



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

May 3, 2018

Thomas Wohlford
Closure Manager
Homestake Mining Company of California
P.O. Box 98
Grants, NM 87020

SUBJECT: HOMESTAKE MINING COMPANY, NRC INSPECTION
REPORT 040-08903/2018-001

Dear Mr. Wohlford:

This letter refers to the U.S. Nuclear Regulatory Commission (NRC) team inspection conducted March 26-28, 2018, at the Homestake Mining Company site near Grants, New Mexico. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The enclosed report presents the results of this inspection.

The inspection included a review of the 16 Conditions specified in the Confirmatory Order dated March 28, 2017 (Agencywide Documents Access and Management System [ADAMS] Package No. ML17060A752). The inspection also included a review of previous NRC inspection findings. The inspection results were presented to you and your staff at the conclusion of the onsite inspection on March 28, 2018.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation involves your failure to initiate plans within one week to survey for leakage and repair the liner as needed to stop evaporation pond leakage in excess of the action leakage rate on several occasions in 2016-2017. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2.b of the NRC's Enforcement Policy. The violation is being treated as an NCV because you identified it, notified the NRC by letter dated November 15, 2017 (ADAMS Accession No. ML18094A120), took short-term corrective actions, and proposed comprehensive, long-term corrective actions. In addition, the NCV was not repetitive and was not willful.

The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to: (1) the Regional Administrator, Region IV; and (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Robert Evans, Senior Health Physicist, at 817-200-1234, or the undersigned at 817-200-1191.

Sincerely,

/RA by RSB Acting for/

Ray L. Kellar, PE, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Docket No. 040-08903
License No. SUA-1471

Enclosure
NRC Inspection Report 040-08903/2018-001

cc w/encl:
M. Hunter, New Mexico Environment Dept.
S. Rodriguez, New Mexico Environment Dept.
B. Tsosie, U.S. Department of Energy

**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket: 040-08903

License: SUA-1471

Report: 040-08903/2018-001

Licensee: Homestake Mining Co. of California

Facility: Grants Reclamation Project

Location: Cibola County, New Mexico

Dates: March 26-28, 2018

Inspectors: Robert Evans, PhD, CHP, PE, Senior Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

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Approved by: Ray Kellar, PE, Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

Homestake Mining Company of California
NRC Inspection Report 040-08903/2018-001

This U.S. Nuclear Regulatory Commission (NRC) inspection was a routine, announced inspection of decommissioning activities being conducted at the Homestake Mining Company site in Cibola County, New Mexico. The inspectors concluded that the licensee was conducting decommissioning activities in accordance with regulatory and license requirements, with one exception as described below.

Management Organization and Controls

- The licensee had sufficient management oversight and site staffing to implement the requirements of the license. One previously cited violation regarding the licensee's failure to establish procedures was closed after the inspectors confirmed that the licensee had established the required procedures. The licensee conducted the annual radiation program audit and embankment inspections in 2017 in accordance with license and regulatory requirements. The audit and inspection were found to be comprehensive and provided useful information to the licensee. A second previously cited violation regarding environmental evaluations was closed, but a third previously cited violation regarding cultural resource inventories was left open pending update of the applicable procedure. (Section 1.2)

Radiation Protection/Maintenance and Surveillance Testing

- The licensee implemented a radiation protection program that was in compliance with license and regulatory requirements. Occupational exposures were undetectable or small fractions of the regulatory limits. One Unresolved Item regarding compliance with regulatory requirements for occupational monitoring was reviewed and left open pending completion of data sampling and analysis by the licensee's representatives. (Section 2.2)

Effluent Control and Environmental Protection

- The licensee implemented an environmental monitoring program in accordance with license requirements. No sample result exceeded a regulatory limit; although, the licensee's method for calculating public doses continues to be reviewed by the NRC's program office. The licensee continued to implement the groundwater corrective action program and treatment systems. However, technical challenges with the reverse osmosis and zeolite treatment systems limited the licensee's treatment capacity. The licensee conducted and reported the land use survey as required by the license. (Section 3.2)

Radioactive Waste Management

- The licensee was adequately controlling site fences, gates, and signs. Ambient gamma exposure rates were consistent with previous inspection findings. The licensee was maintaining the evaporation ponds, with one exception. The licensee failed to take timely corrective actions in response to exceedances of the action leakage rate. The licensee expects to implement pond repairs in the next few years. The NRC reviewed the status of a previously cited violation regarding exceedances of the radon flux standard. The violation

was left open pending submittal of additional information to the NRC. The licensee implemented the NRC-accepted procedure for measuring the radon flux emanation rate during the 2017 sampling event. (Section 4.2)

Follow-up of Confirmatory Action Letters or Orders

- The inspectors reviewed the status of the 16 conditions referenced in Section V of the Confirmatory Order dated March 28, 2017. Conditions 9 and 11-13 have been evaluated and are determined to be satisfied. Conditions 1-8, 10, and 14-16 remain open with pending actions. (Section 5.2)

Report Details

Site Status

The Homestake Mining Company facility was a conventional uranium mill that operated from 1958-1990. The mill was decommissioned in 1993-1994, and cleanup of the wind-blown tailings was completed in 1995. Tailings generated from milling operations were placed in two piles, a large tailings pile (LTP) and a small tailings pile (STP).

The side slopes of the LTP have been covered with a permanent radon barrier and erosion protection layer. An interim cover is being maintained on top of the LTP. Two lined evaporation ponds are situated on top of the STP. The remainder of the STP is covered with an interim cover. In addition, two water collection ponds were constructed adjacent to the STP. A third evaporation pond was constructed in 2011 to the north of the LTP.

At the time of the inspection, the licensee continued to implement the groundwater corrective action program. The licensee operated injection and recovery wells as well as the reverse osmosis and zeolite cleanup systems. The licensee continued to dispose of wastewater in the three evaporation ponds.

In the future, the licensee plans to take the evaporation ponds out of service for repairs. The licensee also plans to implement a pilot test to determine the feasibility of using horizontally drilled wells to remediate the groundwater underneath the LTP. The inspectors will review these activities during future inspections.

1 Management Organization and Controls (88005)

1.1 Inspection Scope

The inspectors reviewed the licensee's organization and management controls to ensure that the licensee was maintaining effective oversight of decommissioning activities.

1.2 Observations and Findings

a. Site Staffing

The inspectors reviewed site staffing to ensure that the licensee had sufficient staff to implement license requirements. At the time of the inspection, site staffing consisted of 11 Homestake Mining Company employees including the closure manager, senior shift supervisor, shift supervisor, and four environmental technicians. One environmental technician position remained open.

Contractors were used as necessary to implement the radiation protection, training, environmental monitoring, and groundwater corrective action programs including collection of samples and installation of wells. The licensee used contract employees to fill the positions of compliance officer, civil engineer/project manager, and radiation safety officer (RSO). The RSO was a part-time contract consultant. In addition to the RSO, the licensee created the alternate RSO position. The alternate RSO supported the RSO and acted on behalf of the RSO when the RSO was unavailable; however, the RSO retained the responsibility under the license. The alternate RSO had the same

training requirements as the RSO and was authorized to sign radiation work permits (RWPs) and other document requiring RSO sign-offs.

Contractors were also used for construction work, electrical repairs, and routine site labor. The licensee estimated that it retained approximately 20 contractors on site during any given day. In summary, the licensee had sufficient management oversight and site staffing to implement the day-to-day operations.

b. Site Procedures

License Condition 23 states that standard procedures shall be established for all activities involving radioactive materials that are handled, processed, or stored. During the previous inspection, the inspectors identified several examples where site activities were being conducted without written procedures. In particular, the licensee was disposing of wastes at the STP, operating the 1,200 gallon per minute (gpm) zeolite cleanup system, and operating the evaporation ponds without written procedures. The licensee's failure to establish standard procedures for all operational activities involving radioactive materials was identified as a violation of License Condition 23 (VIO 040-08903/1701-01).

The licensee responded to this violation by letter dated August 3, 2017 (ADAMS Accession No. ML17223A189). The licensee committed to generating updated written procedures by November 3, 2017. The inspectors reviewed the licensee's procedures that were developed in response to the violation.

The first procedure, SOP-22, "Procedure for Onsite Disposal of Radiologically Impacted Waste," was developed for onsite disposal of radiologically impacted wastes. This procedure provided details of what can be disposed, how to dispose of the material, and documentation of disposals. The second procedure, SOP-25, "1,200 gpm Zeolite Water Treatment Plant," was developed for operation of the 1,200 gpm zeolite system. This procedure was noted to be a work in progress, in part, because the system was out of service during the inspection. The licensee will validate and verify the procedure when the system is restarted. The inspectors also reviewed the licensee's procedures for evaporation pond operations, including SOP-23, "Evaporation Pond Operations," as well as leak detection system monitoring.

Because the licensee has developed the procedures that were specified in the violation, Violation 040-08903/1701-01 was closed. The inspectors plan to walk down the procedures in the field with licensee staff during a future inspection.

In addition to the above procedures, the inspectors noted that the licensee was updating its procedure for implementing License Condition 41 regarding reportable events. The inspectors discussed this procedure with licensee staff. The inspectors will review this updated procedure during a future inspection.

c. Routine Audits, Inspections, and Reviews

An annual radiation protection and As Low As Reasonably Achievable program audit is required by License Condition 32 and regulation 10 CFR 20.1101(c). In accordance with License Condition 42, the audit is required to be submitted to the NRC as part of the annual report. The most recent annual audit was conducted in December 2017 and was

included as Appendix C to the Annual Monitoring Report and Performance Review dated March 29, 2018 (ADAMS Accession Nos. ML18102A955, ML18102A970). The inspectors reviewed the annual audit and concluded that the auditor conducted a detailed review of the radiation protection program. The auditor did not have any findings or identify any negative trends. The auditor provided four recommendations, although none were safety significant. The auditor also identified improvement in site procedures. In summary, the licensee's audit was reviewed and determined to be comprehensive and met license and regulatory requirements.

License Condition 12 states that periodic embankment inspections shall be conducted, and License Condition 42 states that the inspection report shall be included in the annual report. The most recent embankment inspection was conducted in November 2017. The inspection results were presented in Appendix D to the licensee's letter and report dated March 29, 2018. The LTP and STP were found to be in generally good condition. The embankment inspector identified problems with the evaporation ponds, problems that are further discussed in Section 4.2 of this inspection report. The report provided recommendations for the licensee, such as repair of damaged settlement/survey monuments on the LTP and rill management and grade control on the STP. In summary, the licensee conducted the annual inspection, the inspection findings were found to be comprehensive, and the results of the inspection were provided in the annual report.

d. Safety and Environmental Review Panel Process

During the April 2017 inspection, documented in NRC Inspection Report 040-08903/2017-001 dated July 6, 2017 (ADAMS Accession No. ML17164A088), the inspectors concluded that the licensee failed to conduct an environmental evaluation and cultural resource inventory during the evaluation of Safety and Environmental Review Panel (SERP) 15-01. These failures were identified as violations of License Conditions 16 and 43, respectively (VIO 040-08903/1701-02 and VIO 040 08903/1701-03). The inspectors noted that a potential cause for these two non-compliances could be traced to the licensee's implementing procedure. The licensee responded to these violations by letter dated August 3, 2017 (ADAMS Accession No. ML17223A189). The licensee committed to develop and/or update written procedures by November 3, 2017.

The inspectors reviewed the licensee's revised procedure SOP-10, "Procedure for Conducting a Safety and Environmental Review Panel (SERP)," during this inspection. The inspectors determined that the environmental review, as required by License Condition 16, was sufficiently discussed in the procedure. Specifically, SOP-10, Table 1, SERP Evaluation Checklist, was sufficient to ensure that the environmental review would be completed as required by License Condition 16. As such, the inspectors determined that Violation 040-08903/1701-02 could be closed.

However, procedure SOP-10 did not adequately address the cultural resource inventory as required by License Condition 43. The inspectors noted that the procedure did not provide sufficient detail to ensure that License Condition 43 requirements would be correctly implemented during future cultural resource inventories. During the inspection, licensee representatives agreed to review SOP-10 and update the procedure as necessary. Accordingly, the inspectors determined that VIO 040-08903/1701-03 should remain open, pending NRC review of the revised procedure.

1.3 Conclusions

The licensee had sufficient management oversight and site staffing to implement the requirements of the license. One previously cited violation regarding the licensee's failure to establish procedures was closed after the inspectors confirmed that the licensee had established the required procedures. The licensee conducted the annual radiation program audit and embankment inspections in 2017 in accordance with license and regulatory requirements. The audit and inspection were found to be comprehensive and provided useful information to the licensee. A second previously cited violation regarding environmental evaluations was closed, but a third previously cited violation regarding cultural resource inventories was left open pending update of the applicable procedure.

2 Radiation Protection/Maintenance and Surveillance Testing (83822/88025)

2.1 Inspection Scope

The inspectors examined the licensee's radiation protection and maintenance and surveillance programs for compliance with license and 10 CFR Part 20 requirements.

2.2 Observations and Findings

a. Radiation Protection Program

License Condition 10 provides the requirements for the occupational exposure monitoring program. The licensee's Manual of Standard Practices provided detailed instructions for implementing the various aspects of the radiation protection program. In January 2018, the licensee's contractor issued the Radiation Protection Program Manual to further describe the radiation protection program requirements. At the time of the inspection, the radiation protection program consisted of external occupational dose monitoring, bioassays, instrument calibrations, lunch room and change room surveys, and training. As required by RWPs, the licensee implemented internal monitoring, equipment release, respiratory protection, and personnel contamination programs.

The inspectors reviewed the licensee's personnel monitoring program. During 2017, 105 individuals were monitored. Based on the licensee's records, no individual received an occupational exposure from external sources. Breathing zone air samples were collected in October-November 2017 for workers that were plugging and abandoning wells on the LTP. The air sampling included air particulate and radon progeny sampling. The average sample result was less than 10-percent of the respective derived air concentration limit. The sample results were below the 500 millirem per year threshold specified in 10 CFR 20.1502 for internal occupation dose monitoring. Accordingly, no internal doses were assigned to workers based on these air sample results.

The inspectors reviewed the licensee's bioassay sample results. In 2017, the licensee collected 259 samples including blanks and spiked samples. The licensee also collected 43 samples in January-February 2018. The highest personnel sample result was 5.7 micrograms of uranium per milliliter of urine, a result that was below the lowest action level of 15 micrograms per milliliter.

The licensee issued six RWPs in 2017 and three RWPs in the first 3 months of 2018. The RWPs were issued for non-routine work. The RWPs included a field level risk assessment and provided instructions for equipment and personnel surveys as required. Overall, the RWPs provided sufficient information for the work being performed.

The inspectors reviewed the licensee's training program. The training program included annual refresher training, new site employee training, and weekly safety meetings. The licensee maintained logs of training. Since the previous inspection, the RSO continued to maintain a training log to document training for radiation safety technicians. Also, the RSO attended 40-hour training at an offsite location in June 2017. In summary, the licensee developed a training program that met the intent of the license.

The licensee maintained radiological survey meters to implement its radiation protection program. The meters were used to measure exposure rates, surface contamination levels, and removable contamination levels. The licensee conducted annual calibrations of the meters. Records were available during the inspection to demonstrate that the meters in service had been calibrated.

Radiological surveys were conducted for release of equipment and to verify that clean areas were not contaminated. The inspectors reviewed the licensee's records for 2017 and the first three months of 2018. No survey result exceeded the respective action level. During the inspection, the licensee's representative indicated that new survey forms will be used to document future surveys. These new forms will provide additional details about the item surveyed and the results of the survey.

Finally, the inspectors reviewed the licensee's calibration records for air samplers. The records for breathing zone samplers were available during the inspection. The calibration program requirements for the licensee's high volume air samplers were not clearly defined and described in site procedures. The licensee conducted some calibrations, but since the requirements were not clear, the inspectors could not determine if the licensee's calibration records were complete. The licensee's representatives agreed to update site procedures as necessary, to clearly describe the high volume air sampler calibration program. The inspectors will review the revised procedure during a future inspection.

b. Regulatory Compliance with 10 CFR Part 20 Requirements for Internal Occupational Dose Monitoring

During the September 2017 inspection, documented in NRC Inspection Report 040-08903/2017-002 dated December 20, 2017 (ADAMS Accession No. ML17353A414), the inspectors observed several contractors performing embankment work on one of the zeolite beds. At that time, the work was not being conducted under an RWP, there was no standard procedure for the work, and the licensee was not conducting internal dose monitoring. Since the licensee was not performing internal occupational dose monitoring, and since the licensee did not have recent data for concentrations of airborne uranium or radon progeny on top of the LTP, it was unclear whether the licensee was in compliance with 10 CFR 20.1502(b)(1), which requires, in part, that a licensee must monitor employees for occupational intake of radioactive material if they are likely to receive greater than 10 percent of the applicable annual limit on intakes from Table 1, columns 1 and 2, of Appendix B to 10 CFR Part 20. At that time, the inspectors concluded that there was not enough information to

determine if the licensee was in compliance with regulatory requirements, and this issue was identified as an Unresolved Item (URI 040-08903/1702-01).

In response to the Unresolved Item, the licensee implemented several program changes including procedure revisions. In addition, the licensee implemented a radiological sampling program to characterize the occupational exposure concentrations of all radionuclides of concern. The characterization study included data collection to assess internal and external exposures of workers performing routine and non-routine work on the LTP and STP. The inspectors concluded that the licensee was implementing an extensive radiological sampling program to assess the radiological hazards across the site. The licensee is expected to finish the data collection in April 2018 and submit a final report to the NRC for consideration a few weeks later. This Unresolved Item remains open pending completion of the licensee's collection and analyses of the sampling data.

2.3 Conclusions

The licensee implemented a radiation protection program that was in compliance with license and regulatory requirements. Occupational exposures were undetectable or small fractions of the regulatory limits. One Unresolved Item regarding compliance with regulatory requirements for occupational monitoring was reviewed and left open pending completion of data sampling and analysis by the licensee's representatives.

3 **Effluent Control and Environmental Protection (88045)**

3.1 Inspection Scope

The inspectors reviewed the licensee's effluent and environmental protection programs to ensure compliance with license and regulatory requirements.

3.2 Observations and Findings

a. Effluent and Environmental Monitoring

License Conditions 10, 15, and 23 specify the environmental monitoring program requirements. Details about the implementation of the program are provided in the licensee's Manual of Standard Practices. The program consisted of air particulate, radon gas, and direct radiation sampling. The inspectors compared the program in operation at the time of the inspection to the requirements specified in the license. In summary, the inspectors confirmed that the licensee was implementing the environmental monitoring program as required by the license.

License Condition 15 requires the licensee to report the results of the environmental monitoring program to the NRC. The inspectors reviewed the two semi-annual environmental monitoring reports for 2017 dated August 17, 2017, and February 22, 2018 (ADAMS Accession Nos. ML17261A206, ML17261A208, and ML18066A088), and the data used in the development of the reports. In summary, the licensee collected the required number of samples, and none of the sample results exceeded regulatory limits. The inspectors observed that the report for the first half of 2017 erroneously included radon and direct radiation data from 2015. During the onsite inspection, the licensee agreed to resubmit the first half report to the NRC with corrected data for radon and

direct radiation. The licensee subsequently submitted the updated report to the NRC by letter dated April 5, 2018 (ADAMS Accession No. ML18102A605).

The licensee conducted air particulate sampling at seven locations including two nearest residences and one background station. (The license requires air particulate sampling at six locations, but the licensee added a seventh station near evaporation pond EP-3 in 2011.) The licensee measured ambient gamma radiation levels at eight locations and ambient radon gas concentrations at nine locations. At the end of each calendar year, the licensee calculated the estimated dose to a member of the public using the environmental monitoring program sample results.

The licensee's records indicate that air particulates remained below 5-percent of the applicable effluent concentration limit in 2017 with most results less than 1-percent of the limits. For the first half of 2017, the radon concentrations ranged from 3.1 E-10 microcuries per milliliter ($\mu\text{Ci}/\text{ml}$) at the background station to 6.6 E-10 $\mu\text{Ci}/\text{ml}$ at Station HMC-2, located at the northeastern outer perimeter. For the second half of 2017, radon concentrations ranged from 3.3 E-10 $\mu\text{Ci}/\text{ml}$ (background) to 8.3 E-10 $\mu\text{Ci}/\text{ml}$. The radon results were below the effluent concentration limit of 1.0 E-8 $\mu\text{Ci}/\text{ml}$ for radon-222 with daughters removed as given in 10 CFR Part 20, Appendix B, Table 2. Direct radiation levels for the first half of 2017 ranged from 51-59 millirem for the six month period. The direct radiation levels for the second half of 2017 ranged from 54-69 millirem.

Using these sample results, the licensee conducted a public dose assessment. The licensee reported the results of the dose assessment in Attachment 5 of its semi-annual environmental monitoring report for the second half of 2017. The licensee reported a dose of 46 and 41 millirem per year for locations HMC-4 (south of property) and HMC-5 (southwest of LTP), respectively. These doses were slightly less than the doses calculated in 2016 (66 millirem per year at station HMC-4 and 47 millirem per year at station HMC-5). These calculated doses for 2016-2017 were less than the 100-millirem regulatory limit as specified in 10 CFR 20.1301(a).

By letter dated December 16, 2015 (ADAMS Accession No. ML15264B052), the NRC staff requested additional information about the licensee's 2014 public dose assessment. The licensee responded to the NRC's request by letter dated January 19, 2016 (ADAMS Accession No. ML16033A407). Because the NRC's program office is currently evaluating the licensee's methodology for calculating public doses, the inspectors did not assess the adequacy of the licensee's calculated doses for compliance with the annual public dose limit.

b. Groundwater Corrective Action Program

License Condition 35 states that the licensee shall implement a groundwater compliance monitoring program to assess the performance of the groundwater restoration program. The inspectors reviewed the licensee's control and operation of various site systems used to implement the groundwater corrective action program. The licensee continues to operate a number of extraction and injection wells. Offsite extraction wells are routed to the zeolite system for filtration, while onsite extraction wells are routed to the reverse osmosis system. The treated water from the zeolite and reverse osmosis systems is mixed with fresh water from the San Andres aquifer in the post treatment tank and injected into the subsurface aquifers, as described in Figure 2.1-13 from the 2017

Annual Monitoring Report/Performance Review (ADAMS Accession Nos. ML18102A955, ML18102A970).

The NRC staff reviewed the groundwater monitoring data presented in the 2017 Annual Monitoring Report/Performance Review. The inspectors noted that the licensee collected all required samples per License Condition 35 and reported the sample results per License Condition 15.

During the inspection, the licensee explained that the design capacity for the two zeolite systems was 1,500 gpm, and the design capacity for the reverse osmosis system was 1,200 gpm. As detailed in Section 2.1.8 of the 2017 Annual Monitoring Report/Performance Review, the zeolite systems operated at an annual average rate of 279 gpm and the reverse osmosis system operated at 553 gpm. At the time of inspection, both the 300 and 1,200 gpm zeolite systems were offline due to maintenance activities. The licensee added barley bags within the zeolite bed to mitigate its algae problems, as discussed in NRC Inspection Report dated July 6, 2017 (ADAMS Accession No. ML17164A088). The licensee noted that the barley had reduced the algae problem, but has not eliminated it. The licensee also explained that larger-sized zeolite cobbles have been placed on top of the 300 gpm zeolite bed to limit wind-blown transport of fine-grained zeolitic material from the bed. If the use of the cobbles in the 300 gpm system is successful, the licensee intends to add them to the 1,200 gpm zeolite system.

At the time of the inspection, the reverse osmosis system was operating at a reduced capacity due to pressure excursions in the microfiltration system at higher flowrates. The pressure excursions were caused by higher turbidity levels coming out of the clarifiers. The licensee was investigating the possibility of adding a polymer to help promote flocculation and was conducting an evaluation to determine the impacts, if any, of the polymer on system performance or the environment.

Evaporation Pond EP-3 was approved by License Amendment 35 and is discussed in the NRC's Technical Evaluation Report dated June 26, 2008 (ADAMS Accession No. ML080920562). License Condition 35.A states, in part, that "[w]ell DD and one additional monitoring well to the middle of the southeast side of EP-3 (to be named later) is to be added to the Table list and will be monitored semi-annually for the B and F list of parameters." An overlay of satellite images and monitoring wells from the 2016 Annual Performance Review (see Figure 1 below) shows well DD2, which was drilled in 2008 and is located on the southeast side EP-3. The inspectors concluded that well DD2 was the well "to be named later" as currently listed in the license. Additionally, during the site inspection, the licensee's site hydrologist identified well DD2 as the unnamed well described in License Condition 35.A. The NRC plans to update this license condition during a future revision of the license.

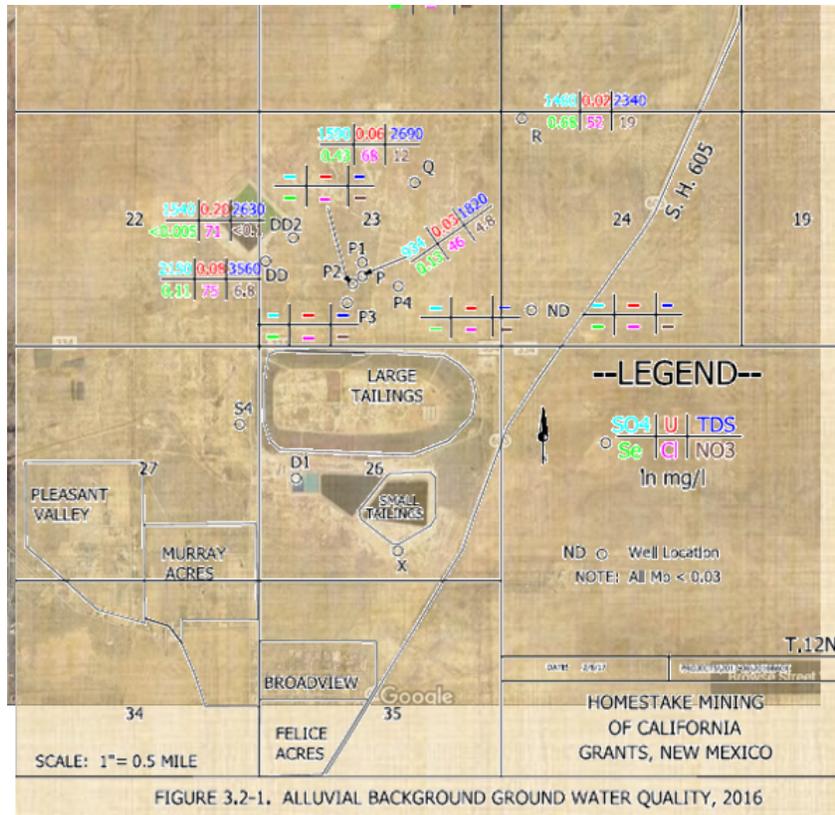


Figure 1. Overlay of Alluvial Background Ground Water Quality with Satellite Images (adapted from Figure 3.2-1 of the 2016 Annual Performance Report for Homestake and Google Maps)

On November 28, 2017 (ADAMS Accession No. ML17340A405), the licensee submitted a request to re-seed former land application areas with native vegetation to decrease dust. By letter dated February 9, 2018 (ADAMS Accession No. ML18019A038), the NRC noted that it had coordinated the review with the New Mexico Environmental Department and the State did not have any questions concerning the dust suppression scope of work.

By letter dated November 14, 2017 (ADAMS Accession Nos. ML17340A406, ML17321A085), the licensee submitted a final status survey plan for release of the former land application areas. During the onsite inspection, the licensee’s representatives discussed the results of their radiological survey of the land application areas. The survey was conducted in December 2017-January 2018. One area was identified that required remediation. After remediation, the area will be resurveyed. The licensee plans to issue a final status survey report to the NRC at a later date, describing the areas surveyed and the results of the survey.

The NRC staff is currently reviewing the licensee’s groundwater monitoring plan and zeolite water treatment system license amendment requests submitted to the NRC on November 20, 2017 (ADAMS Accession No. ML18018A102), and December 11, 2017 (ADAMS Accession No. ML17361A007), respectively. The licensee submitted clarifying information for the zeolite system application by letter dated February 22, 2018 (ADAMS Accession No. ML18066A583). By letter dated January 15, 2018 (ADAMS Accession

No. ML18025B339), the licensee informed the NRC that it was working to create an updated groundwater flow model for the Grants Reclamation Project. This model would be a basin-wide model, versus a site-specific model.

The licensee notified the NRC by letter dated May 17, 2017 (ADAMS Accession No. ML17145A307), that it had discontinued the tripolyphosphate (TPP) injection pilot testing program. During the inspection, the licensee confirmed that they had discontinued the TPP pilot program. NRC staff is currently conducting a technical review of the TPP pilot study to determine if there will be any long-term impacts to groundwater remediation.

On November 30, 2017 (ADAMS Accession No. ML17340A408), the licensee submitted a proposed pilot program to install and operate horizontal wells within the LTP and beneath the LTP in the alluvial aquifer. The NRC responded by letter dated March 20, 2018 (ADAMS Accession No. ML18051A162). The NRC staff coordinated its review with the New Mexico Environmental Department and did not have any questions concerning the proposed scope of work. Documentation associated with the installation of these wells will be reviewed during future NRC inspections following completion. In addition, NRC staff will review the associated environmental evaluation and cultural resource inventory after completion of the licensee's evaluations.

c. Land Use Survey

License Condition 42 specifies that a land use survey be conducted and presented in the annual report to the NRC. The most recent land use survey was included as Appendix E to the annual report dated March 29, 2018. The land use survey summarized current land uses and identified changes to land use in proximity to the site. The land uses included livestock grazing, crop irrigation in two lots, and residential development activities. All water users were supplied with municipal water supplies except one resident who declined municipal water. The inspectors confirmed that the licensee conducted the land use survey and reported the results to the NRC as required by the license.

3.3 Conclusion

The licensee implemented an environmental monitoring program in accordance with license requirements. No sample result exceeded a regulatory limit; although, the licensee's method for calculating public doses continues to be reviewed by the NRC's program office. The licensee continued to implement the groundwater corrective action program and treatment systems. However, technical challenges with the reverse osmosis and zeolite treatment systems limited the licensee's treatment capacity. The licensee conducted and reported the land use survey as required by the license.

4 Radioactive Waste Management (88035)

4.1 Inspection Scope

The inspectors interviewed licensee representatives, toured the site, and reviewed applicable records to determine if the licensee had established and maintained an effective program for managing radioactive wastes.

4.2 Observations and Findings

a. Site Tours

The inspectors toured the site and observed the LTP, STP, evaporation ponds, collection ponds, zeolite systems, and reverse osmosis building. Site fences, gates, and perimeter postings were being maintained by the licensee. One faded sign was observed on the main entry gate, and licensee representatives agreed to replace the sign in a timely manner.

As noted in Section 2.2 of this inspection report, the inspectors previously identified an Unresolved Item involving contract workers performing embankment improvements on the zeolite ponds without procedures or an RWP, and the contractors were being monitored for external occupational radiation exposure only. During this inspection, the inspector observed the sampling equipment being used to monitor the radiological conditions across the site. The equipment appeared to be operable and in good condition. The inspectors will review the licensee's sample results and analysis during a future inspection.

During site tours, the NRC inspectors conducted radiological surveys using a Ludlum Model 19 microRoentgen survey meter (NRC No. 015544, calibrated to radium-226, calibration due date of 07/25/18). With a background of approximately 10 microRoentgen per hour ($\mu\text{R/hr}$), the ambient gamma radiation levels on top of the LTP in the vicinity of the zeolite ponds were observed to be at or near background levels. The burial area on the STP measured approximately 34 $\mu\text{R/hr}$. The highest measurement, 800 $\mu\text{R/hr}$, was identified at the southeastern corner of evaporation pond EP-1. This pond is located within the radiologically restricted area and is not accessible to members of the public. These survey results were consistent with results identified during previous inspections. No area required posting as a radiation area (5,000 $\mu\text{R/hr}$).

b. Observation of Evaporation Ponds

By letter dated May 5, 2017 (ADAMS Accession No. ML17124A527), the licensee notified the NRC and New Mexico Environment Department about its plans to conduct a technical review of the condition of the liner in evaporation pond EP-1. In addition, by letter dated November 15, 2017 (ADAMS Accession No. ML18094A120), the licensee notified the NRC that some of the leak detection pumping rates were in excess of the action leakage rate at ponds EP-2 and EP-3. During the site inspection, the licensee provided tours of ponds EP-1, EP-2, and EP-3 and status updates for the liners in the three ponds.

As discussed in the NRC Inspection Report dated July 6, 2017 (ADAMS Accession No. ML17164A088), NRC inspectors observed slumping beneath the high-density polyethylene liner in the southeastern corner of EP-1. NRC inspectors observed the slumping again during this inspection, as well as ongoing repairs that have been made to the liner. The licensee stated that the slumping will be addressed as part of the licensee's installation of a new liner in EP-1. The licensee also installed netting on a side slope of EP-1 to reduce rill formation. If the netting is successful, the licensee will use netting on additional side slopes.

As noted above, the licensee assessed EP-1 and determined that the liner needed to be replaced. The feasibility study has been completed, and the licensee was working on the permitting requirements and engineering design. The installation of a new double liner with a leak detection system will require the draining of EP-1, which will necessitate additional evaporative capacity in the other two ponds. To achieve that additional evaporative capacity, the licensee is considering the installation of enhanced evaporators in EP-3. The licensee anticipates that the replacement of the EP-1 liner will begin in 2019 and will take approximately 6 months to complete. Depending on the groundwater processing flowrate through the reverse osmosis system and zeolite systems, the holding capacity of ponds EP-2 and EP-3 could limit the quantity of groundwater being processed while EP-1 remains out of service.

In its letter dated November 15, 2017, the licensee informed the NRC that the action leakage rate was exceeded at ponds EP-2 and EP-3 for short periods of time in 2016 and 2017, suggesting that the primary liners were leaking. The leak detection performance criterion of 775 gallons per day per acre foot of storage is specified in the licensee's letter dated July 18, 2007 (ADAMS Accession No. ML072110267), and is referenced in License Condition 35.D.

The July 18, 2007, letter provides the actions that the licensee committed to take when the action leakage rate is exceeded. In particular, the licensee is required to initiate plans within one week to survey for leakage and repair the liner as needed to stop leakage in excess of the action leakage rate. Contrary to the above, during short periods of time in 2016 and 2017, the licensee failed to take the immediate actions specified in the July 18, 2007, letter. The licensee's failure to take the required actions in response to exceedances of the action leakage rate in 2016 and parts of 2017 was identified as a violation of License Condition 35.D (NCV 040-08903/1801-01).

However, this violation is being treated as a Non-Cited Violation (NCV), consistent with Section 2.3.2.b of the NRC's Enforcement Policy. The licensee identified the violation, notified the NRC of the violation, took short-term corrective actions, and proposed comprehensive long-term corrective actions, as documented below. There was no indication of previous inadequate corrective actions or willfulness. In addition, there is no evidence that the two ponds are leaking fluid into the groundwater, based on samples recently collected from local monitoring wells.

During the inspection, the inspectors reviewed the licensee's corrective actions taken in response to the exceedances of the action leakage rate. As noted in the licensee's letter dated November 15, 2017, the licensee took short-term corrective actions including development of a standard procedure for leak detection system monitoring and response relative to the action leakage rate criteria. The licensee also lowered the water level in EP-2 which reduced the leak rate. Long-term corrective actions include repairing the pond liners as necessary.

The licensee explained that repairs to Cell B in EP-3 would require lowering the water level, which cannot occur until after the installation of the new liner in EP-1. In its November 15, 2017, letter, the licensee also indicated that they believe that the secondary liner is not leaking, based on the results of sampling of monitoring wells around EP-3. Currently, leakage through the primary liner continues to be monitored and automatically pumped back into EP-3.

The licensee noted during the inspection that several of the K wells located on the downgradient/southern boundary of EP-1 indicate slight increases in contaminant concentrations. The licensee stated that it is not clear if these increases are related to leakage from EP-1. However, the licensee noted that all of these wells are located within the controlled area. The groundwater in the vicinity of pond EP-1 was being extracted from local wells and treated by reverse osmosis.

The inspectors also noted that the licensee was conducting weekly inspections of the ponds for water fowl; although, the licensee previously committed to conducting these inspections on a daily basis. License Condition 35.D references the licensee letter dated March 17, 2008 (ADAMS Accession No. ML080800343) which requires daily inspections of ponds for water fowl. The licensee has been conducting these inspections weekly since January 2018. Although this inspection finding was not safety significant, the licensee's representatives indicated that they would start conducting these inspections daily, as committed in the letter dated March 17, 2008.

c. (Open) Violation 040-08903/1601-01; Exceedance of radon flux limit

License Condition 36.E requires the licensee to demonstrate compliance with the radon flux standard by performing a radon flux survey for the LTP and STP on an annual basis. As documented in NRC Inspection Report 040-08903/2016-001 dated April 20, 2017 (ADAMS Accession No. ML17088A761), the licensee was cited for its failure to collect a sufficient number of radon flux samples, correctly calculate the radon flux average value, and maintain the radon flux for the LTP below the standard specified in the license and regulations.

The licensee responded to the violation by letter dated May 16, 2017 (ADAMS Accession No. ML17143A271). In its letter, the licensee indicated that it had placed additional interim cover material onto the LTP, in an effort to reduce the radon flux emanation rate. The licensee stated that additional reviews would be necessary to determine the required cover thickness as well as proposed corrective actions based on these additional reviews. The licensee would submit this additional information to the NRC within 30 days. Further, the licensee committed that it would submit a sampling procedure to the NRC for review and approval within 30 days.

By letter dated September 13, 2017 (ADAMS Accession No. ML17264A070), the licensee provided the results of its additional reviews. Due to technical constraints on placement of the final radon barrier on top of the LTP, the licensee requested an exemption from regulatory requirements for compliance with the radon flux standard for the LTP until completion of groundwater restoration. By letter dated October 19, 2017 (ADAMS Accession No. ML17292A953), the NRC advised the licensee to resubmit the request for an exemption with sufficient detail so the NRC could conduct a detailed technical review of the request. The inspectors discussed the licensee's exemption request during the inspection. The licensee is expected to submit an updated request for an exemption in the near future. The NRC will conduct an administrative review of the licensee's request upon receipt of the request.

Also by letter dated September 13, 2017, the licensee submitted a proposed procedure to the NRC for measuring the radon flux emanation rates on the STP and LTP. The licensee proposed to collect 100 measurements across the top of the LTP and calculate an arithmetic mean of the results. For the STP, the licensee would collect 100

measurements across the earthen region of the STP (some areas were covered by evaporation ponds), and calculate an area-weighted average of the results. By letter dated October 19, 2017, the NRC concluded that the procedure was acceptable on an interim basis, until the NRC and licensee agreed on longer-term solutions to the radon flux exceedances.

The licensee implemented the new procedure during the September-October 2017 sampling event. The results of the sampling event were presented to the NRC in Attachment 3 of the semi-annual environmental monitoring report for 2017 dated February 22, 2018. In summary, the radon flux emanating from the LTP averaged 46.6 picocuries per meter-squared second, a value that exceeded the 10 CFR Part 40, Appendix A, Criterion 6 standard of 20 picocuries per meter-squared second. The LTP was expected to exceed the radon flux standard. The radon flux emanating from the STP averaged 3.5 picocuries per meter-squared second, a result that was below the flux standard.

This violation remains open until the licensee submits a revised request for an exemption from the radon flux standard. The licensee plans to submit the request to the NRC in the near future.

4.3 Conclusions

The licensee was adequately controlling site fences, gates, and signs. Ambient gamma exposure rates were consistent with previous inspection findings. The licensee was maintaining the evaporation ponds, with one exception. The licensee failed to take timely corrective actions in response to exceedances of the action leakage rate. The licensee expects to implement pond repairs in the next few years. The NRC reviewed the status of a previously cited violation regarding exceedances of the radon flux standard. The violation was left open pending submittal of additional information to the NRC. The licensee implemented the NRC-accepted procedure for measuring the radon flux emanation rate during the 2017 sampling event.

5 Follow-up of Confirmatory Action Letters or Orders (92703)

5.1 Inspection Scope

The inspectors reviewed the status of the 16 Conditions specified in Section V of the Confirmatory Order dated March 28, 2017.

5.2 Observations and Findings

By letter dated March 28, 2017, the NRC issued a Confirmatory Order to the licensee as a result of successful Alternate Dispute Resolution mediation between the NRC and the licensee (ADAMS Accession Package No. ML17060A752). Section V of the Order includes 16 conditions that were agreed upon during mediation. The following Condition actions were reviewed and verified by the inspectors:

Condition 1

Condition 1 requires, in part, that the licensee submit its root cause protocol (RCP) to an independent third party consultant with expertise in root cause analysis (RCA) and

provide a copy of the independent third party reviewed analysis protocol to the NRC within 120 days of issuance of the Order. The RCP will identify any changes made by the independent third party reviewer and include a qualification statement for the third party reviewer. This protocol will be used to complete Conditions 2, 3, and 4 of the Order.

The requirement under Condition 1 of the Order to submit the RCP is considered to be satisfied. Details of the NRC's review of Condition 1 is provided in Section 3.2 of NRC Inspection Report 040-08903/17-002 dated December 20, 2017 (ML17353A414).

Conditions 2, 3, and 4 of the Order have not been completed by the licensee; therefore, verification of the use of the RCP for these Conditions remains open.

Condition 2

Condition 2 requires, in part, that within 30 days of submitting the RCP to the NRC, the licensee will use the RCP to analyze the reasons for the apparent violations documented in the NRC's letter dated October 4, 2016 (ADAMS Accession No. ML16251A526). In addition, the licensee will submit any proposed corrective actions to the NRC for review and approval within 60 days of completing the RCA.

The licensee requested an extension in submission of the RCA for the five apparent violations by letter dated August 23, 2017 (ADAMS Accession No. ML17237C046). The NRC granted approval to extend the submittal due date to September 15, 2017, in an email dated August 24, 2017 (ADAMS Accession No. 17243A234). The NRC provided a formal approval of the extension request by letter dated October 19, 2017 (ADAMS Accession No. ML17241A299). The October 19, 2017, letter also acknowledged receipt of the licensee's September 15, 2017, RCA of the five apparent violations (ADAMS Accession No. ML17263A125). The licensee concluded that the common root cause for each of the five apparent violations was lack of communication by licensee management to other licensee staff and corporate managers, and a lack of understanding of regulatory compliance by licensee's management.

The licensee submitted the corrective action plan for the five apparent violations by letter dated November 14, 2017 (ADAMS Accession Package No. ML17320A118). Condition 2 of the Order will remain open until the NRC has reviewed and approved the licensee's proposed corrective actions.

Condition 3

Condition 3 of the Order requires the licensee to complete an assessment of all activities to determine whether all activities are authorized and are being conducted in compliance with NRC requirements.

By letter dated November 17, 2017 (ADAMS Accession No. ML17325B023), the licensee requested an extension until September 3, 2018, for submittal of the self-assessment. The NRC granted the extension request by letter dated December 26, 2017 (ADAMS Accession No. ML17340B340). During the inspection, the licensee stated that the self-assessment will be submitted by the September 3, 2018, extension due date. Condition 3 of the Order remains open.

Condition 4

Condition 4 of the Order requires the licensee to engage an independent third party consultant to review and evaluate the self-assessment as described in Condition 3 of the Order. Condition 4a states that the licensee must also submit the name and qualifications of the consultant for NRC approval within 30 days of issuance of the Order, Condition 4b requires the licensee to provide the consultant a copy of the self-assessment within 120 days of the self-assessment, and Condition 4c requires the licensee to provide the consultant's review of the self-assessment within 120 days of when the consultant received it for review. In addition, Condition 4d states that the NRC will perform an audit of the assessment and the contractor's report. The licensee will be required to incorporate any NRC audit findings.

The licensee submitted correspondence dated April 14, 18, and 24, 2017, to provide the names and qualifications of the third party consultant for NRC approval (ADAMS Accession Nos. ML17108A258, ML17108A207, and ML17115A424). The NRC approved the consultants by correspondence dated April 19 and May 3, 2017 (ADAMS Accession Nos. ML17114A106 and ML17138A303). As noted in Section 3.2 of NRC Inspection Report 040-08903/17-002 dated December 20, 2017 (ML17353A414), Condition 4a has been satisfied and is considered complete.

The NRC approved an extension of the due date for the self-assessment to September 3, 2018 (see Condition 3 above). Conditions 4b and 4c remain open and cannot be completed until the self-assessment has been completed.

Condition 5

Condition 5 of the Order requires that any changes or additions to the license or procedures resulting from this Order will be submitted to the NRC as license amendment requests for NRC approval, or an update to the appropriate licensee procedure after notification of the NRC. All license amendment requests will be submitted to the NRC within 60 days of receiving the results of the NRC's audit.

The licensee has not submitted any license amendment requests or notified the NRC of any proposed updates to the procedures beyond the updated procedures directly required by the Order. During the inspection, the licensee stated that an extension to the due date of the Condition might be necessary. Condition 5 of the Order remains open.

Condition 6

Condition 6 of the Order requires the licensee to submit a revised groundwater Corrective Action Program (CAP) to the NRC by the end of calendar year 2018, including amendments to the license approved by that date.

The licensee's November 17, 2017, letter (see Condition 3 above) expressed uncertainty in meeting the current due date of December 31, 2018, for submission of the revised CAP due to the extended time frame needed to complete the self-assessment discussed in Condition 3 of the Order. The letter states that, "the need for and the length of any extension of the date for submittal of an updated CAP will depend on factors that will only be known by the parties as Homestake Mining Company (HMC) nears completion

of the self-assessment.” The letter further states that “...the NRC should be aware now that HMC may later make a request for an extension of the December 31, 2018, Confirmatory Order update submittal deadline dependent on the results of the self-assessment.” The NRC will review any future extension requests and respond accordingly. Condition 6 remains open and cannot be completed until the revised CAP is submitted to the NRC.

Condition 7

Condition 7 of the Order requires the licensee to conduct initial and annual refresher training for all individuals (employees and vendors, commensurate with their duties) engaged in licensed activities. Section (a) of this condition required initial and annual training to address awareness and understanding of regulatory and license requirements, including but not limited to informing licensee employees of the jurisdiction of the NRC, Environmental Protection Agency, and New Mexico Environmental Department over the Grants site. Section (b) of this condition required the licensee to maintain documentation for each training session conducted, which will include a summary of the contents of the training and individual attendance.

In addition, the inspectors reviewed the ongoing, one-on-one training conducted by the RSO for the radiation safety technicians. The inspectors found the training and documentation to be adequate. Condition 7 of the Order is an on-going requirement and will continue to be evaluated during future inspections.

Condition 8

Condition 8 of the Order requires the licensee to use the mass balance methodology described in the revised 2012 groundwater CAP submittal to complete an analysis of the re-injection system’s impact to the time estimate for completion of the groundwater CAP. The analysis was to be completed within 120 days of issuance of the Order, and the licensee was required to discuss the methodology, data, and analysis with the NRC, no less than 30 days prior to its finalization of the re-injection analysis.

The licensee and the NRC discussed the methodology, data, and analysis during a teleconference on June 26, 2017, and during a follow-up meeting on June 27, 2017. Notes summarizing the discussions held during the meetings on June 26 and 27, 2017, as well as the licensee’s presentation, are publicly available (ADAMS Accession No. ML17352B067). The licensee submitted the impact analysis for the re-injection system by letter dated July 26, 2017 (ADAMS Accession Package No. ML17212A010). The NRC acknowledged receipt of the impact analyses for the re-injection program by letter dated August 1, 2017 (ADAMS Accession No. ML17213A29). The NRC is currently performing the audit of the licensee’s submitted analysis, and the NRC will provide the audit findings to the licensee once they are completed. Condition 8 of the Order remains open and can be reviewed for closure once the licensee incorporates NRC’s comments into the analysis.

Condition 9

Condition 9 of the Order requires within 30 days from issuance of this Order that the licensee perform adjustments to the operations of the reverse osmosis plant to ensure compliance with the groundwater protection standards. The licensee was also required

to evaluate the procedure required by License Condition 23 to ensure the process is adequate to reduce constituent concentrations to values below the groundwater protection standards listed in License Condition 35.B before discharge.

The requirement under Condition 9 of the Order to perform adjustments to the operations of the reverse osmosis plant and evaluate the procedure required by License Condition 23 is considered to be satisfied. Details of the NRC's review of Condition 9 is provided in Section 3.2 of NRC Inspection Report 040-08903/17-002 dated December 20, 2017 (ML17353A414).

Condition 10

Condition 10 of the Order requires an analysis by the licensee using the methodology described in NUREG-1620 to assess the impact of exceedances discharged from the reverse osmosis plant as documented in the NRC's October 4, 2016, letter (ADAMS Accession No. ML16251A526). The analysis was to be completed within 120 days of issuance of the Order, and the licensee was required to discuss the methodology, data, and analysis with the NRC, no less than 30 days prior to its finalization of the re-injection analysis. The NRC will then perform an audit of the analysis, and provide the licensee with the audit results, including any recommended changes. The licensee will incorporate NRC audit results in the actions described in Condition 5 of this section.

The licensee and the NRC discussed the methodology, data, and analysis during a teleconference on June 26, 2017, and during a follow-on meeting on June 27, 2017. Notes summarizing the discussions held during the meetings on June 26 and 27, 2017, as well as the licensee's presentation, are publicly available (ADAMS Accession No. ML17352B067). The NRC acknowledged receipt of the impact analyses for the exceedances at the reverse osmosis plant by letter dated August 1, 2017 (ADAMS Accession No. ML17213A29). The NRC is currently performing the audit of the analysis and will provide the audit results in writing once completed. Condition 10 of the Order remains open and will be reviewed once the licensee incorporates NRC's audit results into the analysis.

Condition 11

Condition 11 of the Order directly modified License Condition 35.C of the license when the Order was issued on March 28, 2017. Condition 11 of the Order is considered to be satisfied.

Condition 12

Condition 12 of the Order requires that the licensee develop written procedures to ensure that monthly composite samples are obtained from Sampling Point 2 (SP2) and that results of those monthly composite samples are reported in the semi-annual and annual reports required by License Conditions 15 and 42. The licensee was required to submit these procedures to the NRC within 120 days of issuance of the Order.

Written procedures for monthly sampling of Sample Point 2 were submitted to the NRC by letter dated July 26, 2017 (ADAMS Accession No. ML17212A025). The inspectors reviewed the revised procedures during the inspection and determined that they were adequate and will ensure that monthly composite samples are obtained from Sample

Point 2. Further, the inspectors noted that the results of the monthly samples were reported in the semi-annual report dated February 22, 2018 (ADAMS Accession No. ML18066A088). Condition 12 of the Order is considered to be satisfied.

Condition 13

Condition 13 of the Order directly modified License Condition 15 of the license when the Order was issued on March 28, 2017. The modification provides clarifying language for when the semi-annual effluent and environmental monitoring reports are due. Condition 13 of the Order is considered to be satisfied.

Condition 14

Condition 14 of the Order requires that the licensee identify sources of supply water, soil and groundwater data, and associated reports, and will use those data to develop a land application assessment of any impacts resulting from the use of irrigation water containing byproduct material to past, current, or foreseeable future uses of the land application areas. The land application assessment will establish background concentrations, remedial action levels (radiological dose and non-radiological risk), and current concentrations of the contaminants of concern in its license at all areas used for land application. The land application assessment will also identify and assess impacts from soil pore water data at the land application areas. Additionally, the licensee was required to take immediate action to ensure that the land application areas are not being used to produce crops for human consumption. The land application assessment was required to be submitted within 180 days of issuance of this Confirmatory Order.

The licensee submitted the land application assessment by letter dated September 25, 2017 (ADAMS Accession No. ML17270A066). A proposed final status survey plan for release of the former land application areas was submitted by letter dated November 14, 2017 (ADAMS Accession No. ML17340A406). The data obtained for the final status survey is intended to augment the existing soil data within the land application impact assessment report submitted on September 25, 2017. The NRC is currently reviewing the September 25, 2017, land application assessment report and is awaiting the results of the final status survey. Once the final status survey report is received, the NRC will decide whether to perform a confirmatory survey at the former land application areas to support the findings in the NRC staff Safety Evaluation Report.

By memorandum dated June 16, 2017 (ADAMS Accession No. ML17328A507), the licensee provided verification that they are not using the former irrigation areas to produce crops for human consumption. Condition 14 of the Order remains open.

Condition 15

Condition 15 of the Order states that if the results of the analysis discussed in Condition 14 of the Order indicates that radiological doses and non-radiological risks are in excess of the NRC-approved remedial action levels, the licensee will propose appropriate measures to control both use and access to the impacted areas, a corrective action plan, if necessary, to achieve the NRC-approved remedial action levels, and final status survey plans to demonstrate that the radiological doses and non-radiological risks are below NRC-approved remedial action levels.

Condition 15 of the Order remains open and will be reviewed once the NRC completes the Safety Evaluation Report for the land application assessment required by Condition 14 of the Order.

Condition 16

Condition 16 of the Order requires that the licensee provide an integrated table that sets forth all actions taken pursuant to the Order. An updated integrated table will be provided semi-annually, until all license and procedure changes under the Order are completed. The licensee submitted the most recent integrated table by letter dated March 28, 2018 (ADAMS Accession No. ML18092A099). Condition 16 of the Order will remain open until all license and procedure changes under the Order are completed.

5.3 Conclusions

The inspectors reviewed the status of the 16 conditions referenced in Section V of the Confirmatory Order dated March 28, 2017. Conditions 9 and 11-13 have been evaluated and are determined to be satisfied. Conditions 1-8, 10, and 14-16 remain open with pending actions.

6 Exit Meeting

The inspectors reviewed the inspection results during an exit meeting conducted at the conclusion of the onsite inspection on March 28, 2018. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary.

SUPPLEMENTAL INFORMATION

Partial List of Persons Contacted

Homestake Mining Company

W. Archuleta, Senior Shift Supervisor, Homestake Mining Co.
B. Bingham, Compliance Officer, Homestake Mining Co.
C. Farr, Assistant Radiation Safety Officer, ERG
G. Hoffman, Hydrogeologist, Hydro-Engineering
B. Kidwell, Compliance/Self-Assessment, Enercon
R. Whicker, Radiation Safety Officer, ERG
T. Wohlford, Closure Manager, Homestake Mining Co.
T. Wright, Acting Compliance Officer, Wright Environmental

Inspection Procedures Used

IP 83822	Radiation Protection
IP 88005	Management Organization and Controls
IP 88025	Maintenance and Surveillance of Safety Controls
IP 88035	Radioactive Waste Management
IP 88045	Effluent Control and Environmental Protection
IP 92703	Follow-up of Confirmatory Action Letters or Orders

Items Opened, Closed, and Discussed

Opened

040-08903/1801-01	NCV	Failure to implement license-required corrective actions
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Closed

040-08903/1701-01	VIO	Failure to establish standard procedures for all activities involving radioactive materials
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040-08903/1701-02	VIO	Failure to prepare and record environmental evaluation before engaging in any activity not previously assessed
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040-08903/1801-01	NCV	Failure to implement license-required corrective actions
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Discussed

040-08903/1601-01	VIO	Exceedance of radon flux limit from LTP
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040-08903/1701-03	VIO	Failure to administer cultural resource inventory before engaging in any developmental activity not previously assessed
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040-08903/1702-01	URI	Compliance with 10 CFR Part 20 Requirements
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List of Acronyms

ADAMS	Agencywide Documents Access and Management System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
IP	Inspection Procedure
LTP	Large Tailings Pile
$\mu\text{Ci/ml}$	microcuries per milliliter
$\mu\text{R/hr}$	microRoentgens per hour
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
RSO	radiation safety officer
RWP	radiation work permit
RCA	Root Cause Analysis
RCP	Root Cause Protocol
SERP	Safety and Environmental Review Panel
STP	Small Tailings Pile
TPP	tripolyphosphate
URI	Unresolved Item

HOMESTAKE MINING COMPANY, NRC INSPECTION REPORT 040-08903/2018-001,
 DATED MAY 3, 2018

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ADAMS ACCESSION NUMBER: ML18115A480

SUNSI Review ADAMS: Non-Publicly Available Non-Sensitive Keyword:
 By: RJE Yes No Publicly Available Sensitive NRC-002

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DATE	04/26/18	04/26/18	04/26/18	04/26/18	5/3/18

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