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October 17, 2007

Mr. Ron Linton, Senior Groundwater Hydrologist/Project Manager  
Nuclear Regulatory Commission  
Mail Stop T-7E18  
Washington, DC 20555-0001

**RE:** New Mexico Environment Department concerns about remediation of the Alluvial aquifer contaminant plume related to the Homestake Uranium Mill Superfund Site (CERCLIS ID NMD007960935)

Dear Mr. Linton:

The New Mexico Environment Department (NMED) has received comments from citizens who live within the vicinity of the Homestake Uranium Mill Superfund Site (Site) concerning control and remediation of site contaminant plumes within the Alluvial aquifer. One of these plumes extends westerly from the south side of the tailings impoundments across sections 27 and 28. Although the Homestake Mining Company (HMC) is addressing this plume through operation of the WR and NPV injection lines, as well as through injection into several wells at the westerly and southwesterly end of this plume, NMED is concerned that the current remedial strategy might be further optimized to increase the rate of contaminant extraction and plume containment, as well as to increase protection of the Rio San Jose Alluvial aquifer system from effects of Site-derived contaminants.

Another remnant contaminant plume in the Alluvial aquifer partially underlies the Felice and Broadview Acres subdivisions in Section 35 and 3, elongated in a southwesterly orientation bounded by a ridge of unsaturated Alluvium. According to HMC's 2006 annual report (HMC, 2007; "2006 annual monitoring report/performance review for Homestake's Grants project pursuant to NRC license SUA-1471 and discharge plan DP-200"), remediation of this plume currently is addressed through operation of seven injection lines in Section 3 (RCR1 through 7), four injection lines within and near Felice Acres (SFA1 and 2, FA1, and WFA1), as well as by injection into Alluvial monitor wells 641, 642, 848, and 868. Again, NMED is concerned that the remedial strategy could be further optimized to increase contaminant extraction rates, and is particularly concerned that the current remedial strategy does not constrain further southwesterly plume expansion adequately. Additionally NMED is concerned that these contaminant concentrations could be exacerbating the occurrence of observed contaminant concentrations above drinking water regulatory standards in Chinle-completed residential wells within the vicinity.

Finally, NMED notes that HMC indicates an "island" of unsaturated alluvium within the lower San Mateo Alluvium that is bounded to the west by the Rio San Jose Alluvium system; in 2006 only one monitor well (889) is shown to be extant within this reportedly-unsaturated alluvium, with a water level of 63.31 ft (TD 65.0 ft) in 1996 (HMC, 2007; Table 4.1-4). These apparently are the most recent water level data collected for this well. NMED notes that this well is in a critical location relative to residential well RW-20, which is inferred to be completed within the Lower Chinle and subcrops with this unsaturated alluvium. Wells 684, 650, 851, 864, 539, 862, 847, CW44, 490, 846, and 989 loosely bound this "island;" however current monitoring data are not tabulated for several of these wells. NMED requests that NRC direct HMC to conduct both regularly-scheduled monitoring for saturation in existing well 889, and to perform additional work within this area to better define the areal saturation limit.

Mr. Ron Linton, NRC

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In Section 3, HMC indicates 2006 water levels in three (3) Alluvial-completion monitor wells (e.g., 652, 877, and 879) that are located just south of the HMC-delineated limit of Alluvial saturation; these water levels are high with respect to the overall Alluvial aquifer ground water levels in the area. HMC notes that "[S]everal wells were drilled in the area of the zero saturation boundaries to better define the limits of the alluvial aquifer. However, there are occurrences of limited saturation in the Chinle shale below the alluvium, indicating that there may be zones of perched water in the upper part of the Chinle shale. These wells have been used to help define where the zero saturation boundary of the alluvium occurs and the water levels in these wells may not be representative of the alluvial aquifer" (HMC, 2007, p. 4.2-1—4.2-2). Data in Table 4.1-4 indicate "zero" saturated thickness values for wells 652 and 879 in 2006, even though water levels are reported for these wells. Under New Mexico Water Quality Control Commission (NMWQCC) regulations (20.6.2 NMAC), all ground water underlying New Mexico that has an existing concentration of 10,000 mg/l or less total dissolved solids (TDS) is protected. This would also be applicable to saturation that was reported in monitor well 889, mentioned previously. Therefore NMED requests that the NRC direct HMC to delineate and characterize the areas of saturation reported within these areas.

Another comment, which NMED has received, requested information on whether ground water flux in the Alluvial aquifer through the Site was determined for the design of the Site remedial strategy for this aquifer. NMED notes that HMC withdrew ground water from Alluvial well P2, which is located upgradient of the large tailing pile, at the rate of 40 gpm during 2006; this reportedly was a continuation of upgradient Alluvial ground water diversion through the Site that was begun in 1993 (HMC, 2007; p. 2.1-3). Please advise NMED if any documentation on this subject is available.

NMED requests the opportunity to review the current remedial strategy for the Alluvial aquifer in detail with NRC at your earliest convenience. NMED is also examining background/Site cleanup standards for the Chinle and Chinle mixing-zone aquifers, and may also wish to discuss this subject as well, although we will need additional time to prepare comments on this. Please contact me at (505) 476-3777 or [david.mayerson@state.nm.us](mailto:david.mayerson@state.nm.us) to discuss scheduling for this review.

Sincerely,



David L. Mayerson  
Superfund Oversight Section

Copies: Mr. William vonTill, NRC  
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