UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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May 15, 1998

MEMORANDUM TO: A. Randolph Blough, Director
Division of Nuclear Materials Safety, RI

FROM: John W. N. Hickey, Chief
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management, NMSS

SUBJECT: RELEASE FOR UNRESTRICTED USE OF SITES FORMERLY USED FOR BURIAL OF LOW-LEVEL RADIOACTIVE WASTE UNDER NRC LICENSE NO. 19-00915-03

In response to your request, the Low-Level Waste and Decommissioning Projects (LLDP) Branch staff has completed its review of the technical assistance request (TAR), dated April 16, 1998, related to unrestricted release of sites formerly used for burial of low-level radioactive waste at a United States Department of Agriculture (USDA) facility in Las Cruces, New Mexico. This TAR was forwarded to LLDP from the Division of Industrial and Medical Nuclear Safety. Based on this review, LLDP staff recommends approval for unrestricted release of the former burial sites.

Region I's TAR sought headquarter's review of the USDA's submission, dated December 19, 1997, regarding its former burial site at the Jornada Experimental Range, and the determination of whether there is any reason that the sites should not be released for unrestricted use. The information submitted by the licensee contained an analysis of the burials using Draft Branch Technical Position (BTP), "Screening Methodology for Assessing Prior Land Burials of Radioactive Waste Authorized Under Former 10 CFR 20.304 and 20.302" (61 FR 56716-24). The licensee proposes to use Step 2 of the screening methodology to demonstrate that materials remaining in its former burial sites pose minimal risk to members of the public and has requested that the site be released for unrestricted use. The assumptions used in this groundwater ingestion scenario (Step 2) are very conservative and overestimate likely doses to potential members of the public.

In 1991, the University of Utah carried out a study on the Jornada Experimental Range, in which goats and coyotes were given certain radioactive material. At the conclusion of the study, these goats and coyotes were buried onsite. The USDA assumed responsibility for the burial site in June of 1991. The radioactive material buried at the site on February 1, 1991, consisted of 7.2 µCi of Mn-54, 98.4 µCi of Zn-65, 71 µCi of I-125, and 86 µCi of Cs-134.

The water table at the Jornada Experimental Range in the Chihuahuan Desert is approximately 400 feet below the surface, the average annual rainfall is about 10 inches per year, and the average annual evaporation rate is about 87 inches per year. Based on these conditions, actual leaching of the radioactive materials is likely to be negligible due to the arid nature of the environment. For additional conservatism, the groundwater ingestion scenario did not use the site-specific data, and assumed: (1) there has been no migration from the burial so that the total

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inventory originally placed in the burial remains; (2) the entire inventory leaches into the groundwater in a one-year period; (3) someone moves onto the site, and places a well near the burial ground that would capture all of the contaminated water; (4) there is no sorption of the radionuclide during transport and only limited dilution and dispersion; and (5) a single individual drinks only well water from the site for that year.

In addition, all the radionuclides are short-lived. The dose in the groundwater ingestion analysis is due almost exclusively to the remaining Cs-134, and the dose decreases by a factor of two approximately every two years. According to the licensee's analysis, the dose from the groundwater ingestion scenario is 5.2 mrem/yr. Based on the data provided by the licensee and an independent review, LLDP staff agrees with the Region I staff and recommends the former burial sites be release for unrestricted use. If you have any questions, please call the contact below.

License No: 19-00915-03
Docket No: 030-04530
Control No: 125345