



# Oregon

Theodore R. Kulongoski, Governor



## OREGON DEPARTMENT OF ENERGY

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July 16, 2007

Mr. Matthew McCormick  
Assistant Manager for the Central Plateau  
U.S. Department of Energy, Richland Operations  
P.O. Box 550, A5-11  
Richland, WA 99352

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**EDMC**

Re: PNNL-16454, 300-FF-5 Groundwater Operable Unit Current Conditions Baseline Risk Assessment

Dear Mr. McCormick:

Oregon appreciates the opportunity for review and comment on the draft baseline risk assessment report recently completed by Pacific Northwest National Laboratory (PNNL) for the 300-FF-5 Operable Unit (OU) at Hanford. As DOE moves forward with the remedial investigation/feasibility study (RI/FS) process for this operable unit, a reliable baseline risk assessment is needed to support the RI/FS process and final decisions for remediation of the 300 Area.

Regrettably, we do not believe that the PNNL risk assessment provides a satisfactory analysis to support the RI/FS process, for several reasons. First and foremost, the assessment falls well short of being consistent with U.S. Environmental Protection Agency (EPA) guidance for a CERCLA baseline risk assessment. EPA guidance states that "the baseline risk assessment is an analysis of the potential adverse health effects (current or future) caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these releases (i.e., under an assumption of no action)" (EPA/540/1-89/002). The EPA guidance also calls for assessing risk under current and reasonably anticipated future conditions.

The PNNL Baseline Risk Assessment limits consideration to current conditions only, meaning that potential future changes in contaminant mobility and/or exposure are not evaluated. In addition, this assessment:

- ignores EPA guidance (i.e., an assumption of no action) by analyzing the site only for scenarios with institutional controls in place. This approach ignores major exposure pathways involving surface and groundwater exposure, sharply reducing estimated risk.
- fails to include tribal risk scenarios, thus ignoring a "reasonable, foreseeable" future use of the site and the associated risks.
- fails to consider "reasonable" alternative future land uses on the 300 Area (as recommended by the City of Richland and acknowledged in the report). The assessment thus ignores the

potential effects of altered land use on exposure and on potential contaminant mobility and underestimates risks at the site.

The net result of the approach taken in the PNNL assessment is to ignore or underestimate current and potential future risks at the 300 Area. It thus fails to inform the RI/FS process in a way that would support a credible decision process.

Notwithstanding the scope of the assessment, it is apparent that there is not adequate data to proceed with the feasibility study process at the present time. As described by the recent PNNL report for the limited field investigation (LFI) for the 300-FF-5 OU, data collection for the LFI was greatly reduced. The planned 15 direct push boreholes were cancelled, so data were collected from only four of the 19 sites planned for sampling. Moreover, there were significant surprises in the data that were collected; contaminants didn't consistently occur where "expected" under existing conceptual models (i.e., uranium), and contaminants appeared in very high concentrations at locations where they had not been expected (i.e., trichloroethylene and tetrachloroethylene). These findings suggest there is not yet adequate information to support a reliable conceptual model that describes the inventory, location, or mobility of contaminants in the 300-FF-5 OU. Therefore, it seems clear there is need for a significant amount of additional characterization of soils and groundwater (for uranium and organics) before DOE can define a sound conceptual model, conduct a viable baseline risk assessment and proceed with the RI/FS process.

Oregon is also extremely troubled by the decision of the authors to arbitrarily exclude data from the risk assessment. During the recent LFI for the 300-FF-5 OU, PNNL staff found concentrations of trichloroethylene and tetrachloroethylene that were more than an order of magnitude higher than the highest previously observed concentrations in 300 Area groundwaters. Trichloroethylene was found at a concentration of 630 micrograms per liter (ug/L), 76 times the previous high concentration (8.3 ug/L) found in the 300 Area, and tetrachloroethylene was found at 9.9 ug/L, 17 times higher than the previously observed high of 0.59 ug/L. We do not understand the rationale for excluding these data; they were collected as part of the same RI/FS process and are published in a companion document. By arbitrarily defining a 2005 cutoff for data used in assessment risk analyses, the authors excluded these data, with the result that risks determined in the assessment are much lower than actual risk. The exclusion of these data compromises the validity of the assessment and significantly understates potential risk from these chemicals.

Section 5.2 (pg.5.3) speaks of the importance of the "general principle of internal consistency" among Hanford risk assessments. Regrettably, the nature, scope, and risk models used in the PNNL risk assessment are very different from the ongoing risk assessments for the river corridor and central plateau. Stakeholder involvement has been non-existent in the assessment process for this work, so there has been no opportunity for review and comment as the assessment was planned and conducted. Additionally, this assessment has used different risk models, a different and much more limited set of exposure scenarios, and different (more limited) data sets. It will be, at best, a challenge to reconcile risk estimates derived from these assessments.

In addition to the major concerns described above, we have a number of secondary comments on the PNNL assessment:

1. We believe this report (pg. iii) misrepresents the conclusions of the 2006 CERCLA Five-Year Review. It states "In 2001, the first 5-year review of the ROD found that the interim remedy and remedial action objectives (RAOs) were still appropriate, although the review called for additional characterization activities. In 2006, the second five-year review again accepted the conclusion that the interim remedy was acceptable..." The thrust of actual language of the 2006 five-year review was quite different,

"For 300-FF-5 Groundwater operating unit, the selected remedy of monitored attenuation for the uranium contaminant in groundwater is not achieving the remedial action objective established in the ROD. However, institutional controls are in place to prevent human consumption of the groundwater. For this OU the remedy is not considered protective. Follow-up actions are necessary to determine long-term protectiveness because remedial action objectives are not expected to be met."

By focusing on unchanged RAOs, the report language obscures the fact that those RAOs are not being met; i.e., that the interim remedy has failed.

2. The report appears to misunderstand the scope of the river corridor baseline risk assessment (RCBRA) (pg 1.4) by stating it will consider effects related to the underlying vadose zone and groundwater." Stakeholders have repeatedly been told that the RCBRA in general, and the 100/300 Areas risk assessment in particular, do not consider releases from groundwater or the deep vadose zone, and that work will be covered in a separate risk assessment by Fluor and the successor contractor.
3. We suggest using a more detailed stratigraphic cross section of the 300 area for Figure 2.2 (e.g., Figure 3.1 of the LFI report (PNNL-16435)), rather than a more generalized cross section for the Hanford Site.
4. Section 2.3 states that because institutional controls are in place, that the interim remedy is protective. This is inherently incorrect for protection of the environment, and is inconsistent with the 2006 Five Year review, which states that "For this OU (i.e., 300-FF-5) the remedy is not considered protective."
5. There are several statements in Section 3.2.1 (pg 3.2) for which we request clarification:
  - The section states that "results suspected to contain errors and values evaluated as being nonrepresentative of aquifer conditions have been excluded." Are there pre-determined, objective criteria for identifying a value that is "suspected" of being in error, or of being "nonrepresentative." If so, what are those criteria, how were they defined, and how much data was excluded?
  - The section also states that values with a "non-detect" lab qualifier were excluded. Were there instances for which data values were below detection limits, but close to, or above, action limits for any of the contaminants of concern? If so what are the implications for assessing risk for those contaminants?
  - As noted earlier, the report states that the report uses data collected through October 5, 2005. One very significant effect of this date is to exclude the very high values for trichloroethylene and tetrachloroethylene reported in the companion document to this risk

assessment, i.e., the 300-FF-5 LFI report (PNNL-16435). The end result is that this report significantly under-reports the risk that would be identified if data from the LFI report were included.

6. The use of only seep or surface water data to infer surrogate strontium-90 concentrations in pore water (e.g., values in Table 3.3) is puzzling. Why not use groundwater concentrations for inferring missing values for pore water?
7. Pages 6.4 and 6.5 have error messages showing what appears to be a failed link to Table 6.3.

Your letter of June 19 indicates that RL is planning an August workshop to provide information for stakeholders, including a revised conceptual model and a proposed path forward. For that workshop, we encourage DOE to evaluate whether there is adequate data to develop a sound conceptual model. If not, we urge you to focus the meeting on identifying data needs and approaches for collection of additional characterization data. We also encourage you to acknowledge the shortcomings of the current PNNL risk assessment and to plan additional work to develop an assessment that is compliant with EPA guidance and that will fully inform the RI/FS process.

We look forward to working with DOE and other stakeholders in planning and reviewing additional work that will inform a sound decision-making process for remediation of the 300 Area.

Should you have any questions or want to discuss any of our comments in more detail please call me (503-378-4906) or Paul Shaffer of my staff (503-378-4456).

Sincerely,



Ken Niles  
Assistant Director

cc: Hanford Natural Resources Trustee Council  
Alicia Boyd, U.S. EPA  
John Price, Washington Department of Ecology

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JUL 24 2007

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