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Corporate Manager  
Reclamation

ENVIRONMENTAL, HEALTH, SAFETY  
AND GOVERNMENT AFFAIRS

December 15, 2001

**UPS Next Day Air: 1Z 875 261 01 1002 082 6**

Mr. Melvyn N. Leach, Branch Chief  
U.S. Nuclear Regulatory Commission  
Mail Stop T-8A33  
Two White Flint North  
11545 Rockville Pike  
Rockville, MD 20852

**RE: Docket No. 40-8903  
License No. SUA-1471  
Request to Change Background Concentrations at the  
Homestake Grants Reclamation Site**

Dear Mr. Leach:

Homestake Mining Company of California (Homestake) respectfully submits this request to amend our license to adjust the site standards for the Homestake's Grants site to account for the full range in background concentrations. The present six NRC site standards at this site were established in the late 1980's by averaging very limited data from the vast amount of data available at the time and using only one of the several background wells. This average data does not represent or define the true full range of background; therefore, approximately half of the natural concentrations will cause exceedance of the present site standards.

The following table shows the six current NRC site standards compared to the 95% background level for the three key site parameters. The 95% of background level is being proposed as a new site standard to fully account for the full natural range of background concentrations.

HOMESTAKE MINING COMPANY  
P.O. BOX 98 • GRANTS, NM 87020-0011

NMSSOIPublic  
add: Judy Muszkilwicz  
to erids

The 95% level has not been defined for vanadium, radium-226 plus radium-228 and thorium-230 because the existing concentrations of these constituents in the ground water are so low that the present site standards are adequate for these parameters. The new site standards are requested for only uranium, selenium and molybdenum.

<b>GRANT SITE WATER-QUALITY STANDARDS AND BACKGROUND</b>		
<i>Constituents</i>	<i>NRC Site Standards</i>	<i>95% Background Level</i>
Uranium	0.04	0.15
Selenium	0.01	0.27
Molybdenum	0.03	0.05
Vanadium	0.02	-----
Ra-226 + Ra-228	5	-----
Thorium-230	0.30	-----
Note: All concentrations are in mg/l except: Ra-226 + Ra-228 and Th-230, which are in pCi/l.		

The present NRC site standards listed above were defined by averaging three samples from 1988 and 1989 from one up-gradient well. The up-gradient database for the Grants site used in establishing the 95% level contained 23 years of data from 1976 through 1998. Additional up-gradient water quality data has been collected since 1998, which would not significantly change the results of the 95% level. Nine up-gradient wells were also used in this analysis to establish the full range of background concentrations. This large database defines the overall areal distributions of concentrations in the up-gradient alluvial water quality and also the variations with time. Therefore, the 95% background level is based on a large volume of monitoring data spread over 23 years and over the large up-gradient area of the aquifer. The attached Environmental Restoration Group (ERG) report on molybdenum, selenium and uranium presents the 95% background analysis.

Also additional analysis of the full range of background was evaluated for sulfate, chloride, TDS and nitrate concentrations at the Grants site. The full range of background was defined for these 4 constituents because these values were needed in evaluating restoration levels relative to these constituents. The following table presents the 95% background concentration levels for these 4

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constituents at the Homestake site (see enclosed ERG report on chloride, nitrate, sulfate and TDS).

<b>GRANT SITE BACKGROUND</b>	
<i>Constituents</i>	<i>95% Background Level</i>
Sulfate	1870
Chloride	112
TDS	3060
Nitrate	23

Note: All concentrations are in mg/l.

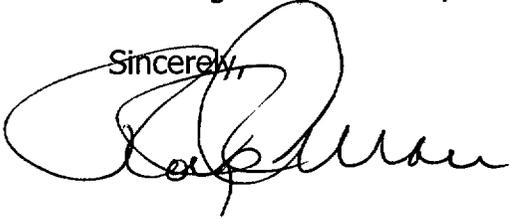
The accompanying Hydro-Engineering summary also supports the request to adjust the background standards for the areas that are direct connections between the alluvial and the Chinle aquifers. These areas exist as mixing zones and exist near the contact areas where alluvial ground water has moved into the Chinle sandstones. The water quality in these zones is represented by a natural gradual gradation from alluvial water quality to a natural Chinle water quality as you move deeper and away from the mixing zone contact area. Homestake proposes that the site standards for the alluvial aquifer are more representative of background concentrations for the mixing zone area in the Chinle aquifers where the alluvial water quality has affected the concentrations in the Chinle aquifers. The water quality type in the contact areas was naturally changed by alluvial water flowing into this area. Therefore, the background alluvial concentrations are appropriate relative to restoration standards in the affected area near the contacts between the Chinle and the alluvium.

In conclusion, Homestake is requesting the NRC to amend our license to adjust the site background standards for three major constituents, uranium, selenium and molybdenum to the 95% background level. The approval of this adjustment will account for the full range of natural background concentration which will result in restoration of only concentrations to background. Also, the same full range of background concentration adjustment is proposed for the restoration of remaining four minor constituents (sulfate, chloride, TDS and nitrate). In addition, Homestake is requesting that the same new alluvial site standards be approved for use in the restoration of the alluvial aquifer/Chinle aquifers mixing zones.

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Please give me a call if you have questions relative to this request.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Hooks", written over the word "Sincerely,".

Enclosure

cc: Ken Hooks, NRC  
Blair Spitzberg NRC Arlington  
Mary Heather Noble, NMED  
Mark Purcell, EPA  
Harold Barnes, HMC