

NUCLEAR WASTE CONSULTANTS INC.

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September 1, 1987

009/1.3/WWL.009
RS-NMS-85-009
Communication No. 194

U.S. Nuclear Regulatory Commission
Division of Waste Management
Geotechnical Branch
MS-623-SS
Washington, DC 20555

Attention: Mr. Jeff Pohle, Project Officer
Technical Assistance in Hydrogeology - Project B (RS-NMS-85-009)

Re: Document Review of "Modification of Rock Mass Permeability in the Zone Surrounding a Shaft in Fractured, Welded Tuff", by J.B. Case and P.C. Kelsall, Document SAND86-7001

Dear Mr. Pohle:

This cover letter transmits to the NRC staff Water, Waste and Land's review of "Modification of Rock Mass Permeability in the Zone Surrounding a Shaft in Fractured, Welded Tuff", by J.B. Case and P.C. Kelsall, Document SAND86-7001. The review was performed by D. McWhorter, L. Davis and T. Sniff of Water, Waste and Land and A. Brown of NWC. The document review has received a management and technical review by Mark Logsdon of NWC. The document review was prepared under Subtask 1.3 of the current contract.

The principal conclusions of the review are:

- o The proposed model for permeability as a function of distance from the shaft wall is reasonable, but is based almost entirely on theoretical concepts and should be considered as an untested, theoretical model. The model is considered by the reviewers to be adequate to predict that permeability increases are expected to be significant and may require corrective actions such as grouting.

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WM Project: WM-10, 11, 16

PDR w/encl

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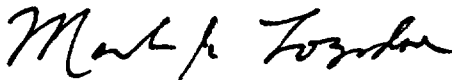
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- o Because the conceptual design of the repository is for location in the unsaturated zone, it is unlikely that shaft sinking would have significant effect on normal groundwater flow, which is considered to occur predominantly in the matrix of the rock. However, zones of modified permeability may require separate evaluation with respect to flooding from surface waters. Furthermore, it is possible that vapor transport may be enhanced in such zones, and to the extent that performance evaluations consider that vapor transport of radionuclides or heat may be important, additional evaluations of the validity of the rock mass permeability model also may be required.

If you have any questions concerning this letter or the attached document review, please contact me immediately.

Respectfully submitted,
NUCLEAR WASTE CONSULTANTS, INC.



Mark J. Logsdon, Project Manager

Att: Document Review of "Modification of Rock Mass Permeability in the Zone Surrounding a Shaft in Fractured, Welded Tuff", by J.B. Case and P.C. Kelsall, Document SAND86-7001

cc: US NRC - Director, NMSS (ATTN: PSB)
HLWM (ATTN: Division Director) - 2
Mary Little, Contract Administrator
HLWM/TRB (ATTN: Branch Chief)
D. Chery, HLWM/TRB
B. Ford, HLWM

bc: M. Galloway, TTI
J. Minfer, OBS
L. Davis, WWL

Nuclear Waste Consultants, Inc.



Water, Waste & Land, Inc.
CONSULTING ENGINEERS & SCIENTISTS

SEP 01 1987

August 31, 1987

Nuclear Waste Consultants
ATTN: Mark Logsdon
8341 South Sangre de Cristo Road, Suite 14
Littleton, CO 80127

Dear Mark:

Enclosed is our document review for SAND86-7001, "Modification of Rock Mass Permeability in the Zone Surrounding a Shaft in Fractured, Welded Tuff." The document was reviewed by Adrian Brown of Nuclear Waste Consultants as well as David McWhorter, Tom Sniff, and myself of Water, Waste and Land.

After your review of the report, please forward it to Jeff Pohle of the NRC.

Sincerely,

WATER, WASTE AND LAND, INC.

Lyle A. Davis

Lyle A. Davis
Project Manager

Encl