

January 28, 2005

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

DOCKETED
USNRC

February 2, 2005 (4:00pm)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of

Docket No. 70-3103

Louisiana Energy Services, L.P.
National Enrichment Facility

ASLBP No. 04-826-01-ML

**DIRECT TESTIMONY OF GEORGE RICE
ON BEHALF OF NUCLEAR INFORMATION AND RESOURCE SERVICE
AND
PUBLIC CITIZEN
NIRS/PC CONTENTION EC-2
REVISED JAN. 28, 2005**

Q1: Please state your name and address.

A1. George Rice; 414 East French, San Antonio, Texas

Q2: What is your profession and educational background?

A2. I am a groundwater hydrologist; I have an MS from the University of Arizona. My resume has been filed in this case as an attachment to the Petition filed on April 6, 2004, and a copy is attached to this testimony.

Q3. What topics will be addressed in your testimony?

A3. I will discuss the questions of the environmental impacts of the proposed National Enrichment Facility (the "NEF") upon water supply. I am testifying in support of contention NIRS/PC EC-2, which states as follows:

NIRS/PC EC-2 -- IMPACT UPON WATER SUPPLIES

CONTENTION: Petitioners contend that the Environmental Report (ER) contained in the application does not contain a complete or adequate assessment of the potential environmental impacts of the proposed project upon water supplies in the area of the project, contrary to 10 C.F.R. 51.45.

To introduce a new industrial facility with significant water needs in an area with a projected water shortage runs counter to the federal responsibility to act "as a trustee of the environment for succeeding generations," according to the National Environmental Policy Act § 101(b)(1) and 55 U.S.C. § 4331(b)(1). To present a full statement of the costs and benefits of the proposed facility the ER should set forth the impacts of the National Enrichment Facility on groundwater supplies.

The DEIS does compare the water use of the proposed facility to the amount of water stored in the Ogallala Aquifer in the entire State of New Mexico (DEIS at 4-15). However, NRC has not shown in the DEIS how this pumpage would affect water levels and the long-term productivity of the Hobbs well field or the Lea County Underground Water Basin.

Q4: Please summarize your conclusion.

A4: I conclude that LES and the NRC Staff have not determined how pumpage for the proposed facility would affect water levels and the long-term productivity of the Hobbs well field or the Lea County Underground Water Basin.

Q5: What is your conclusion based on?

A5: My conclusion is primarily based upon a review of LES's Environmental Report, NRC's Draft Environmental Impact Statement, and the Lea County Regional Water Plan.

Q6: Have LES/NRC determined how groundwater pumpage for the proposed facility would affect the long-term productivity of the Hobbs well field or the Lea County Underground Water Basin?

A6: No. The water used at the proposed facility would be pumped from the Hobbs well field (Lea County Underground Water Basin, Ogallala Aquifer)¹. Groundwater in the Lea County Underground Water Basin is being pumped at a rate faster than it is being recharged².

¹ Louisiana Energy Services, 2004a, page 4.4-5; and Leedshill-Herkenhoff, 2000, page 1 of Executive Summary and page 7-2 (NIRS/PC Exhibit 24).

² Leedshill-Herkenhoff, 2000, page 1 of Executive Summary and page 5-4 (NIRS/PC Exhibit 24).

In the DEIS, NRC compares the water use of the proposed facility to the amount of water stored in the Ogallala Aquifer in the entire State of New Mexico³. This comparison is not relevant or useful. The effects of the NEF's water use would be confined to the portion of the Ogallala Aquifer near the Hobbs well field, not the Ogallala in the entire state. LES and NRC have not determined how pumpage for the proposed facility would affect water levels and the long-term productivity of the Hobbs well field or the Lea County Underground Water Basin.

The long-term effects of water use by the NEF could be estimated by simulating pumpage from the Hobbs well field both with, and without, the additional pumpage required for the proposed NEF.

Q7: Does this conclude your testimony?

A7: Yes.

³ NRC, 2004a, page 4-15 (NIRS/PC Exhibit 41).

References

Leedshill-Herkenhoff, Inc., John Shoemaker & Associates, Inc., Montgomery & Andrews, P.A., 2000, *Lea County Regional Water Plan*, prepared for Lea County Water Users Association, December 7, 2000.

Louisiana Energy Services, 2004a, *National Enrichment Facility Environmental Report*; Revision 2, July 2004.

Nuclear Regulatory Commission (NRC), 2004a, *Environmental Impact Statement for the Proposed National Enrichment Facility in Lea County, New Mexico, Draft Report for Comment*, NUREG-1790, September 2004.

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General

More than 20 years experience in hazardous waste investigations.

Education

M.S. Hydrology, University of Arizona, 1991
B.S. Hydrology, University of Arizona, 1979

Employment History

1993: Consultant
1988 - 1993: The MITRE Corporation, Brooks Air Force Base, Texas
1983 - 1988: SHB Geotechnical Engineers, Inc., Albuquerque, New Mexico
1980 - 1983: University of Arizona, Tucson, Arizona
1979 - 1980: U.S. Forest Service, Gifford Pinchot National Forest, Vancouver, Washington

Experience

- Design and install monitor well networks.
- Design, perform, and analyze aquifer tests.
- Design and install vadose zone monitor networks.
- Design and conduct groundwater sampling programs.
- Apply groundwater flow and contaminant transport models to predict the fate of groundwater contaminants (MODFLOW, MT3D, MOC3D).
- Participate in multidisciplinary teams to select and design hazardous waste disposal sites.
- Conduct third party reviews of environmental documents and field programs.
- Expert Witness.

Representative Projects

Site Characterization - Principal hydrologist responsible for the hydrologic characterization of low-level radioactive and hazardous waste sites throughout the western United States. The goals of these studies were to determine the extent and intensity of any metals or radionuclide contamination, estimate the rate and direction of contaminant movement, and predict future concentrations at receptor sites. Achievement of these goals required the installation of monitor well networks, installation of vadose zone monitoring instruments, groundwater sampling, the performance and analysis of aquifer tests, and the integration of data into a coherent conceptual model of each site.

Contaminant Transport Modeling - Used two and three-dimensional models to design pump and treat systems and estimate the effects of proposed remedial actions on future water quality. Conducted studies to estimate the time required for contaminants to reach potential receptors and estimate contaminant concentrations after plumes reached receptors.

Waste Repository Design - Principal hydrologist responsible for estimating the effects of remedial designs on future groundwater quality at low-level nuclear waste repositories in Arizona and Colorado. This required working closely with geotechnical and civil engineers to produce designs that incorporated the hydrologic characteristics required to meet water quality standards.

Field Methods Instructor - Member of a team that taught environmental field techniques to Air Force personnel. The four-day course consisted of lectures and field trips. It focused on monitor well design, monitor well construction, sampling program design, and groundwater sampling techniques.

Quality Assurance Manager - Manager of hydrology group responsible for evaluating environmental work performed at Air Force bases throughout the United States. Evaluated reports, hydrologic analyses, and field work related to Preliminary Assessments and Site Inspections (PA/SI), Remedial Investigations and Feasibility Studies (RI/FS), and Remedial Actions (RA). These evaluations usually resulted in recommendations for improving overall program design, analytical techniques, or field procedures.

Bibliography

Rice, G., 1987. *Design of Low Level Radioactive Waste Repositories to Minimize Groundwater Contamination*. Presented to Rocky Mountain Association of Environmental Professionals, Albuquerque, New Mexico.

Rice, G., Brinkman, J., and Muller, D., 1988. *Reliability of Chemical Analyses of Water Samples - The Experience of the UMTRA Project*. Ground Water Monitoring Review, Vol. VIII, No. 3, pp. 71-75.

Casagrande, D., Price, F., Rice, G., Vogel, G., 1989. *Geochemistry Manual*, MITRE Working Paper WP-89W00180. The MITRE Corporation, Civil Systems Division, 7525 Colshire Drive, McLean, Virginia.

Rice, G., Green, R., Pohle, J., 1993, *Reduction in Uncertainty in the Geologic Setting Performance Measure, 10 CFR 60.113(a)(2): Computer Code Selections, Conceptual Models, and Databases*, Prepared for Nuclear Regulatory Commission Contract NRC-02-88-005, Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas.

Rice, G. 1994, *AGUA Report, Contamination of the Edwards Aquifer in Bexar County*, A presentation of contaminant concentrations and a discussion of the relationship between contamination and development of the Edwards Aquifer Recharge Zone.

Green, R., Meyer, K., Rice, G., 1994, *Hydraulic Characterization of Hydrothermally-Altered Nopal Tuff*, Prepared for Nuclear Regulatory Commission Contract NRC-02-93-005, Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas.

Green, R.T., Dodge, F.T., Svedeman, S.J., Manteufel, R.D., Rice, G., Meyer, K.A., Baca, R.G., 1995, *Thermally Driven Moisture Redistribution in Partially Saturated Porous Media*, Prepared for Nuclear Regulatory Commission Contract NRC-02-93-005, Center for Nuclear Waste Regulatory Analyses, San Antonio, Texas.

Rice, G., 1996, *The BFI Tessman Road Landfill: Hydrologic Issues*, Prepared for Larry R. Daves and Associates, San Antonio, Texas.

Rice, G., 1997, *Groundwater and Groundwater Contamination in the Vicinity of Mr. Quintanilla's House, 710 Price Avenue, San Antonio, Texas*, Prepared for Tinsman & Houser, San Antonio, Texas.

Rice, G., 2001, *Evaluation of Groundwater Characterization and Modeling at the Pantex Plant*, June 2001. Prepared for Serious Texans Against Nuclear Dumping (STAND).

Rice, G., 2001, *Evaluation of HDR/SAWS Modeling of the Carrizo-Wilcox Aquifer in Lee, Bastrop, and Milam Counties, Texas*.

Rice, G., 2002, *Groundwater Modeling at Pantex, and Recommendations of the Technical Advisory Group*, Prepared for Serious Texans Against Nuclear Dumping (STAND), September 2002.

Rice, G., 2003, *Background Concentrations of Contaminants in the Ogallala Aquifer at Pantex, an Evaluation*, Prepared for Serious Texans Against Nuclear Dumping (STAND), May 2003.

CERTIFICATE OF SERVICE

Pursuant to 10 CFR § 2.305 the undersigned attorney of record certifies that on January 28, 2005, the foregoing Direct Testimony of George Rice on behalf of Nuclear Information and Resource Service and Public Citizen, NIRS/PC Contention EC-2, Revised Jan. 28, 2005 was served by electronic mail and by first class mail upon the following:

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