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December 11, 1996
Contract No. NRC-02-93-005
Account No. 20-5708-871

U.S. Nuclear Regulatory Commission
ATTN: Dr. John W. Bradbury
Division of Waste Management
Two White Flint North, Mail Stop TD-13
Washington, DC 20555

Subject: Transmittal of the deliverable "Neptunium Sorption Modeling—Journal Paper" (Intermediate Milestone 5708-871-710).

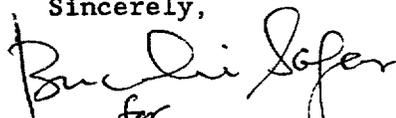
Dear Dr. Bradbury:

The enclosed paper is specified as IM 5708-871-710 in the CNWRA Operations Plans for the closeout of the Key Technical Issue (KTI) on Radionuclide Transport. The publication title for this paper is "Neptunium(V) Sorption on Montmorillonite: Experimental and Surface Complexation Modeling Study." The paper will be submitted for publication in Environmental Science and Technology.

This paper summarizes CNWRA experimental results for neptunium sorption on the clay mineral montmorillonite in the presence and absence of carbon dioxide. Surface complexation models have been calibrated to one experimental data set and extrapolated to other experimental conditions with good success. These results are useful in resolving differences between DOE approaches to sorption modeling and alternative conceptual models. This also represents progress in terms of sensitivity analyses of how different chemical parameters affect neptunium sorption, and establishes a framework for constraining sorption in performance assessment calculations for the proposed high-level radioactive waste repository at Yucca Mountain.

If you have any questions regarding this submittal, please contact me (210) 522-5540 or Dr. David Turner (210) 522-2139.

Sincerely,



English C. Percy, Element Manager
Geohydrology and Geochemistry

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Enclosures

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