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NATURAL RESOURCES

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July 18, 2017

Mr. Kenneth E. Pallagi
Westinghouse Electric Company
Hematite Decommissioning Project
3300 State Road P
Festus, MO 63028

Subject: Remedial Action Completion Report for Operable Unit 1; Regulatory Review Draft
Hematite Decommissioning Project Document EO-16- 002, February 2017

Dear Mr. Pallagi:

The Missouri Department of Natural Resources (department) staff has reviewed the subject document, which was received on February 23, 2017. Based on consideration of the remediation status of the Hematite Decommissioning Project and the current site schedule the department has determined that the draft Operable Unit 1 Remedial Action Completion Report (RACR) cannot be fully evaluated or approved at this time. This is a result of the Westinghouse decision to suspend completion of the chemical remediation plan documented in the Record of Decision for Operable Unit 1 (OU-1 ROD) dated May 18, 2009. For reasons stated in subsequent paragraphs an OU-1 ROD Amendment is needed before a RACR for OU-1 activities can be approved.

The OU-1 ROD defines criteria for Westinghouse's commitment to remediate chemical contamination in buried wastes, sediments, and soils above the phreatic surface. A second Operable Unit (OU-2) has been identified to address contaminated groundwater, and contamination in soil not otherwise included in the OU-1 ROD.

Westinghouse explained the basis of their decision to "decouple" OU-1 chemical remediation from radiologic remediation in a letter from Gay M Fussell to Tiffany Drake dated October 29, 2015. According to the letter the decision was primarily based on discovery of an "exponential" increase in the estimated volume of VOC-impacted soil (from 680 yd³ to 31,311 yd³). Postponing chemical remediation would allow the company to focus on radiologic remediation, and accelerate completion of the Site Decommissioning Plan. This focus was expected to result in earlier termination of the Special Nuclear Material License issued for the site by the U.S Nuclear Regulatory Commission (NRC). The delay would also allow consideration of alternate treatment options for residual OU-1 soil contamination.

Since Westinghouse announced their decision to postpone chemical remediation company and department representatives have discussed several ways to administratively define an approach to remediation of residual OU-1 soil contamination. This is necessitated by the substantial and fundamental changes to the original basis of the OU-1 ROD including:

- Discovery of a 45-fold increase in the estimated volume of contaminated soil;
- Transport of most VOC impacted soil to off-site facilities rather than treat them on site;
- Delay in remediation of the residual soil contamination;
- Intent to consider alternate treatment options for residual soil contamination;
- Indicated change in the end-use condition from Residential to Industrial; and
- Need for Land Use Controls to support the revised end-use condition.



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Considering these changes the department believes that the most efficient approach would be to amend the OU-1 ROD to document the remediation that Westinghouse has completed and to explain that the residual OU-1 soil contamination will be addressed in the planned OU-2 ROD.

As stated earlier the draft OU-1 RACR cannot be fully evaluated at this time. However, department staff has compiled a list of informal preliminary comments, which are attached to this letter. The comments are offered to provide Westinghouse with an indication of issues that the department believes will require consideration when developing future investigation and documentation needed to move forward with the OU-2 Process while completing an OU-1 ROD Amendment and a final OU-1 RACR.

If you have any questions, please contact me at (314) 877-3250 or (314) 810-3300, extension 330. Written inquiries can be directed to the Missouri Department of Natural Resources, 917 N. Highway 67, Suite 104, Florissant, Missouri 63031 or emailed to ben.moore@dnr.mo.gov.

Sincere Regards,

HAZARDOUS WASTE PROGRAM



Ben L. Moore, PE

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**Informal Preliminary Comment on the
 Remedial Action Completion Report for Operable Unit I
 Regulatory Review Draft, February 2017**

Cmt	Pg	Sect	¶	Comment
1	1	1.0	1	Add "partial" before "achievement" as OU1 RGs not met for entire site. Important to clearly state that OU-1 does not address contamination in groundwater or in soils below the groundwater table. Soils above the water table in many areas may meet RGs yet significant "areas" of the site will require additional remediation and/or land use controls due to residual contamination in soil and groundwater.
2	1	1.0	1	Land Use Controls (LUCs) may be required due to potential Vapor Intrusion in some areas and definitely for GW in a large part of the site.
3	1	1.0	2	It is important to understand the horizontal and vertical limits and volume of contaminated "residual soil," and the mass of residual solvent(s). Informed interpolation between "clean" samples and samples showing residual contamination would be a reasonable approach to estimating the soil volume and solvent mass. However, the horizontal and vertical limits identified in the RACR should be set by documented "clean" sample. It is not clear that there is sufficient information surrounding "hot spots" and Building 230 to make these determinations. The RACR should include the assumptions made in arriving at the various estimates and Figures showing cross sections of the remaining residual soil contamination.
4	1	1.1	3	Terms such as "Facility", "Site", "Property" "Production Facility" and "Central Tract" are, at times, used inconsistently. "Facility" should match the CERCLA definition. To the extent possible other terms having a specific CERCLA definition should be consistent with CERCLA. Please ensure that each term that bounds a specific area is explained, used consistently, and shown on a Figure. Significant boundaries should be shown on all figures to the extent that a boundary line falls on the area depicted.
5	1	1.1	3	Future land use of an 8-acre "Production Facility" is indicated as "industrial". This represents a change from the "residential farmer" scenario considered in establishing the OU-1 ROD. Anticipated departure from the OU-1 ROD should be clearly stated as such. The boundary of this production facility is not shown on a drawing and there is documented groundwater contamination in other areas, which will also require land use restrictions until remediated. This should be discussed as it pertains to current/future land use and boundaries should be indicated on appropriate Figures.
6	3	Figure 2.		Titled "Hematite Facility." Reference comment #4.
7	5	Figure 3.		Titled "Current Land Use..." The only specific "current" use noted seems to be limited to two "Buildings" and two "Residential Property". The limits of actual current land use should be clearly shown and, to the extent known. Restricted-use areas should also be indicated. An example would be the limits of agricultural use areas. Reference comment #4.
8	18	3.1	1	The MARSSIM Survey Area Classification system, which relies on a 100% radiological surface scans to inform the selection of discrete samples for laboratory-analysis, may be appropriate for chemical contamination where there is a reason to expect co-location of radiological and chemical constituents. It may not be appropriate for areas where chemical contamination exists separately from radiological contamination. Building 230 is an example of this. The building was designated as a Class 2 area for MARSSIM sample density purposes. However, VOC contamination was identified beneath the building which would require smaller sample areas and higher sample density. Additional investigation is needed to define the nature and extent of contaminated soil under Building 230.

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9	20	Table 3.		The excavated depth is helpful. The excavated elevation would be more definitive relative to understanding final site conditions. Pre-backfill land survey data should be included in the report or referenced in Section 9. Figures showing elevation contours of the final excavated surfaces, final backfilled surface, and representative cross sections need to be included.
10	21	3.2	1	Please ensure that the listed plans are referenced in Section 9 and indicate reference numbers here.
11	22	3.2	2	This does not appear to be an entirely accurate representation of the OU-1 ROD which states "The Selected Remedy includes the option for the treatment of LLMW for VOCs upon reaching the radiological waste disposal facility, in lieu of on-site treatment." In fact, only a relatively small quantity of the material shipped to off-site disposal was "treated" and there was no on-site treatment of VOC contaminated soil. On-site VOC treatment w/ reuse or off-site disposal of the treated soil was the primary approach included in the ROD; off-site treatment prior to disposal was the alternate. A discussion of reasons for departure from the identified primary or alternate remedy is needed.
12	25	3.3.4	4	Remediation cannot be considered complete until the vegetation density standard has been documented. Final grading to eliminate ponding across the site and more durable erosion control for the Northeast Site Creek are also needed.
13	26	3.3.5.2	2	A permit revision before the NRC license is terminated does not seem appropriate. Our current understanding is that a 2017 anticipated date for license termination may not be valid at this time.
14	27	3.3.5.3	1	Need a discussion of or reference to an evaluation of "new" monitoring wells, which were installed, in part, to evaluate the impact of OU1 remediation efforts on groundwater. Is there evidence of groundwater impact from water management practices during OU1 remediation?
15	27	3.4.1	1	Are "land survey areas", "survey units" and this approach described in more detail elsewhere in the document or in a reference? The LSA boundaries were revised several times during remediation. Please discuss reasons for the changes?
16	28	3.4.2	1	This does not appear to be a complete description of the way excavated soil was handled. Clean soil was transported to "the backfill storage area", however it is our understanding that there are more than one area where soil was evaluated and stockpiled. Please discuss and identify the WHA and stockpile areas.
17	28	3.5	3	Information including a schedule indicating the duration of extended periods of suspended excavation, when open pits were left uncovered, is needed. This should include a discussion of whether accumulated precipitation was allowed to accumulate or was removed. If not removed, the potential impact of delay on the spread of subsurface contamination should be discussed.
18	29	Figure 6.		The colors and conventions used in this figure seem confusing and some colors are difficult to differentiate one from another. This is particularly challenging relative to the color depicting the "average elev" for unexcavated areas and the color for elevation range 430.01-432, and the colors differentiating the range 414.01 to >412. Another challenge to interpretation is that excavated area elevations span 2-foot intervals while the "average elevation" across the site represents an interval of more than 15-feet. Elevation contour lines would help with interpretation.
19	30	3.5.1	3	Statement regarding completion of NRC-regulated remediation before NRC makes that determination is not an appropriate subject for the RACR.
20	32	3.5.3	5	The VOC Pit and NGP are not identified on Figure 6.

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21	33	3.5.5	2	Identifies LSA-08-17 as "west of Building 240" but the direction indicated on Figure 4 appears to be southwest. Considering the orientation of buildings and other Site features the use of general (i.e. north, south, east, west) directional terms can be confusing. This comment applies to other uses of directional references in the RACR. Suggest use of a more accurate compass direction (e.g. southeast, southwest) when it is necessary to describe a relative location.
22	34	3.5.5	5	The conclusion drawn from this paragraph is that PID screening as used in the 2013 pre-design study was not an effective method for identifying locations to collect samples to document significant VOC concentrations. This is consistent with an MoDNR evaluation of PID readings and corresponding laboratory analyses for 94 soil samples collected by Westinghouse in February, 2013. The evaluation concluded that the MultiRAE PID meter as used by Westinghouse for that study was not an appropriate instrument to use for project decisions. This was based on poor correlation between PID readings and laboratory results. The RACR should include a discussion of the impact of the use of this screening method in evaluating conditions in other areas of the site that were determined to meet RGs.
23	41	3.5.10. 7	2	The first sentence is confusing.
24	45	Table 5		The EECA referenced in the table footnote is a decision document supporting the selected remedy. Completion reports for all EECAs (e.g. Deul's Mountain, Building Demolition) should be referenced, or related information provided in this table or elsewhere in the RACR and discussed.
25	47	3.9.1	1	Please identify the reports that document the Civil Land Surveys and include them in the list of references or otherwise document the source of land survey information.
26	47	3.9.2	2	Surface soils placed during backfilling and visible in backfilled areas appear to be no different from subsurface soils observed during backfilling. This may be a contributing factor to difficulty establishing vegetative cover.
27	50	3.9.4	1	Remedial Action cannot be considered complete until the surface, including NE Site Creek banks, is stable including grading to eliminate ponding.
28	50	3.10.2	1	The GeoFab is not stable as evidenced by washout in some areas during storm events. What alternate method will be used to stabilize the NE Site Creek banks? We are not aware of a spring feeding the NE Site Creek.
29	53	Table 12		Note MoDNR letter to Gay Fussell dated June 21, 2016, regarding: "Westinghouse Electric Company (WEC) Hematite Decommissioning Project - Pre-sampling Notifications (PSN) and Confirmation Completion Summaries (CCS) for LSA-08-01 through LSA-08-17". This letter identifies a need for additional sampling to define limits of residual OU-1 contamination.
30	56	4.2.1.1	1	Identifies Reference 12, the ... <i>Final Sampling and Analysis Plan for Remediation of Operable Unit 1</i> Revision 1.5, March 2015. Are the criteria for PID use consistent through the various revisions? Was the same type of PID used consistently?
31	56	4.2.1.1	1	Identifies Reference 149, <i>Performing Field Screening Measurements Using a PID and FID, Revision 7, November 19</i> (presumably 2015). What are the significant changes between the various revisions?
32	57	4.2.1.2	2	Reference 98 is identified as the 14th revision of the <i>Chemical Verification and Confirmation Sampling</i> document. Were previous versions considered inadequate for Chemical Confirmation Sampling and, if so, what areas could have been impacted by the use of earlier versions.
33	57	4.2.1.2	3	Was a PID used to screen all LSAs on the described 25-foot grid spacing?

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34	57	4.2.1.2	4	Describe the "phreatic surface" concept as used for OU-1 Remediation and identify the elevation corresponding to the various LSAs.
35	57	4.2.1.3	2	Reference Comment 8 regarding the "Class 2" designation as it may pertain to sample frequency in other areas.
36	58	4.2.1.5	1	States "...confirmation samples were collected from a freshly excavated surface" is not an accurate statement. CCS sampling was often conducted a week, sometimes several weeks, after a surface was exposed. Please identify the length of time between excavation and VOC sample collection in the various LSAs. Discuss the impact of samples that were not obtained from a "freshly excavated surface" and the validity of using the results to define an LSA as "clean".
37	58	4.2.2	2 & 3	Building 230 was initially identified as a Class 2 survey unit based on the expectation that the area had not been contaminated. Subsequent sampling indicated that this was an incorrect expectation. In addition, equipment limitations restricted sample collection to a depth of 10 feet. Additional sampling will be needed to define nature and extent.
38	61	4.5.2.2	1	"Land Use Controls including access controls are currently in place..." infers LUCs in addition to access controls. What are they? Reference Comments 2, 5, & 7.
39	67	5.1.1	4	States "...risks that could result from...and, inhalation of particulates or VOCs in soil gas, has been eliminated." It is not clear that VOCs in soil gas was addressed in either the OU-1 ROD or in samples collected during remediation. The reference to VOCs in soil gas should be removed.
40	72	6.2.1.2	2	Contaminated groundwater has been identified southwest of the Central Tract across Joachim Creek. Is access to groundwater in this area currently restricted? If so, what LUC(s) provides the restriction?
41	72	6.2.2	3	It is not entirely accurate to state that "No VOC-impacted soil remains..." Subsurface soils may have met OU-1 Remediation Goals yet be impacted by VOCs. This could be from residual VOCs below RGS, smear from a fluctuating water table or VOCs in soil gas.
42	73	Figure 8.		Titled "Land Use Controls at OU-1 Residual Areas..." There are LUCs related to the Laclede Natural Gas Pipeline that are not indicated on the Figure.
43	74	6.2.2	6	"...MDNR will continue to monitor..." MoDNR does not typically accept direct responsibility for monitoring LUCs; however, MoDNR does intend to support Westinghouse in these efforts through participation in Periodic Inspections and evaluation of related reports.
44	74	6.2.3	1	"When remedial actions for OU-2 were postponed..." Remedial Actions were postponed more than once after the OU-1 ROD was finalized. We surmise this refers to the October 2015 decision to decouple radiological remediation from chemical remediation; however, it should be made clear.
45	74	6.2.3	1	A topographic Figure of final surface contours conforming to RCRA closure requirement specifications would be helpful and will be required for a OU-1 Residual/OU-2 RACR.
46	74	6.2.3	3	"Operations and Maintenance requirements..." Suggest soil testing for nutrients and pH be added. A more detailed Operations and Maintenance plan will eventually be required for OU-1 Residuals/OU-2 purposes.
47	76	6.3	4	MoDNR intends to participate in the Annual Inspections for the first 5 years and in 5-Year Review inspections thereafter.
48	76	6.4	1	MoDNR wants to participate in the 5-Year Review inspection which is typically more comprehensive than an annual inspection. Need provision for notifying MoDNR in advance of the annual and 5-year inspections.
49	77	6.5.1	1	May be impacted by VI Study Results

Cmt	Pg	Sect	¶	Comment
50	79	6.6	1	Is the administrative record posted at the public library updated?
51	79	6.6	3	A Public participation program and meeting(s) are anticipated as a part of the Amended ROD/OU-2 process
52	79	6.7		The schedule is no longer valid
53	81	8.1	1	Reference the OU-1 ROD as amended
54	81	8.2	1	Reference the OU-1 ROD as amended
55	82	9.0		"References." 160 documents are referenced in this section. All references should be compiled on appropriate electronic media and included with the RACR.