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# Center for Nuclear Waste Regulatory Analyses

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(210) 522-5160 • FAX (210) 522-5155

December 27, 1994  
Contract No. NRC-02-93-005  
Account No. 20-5704-001

U.S. Nuclear Regulatory Commission  
ATTN: Mrs. Barbara D. Meehan  
Division of Contracts & Property Management  
TWFN Mail Stop 7E-33  
Washington, D.C. 20555

Subject: Major Milestone No. 5704-001-095-005 (Overall Research Project, Evans Hydrology Workshop)

Dear Mrs. Meehan:

The subject milestone required that the bi-annual Evans Hydrology Workshop be planned and scheduled in early 1995. This workshop is generally arranged in concert with the University of Arizona, which is the case this time also. Prof. Randy Bassett is the primary coordinator.

The workshop is scheduled for January 31 to February 3, 1995 in Phoenix, Arizona. All arrangements for the workshop have been completed including invitations to participants and presenters (see attached).

Therefore, the requirements of the subject major milestone as defined in the Overall Research Project have been met. If you have any questions, please call me or Dr. English Percy at 210/522-5504.

Sincerely yours,

*Wesley C. Patrick*  
Wesley C. Patrick  
President

/bsc

cc:	J. Linehan	CNWR Directors
	S. Fortuna	CNWR Element Managers
	B. Stiltenspole*	E. Percy
	F. Costanzi	S. Rowe, SwRI
	B. Morris	
	W. Ott	
	J. Randall	

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# VANS WORKSHOP VI

## Flow and Transport through Unsaturated Fractured Rock

January 31 - February 3, 1995  
Phoenix, Arizona

Workshop  
Coordinators:

Randy Bassett  
UA - HWR

Shlomo Neuman  
UA - HWR

Peter Wierenga  
UA - SWS

Workshop  
Organizing  
Committee:

Ross Bagtzoglow  
CNWRA

Randy Bassett  
UA - HWR

William Ford  
NRC

Michael Lee  
NRC

Shlomo Neuman  
UA - HWR

Tom Nicholson  
NRC

English Percy  
CNWRA

Budhi Sagar  
CNWRA

Peter Wierenga  
UA - SWS

October 14, 1994

Dr. Budhi Sagar  
CNWRA  
6220 Culebra Road  
Drawer 28510  
San Antonio, TX 78284

Dear Budhi:

The attached letter will be sent to all individuals who are being invited to the workshop. Enclosed is also the schedule that identifies the speakers who have already been notified. Beyond the speakers, would you let me know who else should be invited from the CNWRA and we will send them a letter and registration information.

Thank you,



Randy Bassett  
For the Workshop Coordinators  
The Dept. of HWR  
Bldg. 11, Room 122  
The Univ. of Arizona  
Tucson, AZ 85721

Office: (602) 621-6215  
FAX: (602) 621-1422  
Email: bassett@hwr.arizona.edu

**EVANS WORKSHOP VII**  
**Flow and Transport through Unsaturated Fractured Rock**

January 31 - February 3, 1995  
Phoenix, Arizona

October 14, 1994

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UA - SWS

Dr. Budhi Sagar  
Center for Nuclear Waste  
Regulatory Analyses  
6220 Culebra Road  
Drawer 28510  
San Antonio, TX 78284

Dear Dr. Sagar:

The Organizing Committee would like to extend an invitation to you to attend the Evans Workshop, which will occur **January 31 - February 3, 1995**. This is the seventh workshop on the subject, all have been extremely well received and productive. This year we have modified the approach and limited the number of speakers to about 26 in order to have a more focused discussion. It is our intent to encourage discussion of the latest research with a free exchange of ideas.

Please find attached our list of topics and the speakers who will be giving presentations. We anticipate that you will be an active participant in the discussions and on the field trip. Additionally, we are making space available for poster sessions for you to present some of your own research if you so choose. The posters will be set up for the duration of the workshop and will receive significant attention. Please notify us if you would like to have poster space reserved.

This workshop will **not** be held in Tucson, rather we have reserved space in the Radisson Hotel in Phoenix near the Sky Harbor Airport. This will facilitate travel and will place us much closer to the Apache Leap Field Site.

The committee anticipates a productive meeting combining invited speakers and open discussion time among many scientists focused on central themes. We have decided to eliminate the need for an abstract for publication, no proceedings will be published, and we are limiting participants to approximately 50-60 people. A notebook will be given to each attendee containing copies of papers and view graphs that the speakers or attendees have provided.

We would appreciate an early response; either by note, FAX, telephone or Email, to let us know if you can participate. Please see the enclosed information to make your reservations.

Thank you again for your interest and we look forward to seeing you in Phoenix in January.

Sincerely,



R.L. Bassett  
For the Workshop Coordinators  
The Dept. of HWR  
Bldg. 11, Room 122  
The Univ. of Arizona  
Tucson, AZ 85721

Office: (602) 621-6215  
FAX: (602) 621-1422  
Email: bassett@hwr.arizona.edu

## EVANS WORKSHOP VII

### Flow and Transport through Unsaturated Fractured Rock

January 31 - February 3, 1995  
Phoenix, Arizona

<b>MONDAY Jan. 30, 1995</b>	<b>TRAVEL DAY</b>
<b>TUESDAY Jan. 31, 1995</b>	
8:00 a.m. - 12:00 p.m.	<p><b>TOPIC 1: Characterization of Fractured Rock Properties</b></p> <p>Methods of characterizing flow in fractured rock, (how is it detected, quantified and located?) In particular, how is flow into, through, across, and up to fractures measured in laboratory and field settings? What are the reliable relationships between air permeability obtained from core or borehole pneumatic tests and hydraulic conductivity? How can these be tested in the field in realistic time scales?</p>
8:00 Introduction 8:30 Speaker 1 9:00 Speaker 2 9:30 Speaker 3 10:00 BREAK 10:30 Speaker 4 11:00 Speaker 5 11:30 Discussion 12:00 LUNCH	Dr. James L. Conca                      WSU Tri-Cities Dr. Edward Kwicklis                      USGS Dr. Sitakanta Mohanty                      CNWRA Dr. Joe Rousseau                      USGS Dr. Ronald Green                      CNWRA
1:30 p.m. - 3:00 p.m.	TOPIC 1: (continued...)
1:30 Speaker 1 2:00 Speaker 2 2:30 DISCUSSION 3:00 BREAK	Mr. Amado Guzman                      UofAZ - Hydrology & Water Res. Dr. Gary LeCain                      USGS
3:30 p.m. - 5:00 p.m.	<p><b>TOPIC 2: Geophysical Methods of Fracture Detection</b></p> <p>What borehole geophysical tools or tomographic methods can be used to identify fractures in unsaturated rock from air-filled rather than water-filled boreholes? Can the mere identification provide any information about connectivity or ability to transmit water?</p>
3:30 Speaker 4 4:00 Speaker 5 4:30 DISCUSSION	Dr. Fred Paillet                      USGS Dr. Larry Myers                      Lawrence Berkeley National Lab
<b>WEDNESDAY Feb.1, 1995</b>	<b>FIELD DAY</b>

**REGISTRATION**

Registration will be held in the Foyer of the Main Ballroom of the Radisson Phoenix Airport Hotel, 3333 University Drive, Phoenix Arizona 85034 from 7:00 - 8:00 a.m. on Tuesday, January 31, 1995. The meeting begins promptly at 8:00 a.m. The fee of \$30.00 is for required lunches during the meeting.

**ACCOMMODATIONS:**

The Radisson Phoenix Airport Hotel, 3333 University Drive, Phoenix, Arizona 85034, phone (602) 437-8400 is holding a block of rooms at the government rate of \$87.00 including tax for single occupancy. Reservations must be made by December 30, 1994 to guarantee this rate. After this time rooms will be on a space available basis only. Be sure to mention you are attending the EVANS WORKSHOP VII.

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**ENROLLMENT APPLICATION**

NAME \_\_\_\_\_ Phone (\_\_\_\_) \_\_\_\_\_

AFFILIATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

REGISTRATION FEE (Per Person)

Please make checks payable to:

Regular. . . . . \$30

**THE UNIVERSITY OF ARIZONA**

TOTAL ENCLOSED \_\_\_\_\_

If you wish to use your VISA, MASTERCARD or DISCOVER CARD for registration:

CARD # \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

I have the following special needs/requirements: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Detach and Mail/Fax this form to:

Engineering Professional Development  
Box 9 Harvill Building, Room 235  
University of Arizona  
Tucson, AZ 85721  
(602) 621-3054 FAX (602) 621-1443