February 09, 2011

Mr. E. Kurt Hackmann
Director, Hematite Decommissioning Project
Westinghouse Electric Company
3300 State Road P
Festus, MO 63028

SUBJECT: NRC REQUEST FOR ADDITIONAL INFORMATION FROM WESTINGHOUSE ON HEMATITE DECOMMISSION PLAN CHAPTER 3

Dear Mr. Hackmann:

By your letter dated August 12, 2009, you submitted a request for approval of the Westinghouse Hematite Decommissioning Plan (DP) (ADAMS Nos. ML092330123, ML092330125, ML092330127, ML092330129, ML092330131, and ML092330132). The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed your request. As a result of that review, the staff has identified areas where additional information is required in order to complete its review. Enclosed are requests for additional information (RAIs). These requests cover the review of Chapter 3 of the DP.

The NRC may transmit by separate correspondence RAIs covering the remaining Chapters of the DP and other documents submitted in support of the Hematite decommissioning such as the Physical Security Plan, should they be necessary.

In accordance with 10 CFR 2.390 of the NRC's "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 Web site at http://www.nrc.gov/reading-rm/adams.html.

Please provide your response to the RAIs within 30 days of the date of this letter. If you have any further questions, please contact me at (301) 415-5928 or via email at john.hayes@nrc.gov.

Sincerely,

/RA/

John J. Hayes, Senior Project Manager
Materials Decommissioning Branch
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Enclosure: Hematite DP Chapter 3 RAIs

cc: Westinghouse-Hematite Service List

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Enclosure: Hematite DP Chapter 3 RAIs

cc: Westinghouse-Hematite Service List

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J. Tapp, RIII

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NAME	JHayes	SAchten	PMichalak	JHayes
DATE	02/01/11	02/02/11	02/08/11	02/09/11

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Westinghouse - Hematite Service List
cc:

Alex S. Polonsky
Morgan Lewis, Esq.
Morgan, Lewis & Kocjus LLP
1111 Pennsylvania Avenue, NW
Washington, DC 20004

R. Budd Haemer
Shaw Pittman, LLP
2300 N Street, NW
Washington, DC 20037-1128

Clarissa Eaton
Community Involvement Coordinator
The Joachim Watershed Community
Advisory Group at Hematite, Missouri
3419 Kathleen Drive
Festus, MO 63028-3333

Kent Bradford, Chairman
Hematite Project Oversight Comm.
Western Zirconium
10000 West 900 South
Ogden, UT 84404-9760

Eric Gilstrap
Environmental Engineer
Department of Natural Resources
Federal Facilities Section
State of Missouri
917 N. Highway 67, Suite 104
Florissant, MO 63031

Kathleen M. Waltz
The Honorable Russ Carnahan
517 Bailey Road
Crystal City, MO 63019

Ramona J. Huckstep
Community Relations Coordinator
Missouri Department of Natural Resources
Hazardous Waste Program
State of Missouri
P.O. Box 176
Jefferson City, MO 65103-0176

Aaron Schmidt, Chief
Federal Facilities Section
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65103-0176

Daniel Schuette, Director
Division of Environmental Quality
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Sara Parker Pauley, Director
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65103-0176

Glenda Miller, Director
Division of Community and Public Health
Missouri Department of Health & Senior
Services
930 Wildwood
P.O. Box 570
Jefferson City, MO 65102-0570

Dennis Diehl
Jefferson County Department of Public
Health
405 Main Street
P.O. Box 437
Hillsboro, MO 63050

Teresa Kreitler
Jefferson County Council Board of
Executives
District 5
P.O. Box 100
Hillsboro, MO 63050

Branden Doster
Operating Facilities Unit Chief
Federal Facilities Section
Department of Natural Resources
State of Missouri

P.O. Box 176
Jefferson City, MO 65102-0176

Michele M. Gutman
Westinghouse Electric Company LLC
4350 Northern Pike
Monroeville, PA 15146-2886

Terry Draper
Festus City Administrator
Festus City Hall
711 West Main
Festus, MO 63028

The Honorable Mike Cage
Mayor, Festus City
Festus City Hall
711 West Main
Festus, MO 63028

Hematite Decommissioning Plan
Request for Additional Information

Hematite Decommissioning Plan Chapter 3 - Site Description

1. (HDP-3-Q1) Comment: Figures 3-10 and 3-11 of the Decommissioning Plan (DP) provide the locations of monitoring wells. What type of well is RMC-9 in Figure 3-11 as the designation is not contained on pages 3-9 or 3-10?

   Path Forward: Provide the well type associated with designation RMC-9.

2. (HDP-3-Q2) Comment: It has been observed that, in the vicinity the Hematite site, the hydraulic heads in the shallow clay overburden are the highest, with hydraulic head differences of 10 feet or more with respect to that in the deep overburden (including sand and sand gravel). Westinghouse postulates that "…the shallow groundwater represents a perched water table," and that the recharge at the Hematite site is from leaking pipes associated with the storm water, domestic and process water and waste transfer systems and this leakage could have contributed the anomalously high water table. If this is the case, it may have important implications on the understanding the radionuclide distribution in the groundwater and transport in the subsurface environment at the Hematite facility. Further information is needed to support this postulate. (Pg 3-24)

   Path Forward: Provide a detailed analysis to support the presence of a perched aquifer at the Hematite facility. To demonstrate the existence of an unsaturated soil between a perched aquifer and a deep water table aquifer below, an evaluation which includes analysis of water level data from group(s) of monitoring wells that are closely spaced and completed at various depths in the shallow and deep overburden would be appropriate.

3. (HDP-3.7-Q3) Comment: In Figure 3-39 and Figure 3-40 of the DP, contours covering large areas of the map are extrapolations that are not supported by field water level measurements.

   Path Forward: Provide new figures trimming extraneous unlikely portions of the contours, adding monitoring well locations and water level elevation data.

4. (HDP-3.7-Q4) Comment: DP Figure 3-41, Post-Remediation Groundwater Wells, lacks sufficient details. In addition, the rationales for the proposed groundwater monitoring network were not discussed in the text.

   Path Forward: Provide a revised map showing all the monitoring wells in all hydrogeologic units using different symbols. Also include a detailed justification on the selection of the monitoring network as required by the NRC license. Include the wells associated with the Interim Groundwater Monitoring Program and include information on the sampling frequency and radionuclides to be analyzed.

Enclosure

5. (HDP-1.3-Q5) Comment: On page 3-31 of the DP, there is a discussion about groundwater flow and contaminant migration prior to 2003 when conditions in the Roubidoux Formation were under significant hydraulic stress due to groundwater withdrawn from the City of Festus' production wells and the private wells near the Hematite site. It is knowledged that the natural flow system had been altered by the groundwater extraction. Westinghouse seems to imply that, for the future, the pattern of pre-2003 need not be considered. Since the site is intended for unrestricted release, the use of groundwater in the vicinity of the Hematite site is not restricted. There is nothing to preclude the Festus standby wells from being brought back into circulation. Should this occur, it could again change the hydraulic conditions in the Roubidoux aquifer. The Jefferson City-Cotter aquifer (including the sand/gravel aquifer) and Roubidoux aquifer appear to be the local groundwater flow system and the intermediate flow system, respectively. Hydraulic stress in the Robidoux aquifer will affect the flow in the Jefferson City-Cotter aquifer.

   Path Forward: Westinghouse should revise the relevant test in the DP to reflect the statements stated above.

6. (HDP-3.1-Q6) Comment: The data provided on domestic and industrial wells in the vicinity of Hematite facility is based on a 2004 Missouri Department of Natural Resources (MDNR) document. Information on the unregistered private wells in the vicinity of the Hematite site is not included in the DP.

   Path Forward: Provide an update of the domestic and industrial wells' information in the vicinity of the Hematite site. Information should include water usage, well depth, and the hydrogeologic unit where wells were completed. Provide a map showing all well locations. Since Wells #3 and #5 are the closest water sources for the Public Water Supply District No. 5 system, provide the monitoring status for these two wells. Also provide information such as water use, well depth, and aquifer type if possible for all unregistered private wells with three miles of the Hematite site.

7. (HDP-3.7-Q7) Comment: The groundwater elevation data (Wells PZ-04 and BR-12_JC) shown in Figure 3-30 of the DP indicates groundwater flow in the Jefferson City-Cotter aquifer to the west/northwest may also possibly exist in the area just north of the Hematite buildings. In a report by Westinghouse's consultant, the consultant recommended that three additional monitoring wells (BR-13-JC, BR-14-JC, and BR-15-JC) be installed in the Jefferson City formation southeast of the facility buildings to further define potential impact by radionuclides (SAIC, 2009, Radionuclide Activitiity in Bedrock Groundwater at Westinghouse Hematite Facility, Hematite, Missouri). However, there is no evidence that such wells were ever added.

   Path Forward: Provide a rational as to why the additional monitoring wells recommended by Westinghouse's consultant were not installed in the area just north of the Hematite buildings and why Westinghouse's present characterization of the groundwater is sufficient. Additionally, provide an update on the recommended bedrock wells and related monitoring data.

8. (HDP-3.1-Q8) Comment: It is indicated that two on-site residences on the north side of state Road P obtain drinking water from a single private well. No information on this private well was included in the DP.

   Path Forward: Provide information on the present water quality status of the private well serving the two residences on the Hematite site along with an assessment of the impact upon water quality as a result of decommissioning and post-decommissioning activities at the Hematite facility.

9. (HDP-3-Q1) Comment: Significant concentrations of radionuclides, especially Tc-99 and uranium, are found in the groundwater in the clay overburden ("leachate") in the vicinity of source areas. These areas include the process buildings, evaporation ponds, southeast of Building 256 and the spent limestone storage, and the burial pit. Low levels of Tc-99 have also been detected in the underlain sand/gravel aquifer downgradient from the site. It is indicated that the contaminated "leachates" in the source areas will be removed along with the contaminated soil to reduce future risk to groundwater. However, it is unclear as to extent of the leachate removal that will occur in each of the source areas.

   Path Forward: Provide the criteria that will be utilized to determine the areal and vertical extents/degree of the impacted overburden (i.e., clay) and "leachate" removal in each of the source areas. Provide justification that these criteria are protective of groundwater and meet the ALARA requirement as well.