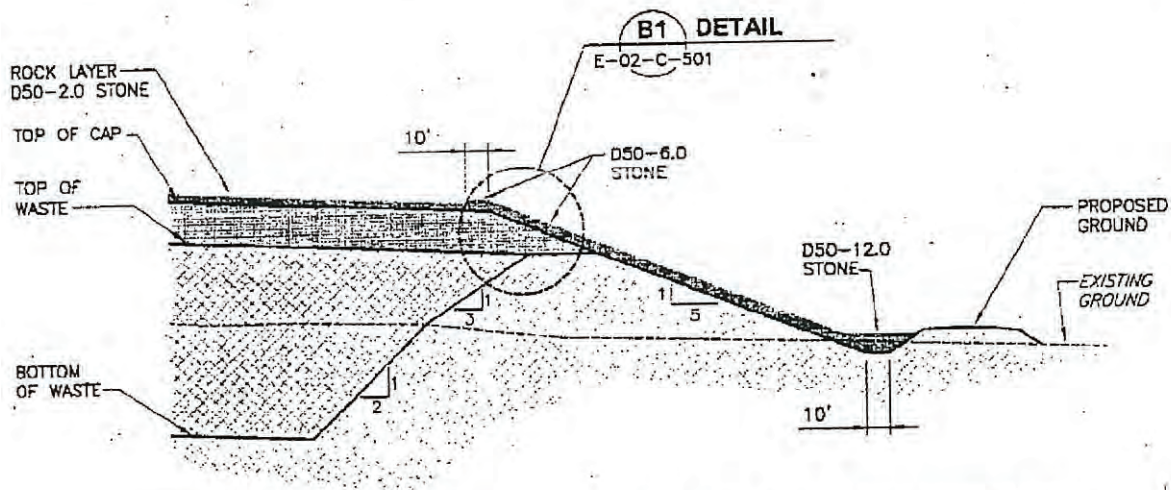


Figure 1 - Current approved design for Moab (from ML082180244)

The approved configuration of the cover system is shown in Figure 1 above. Based on this configuration, the cover thickness over the RRM near the crest of the sideslope is approximately

RECORD COPY

030311 9/17 0 17

6 feet (ft) instead of the intended 8.5 ft. In this area, the frost protection layer is less than the intended thickness.

DOE identified the condition and requested NRC concurrence to leave the RRM already placed to the design elevation; that is, no changes would be made at the perimeter of the cell where RRM placement has reached the design grade. In the 2008 technical evaluation report (NRC, 2008, ML082060216), the staff determined that the design complied with the applicable requirements in 10 CFR 40. A 4 ft thick radon barrier of compacted Mancos shale was specified to meet the radon flux limit. While the sloping cell cover creates a section that is less than the intended full cover thickness, the radon barrier of 4 ft is maintained. DOE performed an evaluation of the radon emanation assuming a reduced frost protection layer, and the overall average flux from the eventual completed cell remained under the applicable limits in 10 CFR 40. Based on its review and analysis, NRC staff concurs on DOE's request to leave the RRM already placed to the design elevation

As a best management practice, DOE has developed a revised detail for RRM placement in the yet to be filled portions of the cell. In this revised detail, shown in Figure 2 below, the thickness of RRM would be reduced and replaced with additional interim cover to maintain the desired cover thickness of 8.5 ft. The final slopes and design elevations would remain unchanged.

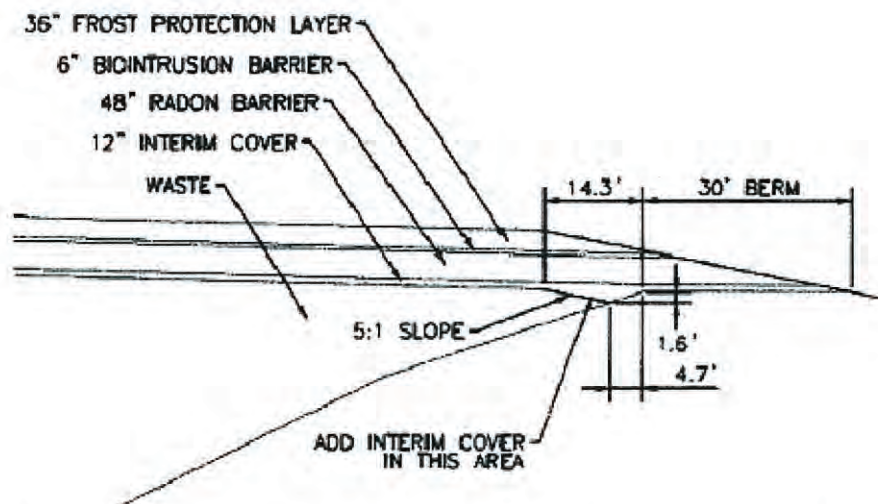


Figure 2 – Proposed change to perimeter detail in yet to be filled areas (from ML101550357)

The staff reviewed the geotechnical engineering aspects of the proposed change; specifically, the staff considered the changes in the design and their effect on the stability of the slope. The currently approved design calls for a maximum sideslope of 5 horizontal to 1 vertical (5H:1V) for the cover system. In the 2008 technical evaluation report (NRC, 2008, ML082060216), the staff determined that the design complied with the applicable requirements in 40 CFR 192. As DOE has not proposed any changes to the maximum sideslope and the cross section remains similar to the approved design, the previous conclusions remain valid and the staff considers the proposed change acceptable from a geotechnical engineering standpoint.

The staff also reviewed the erosion protection aspects of the proposed change. The staff focused its review on the maximum slope angle, maximum slope length, and upstream catchment area which may be different from the originally approved design. The staff notes that the maximum slope remains 5H:1V. Additionally, the grading plan remains unchanged so there are no changes to the maximum slope length or upstream catchment area. In the 2008 technical evaluation report (NRC, 2008, ML082060216), the staff determined that the design complied with the applicable requirements in 40 CFR 192. As the proposed changes do not alter the maximum slope angle, maximum slope length, or upstream catchment area, the previous conclusions remain valid and the staff considers the proposed change acceptable from an erosion protection standpoint.

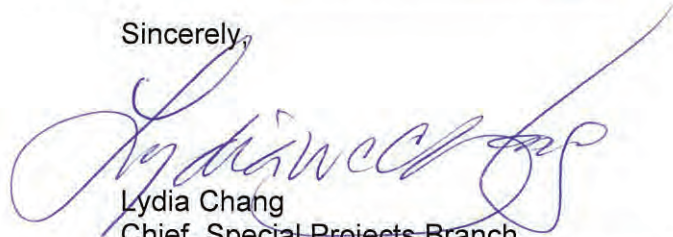
In the 2008 technical evaluation report (NRC, 2008, ML082060216), the staff determined that the design complied with the applicable requirements in 10 CFR 40. As the request and proposed change do not affect the 4 ft radon barrier thickness, the previous conclusions remain valid.

Based on its review, the staff has reviewed the proposed change to RRM placement in yet to be filled portions of the cell and considers it acceptable. DOE may leave the existing drawing set in the RAP as submitted. DOE will ensure that appropriate adjustments to the cell as-built drawings are made and submitted with the completion report.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Procedures and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html>.

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.

Sincerely,



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



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

November 29, 2010

Ms. Kimberly Conway
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Monitoring Beyond the Toe of the Crescent Junction Disposal Cell, Moab Uranium Mill Tailings Remedial Action (UMTRA) Project

Dear Ms. Conway:

This letter is to notify you of a discrepancy between with the *Remedial Action Plan and Site Design for Stabilization of Moab Title I Uranium Mill Tailings at the Crescent Junction, Utah, Disposal Site* Remedial Action Selection (RAS) Report, Revision 2, dated July 2008 and Addendum A of the Remedial Action Plan (RAP), DOE Responses to Nuclear Regulatory Commission (NRC).

The issue involves monitoring beyond the toe of the cell for leachate and cell performance. The July 2008 **RAS Paragraphs 4 and 5 of Section 7.2.4, Transient Drainage**, states:

In addition to monitoring the standpipes, DOE will monitor for the presence of ground water and tailings fluids at well locations 0202, 0203, 0205 and 0210 (Reference Figure 1, page 4, Attachment 3, Ground Water Hydrology). These wells were drilled in 2006 to a depth of approximately 300 feet as part of the Crescent Junction site characterization. Prior to placing RRM [residual radioactive material] in the disposal cell, DOE will recomplete the four wells mentioned above as monitoring locations. These wells will be used as indicators of tailings cell performance and to determine if cell leakage is occurring and if so, to determine if leakage is occurring as predicted in the RAP model. The recompleted wells will be screened through the weathered Mancos Shale and slightly into the weathered Mancos Shale.

For the first three years following the start of RRM placement DOE will monitor annually for the presence of water in Wells 0202, 0203, 205 and 0210. If water is detected additional chemical analysis will be done on tailings fluid indicator constituents (i.e. uranium, ammonia). After three years following the start of RRM placement DOE will monitor for the presence of water every third year. Chemical analysis will be performed if water is detected.

Additionally, as documented in the **RAP Addendum A, September 2007 Open Issues Meeting**, the NRC had the following comment on **Section 10 Water Resources Protection**.

10. Points of Compliance: No points of compliance have been established and I don't believe they need to be for chemical concentrations, however, I believe DOE needs to better explain how they will demonstrate cell performance and monitoring for performance. DOE has modeled the expected lateral spreading of contaminants in the weathered Mancos Shale and estimated a 10 year ring, 200 year ring, and 1000 year ring. I would think that if contamination is expected to spread to the 10 year ring, why not monitor for cell performance? If no contamination or fluids occurs at year 10, cell is performing better than anticipated. If it occurs before, DOE should have a plan to install wells at further out to monitor for performance. No chemically, only the presence or absence of cell fluid is needed to monitor performance because the geochemical nature of the Mancos (saline and briny) and its been written off as a source of water. I also believe that DOE should be specific as to how many standpipes are going to be installed to monitor cell performance, at the edge of the cell. In RAP, Attachment 3, Appendix G, page 12, last bullet, states, "Up to three piezometers (standpipes) are recommended to monitor the accumulation of leachate within the footprint of the disposal cell, during the transient drainage period, to verify that bathtubting dissipates as steady-state conditions are achieved. In addition, the piezometer may be used to monitor subsurface hydrologic condition after steady-state drainage is achieved." However, the RAP, page 4-7 states, "DOE will monitor the accumulation of transient drainage with a standpipe tapping a sump at the down gradient toe of the disposal cell..." And on top of page 9-2, "A temporary standpipe to monitor transient drainage is discussed in Section 4.0 of this document." I take this statement to mean DOE has discarded the recommendation made in the RAP, Attachment 3, Appendix G, page 12.

The above NRC comment continues with the following two concerns.

- 1) DOE should monitor the toe of the cell for leachate and cell performance to make sure they do not have fluids migrating at the unweathered Mancos Shale - Alluvial material interface. I think one locations [*sic*] is not enough for a cell of this size and is contrary to the recommendation in the RAP. These multiple locations should be defined.
- 2) The overall performance of the cell and the disposal strategy of allowing the cell to leak over time needs to be confirmed. DOE has determined that all the fluids will be contained within a defined perimeter around the cell and within the weathered Mancos Shale. They should be required to monitor for this performance for the presence/absence of cell fluids.

In response to the above comment and concerns, DOE gave the below response, as documented in **Appendix A September 2007 Open Issues Meeting, Section 10 Water Resources Protection**

The disposal cell has been designed with four locations for standpipes to monitor the presence/absence of cell fluids (*free water*). The four standpipes are along the down gradient interior boundary of the cell (Addendum C Final Design Drawings) The details of the standpipe are shown on drawing E-02-C-104 in that Addendum. If any water accumulates in the standpipe following closure of the cell it can be removed and stored in a cell water retention pond.

During construction of the cell, the slope of the bottom will promote drainage to a temporary sump in the dirty construction area. This water will either evaporate or will be pumped and used as dust control on contaminated areas within the cell. As the construction continues, the amount of water accumulation at the fresh face of construction can be monitored along with any water in the already installed standpipes. This would also provide information for documentation and for future planning.

A decision on future action to monitor water outside the cell would be developed under an observational approach. If there were indications that a larger volume of (*free*) water than anticipated was accumulating within the cell, there would be studies/modeling performed to ascertain what or if there was an impact and if further action was warranted.

The discrepancy is that DOE did not recomplete the referenced wells as indicated above and; therefore, did not monitor for cell leakage in the soils surrounding the disposal cell prior to or since DOE began placing RRM in the disposal cell in April 2009. DOE requests the referenced monitoring wells not be recompleted until after water is observed in the standpipes to be located in the compacted RRM. DOE does not believe this change compromises its ability to demonstrate cell performance. DOE discussed the prudence of waiting to recomplete monitor wells in its response to NRC comments presented in Addendum A of the RAP.

The cell has been constructed per the specifications including a slight slope to the cell floor which allows any drainage from the RRM or any precipitation water to migrate to a temporary sump located along the southern edge of the cell.

DOE began placing RRM in the cell in April 2009 in the southwest corner. Through observation of the tailings during placement, there is no indication of any leakage from the tailings. All tests of soil moisture of the RRM at placement also indicate that there is no excess water. Because DOE began placing the cover this summer, the creation of any transient drainage is still in the future and would first be observed on the cell floor.

The first standpipe is anticipated to be installed in 2011 or 2012.

DOE would like to revise Section 7.2.4 as indicated below and follow the monitoring approach outlined in Addendum A to read:

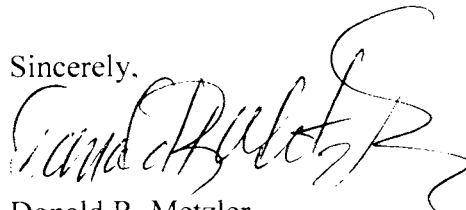
The disposal cell has been designed with four locations for standpipes to monitor the presence/absence of cell fluids. The four standpipes are along the down gradient interior boundary of the cell (Addendum C Final Design Drawings). The details of the standpipe are shown on drawing E-02-C-104 in that Addendum.

During construction of the cell, the slope of the bottom will promote drainage to a temporary sump in the dirty construction area. This water will either evaporate or will be pumped and used as dust control on contaminated areas within the cell. As the construction continues, the amount of water accumulation at the fresh face of construction can be monitored along with any water in the already installed standpipes. This would also provide information for documentation and for future planning.

A decision on future action to monitor water outside the cell would be developed under an observational approach. If there were indications that a larger volume of water than anticipated was accumulating within the cell, there would be studies/modeling performed to ascertain what or if there was an impact and if further action was warranted.

Please consider this suggested revision to the RAS and do not hesitate to contact me at (970) 257-2115 if you have any questions.

Sincerely,



Donald R. Metzler
Moab Federal Project Director

cc:

L. Chang, NRC
J. Berwick, DOE
K. Wethington, DOE
J. Ritchey, TAC
Project File MOA 2.12 (C. Smith)

23 B



U.S. Department of Energy

200 Grand Avenue
Grand Junction, CO 81501

December 20, 2010

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Explanation Supporting Letter Dated September 15, 2010 and Titled "Proposed Changes to the Remedial Action Plan (RAP) – Specification Revisions Related to the Crescent Junction Disposal Cell, Moab Uranium Mill Tailings Remedial Action (UMTRA) Project"

Dear Ms. Conway:

As discussed with Nuclear Regulatory Commission staff during our site meeting on November 17, 2010, U.S. Department of Energy (DOE) submits for your review this explanation supporting the proposed revision to two RAP specifications (31-00-30 and 32-11-23) associated with disposal cell biobarrier cover layer, also identified as the infiltration and biointrusion barrier layer. In our letter dated September 15, 2010, we stated, "DOE is confident that the proposed specification revisions will not negatively affect the performance of the biobarrier."

The purpose of the biobarrier layer as stated in the Moab Project Remedial Action Inspection Plan (RAP Addendum E, section 6.8, page 19 of 27) is "above the Radon Barrier, a 6 inch thick infiltration and biointrusion barrier 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."

The proposed revisions to the above referenced specifications do not alter the quality (durability) of the specified rock, but allows a wider range in grain diameter. The layer function of providing a barrier to burrowing animals will not be affected due to minor changes in rock size because the percentage of large rocks remain such that the small population of burrowing animals (e.g. prairie dogs, gophers, and badgers) will not be able to penetrate. The 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. As a result the minimal precipitation (i.e. 9 inches annually) in this location of the country of which only a fraction will infiltrate the frost protection layer will flow laterally through the rock layer rather than penetrate into the radon barrier.

Ms. Kimberly Conway

-2-

December 20, 2010

In general, we believe that the Moab Project is implementing a cover design using rock specifications that are much more stringent by comparison to other UMTRA sites with similar western U.S. settings. Therefore, the minor adjustments to rock size of the biobarrier without altering rock quality will not negatively affect overall cover performance.

Thank you again for your review of the proposed changes to the specification while considering the explanation described above. If you have any questions do not hesitate to contact me at 970-257-2115.

Sincerely,

A handwritten signature in black ink, appearing to read "Donald R. Metzler", with a stylized flourish at the end.

Donald R. Metzler
Moab Federal Project Director

cc:

J. Berwick, DOE
K. Wethington, DOE
B. Anderson, RAC
L. Brede, RAC
K. Turvy, RAC
J. Ritchey, TAC
K. Walker, TAC
Project File CRJ 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\RAPBarrierExplanation.doc



Department of Energy
200 Grand Avenue
Grand Junction, Colorado 81501

May 9, 2011

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Monitoring Beyond the Toe of the Crescent Junction Disposal Cell, Moab Uranium Mill Tailings Remedial Action (UMTRA) Project

Ms. Conway:

This letter is to withdraw our letter to you dated November 29, 2010, of the same subject. Based on our conference call on April 13, 2011, we are going to proceed with the monitoring activities described in the approved Remedial Action Plan (RAP). The Department of Energy (DOE) intends to proceed with both the installation of the standpipes located in the disposal cell and recompleting four monitoring wells located outside the disposal cell as specified in the approved RAP. DOE will recomplete these four existing monitoring wells to the appropriate depth in the near future and then monitor for the presence of water as originally prescribed.

In the November 29 letter, we acknowledged not recompleting boreholes as monitoring wells prior to waste placement per Section 7.2.4 of the RAP. We believe that not completing the wells prior to waste placement has not compromised monitoring for leachate from tailings fluids. Because the residual radioactive material (RRM) is being placed at near optimum moisture, daily observations of the RRM placed have not resulted in any evidence that free liquids are present.

If you have any questions or comments, please feel free to contact me at (970) 257-2115.

Sincerely,

A handwritten signature in black ink, appearing to read "Donald R. Metzler".

Donald R. Metzler
Moab Federal Project Director

cc:

L. Chang, NRC

J. Berwick, DOE

K. Wethington, DOE

L. Brede, RAC

C. Niemeyer, RAC

J. Ritchey, TAC

Project File MOA 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\WithdrawGWRevision.doc



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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.

RECORD COPY
LV 6/23/11

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.

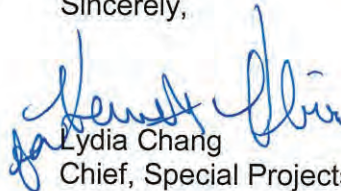
D. Metzler

3

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Procedures and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html>.

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

Sincerely,



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



Department of Energy
200 Grand Avenue
Grand Junction, Colorado 81501

June 15, 2011

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Proposed Change to the Remedial Action Plan – Specification Revision Related to the Crescent Junction Disposal Cell, Moab Uranium Mill Tailings Remedial Action (UMTRA) Project

Ms. Conway:

The purpose of this letter is to request Nuclear Regulatory Commission (NRC) concurrence on a specification and design drawing change to the Moab UMTRA Project Remedial Action Plan. The U.S. Department of Energy (DOE) is proposing the following changes:

- 1) Drawing E-02-C-501 (proposed changes in the clouded area in Figure 1). The current approved drawing reflects a “calculated” value and a “used value” for the D50 of the rock size. The used values were established by taking the calculated value and in every case but one, rounding up to the nearest standard screen size. The proposed revised drawing below proposes to use the “calculated” as actual for the D50 12-, 6-, and 4-inch rock sizes.
- 2) During a conference call on May 4, 2011, between the NRC and DOE, we discussed the difficulty of sampling and testing riprap gradations. It was suggested that this project should research previous UMTRA projects to see what type of testing and specifications have been used in the past. DOE has reviewed and examined the sampling and testing methods used on previous UMTRA projects located in Green River, UT, and Grand Junction, CO. While reviewing previous UMTRA project specifications, we found that the target gradation bands on past projects are significantly larger than the bands that have been specified on the Moab UMTRA Project. In our letter dated September 15, 2010, we proposed a similar specification change to the aggregate utilized on the final cover (Area C) of the disposal cell, which NRC is currently reviewing. This request is in regard to the side slope riprap (Area B) and apron riprap (Area A) on the same disposal cell (See Figure 1).

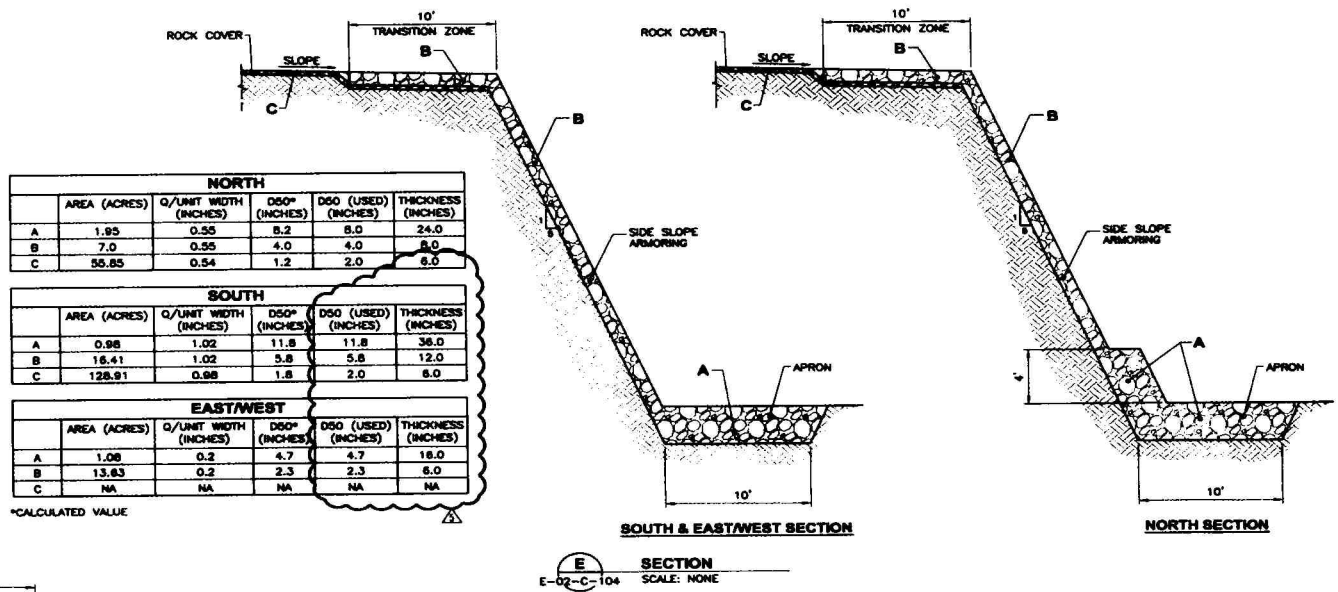


Figure 1. Detail from Drawing E-02-C-501-E showing location of riprap placement on cover edge

DOE is proposing to revise Specification 32-11-23 Aggregate and Rip Rap, Section 2.1.6.1 Bio Barrier and Cover Top, Table 3 as indicated in Figure 2 below.

As requested, we have included gradation target graphs (See Attachment A) which show the altered gradation targets in graph form for the riprap material to be used on this project. The intention of these graphs is to show that the targets which have been changed will enable the project to meet the calculated D50 for each specified rock size. The graphs show bands which represent the revised targets and also a line representing the gradation tests that have already been performed on the project to date.

As requested, we have included gradation target graphs (see Attachment A) which show the altered gradation targets in graph form for the riprap material to be used on this project. The intention of these graphs is to show that the targets which have been changed will enable the project to meet the calculated D50 for each specified rock size. The graphs show bands which represent the revised targets and also a line representing the gradation tests that have already been performed on the project to date.

Calculated Min. D50	Cover E & W Edge Riprap D50 - 2.3	Cover N Edge Riprap D50 - 4.0	Cover S Edge Riprap D50 - 5.8	Cover E & W Apron Armor D50 - 4.7	N Apron Armor & Bedding D50 - 8.2	S Apron Armor & Bedding D50 - 11.8
Min. Thickness	6"	8"	12"	16"	24"	36"
Bedding Thickness					4"	4"
18 inch	-	-	-	-	-	TBD
16 inch	-	-	-	-	-	
12 inch	-	-	-	-	90-100	
10 inch	-	-	-	-	45-90	
8 inch	-	-	90-100	90-100	35-50	
7 inch	-	-	45-90	-	-	
6 inch	90-100	90-100	35-55	35-90	0-30	
5 inch	-	-	-	35-55	-	
4 inch	35-90	35-50	10-40	-	-	
3 inch	20-60	-	-	-	-	
2 inch	8-45	10-36	-	-	-	
1-1/2 inch	-	-	5-30	0-30	100	100
1 inch	0-30	5-30	-	-	60-100	60-100
1/2 inch	0-30	0-30	0-30	0-30	50-90	50-90
No. 4	0-15	0-15	0-15	0-15	20-70	20-70
No. 8	0-15	0-15	0-15	0-15	10-40	10-40
No. 16	0-15	0-15	0-15	0-15	0-30	0-30
No. 200	0-15	0-15	0-15	0-15	0-15	0-15

Figure 2. Proposed changes to target bands for riprap in Specification 32-11-23 Aggregate and Rip Rap (Note – A proposed gradation revision for the D50 11.8-inch rock is still being determined by DOE will be provided in a subsequent letter)

DOE requests your concurrence on the two items proposed above. These items were also discussed with Mr. Ted Johnson on a conference call held on May 23, 2011.

If you have any questions do not hesitate to contact me at 970-257-2115.

Sincerely,



Donald R. Metzler
Moab Federal Project Director

cc w/enclosures:

J. Berwick, DOE

C. Niemeyer, RAC

Project Record CRJ 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\RequestD50RockChange.docx



Department of Energy
200 Grand Avenue
Grand Junction, Colorado 81501

June 20, 2011

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Radon Emanation from the Crescent Junction, Utah, Disposal Cell

Dear Ms. Conway:

The Moab UMTRA Project requests a requirement change to the Remedial Action Plan (RAP) for the Crescent Junction disposal cell. The current RAP contains a design criteria of 707 picocuries per gram (pCi/g) of radium-226 (Ra-226) as the maximum activity for residual radioactive material (RRM) placed in the uppermost 7 feet of the disposal cell.

In our letter dated March 24, 2011, we originally proposed a waiver to this requirement, which we subsequently reviewed and discussed with Tom Youngblood in a conference call on June 16, 2011. As suggested in the conference call, we now propose to change the requirement language in the RAP to state the "average" Ra-226 concentration would not exceed the defined limit. The sentence in paragraph 2, section 5.2.6 Radium-226 Activity, page 5-6 of the Remedial Action Selection Report in the RAP would therefore read:

"As the RRM is placed in the upper layer (seven feet) the radium activity will be carefully monitored to ensure that the *average* radium activity in the upper seven feet does not exceed 707 pCi/g."

The balance of the letter dated March 24, 2011, remains intact and supporting sample data, test results, measurement procedures, and process descriptions have been forwarded as requested.

If you have any questions do not hesitate to contact me at 970-257-2115 or Joel Berwick at 435-719-2820.

Sincerely,

Donald R. Metzler
Moab Federal Project Director

RECORD COPY

110211 *[initials]*
7-12

cc w/enclosure:

J. Berwick, DOE

C. Niemeyer, RAC

J. Ritchey, TAC

Project Record CRJ 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\707RadonEmanation.docx



MOA 018752

707 pCi/gm in top 7 feet of waste

Berwick, Joel [joel.berwick@gjem.doe.gov]

Sent: Monday, August 01, 2011 2:13 PM

To: Larry Brede; Craig Niemeyer [Craig.Niemeyer@gjemrac.doe.gov]; Kathy Turvy; Ronald Daily [Ronald.Daily@gjemrac.doe.gov]; Brent Anderson

Cc: Metzler, Donald [donald.metzler@gjem.doe.gov]; Joe Ritchey [Joe.Ritchey@gjemtac.doe.gov]; kimberly.conway@nrc.gov; Berwick, Joel [joel.berwick@gjem.doe.gov]

Kim Conway of NRC called this afternoon to inform me that NRC does not see a problem with the our latest proposal to them on this issue (Letter dated June 20, 2011). That is we may begin placing and sampling so that we have an **average** Radium-226 concentration of 707 pCi/gm as opposed to an absolute maximum of 707 as is the practice now.

We can therefore implement the procedures described in the June 20, 2011 letter immediately.

Thanks,

Joel Berwick
US Dept. Energy
Box A, 2021 N. Hwy 191
Moab, UT 84532

(435) 719 - 2820 offc
(970) 370- 4727 cell

RECORD COPY

8-13-12



U.S. Department of Energy
200 Grand Avenue
Grand Junction, CO 81501
August 29, 2011

Ms. Kimberly Conway, Project Manager
FSME Division of Waste Management and Environmental Protection
U.S. Nuclear Regulatory Commission
Mail Stop T8F5
Washington, DC 20555-0001

Subject: Proposed Change to the Remedial Action Plan – Specification Revision Related to the Crescent Junction Disposal Cell, Moab Uranium Mill Tailings Remedial Action (UMTRA) Project

Dear Ms. Conway:

The purpose of this letter is to request Nuclear Regulatory Commission (NRC) concurrence on a specification change to the Moab UMTRA Project Remedial Action Plan, and also include the recent suggestions by the NRC to our letter about the specification change dated June 15, 2011.

The U. S. Department of Energy (DOE) is proposing to add the following changes for final approval:

- 1) The requested change reduces the quantity of fines allowed from 15- to 5-percent and eliminates three (No. 8, No. 16, No. 200) of the four smaller bands of gradation leaving the No. 4 band in the specification to control fines content in the final rock products.
- 2) A proposed gradation revision for the D50 - 11.8-inch rock has been determined, and has been provided here as requested and involved testing material already located on site.

DOE is proposing to revise Specification 32-11-23 Aggregate and Rip Rap, Section 2.1.6.1 Bio Barrier and Cover Top, Table 3 as indicated in Figure 1.

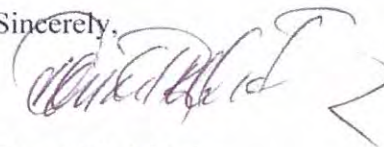
DOE requests your concurrence on the additional two items proposed above. These items were also discussed with Mr. Ted Johnson on several conference calls held since June 15, 2011. If you have any questions do not hesitate to contact me at 970-257-2115.

RECORD COPY

	Cover E & W Edge Riprap	Cover N Edge Riprap	Cover S Edge Riprap	Cover E & W Apron Armor	N Apron Armor & Bedding	S Apron Armor & Bedding
Calculated Min. D50	D50 - 2.3	D50 - 4.0	D50 - 5.8	D50 - 4.7	D50 - 8.2	D50 - 11.8
Min. Thickness	6"	8"	12"	16"	24"	36"
Bedding Thickness					4"	4"
<u>30 inch</u>						<u>80-100</u>
<u>25 inch</u>						<u>55-90</u>
<u>22 inch</u>						<u>25-60</u>
18 inch	-	-	-	-	-	<u>10-40</u>
16 inch	-	-	-	-	-	<u>5-25</u>
12 inch	-	-	-	-	90-100	<u>0-15</u>
10 inch	-	-	-	-	45-90	<u>0-10</u>
8 inch	-	-	90-100	90-100	35-50	
7 inch	-	-	45-90	-	-	
6 inch	90-100	90-100	35-55	35-90	0-30	
5 inch	-	-	-	35-55	-	
4 inch	35-90	35-50	10-40	-	-	
3 inch	20-60	-	-	-	-	
2 inch	8-45	10-36	-	-	-	
1.5 inch	-	-	5-30	0-30	100	100
1 inch	0-30	5-30	-	-	60-100	60-100
0.5 inch	0-30	0-30	0-30	0-30	50-90	50-90
No. 4	<u>0-5</u>	<u>0-5</u>	<u>0-5</u>	<u>0-5</u>	20-70	20-70
No. 8	=	=	=	=	10-40	10-40
No. 16	=	=	=	=	0-30	0-30
No. 200	=	=	=	=	0-15	0-15

Figure 1. Proposed Changes to Target Bands for Rip Rap in Specification 32-11-23 Aggregate and Rip Rap

Sincerely,



Donald R. Metzler
Moab Federal Project Director

RECEIVED

cc w/enclosure:

J. Berwick, DOE

C. Niemeyer, RAC

J. Ritchey, TAC

Project Record CRJ 2.12 (C. Smith)

T:\condor_doe\CRESCENT JCT\NRC\GradatnBand&TargetRevisn.doc



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 29, 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 –
REVISIONS TO RIPRAP SPECIFICATIONS FOR THE CRESCENT JUNCTION
DISPOSAL CELL, MOAB URANIUM MILL TAILINGS REMEDIAL ACTION
(UMTRA) PROJECT

Dear Mr. Metzler:

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of your letter dated August 29, 2011, in which the Department of Energy (DOE) proposed changes to riprap specifications for the Crescent Junction disposal cell. The proposed changes to the Moab UMTRA Project Remedial Action Plan are as follows:

- A reduction in the quantity of fines allowed from 15- to 5-percent and the elimination of three of the four smaller bands of gradation (No. 8, No. 16, No. 200), leaving the No. 4 band in the specification to control fines content in the final rock products.
- A gradation revision for the D50-11.8-inch rock.

Specifically, DOE proposed revisions to Specification 32-11-23 Aggregate and Rip Rap, Section 2.1.6.1 Bio Barrier and Cover Top, Table 3. These revisions were indicated in Figure 1 of your August 29, 2011, submittal. Based on its review, NRC staff finds the proposed changes acceptable. A technical evaluation documenting the staff's review is enclosed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Procedures and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html>.

RECORD COPY
111711 9/29/11 12.0.1

D. Metzler

2

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.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lydia Chang", is written over the typed name and title.

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

Enclosure: Technical Evaluation

cc: J. Berwick, DOE

TECHNICAL EVALUATION OF REVISED SPECIFICATIONS

In a letter dated August 29, 2011, the Department of Energy (DOE) submitted proposed changes to riprap specifications for the Crescent Junction disposal cell. These changes are necessary to accommodate the rock characteristics that are currently being produced at the quarry, and to have an acceptable riprap construction specification that meets gradation and rock size requirements.

Staff review indicates that the proposed changes are acceptable. The technical basis for the acceptability of the changes is discussed below.

1. Reduction of Fines. The requested change reduces the amount of fines allowed for several of the smaller rock sizes from 15 percent to 5 percent and eliminates several of the smaller bands. This change was first reviewed by the staff when DOE submitted proposed changes to the gradations on June 15, 2011. During that review, the staff concluded that DOE's proposed change allowed too much fine material to be produced and placed on the cell. In several conference calls, the Nuclear Regulatory Commission (NRC) staff suggested to DOE that the gradations were generally acceptable, other than the amount of fines, which should be no more than 5 percent. Following those discussions, DOE agreed to NRC staff suggestions.

Based on review of the gradations submitted by DOE, the staff concludes that the riprap layers for the smaller rock sizes are properly graded for easy placement and that the minimum D_{50} rock sizes in the layers are at least as large as the required D_{50} rock size. In addition, the layer thicknesses are at least twice as large as the required D_{50} rock size to assure easy placement. Due to the potential for segregation of materials during placement, fines in the gradation have been kept to a minimum. Further, based on review of the gradations, the staff concludes that the proposed gradations meet the suggested criteria of NUREG-1623.

2. Gradation Change for 11.8-inch Rock. The proposed change requests approval of larger rock sizes than currently required for the 11.8-inch riprap. DOE proposes to provide rock that has a D_{50} of about 20 inches, which is larger than the required size of 11.8 inches. This larger rock is needed for the aprons, toes, and diversion channel areas of the site. Staff review of the gradation indicates that the riprap layers for the smaller rock sizes are properly graded and that the minimum D_{50} rock sizes is at least as large as the required D_{50} rock size. In addition, the layer thicknesses are at least twice as large as the D_{50} rock size to assure easy placement. Fines in the gradation have been kept to a minimum to reduce the potential for segregation of fine material. Based on these considerations, the staff concludes that the proposed gradations are acceptable and meet the suggested criteria of NUREG-1623.

Enclosure