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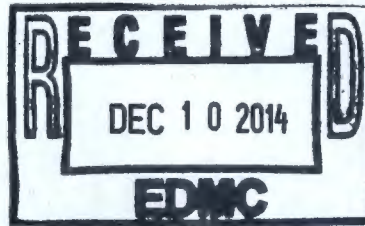
STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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December 8, 2014

14-NWP-240

Mr. Jonathon A. Dowell, Deputy Manager  
Office of River Protection  
United States Department of Energy  
PO Box 450, MSIN: H6-60  
Richland, Washington 99352



Re: United States Department of Energy's (USDOE) "*WMA C PA Model Development – A Briefing to Washington State Department of Ecology for WMA C Performance Assessment*,"  
CHPRC-02348-VA, Revision 0, Presented on October 29, 2014

Dear Mr. Dowell:

The Department of Ecology (Ecology) reviewed the referenced model development presentation. The geologic and hydrogeologic conceptual models (presented on October 29, 2014) will be used in the predictive transport analysis of Waste Management Area C (WMA C) tank residuals for the performance assessment (PA).

Ecology considers these two conceptual models to provide an incomplete set of bounding scenarios, and to be inadequate, since both models failed to include the basic heterogeneities observed to be present in the vadose zone.

Ecology recognizes that there are a number of thin porous and permeable layers, identified using moisture logs in push holes which would lead to more lateral migration of contaminants than the typical vertical downward migration. These layers may be of limited thickness and lateral extent, thus creating cascading effects. Inclusion of heterogeneities, however small they are, is vital for a credible assessment for the design and implementation of any corrective action or closure of the site and the protection of human health and environment from potential surface and other exposures. Since field sampling has failed to identify where much of the known contamination resides, the lateral transport must be modeled to estimate the lateral extent of contamination.

The concept of geologic and hydrogeologic heterogeneities, and the associated uncertainties associated with them were discussed at several public workshops with USDOE dating back to 2010 and were included in Ecology's comments on the Single-Shell Tank (SST) PA in 2005. It was agreed that multiple conceptual model scenarios would be used to address uncertainties and different alternative scenarios before any decision is made.

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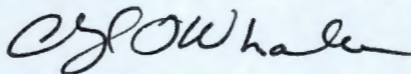
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It was agreed that this PA would evaluate lateral transport and determine if it has significant impact on the predictive results. This alternative conceptual model could provide a bounding look at slower source term input to the groundwater and increased lateral spreading. USDOE appears to be deviating from that agreed upon approach. It had been agreed that this detailed modeling would be used to inform future PAs for other 200 Area units.

Ecology is making a recommendation to USDOE to use a more meaningful and credible set of alternative site conceptual models by including the geological and hydrogeological heterogeneities for the predictive analysis.

If you have any questions, please contact Jeff Lyon, Tank Systems Operations and Closure Project Manager, at [jeff.lyon@ecy.wa.gov](mailto:jeff.lyon@ecy.wa.gov) or (509) 372-7914, or Dib Goswami, Lead Specialist Hydrogeologist, at [dib.goswami@ecy.wa.gov](mailto:dib.goswami@ecy.wa.gov) or (509) 372-7902.

Sincerely,



Cheryl Whalen  
 Cleanup Section Manager  
 Nuclear Waste Program

dg/aa

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cc: Gabriel Bohnee, NPT  
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