

## **Poster Title: Conceptual Model Uncertainty: Erosion Scenarios**

### **Summary**

#### Questions raised during NRC's review:

- How can erosional processes lead to exposure to potential receptors? Erosional processes can lead to pathways of exposure to potential receptors by uncovering buried contamination or through increased release rates to ground or surface water or deposition of eroded material at potential downgradient receptor locations.
- What erosional processes dominate the potential risk to receptors? For example, sheet and rill erosion rates are expected to be relatively low compared to other erosional processes (based on DOE landscape evolution modeling results) and lead to depletion of surface soil contamination at the source. Gully formation and stream widening are expected to be likely exposure mechanisms for the lagoon areas in Waste Management Area 2 in the absence of engineered barriers.
- What are the differences in potential pathways of exposure to onsite and offsite receptors? Pathways of exposure to a potential onsite receptor in the vicinity of an actively eroding surface water erosion front (e.g., gully) are expected to be limited given the geometry of exposure area (i.e., steep slopes). Although dilution in surface water would tend to reduce downstream concentrations, additional pathways such as the fish ingestion pathway could potentially make offsite impacts more limiting.
- How can uncertainty in erosion predictions be reduced, constrained, or adequately managed? In some cases, pessimistic assumptions can be made and a licensee (or DOE in this case) could still easily demonstrate compliance with license termination rule criteria. In other cases, uncertainties may be reduced or significantly constrained to allow decision-making with collection of additional data, studies, or other forms of model support.

#### NRC staff actions:

- NRC staff generated several requests for additional information related, for example, to (i) the no erosion assumption for surface soil DCGL calculations that do not consider potential exposure at downgradient locations from sediment deposition and (ii) lack of quantification of potential erosion impacts for subsurface soil DCGL calculations that could cause subsurface soil contamination to become surface soil contamination or otherwise lead to exposure from releases of radioactivity into the environment.
- NRC staff performed independent modeling and calculations to risk-inform the review.

#### Future NRC staff actions include:

- Review of responses to requests for additional information.
- Additional modeling and calculations, as necessary, to supplement information gaps.