Homestake's Long History of Contamination

PHOTOS: LARRY CARVER

The pollution legacy from uranium mining and milling in the United States include three uranium mill tailings piles that have been designated as Superfund sites due to significant groundwater contamination that remains more than 20 years after the last uranium ore was processed. These sites are located at Churchrock, New Mexico (General Electric/United Nuclear Corporation); Cañon City, Colorado (General Atomics/Cotter Corporation); and Milan, New Mexico near Grants (Barrick Gold/Homestake Mining Company).

The Homestake site has been a focus of intense effort during the past year as the U.S. Environmental Protection Agency (EPA) and the State of New Mexico Environment Department (NMED) work with the company on its latest change to its remediation plan.

"After 30 years of failed remediation at the Homestake/Barrick Gold site, it only makes sense to wait until the USEPA's Remediation System Evaluation is complete, consider the ACE's findings, and then permit the entire discharge system in one hearing that takes into account all of these complicated and, to date, ineffective processes."

— CANDACE HEAD-DYLLA

But homeowners downstream of the Homestake site, whose property has been impacted by the contaminated groundwater seeping from the tailings pile, want a seat at the table. A few years ago the families whose lands lie in the affected areas, including several generations of residents who have lived in subdivisions downstream of the Homestake site, formed the Bluewater Valley Downstream Alliance (BVDA) to address these concerns. BVDA seeks a permanent remedy to the pollution leaking from the Homestake site. Their membership has reached out the New Mexico Congressional Delegation, their state representatives, as well as regulators with NMED, EPA, and the Nuclear Regulatory Commission (NRC) to attain that result.

HISTORY

The United Nuclear-Homestake Partners (UNHP) mill site was created in 1958 to process uranium. Its uranium mill tailings piles lie in the 100-year flood plain of the San Mateo Creek, a productive alluvial aquifer fed by groundwater from the Bluewater and San Mateo Creek watersheds. The Homestake site lays over a geologic fault though which groundwater and groundwater contamination flow into deeper aquifers. From 1958 through 1990, milling operations produced up to 3,500 tons ore per day containing under 0.2% uranium content. The resulting 99.8% of ore become mill waste (tailings) which was placed on the ground in two tailings piles — a Large and Small Tailings Pile. The Large Tailings Pile that is a mile-long, 100-foot high mound that contains more than 23 million tons of tailings, while the Small Tailings Pile contains about 1.5 million tons of tailings.

"I was born and raised in Bluewater Village and have lived in Murray Acres since 1964. I have observed the Homestake mill and tailings operation virtually every day over this time.

…I was appointed to the Rio San Jose Flood Control District in 2000, and I was elected to the Board of Directors of the District in 2002, and I am currently in my second six-year term. I mention this because I was one of several residents of our community who organized the Rio San Jose Flood Control District in the early 1980s. We did this because of the many floods that occurred in the area in the 1970s... I have been intimately involved in flood control concerns in our community for more than 30 years...

On February 16, 1979, Homestake opened a hole in the berm to allow the runoff to flow south across its property just east of Thunderbird Road. Late that afternoon, I took a few pictures of this flood, which I have copied and included in Attachment 5 to my statement. Photo 5A shows fluids pouring from the breach in the holding berm. Photos 5B and 5C show the fluids flowing south on Thunderbird Road toward the corner of Wagonwheel Road in the direction of the Village of Milan. These locations are outside, or off, of Homestake's property."

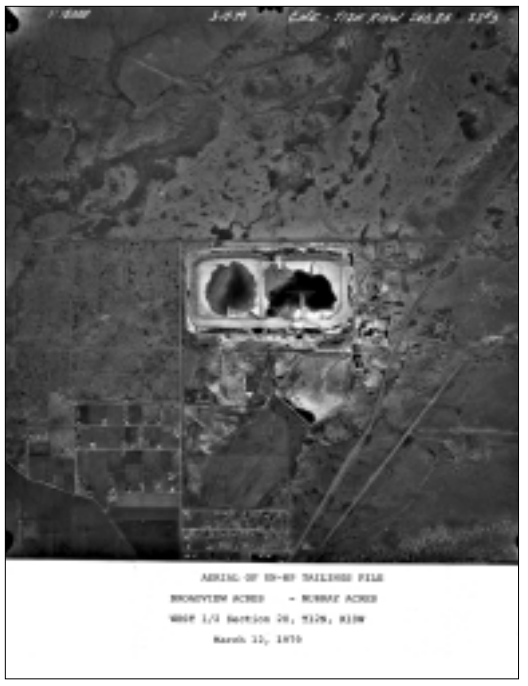
— LARRY CARVER

Groundwater contamination at the Homestake site was first identified in a 1962 U.S. Public Health Service (USPHS) Report, only four years after uranium milling and mill tailings disposal operations began in 1958 ("Process and Waste Characteristics at Selected Uranium Mills," W62-17, US Public Health Service, Robert B. Taft Sanitary Engineering Center, Cincinnati OH, 1962). At that time, USPHS reported elevated radium levels in groundwater beneath the mill site and expressed concern for that the accumulation of radium in the tailings pond, "if coupled with seepage, could produce a significant groundwater contamination problem." The report also stated that, "the opinion of mill personnel was that the soil at the location provided an excellent seal, thereby minimizing the problem of seepage in the ground water." USPHS pointed out the "need to consider groundwater contamination inasmuch as ranchers in the general area … use well supplies for domestic consumption, for watering livestock and for irrigation." There was also concern for the mining boom towns of Milan and Grants further downstream which rely on groundwater for domestic water use.

Mill tailings accumulated rapidly at the site through the 1960s and 1970s. By 1975, an investigation by the newly created U.S. Environmental Protection Agency found "the most significant contaminant is selenium" at the Homestake site after it was detected in subdivision wells downgradient of the tailings piles at levels 340 times drinking water standards (3.4 mg/l in groundwater versus a drinking water standard of 0.1). The EPA investigators also found that uranium concentrations in groundwater had reached 25–50 times the concentration found in samples of unaffected groundwater. In 1997, the peer reviewed journal *Ground Water* looked back at the 1975 EPA investigation in the article, "Effects of Uranium Mining and Milling on Groundwater in the Grants Mineral Belt, New Mexico" (https://info.ngwa.org/GWOL/pdf/762502233.PDF). The authors stated: "Geologic and hydrologic conditions are not suitable for land disposal of milling wastes in that sandy soils and a relatively shallow water table are present. Contamination of the shallow aquifer is indicated by several chemical and radiochemical parameters."

The groundwater contamination detected by EPA in 1975 led to the development of the first of a series of Groundwater Protection Plans for the Homestake site. The first plan resulted from an agreement signed on August 18, 1976 between the New Mexico Environmental Improvement Division (NMEID, predecessor to the NMED) and United Nuclear Corporation (then owner of the Homestake site). The agreement provided for establishment of a groundwater injection and collection system, a monitoring program, negotiations for modification if the plan was unsuccessful; acknowledged concern for selenium being pushed south of the injection wells; and made available domestic water to downgradient residents. The last item resulted in bottled water being provided to residents of the subdivisions in the Bluewater Valley by United Nuclear Corporation (UNC), owner and operator of the Homestake site. Bottled water was supplied for domestic use only, not for gardening, irrigation, or livestock.

In 1983, without a remedy for the contamination under their property in sight, Bluewater Valley residents filed a lawsuit against the Homestake site owners. Also in 1983, the Homestake site was listed on the Superfund National Priorities List of significantly contaminated sites. Unfortunately for the community, this determination made successful pursuit of the lawsuit more difficult. In 1985, the lawsuit was settled in exchange for hook-ups to the municipal water supplies for domestic use, payment of water bills for those hook-ups for 10 years by UNHP, and promises by UNHP to clean up the site within 10 years.



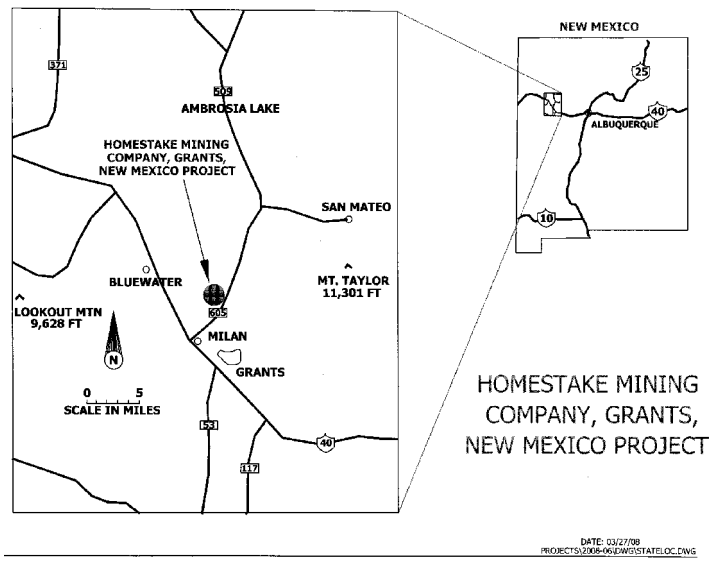


FIGURE 1.2-1. LOCATION OF THE GRANTS PROJECT

PHOTO: JOHN MORROWS

Runoff from February 16, 1979 Homestake mill dam breach, Thunderbird Road, Milan, NM.

Representing BVDA's interests are Milton Head, John Block (New Mexico Environmental Law Center), Larry Carver, and Art Gebeau.

"In 1975, when residents were first told about the groundwater contamination, Homestake assured them it would be cleaned up in 10 years. Then, in 1983, many of the residents sued HMC to be hooked up to Milan's water system as their wells were polluted and the groundwater had not been cleaned up. Those hookups were installed and HMC agreed to pay for the water use, with limitations, for 10 years at which time the groundwater would be cleaned up to usable levels, as promised by HMC.

In 1995, the groundwater was still contaminated, but HMC stopped paying for the residents' water usage. Between 2005 and 2007, those wells were still contaminated and, in addition, the contamination had spread to many other residents' wells."

— ARTHUR GEBEAU, MILAN, NEW MEXICO

For more than 33 years, Homestake has operated an increasing complex and extensive groundwater extraction and injection system. Operations have included extraction of hundreds of gallons per minute of contaminated groundwater beneath the tailings and in the contaminated groundwater plume downgradient of the tailings. These injection wells were supplemented by injection of relatively clean groundwater at the south end of its property, but not at the downstream end of the contamination plume. Injection wells at this location could have established a "hydrologic barrier" to prevent pollutants from moving downgradient towards to the subdivisions.

By 1997, 20 years of clean-up effort had resulted in the extraction of groundwater totaling more than 2.6 billion gallons (more than 8,100 acre-feet), and drainage of more than 270 acre-feet of liquid from the tailings by "toe drains." Despite those efforts, groundwater contamination remained under the tailings and in downstream areas including the subdivision where BVDA residents live. (See www.sric.org/mining/docs/Umills.html for more information.)

In its 1997 groundwater monitoring review, Homestake Mining Company sought to ease its clean up burden by proposing alternative concentration limits for groundwater cleanup standards. This would weaken groundwater cleanup requirements by raising the concentration of contaminant that would be allowed in groundwater after clean-up.

In addition, Homestake proposed a combination of groundwater extraction and tailings drain that it asserted would leave the site cleaned up by 2010. The NMED and the U.S. Nuclear Regulatory Commission (NRC), which issues uranium mill and mill tailings-related licenses, approved these alternative clean up standards. While the extent and severity of contamination at the Homestake site have been reduced by remediation efforts, even these weakened standards have yet to be attained at the site.

"We have watched Homestake/ Barrick Gold add more evaporation ponds and a reverse osmosis plant and spray plumes of water above the ponds with moisture drifting toward us. We have seen them buy lots and houses within our subdivision, and bury the existing houses. We now have pipes running in every direction and experimental irrigation plots with failed crops, using contaminated water."

— JONNIE HEAD

By 2000, Homestake staff determined that draining contaminants from the tailings pile "had proven more difficult that anticipated" and began a new tailings management strategy. They began a tailings flushing program which used pumps in wells to inject fluids (rather than extract fluids) into the large tailings pile in an effort to increase the amount of drainage which could remove contaminants from the pile. This unique and unprecedented approach — no comparable examples of tailings flushing have been identified by Homestake staff in their response to questions — has resulted in a small increase in the total amount of contaminants that Homestake has been able to remove from the tailings. But it has also resulted in an enormous volume of contaminated liquid that requires storage and evaporation in the large open ponds at the site. It is the operation of these ponds, and the addition of a 26.5 acres evaporation pond (EP-3) to the existing 48.5 acres that leads us to the present day.

PRESENT

For more than a year, the EPA has been funding a Remediation System Evaluation (RSE) at Homestake to assess the effectiveness of the site owner's efforts to address groundwater and airborne contamination during the past 35 years. The RSE provides the most extensive independent technical evaluation of the Homestake-Milan groundwater clean-up effort since it began in the late 1970s. EPA contracted a U.S. Army Corps of Engineers (ACE) scientific team, which issued a draft RSE report on February 15, 2010. A final RSE report including recommendations for further investigation and actions is anticipated later in 2010 following review and comments by BVDA, Homestake, and regulatory agencies.

On January 12–13, 2010, the NMED convened a Public Hearing on the groundwater discharge plan, DP-725, for the ponds. This hearing resulted largely from the strong and consistent efforts of BVDA and the Multicultural Alliance for a Safe Environment (MASE), of which BVDA is a core group participant. On April 12, 2010, NMED issued a final decision on DP-725 that approved Homestake's application. However, two new discharge plan applications were submitted on March 30, 2010 — the renewal of DP-200 and a new plan designated DP-1751 — giving the public further opportunity to comment on Homestake's activities and its impacts on groundwater. These hearings will address operation of the hundreds of injection and collection wells Homestake operates in and around the tailings pile.

"We support BVDA's long-term goal of insuring that groundwater is cleaned and that the communities are finally protected by eventual removal of all uranium milling and remediation wastes to a safe, permanent disposal site that is far removed from people, isolated from area groundwater and floodplains, and naturally armored to provide containment for the thousands of years that the wastes will remain hazardous."

— NADINE PADILLA, MASE

More than 35 years later, NMED continues to issue warnings about groundwater in the Bluewater Valley subdivisions due to contamination associated with uranium mining and milling after exceedences of drinking water standards were first detected in 1975. NMED's most recent warning was issued January 8, 2009 in a press release titled, "NMED Advises San Mateo Creek Basin Private Well Owners in Cibola and McKinley Counties That Water May Contain Contaminants from Naturally-Occurring Ore and Processes from Past Uranium Mining." The advisory was not accompanied by any offer of alternative water supplies, or compensation for damaged water or property. In the notice, NMED staff asserted that, "NMED has and will continue to work with federal regulators and potentially responsible parties in the area to address this issue," and that it "is in the early stages of investigations within the San Mateo Creek basin to better understand, and potentially address, possible ground water contamination from past uranium mining and milling activities."

After more than 30 years of remediation efforts, the continued warnings against water use ring hollow to BVDA members whose livelihood is tied up in their property. This long history, longer than the tenure of any of the NMED, NRC or Homestake staff working on the project, leads BVDA to continually remind regulators and elected officials of EPA's conclusions from 1977 that "geologic and hydrologic conditions are not suitable for land disposal of milling wastes in that sandy soils and a relatively shallow water table are present." The implication is that a new site is needed for the more than 25,000,000 tons of Homestake tailings if they are to be permanently disposed of without continued groundwater contamination.

FOR MORE INFORMATION

Bluewater Valley Downstream Alliance
www.bvdownstreamalliance.org
contact1@bvdownstreamalliance.org

NMED Ground Water Quality Bureau
www.nmenv.state.nm.us/gwb/
NMED-GWQB-PublicNotice.htm