

**Safety Assessment for Third Alternative Disposal Request for Transfer of Hematite Project Waste to USEI
RAIs and Proposed Resolution
July 2013**

RAI No.	Section No.	Issue	Regulatory Link	Discussion	Path Forward
1	None	Physical security aspects of the waste to be shipped, handled, treated and disposed at USEI	10 CFR 73	This 20.2002 request involves special nuclear material (SNM). Yet, in support of this request there is no discussion of the physical security aspects associated with the transportation, handling, treatment and disposal of the material destined for USEI.	Provide a discussion of the physical security aspects associated with the waste to be transported, handled, treated and disposed at USEI.
2	Executive Summary (1.0)	Dose to USEI workers from waste handling	10 CFR 20.2002(d)	In the first paragraph it is indicated that the estimated doses to USEI workers have been calculated for various functions. One function which is not included in this section is the treatment of the waste. Table 1 is presented in the section but there is no reference in the text as to the purpose of the Table.	Indicate whether the doses to USEI operators will be calculated for waste treatment occurring at USEI.
3	Material Description (5.1)	No reference to Table 1.			Incorporate Table 1 into the text if appropriate. Explain its relevance.
4	Material Description (5.1), Waste Characterization Plan (5.2)	(a) Volume estimates for Soil vs. Soil-Like Material not provided (b) Complete characterization of dewatered sludge was not provided	10 CFR 20.2002(a)	It was noted in Section 5.1 of HDP-TBD-WM-909 that 22,000 cubic meters of soil- and soil-like material (such as dewatered sanitary sludge) would be disposed. However, there are no specific volume estimates for each type of material, soil or soil-like. The original characterization associated with Amendment 58 was specific to soils, and did not include sanitary sludge. While a more conservative sampling frequency was ultimately chosen and approved by Amendment 58, the analysis used to determine the necessary soil sampling	Please provide information on the estimated volume of soil-like material and its density. and similar information for the soil. Please provide additional results on the characterization of sanitary system sludge, as noted in Section 5.2 of HDP-TBD-WM-909. Since the staff must evaluate

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				<p>frequency did not include dewatered sludge. In order to complete its review, the staff needs information on the volume and characterization attributes of the soil-like materials in order to assess whether Westinghouse's soil sampling strategies are appropriate. The staff is anticipating additional characterization information, based upon the statements in Section 5.2 of HDP-TBD-WM-909, "HDP will take additional samples of the sanitary system sludge for laboratory analysis for Tc-99, isotopic uranium, and gamma spectroscopy. These sample results will be submitted to NRC to augment this 20.2002 request." However, Westinghouse has not indicated when such information will be provided.</p>	<p>the usage of a sampling plan, originally based only on soil characterization for use on soil-like materials, Westinghouse should provide a description of how the soil sampling frequency and methodology approved for Amendment 58 will be adequate to sample soil-like material (such as dewatered sludge).</p>
5	<p>Multiple Material Description (5.1), Waste Characterization Plan (5.2), Transport and Disposal Dose Assessments (6.0)</p>	<p>Reference to NRC Amendments 58 & 60 as the source & bases for Hematite information</p>	<p>10 CFR 70.21(a)(3)</p>	<p>Various portions of the text refer to References 1 & 2 as being the source and basis for information presented in the May 28, 2013 Hematite submittal. The NRC's SERs associated with amendments 58 and 60 were not the source for such information. Rather the sources were the May 2009 and January 2012 Westinghouse 20.2002 submittals supplemented by additional submittals. Examples of information whose source was not the NRC's SERs includes:</p>	<p>Various portions of the text should be modified to clearly differentiate between information presented in the previous Westinghouse 20.2002 submittals and supporting information versus the NRC's SERs. Reference section should be updated to incorporate the submittals and various supporting documents associated with the May 2009 and January 2012 20.2002 requests.</p>

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				<ul style="list-style-type: none"> • expected concentrations of radionuclides; • information regarding the waste matrix. Information regarding average enrichments of waste; • average total activity concentration; • detailed characterization data and accompanying analyses; • methods and requirements associated with waste shipments; • dose assessment methodology for rail transport and USEI treatment and disposal activities; • updated Stabilization Operator data; • dose estimates for USEI workers while handling and treating the waste and to the public during transport of the waste; 	
6	Waste Characterization Plan (5.2), Table 2	Table 2 does not include soil-like material	10CFR20.2002(d)	<p>Section 5.2 indicates that “the approach used to sample soil and soil-like material associated with this request will be identical to that approved by Reference 1, and “the sample results will be compared to the contingency plan limits shown in Table 2, above.” However, Table 2 does not reference “soil-like” material, only soil.</p> <p>In Section 5.2 it was noted that the same approach would be used to sample both soil and soil-like materials, but it was not</p>	Please clarify in Table 2 whether or not the same contingencies and limits for soil also apply to “soil-like” material.
	Waste Characterization	Sampling of soil and soil-like	10CFR20.2002(d)		Please provide clarification that soil and soil-like materials will be sampled

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	Plan (5.2)	materials		clear whether or not populations of soil would be sampled separately from soil-like materials (or if Westinghouse intends to mix soil-like materials into soil prior to sampling). Currently, the NRC staff does not have sufficient characterization information to fully assess the similarity of soil and soil-like materials. As such, it would be prudent to sample soil and soil like materials separately (i.e., prior to any mixing.)	separately or provide justification for mixing the populations.
7	Transport and Disposal Dose Assessment (6.0)	External dose rates provided in Table	10 CFR 20.2002(d)	The NRC staff was not able to recreate these dose rate values for the Gondola Surveyor and the Excavator Operator using the Microshield outputs provided in the first two Hematite 20.2002 requests or their associated RAI responses.	Provide information on how the values of Table 4 for the Gondola Surveyor and the Excavator Operator were calculated, including the relevant Microshield files.
8	Transport and Disposal Dose Assessment (6.0)	Table 4 value for the external dose to an individual for the Stabilization Worker	10 CFR 20.2002(d)	The value (3.9E-2), provided in the Table 4 does not match the value obtained by the NRC staff (3.2E-2).	Confirm if the value in Table 4 is correct.
9	General and Post Closure Analysis (7.1)	Characterization of material that has been shipped to date and the shipping rate	10 CFR 20.2002(d)	As part of the sensitivity analysis associated with the post-closure dose analysis, Westinghouse estimated the combined impacts of a faster shipping rate. The cumulative dose was weighted assuming the amount of material shipped as of March 31, 2013 was shipped at a nominal shipping rate.	1) Please summarize the results of additional characterization data on the material associated with the approval of the May 2009 20.2002 that has already been shipped.

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10	Nuclear Criticality Safety (8.0)	Criticality safety with respect to soil-like material	10 CFR 70.24	Westinghouse submittal contains no discussion of how criticality safety is ensured for the soil-like material.	2) Please confirm the actual shipping rate as of March 31, 2013 for the material associated with the May 2009 20.2002 request (railcars/wk on average). Please address criticality safety for the soil-like material.