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## **MEMORANDUM**

**DATE:** February 14, 2001  
**TO:** Mal Murphy [malmurphy@home.com]  
**CC:** Danielle Fife [dfife@nrff.com]  
**RE:** **SATURATED ZONE FLOW & TRANSPORT AMR Reviews**  
**Input and Results of the Base-Case Saturated Zone Flow & Transport Model**  
**for TSPA**  
**ANL-NBS-HS-000030**

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This AMR describes the simplification via a 1-D radionuclide transport model for SZ transport.

Key items in this AMR include:

1. This is an extremely idealized and simplified model. It basically applies a 1-D transport model along each streamline. The flaw with that concept is that it does not capture the heterogeneity of the system, and that it ignores all flow of any kind between streamlines. Even so, if properly implemented, it could be acceptable.
2. It assumes random sources in one of four source regions (Section 5.2, p. 14, Assumption 5). Also, flow pathways in the SZ are assumed to be independent of climate states (Section 5.6, p. 16, Assumption 16); this should be verified by rerunning the underlying flow model with higher flow rates.
3. Changes in groundwater flow with climate are assumed to happen instantaneously (Section 5.6, p. 16, Assumption 15). As long as they are increasing flow, this is an acceptable assumption.

4. **It assumes all radionuclide mass crossing the 20 km fence is captured by hypothetical pumping wells (Section 5.3, p. 14, Assumption 6), but ignores pumping effects (Section 5.2, p. 14, Assumption 7).**
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