



**Department of Energy**  
 Albuquerque Operations  
 Los Alamos Area Office  
 Los Alamos, New Mexico 87544

JUN 05 1987

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Mr. Myron Knudson, Director  
 Water Management Division, 6W  
 U. S. EPA, Region VI  
 Allied Bank Tower at Fountain Place  
 1445 Ross Avenue  
 Dallas, Texas 75202-2733

Dear Mr. Knudson:

On April 7, 1987, I received a letter from the New Mexico Environmental Improvement Division (EID) regarding our National Pollutant Discharge Elimination System (NPDES) Permit No. NM0028355 for discharges from Los Alamos National Laboratory (LANL). The EID letter (Enclosure 1) indicated concerns regarding the discharge of barium from an NPDES Outfall at the Laboratory and included several Environmental Protection Agency (EPA) Region VI personnel on the distribution i.e., Roger Hartung, Jack Ferguson, and Susan Stark. In order to avoid any misunderstanding regarding the NPDES permit, I am writing this explanation and addressing EID's concerns by copy of this letter.

The subject of the EID letter is NPDES Outfall 055, which is a Category 05A High Explosives Outfall. During the early 1980's this Outfall experienced periodic noncompliance with NPDES effluent limitations, specifically chemical oxygen demand. As a result of this noncompliance, this Outfall was included in the first Federal Facility Compliance Agreement (FFCA) negotiated between EPA and the Department of Energy's (DOE), Los Alamos Area Office (LAAO), in March 1983. Remedial action taken to bring this Outfall into compliance with the NPDES permit included construction of a lined evaporation pond prior to 1985.

On December 1, 1980, EPA placed DOE/LAAO on notice that a FFCA was to be negotiated and that the compliance agreement was to include a description of the violating discharges and the specific improvements planned to correct them (Enclosure 2). As part of the FFCA negotiations, EPA personnel (James Highland and Rick Amber) conducted site inspections on at least two occasions and inspected the noncompliant high explosive Outfalls, included Outfall 055. During Mr. Highland's site inspection on September 14-15, 1982, the proposed construction of the lined evaporation pond at Outfall 055 was discussed with regard to the wastewater characteristics, and the construction of the evaporation pond was encouraged in principle by EPA. When the FFCA was signed by DOE/LAAO and EPA it required installation of an evaporation pond at Outfall 055 and the EID reviewed and concurred with the content of the FFCA before it was executed (Enclosure 3).

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The lined evaporation pond was used to collect wastewater drainage from sand filters. However, in order to fully understand the process, a brief explanation regarding the generation of this wastewater may be useful at this point. Throughout the Laboratory's Technical Area 16, many individual buildings have operations that involve the presence of high explosive materials. Each building that houses operations that process high explosives has a wastewater sump that is used to clarify wastewater prior to discharge pursuant to NPDES. Periodically, these sumps are vacuum cleaned and the materials discharged onto the sand filters that drain to the lined evaporation pond. After the solid materials trapped by the filter are dried, they are burned to eliminate the explosivity hazard and the resulting ash is handled as a hazardous waste.

Each of the high explosive Outfalls is permitted under NPDES, and the 1977 consolidated NPDES permit application indicated that many of the high explosive Outfalls contained barium in the effluent. Subsequent NPDES permit reapplications included previous wastewater characterization and information by reference. Barium is present due to the explosive industry's typical use of barium nitrate in explosives. Throughout the history of high explosive operations at the Laboratory, barium nitrate has been present. However, its usage has waxed and waned with peak usage occurring during the 1940s, 1950s, and mid-1970s to mid-1980s. Therefore, depending on the time period during which an NPDES high explosives Outfall was sampled, barium may or may not have been present. Typically, only de minimus quantities were anticipated in the effluents in the concentration range of a few parts per million.

From the time the lined evaporation pond went into service in January 1985, it did not discharge until mid-1986. Because of the residence time that wastewater had in the lined pond, certain chemical constituents had concentrated through evaporation unbeknown to the Laboratory. Barium, in particular, had concentrated to such a level that the level in the bottom sediments exceeded the criteria for Extraction Procedure (EP) toxicity under the New Mexico Hazardous Waste Management Regulations (NMHWMR-3). The EID then made a determination that the Laboratory had stored and treated a hazardous waste in the pond. (Although neither DOE nor the University of California has acquiesced in EID's determination, DOE/LAAO has since submitted a closure plan on November 13, 1986, for the pond and continued to analyze the contents of the pond to insure that high levels of barium are not accumulating).

For several months the Laboratory did not discharge from the pond following the above-mentioned discharge. The lined pond became quite full because of the accretion of excessive precipitation and was sampled on November 10 and 20, 1986, in preparation for discharge. The collected samples were analyzed for the NPDES parameters, as well as for barium. The results indicated that the potential discharge met the NPDES parameter limitations and that the barium was well below the NMHWMR-3 requirement for barium.

On December 12, 1986, additional influent was added to the lined pond and the pond was discharged. Subsequent analysis of effluent samples collected during discharge from the pond indicated barium concentrations exceeding 100 mg/l (specifically, 130 mg/l). It was later determined that the excessive barium levels were a result of additional influent. Realizing the import of this concentration regarding hazardous waste management and NPDES, the Laboratory immediately initiated steps to preclude the recurrence of such an incident. Specifically, the following steps have been taken:

1. An engineering design was initiated and completed to construct an accumulation tank which would provide treatment of the effluent prior to discharge pursuant to NPDES. This treatment system would include barium sulfate precipitation, clarification and activated carbon filtration of the effluent prior to discharge.
2. A composite sampling program was initiated on specific high explosive outfalls that contribute wastewater to the lined pond and that have the potential for contributing barium to the lined pond. Treatment for barium removal is being invoked at the building wastewater treatment sumps prior to effluent transfer to the lined pond, as necessary.

40 CFR 122.41(1)(8) states: "Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information." Since barium was presumed to be present in only de minimus concentrations, and was not analytically shown to be a constituent of the high explosive wastewater Outfall sampled as representative of the high explosive effluent category (for the NPDES permit application submitted March 1986), the Laboratory did not expect high concentrations of barium in Outfall 055. As previously stated, the presence of high concentrations of barium in Outfall 055 was first thought to be due to evaporative concentration effects in the lined pond. As soon as it was apparent that barium was being added to the pond via influent that contained more than de minimus concentrations, the Laboratory undertook swift remedial actions.

Should further monitoring of other high explosive Outfalls disclose barium as a wastewater constituent exceeding the reported levels characterizing the Outfalls in the 1986 permit reapplication, such information will be transmitted immediately to EPA and EID. Furthermore, as soon as the detail design is available for the new treatment system proposed for Outfall 055 (or for any other high explosive Outfalls, as dictated by the monitoring program), such information will be transmitted to EPA and EID.

Mr. Myron Knudson

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On April 23 and 24, 1986, an EPA NPDES Compliance Evaluation Inspection was conducted at the Laboratory by Ms. Delia Oteiza. During the inspection and pursuant to her request, Ms. Oteiza was taken on a tour of the lined pond and Outfall 055 and typically high explosive wastewater sumps and Outfalls. The history and unforeseen presence of barium in Outfall 055 and the interrelationship of the NPDES and Resource Conservation and Recovery Act (RCRA) requirements were discussed. After touring the high explosive Outfalls and specifically Outfall 055, Ms. Oteiza should be able to corroborate the above-mentioned explanation and assist in clarifying any further misunderstanding regarding Outfall 055.

I trust that the foregoing discussion for the benefit of all parties concerned will shed light on any misunderstandings regarding Outfall 055 and our NPDES permit. Please be assured that we are aware of the requirements associated with our NPDES permit and that we apologize for any failure in reporting. Both DOE/LAAO and the Laboratory are diligently making every effort to maintain compliance with the permit. Should you have any questions concerning this letter or our NPDES permit, please feel free to contact James Phoenix (FTS) 843-5288 of my staff.

Sincerely,



Harold E. Valencia  
Area Manager

3 Enclosures

cc:

Michael Burkhart, Director, NMEID, Santa Fe, NM  
Kathleen Sisneros, NMEID, Santa Fe, NM  
James Highland, USEPA, Dallas

LTP:JAP:0688