



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 03, 1999

Mr. Ray Plieness  
U.S. Department of Energy  
Grand Junction Office  
2597 B 3/4 Road  
Grand Junction, CO 81503

SUBJECT: ACCEPTANCE OF THE FINAL GROUNDWATER COMPLIANCE ACTION PLAN  
FOR THE RIVERTON, WYOMING, TITLE I UMTRA SITE

Dear Mr. Plieness:

The U.S. Nuclear Regulatory Commission (NRC) staff hereby concurs with the U.S. Department of Energy's (DOE's) Groundwater Compliance Action Plan (GCAP), dated September 5, 1998, for the Uranium Mill Tailings Action Project Site at Riverton, Wyoming. This action completes the remedial action for the Riverton site under the Uranium Mill Tailings Radiation Control Act of 1978, as amended (UMTRCA).

The DOE Groundwater Project has completed an Environmental Assessment (EA) of groundwater compliance activities at the Uranium Mill Tailings Site, Riverton, Wyoming. DOE has also submitted a Final Site Observational Work Plan (SOWP), dated February 25, 1998, to NRC. In September 1998, NRC staff reviewed the SOWP, which included the Draft GCAP. The review focused on the proposed groundwater remediation strategy for compliance with 40 CFR Part 192, and the technical information presented in support of this strategy. NRC staff had no technical objection to DOE's SOWP or Draft GCAP.

As discussed in the enclosed Technical Evaluation Report (TER), NRC staff has determined that the Final GCAP for the Riverton site satisfies the requirements set forth in the UMTRCA, and the regulations in 40 CFR 192, Subparts B and C for the cleanup of groundwater contamination resulting from the processing of ores of the extraction of uranium. Therefore, NRC concurs on the Final GCAP.

The NRC staff concurs with the GCAP for the Riverton site. If you have any questions concerning this letter, please contact Mr. Michael Layton, of my staff, at (301) 415-6676.

Sincerely,

A handwritten signature in cursive script that reads "King Stablein".

N. King Stablein, Acting Chief  
Uranium Recovery and  
Low-Level Waste Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc: D. Metzler

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Sincerely,  
Original Signed By  
N. King Stablein, Acting Chief  
Uranium Recovery and  
Low-Level Waste Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
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Enclosure: As stated

cc: D. Metzler

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OFC	URLL*		URLL*		URLL <i>NKS</i>			
NAME	JGunn		CAbrams		KStablein			
DATE	4/29/99		4/29/99		5/03/99			

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TECHNICAL EVALUATION REPORT  
TITLE I GROUNDWATER REMEDIATION

**DATE:** April 23, 1999

**FACILITY:** Riverton, WY

**TECHNICAL REVIEWER:** Jane Gunn

**BACKGROUND:**

The U.S. Department of Energy (DOE) submitted a Final Groundwater Compliance Action Plan (GCAP) for the uranium tailings site in Riverton, Wyoming by cover letter dated September 22, 1998. U.S. Nuclear Regulatory Commission (NRC) staff reviewed the GCAP and concurs with the proposed action. The compliance strategy proposed in the GCAP will achieve compliance with Subpart B of 40 CFR 192 through natural flushing in conjunction with institutional controls and compliance monitoring. Public health will be protected during the natural flushing process through a moratorium on future well drilling in the affected area, and a DOE funded alternate water supply for residents living over or near the affected groundwater.

**SUMMARY AND CONCLUSIONS:**

Staff has determined that the GCAP for the Riverton, Wyoming site satisfies the requirements set forth in the Uranium Mill Tailings Radiation Control Act of 1978, as amended (UMTRCA), and the standards in 40 CFR 192, Subparts B and C for the cleanup of groundwater contamination resulting from the processing of ores for the extraction of uranium. Future monitoring and a performance assessment are required with the selection of the natural flushing strategy, and verification monitoring will provide additional confidence in the predicted natural flushing. If predicted flushing results do not reasonably agree with actual monitoring data, additional corrective action may be necessary. A combination of institutional controls and alternate water supply system will protect public health during the natural flushing period.

**TECHNICAL EVALUATION:**

DOE submitted the Site Observational Work Plan (SOWP) for the Riverton, Wyoming site to the NRC in February 1998 for a "fatal flaw" review to ensure the approach met regulatory requirements. The compliance strategy proposed for the Riverton site is natural flushing in conjunction with institution controls and verification monitoring. Natural flushing will attenuate contaminants through natural groundwater movement to a level that will not pose a threat to human health or the environment within 100 years.

There are three aquifers beneath the Riverton site: a surficial unconfined aquifer, a middle semiconfined aquifer, and a deeper confined aquifer. The milling-related contamination at the site has affected both the unconfined and the semiconfined aquifers, with the unconfined aquifer being the most affected. Contaminant distribution is controlled chiefly by groundwater movement, which is to the southeast toward the Little Wind River. Groundwater from the surficial and semiconfined aquifers ultimately discharges into the Little Wind River. Contaminated water that discharges to the Little Wind River is diluted nearly instantaneously;

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statistical analysis on upstream, adjacent, and downstream water samples shows no discernible difference.

Aquifer restoration through natural flushing was modeled in the SOWP through a numerical probabilistic computer model which predicted concentrations of uranium and molybdenum in the affected aquifer will be reduced to concentrations below maximum concentration limits within 100 years (from 1997). All simulations showed uranium and molybdenum concentrations at background levels within the 100 year time frame. Early trends in the data included in the SOWP support this finding.

**REFERENCES:**

U.S. Department of Energy, 1998. Final Site Observational Work Plan for the UMTRA Project Site at Riverton, Wyoming, February 1998. DOE Document Number U0013801.

U.S. Department of Energy, 1998. Final Groundwater Compliance Action Plan, 40 CFR 192 (Subpart B) Groundwater compliance Modification to the Remedial Action Plan (RAP) and Site Design for Stabilization of the Inactive Uranium Mill Tailings Site at Riverton, Wyoming.

Enclosure