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Memorandum

To: LaDonna Turner, Site Assessment Manager
Technical and Enforcement Branch
U.S. Environmental Protection Agency, Region 6

Date: September 10, 2009

From: Dana Bahar, Manager, Superfund Oversight Section
Ground Water Quality Bureau, New Mexico Environment
Department.

Subject: Pre-CERCLIS Screening Assessment of Barbara J #3 mine,
McKinley County, New Mexico: Further action under CERCLA
is recommended

Site name	Barbara J #3 mine	Street address	not applicable		
City	not applicable	State	New Mexico	Zip code	not applicable
County	McKinley				
Latitude	35° 19' 53.52" N	Longitude	107° 49' 34.22" W		

Site physical description: The Barbara J #3 minesite currently has several waste piles, a concrete pad, a load-out area, a mine shaft, and a well or vent shaft remaining from uranium mining activities. The waste piles emit elevated levels of radioactivity in comparison to background values (assumed to be in the range of 10 to 40 counts per second [cps] from data collected at this and nearby sites), border drainage courses, and show evidence of erosion (see Figure 1).

Site identification: Potential alluvial ground water contamination within the Grants Mineral Belt was identified because background standards established for the contaminants of concern for ongoing remedial action associated with the Homestake Mining Company NPL site (CERCLIS NMD0007860935) are generally higher than Maximum Contaminant Levels (MCLs). NMED conducted sampling of private residential wells in subdivisions located in the vicinity of the HMC site, and found that the majority had one or more contaminant concentrations exceeding MCLs.

Site summary: Observations made during a July 1, 2009 site visit are shown on the accompanying figures. The highest radioactivity level was measured during site reconnaissance at the former ore load-out area (1924 cps). The shaft is covered by a rusted steel plate. The open well or vent hole was probed to a depth of 458' without hitting solid bottom. Waste piles with elevated radioactivity (highest radioactivity=436 cps; background=33

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cps) were noted. The waste piles are marked by erosional rills, indicating that waste has been dispersed downstream. Contamination of vicinity soils and surface drainages by precipitative erosion and wind dispersion comprise the primary contaminant pathways that may be associated with this site. Additionally, site runoff of contaminated wastes may impact ground water quality either through seepage through alluvium or by direct entry to the subsurface via the open well and shafts.

Targets: Residences are located near the junction of State Hwy. 605 and 509, approximately 2.76 air-miles east-northeast of the Site. Another residence is located along Haystack Road approximately 1.0 air-miles southwest of the Site, from which another residence is visible further to the west. Other potential targets may include cattle and wildlife.

Closest well sampled to date: irrigation well SMC-22 (0.45 air-miles; 48.2 µg/l total uranium in 2009 sampling [total uranium Maximum Contaminant Level=30 µg/l])

Site ownership and Potential Responsible Parties: Surface and mineral rights reportedly are held by the Bureau of Land Management (BLM). Todilto Exploration and Development Company last operated the mine in 1980.

File review: NMED staff reviewed the following files:

- Database compiled by Mining and Minerals Division of the New Mexico Energy, Minerals, and Natural Resources Department (07/20/2007).
- Anderson, Orin J., 1980. "Abandoned or inactive uranium mines in New Mexico".
- Golder Associates, 2009. "Findings of Barbara J Sites, Abandoned uranium mine lands pilot study conducted March—May 2009." Draft Technical Memorandum.
- McLemore, Virginia T. and William L. Chenoweth, 1991. "Uranium mines and deposits in the Grants district, Cibola and McKinley Counties, New Mexico." New Mexico Bureau of Mines and Mineral Resources Open-file report 353.
- Rappaport, Linda, "Uranium deposits of the Poison Canyon ore trend, Grants District," in "Geology and technology of the Grants Uranium Region, 1963. State Bureau of Mines and Mineral Resources.
- U.S. Geological Survey, 1997. "Gallup quadrangle NURE HSSR study." OFR-97-492.

Site reconnaissance: NMED staff conducted a Site reconnaissance on July 1, 2009.

Recommendations: A release of CERCLA hazardous substances has been documented at the site. NMED recommends further investigation under CERCLA to assess the risk posed by the site using the Hazard Ranking System.

NMED recommends that the investigation include the following:

1. Sample sediments along drainages to characterize extent of Site-derived waste dispersion.
2. Investigate and characterize ground water impacts.

In addition NMED recommends the following actions be performed to address immediate threats to public health and the environment:

1. Remove waste with elevated radioactivity.
2. Plug open shaft and well/vent holes.

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Figure 1: Barbara J #3 Mine—measurements taken July 1, 2009

"Px" reference the location of photographs on pages following.

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P1: Barbara J #3 Mine well? >458' deep



P2: Barbara J #3 Mine shaft covered by rusted steel plate (arrow)