

RESOLVING ISSUES IN ISOTHERMAL HYDROLOGY AT YUCCA MOUNTAIN, NEVADA - A REGULATORY PERSPECTIVE

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ABSTRACT

The US Nuclear Regulatory Commission (NRC) staff has completed Revision 2 (1) of our Issue Resolution Status Report on isothermal hydrology for a proposed repository at Yucca Mountain. Staff-level resolution of issues can be achieved during prelicensing consultation when we have no further questions (i.e., open items) about how the Department of Energy's (DOE's) repository program is addressing an issue. That would not preclude those issues being raised during licensing. Subissues in isothermal hydrology include (1) climate change; (2) hydrologic effects of climate change; (3) present-day infiltration; (4) present and future deep percolation; (5) saturated zone and dilution; and (6) matrix diffusion. Subissues 1-3 are resolved. To illustrate the resolution process, this paper first discusses a climate subissue that has been resolved. We then review paths to resolution for the unresolved saturated zone subissue, focusing on lateral flowpaths. It is possible to reasonably bound lateral flow and transport paths in the saturated zone with currently available data. Nye County wells drilled south and southeast of Yucca Mountain reveal a thick valley-fill aquifer. The presence of this aquifer along flowpaths from Yucca Mountain is favorable for repository performance because it is expected to have high porosities and abundant clay minerals. These properties would retard the migration of contaminants that may be released over thousands of years. However, hydraulic and chemical properties are still not well known for the valley fill. We have identified several continuing data needs for DOE's consideration. We will complete Revision 3 of our status report in 2000 to review further progress in resolving subissues. DOE is responsible for collecting the data needed to address our technical issues, and for establishing its quality. Some of the needed data might be collected under a performance confirmation program.