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Hydrogeology • Mineral Resources Waste Management • Geological Engineering • Mine Hydrology

August 6, 1986
Contract No. NRC-02-85-008
Fin No. D-1020
Communication No. 72

Mr. Jeff Pohle
Division of Waste Management
Mail Stop 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Monthly Report--July 1986

Dear Jeff:

This document constitutes the tenth monthly (July 1-31, 1986) progress report as required by Contract No. NRC-02-85-008. Williams and Associates, Inc. reviewed several documents this month for the Basalt Waste Isolation Project, for the Nevada Test Site and for the Palo Duro Basin. These document reviews are in draft and final forms. Considerable effort has been placed on finalizing our papers on uncertainty and on predicting groundwater travel time. We are continuing our efforts on the required list of tasks outlined in the SOW. Details about our efforts on this contract are outlined based on Task and Subtask numbers.

TASK 1

The following work was conducted under Task 1.

Subtask 1.1

This subtask has been completed.

Subtask 1.2

Williams and Associates, Inc. reviewed the NRC comments on the Final Environmental Assessment (FEA) for Yucca Mountain. We have no changes to incorporate into the comments. The comments are technically defensible.

Williams and Associates, Inc. also reviewed the following three "mini reports" by Water, Waste & Land, Inc.: 1) Theoretical Description of Steady Downward Flow in Layered, Fractured Unsaturated Porous Media, 2) Travel Time Calculations Yucca Mountain, Nevada, and 3) Estimates of Cumulative Radioactive Flux at Yucca Mountain, Nevada.

Williams and Associates, Inc. completed written reviews of the following documents during the month of July:

1. Daniels, J.J., Scott, J.H., and Hagstrum, J.T., 1981, Interpretation of Geophysical Well-Log Measurements in Drill Holes UE25a-1, -5, -6, and -7, Yucca Mountain, Nevada Test Site: USGS Open-File Report 81-615, 29 p.

2. Hagstrum, J.T., Daniels, J.J., and Scott, J.H., 1980, Interpretation of Geophysical Well-Log Measurements in Drill Hole UE25a-1, Nevada Test Site, Radioactive Waste Program: USGS Open-File Report 80-941, 32 p.

3. Healey, D.L., Clutsom, F.G., and Glover, D.A., 1984, Borehole Gravity Meter Surveys in Drill Holes USW G-3, UE-25p#1, UE25c#1, Yucca Mountain Area, Nevada: USGS Open-File Report 84-672, 16 p.

4. Klavetter, E.A. and Peters, R.R., 1985, Fluid Flow in a Fractured Rock Mass. Nevada Nuclear Waste Storage Investigations Project Department, Sandia National Laboratories, Albuquerque, NM.

5. Ortiz, T.S. and others, 1985, A Three-Dimensional Model of Reference Thermal/Mechanical and Hydrological Stratigraphy at Yucca Mountain, Southern Nevada. Sandia National Laboratories, Albuquerque, NM, and Livermore, CA, SAND84-1076, 72 p.

6. Thompson, F.L., Dove, F.H., and Krupka, K.M., 1984, Preliminary Upper-Bound Consequence Analysis for a Waste Repository at Yucca Mountain, Nevada. Sandia National Laboratories, Albuquerque, NM, and Livermore, CA.

7. Walter, G.R., October 1982, Theoretical and Experimental Determination of Matrix Diffusion and Related Solute Transport Properties of Fractured Tuffs from the Nevada Test Site. Department of Hydrology and Water Resources, University of Arizona, Tucson, AZ, for Los Alamos National Laboratory, Los Alamos, NM, LA-9471-MS.

These reviews were forwarded under separate cover. Additional reports are being reviewed currently.

Subtask 1.3

Williams and Associates, Inc. forwarded a letter report of calculations performed on the flux through Yucca Mountain. These calculations suggest that it may not be possible to estimate flux rates to the nearest 0.5 mm at the present time due to the heterogeneity of the tuffs at Yucca Mountain. The calculations suggest also that the concept of capillary barriers is not needed to explain the low saturation levels in the Topopah Springs member as suggested by Montazer and Wilson (1984). Williams and Associates, Inc. is continuing to review the literature pertaining to potential conceptual models for NNWSI.

TASK 2

The following work was conducted under Task 2.

Subtask 2.1

This subtask has been completed.

Subtask 2.2

Williams and Associates, Inc. reviewed the comment prepared by the NRC on the Final Environmental Assessment (FEA) for BWIP. We suggested that one change be made in the comment; this change was conveyed to Mr. Coleman by phone. The comment is technically defensible. This review of the comment on the FEA completes our efforts on the FEA portion of this subtask.

No document reviews have been completed on the BWIP site this month.

Subtask 2.3

Williams and Associates, Inc. is continuing to review the literature pertaining to potential conceptual models for BWIP. We will continue to evaluate and update existing conceptual models as new data become available.

TASK 3

The following work was conducted under Task 3.

Subtask 3.1

This subtask has been completed.

Subtask 3.2

Williams and Associates, Inc. reviewed the comments prepared by the NRC on the Final Environmental Assessments (FEA's) for the SALT sites (Palo Duro Basin, Paradox Basin, and Richton Dome). Suggested changes to the comments were conveyed to Mr. Ross by phone. The comments are technically defensible. This review of the comments on the FEA's completes our efforts on the FEA portion of this subtask.

Written reviews for two documents were forwarded to the NRC. Written reviews were submitted for the following documents:

1. Wirojanagud, P., Kreitler, C.W., and Smith, D.A., 1985, Numerical Modeling of Regional Ground-Water Flow in the Deep-Basin Aquifers of the Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, Open-File Report, OF-WTWI-1984-8, Revision 1, 37 p.

2. Senger, R.K. and Richter, B.C., 1983, Identification of Recharge-Discharge Areas of the Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, Open-File Report, OF-WTWI-1983-4.

3. Wilton, D.E., and Picking, L.W., July 1985, Analysis of Pumping Test Data, Sawyer No. 1 and Mansfield No. 1 Wells. Prepared by Stone and Webster Engineering Corporation for Battelle Memorial Institute, Interim Topical Report ONWI/SUB/85/E512-05000-T39, 119 p.

Williams and Associates, Inc. are completing the reviews of additional documents. Reviews of these documents will be forwarded under separate cover when completed.

Subtask 3.3

Williams and Associates, Inc. completed the initial requirement under this subtask with the submission of our conceptual model letter report. Williams and Associates, Inc. is continuing to review the literature pertaining to potential conceptual models for the Palo Duro Basin. We will continue to evaluate and update existing conceptual models as new data become available.

TASK 4

This task has not been initiated. We are accumulating relevant documents during the course of our other activities under Tasks 1, 2, and 3.

TASK 5

Williams and Associates, Inc. are preparing two papers for the NRC. The first paper defines "uncertainty" with respect to hydrogeologic considerations and prediction of groundwater travel times. The second paper presents our views on the relationship of scale, hydrogeologic parameter quantification, and prediction of groundwater travel time. We anticipated completing these two papers in July. However, we are continuing to revise these two papers. These two papers will be forwarded to the NRC this month (August).

Contractural Problems

No contractual problems have arisen.

Current Expenditures

A breakdown of individual hours and charges is shown on the attached table. Cumulative costs and projected costs are shown on the second table. The attached figure illustrates projected and current cumulative costs.

Sincerely,

Roy Williams

Roy E. Williams

INDIVIDUAL HOURS AND CHARGES

	This Month (hours)	Cumulative (hours)	Cumulative (amount)
Roy Williams	56	680	$ 34,000
Gerry Winter	173.3	1,733	32,929.1
Jeff Brown	0	358	12,530
Jim Osiensky	116	1,160	20,996
Dale Ralston	0	163	7,172
Kirk Steinhorst	12	26.25	971.25
Terry Eckwright	0	109	1,641
John Sharp	0.5	73	2,920
Charles Smith	-	-	-
George Bloomsburg	9	277	11,080
Terry Howard	-	-	-
Stanley Miller	14	181	6,335
Noel Krothe	0	7.6	380
Richard Parizek	0	25.5	1,275
Barbara Williams	0	88.5	1,681.5

CURRENT AND CUMULATIVE PROJECT COSTS

Task	Current Month	Cumulative to Date* FY 86	Cumulative to Date* FY 87	Total to Date*
1	$ 5,910	$ 78,592	$-----	$ 78,592
2	1,970	65,051	-----	65,051
3	5,014	76,775	-----	76,775
4	-----	-----	-----	-----
5	5,014	47,101	-----	47,101
Total	17,908			

Percentage billed to total funds allocated = 66%.