HOMESTAKE
Grants Project

Homestake Mining Company of California

David W. Pierce
Closure Manager

19 June 2019

Document Control Desk
U.S. Nuclear Regulatory Commission,
Washington, DC 20555–0001

Mr. Ron Linton, Project Manager
Project Manager, Materials Decommissioning Branch (Mail Stop: T-8F5)
Decommissioning, Uranium Recovery & Waste Programs
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

40-8903

RE: Homestake Mining Company of California – Grants Reclamation Project – Request for Amendments to License No. SUA-1471 to Clarify and Update Current License Conditions and Commitments

Dear Mr. Linton:

Homestake Mining Company of California (HMC) is submitting this request to amend NRC License SUA-1471 for the Grants Reclamation Project. During our efforts to comply with Condition Three of the Confirmatory Order EA-16-114, *viz.,* implement an "assessment of all HMC activities to determine whether all activities are authorized and are being conducted in accordance with NRC requirements," HMC determined that a number of license conditions describing the radiation protection and control program are no longer applicable to current licensed operations. For example, several license conditions require the use of radiation protection and monitoring measures that are no longer applicable because they were established when the site included an operating uranium mill. In addition, many specification details found in NRC regulatory guides, several of which are generically referenced in the license, are no longer applicable for the same reason. Accordingly, HMC is requesting amendment of the license to base all radiation protection and control requirements for the site on HMC's Radiation Protection Program (RPP) Manual for consistency with current program objectives and specifications. Consistent with ALARA principles, the scope of the RPP has been developed to be commensurate with the low-level radiological risks that are currently present at this site. Proposed changes to current license conditions are listed in Attachment 1.

In support of this license amendment request (LAR), HMC has revised the RPP Manual to serve as a license tie-down document for specification of radiation protection and control requirements at the Grants Reclamation Project. The specifications of the RPP Manual are intended to supersede and replace all previous license condition (LC) requirements related to radiation protection and control as specified in this LAR. The current RPP Manual is provided in Attachment 2. Standard operating procedures (SOPs) associated with the RPP are designed to ensure the radiation protection and control requirements of the RPP will be met. As such, SOPs may be modified with RSO approval and a licensed amendment is not required. SOPs are kept onsite and are available for NRC review.

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In accordance with a request from NRC, as verbally communicated to HMC staff on a conference call during the March 18-20, 2019 NRC site inspection, HMC has performed an comparative assessment of individual radiation protection specifications in NRC Regulatory Guides 8.30 and 8.31 versus the radiation protection specifications found in the RPP Manual (Attachment 3). Technical justifications are provided for Regulatory Guide specifications that are not applicable to current site operations or radiological conditions and thus have been modified or are not included in the RPP Manual.

The specifications of the RPP Manual have been developed to supersede and replace applicable radiation protection and control requirements in the following License Conditions (LCs):

- LC 10, occupational radiation protection requirements as incorporated by reference to Table 3 from a letter dated September 2, 1993, as modified by letter dated March 7, 1996;
- LC 14, Release of equipment or packages from the restricted area;
- LC 21, Site Radiation Protection Administrator qualifications;
- LC 24, Radiation Work Permit requirements; and
- LC 32, Bioassay at Uranium Recovery Facilities, Health Physics Surveys in Uranium Recovery Facilities, and maintaining Occupational Radiation Exposure at Uranium Recovery Facilities ALARA.

In accordance with the clarification provided in the June 15, 2018 letter (ML18107A033) from Anne Borland, HMC has conducted a root cause analysis for this proposed amendment. This LAR is not specifically related to the five apparent violations identified by the NRC in its October 4, 2016 letter to HMC; rather, it falls within the category of an "assessment of all HMC activities" being performed. HMC has conducted this analysis to determine the root cause for the failure to maintain the license in a manner that properly addresses the current conditions at the site. The root cause analysis is provided in Attachment 4.

As per the Self-Assessment, a copy of the RPP Manual was submitted to Fox-Fire Scientific for third-party review. A copy of third-party review comments and HMC responses have been included as Attachment 5. A signed copy of NRC Form 313 is included in Attachment 6.

Thank you for your time and attention on this matter. If you have any questions, please contact me via e-mail at dpierce@barrick.com or via phone at 505.238.9701.

Respectfully,

David W. Pierce

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Enclosures:
Attachment 1 – SUA-1471 License Amendments
Attachment 2 – HMC Radiation Protection Program Manual
Attachment 3 – Crosswalk Between NRC Regulatory Guides and RPP Manual
Attachment 4 – Root Cause Analysis for License Amendments
Attachment 5 - Third-Party Review Comments and HMC Responses
Attachment 6 - NRC Form 313

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

Request of Amendment to License No. SUA-1470 to Clarify and Update Current License Conditions and Commitments

Homestake Mining Company

(Grants Reclamation Project)

June 18, 2019

ATTACHMENT 1

SUA-1471 License Amendments

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

ATTACHMENT 2

Radiation Protection Program Manual

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

ATTACHMENT 3

Crosswalk Between NRC Regulatory Guides and RPP Manual

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

ATTACHMENT 4

Root-Cause Analysis for License Amendments

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

ATTACHMENT 5

Third-Party Review Comments and HMC Responses

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

ATTACHMENT 6

NRC Form 313

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

ATTACHMENT 1

SUA-1471 License Amendments

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Attachment 1

Proposed Changes to NRC License No. SUA-1471

License Condition	Current Requirement	Proposed Change	Justification
10	This license authorizes 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.	MODIFY LAST PART OF LC 10	Occupational radiation protection elements and procedures incorporated into this LC by reference to Table 3 in the 1993 letter are outdated as the site is no longer an operational uranium mill. Propose revising the latter part of LC 10 as follows: "...in accordance with the environmental monitoring program outlined in Table 1 of a letter submitted September 2, 1993 (and as modified by letter dated March 7, 1996), and with the radiation protection program defined in the current Radiation Protection Program (RPP) Manual.
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.	DELETE	This condition references an archaic NRC document from September 1984 that addresses general limits for release of equipment or packages from restricted areas. A more appropriate reference is the uranium and progeny specific limits in Table 2 of Regulatory Guide 8.30 ("Health Physics Surveys in Uranium Recovery Facilities"). The applicable sections of RG 8.30 have been included in the updated RPP Manual.
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	DELETE	Replace RPA with RSO throughout the license. Regulatory Guide 8.31, "Information Insuring that Occupational Radiation Exposure at Uranium Recover Facilities will be ALARA," was reviewed and commitments modified in attached RPP Manual to meet current licensed operations, not an operating uranium mill.

	Uranium Mills will be As Low As is Reasonably Achievable." [Applicable Amendment: 27]		
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.	CHANGE LAST SENTENCE OF CONDITION	Change to: "An up-to-date copy of each written procedure will be kept on-site for check-out and use in areas where they apply." It is impractical and cumbersome to maintain copies of procedures in certain areas on the HMC site, e.g., the STP, LTP, and Evaporation ponds. A more reasonable and adequate approach would be to maintain them in the office.
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 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.	DELETE	The RPP Manual(Attached) addresses the requirements for a Radiation Work Permit outlined in License Condition 24. Therefore, this condition can be deleted.
32	The licensee shall follow the guidance set forth in U.S. Nuclear Regulatory Commission, Regulatory Guides 8.22, "Bioassay at Uranium Recovery Facilities," 8.30, "Health Physics Surveys in Uranium	DELETE	Regulatory Guides 8.22, "Bioassays at Uranium Recovery Facilities," 8.30, "Health Physics Surveys in Uranium Recovery Facilities," and 8.31, "Information Relevant to Ensuring that Occupational

	Recovery Facilities," and 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposure at Uranium Recovery Facilities will be As Low As is Reasonably Achievable (ALARA)," or NRC-approved equivalent. A. DELETED by Amendment 27. B. Any time uranium in a worker's urine specimen exceeds 15 micrograms per liter (ug/l), the annual ALARA audit will indicate what corrective actions were considered or performed. C. DELETED by Amendment 34. [Applicable Amendments: 2, 34]		Radiation Exposure at Uranium Recovery Facilities will be ALARA," are no longer generally applicable because HMC is no longer an operating uranium recovery facility. Applicable provisions have been extracted and incorporated into the RPP Manual. The RPP has been updated such that radiation protection and control requirements are commensurate with current radiological conditions and potential exposures at the site. Relevant sections of these three RGs are retained where applicable to activities and potential exposure circumstances at the site. The updated RPP Manual is attached for NRC review and approval. Supporting SOPs are available onsite for NRC review during site inspections.

ATTACHMENT 3

Crosswalk Between NRC Regulatory Guides and RPP Manual

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.22	2. Working Conditions Under Which Bioassays Should be performed	Routinely exposed to (air, contact) yellow cake	N		Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago and yellowcake is no longer produced or stored at the Site. Routine bioassay not warranted based on many years of data, though non-routine work with higher potential for exposure to tailings or residual solids/salts in ponds may warrant bioassay sampling under RWP at discretion of RSO.
8.22	2. Working Conditions Under Which Bioassays Should be performed	Routinely exposed to airborne uranium ore dust	N	4.2.3	Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago, ore is no longer stored onsite, tailings are covered, and impacted soils have been remediated. Routine bioassay not warranted based on many years of data, though non-routine work with higher potential for exposure to tailings or residual solids/salts in ponds may warrant bioassay sampling under RWP at discretion of RSO.
8.22	2. Working Conditions Under Which Bioassays Should be performed	Performed if any reason to suspect yellowcake or uranium ore concentration > 10^{-10} µCi/mL for a week or calendar quarter, respectively	N	2.2	Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago, ore is no longer stored onsite, tailings are covered, and impacted soils have been remediated. Monitoring shows radionuclide levels in air above tailings piles and at Site boundaries are orders of magnitude below this criterion.
8.22	Table 1 & 2	Corrective Actions Based on Urine/In-Vivo measurements	Y	4.4.2.3	RG 8.22 criteria for corrective actions cited in RPP.
8.30	2.3 Surveys for Radon-222 and its Daughters	Monthly measurements of radon daughter concentrations should be made where radon daughters routinely exceed 10% of the limit or 0.03 working level above background. If radon daughter concentrations are normally greater than 0.08 working level (25% of limit) or radon concentrations are above 3 x 10^{-8} µCi/ml, the sampling frequency should be increased to weekly. Sampling should continue to be performed weekly until four consecutive weekly samples indicate concentrations of radon daughters below 0.08 working level or radon below 3 x 10^{-8} µCi/ml. After that, radon daughter surveys may be resumed on a monthly basis.	Y	Section 4.4.2.2; SOP 11	Mill buildings and infrastructure were decommissioned decades ago, ore is no longer stored onsite, tailings are covered, and impacted soils have been remediated. Both the LTP and STP have been covered with interim cover, rock armor, or evaporation pond. Measured average net (above background) radon progeny levels in air above the LTP and at Site boundaries are well below 0.03 WL.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.30	2.1 Surveys for Airborne Uranium Ore Dust	In areas that are not "airborne radioactivity areas," an acceptable sampling program for airborne uranium ore dust includes monthly grab samples of 30 minutes duration in worker occupied areas while ore is being actively handled.	N		Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago, ore is no longer stored onsite, tailings are covered, and impacted soils have been remediated. Personal breathing zone (BZ) air monitoring results for non-routine RWP activities on top of LTP show uranium levels in air average less than 6% of the DAC.
8.30	2.2 Surveys for Airborne Yellowcake	Thus, surveys for airborne yellowcake are necessary to demonstrate compliance with the occupational dose limits in 10 CFR 20.1201.	N		Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago and yellowcake no longer produced or stored onsite. Impacted soils have been remediated.
8.30	2.2 Surveys for Airborne Yellowcake	The recommended survey program for yellowcake uses a combination of general air sampling and breathing zone sampling during routine and nonroutine operations that may involve considerable intake	N		Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago and yellowcake no longer produced or stored onsite. Impacted soils have been remediated.
8.30	2.2 Surveys for Airborne Yellowcake	Grab samples for yellowcake with a duration of 30 minutes should be performed weekly in airborne radioactivity areas and monthly in areas not designated as airborne radioactivity areas.	N		Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago and yellowcake no longer produced or stored onsite. Impacted soils have been remediated.
8.30	2.4 Surveys for External Radiation	The survey frequency in radiation areas should be quarterly. Survey measurements should be representative of where workers might stand so that their whole-body radiation exposures can be estimated.	N		There are no locations at the site that qualify as Radiation Areas or that otherwise warrant routine monitoring for external occupational exposures. Occupational dosimetry results verify that external doses at the site are negligible.
8.30	2.4 Surveys for External Radiation	In addition to gamma surveys, beta surveys of specific operations that involve direct handling of large quantities of aged yellowcake are advised to ensure that extremity and skin exposures for workers who will perform those operations are not unduly high.	N		Not an active UR facility. Yellowcake no longer produced or stored onsite.
8.30	2.5 Surveys for Surface Contamination in Restricted Area	In yellowcake areas, daily visual inspections should be made for locating yellowcake contamination on surfaces.	N		Not an active UR facility. Yellowcake no longer produced or stored onsite.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.30	2.5 Surveys for Surface Contamination in Restricted Area	In rooms where work with uranium is not performed, such as eating rooms, change rooms, control rooms, and offices, a lower level of surface contamination is likely to be present. These areas should be spot-checked weekly for removable surface contamination using smear tests.	Y	4.3.2	Routine (both quarterly and weekly) clean area surveys have been performed for the last couple of years with no contamination identified. With the mill decommissioned and the tailings piles covered the weekly requirement is unnecessary. The RPP appropriately indicates a monthly schedule for routine workplace surveys.
8.30	2.7 Surveys of Equipment Prior to Release to Unrestricted Areas	Surface contamination surveys should be conducted before potentially contaminated equipment is released to unrestricted areas.	Y	4.3.3; 4.3.6	RPP specifications consistent with applicable portions of RG 8.30 guidance with respect to this groundwater restoration and environmental monitoring facility (not an active UR Facility).
8.30	2.6 Surveys for Contamination of Skin and Personal Clothing	Entire section	Y	4.3.4; 4.3.6	RPP specifications consistent with applicable portions of RG 8.30 guidance with respect to this groundwater restoration and environmental monitoring facility (not an active UR Facility).
8.30	2.8 Surveys of Packages Prepared for Shipment	After being filled, yellowcake packages should be washed down to remove surface contamination.	N		Not an active UR facility. There are no shipments of yellowcake packages being transported from the site.
8.30	2.9 Ventilation Surveys	The operation of the ventilation system should be checked each day by the radiation safety staff during the daily walk-through of the UR facility.	N		Not an active UR facility. There are no yellowcake drying or processing operations. Airborne effluents from the RO are negligible and data and evaluations to support this expectation have previously been provided to NRC.
8.30	2.10 Surveys for Contamination on Respirators	Before being reused, respirator face pieces and hoods should be surveyed for alpha contamination by a standard wipe or smear technique.	N		There is no need for respirator use at the Site as confirmed with routine personnel BZ air monitoring under RWPs. The historic respiratory program under procedure "HP-7" was discontinued. Should future circumstances require respirator use, a respiratory protection program would need to be re-established under a new SOP.
8.30	Table 3	Summary of Survey Frequencies	Y	4.4.2 (Table 4)	Table 4 in the RPP (Section 4.4.2) provides monitoring and survey frequencies appropriate for this environmental remediation and monitoring Site. Most survey types in Table 3 of RG 8.30 not applicable as this is not an active UR facility, and those that do apply have been modified for Site circumstances.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.30	4. Administrative Action Levels	The licensee should establish administrative action levels to protect workers. Action levels should be established as shown below. A record of each investigation made and the actions taken, if any, should be kept until license termination.	Y	4.2.2. (Table 1)	Not an active UR facility. Mill buildings and infrastructure decommissioned decades ago, yellowcake or ore are no longer produced or stored onsite, tailings are covered, and impacted soils have been remediated. Appropriate administrative limits for applicable dose, survey and monitoring parameters are defined in Table 1 of the RPP Manual.
8.30	6. Establishing "Airborne Radioactivity Areas"	Any area, room, or enclosure is an "airborne radioactivity area" as defined in 10 CFR 20.1003 if (1) at any time the airborne uranium concentration exceeds 5 x 10-11 µCi/ml in the case of ore dust or 1x10-10 µCi/ml in the case of yellowcake (i.e., the values in Appendix B to 10 CFR Part 20) or (2) the concentration exceeds 25% of the values in Appendix B to 10 CFR Part 20 averaged over the number of hours in any one week in which individuals are present in such area, room, or enclosure.	N	4.4.2.2	Not an active UR facility and there are no airborne radioactivity areas as defined in RG 8.30. Mill buildings and infrastructure decommissioned decades ago, yellowcake or ore are no longer produced or stored onsite, tailings are covered, and impacted soils have been remediated. Historical air monitoring and recent radiological exposure study show that routine occupational exposure monitoring is no longer warranted at this Site.
8.30	5. Reporting Requirements	Each licensee is required to notify the NRC as soon as possible of exposures, radiation levels, and concentrations of radioactive materials exceeding the constraints or limits as required in Subpart M of 10 CFR Part 20 and in 10 CFR 40.60.	Y	4.3.7; 4.4.2.4; 4.5.2	Not an active UR facility. Radiological exposure pathways are largely limited to non-routine activities on covered tailings piles or evaporation ponds. Where warranted, such activities are conducted under a RWP. NRC notification requirements largely limited to spills/release of impacted groundwater. Routine reporting includes semiannual effluent reports and annual ALARA Audit report. Appropriate notification and reporting requirements are provided in cited sections of RPP Manual.
8.30	7. Posting of Caution Signs, Labels, and Notices to Employees	The radiation protection staff should periodically survey to ensure that signs, labels, required notices to employees, copies of licenses, and other items are properly posted as required by 10 CFR 19.11 and 10 CFR Part 20.	Y	4.2.1	Caution sign posting requirements for Site boundaries (Controlled and Restricted Areas) covered in RPP Manual. Notices to employees, RML, RPP Manual, SOPs and other relevant documents or information maintained in main office.
8.30	8. Calibration of Survey Instruments	Portable survey instruments should be placed on a routine maintenance and calibration program to ensure that properly calibrated and operable survey instruments	Y	4.7.2.1	Appropriate instrumentation calibration and QC requirements described in RPP Manual.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
		are available at all times for use by the health physics staff.			
8.30	8. Calibration of Survey Instruments	Survey instruments should be checked for constancy of operation with a radiation check source prior to each usage. If the instrument response to the radiation check source differs from the reference reading by more than 20%, the instrument should be repaired if necessary and recalibrated	Y	4.7.2.1	Appropriate instrumentation calibration and QC requirements described in RPP Manual.
8.30	9. Protective Clothing	Workers working with yellowcake should be provided with protective clothing such as coveralls and shoes or shoe covers.	N	4.3.2	Not applicable for yellowcake, but appropriate PPE requirements covered in Section 4.3.2 of RPP Manual.
8.30	10. Quality Assurance Program	The licensee should ensure the accuracy of survey measurements by having a quality assurance program.	Y	4.7, 4.7.2	Appropriate quality assurance requirements provided in RPP Manual.
8.31	1.1 Licensee Management	A strong commitment to and continuing support for the development and implementation of the radiation protection and ALARA program;	Y	2.4, 3.1	ALARA commitment clearly articulated in RPP Manual.
8.31	1.1 Licensee Management	A periodic management audit program that reviews procedural and operational efforts to maintain exposures ALARA;	Y	2.4, 3.1	ALARA program with monthly internal audits and annual 3rd party audit clearly articulated in RPP Manual.
8.31	1.1 Licensee Management	Continuing management evaluation of the radiation safety (health physics) program, its staff, and its allocation of adequate space and money;	Y	3.1	Management commitment to RPP and HP staff clearly articulated in RPP Manual. RG 8.31 criteria for HP staff qualifications intended for full-scale operational UR facility - RPP provides appropriately modified qualifications for RSO and RST positions that are commensurate with low-level radiological exposure hazards at this groundwater restoration and environmental monitoring facility.
8.31	1.1 Licensee Management	Appropriate briefings and training in radiation safety, including ALARA concepts for all uranium employees in the facility and, when appropriate, for contractors and visitors	Y	3.1	Radiation protection training requirements clearly articulated in RPP Manual and frequency/content commensurate with low-level radiological exposure hazards at this groundwater restoration and environmental monitoring facility
8.31	1.2 RSO	Major responsibility for the development and administration of the radiation protection and ALARA program;	Y	3.1	Appropriate RSO responsibilities clearly articulated in RPP Manual.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.31	1.2 RSO	Sufficient authority to enforce regulations and administrative policies that affect any aspect of the radiological protection program;	Y	3.1	Appropriate RSO responsibilities and authority articulated in RPP Manual.
8.31	1.2 RSO	Responsibility to review and approve plans for new equipment, process changes, or changes in operating procedures to ensure that the plans do not adversely affect the protection program against uranium and its daughters;	Y	3.1	RSO responsibilities for review/revision of RPP clearly articulated in RPP Manual.
8.31	1.2 RSO	Adequate equipment and laboratory facilities to monitor relative attainment of the ALARA objective.	Y	4.3.6	Appropriate analytical monitoring/survey equipment requirements clearly articulated in RPP Manual.
8.31	1.3 Uranium Recovery Workers	Adhering to all rules, notices, and operating procedures for radiation safety established by licensee management and the RSO;	Y	3.1	Appropriate Site worker responsibilities articulated in RPP Manual.
8.31	1.3 Uranium Recovery Workers	Reporting promptly to the RSO and licensee management equipment malfunctions or violations of standard practices or procedures that could result in increased radiological hazard to any individual;	Y	3.1	Appropriate Site worker responsibilities articulated in RPP Manual.
8.31	1.3 Uranium Recovery Workers	Suggesting improvements for the radiation protection and ALARA program.	Y	3.1	Appropriate Site worker responsibilities articulated in RPP Manual.
8.31	2.2 Operating Procedures	Written standard operating procedures should be established for all activities that involve handling, processing, or storing radioactive materials.	Y	4.2.4; Appendix A	All SOPs necessary for compliance with RPP requirements have been developed and are readily available for use by HP staff, Site workers and contractors as needed, and for review by NRC during Site inspections.
8.31	2.2 Operating Procedures	Written procedures should also be established for such activities as health physics monitoring, sampling, analysis, and instrument calibration.	Y	4.2.4; Appendix A	All SOPs necessary for compliance with RPP requirements have been developed and are readily available for use by HP staff, Site workers and contractors as needed, and for review by NRC during Site inspections.
8.31	2.2 Operating Procedures	An up-to-date copy of each written procedure, including accident response and radiological fire protection plans, should be kept accessible to all employees.	Y	4.2.4; Appendix A	All SOPs necessary for compliance with RPP requirements have been developed and are readily available for use by HP staff, Site workers and contractors as needed, and for review by NRC during Site inspections.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.31	2.2 Operating Procedures	All written procedures involving radioactive material control should be compiled in a manual that allows documentation of each revision and its date.	Y	4.2.4; Appendix A	All SOPs necessary for compliance with RPP requirements have been developed and are readily available for use by HP staff, Site workers and contractors as needed, and for review by NRC during Site inspections.
8.31	2.2 Operating Procedures	The RSO should review all existing operating procedures at least annually to ensure the procedures do not violate any newly established radiation protection practices.	Y	4.2.7	Monthly and annual ALARA audits provide mechanism for periodic RSO review of efficacy and appropriateness of RPP and associated SOPs.
8.31	2.2 Operating Procedures	For work on nonroutine maintenance jobs...radiation work permit (RWP) should be used.	Y	2.2, 3.1, 4.2.5	Application of RWPs clearly articulated in RPP Manual.
8.31	2.3.1 Daily and Weekly Inspections	The RSO and the facility foreman should conduct a weekly inspection of all facility areas to observe general radiation control practices and review required changes in procedures and equipment.	Y	4.3.1, 4.5.1.1, SOP 23	Not an active UR facility. Radiological exposure pathways largely limited to non-routine RWP activities on covered tailings piles or evaporation ponds. RO plant can present low-level exposure potential during maintenance work. Monthly workplace contamination surveys and non-routine RWP requirements are sufficient for radiation control at this groundwater restoration and environmental monitoring Site. Weekly inspections focus on operational system performance and maintenance.
8.31	2.3.1 Daily and Weekly Inspections	The RSO or designated health physics technician should conduct a daily walk-through (visual) inspection of all work and storage areas	Y	4.3.1	Daily visual inspections focused on operational system performance and maintenance as radiological hazards are negligible for most Site operations.
8.31	2.3.1 Daily and Weekly Inspections	Problems observed during all inspections should be noted in writing in an inspection logbook or other retrievable record format. The entries should be dated, signed, and maintained on file for at least 1 year.	Y	4.2.7	Not an active UR facility. Inspection provisions in RPP Manual adequate for minimal radiological hazards at this groundwater restoration and environmental monitoring Site.
8.31	2.3.1 Daily and Weekly Inspections	The RSO should review all violations of radiation safety procedures or other potentially hazardous problems with the resident manager or other mill employees who have authority to correct the problem.	Y	4.2.7	Not an active UR facility. Inspection provisions in RPP Manual adequate for minimal radiological hazards at this groundwater restoration and environmental monitoring Site.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.31	2.3.1 Daily and Weekly Inspections	The RSO should review the daily work-order and shift logs on a regular basis to determine that all jobs and operations with a potential for exposing personnel to uranium, especially those RWP jobs that would require a radiation survey and monitoring, were approved in writing by the RSO, the RSO's staff, or the RSO's designee prior to initiation of work.	Y	4.2.5; 4.2.7	Not an active UR facility. Monthly ALARA audits conducted by ARSO and reviewed by RSO, including review of RWPs. Inspection provisions in RPP Manual adequate for minimal radiological hazards at this groundwater restoration and environmental monitoring Site.
8.31	2.3.2 Monthly Reviews	The RSO should review the results of daily and weekly inspections, including a review of all monitoring and exposure data for the month	Y	4.2.5; 4.2.7	Monthly ALARA audits conducted by ARSO including review of inspection paperwork. Monthly ALARA reports forwarded to RSO, RSTs and Closure Manager for review.
8.31	2.3.2 Monthly Reviews	The RSO should provide to the resident manager and all department heads for their review a written summary of the month's significant worker protection activities	Y	2.4, 3.1 (ARSO)	Monthly ALARA audits conducted by ARSO, with monthly ALARA reports forwarded to RSO, RSTs and Closure Manager for review.
8.31	2.3.2 Monthly Reviews	The monthly summary report should specifically address any trends or deviations from the radiation protection and ALARA program	Y	2.4, 4.2.7, 4.3	Monthly ALARA audit reports include review of trends in data, where applicable.
8.31	2.3.2 Monthly Reviews	Monthly summary reports should be maintained on file and readily accessible for at least 5 years.	Y	4.4.2.4	All data relevant to doses maintained until license termination. All data relevant to contamination surveys maintained for 3 years. A separate provision for retaining monthly ALARA reports for 5 years is not necessary for this Site, though in practice these records are stored indefinitely in electronic format.
8.31	2.3.3 Radiation Protection and ALARA Program Audit	Licensee management should have annual audits of the radiation protection and ALARA program	Y	2.4	Covered in RPP Manual.
8.31	2.4.1 RSO Qualifications (This section called out in LA21)	bachelor's degree, At least 1 year of work experience, At least 4 weeks of specialized classroom training in health physics specifically applicable to uranium recovery,	Y	3.2.1	Not an operational UR facility. RSO qualifications modified in RPP Manual to be commensurate with radiological hazards present and the scope of the RPP.
8.31	2.4.2 Health Physics Technicians	An associate degree or 2 or more years of study, At least a total of 4 weeks of generalized training (up to 2 weeks may be	Y	3.2.1	Not an operational UR facility. RST qualifications modified in RPP Manual to be commensurate with radiological hazards present and the scope of the RPP.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
		on the- job training), One year of work experience using sampling and analytical laboratory procedures,			
8.31	2.5 Radiation Safety Training	All new employees should be instructed by means of an established course in the inherent risks of exposure to radiation and the fundamentals of protection against exposure to uranium and its daughters before beginning their jobs	Y	3.2.1, 3.2.2	Covered in RPP Manual.
8.31	2.5 Radiation Safety Training	Each permanent worker should be provided an abbreviated retraining course annually.	Y	3.2.1, 3.2.2	Covered in RPP Manual.
8.31	2.5 Radiation Safety Training	Documented successful completion of the training/retraining course should also be maintained on file	Y	3.2.1	Covered in RPP Manual.
8.31	2.5 Radiation Safety Training	Supervisors should be provided additional specialized training on their supervisory responsibilities	N		Not an operational UR facility. Supervisor training a corporate decision that is not a regulatory requirement nor related to radiation protection. This topic doesn't belong in the RPP Manual.
8.31	2.5 Radiation Safety Training	All visitors who have not received training should be escorted by	Y	4.2.1, 4.2.3	Covered in RPP Manual.
8.31	2.5 Radiation Safety Training	Contractors that have work assignments in a UR facility should also be given appropriate training and safety instruction	Y	3.2.1, 3.2.2	Covered in RPP Manual.
8.31	2.6 Surveys	The RSO and radiation safety office staff are responsible for performing all routine and special radiation surveys	Y	3.1	Covered in RPP Manual.
8.31	2.7 Respiratory Protection	The RSO and the radiation safety office staff are responsible for the implementation of a respiratory protection program, if one is needed.	N	3.1, 4.4.2	Respiratory protection program unnecessary as verified by occupational air monitoring. Air monitoring provisions are discussed RPP Manual.
8.31	2.8 Bioassay Procedures	The RSO is responsible for implementing a bioassay program.	Y	4.4, 4.4.2, 4.4.2.3	Covered in RPP Manual.
8.31	3.2 Access Control	Access to airborne radioactivity areas should be controlled or restricted by the use of caution signs and procedures, or security locks when permitted by fire protection regulations.	Y	4.2.1	There are no locations at the site that qualify as Airborne Radioactivity Areas, but access controls for Controlled or Restricted Areas in effect on a Site-wide basis.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.31	3.3 Ventilation Systems	Establish a facility-specific, operational ALARA goal for concentrations of natural uranium and its daughters at less than 25% of the DAC values given in Table 1 of Appendix B to 10 CFR Part 20.	Y	4.2.2	Not an operational UR facility. Radiological air monitoring demonstrates negligible airborne radionuclide levels for routine operations (consistent with background conditions), though some RWP work can register slightly higher values. Administrative limits are adequate for ALARA goals.
8.31	3.4 Fire Control	Appropriate caution signs should be posted in areas of fire hazard.	N	N/A	Fire control procedures are covered in SOP-6 (Firefighting Procedure). Like other non-radiological procedures at the HMC facility, SOP-6 is not associated with radiation protection or RPP requirements and thus does not appear in association with the RPP Manual.
8.31	3.4 Fire Control	Fire detection systems should be checked weekly.	N	N/A	Fire control procedures are covered in SOP-6 (Firefighting Procedure). Like other non-radiological procedures at the HMC facility, SOP-6 is not associated with radiation protection or RPP requirements and thus does not appear in association with the RPP Manual.
8.31	3.4 Fire Control	Fire drills should be performed at least semiannually.	N	N/A	Fire control procedures are covered in SOP-6 (Firefighting Procedure). Like other non-radiological procedures at the HMC facility, SOP-6 is not associated with radiation protection or RPP requirements and thus does not appear in association with the RPP Manual.
8.31	3.5 Laboratory Design Features	Laboratory surfaces used for the preparation of bioassay samples should be decontaminated daily to be as close to background as practicable but less than 200 dpm α/100 cm2 of total surface contamination	Y	4.3.2	Covered in RPP Manual.
8.31	3.6 Ore and Product Storage	Provisions for storage of raw ore or other materials...that material is not dispersed by wind and rain;	N		N/A - not an operational UR facility.
8.31	3.6 Ore and Product Storage	Adequate space in the yellowcake storage and packaging areas to conduct initial surveys and spot smear tests and to enable decontamination of drums	N		N/A - not an operational UR facility.
8.31	3.7 General Equipment Considerations	Appropriate caution signs and symbols should be provided to meet the requirements of 10 CFR 20.1901, as discussed in more detail in Revision 1 of Regulatory Guide 8.30, "Health Physics Surveys in Uranium Recovery Facilities"	Y	4.2.1, 4.2.2	Covered in RPP Manual.

Reg. Guide	Section	NRC Regulatory Guide Specification	Applicable? y/n	Applicable RPP Section	Explanation
8.31	3.7 General Equipment Considerations	The use of semiautogenous methods for grinding ore is recommended because of the significantly reduced generation of airborne dusts.	N		N/A - not an operational UR facility.
8.31	4.1 Ore Storage, Handling, and Crushing Areas	Where ore is handled in the open, the objective should be to minimize blowing of dust.	N		N/A - not an operational UR facility.
8.31	4.2 Grinding, Leaching, and Concentrating Process Areas	The ventilation rate should be adequate to maintain the concentrations of radon-222 or its daughters and natural uranium from ore dust to less than 25% of the DAC value specified in Table 1 of Appendix B to 10 CFR Part 20 as modified by the note to Appendix B.	N		Not an operational UR facility. Radiological air monitoring demonstrates negligible airborne radionuclide levels for routine operations (consistent with background conditions), though some RWP work can register slightly higher values. Administrative limits are adequate for ALARA goals.
8.31	4.3 Precipitation, Drying, and Packaging Areas	General ventilation systems are required and should be designed to maintain the concentration in air to less than 25% of the DAC for natural uranium.	N		Not an operational UR facility. Radiological air monitoring demonstrates negligible airborne radionuclide levels for routine operations (consistent with background conditions), though some RWP work can register slightly higher values. Administrative limits are adequate for ALARA goals.
8.31	4.4 Miscellaneous Locations	Should be serviced by ventilation systems designed to maintain air concentration of natural uranium and its daughters to less than 25% of the DAC for natural uranium	N		Not an operational UR facility. Radiological air monitoring demonstrates negligible airborne radionuclide levels for routine operations (consistent with background conditions), though some RWP work can register slightly higher values. Administrative limits are adequate for ALARA goals.

ATTACHMENT 4

Root-Cause Analysis for License Amendments

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Attachment 4

Root Cause Analysis for the License Amendment Request regarding License Conditions no Longer Applicable

HMC has conducted a detailed root cause analysis to determine the root cause for the failure to maintain the license in a manner that properly addresses the current conditions at the site.

Contributing Factor. Following the same approach as was taken in identifying the root causes for the non-compliances identified in the Regulatory Compliance Matrix prepared as part of the ongoing self-assessment, HMC identified the contributing factor applicable to this issue to be:

> **LA5 – Change Management:** Leaders did not use a systematic process for evaluating and implementing change so that safety remained the overriding priority.

The proposed changes are intended to revise the license so that it more appropriately applies to the operation of a uranium mill tailings reclamation site and to reference only contemporary and appropriate radiation standards. As currently written, certain license conditions are not applicable because they are necessary only to properly control operations at an operating mill or rely on outdated references. These changes should have been made at the time the operation of the mill ceased.

Root Cause. The root cause for this issue is:

> Barrick and HMC management did not adequately oversee Site activities or provide resources adequate to ensure that all aspects of Site operations were conducted in full accordance with applicable requirements and standards.

Corrective actions for this and other root causes currently are under development.

ATTACHMENT 5

Third-Party Review Comments for Radiation Protection Plan with HMC Responses

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1	Many		There are many places in the RPP and the associated SOPS where "should" is used in instances where "shall" is more appropriate. Conduct a generic review of all uses of "should."	A global review was conducted for the RPP and all associated SOPs and "shall" or "must" replaced "should" where appropriate.
2	General		A statement should be made in the RPP that minors are not employed at the site due to the radiological and chemical risk that exist at the site.	Radiological and chemical risks at the site are very low. The reason that minors are not employed at the site is related to company policy, not health risks.
3	General		Information on declaring a pregnancy and the dose recommendations/limits for declared pregnant workers should be included. A form for declaring a pregnancy should be added to an SOP or to the RPP.	Dose Limits to the fetus for declared pregnant workers are given in Footnote 10 in the RPP. Additional information has been added to Section 4.4 of the RPP. Detailed training for women of child-bearing age is given annually to applicable employees. Declaration of pregnancy need not be done on an official form, but does need to be in writing to the Closure Manager as is now indicated in Section 4.4 of the RPP.
4	General		A form should be developed that facilitates the collection of prior occupational dose history for the current calendar year and should be used to collect that data when new employees are hired. This form and this requirement should be discussed in the RPP.	Given that radiological risks at the site are too low to warrant occupational radiation monitoring under 10 CFR 20.1502, determination of prior occupational dose is not required under 10 CFR 20.2104.
5	General		A form for a termination bioassay should be added to an SOP or the RPP. This form should request information on how to contact the employee in the future (in case their termination bioassay sample has a positive result and additional bioassay is required).	A "Bioassay Participation Form" has been added to SOP 14. This form is not specific to exit bioassay, but does contain complete contact information for the reason cited.
6	2.2	4	Since you are conducting workplace air monitoring and especially breathing zone monitoring, these should be factored into your internal dose assessment. In addition, although no doses or radon concentrations are provided, it appears that occupational radon doses may exceed the measured external doses. Since the NRC is requiring you to conduct new occupational exposure monitoring, that monitoring should include internal dose, especially since it may provide more dose than external pathways.	A comprehensive occupational radiation exposure study was conducted in 2017. Results are provided in a report attached to the RPP in Appendix B. This study included evaluation of potential internal doses from radon, air particulates and external gamma radiation. Results confirm that the potential for the TEDE to exceed the 500 mrem/yr threshold for occupational monitoring given in 10 CFR 20.1502 is not met. This section has been revised accordingly.
7	2.2	4	Why would you discontinue the occupational air monitoring program based on the high-volume air sampling to determine the airborne particulate concentration? That is a much more sensitive option for evaluating potential intakes and can be used to show that the worst-case dose is minimal. If the measured airborne concentrations continue to remain at background levels, then that would preclude internal monitoring via urine bioassay. Elimination of urine bioassay would eliminate the problem of results above the action level, which often appears to be due to lab errors	High-volume air monitoring was conducted as part of the above referenced occupational radiation exposure study. Results confirm the earlier conclusion that concentrations are very low, well below effluent concentrations given in 10 CFR 20 Appendix B, even on top of the tailings piles. The study concluded that BZ air sampling, bioassay and possibly dosimetry are still appropriate for certain non-routine activities at the discretion of the RSO (e.g. under a RWP). This section has been revised accordingly.

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			or sample contamination. The air sampling route is most likely the least expensive approach, too.	
8	3.1, RSO	5	The RSO should have dotted line reporting to a leader at Homestake Mining Company of California.	As per Regulatory Guide 8.31, the RSO reports directly to the resident site manager (in this case the Closure Manager). Reporting to a higher authority at HMC is not necessary for the Grants site.
9	3.1, RST	6	When is it appropriate for the RST to skip the RSO and report directly to the Site Closure Manager?	When it is a non-radiological issue.
10	3.1	6	Site workers: Are all site workers considered to be Radiation Workers? Are only those that enter controlled or restricted areas considered to be Radiation Workers? Are none of the site workers considered to be Radiation Workers? This should be clarified.	The NRC definition is referenced, along with expected doses in relation to that definition. This label is not important, but the specification that all workers performing work in Controlled or Restricted areas must follow the RPP and SOPs is important.
11	3.2.2	7	The Radiation Safety Training should include discussion of the information found in 10CFR19. This was one of the gaps identified in the gap analysis. Radiation safety training provides an excellent opportunity to discuss many of these items.	A bullet referencing worker rights and responsibilities under 10 CFR 19 has been added to this section.
12	4.1.2	8	Annual leak tests are performed on all sealed sources. You cannot leak test a plated source, which is what several of your check sources are.	You can test a plated source for removable activity – the sentence has been modified accordingly.
13	4.2.1, bullet 2	9	Restricted areas may be needed for routine (recurrent) tasks. Delete "due to non-routine..." Similarly, the controls are described as temporary. Are there no areas where permanent controls are needed?	There are no locations of routine activities at the site that warrant a permanent Restricted Area designation.
14	Table 1	10	Be consistent with units. Use mrem/hr instead of uR/hr for the external gamma administrative limit.	Site instruments are not tissue equivalent dose meters – RSTs need to know the administrative limit expressed as exposure rate, not dose rate. Dose rate is a regulatory definition for "Radiation Area" and there are no such areas at the site.
15	4.2.3 #3	11	There should be a requirement that only single-use containers should be used for drinking in the Controlled Area. This will prevent re-use of a container that has become soiled and potentially contaminated.	A statement to this effect has been added to this section.
16	4.2.3 #4	11	Most of the SOPs contain little to no description of PPE needed. This is a major shortcoming of the SOPS. Each SOP should describe the PPE needed for the various tasks covered by the SOP.	Many of these SOPs require no PPE. Exceptions are bioassay sample prep, contamination surveys, spill response, trash pit disposal, and evaporation pond operations. In each of these SOPs, statements have been added concerning PPE requirements.
17	4.2.3 #6	11	There should be mention of when one is required to submit a "baseline" or "termination" bioassay sample. These requirements can be discussed in more detail elsewhere, but the need for these types of samples should be addressed here too.	This information is already explicitly stated in bullet #6.

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18	4.2.3 #7	11	This use of breathing zone air sampling should be included in the discussion in the 2nd paragraph of Section 2.2. the use of breathing zone air samples to monitor potential intakes by workers is much more sensitive than urine bioassay	See responses to comments #6 and #7.
19	4.2.3 #9	11	Who is allowed to complete exit surveys? This really should be performed by the RST or RSO as most workers do not have a proper understanding of how to complete a proper contamination survey.	Personnel are trained by the RST to perform personal exit surveys. This has been clarified in SOP 12.
20	4.2.3 #10	12	Who is allowed to perform decontamination in accordance with SOP 12? Any survey completed after decontamination should be performed by the RSO or RST as most other employees are not going to perform a proper survey.	The RST performs all equipment release surveys and decontamination procedures as indicated in SOP 12.
21	4.2.3 #11	12	There is nothing here about workers, the RST, or the RSO having stop work authority when radiological hazards are identified. This authority should be clearly stated here.	A statement to this effect has been added to this bullet point.
22	4.2.5, footnote 4	12	One of the assumptions in your contamination control process is that the Controlled Area outside of restricted areas is clean and thus surveys are not needed for exit of personnel and equipment from the Controlled Area. However, this footnote is describing an exception to that assumption. This deserves more than a footnote. This should be its own Section 4.2.X describing the specials controls to be used for this boneyard area(s). It sounds like the boneyard should be a permanent restricted area. Is the contaminated equipment in the boneyard plastic wrapped or otherwise sealed to prevent the spread of contamination? What are the contamination control provisions used?	Most of the contamination in these boneyards is limited to surface activity inside of old pipes. Levels are relatively low and are not expected to exceed release limits, though formal surveys have not been conducted on all materials in the boneyards. Walking into boneyards presents virtually zero chance of contamination or exposures and does not warrant a Restricted Area provision (i.e. with personnel exit surveys, etc.). The disposition of boneyard materials is to be determined by the Closure Manager alone and no one else has authority to remove, handle, release or reuse any of this material without the approval and direction of the Closure Manager. A footnote is adequate to describe this exception to the assumptions applied to Controlled Areas.
23	4.2.6	13	What constitutes a potential for significant exposure to radioactive material?	The statement in question is reproduced verbatim from License Condition 24 (i.e. no quantitative definition for this term is given in LC 24). Presumably air concentrations > 10% of the DAC or potential doses > 500 mrem would be reasonable thresholds for "significance", but such thresholds are unlikely to ever exist (based on recent occupational exposure studies) and in any case, the quantitative degree of significance would not be known in advance. We believe the term "significant" in this context should continue to be a qualitative professional judgement call by the RSO.

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24	4.2.8	13	What is the frequency of the periodic inspections and audits? This is not stated in the RPP unless this is referring to the monthly ALARA audits and the annual ALARA audit. Continual inspection by the RST shouldn't be considered as an audit/inspection.	The frequency of RSO/ARSO audits is monthly, and the RSTs are required to continually monitor/inspect compliance with the RPP and SOPs.
25	4.3 # 3)	13	Is there an SOP for this? Task-related surveys are described in various provided SOPs, but not routine surveys of "clean" areas to monitor for contamination.	Yes – SOP 12 gives the procedures for contamination surveys. Clean area surveys are specifically described in Section 6.4, and a quarterly schedule specification has been added.
26	4.3.1	14	The frequency of visual inspections should be included here as well as how those inspection will be documented. Reference to a procedure that outlines these inspections would be appropriate, too. The maintenance schedule should also be discussed or a reference provided to a document where the schedule can be found. The section states that records of these inspections/audits will be documented. Who will maintain those records for review?	Inspection activities occur during routine operations and/or as specified in applicable SOPs depending on the system being inspected. Maintenance for various types of equipment (e.g. RO systems) is done in accordance with manufacturer and/or SOP specifications and as required by any performance issues. This section has been modified for clarity, including citation of example SOPs. Inspection procedures are generally described in the RPP, but specifics are given only where applicable in certain SOPs (some of which do not directly pertain to the RPP).
27	4.3.4	14	Any RWP requiring personnel exit surveys should include establishment of a temporary restricted area.	This is already the case, and the paragraph has been edited for clarity in this regard.
28	4.3.4	14	Are the individual workers allowed to complete their own exit surveys? This is concerning as most employees do not know how to perform a proper survey.	Yes, SOP 12 specifies that the RST will train applicable personnel in the proper procedure for personal exit surveys and documentation.
29	4.3.6	15	What is the survey frequency for designated eating/drinking or "clean/areas" inside the Admin Building? Who will perform these surveys? Where will the records be stored? Who will review the survey results?	A monthly schedule is specified in this section. As indicated in SOP 12, the RST performs these surveys, and this has been clarified in this section.
30	4.4	17	The logic behind limiting routine dosimetry and bioassay sampling is reasonable. Has the site considered the value of continuing with dosimetry and breathing zone sampling as a bare minimum? There is a value in a "negative" result.	Dosimetry, bioassay and BZ sampling are limited to non-routine activities at the discretion of the RSO. RWP monitoring results consistently show "negative" results for non-routine activities under RWPs as well as routine operations, but potential exposures to radioactive materials are higher under RWP conditions. While monitoring data for RWPs is considered appropriate under ALARA principles, the value of also obtaining proof of negative monitoring results for routine operations is not an effective use of resources with respect to worker safety. Physical hazards at the site are much greater than radiological hazards, and where possible in terms of

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				regulatory compliance, take precedence in terms of resource allocation. This approach is consistent with optimization objectives underlying ALARA principles.
31	4.4.2.2	20	This Section says that TEDEs will be calculated, but SOP 13 says CEDE and thus TEDE will not be calculated.	SOP 13 has been revised to eliminate the inconsistency – moving forward, both external and internal dose estimates will be calculated, but only for workers that require radiological monitoring for non-routine activities under RWPs or otherwise at the discretion of the RSO.
32	4.4.2.3	21	While it is hard to determine the dose from positive routine sampling if a specific intake date is not known, the data can be used to determine the potential internal dose from a chronic exposure over one's entire career. This is a positive aspect of routine sampling that should be considered. Another option is to perform RWP based breathing zone air sampling and use that to determine the potential internal dose to employees. One or the other should be used, but both would be redundant.	BZ Air monitoring will be used to estimate internal dose. This has been clarified in SOP 13. Bioassay results will be compared against toxicity-based concentration criteria (predetermined action levels) found in NRC Regulatory Guide 8.22. This has been clarified in SOP 14 (bioassay) and in the RPP.
33	4.6.3.1	24	Radon will flow hydrologically downgradient under calm or near-calm wind conditions. Otherwise, it will flow with the prevailing wind.	True, but radon will also mix, disperse and become rapidly diluted in turbulent wind conditions. The highest concentrations at locations distant from the source would occur downgradient during relatively calm nighttime and early morning hours.
34	4.7.2	25	Reference is made to routine QC measurements. We would expect these measurements to include trending in instrument performance, but SOP 16 includes no such provisions. (Need forms)	The RPP and SOP 16 specify control limits of ± 20% of average or typical readings. QC readings are taken daily when instruments are in use. Spare instruments are available in the event that QC control limits are exceeded. Separate trend analysis of instrument performance over time (e.g. control charts) is not crucial, but a form has been added to generate initial QC limits (EDF-28D), and daily QC forms (EDF-28A - 28C) have been updated to include QC limits.
35	4.7.2.1	25	The procedures which use instruments should explicitly include a check to make sure the calibration is not expired. While the date is recorded, instruction to not use an expired calibration is not present.	A statement to this effect has been added to SOP 16.

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36	4.7.2.2	26	The process to conduct these QC measurements and compare to the 20% uncertainty criteria over time is not present in SOP 16 or EDF-13. The SOP and form need improvement to include the process to do this trending.	See response to comment #34.

Attachment 1

Proposed Changes to NRC License No. SUA-1471

License Condition	Current Requirement	Proposed Change	Justification
10	This license authorizes 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.	MODIFY LAST PART OF LC 10	Occupational radiation protection elements and procedures incorporated into this LC by reference to Table 3 in the 1993 letter are outdated as the site is no longer an operational uranium mill. Propose revising the latter part of LC 10 as follows: "...in accordance with the environmental monitoring program outlined in Table 1 of a letter submitted September 2, 1993 (and as modified by letter dated March 7, 1996), and with the radiation protection program defined in the current Radiation Protection Program (RPP) Manual.
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.	DELETE	This condition references an archaic NRC document from September 1984 that addresses general limits for release of equipment or packages from restricted areas. A more appropriate reference is the uranium and progeny specific limits in Table 2 of Regulatory Guide 8.30 ("Health Physics Surveys in Uranium Recovery Facilities"). The applicable sections of RG 8.30 have been included in the updated RPP Manual.
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	DELETE	Replace RPA with RSO throughout the license. Regulatory Guide 8.31, "Information Insuring that Occupational Radiation Exposure at Uranium Recover Facilities will be ALARA," was reviewed and commitments modified in attached RPP Manual to meet current licensed operations, not an operating uranium mill.

	Uranium Mills will be As Low As is Reasonably Achievable." [Applicable Amendment: 27]		
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.	CHANGE LAST SENTENCE OF CONDITION	Change to: "An up-to-date copy of each written procedure will be kept on-site for check-out and use in areas where they apply." It is impractical and cumbersome to maintain copies of procedures in certain areas on the HMC site, e.g., the STP, LTP, and Evaporation ponds. A more reasonable and adequate approach would be to maintain them in the office.
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 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.	DELETE	The RPP Manual(Attached) addresses the requirements for a Radiation Work Permit outlined in License Condition 24. Therefore, this condition can be deleted.
32	The licensee shall follow the guidance set forth in U.S. Nuclear Regulatory Commission, Regulatory Guides 8.22, "Bioassay at Uranium Recovery Facilities," 8.30, "Health Physics Surveys in Uranium	DELETE	Regulatory Guides 8.22, "Bioassays at Uranium Recovery Facilities," 8.30, "Health Physics Surveys in Uranium Recovery Facilities," and 8.31, "Information Relevant to Ensuring that Occupational

	Recovery Facilities," and 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposure at Uranium Recovery Facilities will be As Low As is Reasonably Achievable (ALARA)," or NRC-approved equivalent. A. DELETED by Amendment 27. B. Any time uranium in a worker's urine specimen exceeds 15 micrograms per liter (ug/l), the annual ALARA audit will indicate what corrective actions were considered or performed. C. DELETED by Amendment 34. [Applicable Amendments: 2, 34]		Radiation Exposure at Uranium Recovery Facilities will be ALARA," are no longer generally applicable because HMC is no longer an operating uranium recovery facility. Applicable provisions have been extracted and incorporated into the RPP Manual. The RPP has been updated such that radiation protection and control requirements are commensurate with current radiological conditions and potential exposures at the site. Relevant sections of these three RGs are retained where applicable to activities and potential exposure circumstances at the site. The updated RPP Manual is attached for NRC review and approval. Supporting SOPs are available onsite for NRC review during site inspections.

ATTACHMENT 6

NRC Form 313

Homestake Mining Company P.O. Box 98, Grants, NM 87020 Tele: (505) 287-4456 Fax: (505) 287-4457

NRC FORM 313 (10-2017) 10 CFR 30, 32, 33, 34, 35, 36, 37, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR MATERIALS LICENSE

APPROVED BY OMB: NO. 3150-0120 EXPIRES: 06/30/2019

Estimated burden per response to comply with this mandatory collection request: 4.3 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

INSTRUCTIONS: SEE THE CURRENT VOLUMES OF THE NUREG-1556 TECHNICAL REPORT SERIES ("CONSOLIDATED GUIDANCE ABOUT MATERIALS LICENSES") FOR DETAILED INSTRUCTIONS FOR COMPLETING THIS FORM: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/. SEND TWO COPIES OF THE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

MATERIALS SAFETY LICENSING BRANCH
DIVISION OF MATERIAL SAFETY, STATE, TRIBAL AND RULEMAKING PROGRAMS
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA,

SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

IF YOU ARE LOCATED IN:

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MISSISSIPPI, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING,

SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
1600 E. LAMAR BOULEVARD
ARLINGTON, TX 76011-4511

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR *(Check appropriate item)*

- ☐ A. NEW LICENSE
- ☑ B. AMENDMENT TO LICENSE NUMBER SUA-1471
- ☐ C. RENEWAL OF LICENSE NUMBER

2. NAME AND MAILING ADDRESS OF APPLICANT *(Include zip code)*

Homestake Mining Company of California
P.O. Box 98
Grants, NM 82070

3. ADDRESS WHERE LICENSED MATERIALS WILL BE USED OR POSSESSED

Homestake Mining Company of California
560 Anaconda Road
Route 605
Milan, NM 87021

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

David W. Pierce

BUSINESS TELEPHONE NUMBER: (505) 287-4456 ext. 34

BUSINESS CELLULAR TELEPHONE NUMBER: (505) 238-9701

BUSINESS E-MAIL ADDRESS: dpierce@barrick.com

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL
   a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.
6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.
7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE.
8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.
9. FACILITIES AND EQUIPMENT.
10. RADIATION SAFETY PROGRAM.
11. WASTE MANAGEMENT.

12. LICENSE FEES (Fees required only for new applications, with few exceptions*)
(See 10 CFR 170 and Section 170.31)
***Amendments/Renewals that increase the scope of the existing license to a new or higher fee category will require a fee.**

FEE CATEGORY: _____ AMOUNT ENCLOSED $: _____

PER THE DEBT COLLECTION IMPROVEMENT ACT OF 1996 (PUBLIC LAW 104-134), YOU ARE REQUIRED TO PROVIDE YOUR TAXPAYER IDENTIFICATION NUMBER. PROVIDE THIS INFORMATION BY COMPLETING NRC FORM 531: https://www.nrc.gov/reading-rm/doc-collections/forms/nrc531info.html.

13. CERTIFICATION. *(Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.*

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 37, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.
WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE	SIGNATURE	DATE
David W. Pierce Closure Manager	David W. Pierce	18 JUN 2019

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			$		
APPROVED BY				DATE	