January 4, 2000

MEMORANDUM TO: Larry W. Camper, Chief
Decommissioning Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

FROM: C. William Reamer, Chief [Original signed by:]
High-Level Waste and Performance Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

SUBJECT: RESEARCH PRODUCTS IN RESPONSE TO USER NEED ON MONITORING STRATEGIES

As requested in your technical assistance request dated October 25, 1999, my staff has reviewed the two NUREG\CR documents (NUREG/CR-5694 and NUREG/CR-5698) provided by the Office of Research (RES) in response to a 1993 User Need to assess techniques for monitoring moisture movement and contaminant transport in the unsaturated zone. In your technical assistance request, you asked for a determination on whether the User Need had been met and whether additional research was needed to support decommissioning. As summarized in the RES transmittal memorandum, dated September 22, 1999, the two NUREG documents provide an assessment of the capabilities, limitations, and usefulness of alternative techniques for monitoring moisture movement and contaminant transport in the unsaturated zone; guidance on the design, installation, use, maintenance, and decommissioning of unsaturated zone monitoring systems; recommendations on conditions and processes to consider in developing a monitoring strategy; and an evaluation of the extent to which unsaturated zone monitoring systems may compromise the performance of natural and engineered barriers. Accordingly, the research addresses the requirements of the User Need.

With regard to the need for additional research in this area to support decommissioning, no additional research is needed. The research was extended, at the outset, to consider monitoring requirements for decommissioning. The original intent was to look at unsaturated zone monitoring for low-level waste disposal sites located in an arid environment. Given the large depth to water table (i.e., hundreds of meters) at these sites, unsaturated zone monitoring will likely be the primary means of providing an early warning of releases from the disposal unit. On the other hand, most decommissioning sites are located in more humid areas where the depth to water table is much shallower; therefore, there is less of a need for monitoring in the unsaturated zone. In addition, as stated in the RES document (NUREG/CR-5698, page 38), none of the monitoring strategies, explored in this research, are particularly well suited for humid areas.

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