

APR 2 1993

MEMORANDUM FOR: Joseph Holonich, Director
Repository Licensing and Quality Assurance
Project Directorate
Division of High-Level Waste Management

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

SUBJECT: PHASE I REVIEW OF STUDY PLAN 8.3.1.5.2.1, REVISION 2
"CHARACTERIZATION OF THE YUCCA MOUNTAIN QUATERNARY
REGIONAL HYDROLOGY" [PPSAS 411421, TACS L60288]

As requested, we have completed the Phase I review of the Study Plan 8.3.1.5.2.1, Revision 2 for Characterization of the Yucca Mountain Quaternary Regional Hydrology (See enclosure). This review was conducted using the Review Plan for NRC Staff Review of DOE Study Plans, Revision 1 (Dec. 6, 1990). No objection-level concerns have been identified.

This study plan describes the methods to characterize the Quaternary hydrology of the Yucca Mountain region as part of the Climate Program. The study plan is divided into four activities, which are:

- o 8.3.1.5.2.1.1 - Regional paleoflood evaluation,
- o 8.3.1.5.2.1.3 - Evaluation of past discharge areas,
- o 8.3.1.5.2.1.4 - Analog-recharge studies, and
- o 8.3.1.5.2.1.5 - Studies of calcite and opaline-silica vein deposits.

This revision of the study plan now contains the activity on regional paleoflood evaluation. Previous versions of the study plan have received various reviews by the NRC staff. Revision 0 had an Acceptance and Start Work Review and a Detailed Technical Review. Revision 1 received only a Phase 1 Review, because no new technical information was added to the initial study plan.

The initial version of the study plan had only the last three activities from the list above. The study plan was also to include an activity on Quaternary Unsaturated-Zone Hydrochemical Analysis. However, that activity has been deleted from this study and instead is included in the Study Plan 8.3.1.2.2.7, Unsaturated-zone Hydrochemistry.

The only new technical information in Revision 2 is contained in the activity on Regional Paleoflood Evaluation. Attachment 1 contains the Acceptance Review, the Start Work Review, the Detailed Technical Review, the DOE Responses to the Detailed Technical Review, and the NRC Evaluation of DOE's Responses to the Detailed Technical Review of Revision 0 of the study plan and the Phase 1 Review of Revision 1 of the study plan.

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The Phase I review of Revision 2 of the study plan (Attachment 2) includes consideration of (A) DOE/NRC agreements on the content of study plans, (B) Identification of objections, (C) Closure of NRC open items, and (D) The Need for a Detailed Review (As called for in Review Plan for Staff Review of DOE Study Plans, Revision I, 12/6/90).

We continue to be concerned about the lack of explicit discussion of an overall program of iterative performance assessment or a discussion of the timing of this study relative to such a program. This type of program leads to the identification of information and analyses needed to support a license application.

The DOE did not propose that the material in the study plan could be used to close any NRC open items. However, in the current review, the NRC technical staff has determined that one of the open items generated by the detailed technical review of Revision 0 of this study plan, is now considered resolved (Attachment 3).

The study plan is a candidate for detailed technical review based on criterion 5. However, since an earlier version of this study plan has had a detailed review and the additional activity in the current version will include conventional characterization techniques, a detailed technical review is not required at this time. The review was conducted by John Bradbury of the Hydrologic Transport Section.

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Enclosure: *MVF*
As stated

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