

# WILLIAMS & ASSOCIATES, INC.

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

'86 APR 14 P3:13

April 2, 1986  
Contract No. NRC-02-85-008  
Fin No. D-1020  
Communication No. 43

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

RE: Monthly Report--March 1986

Dear Jeff:

This document constitutes the sixth monthly (March 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, the BWIP site, and for the Palo Duro Basin. These document reviews are in draft and final forms. 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.

WM-RES  
WM Record File  
D1020  
WFA

WM Project 10, 11, 16  
Docket No. \_\_\_\_\_  
PDR ✓  
LPDR B, N, S

Distribution:

Pohle

Loan-Ticket

(Return to WM, 623-SS)

8605080018 860402  
PDR WMRES EECWILA  
D-1020 PDR

2970

## TASK 1

The following work was conducted under Task 1.

### Subtask 1.1

This subtask has been completed.

### Subtask 1.2

A written review was submitted for the following document:

1. Claassen, H.C., 1983, Sources and Mechanisms of Recharge for Groundwater in the West-Central Amargosa Desert, Nevada--A Geochemical Interpretation. USGS Open-file Report 83542, Denver, 61 p.

Williams and Associates, Inc. reviewed eight documents during the month of March. Written summaries of these documents currently are being edited. These summaries will be forwarded under separate covers.

### Subtask 1.3

Final editing of our letter report pertaining to evaluation of conceptual models for NNWSI was completed during March, 1986. This letter has been forwarded to the NRC. We are continuing our evaluation of conceptual models in accordance with the SOW.

## TASK 2

The following work was conducted under Task 2.

### Subtask 2.1

This subtask has been completed.

### Subtask 2.2

We reviewed the available head data; There were two errors and an omission on the tables forwarded with this communication (#29). We have revised these tables; new tables were forwarded as Communication #42.

We completed our review of "Piezometer Completion Report for Borehole Cluster Sites DC-19, DC-20 and DC-22" by Jackson and others (RHO-BWI-TI-226, 1984). Our review was forwarded as Communication #38. A copy of Jackson and Veatch (Design and Installation of Deep Multilevel Piezometer Nests in Columbia River Basalts at the Hanford Site, Washington, 1985, RHO-BW-SA-428 P) was forwarded to us. This copy was lost in the mail; we recently received a copy of this report.

### Subtask 2.3

Williams and Associates, Inc. is completing our letter report on conceptual models. We have reviewed the existing concepts regarding groundwater flow at the BWIP site; these concepts are being evaluated based upon the water level data collected in the multi-piezometer clusters (DC-19, DC-20, and DC-22). Our concepts of ground water flow have been revised based on the additional water level data presented during the DOE/NRC consultation meeting held December 1985. The water level perturbations created by pulling the bridge plugs at borehole RRL-14 and by drilling borehole DC-23W provide additional insight into the conceptual model(s) of groundwater flow.

### TASK 3

The following work was conducted under Task 3.

#### Subtask 3.1

This subtask has been completed.

#### Subtask 3.2

Several documents were reviewed and written reviews were forwarded to the NRC. In addition review work has begun on several more documents which should be finished within the next month. Written reviews were submitted for the following:

1. Bair, E.S., O'Donnell, T.P., and Picking, L.W. 1985. Hydrogeologic Investigations Based on Drill-Stem Test Data: Palo Duro Basin Area, Texas and New Mexico. Office of Nuclear Waste Isolation, Technical Report, BMI/ONWI-566.
2. Conti, R.D., Herron, M.J., Senger, R.K., and Wirojanagud, P. 1985. Stratigraphy and Influence of Porosity on Ground-Water Flow in the Wolfcamp Brine Aquifer, Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, Austin, Texas, OF-WTWI-1985-19.
3. Senger, Rainer K., 1985, Investigation of the Possible Effect of Fracture Zones on Ground-Water Flow in the Palo Duro Basin, West Texas: Texas Bureau of Economic Geology, Austin, Texas, OF-WTWI-1985-36.
4. Senger, R.F. and Fogg, G.E. 1984. Modeling of the Effects of Regional Hydrostratigraphy and Topography on Ground-Water Flow, Palo Duro Basin, Texas. Texas Bureau of Economic Geology, Austin, Texas, OF-WTWI-1984-32.

Communication #33 discussed the conflict created by inconsistencies between documents, specifically the documents listed below.

1. Bair, E.S., O'Donnell, T.P., and Picking, L.W. 1985. Hydrogeologic Investigations Based on Drill-Stem Test Data: Palo Duro Basin Area, Texas and New Mexico. Office of Nuclear Waste Isolation, Technical Report, BMI/ONWI-566.

2. Conti, R.D. and Senger, R.K., 1985, Hydrostratigraphy of the Wolfcamp Aquifer, Palo Duro Basin, Texas Panhandle: Texas Bureau of Economic Geology, Austin, TX, OF-WTWI-1985-38.
3. Senger, R.F. and Fogg, G.E. 1984. Modeling of the Effects of Regional Hydrostratigraphy and Topography on Ground-Water Flow, Palo Duro Basin, Texas. Texas Bureau of Economic Geology, Austin, Texas, OF-WTWI-1984-32.
4. Orr, E.D. and Senger, R.K., 1984, Vertical Hydraulic Conductivity, Flux and Flow in the Deep-Basin Brine Aquifer, Palo Duro Basin, Texas. Texas Bureau of Economic Geology, Austin, Texas, OF-WTWI-1984-44, 19 p.
5. Senger, Rainer K., 1984, Hydrodynamic Development of the Palo Duro Basin and Other Mechanisms Creating Possible Transient Flow Conditions. Texas Bureau of Economic Geology,, Austin, Texas, OF-WTWI-1984-54.
6. Kaiser, W.R., 1985, Cross-Formational Flow in the Palo Duro Basin, Texas Panhandle. Texas Bureau of Economic Geology, Austin, Texas, OF-WTWI-1985-33.

This is a problem that we will have to remain alert to.

### Subtask 3.3

We are evaluating the conceptual models we developed under contract NRC-02-83-033. We are considering the implications of those documents we have reviewed that reflect on the conceptual models of groundwater flow in the Palo Duro Basin. It is our understanding that we will not evaluate conceptual models for the Paradox Basin or the salt dome sites at this time. We have seen very little new information on the Paradox Basin or the salt dome sites that warrants altering our views (Contract NRC-02-83-033) on the conceptual models for these sites. We believe that our views on these sites are still valid.

TASK 4

(not initiated)

TASK 5

Dr. Williams attended the Waste Management Conference held in Tucson, Arizona; the topic of the conference was radioactive waste disposal. A trip report was not required. Dr. Williams reviewed the paper presented by Dr. Codell at this conference. Dr. Williams' comments on the paper have been forwarded to Dr. Codell.

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 pl*

Roy E. Williams



# INDIVIDUAL HOURS AND CHARGES

	This Month (hours)	Cumulative (hours)	Cumulative (amount)
Roy Williams	72	384	\$ 19,200
Gerry Winter	173.3	1,039.8	19,758.3
Jeff Brown	28	234.5	8,207.5
Jim Osiensky	116	696	13,224
Dale Ralston	7	84	3,696
Kirk Steinhorst	-	-	-
Terry Eckwright	21	81	1,221
Jack Sharp	2	8	320
Charles Smith	-	-	-
George Bloomsburg	35	119	4,760
Terry Howard	-	-	-
Stanley Miller	34	77	2,695
Noel Krothe	7.6	7.6	380

# CURRENT AND CUMULATIVE PROJECT COSTS

Task	Current Month	Cumulative to Date* FY 86	Cumulative to Date* FY 87	Total to Date*
1	\$ 7,857	\$ 42,509	\$-----	\$ 42,509
2	7,857	44,363	-----	44,363
3	8,364	40,771	-----	40,771
4	-----	-----	-----	-----
5	1,267	13,424	-----	13,424
Total	25,345			

Percentage billed to total funds allocated = 35 %.

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

Cost in Dollars x 100

800  
700  
600  
500  
400  
300  
200  
100  
0

Projected Costs  
Actual Costs

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep  
1985 1986