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

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September 5, 1986
Contract No. NRC-02-85-008
Fin No. D-1020
Communication No. 79

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

RE: Monthly Report--August 1986

Dear Jeff:

This document constitutes the eleventh monthly (August 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 Nevada Test Site and for the Palo Duro Basin. These document reviews are in draft and final forms. We completed our first drafts of the 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.

Williams and Associates, Inc. compiled a detailed letter report on the work completed on this contract as of August 28, 1986. The letter report outlines the meetings we have attended, documents we have completed or are continuing to work on, and additional work we have conducted for the NRC.

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WM Record File
D1020
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WM Project 10, 11, 16
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Distribution:

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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. completed written review of the following documents during the month of August:

1. Carlos, B.A., 1985, Minerals in Fractures of the Unsaturated Zone from Drill Core USW G-4, Yucca Mountain, Nye County, Nevada. Los Alamos National Laboratory, Los Alamos, NM, 55 P.
2. Czarnecki, J.B., 1984, Simulated Effects of Increased Recharge on the Groundwater Flow System of Yucca Mountain and Vicinity, Nevada-California. U.S. Geological Survey prepared in Cooperation with the U.S. Department of Energy, Water Resources Investigations 84-4344.
3. Czarnecki, J., and Waddell, R.K., 1984, Finite Element Simulation of Ground Water Flow in the Vicinity of Yucca Mountain, Nevada-California. U.S. Geological Survey, Water-Resources Investigations Report 84-4349.
4. Johnstone, J.K., Peters, R.R., and Gnirk, P.F., 1984, Unit Evaluation at Yucca Mountain, Nevada Test Site: Summary Report and Recommendation. Sandia National Laboratories, Albuquerque, NM, and Livermore, CA, SAND83-0372.
5. Johnstone, J.K., and Wolfsberg, K., Editors, 1980, Evaluation of Tuff as a Medium for a Nuclear Waste Repository: Interim Status Report on the Properties of Tuff. Sandia National Laboratory, SAND80-1464.

In addition, Williams and Associates, Inc. revisited the following document:

1. Johnson, R.L., October 1982, Thermal Analyses for a Nuclear Waste Repository in Tuff Using USW-G1 Borehole Data. Sandia National Laboratories, Albuquerque, NM, SAND82-0170.

Subtask 1.3

Williams and Associates, Inc. completed a letter report containing a semi-annual update of conceptual models for NNWSI as required by the SOW for Contract No. NRC-02-85-008. This letter report was forwarded as Communication No. 76.

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. began a two-dimensional cross-sectional model study of the hydraulic gradients indicated by the cluster piezometer sites (DC-19, -20, and -22). The finite element program UNSAT2 is being used in conjunction with a preprocessor (MBUILD) and a post processor (FEDIT). The purpose of this effort is to investigate the relationship of vertical hydraulic conductivity to horizontal hydraulic conductivity.

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

Written reviews for the following documents were forwarded to the NRC:

1. Bair, E.S., June 1985, Hydrodynamic Investigations in the Texas Panhandle Area. Report prepared by Stone and Webster Engineering Corp. for Battelle Memorial Institute, Topical Report, ONWI/SUB/85/E512-05000-T42, 68 p.
2. Conti, R.D., Senger, R.K., Wiroganagud, P., and Herron, M.J., 1984, Wolfcampian Series Porosity Distribution: Implications for Deep-Basin Ground-Water Flow in the Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, Austin, TX (Revision 1), OF-WTWI-1984-33.
3. Senger, R.K., Fogg, G.E., and Kreidler, C.W., 1985, Effects of Hydrostratigraphy and Basin Development on Hydrodynamics of the Palo Duro Basin, Texas. Texas Bureau of Economic Geology, Austin, TX, OF-WTWI-1985-37.

Williams and Associates, Inc. is 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. completed the final drafts of 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 decided to revise these two papers prior to forwarding them to the NRC.

Contractual 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 E. Williams

Roy E. Williams

INDIVIDUAL HOURS AND CHARGES

	This Month (hours)	Cumulative (hours)	Cumulative (amount)
Roy Williams	48	728	\$ 36,400
Gerry Winter	173.3	1,906.3	36,221.80
Jeff Brown	0	358	12,530
Jim Osiensky	116	1,276	23,200
Dale Ralston	1	164	7,216
Kirk Steinhorst	2	28.25	1,045.25
Terry Eckwright	0	109	1,641
John Sharp	0.5	73	2,920
Charles Smith	-	-	-
George Bloomsburg	5	282	11,280
Terry Howard	-	-	-
Stanley Miller	3	184	6,440
Noel Krothe	0	7.6	380
Richard Parizek	0	25.5	1,275
Barbara Williams	9	97.5	1,852.50
John Riley	8.5	8.5	136.00

CURRENT AND CUMULATIVE PROJECT COSTS

Task	Current Month	Cumulative to Date*		Total to Date*
		FY 86	FY 87	
1	\$ 6,205	\$ 84,797	\$-----	\$ 84,797
2	4,050	69,101	-----	69,101
3	5,795	82,570	-----	82,570
4	-----	-----	-----	-----
5	2,072	49,173	-----	49,173
Total	18,122			

Percentage billed to total funds allocated = 71%.

Williams and Associates, Inc.
Viola, Idaho 83872
Contract No. NRC-02-85-008

