



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

September 28, 2000

Mr. Roy Cellan
Homestake Mining Company
P.O. Box 98
Grants, NM 87020

**SUBJECT: HOMESTAKE MINING COMPANY - AMENDMENT NO. 33 -
REVISED GROUNDWATER MONITORING PROGRAM**

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of Homestake Mining Company's (HMC's) September 29, 1999 and February 25, 2000, letters which requested revisions to its groundwater monitoring program. The proposed changes reduce the overall number of samples and sampling events per year, to eliminate redundant sampling while meeting NRC requirements. The staff has determined that the revisions to HMC's groundwater monitoring program are acceptable, with the two minor modifications discussed in Enclosure 1, the Technical Evaluation Report (TER).

Therefore, pursuant to Title 10 of the Code of Federal Regulations (10 CFR), Part 40, Source Material License SUA-1471 is hereby amended as discussed in the TER. All other conditions of the license shall remain the same. The license is being reissued to incorporate the revised license conditions (Enclosure 2). An environmental report is not required from HMC, since the amendment does not meet the criteria of 10 CFR 51.60(b)(2). And an NRC staff environmental assessment was not performed, since this action is categorically excluded under 10 CFR 51.22(c)(11).

If you have any questions regarding this letter or the NRC staff review, please contact the NRC Project Manager for the HMC site, Ken Hooks, at (301) 415-7777 or by e-mail to krh1@nrc.gov.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

Philip Ting, Chief
Fuel Cycle Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards

Docket No.: 40-8903
License No.: SUA-1471

Enclosures: TER and License SUA 1471
cc: Donna Bergman-Tabbert, DOE Grand Junction
Maura Hanning, NMED, Santa Fe
Petra Sanchez, EPA Region 6, Dallas

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Case Closed: L51871

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DATE	9/ /00		9/ /00		9/ /00		9/ /00		9/ /00	

September 28, 2000

TECHNICAL EVALUATION REPORT
Revisions to Homestake Groundwater Monitoring Program

DATE: August 14, 2000

DOCKET NO. 40-8903

LICENSE NO. SUA-1471

LICENSEE: Homestake Mining Company

FACILITY: Grants Uranium Mill Site

PROJECT MANAGER: Kenneth Hooks

TECHNICAL REVIEWER: Jane Gunn

SUMMARY AND CONCLUSIONS:

By letters dated September 29, 1999 and February 25, 2000, Homestake Mining Company (Homestake) has requested to alter its groundwater monitoring program to reduce the overall number of samples and sampling events per year. The current program was approved by License Amendment No. 28, on October 3, 1997, and is shown in Attachment 1, Table 2 - Groundwater Monitoring Program (8-97).

Currently, Homestake samples groundwater monitoring wells as much as quarterly. However, data collected shows no seasonal variation in the groundwater quality. Therefore, Homestake has requested to amend its groundwater monitoring program to sample on an annual basis. Additionally, Homestake has reviewed the monitoring wells and proposed a more streamlined monitoring program which will eliminate redundant wells from the groundwater monitoring program. This restructuring of the groundwater monitoring program also takes into account the dynamic nature of the Groundwater Corrective Action Plan (CAP); many of the changes in the groundwater monitoring program are necessary because of changes in the CAP. The groundwater monitoring program should continue to be reevaluated with each change in the CAP.

Homestake's request to modify the existing groundwater monitoring program streamlines its current program by reducing the frequency of monitoring, the parameters being monitored, and the number of wells being sampled. The monitoring required by NRC license is a minimum commitment on the part of the licensee and therefore, does not necessarily represent all monitoring performed by the licensee. It is, however, sufficient to provide a clear understanding of contaminant movement and CAP results at the site. The CAP is a dynamic program. Therefore, wells that have previously been monitoring or pumping wells may be converted to clean water injection wells, and thus no longer be available for sampling. Also, as the CAP progresses, some areas that were previously intensely monitored may require less frequent monitoring.

NRC staff have reviewed the proposal (depicted by Table 2 (8-99) in HMC's September 29, 1999, submittal) and found it to be acceptable, with minor modifications as discussed.

DISCUSSION:

Homestake proposed several changes to its currently approved groundwater monitoring program. To evaluate their proposed revised groundwater monitoring program, NRC staff considered each aquifer as a unit and evaluated the proposed monitoring to ensure potential contaminant migration would be identified, protecting human health and the environment.

Homestake has proposed to reduce the number of parameter lists from six to four by consolidating similar lists. Most of the monitoring wells will be sampled for indicator parameters, that is known constituents in the tailings that are more readily transported in groundwater. Point of Compliance (POC) wells will continue to be sampled for all Constituents of Concern (COCs) annually, although the number of POC wells will decrease. This reduction in POC wells will not affect the integrity of the groundwater monitoring plan as the three remaining POC wells are sufficient to determine contaminant migration from the tailings pile. Reducing the POC wells to three will make Homestake's POC wells consistent with other NRC licensed mill tailings sites.

The current groundwater monitoring program contains several groundwater constituents that are monitored on a quarterly, semi-annual, or annual basis. Data presented by the licensee, collected over the past several years, show that there is not a seasonal variation in levels of constituents of concern in the groundwater. Therefore, the licensee requests that groundwater monitoring take place annually, as trends in groundwater contaminants are relatively slow at the site, and annual monitoring will be adequate to monitor contaminant movement and progress of the CAP. Additionally, the licensee proposes reducing the total number of wells monitored, as the current monitoring program contains multiple redundancies in areas being monitored. NRC staff have evaluated Homestake's revised monitoring plan to ensure adequate groundwater monitoring in each potentially affected aquifer below the site.

Alluvial Aquifer

The alluvial aquifer is the most impacted from site activities, as it is the uppermost aquifer at the Homestake Mill site. Groundwater flow in the alluvial aquifer has been changed from the natural directions by the CAP. Naturally, groundwater flows from the north-northeast to the south-southwest. The pumping associated with the CAP has changed groundwater flow southwest of the tailings piles to northeast. Further southwest, beyond the zone of influence of the CAP, groundwater flow returns to its natural direction. Background water quality will be measured in well P, which is upgradient of the site. The POC wells D1, S4, and X, located just downgradient of the tailings piles, will also continue to be monitored. To ensure adequate monitoring in the nearby subdivisions, Homestake will monitor 12 additional wells in and around the subdivisions (wells to be monitored are listed in the attached revised Table 2).

Upper Chinle

Groundwater flow is controlled by faults and influenced by the CAP in the site area in the Upper Chinle aquifer. Regionally, groundwater flow in this aquifer is from the NNE to SSW. However, on the SW side of the site the CAP has induced a localized reversal of this gradient. Monitoring for influence of the tailings pile in the Upper Chinle will take place downgradient, south and southeast of the site using wells 446, 494, and 944.

Middle Chinle

The same faults that control groundwater flow in the Upper Chinle also control the flow in the Middle Chinle, however, the natural groundwater gradient in the Middle Chinle is from the southwest to the northeast. Outside of the faults, groundwater gradients differ significantly. To ensure adequate monitoring in all downgradient directions in the vicinity of the pile, well CW2 must be monitored annually for the G list of parameters. To ensure compliance in the direction of the subdivisions, even though it is not a downgradient direction in the Middle Chinle aquifer, well 493 will be monitored annually for the G list of parameters.

San Andres Aquifer

Monitoring in the San Andres aquifer will continue to be accomplished through continuation of the current monitoring of Deepwells 1 and 2. Site data collected for the last several years shows there is not a seasonal variation in these wells. Therefore, annual monitoring will be protective of human health and the environment.

Proposed changes in the groundwater monitoring plan have been evaluated against the site groundwater conditions and the current groundwater monitoring program and CAP. The proposed changes, with minor modifications, are consistent with protection of human health and the environment, and therefore acceptable to NRC staff.

Homestake has collected data on the Reverse Osmosis (RO) product water weekly composite sample since January 6, 2000. Data has indicated that the parameters are stable, and therefore Homestake has requested by email dated July 31, 2000 to change the weekly to monthly composite sampling. Weekly composite samples taken since startup of the RO system have been very consistent. One apparent high result was retested by the lab and the high result was found to be an error. Therefore, the NRC staff find Homestake's request to change from weekly to monthly composite sampling acceptable.

Exceptions to the licensee's proposal are: (1) Well CW2 must remain in the sampling program (Site Monitor Wells) in Table 2(8-99), monitored annually for the G list of parameters; and (2) chromium(Cr) is not to be included in the analyses as its removal from the CAP was approved by NRC letter dated March 10, 1995 (see attached NRC version of Table 2 (8-99)). These were discussed with and agreed to by the licensee.

RECOMMENDED LICENSE CHANGES:

35. The licensee shall implement a groundwater compliance monitoring program to assess the performance of the groundwater restoration program. This program is separate from the requirements in License Condition 15. The Licensee shall:
 - A. Implement the groundwater monitoring program shown in Table 2 (8-99) submitted September 29, 1999, except that well CW2 will remain in the sampling program monitored annually for the G list of parameters and Cr is to be deleted from the D and F lists of parameters.

- B. Comply with the following groundwater protection standards at the point of compliance wells D1, X, and S4 with background being recognized in well P.

molybdenum = 0.03 mg/l, selenium = 0.10 mg/l, vanadium = 0.02 mg/l, uranium = 0.04 mg/l, radium-226 and -228 = 5.0 pCi/l, and thorium-230 = 0.30 pCi/l.

- C. Implement the corrective action program described in the September 15, 1989 submittal, as modified by the reverse osmosis system described in the January 15, 1998, submittal with the objective of returning the concentrations of molybdenum, selenium, thorium-230, uranium, and vanadium to the site standards as listed in LC 35B. In addition, the reverse osmosis system will include the addition of Sample Point 2 downstream of the Mixing Tank. Composite samples from Sample Point 2 will be taken monthly and analyzed for U and Mo.
- D. Operate the two lined evaporation ponds, Pond #1 and Pond #2, and enhanced evaporation systems located in each pond as described in the June 8 and 28, 1990; and July 26, August 16, August 19, September 2 and 15, 1994 submittals.
- E. Submit by March 31 of each year, a performance review of the corrective action program that details the progress towards attaining groundwater protection standards.

[Applicable Amendments: 3, 4, 5, 7, 8, 10, 11, 16, 21, 28, 30, 31, 33]

ENVIRONMENTAL IMPACT EVALUATION:

An environmental assessment is not required for this licensing action, in accordance with the categorical exclusion contained in 10 CFR § 51.22 (c)(11). That paragraph states that the categorical exclusion applies to issuing license amendments for uranium mills licensed under 10 CFR § 40, provided that (1) there is no significant change in the types or significant increase in the amounts of any effluent that may be released off site, (2) there is no significant increase in individual or cumulative occupational radiation exposure, (3) there is no significant construction impact, and (4) there is no significant increase in the potential for or consequences from radiological accidents.

The licensing action discussed in this technical evaluation meets the criteria for a categorical exclusion, since the proposed amendment does not involve an expansion of the existing facility. The license amendment application does not meet the criteria of 10 CFR 51.60(b)(2), regarding environmental reports. Consequently, an environmental report is not required from the licensee for this action.

TABLE 2 - Groundwater Monitoring Program (8-97)

Well Number	Parameters to be Monitored	Frequency of Monitoring
#1 & #2 Deepwell	C	Quarterly
#1 & #2 Deepwell	D	Annually
All Active Injection Wells	Rate& Monthly Total	Monthly
BroadviewAcres SUB1, SUB3,453	A	Semi-Annually
Broadview Acres - SUB2	A (except water level)	Semi-Annually
BroadviewAcres SUB1, SUB2, SUB3,434,446,453	B (except water level)	Annually
Felice Acres - 490,492,493,494	A	Semi-Annually
Felice Acres - 490,492,493,494	B	Annually
Murray Acres - 802, 844	A	Semi-Annually
Murray Acres M - 802,804, 820,844, WCV	B(no water level in 804)	Annually
Pleasant Valley - 688,835, 846	A (no water level in 835)	Semi-Annually
Pleasant Valley - 688,835, 846	B (no water level in 835)	Annually
Regional - 905,910,917,920,942	B (except water level)	Annually
Site Monitoring Wells B, CW2, CW3, CW4R, PM, WR7, WR1 1, X, Y	A	Quarterly
Site Monitoring Wells B, CW2, CW3, CW4R, PM, WR7, WRI. 1, X, Y	B&F	Semi-annually
Secondary Site Monitoring Wells BC, B1, BP, D1, DC, DM, DZ, F, M 1, K2, KM, KZ, M4, MO, N, O, S, SO, SV, T, W, WR5, WR9	A	Semi-annually
Secondary Site Monitoring Wells GH,CW2-1	Water Level Only	Semi-annually

TABLE 2 - Groundwater Monitoring Program (8-97)

Well Number	Parameters to be Monitored	Frequency of Monitoring
Secondary Site Monitoring Wells BC, BI, BP, CW9, DI, DC, DM, DZ, F, FB, 1, K2, KM, KZ, M4, MO, N, ND, O, S, SO, SV, S2, T, W, WR9, WR5	B	Annually
Secondary Site Monitoring Wells 931,934	B	Semi-Annually
Secondary Site Monitoring Well NC	A B	Quarterly Semi-Annually
Secondary Site Monitoring Wells 929,933,945, CW40	B (no water level in 933 or 945)	Semi-Annually
All Active Collection Wells	E	Monthly
All Active Collection Wells	B	Annually
All Active Collection Wells	Collection rate, water level and total volume for week	Weekly
Reversal Wells B, BA, KZ, KF, SO, SP, S1, S2	Water Level	Weekly
E Coll Pond, W Coll Pond	B (W Coll Pond - no water level)	Quarterly
E Coll Pond, W Coll Pond	F	Semi-annually
DQ, M5, S3, S4	B	Quarterly
DQ, M5, S3, S4	F	Semi-annually
Background Wells P, PI, P2	B F	Quarterly Semi-annually
Background Wells DID, Q, R	B&F	Annually

A = Water Level, SO₄, U-Nat, Se, TDS

B = Water Level, pH, TDS, SO₄, Cl, HCO₃, CO₃, Na, Ca, Mg, K, NO₃, U-Nat, Se, Mo, Ra-226

C = SO₄ TDS

D = Ca, Mg, K, Na, HCO₃, CO₃, Cl, SO₄, pH, TDS, Al, As, Ba, Cd, Co, Cr, Cu, CN, F, Fe, Pb, Mn, Hg, Mo,
Ni, NO₃ as N, Se, Ag, Zn, U-Nat, Filtered Ra-226

E = Water Level, SO₄, U-Nat, TDS

F = V, Ra-228, Tb-230

NRC's Revised TABLE 2 (8-99)

Well Number	Parameters to be Monitored	Frequency of Monitoring
#1 & 2 Deepwells	D	Annually
Broadview Acres Wells 446, SUB1, SUB2, SUB 3	G	Annually
Felice Acres Wells 490, 492, 493, 494	G	Annually
Murray Acres Wells 802, 844	G	Annually
Pleasant Valley Wells 688, 846	G	Annually
Regional Wells 920, 942	G	Annually
Site Monitoring Wells F, FB, GH, MO, CW2	G	Annually
Collection System Wells	Total Volume	Monthly
Injection System Wells	Total Volume	Monthly
Reversal Wells B, BA, KZ, KF, SO, SP, S1, S2	Water Level	Weekly
Point of Compliance Wells D1, X, S4	B, F	Annually
Background Well P	B	Annually

B: Water Level, pH, TDS, SO₄, Cl, HCO₃, CO₃, Na, Ca, Mg, K, NO₃, U, Se, Mo, Ra-226

D: Ca, Mg, K, Na, HCO₃, CO₃, Cl, SO₄, pH, TDS, A1, As, Ba, Cd, Co, Cu, CN, F, Fe, Pb, Mn, Hg, Mo, Ni, NO₃ as N, Se, Ag, Zn, U, Filtered Ra-226

F: V, Ra-228, Th-230

G: Water Level, SO₄, U, Se, TDS, Mo

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

<p style="text-align: center;">Licensee</p> <p>1. Homestake Mining Company</p> <p>2. P.O. Box 98 Grants, New Mexico 87020</p>	<p>3. License Number SUA-1471, Amendment No. 33</p> <p>4. Expiration Date Until NRC determines site reclamation is adequate. [Applicable Amendment: 12]</p> <p>5. Docket or Reference No. 40-8903</p>
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6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form	8. Maximum Amount that Licensee May Possess at Any One Time Under This License
Uranium	Any	Unlimited

9. **Authorized Place of Use:** The licensee's uranium mill located in Cibola County, New Mexico, County, New Mexico. [Applicable Amendment: 12, 29]
10. **This license authorizes only the possession of residual uranium and byproduct material in the form of uranium waste tailings and other byproduct waste generated by the licensee's past milling operations in accordance with Tables 1 and 3 and the procedures submitted by letter dated September 2, 1993, as modified by letter dated March 7, 1996.**
- Anywhere the word "will" is used, it shall denote a requirement.
- [Applicable Amendments: 2, 6, 12, 16, 24]
11. **DELETED by Amendment 21.**
12. **Periodic embankment inspections of the large and small tailings embankment shall be conducted by knowledgeable individuals who are familiar with the site and mining operations. An annual status report shall be included in the Semi-Annual Environmental Report for the second half of the year.**
- [Applicable Amendments: 2, 12, 14, 24]
13. **DELETED by Amendment No. 27.**
14. **Release of equipment or packages from the restricted area shall be in accordance with the attachment to SUA-1471 entitled "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials," dated September 1984. [Applicable Amendments: 21, 31]**
15. **The results of all effluent and environmental monitoring required by this license shall be reported in accordance with 10 CFR 40, Section 40.65, with copies of the report sent to the NRC. Monitoring**

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data shall be reported in the format shown in the attachment to SUA-1471 entitled, "Sample Format for Reporting Monitoring Data." For purposes of 10 CFR 40.65 reporting requirements, only groundwater radionuclide data from the point of compliance wells and backgrounds well P shall be reported. [Applicable Amendments: 5, 31]

16. Before engaging in any activity not previously assessed by the NRC, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not previously assessed or that is greater than that previously assessed, the licensee shall provide a written evaluation of such activities and obtain prior approval of the NRC in the form of a license amendment.
17. Prior to termination of this license, the licensee shall provide for transfer of title to byproduct material and land, including any interests therein (other than land owned by the United States or the State of New Mexico), which is used for the disposal of such byproduct material or is essential to ensure the long-term stability of such disposal site, to the United States or the State of New Mexico, at the State's option.
18. DELETED by Amendment No. 27.
19. DELETED by Amendment No. 17.
20. DELETED by Amendment No. 21.
21. The site Radiation Protection Administrator (RPA), who is responsible for conducting the site radiation safety program, shall possess the minimum qualifications as specified in Section 2.4.1 of Regulatory Guide 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Mills will be As Low As is Reasonably Achievable." [Applicable Amendment: 27]
22. The results of sampling, analyses, surveys and monitoring; the results of calibration of equipment, reports on audits and inspections; all meetings and training courses required by this license and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in the NRC regulations, all such documentation shall be maintained for a period of at least 5 years.
23. Standard procedures shall be established for all activities involving radioactive materials that are handled, processed, or stored. Procedures shall enumerate pertinent radiation safety practices to be followed. Additionally, written procedures shall be established for environmental monitoring, bioassay analyses, and instrument calibrations. An up-to-date copy of each written procedure shall be kept in the area to which it applies.

All written procedures shall be reviewed and approved in writing by the RPA before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the RPA shall perform a documented review of all existing procedures at least annually.

[Applicable Amendment: 27]

24. The licensee shall be required to use a Radiation Work Permit (RWP) for all work or nonroutine maintenance jobs where the potential for significant exposure to radioactive material exists and for

**MATERIALS LICENSE
SUPPLEMENTARY SHEET**

License Number SUA-1471, Amendment No. 33

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which no standard written procedure already exists. The RWP shall be approved by the RPA or his designee, qualified by way of specialized radiation protection training, and shall at least describe the following:

- A. The scope of work to be performed.
- B. Any precautions necessary to reduce exposure to uranium and its daughters.
- C. The supplemental radiological monitoring and sampling necessary prior to, during, and following completion of the work.

25. DELETED by Amendment No. 21.

26. Mill tailings, other than small samples for purposes such as research or analysis, shall not be transferred from the site without specific prior approval of the NRC in the form of a license amendment. The licensee shall maintain a permanent record of all transfers made under the provisions of this condition.

27. DELETED by Amendment No. 21.

28. The licensee shall maintain an NRC-approved financial surety arrangement consistent with 10 CFR 40, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, reclamation of tailings or waste disposal areas, ground-water restoration, and the long-term surveillance fee. Within 3 months of NRC approval of a revised reclamation plan, the licensee shall submit for NRC review and approval a proposed revision to the financial surety arrangement if estimated costs for the newly approved plan exceed the amount covered in the existing financial surety. The revised surety arrangement shall then be in effect within 3 months of written NRC approval.

Annual updates to the surety amount by 10 CFR Part 40, Appendix A, Criteria 9 and 10, shall be submitted to the NRC at least 3 months prior to the anniversary date, which is designated as June 30 of each year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of costs and the basis for the cost estimate. The attachment to the license entitled, "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates," outlines the minimum considerations used by the NRC in the review of site closure cost estimates.

The licensee's currently approved surety, a Parent Company Guarantee issued by Homestake Mining Company, shall be continuously maintained in an amount no less than \$24,000,000 for the purpose of complying with 10 CFR 40, Criteria 9 and 10, until a replacement is authorized by the NRC. The use of a parent company guarantee necessitates an evaluation of the corporate parent as part of the annual surety update. In addition to the cost information required above, the annual submittal must include updated documentation of the (1) letter from the chief financial officer of the parent company, (2) auditor's special report confirmation of chief financial officer's letter, (3) schedule reconciling amounts in chief financial officer's letter to amounts in financial statements, and (4) parent company guarantee if any changes are appropriate.

[Applicable Amendments: 9, 12, 23, 24, 26]

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29. DELETED BY Amendment No. 32
 30. DELETED by Amendment No. 21.
 31. DELETED by Amendment No. 27]
 32. The licensee shall comply with the following:
 - A. DELETED by Amendment No. 27.
 - B. Analysis of urine samples shall utilize an LLD of at least 5 ug/l uranium.
 - C. A copy of the report documenting the annual ALARA audit shall be submitted to the NRC, review within 30 days of completion of the audit.
- [Applicable Amendment: 2]
33. DELETED by Amendment No. 21.
 34. DELETED by Amendment No. 4.
 35. The licensee shall implement a groundwater compliance monitoring program to assess the performance of the groundwater restoration program. This program is separate from the requirements in License Condition 15. The Licensee shall:
 - A. Implement the groundwater monitoring shown in Table 2 (8-99) submitted September 29, 1999, except that well CW2 will remain in the sampling program monitored annually for G list of parameters and Cr is to be deleted from the D and F lists of parameters.
 - B. Comply with the following groundwater protection standards at the point of compliance wells D1, X, and S4 with background being recognized in well P.

molybdenum = 0.03 mg/l, selenium = 0.10 mg/l, vanadium = 0.02 mg/l, uranium = 0.04 mg/l, radium-226 and -228 = 5.0 pCi/l, and thorium-230 = 0.30 pCi/l.
 - C. Implement the corrective action program described in the September 15, 1989 submittal, as modified by the reverse osmosis system described in the January 15, 1998, submittal with the objective of returning the concentrations of molybdenum, selenium, thorium-230, uranium, and vanadium to the site standards as listed in LC 35B. In addition, the reverse osmosis system will include the addition of Sample Point 2 downstream of the Mixing Tank. Composite samples from Sample Point 2 will be taken monthly and analyzed for U and Mo.
 - D. Operate the two lined evaporation ponds, Pond #1 and Pond #2, and enhanced evaporation systems located in each pond as described in the June 8 and 28, 1990; and July 26, August 16, August 19, September 2 and 15, 1994 submittals.
 - E. Submit by March 31 of each year, a performance review of the corrective action program that details the progress towards attaining groundwater protection standards.

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[Applicable Amendments: 3, 4, 5, 7, 8, 10, 11, 16, 21, 28, 30, 31,33]

36. The licensee shall complete site reclamation in accordance with an approved reclamation plan. The ground-water corrective action plan shall be conducted as authorized by License Condition No. 35. All activities shall be completed in accordance with the following schedules.

A. To ensure timely compliance with target completion dates established in the Memorandum of Understanding with the Environmental Protection Agency (56 FR 55432, October 25, 1991), the licensee shall complete reclamation to control radon emissions as expeditiously as practicable, considering technological feasibility, in accordance with the following schedule:

(1) Windblown tailings retrieval and placement on the pile:

For the Large Impoundment - December 31, 1996.

For the Small Impoundment - May 31, 1997.

(2) Placement of the interim cover to decrease the potential for tailings dispersal and erosion:

For the Large Impoundment - December 31, 1996.

For the Small Impoundment - May 31, 1997.

(3) Placement of final radon barrier designed and constructed to limit radon emissions to an average flux of no more than 20 pCi/m²/s.

For the Large Impoundment which has no evaporation ponds - December 31, 2003.

For the Small Impoundment, tailings pile surface areas are essentially covered by evaporation ponds constructed as part of the ground-water corrective action program. Prior to December 31, 2012, the areas not covered by the evaporation ponds shall have final radon barrier in place. Final radon barrier placement over the entire pile shall be completed within 2 years of completion of ground-water corrective actions.

[Applicable Amendment: 25]

B. Reclamation, to ensure required longevity of the covered tailings and ground-water protection, shall be complete as expeditiously as is reasonably achievable, in accordance with the following target dates for completion:

(1) Placement of erosion protection as part of reclamation to comply with Criterion 6 of Appendix A of 10 CFR Part 40:

For the Large Impoundment - September 30, 2004.

For the Small Impoundment - September 30, 2013.

[Applicable Amendment: 25]

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(2) Projected completion of ground-water corrective actions to meet performance objectives specified in the ground-water corrective action plan - May 1, 2010.

- C. Any license amendment request to revise the completion dates specified in Section A must demonstrate that compliance was not technologically feasible (including inclement weather, litigation which compels delay to reclamation, or other factors beyond the control of the licensee).
- D. Any license amendment request to change the target dates in Section B above, must address added risk to the public health and safety and the environment, with due consideration to the economic costs involved and other factors justifying the request such as delays caused by inclement weather, regulatory delays, litigation, and other factor beyond the control of the licensee.

[Applicable Amendment: 13, 22]

37. The licensee shall reclaim the large and small tailings impoundments as stated in their October 29, 1993, submittal, including the following requirements.

- A. The radon barrier for the large tailings pile shall be in accordance with material types, thicknesses and placement criteria described in Homestake Mining Company's *Final Radon Barrier Design for the Large Tailings Pile*, submitted June 16, 1995. [Applicable Amendment: 22]
- B. The final reclamation of the area that includes the small tailings pile and the two evaporation ponds will include the disposal of the contaminated groundwater restoration materials and precipitated solids from the evaporation pond. The small tailings pile and evaporation ponds will be reconstructed and covered with radon barrier material. The placement of the barrier on the small tailings pile shall be done in accordance with the material types, thicknesses, and placement criteria described in Homestake Mining Company's *Final Radon Barrier Design for the Small Tailings Pile*, transmitted to the NRC in August 1996. [Applicable Amendments: 27, 32]
- C. The licensee shall submit a construction quality control program for NRC review and approval prior to placing any portion of the radon barrier that will ensure that the specification which limits the activity of the radon barrier material to 5 pCi/g above background is not exceeded.
- D. The construction quality assurance and control program shall be as defined in the Staff Technical Position On Testing and Inspection (NRC, 1989). The acceptable correlation between ASTM D 2922 and ASTM D 1556 shall be as defined in the licensee's April 30, 1992, submittal.
- E. OMITTED in Amendment No. 14.
- F. The radon barrier shall not be placed on the top surface of the large tailings impoundment until the settlement has been demonstrated to be at least 90 percent of expected settlement, and the results of this determination have been reviewed and accepted by the NRC. The radon barrier may be placed on the large impoundment side slopes following final grading of the impoundment. Care shall be taken to preclude the possibility of ponding. Before the

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erosion protection is placed, it shall be verified that the radon barrier material meets the specifications.

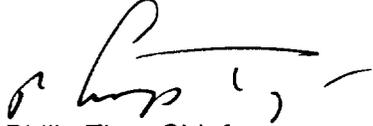
- G. The adequacy of the erosion protection proposed for the side slopes of both the large and small impoundments shall be reevaluated considering any increases in impoundment heights due to the revised radon attenuation cover design.
- H. DELETED by Amendment No. 21.
- I. A completion report shall be provided within 6 months of the completion of construction. This report, including as-built drawings, shall verify that reclamation of the site has been performed according to the approved plan. The report shall also include summaries of results of the quality assurance and control testing to demonstrate that approved specifications were met.
- J. The soil cleanup program associated with the decommissioning of the groundwater restoration facilities and small tailings pile reclamation shall be done as specified in the submittal of September 15, 1994, and as modified by the submittal of December 13, 1995. [Applicable Amendment: 32]
- K. The licensee shall implement a quality control (QC) program for the soil cleanup verification program to include sending at least 10 percent of the samples (randomly selected) to a vendor laboratory for Ra-226 analysis. If the vendor laboratory uses gamma spectroscopy, at least 30 percent of these QC samples shall also be chemically analyzed. [Applicable Amendment: 32]

[Applicable Amendment: 14]

- 38. The licensee is authorized to use water collected as part of the site ground-water corrective action program for conditioning soils during placement of the interim cover or the radon barrier on the tailings impoundments. The licensee shall also analyze samples of the collection water being used for this purpose for radium-226 and 228 content semiannually. If sample results exceed 30 pCi/l combined radium, the licensee shall perform an evaluation of the potential impacts of using this water on the required design of the radon barrier and submit the evaluation for NRC review within 30 days of receipt of sample results. [Applicable Amendment: 18]
- 39. DELETED by Amendment No. 31.

FOR THE NUCLEAR REGULATORY COMMISSION

Date Sept. 28, 2000


Philip Ting, Chief
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