August 28, 2012

April Gil, Ph.D, Program Manager
US Department of Energy
Office of Legacy Management
2597 B ¾ Road
Grand Junction, CO 81503

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF U.S. DEPARTMENT OF ENERGY REPORT ENTITLED "WORK PLAN FOR THE ENHANCED CHARACTERIZATION OF THE SURFICIAL AQUIFER, RIVERTON, WYOMING, PROCESSING SITE" (WM-60)

Dear Dr. Gil:

I am writing to provide U.S. Nuclear Regulatory Commission (NRC) staff comments on the U.S. Department of Energy (DOE) report entitled, "Work Plan for the Enhanced Characterization of the Surficial Aquifer, Riverton, Wyoming Processing Site" dated June 2012. DOE is proposing this Work Plan to NRC in accordance with commitments in the Long-Term Management Plan for the site. Based on our review of the Work Plan we have the following comments:

1. The Work Plan states that the increased contaminant concentrations (i.e. contaminant spikes) after the June 2010 flood are due to the mobilization of residual contamination in the unsaturated zone by the flood waters. While this may be true, the Work Plan does not consider alternative mechanisms that may have influenced the contaminant spikes attributed to the flood. NRC staff suggests that DOE evaluate alternative mechanisms, such as redistribution of uncharacterized higher concentrations in the groundwater due to sudden flow regime changes or colloid facilitated transport during flooding and dissolution of colloid contaminants from unfiltered samples. In addition, the proposed data collection should be sufficient to support DOE's current assumption, and also demonstrate the applicability of other mechanisms in the event the assumption is not substantiated.

2. It is not clear from the Work Plan when DOE intends to start the enhanced characterization activities or when they are expected to be completed. It would be helpful if a schedule for the enhanced characterization were available in the event NRC wishes to observe the characterization activities. In addition, without a specific project schedule, it is unclear if DOE intends to drill all of the 120 proposed sample locations at one time or whether a phased approach, with data analysis at the end of each phase, will be used to ensure that the project is providing the expected results. If a phased approach is being considered, it would be helpful if DOE could provide the results of each phase to NRC (e.g., by submission of a preliminary report or by notification when data is available on the Geospatial Environmental Mapping System (GEMS) website.

3. The systematic grid pattern for the proposed groundwater sampling locations may not fulfill the stated objectives of enhancing the definition of the contaminant plumes and defining the centroid of each constituent plume. NRC staff suggests increasing the proposed spacing between each sample location to reduce the number of designated sample locations. This will allow the remaining sample locations to be based on field and laboratory observations.

4. Section 2.0 states that soil samples from non-flooded and flooded areas will be compared to examine the influence of surface infiltration. It is unclear how this comparison will be interpreted since higher soil concentrations would be expected further upgradient due to the longer residence time of the plume and the high concentrations found upgradient of the flooded area. NRC staff suggests that the Work Plan state the expected comparative results that would substantiate the assumption that flood waters are mobilizing contaminants in the unsaturated zone.

5. Section 2.1 states that groundwater sampling will be conducted according to the Sampling and Analysis Plan, with a number of exceptions. However, the stated exceptions appear to be inconsistent with procedures used during historic sampling events such as obtaining parameter stability prior to sampling. Variation from past procedures may distort sample results and make comparisons to historic data difficult to interpret.

6. Section 2.1 states that the geoprobe will be driven to 12 feet below ground surface and samples will be taken from the top of the water column. This procedure is inconsistent with sample depths from other alluvial wells installed to the bottom of the alluvial aquifer. NRC staff suggests that samples should be taken at a depth that is representative of historic samples near the proposed location.

7. Section 2.2 states that two samples will be collected at each location using the geoprobe with a 5-foot rod and each five foot sample will be split into two samples. The 33 sample locations would produce a total of 132 samples. However, this total number of samples is inconsistent with the value of 66 samples from 33 locations stated in Section 3.2. Please clarify the number of samples that will be collected and the intended sample interval, if only one 5-foot sample will be obtained.

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 staff's review or recommendations on this report please feel free to contact me at 301-415-6749, email 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.: WM-60

cc: Riverton dist. list

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cc: Riverton dist. List

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OFC	DURLD	DURLD	DURLD	DURLD	DURLD
NAME	DOrlando	MMeyer	TRowe	LChang	DOrlando
DATE	8/20/12	8/21/12	8/21/12	8/27/12	8/28/12

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Riverton Site Distribution List

D. Aragon
Wind River Environmental Quality Commission
Shoshone & Northern Arapahoe Tribes
PO Box 217
Fort Washakie, WY 82514

D. Goggles
Wind River Environmental Quality Commission
Shoshone & Northern Arapahoe Tribes
PO Box 217
Fort Washakie, WY 82514

T. Shakespeare
Wind River Environmental Quality Commission
Shoshone & Northern Arapahoe Tribes
PO Box 217
Fort Washakie, WY 82514

B. Chestnut
Ziontz, Chestnut, Varnell, Berley & Slonim
2101 4th Ave, Suite 1230
Seattle WA 98121

R. Bush
US Department of Energy
Office of Legacy Management
2597 B ¾ Road
Grand Junction, CO 81503

T. Plessinger
US Department of Energy
Office of Site Operations
2597 B ¾ Road
Grand Junction, CO 81503

K. Varilek
Muhaisen & Muhaisen, LLC
2020 S. Parker Road
Unit L
Denver, CO 80231