

# WILLIAMS & ASSOCIATES, INC.

P.O. Box 48, Viola, Idaho 83872

(208) 883-0153 (208) 875-0147

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

WM-RES  
WM Record File  
B7389  
WGA

WM Project 16  
Docket No.  
PDR  
LPDR 5

Distribution:  
Fross  
NSM

Joan - ticket

(Return to WM, 623-SS)

SOC

September 9, 1985  
Contract NRC-02-83-033  
FIN #B-7389-3  
Communication #60

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

Re: Twenty-first Monthly Progress Report

Dear Fred:

This document constitutes the twenty-first monthly (August 1-31, 1985) progress report as required by contract No. NRC-02-83-033.

## Task 1, Subtask 1.1

Documents which we have obtained are noted in the attached reference list. The documents received this month are listed by category (Palo Duro, Paradox, and Salt Domes plus a Generic category for non-site specific reports). We are continuing to order copies of all ONWI documents either published or to be published which we feel will have some bearing on our efforts. We are obtaining copies of non-ONWI reports and articles which may have a bearing on our efforts.

Dr. Williams, Dr. Sharp, and Mr. Winter attended an NRC, DOE, and Texas Bureau of Economic Geology meeting held in Austin, Texas, from August 5-8, 1985. Numerous presentations were made during this meeting. Core from test wells was examined during this meeting. The trip report for Williams & Assoc., Inc. was forwarded to the NRC as Communication #58. We completed reviewing the package of reports forwarded to us for this meeting. These reports were released by the Texas Bureau of Economic Geology; the references were noted in our last monthly report.

## Task 1, Subtask 1.2, 1.3, and 1.4

These subtasks have been completed.

8509300156 850909  
PDR WMRES EECWILA  
B-7389 PDR

1985 09 08 68

WM DOCKET CONTROL

2414

#### Task 2, Subtask 2.1

A reference list is attached for those documents received this month pertaining to the Paradox Basin. See Subtask 1.1 for details concerning our parallel effort on this subtask.

#### Task 2, Subtask 2.2, 2.3, and 2.4

These subtasks have been completed.

#### Task 3, Subtask 3.1

A reference list is attached for those documents received this month pertaining to salt domes. See Subtask 1.1 for details concerning our parallel effort on this subtask.

#### Task 3, Subtask 3.2, 3.3, and 3.4

These subtasks have been completed.

#### Task 4

This task is inactive at this time.

#### Task 5

The Draft Environmental Assessments (EA) for Deaf Smith County, Swisher County, Lavender Canyon, Cypress Creek Dome, Vacherie Dome, and Richton Dome have been reviewed previously. The final NRC comments on the draft EA's have been received; we have reviewed these comments per instructions received from the project officer. We have reviewed the EA comments prepared by the U. S. Department of Interior and the state of Utah. The final EA's have not been released.

#### Future Activities

Williams and Associates will continue their efforts to obtain all relevant documents pertaining to the salt repository sites. We are continuing to review all the reports received from ONWI pertaining to salt sites. In addition, we will review the documents we obtain through our own initiative. These documents deal with the sites and subjects pertinent to the hydrogeologic analysis of data. We will continue our review of those documents that precede the receipt of Site Characterization Plans (SCP).

We have received copies of several documents that Williams and Associates, Inc. will review. These documents contain information pertinent to the Salt repository sites. These

documents will be reviewed for our information only at this time.

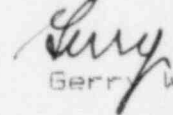
Contractural Problems

We have no contractural problems.

Current Expenditures

A breakdown of individual hours and charges plus travel expenses is shown on the attached Table 1. Cumulative charges and projected costs are shown on attached Figure 1.

Sincerely,

  
Gerry Winter

## NEW REFERENCES

### Palo Duro

- Bair, E. S. and O'Donnell, T. P. 1985. Hydrodynamics of Aquifers and Aquitards at Proposed High-Level Nuclear-Waste Repository Sites, Palo Duro Basin, Texas, USA. in Memoires, vol. XVII, part 2 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 596-611.
- Kreitler, C. W., Fisher, R. S., Senger, R. K., Hovorka, S. D., and Dutton, A. R. 1985. Hydrology of an Evaporite Aquitard: Permian Evaporite Strata, Palo Duro Basin, Texas. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 150-168.
- Picking, L. W. and Wilton, D. E. 1985. Testing the Hydraulic Characteristics of Low Permeability Carbonates, Palo Duro Basin, Texas. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 190-197.
- Smith, P. G., Page, G. W., and Downing, J. K. 1985. Regional Lithopermeability Determinations for the Permian Basin Area of Texas and New Mexico. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 177-189.

### Paradox

### Salt Domes

### Generic

- Black, J. H., Holmes, D. C., Alexander, J., and Brightman. 1985. The Role of Low-Permeability Rocks in Regional Flow Systems:-The Harwell Area Study. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 107-117.
- Chaturvedi, Lokesh. March 1984. Occurrence of Gases in the

Salado Formation. Environmental Evaluation Group, Environmental Improvement Division, Health and Environment Department, State of New Mexico, EEG-25, 67 p.

Clifton, P. M., Sagar, B., and Baca, R. G. 1985. Stochastic Groundwater Traveltime Modeling Using a Monte Carlo Technique. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 319-331.

Long, J. C. S., Endo, H. K., Karasaki, K., Pyrak, L., Maclean, P., and Witherspoon, P. A. 1985. Hydrologic Behavior of Fracture Networks. in Memoires, vol. XVII, part 2 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 449-462.

Marsily, G. de. 1985. Flow and Transport in Fractured Rocks: Connectivity and Scale Effect. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 267-277.

Moench, A. F. and Hsieh, P. A. 1985. Analysis of Slug Test Data in a Well with Finite Thickness Skin. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 17-29.

Neuman, S. P., Simpson, E. S., Hsieh, P. A., Jones, J. W., and Winter, C. L. 1985. Statistical Analysis of Hydraulic Test Data from Fractured Crystalline Rock near Oracle, Arizona. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 289-300.

Office of Nuclear Waste Isolation. 1985. Salt Repository Project Technical Progress Report for the Quarter 1 October-31 December, 1984. Prepared for U. S. Department of Energy, DOE/CH/10140-3(85-1), 101 p.

Ross, Benjamin. 1985. Theory of the Oscillating Slug Test in Deep Wells. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 44-51.

Sagar, B. and Clifton, P. M. 1985. Stochastic Groundwater Flow Modeling Using the Second-Order Method. in Memoires, vol. XVII, part 2 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 498-512.

Sterrett, R. J. and Nelson, R. A. 1985. Impact of Borehole Deformation on Hydrogeologic Testing in Salt. in Memoires, vol. XVII, part 1 proceedings, Hydrogeology of Rocks of Low Permeability, International Assoc. of Hydrogeologists, p. 169-176.