March 21, 2011

Mr. Scott Surovchak, Site Manager
Shirley Basin South
11025 Dover St.
Suite 1000
Westminister, CO 80021

SUBJECT: ACTIONS RELATED TO THE SHIRLEY BASIN SOUTH URANIUM MILL TAILINGS RADIATION CONTROL ACT SITE IN WYOMING

Dear Mr. Surovchak:

This letter pertains to several ongoing activities related to the Shirley Basin South, Uranium Mill Tailings Radiation Control Act site in Wyoming.

In December 2010, the U.S. Department of Energy (DOE) submitted the Data Validation Package, dated October 2010, for the June groundwater sampling at the Shirley Basin South Uranium Mill Tailings Radiation Control Act site in Wyoming [Agency-wide Document Access and Management (ADAMs) accession number ML103620673]. The U.S. Nuclear Regulatory Commission (NRC) staff have completed our review of the report and have the following comments:

- The report indicates that DOE is basing the report on the requirements of the 2009 Long-Term Surveillance Plan (LTSP) for the Shirley Basin South site. The 2009 revision to the 2004 approved LTSP was withdrawn in 2010. Thus, it is not clear why DOE is referencing the 2009 LTSP.

- In the 2004 LTSP, DOE committed to developing an Evaluative Monitoring Workplan, if confirmatory sampling indicated that alternate concentration limits (ACLs) were exceeded at the Shirley Basin site, as a precursor to the possible development of corrective action for groundwater at the site (ML100070630). Please provide the status of the development of this plan.

- DOE stated that the exceedances of the Radium-228 and 226 ACLs at Wells 5-DC,

  54-SC and 110-DC were due to natural thorium and another, unidentified, natural cause, but failed to provide adequate justification for the NRC staff to concur with DOE's conclusion. DOE indicated that wells near the disposal cell have lower concentrations of radium-226 than Well 110-DC and, therefore, radium-226 is suspected to be from a natural cause. However, DOE did not provide any data to substantiate either of these conclusions. NRC staff has evaluated the concentrations of radium in wells at the site on a well-specific basis, using information from the September 1996 ACL request and

DOE data. Based on this data, it appears that radium-228 values have been trending upwards in Wells 5-DC and 54-SC in a similar manner since about 2002. In that this trend is seen at both wells and in both aquifers it may indicate that radium is, in fact, tailings derived.

In addition, on March 17, 2010, DOE submitted a request to decommission Well 54-SC because of a concern that it was a potential source of cross contamination between the Main and Upper Sand aquifers (ML093290418; ML100850210). On August 23, 2010, NRC staff raised questions about DOE's request, specifically that: (1) Borehole data appeared to indicate that Well 54-SC was screened entirely within the Upper Sand aquifer, and thus, not cross contaminating the Main Sand aquifer; and (2) The replacement well for Well 54-SC , Well 101-SC is inadequate as a replacement well because it has been dry since installation, potentially due to a screening interval that may not span the entire Upper Sand aquifer (ML102250224). To date, we have not received your responses to these concerns. If you still wish to pursue closure of this well, NRC staff will need to resolve these issues before we can consider your request. Please either provide the information requested in our letter or provide an update on your plans to close this well.

Finally, in the 2004 LTSP DOE committed to evaluating if there were any significant changes in water demands in the vicinity of the site. This evaluation was to begin in 2010. To date NRC has not received your 2010 evaluation. Please provide the status of this evaluation.

NRC staff remains concerned that site derived contaminants have, or may be, migrating towards the site boundary and into areas that are not under DOE or another licensee's control. Therefore, NRC staff is requesting that DOE staff review the concerns raised above regarding the ACL exceedances and that we discuss a plan to address these issues. An appropriate venue for this discussion may be at the May joint NRC/National Mining Association workshop.

In accordance with 10 CFR 2.390 of the NRC "Rules of Practice for Domestic Licensing Proceedings 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 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.

If you have any questions concerning the NRC staff comments, please contact me at 301-415-6749 or by email at Dominick.orlando@nrc.gov.

Sincerely,

/RA/

Dominick A. Orlando, Senior 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. 040-6659

cc: K. Frederick, WDEQ
M. Thiesse, WDEQ
R. Bush, DOE LM

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