

**NOV 27 1991**

**MEMORANDUM FOR:** David Brooks, Acting Director  
Repository Licensing and Quality Assurance  
Project Directorate  
Division of High-Level Waste Management

**FROM:** Margaret Federline, Branch Chief  
Hydrology and Systems Performance Branch  
Division of High-Level Waste Management

**SUBJECT:** PHASE I REVIEW OF STUDY PLAN 8.3.1.9.2.2, Rev. 0:  
WATER RESOURCE ASSESSMENT OF YUCCA MOUNTAIN, NEVADA

As requested, we have completed the Phase I review of the Study Plan for Water Resource Assessment of Yucca Mountain, Nevada (see enclosure). This review was conducted using the Review Plan for NRC Staff Review of DOE Study Plans Revision 1 (December 6, 1990). As discussed below, we have no objection-level concerns and do not find the study to be a candidate for detailed technical review.

The results of this study and other studies under Investigation 8.3.1.9.2 (present and future value of natural resources proximal to the site) will be used to predict the effects of exploration and exploitation of resources on hydrologic, geochemical, and rock characteristics at the Yucca Mountain site. The stated objectives of this study are (1) to assess the current and projected supply and demand situation for ground-water in the study area, and (2) estimate the value of the groundwater resource. An evaluation of present and future water resources and their values is needed to assess the potential for human intrusion of the repository. The study includes one activity, "Projected Trends in Local and Regional Ground-Water Development and Estimated Withdrawal Rates in Southern Nevada, Proximal to Yucca Mountain."

Work under this study plan does not include any field tests and thus will have no physical impacts on the Yucca Mountain site or other site characterization activities. Accordingly, the work does not include activities that could cause significant and irreparable adverse effects on the site, site characterization program, or the eventual usability of the data for licensing (programmatic fatal flaws). This study plan is not a candidate for a detailed technical review because it does not meet any of the criteria described in step 6 of part 4.2 of the Review Plan. It is only indirectly related to key site issues and NRC open items.

Although this study is not a candidate for a detailed technical review, the following concern should be brought to the attention of the DOE. On page 1-1 of the plan, it is stated that groundwater is the only resource expected to have the potential for future inadvertent human intrusion. This statement is premature given the fact that Yucca Mountain occurs in a mineral-rich geologic setting. This geologic setting includes current gold production and exploration for hydrocarbons. Gold has been mined in the site vicinity (at

102.8  
MAX

Bare Mountain to the west and at Wahmonie to the east) for over a century. Recent oil exploration has occurred within 25 km of the proposed site. Based on the historical record, it is likely that exploration for natural resources in the site vicinity will continue into the future. The potential for these resources to occur at the site will be addressed as part of site characterization under Investigation 8.3.1.9.2. Mineral and energy resources (including hydrocarbon and geothermal resources) will be evaluated under study 8.3.1.9.2.1 (natural resource assessment).

The review was conducted by Neil Coleman of the Hydrologic Transport Section, who can be reached on ext. 20530.

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Margaret Federline, Branch Chief  
Hydrology and Systems Performance  
Branch  
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Enclosures:  
As stated

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