



Department of Energy  
Office of Legacy Management

JAN 17 2007

Mr. Kevin Frederick, Supervisor  
Groundwater Pollution Control Program  
Wyoming Department of Environmental Quality  
Herschler Building  
122 West 25<sup>th</sup> Street  
Cheyenne, WY 82002

Subject: Shirley Basin South Site, Wyoming Department of Environmental Quality Letter of July 31, 2006

Dear Mr. Frederick:

The U. S. Department of Energy (DOE) Office of Legacy Management (LM) appreciates and shares the concern associated with exceedances of the Alternate Concentration Limits (ACLs) for cadmium and radium-228 in selected monitoring wells at the Shirley Basin South site located in Carbon County, Wyoming. Our previous correspondence proposed continuing the monitoring program as currently in place to develop a better trend of the analytical data. Historical data from the site does not provide a long-term and certainly not a clear trending of water quality in the Point of Compliance (POC) wells.

Exceedances of the cadmium ACL in POC well 5-SC were recorded in 1996, 1997, 1999, 2001, and recently in 2005, with the highest results noted in 1997 and 1999. The prior exceedances were immediately followed by results below the ACL. Recent sampling and analysis indicates the cadmium concentration in POC well 5-SC has once again returned to below the ACL.

Radium-228 data from POC well 5-DC is equally erratic and only exceeded the ACL in the three most recent sampling events. Once again, no clear, long-term trend is indicated by the analytical data. However, the three recent elevated results indicate at least a short-term increase in radium-228 in ground water adjacent to this well. Well 5-DC is located in the Main Sand Aquifer of the Wind River Formation, and the ground water flow of that aquifer is to the northwest. Because the location of well 5-DC is near the northeast corner of the disposal cell, the increase in radium-228 may not be associated with leakage from the disposal cell. Instead, it could be related to a local deposit of thorium-bearing ore. Additional analytical and water level data are needed to gain a better understanding regarding the current increase in radium-228.

Since the DOE owns the property and can limit the use of wells to ground water sampling and analysis, there is no risk of human exposure to any of the constituents in the ground water. Since there is no ground water consumptive use on the site or near the site boundary, there is no Point of Exposure (POE) and therefore no established POE wells at the site.

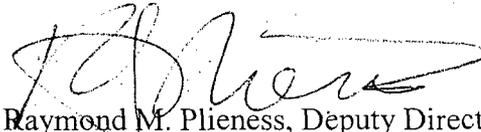
Mr. Frederick

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LM is currently discussing the ground water conditions at the site with the U. S. Nuclear Regulatory Commission and would appreciate your input. We would also like to address the previous selection of ACLs, prior to DOE receipt, and whether or not their selection was appropriate for the site considering that existing ground water quality had already indicated exceedances.

Please contact me at 970-248-6091 or Scott R. Surovchak at 303-966-3551 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Plieness', written over a faint, illegible typed name.

Raymond M. Plieness, Deputy Director  
Office of Site Operations

cc:

S. Cohen, NRC

S. Surovchak, DOE/LM-20

Project File: SBS 400.02 (D. Roberts)

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