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July 15, 1986

009/3.3/REV.004
RS-NMS-85-009
Communication No. 75

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: **Comments on Salt Final Environmental Assessment**

Dear Mr. Pohle:

Please find attached review comments on the Deaf Smith County Final Environmental Assessment from Daniel B. Stephens and Associates (DBS). The review was performed under Subtask 3.3 of the current contract.

The review addresses each of the detailed and general comments of the NRC. The reviewers finds that, in general, the Final EA has addressed the NRC comment or concern. Exceptions are noted in the text of the DBS review. The review refers to DBS' earlier document review on the DOE Travel Path and Travel Time analyses for more detail on limitations that they consider to exist in the DOE methodology for evaluating pre-emplacement groundwater travel time.

If you have any questions about this review, please do not hesitate to contact me or Dr. Stephens.

Respectfully submitted,
NUCLEAR WASTE CONSULTANTS

Mark J. Logsdon

Mark J. Logsdon, Project Manager

cc: US NRC - Director, NMSS (ATTN PSB)
DWM (ATTN Division Director)
Mary Little, Contract Administrator
WMGT (ATTN Branch Chief)

bc: R, Knowlton, DBS

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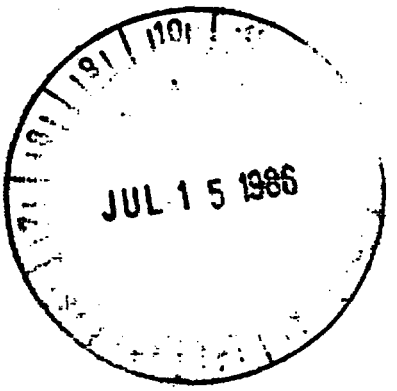
DANIEL B. STEPHENS & ASSOCIATES, INC.
CONSULTANTS IN GROUND-WATER HYDROLOGY

• GROUND-WATER CONTAMINATION • UNSATURATED ZONE INVESTIGATIONS • WATER SUPPLY DEVELOPMENT •

July 11, 1986



Mr. Mark Logsdon
Nuclear Waste Consultants, Inc.
8341 S. Sangre de Cristo Rd.
Littleton, CO 80127

Dear Mark,

As part of our review work on documents related to the Deaf Smith Site in the Palo Duro Basin under NRC contract RS-NMS-85-009, we have taken the liberty of comparing the Draft and Final versions of the DOE's Environmental Assessment (EA) of this site. The enclosed Attachment lists our remarks with regard to the NRC's formal comments on the Draft EA.

It is our understanding that the NRC may issue a formal statement with regard to the Final EA. If this is the case, then our comments may be useful to the NRC SALT staff. Please forward this correspondence to Jeff Pohle at the NRC.

If you have any questions regarding this material, please do not hesitate to call.

Yours truly,

Robert G. Knowlton, Jr.
Project Manager

RGKjr/mt

enclosure

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ATTACHMENT 1

The Extent To Which EA Addresses NRC's Comments on Draft EA

pg. 1. Major Comment 1

The EA does include information on lineaments and fractures which is included in the analysis of ground water travel path and travel time.

pg. 4-5 Major Comment 3

Uncertainty in grcundwater travel path and travel time has been addressed in the EA, and this appears to answer the concerns raised by the NRC. Our earlier comments on the report on Travel Path and Travel Time should be considered in making a response to the usefulness of this approach.

p. 16 Detailed Comment 3-30

The NRC comment has not been addressd - i.e. the hydrostratigraphic system is still presented in a simplistic three-layer sequence. It is premature to make this simplification, inlight of the numerous geologic data and numerical models which point out the complexity of the system.

The section in chapter 6 on travel path does, however, add additonal layers to the system. Nevertheless one cannot conclude that any one of the flow paths derived from the analysis is representative of a conceptual model of the system, owing to the inability of the approach to conserve mass.

p. 16-17 Detailed Comment 3-31

Horner plots are discussed briefly in the EA and mean values of permeability are reported. Details are not provided on how permeabilities were determined from the DST data. This NRC comment is only partially addressed.

p. 17 Detailed Comment 3-32

Additional discussion on permeability data in HSUB is provided and mean values are greater than those reported in the Draft EA.

p. 18 Detailed Comment 3-33

Head data in HSUB are not reported, as requested by NRC. The EA states that because there is an aquifer above HSUB and one below it, that HSUB is saturated. This is not necessarily true. It is possible that zones within HSUB may be unsaturated, depending upon the contrast in permeabilitis and capillary properties of the rocks.

p. 18-19 Detailed Comment 3-35

Transient potentiometric data in the Wolfcamp and Pennsylvanian have been included in the EA, along with maps derived from culled data.

p. 19 Detailed Comment 3-36

Discontinuities of formations within HSUC are described and this concern appears to be adequately addressed.

p. 20 Detailed Comment 3-37

Effective porosities in HSUB and C are still derived from lab cores, however values from neutron logging in HSUC are also reported. There are no insitu tests to obtain effective porosity. (The parameter may be expected to be obtained in the Site Characterization Phase).

p. 20 Detailed Comment 3-38

The EA points out the contradiction between the conceptual model flow paths which suggest little flux through HSUB to HSUC and geochemical data which indicate that in places there appears to be significant leakage across HSUB. No consistent conceptual model for flow is clearly presented in the EA that combines the hydrogeologic and hydrochemical evidence.

p. 20-21 Detailed Comment 3-39

Numerous references are provided in the EA on the sources of data used to complile statistics on permeability. There is no direct discussion in the EA on how data were obtained from DST plots which were used to construct the probability diagrams, therefore the validity of the plot cannot be evaluated and the NRC comment has not been adequately addressed.

p. 21 Detailed Comment 3-40

Calculations of groundwater flow velocity in the Ogallala have been omitted in the EA.

p. 21 Detailed Comment 3-41

The EA states that DST's were run on G. Friemel and Detton No. 1 wells in order to obtain permeability data. This NRC comment appears to be adequately addressed.

p. 21 Detailed Comment 3-42

This concern on the porosity of HSUB is addressed in Chapter 6 on the travel path/travel time calculation.

p. 22 Detailed Comment 3-43

A range of permeabilities has been utilized in the travel time analysis, as requested.

p. 23 Detailed Comment 3-44

The possibility for horizontal flow in interbeds of HSUB is considered in Chapter 6 of the EA.

p. 23 Detailed Comment 3-45

Potentials in the travel time analysis are based on environmental heads, as requested.

p. 23 Detailed Comment 3-46

The travel time analysis in HSUC has been made more conservative, in that ranges of porosity and permeability are used. However, only the Wolfcamp is considered in the travel time analysis of HSUC in Chapter 6.