



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

August 28, 2020

EA-16-114

David Pierce
Closure Manager
Homestake Mining Company of California
P.O. Box 98, Hwy 605
Grants, NM 87020

SUBJECT: NRC INSPECTION REPORT 040-08903/2020-001

Dear Mr. Pierce:

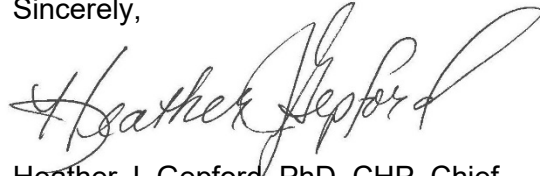
This letter refers to the U.S. Nuclear Regulatory Commission (NRC) inspection conducted from July 22-30, 2020, of the Grants Reclamation Project in Cibola County, New Mexico. This inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of representative records and interviews with personnel. The inspection was conducted remotely with records being reviewed offsite and interviews with site staff being conducted by telephone.

The results of the inspection were presented to you and your staff at the conclusion of the inspection on July 30, 2020. A follow-up conference call was held with you and other members of your staff on August 20, 2020, to discuss the impacts of reduced pond evaporative capacity on groundwater activities. The details of this inspection are provided in the enclosure to this letter. Since no violations were identified, no response to this letter is required.

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 or proprietary 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 at 817-200-1234 or the undersigned at 817-200-1156.

Sincerely,

A handwritten signature in black ink, appearing to read "Heather J. Gepford". The signature is fluid and cursive, with a large, stylized initial 'H'.

Heather J. Gepford, PhD, CHP, Chief
Materials Licensing & Decommissioning Branch
Division of Nuclear Materials Safety

Docket: 040-08903
License: SUA-1471

Enclosure:
NRC Inspection Report 040-08903/2020-001

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

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

Docket No.: 040-08903

License No.: SUA-1471

Report No.: 040-08903/2020-001

Licensee: Homestake Mining Company of California

Facility: Grants Reclamation Project

Location: Cibola County, New Mexico

Dates: July 22-30, 2020

Inspectors: Martha Poston, Health Physicist
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety, Region IV

Robert Evans, PhD, PE, CHP, Senior Health Physicist
Materials Licensing and Decommissioning Branch
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Ron Linton, Hydrogeologist
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Approved by: Heather J. Gepford, PhD, CHP, Chief
Materials Licensing and Decommissioning Branch
Division of Nuclear Materials Safety, Region IV

Attachment: Supplemental Inspection Information

Enclosure

EXECUTIVE SUMMARY

Homestake Mining Company of California NRC Inspection Report 040-08903/2020-001

This inspection was a routine, announced U.S. Nuclear Regulatory Commission (NRC) inspection of decommissioning activities being conducted at the Grants Reclamation Project, Homestake Mining Company's former mill in Cibola County, New Mexico. In summary, Homestake Mining Company of California (the licensee) was conducting decommissioning activities in accordance with license and regulatory requirements.

Management Organization and Controls

- The licensee had sufficient staff for the work in progress, although staffing had been impacted by the COVID-19 virus. The licensee had not conducted a Safety and Environmental Review Panel under its performance-based procedure since the previous inspection. The review of standard operational procedures was delayed, and operational procedures will be reviewed during a future inspection. The licensee conducted an annual radiation protection program audit as required by license and regulatory requirements. A previously cited violation involving the licensee's failure to conduct an environmental evaluation as required by the license was reviewed and closed. A second previously cited violation involving the licensee's failure to implement Regulatory Guide 8.31 requirements with four examples was reviewed and closed. A third previously cited violation involving the licensee's failure to establish a reverse osmosis system procedure was reviewed but remained open to allow the NRC inspectors to walkdown the procedure during a future inspection. (Section 1.2)

Radiation Protection/Maintenance and Surveillance

- The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures were small fractions of the regulatory limits. Bioassay sampling and air sampling were performed as required by radiation work permits. Radiological survey results indicated that the licensee was controlling contamination. The licensee conducted instrument calibration in accordance with the license and site procedures. The licensee trained new individuals to conduct the daily walkthroughs, in part, to restore compliance with license requirements. A previously cited violation involving a potentially uncalibrated instrument was closed. (Section 2.2)

Radioactive Waste Processing, Handling, Storage and Transportation

- The licensee conducted and reported the annual embankment inspection as required by the license. The report identified one high priority recommendation that was promptly corrected by the licensee. The inspectors reviewed the status of the ponds. At the time of the inspection, there was no clear evidence that any of the ponds were leaking contaminants into the environment. The inspectors reviewed the licensee's dose assessment estimate for evaporation pond (EP)-1 relining efforts. The inspectors concluded that the expected doses will be well below the regulatory limits. (Section 3.2)

Effluent Control and Environmental Protection

- The licensee implemented its environmental and effluent monitoring program in accordance with license requirements. No environmental or effluent sample exceeded any license or regulatory limit. The licensee conducted radon flux measurements on the large tailings pile and small tailings pile in accordance with the NRC-accepted interim sampling procedure. The licensee implemented a groundwater monitoring and corrective action program as required by the license, although the licensee had experienced several challenges since the previous inspection. The licensee conducted an annual land use survey and reported the results to the NRC as required by the license. (Section 4.2)

Emergency Preparedness

- The licensee established and implemented emergency response procedures. The licensee also implemented semi-annual fire drills in response to a previously cited violation. A second previously cited violation involving the licensee's failure to have a procedure for evaluating the reportability of an incident/event was reviewed and closed. (Section 5.2)

Follow-up of Confirmatory Action Letters or Orders

- Confirmatory Order EA-16-114 (Order) Conditions 1, 3, 4, 9, and 11-13 have been evaluated and are determined to be satisfied. Confirmatory Order Conditions 2, 5-8, 10, and 14-16 remain open and will continue to be evaluated by the NRC. (Section 6.2)

Report Details

Site Status

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

The side slopes of the LTP have been covered with the final 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 its groundwater corrective action program. The licensee operated injection and recovery wells as well as the reverse osmosis (RO) system. The zeolite system did not operate during the first half of 2020; the licensee anticipates restarting the zeolite system in August or September of 2020. The licensee continued to dispose of wastewater in evaporation ponds EP-2 and EP-3.

1 Management Organization and Controls (IP 88005)

1.1 Inspection Scope

The inspectors reviewed the licensee's oversight and control of licensed 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 onsite inspection, site staffing consisted of 11 employees including the closure manager, community relations specialist, health and safety/regulatory compliance manager, site engineer, hydrogeologist, administrative assistant, environmental specialist/radiation safety technician (RST), and four maintenance technicians.

There were three new staff positions that were open at the time of the inspection including the environmental specialist, RO plant operator, and maintenance technician positions. Contractors were used as needed to fill positions such as radiation safety officer (RSO) and assistant RSO (ARSO). Contractors were also used for construction, drilling, electrical, and routine site work. The inspectors determined that the licensee had sufficient management and support staff for the work in progress.

The inspectors discussed with licensee staff the impacts of the COVID-19 virus on site operations. As a result of the virus, some work was delayed or conducted at a reduced rate. For example, the licensee informed the NRC that the relining of evaporation pond EP-1 was delayed into 2021 due to the virus (Agencywide Documents Access and Management System [ADAMS] Accession No. ML20154K730). Other impacts included

implementation of new work controls, social distancing rules, and use of remote work as appropriate.

On April 6, 2020, the licensee requested a temporary exemption from the training requirements for the RST to allow another, specified individual to fill the position due to impacts of the COVID-19 virus (ADAMS Accession No. ML20098F606). The NRC granted the exemption by letter dated April 8, 2020 (ADAMS Accession No. ML20099A179). The exemption was approved for 90 days from the date of issue or upon return of the qualified RST, whichever occurred first. The RST returned to work on May 27, 2020. The inspectors interviewed the temporary RST and determined he had a good understanding of his duties and responsibilities while acting as the RST. Based on interviews and records reviewed during the period the temporary RST was acting, the inspectors concluded radiological safety was maintained during the period the exemption was in place.

b. Review of Licensee's Change Process

License Condition 16 of the NRC Materials License SUA-1471, Amendment 56, dated June 24, 2020, states, in part, that before engaging in any activity not previously assessed by the NRC, the licensee shall prepare and record an environmental evaluation of such activity. The licensee's program to evaluate changes was described in Standard Operating Procedure (SOP-10), "Procedure for Conducting a Safety and Environmental Review Panel," Revision 6. Since the previous inspection, conducted in October 22-24, 2019, (ADAMS Accession No. ML19323F639), the licensee had not conducted any Safety and Environmental Review Panel (SERP) evaluations.

License Condition 43 states, in part, that before engaging in any developmental activity not previously assessed by the NRC, the licensee shall administer a cultural resource inventory. Since the previous inspection, the licensee has not performed a cultural resource inventory related to any developmental activity.

Based on the licensee's self-assessment (ADAMS Accession Package ML18248A265) as required by the Confirmatory Order EA-16-114 and the NRC audit of the self-assessment (ADAMS Accession No. ML19120A145), both the licensee and the NRC inspectors identified that the NRC Materials License SUA-1471 does not contain a condition that provides a facility change mechanism using the SERP process. The licensee subsequently submitted a license amendment request (ADAMS Accession No. ML20225A280) to add a performance-based license condition. This license amendment request is currently under the NRC inspectors review.

c. Review of Operational Procedures

License Condition 23 states, in part, that procedures shall be established for all activities involving radioactive materials that are handled, processed, or stored. Since this inspection was a remote inspection, the inspectors did not review recently revised operating procedures for completeness. This program area will be reviewed during a future onsite inspection, to allow the inspectors to compare the operating procedures to the as-built features of the facility.

d. Audits, Inspections, and Reviews

An annual radiation protection and as low as is reasonably achievable (ALARA) audit is required by 10 CFR 20.1101(c) and License Condition 32. In addition, License Condition 42 requires the licensee to submit the ALARA audit to the NRC as part of the annual report. The most recent ALARA audit was conducted in December 2019 and was included as Appendix C to the licensee's Annual Monitoring Report and Performance Review dated March 31, 2020 (ADAMS Accession No. ML20094F782).

The inspectors reviewed the annual ALARA audit during the inspection. The inspectors concluded that the auditor conducted a detailed review of the radiation protection program. The auditor did not identify any negative findings or trends. The auditor provided one recommendation related to the timely review of laboratory data. The inspectors concluded the licensee's audit was comprehensive and met license and regulatory requirements.

e. (Closed) Violation 040-08903/1901-01: Failure to Conduct Environmental Evaluation

License Condition 16 states, in part, that before engaging in any activity not previously assessed by the NRC, the licensee shall prepare and record an environmental evaluation of such activity. During the March 2019 inspection (ADAMS Accession No. ML19129A405), the inspectors identified that the licensee had failed to conduct an environmental evaluation prior to adding an algaecide to the microfiltration break tank in the RO system.

The licensee responded to the violation by letters dated July 12, 2019, and August 28, 2019 (ADAMS Accession Nos. ML19198A064 and ML19248C356, respectively). The proposed corrective actions included weekly site operations meetings to screen proposed site changes, introduction of a pre-project checklist, completion of an evaluation checklist prior to initiating project work, and training of staff.

The NRC inspectors reviewed the status of the corrective actions during the October 2019 inspection (ADAMS Accession No. ML19323F639). The inspectors determined that the licensee was holding weekly site operations meetings, and the inspectors examined the status of the pre-project checklists. At that time, the checklist had not been incorporated into the applicable site procedure, so the violation was left open.

During this inspection, the inspectors reviewed the status of the four proposed corrective actions. Based on information provided by the licensee, the weekly site operations meetings started in April 2019. The new project checklist was first implemented in March 2019. The evaluation checklist was implemented in April 2019. Finally, staff training was conducted in September 2019.

The inspectors reviewed the status of the applicable site procedure and checklists. The applicable procedure was Standard Operating Procedure SOP-10, "Procedure for Conducting a Safety and Environmental Review Panel (SERP)," Revision 7 dated September 13, 2019. The evaluation checklist had been incorporated into the procedure. The procedure also discussed the pre-project checklist (currently called the new project checklist); however, the licensee decided not to incorporate the checklist into the procedure. The licensee considered the checklist a management tool for screening new projects. In summary, the inspectors concluded that the licensee

implemented the corrective actions as proposed in its letters dated July 12, 2019, and August 28, 2019.

f. (Closed) Violation 040-08903/1901-02: Failure to Implement Regulatory Guide 8.31 Requirements

License Condition 32 requires, in part, that the licensee shall follow the guidance set forth in Regulatory Guide 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. During the March 2019 inspection (ADAMS Accession No. ML19129A405), the NRC identified a violation involving the licensee's failure to implement Regulatory Guide 8.31 requirements with four examples. Specifically, the licensee failed to: (1) conduct weekly inspections of all facility areas; (2) conduct daily walk-through inspections of all work and storage areas to observe general radiation practices; (3) provide three months of specialized training to its RST; and (4) conduct fire drills on a semi-annual basis, as required by Sections C.2.3.1, C.2.4.2.2, and C.3.4 of Regulatory Guide 8.31.

The licensee responded to the violation by letters dated July 12, 2019, and August 28, 2019 (ADAMS Accession Nos. ML19198A064 and ML19248C356, respectively). The proposed corrective actions included: (1) implementation of the weekly inspections by the RSO or assistant RSO; (2) development of a program for implementation of the daily walkthroughs; (3) plans for training the RST; and (4) implementation of a program for routine fire drills. The NRC accepted the proposed corrective actions by letter dated September 6, 2019 (ADAMS Accession No. ML19248D160).

During the October 2019 inspection (ADAMS Accession No. ML19323F639), the inspectors reviewed the status of the corrective actions for the violation. Two of four corrective actions were incomplete; specifically, the implementation of the daily site inspections on weekends and holidays and training the RST.

The status of the four corrective actions were reviewed during this inspection. The licensee had implemented a program for the weekly inspections by August 2019, although at least one inspection was missed in April 2020 due to issues related to the COVID-19 virus. The licensee started the daily walk-throughs on weekends and holidays in April 2020 after it completed the training requirements for additional individuals. The licensee qualified seven individuals to conduct the daily walk-through inspections. The RST completed the license-required training by December 2019. Finally, routine fire drills commenced in April 2019. In summary, the licensee completed all corrective actions as proposed in its letters dated July 12, 2019, and August 28, 2019.

In letters dated January 14, 2020 and March 9, 2020, as part of proposed corrective actions to a previous violation, the licensee submitted a license amendment request to revise License Condition 32 to allow staff designated by the RSO to perform daily walkdowns (ADAMS Accession Nos. ML 20023A196 and ML20078J084). License Condition 32 was amended on June 24, 2020 (ADAMS Accession No. ML20147A107) to allow staff designated by the RSO to perform the daily walkdowns. The inspectors reviewed the daily and weekly walkdown records for April 8, 2020, through July 21, 2020. The inspectors noted some gaps due to impacts of COVID-19 or holidays and

weekends in the April and May timeframe, but after the license was amended on June 24, 2020, the inspectors did not identify any daily walkdowns that had been missed.

g. (Discussed) Violation 040-08903/1902-02: Failure to Develop Standard Operating Procedure for Activities Involving Radioactive Material

License Condition 23 states, in part, that procedures shall be established for all activities involving radioactive materials that are handled, processed, or stored. By Notice of Violation dated November 22, 2019 (ADAMS Accession No. ML19323F639), the licensee was cited for its failure to establish a procedure for startup of the RO water treatment system, a system that filters radioactive contaminants from the groundwater.

The licensee responded to the violation by letter dated December 20, 2019 (ADAMS Accession No. ML19361A030). The licensee stated that the procedure was being written at that time and should be available for the NRC review by the next NRC inspection in 2020. The NRC accepted the licensee's response by letter dated January 17, 2020 (ADAMS Accession No. ML20017A180).

The inspectors reviewed the procedure during the inspection. The licensee updated Standard Operating Procedure SOP-32, "Reverse Osmosis Water Treatment Plant Startup and Shutdown Procedures," Revision 1 dated January 14, 2020, to include detailed instructions for system startup. Although the licensee developed a procedure for startup of the RO water treatment system, this violation remains open until the NRC inspectors have conducted a walkdown of the procedure to verify the technical adequacy of the procedure.

1.3 Conclusions

The licensee had sufficient staff for the work in progress, although staffing had been impacted by the COVID-19 virus. The licensee had not conducted a SERP under its performance-based procedure since the previous inspection. The review of standard operational procedures was delayed, and operational procedures will be reviewed during a future inspection. The licensee conducted an annual radiation protection program audit as required by license and regulatory requirements. A previously cited violation involving the licensee's failure to conduct an environmental evaluation as required by the license was reviewed and closed. A second previously cited violation involving the licensee's failure to implement Regulatory Guide 8.31 requirements with four examples was also reviewed and closed. A third previously cited violation involving the licensee's failure to establish an RO system procedure was reviewed but was left open to allow the NRC inspectors to walkdown the procedure during a future inspection.

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

2.1 Inspection Scope

The inspectors reviewed the licensee's radiation protection program, including instrument calibrations, to verify compliance with 10 CFR Part 20 and license requirements.

2.2 Observations and Findings

a. Radiation Protection Program

The licensee's Manual of Standard Practices provides the instructions for implementing the various aspects of the radiation protection program. At the time of the inspection, the radiation protection program consisted of external occupational dose monitoring, bioassays, contamination surveys, radiation work permits (RWPs), and instrument calibrations.

The NRC inspectors reviewed the following RWPs issued since the previous inspection:

RWP-12-2019	Clarifier Rebuild
RWP-1-2020	Collection Pond Sludge and Liner Removal Rework
RWP-2-2020	Reverse Osmosis/Clarifier Repair after Seal Blowout
RWP-3-2020	Earthwork associated with relining of collection pond
RWP-4-2020	Liner Stabilization with for Evaporation Pond 1
RWP-5-2020	Annual Reverse Osmosis System Maintenance
RWP-6-2020	Evaporation Pond 1 Clean Fill Movement
RWP-7-2020	Cleaning of 1200 gallon per minute Zeolite System

The inspectors reviewed the RWP documentation, controls, and personnel protective equipment requirements and concluded that the requirements were appropriate for the scope of work described. Required training was documented and all surveys (personnel and equipment/materials) were conducted as specified in the RWP.

The inspectors reviewed the licensee's personnel monitoring program. During calendar year 2019, employees, contractors, and vendors were monitored for external doses using optically stimulated luminescent dosimeters. The maximum dose for calendar year 2019 was 2 millirem. Measured doses to contractors were routinely reported as below the minimal reporting capabilities of the dosimeter. The licensee periodically, based on the RWP requirements, collected bioassay samples from employees and contractors. Bioassay records were reviewed and none of the bioassay results were above the action level.

The licensee maintained radiological survey instruments to implement its radiation protection program. This equipment was used to measure exposure rates, surface contamination, and removable contamination levels. Instruments were calibrated annually. The inspectors reviewed the calibration records and all instruments were found to be calibrated at the proper interval. Radiological survey records were reviewed. All surveys were conducted with calibrated instruments, and the instrument used was appropriate for the type of survey being performed. No issues or concerns associated with instrument calibrations or surveys were identified by the NRC inspectors.

Interviews were conducted with the licensee's staff member who was approved to perform daily walkdowns and other RST duties under the exemption granted on April 8, 2020 (ADAMS Accession No. ML20099A179), as well as the RSO and ARSO regarding the RSO designee program approved by license amendment dated June 24, 2020 (ADAMS Accession No. ML20147A107). The inspectors determined that the individual approved to perform RST duties due to the impact of COVID-19 virus was knowledgeable of his duties and responsibilities under the exemption as well as the start

and end dates for the specific exemption. The individual conducted RST duties from April 8 to May 27, 2020, when the qualified RST returned to work.

The RSO and ARSO explained how the RSO designee program was implemented during interviews conducted as part of the inspection. Designee training was conducted for four individuals on April 17, 2020. A fifth individual was trained on July 2, 2020. The RSO or ARSO conducted at least one walkdown inspection with each of the five designees after the training was completed. Beginning on May 2, 2020, the RSO designees started performing daily walkdowns on weekends and at other times when the RST was not available. Additional walkdowns were performed with the designees under the supervision of the RST after his return to work on May 27, 2020. The inspectors confirmed that the RSO, ARSO, or RST reviewed and approved all walkdown logs.

As noted above, the NRC previously identified and cited the licensee for its failure to conduct these walkdowns on weekends and whenever a member of the health physics staff was not available. The inspectors determined that the licensee implemented corrective actions in a timely manner, taking into consideration the impacts of COVID-19 on the site, and concluded the licensee had restored compliance with license requirements. (Section 1.2.f)

b. (Closed) Violation 040-08903/1902-01: Failure to Maintain Instrument Calibration

Title 10 CFR 20.1501(c) requires licensees to ensure that instruments and equipment used for quantitative radiation measurements are calibrated periodically for the radiation measured. During the October 2019 inspection (ADAMS Accession No. ML19323F639), the inspectors noted that the licensee failed to ensure that all instruments and equipment were properly calibrated for the radiation measured. Specifically, a meter was returned from the calibration vendor with a calibration label and certificate for a different instrument. The licensee subsequently placed the potentially uncalibrated meter into service without verifying that the meter had been adequately calibrated.

The licensee responded to the violation by letter dated December 20, 2019 (ADAMS Accession No. ML19361A030). The licensee stated that the calibration label had a typographical error that was not immediately identified upon receipt of the instrument. The licensee provided new information regarding instrument calibration that was not available during the inspection, including the original electronic calibration data from the vendor.

The NRC reviewed the new information and concluded that the instrument had been calibrated despite the incorrect information on the calibration certificate and label. However, the licensee failed to verify with the vendor that it was a documentation error before placing the instrument back in service. Based on our review of the new information, the issue was recharacterized as a minor violation rather than Severity Level IV (ADAMS Accession No ML20017A180).

2.3 Conclusions

The licensee implemented a radiation protection program that met the requirements of 10 CFR Part 20 and the license. Occupational exposures were small fractions of the regulatory limits. Bioassay sampling and air sampling were performed as required by the RWP. Radiological survey results indicated that the licensee was controlling

contamination. The licensee conducted instrument calibration in accordance with the license and site procedures. The licensee trained new individuals to conduct the daily walkthroughs, in part, to restore compliance with license requirements. A previously cited violation involving a potentially uncalibrated instrument was closed.

3 Radioactive Waste Processing, Handling, Storage and Transportation (IP 88035)

3.1 Inspection Scope

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

3.2 Observations and Findings

a. Site Inspections

As this inspection was a remote inspection, the inspectors did not conduct site tours or perform independent radiological measurements. These activities will be conducted during a future, onsite inspection.

License Condition 12 states that periodic embankment inspections shall be conducted, and License Condition 42 states that the embankment inspection report shall be included in the annual report. The most recent embankment inspection report was dated March 27, 2020. This report was included as Appendix D to the Annual Monitoring Report/Performance Review dated March 31, 2020 (ADAMS Accession No. ML20094F782). The inspectors reviewed the report during the remote inspection.

The licensee's inspector observed the two tailings impoundments and three evaporation ponds. The licensee's inspector concluded that the impoundments and ponds were generally in stable condition. One high-priority recommendation was identified related to the filling of a sinkhole near LTP down-drain 11. The NRC inspectors confirmed that the high priority inspection recommendation had been resolved. The NRC inspectors concluded that the licensee conducted the annual inspection, the inspection findings were comprehensive, and the results of the inspection were provided to the NRC in the annual report.

b. Status of Ponds

During previous NRC inspections (ADAMS Accession Nos. ML18115A480 and ML18303A199), the inspectors reviewed the licensee's plans to resolve pond leakage. Leakage was identified in evaporation pond EP-1, which has a single liner, and through the primary liners of evaporation ponds EP-2 and EP-3, both of which have secondary liners. According to the licensee, there was no evidence of leakage through either of the secondary liners in EP-2 or EP-3. As noted earlier, the licensee delayed the relining of EP-1 until the spring of 2021 due to scheduling and personnel risks associated with the COVID-19 virus.

During the inspection, the licensee discussed the relining of the west collection pond, a work project that was completed on June 5, 2020. The residual lime material and the old liner from the west collection pond were placed into pond EP-1. The NRC inspectors

reviewed the RWP and dose results for the work and concluded that both were acceptable.

By letter dated February 20, 2020 (ADAMS Accession No. ML20057C925), the licensee notified the NRC of a leak in pond EP-2 that exceeded the 775 gallons per day per acre foot (gpd/acre-foot) of storage. The licensee discussed in its letter that as the water level approached 20.5 to 21 feet in depth in pond EP-2, leakage had previously exceeded the 775 gpd/acre-foot limit. Although there appeared to be a correlation between pond elevation and leakage rate, the licensee discussed that the relationship was not perfectly consistent. In addition, the licensee had not been able to identify any liner holes at the 20- to 21-foot water level. The licensee transferred water from ponds EP-2 to EP-3 and EP-1 to enhance evaporation. At the time of inspection, the water level in EP-2 was at the 16- to 17-foot level. The leakage at the time of inspection had dropped below 775 gpd/acre-foot. The licensee also noted that the water temporarily staged in other ponds would be transferred back to EP-2 as the winter season approached. As noted earlier, there was no indication of leakage having occurred through the secondary liner.

The NRC inspectors previously inquired about the increasing concentration of sulfates, total dissolved solids, and nitrates at wells DD and DD2 (ADAMS Accession No. ML19129A405). These wells located near pond EP-3 could be indicative of pond leakage. The licensee maintained the position that upgradient mine water was responsible for these negative trends, and that the increase in concentrations in the monitoring wells was not associated with pond EP-3. The NRC inspectors will continue to closely monitor these wells over time, in part, to ensure that pond EP-3 has not developed a leak through its secondary liner.

c. Review of Evaporation Pond EP-1 Dose Estimates

By letter dated January 9, 2019 (ADAMS Accession ML19022A265), the licensee submitted a radiological dose assessment for the planned relining of evaporation pond EP-1. To reline the pond, the licensee and its contractor plan to drain the pond, an activity that will result in the exposure of workers and members of the public to radioactive sediments at the bottom of the pond. The licensee conducted both public and occupational dose assessments and concluded that potential exposures to the radioactive sediments were unlikely to result in significant radiological doses to either workers or members of the public.

The licensee's occupational dose assessment considered several potential exposure pathways including: (1) direct exposure to the radiation, (2) inhalation of radioactive particulates, and (3) inhalation of radon-222 and its short-lived progeny. Ingestion of radioactivity was determined to not be a credible exposure pathway, provided workers followed procedural requirements for personal protective equipment and hygiene. The licensee's analysis determined that the estimated maximum dose to an occupational worker was 65 millirem per year, primarily from external exposure to the radioactive sediments. This calculated dose was well below the 5,000 millirem per year annual dose limit specified in 10 CFR 20.1201 for occupational workers.

The exposure pathways for members of the public included the soil ingestion pathway, in addition to the three pathways described above. The maximum dose to a member of the public was estimated to be less than 1 millirem per year, primarily from radon and its

short-lived progeny. This calculated dose was well below the 100 millirem per year dose limit specified in 10 CFR 20.1301 for members of the public.

Although the licensee has postponed the relining of pond EP-1 until 2021, the pond has been drawn down and potentially contaminated salts were exposed on the southern edge of the impoundment. The licensee used a surfactant, Hydroguard™, to mitigate the airborne transport of salts.

The inspectors reviewed the licensee's RESRAD dose assessment and concluded the assessment was reasonable for estimating risk. However, there was uncertainty in the calculation because the licensee relied on several default parameters, including the mass loading rate. The NRC inspectors discussed the use of field monitoring to validate the dose assessment assumptions and use of defaults, especially in the presence of windblown salts with the licensee. As noted earlier, during the EP-1 relining effort the licensee plans to control the work using procedures, including RWPs, which should limit worker and public exposures to radioactive material.

3.3 Conclusions

The licensee conducted and reported the annual embankment inspection as required by the license. The report identified one high priority recommendation that was promptly corrected by the licensee. The inspectors reviewed the status of the ponds. At the time of the inspection, there was no clear evidence that any of the ponds were leaking contaminants into the environment. The inspectors reviewed the licensee's dose assessment estimate for evaporation pond EP-1 relining efforts. The inspectors concluded that the expected doses will be well below the regulatory limits.

4 Effluent Control and Environmental Protection (IP 88045)

4.1 Inspection Scope

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

4.2 Observations and Findings

a. Effluent and Environmental Monitoring Program

License Condition 10 provides the effluent and environmental monitoring program requirements. In accordance with License Condition 23, details about program implementation are provided in the licensee's Manual of Standard Practices. The program consisted of air particulate, radon gas, and direct radiation sampling. The NRC inspectors compared the program in operation during 2019 to the requirements specified in the license. The inspectors concluded the licensee implemented the effluent and environmental monitoring program as required by the license.

License Condition 15 requires the licensee to report the results of the effluent and environmental monitoring program to the NRC on a semi-annual basis. The inspectors reviewed the semi-annual report dated February 24, 2020 (ADAMS Accession No. ML20063J229) and the data used in the development of the report. The inspectors

concluded the licensee collected the required number of samples and reported the sample results. None of the results exceeded license or regulatory limits.

The licensee conducted high volume air particulate sampling at seven locations including the two nearest residences and one background station. The licensee continuously sampled the air for concentrations of natural uranium, radium-226, and thorium-230. The licensee's records indicated that air particulates in 2019 were less than 2 percent of the NRC's effluent concentration limits.

Ambient radon-222 gas was measured at nine locations including a background location. The licensee used track-etch passive radon monitors that were exchanged quarterly. The maximum average semiannual radon-222 measurement was $9.4\text{E-}10$ microcuries per milliliter at the northeastern outer perimeter station HMC-2, with an average background concentration of $4.2\text{E-}10$ microcuries per milliliter.

The licensee also measured ambient gamma radiation levels at eight locations using optically stimulated luminescent dosimeters. The dosimeters were exchanged twice a year. The measured dose rates ranged from 54.4 to 78.6 millirem per half-year with an average background of 62 millirem.

At the end of each calendar year, the licensee calculated the estimated dose to members of the public using the effluent and environmental monitoring sample results. This information was provided in Attachment 4 of the semi-annual report for the second half of 2019. The licensee calculated doses of 50 and 31 millirem for calendar year 2019 at stations HMC-4 (south of property) and HMC-5 (southwest of LTP), respectively, using an occupancy factor of 0.75. Both calculated doses were below the public dose limit of 100 millirem per year as specified in 10 CFR 20.1301(a).

By letter dated December 16, 2015 (ADAMS Accession No. ML15264B052), the NRC inspectors requested additional information about the licensee's 2014 public dose assessment methodology. The licensee's revised response to the NRC's request for additional information was provided by letter dated March 31, 2020 (ADAMS Accession No. ML20009F859). Because the NRC inspectors have not completed the evaluation of the licensee's methodology to calculate public doses, the inspectors did not assess the adequacy of the licensee's 2019 public dose assessment.

b. Annual Radon Flux Measurements

License Condition 36.E requires the licensee to conduct annual radon flux measurements on the LTP and STP. The licensee conducted the 2019 sampling event in September-October 2019 using the sampling procedure that was accepted by the NRC on an interim basis (ADAMS Accession No. ML17292A953). The results of the sampling event were presented in Attachment 5 of the semi-annual report for the second half of 2019 dated February 24, 2020 (ADAMS Accession No. ML20063J229). The radon flux emanating from the LTP averaged 35.4 picocuries per meter-squared second, while the radon flux emanating from the STP averaged 10.5 picocuries per meter-squared second.

The measured radon flux for the LTP (35.4 picocuries per meter-squared second) was down significantly from 2018 (51.3 picocuries per meter-squared second). According to licensee representatives, the reduction in the measured radon flux might be attributed to

the randomized location of the sampling points and seasonal timing of the radon flux monitoring.

The radon flux for the STP was down slightly, from 12.7 picocuries per meter-square second, as measured in 2018, to 10.5 picocuries per meter-squared second. As noted in the annual report, this reduction may be attributed to cover repairs that were completed on the STP in November 2018.

Consistent with the data collected in the last several years, the radon flux emanating from the LTP continues to exceed the regulatory and license limit of 20 picocuries per meter-squared second, while the radon flux emanating from the STP continues to be below the limit. The licensee's long-term corrective action is to install the final cover on top of the LTP, which should allow the licensee to restore compliance with the regulatory and licensed radon flux limit.

c. Groundwater Monitoring and 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 (GCAP).

The licensee continued to operate a number of extraction and injection wells. The discharge from onsite extraction wells was routed to the RO system for cleanup. The treated water from the RO system was mixed with fresh water from the San Andres aquifer in the post treatment tank and injected into the subsurface aquifers, as shown in Figure 2.1-6 from the 2019 Annual Monitoring Report/Performance Review dated March 31, 2020 (ADAMS Accession No. ML20094F782). As described in Section 2.1 of the 2019 Annual Monitoring Report/Performance Review, the RO system operated at an average of 314 gallons per minute (gpm) on an annualized basis for 2019.

The zeolite system was used to remove uranium from the offsite extraction wells. The clean water was then routed to the post treatment tank for reinjection. The zeolite system operated at an average annual flow rate of 160 gpm in 2019. These combined flow rates (RO and zeolite system discharges) were well below the total design capacity of 2,700 gpm. The reduced flow rates were primarily a result of limited evaporation pond evaporative capacity for disposal of the RO and zeolite system wastewater.

During the inspection, the licensee informed the inspectors that the zeolite system has not been operating due to the drawdown of pond EP-1 for relining. During the inspection, the licensee indicated the intent to restart the zeolite treatment system in September 2020. The quantity of contaminated groundwater the licensee can treat depends on seasonal evaporation rates. Because the licensee has not operated the zeolite treatment system since the end of 2019, the offsite collection wells have also not been in operation. While the zeolite system was not operating, the licensee continued to work on an oxygenation system to help mitigate algae growth within the zeolite beds.

The licensee stated that they are continuing to inject treated water at the leading edge of the offsite plumes to reduce contaminant migration. The NRC inspectors discussed concerns with the licensee regarding the lack of collection and treatment of offsite

groundwater contamination due to the zeolite system being out of service for an extended time frame.

First, the injection of treated water downgradient from the plume may not be sufficient to prevent contaminant migration. This concern may be risk significant as groundwater in the alluvial aquifer flows towards an area where the alluvial aquifer is in hydraulic communication with the San Andres Glorieta aquifer. Furthermore, this area is adjacent to a municipal drinking water supply well that draws water from the San Andreas Glorieta aquifer. During the inspection, the licensee explained that potential migration of the uranium plume would be very slow. The NRC inspectors agreed that uranium transport is slow and noted that there was an extensive monitoring well network to monitor groundwater restoration progress. The NRC staff will continue to closely monitor onsite and offsite plume migration.

Second, the temporary suspension of offsite collection and treatment of contaminated groundwater could extend the timeline for restoration of the offsite plumes. The licensee agreed that the suspension would extend the restoration timeline but argued that although the groundwater collection from the offsite areas is approximately 37 percent of the total groundwater collection from the Alluvial and Chinle aquifers, the mass of uranium collected is less than 2 percent of the total uranium collected. Therefore, the amount of uranium from offsite sources that could have been removed was small while the zeolite system was out of service. The licensee is currently addressing the NRC staff's request for supplemental information on its proposed 2019 GCAP (ADAMS Accession No. ML20142A195). This issue will be reviewed as part of the GCAP review.

The NRC inspectors discussed the evaporative capacity of the ponds EP-2 and EP-3 with the licensee, which is approximately equal to 450-500 gpm of wastewater from the RO system. Based on the major operational flows reported in the Annual Monitoring Reports/Performance Reviews from 2016-2019, it appears that the RO system operated at a recovery rate of approximately 75-80 percent (i.e., 20-25 percent of the feed was discharged to the evaporation ponds), and the zeolite system operated at a recovery rate of 85-90 percent (i.e. 10-15 percent of the feed was discharged to the evaporation ponds). As the RO system was typically operating at a feed rate of approximately 300 gpm in 2020, it appeared that the licensee had the evaporative capacity to operate the zeolite system even with the limitations in evaporative capacity due to the proposed relining of pond EP-1. As previously discussed, the licensee plans to restart the zeolite system in early September 2020.

Since the previous inspection, the licensee made several changes to the water treatment systems including rebuilding of Clarifier 1, replacement of the aspirator in equalization vessel 1, and replacement of the blowdown pump seal in Clarifier 2. The licensee stated that they had not observed pressure excursions since replacing the RO system inlet filter membranes and that they had not added any polymer to aid in flocculation.

The inspectors reviewed the licensee's response to the March 27, 2020, release of water and sludge material from the failed Clarifier 2 blowdown pump seal (ADAMS Accession Nos. ML20090E287, ML20097D671, and ML20118C301). The inspectors also interviewed licensee staff who helped manage the cleanup and repair effort. They stated that the pump seal that was installed in September 2019 was not from the original equipment manufacturer, but it was a form/fit/function replacement for the seal. The

replacement was supposed to have the same life expectancy as a seal from the original manufacturer.

The inspectors reviewed the licensee's corrective actions taken in response to the seal failure, including the licensee's determination for mode of seal failure and consideration of future failures. The licensee provided information about the failure mode, the consideration of future failures, and seal life expectancy. The licensee provided information including the seal types that failed in 2019-2020 (original and generic seals), the currently installed seal (original equipment manufacturer), spare seals, and future replacement lessons learned while taking seal quality into consideration. The inspectors concluded that the information provided by the licensee in response to the failed pump seal satisfied the reporting requirements provided in License Condition 41.

The RO unit was out of service from March 27, 2020 to April 12, 2020. The inspectors inquired about the potential loss in hydraulic containment of the onsite contamination due to the RO system being down during this period. The licensee observed a general rise in groundwater levels, while the pumps were shut off, rather than a flattening of the hydraulic gradient. Accordingly, the licensee did not observe any changes in the hydraulic containment. The licensee also noted that gradient reversal in the alluvial aquifer is slow.

During this inspection, the NRC inspectors reviewed SOP-15, "Post-Treatment Tank (SP-2) Water Sampling, Analysis and Reporting Requirements," Revision 5, dated March 10, 2020, and recognized that the conductivity measurements were specified to be taken weekly. The inspectors noted that daily measurements of pH and conductivity were taken directly from the RO skids, but they are not prescribed in SOP-15.

By letters dated January 3, 2020 (ADAMS Accession No. ML20006F425) and January 6, 2020 (ADAMS Accession No. ML20007D268), the licensee notified the NRC of two unauthorized discharges from the same injection line on December 20-21 and December 31, 2020, respectively. The water breached the exterior berm, but the concentrations of contaminants were low as it was treated injection water. The injection line broke at the same location (i.e., the flowmeter) due to freezing conditions. The licensee's corrective action was to wrap this area of the injection line with insulation and heat tape. The inspectors determined that the dose impact from the breaches were not risk significant and the corrective actions were reasonable.

d. Land Use Survey

License Condition 42 specifies that a land use survey be conducted and submitted in the annual report to the NRC. The most recent land use survey was included as Appendix E to the annual report dated March 31, 2020 (ADAMS Accession No. ML20094F782). The inspectors reviewed the land use survey during the inspection. The inspectors concluded the licensee conducted the annual land use survey and presented the results of the survey to the NRC in the annual report as required by the license.

The land use survey summarized current land uses and identified changes to land use in proximity to the site. The current land uses for 2019 were similar to previous land uses. For licensee-owned properties, the land uses included livestock grazing. In addition, several lots owned by the licensee were used for irrigation of crops using non-impacted groundwater. The land use for properties not owned by the licensee was primarily

residential. All residential properties had municipal water supplies, with one exception. Based on information provided by the licensee during the inspection, this remaining property owner was connected to the municipal water supply in mid-2020.

4.3 Conclusions

The licensee implemented its environmental and effluent monitoring program in accordance with license requirements. No environmental or effluent sample exceeded any license or regulatory limit. The licensee conducted radon flux measurements on the LTP and STP in accordance with the NRC-accepted interim sampling procedure. The licensee implemented a groundwater monitoring and corrective action program as required by the license, although the licensee had experienced several challenges since the previous inspection. The licensee conducted an annual land use survey and reported the results to the NRC as review as required by the license.

5 **Emergency Preparedness (IP 88050)**

5.1 Inspection Scope

Determine if the licensee's emergency preparedness program is adequate to protect the safety and health of employees, members of the public, and the environment.

5.2 Observations and Findings

a. Emergency Preparedness Program Review

The licensee's emergency response procedures were outlined in SOP-1, "Emergency Response Procedure," Revision 2 dated August 1, 2019. The procedure instructed workers to not put themselves in jeopardy, call for help, and in the event of an environmental spill used the SWIMS process. The SWIMS process consists of the following: Stop the Leak, Warn others, Isolate the area, Minimize exposure and Standby for assistance. The licensee also maintains procedures for evacuation and firefighting. The inspector reviewed the changes to the SOP since the previous inspection and identified no issues or concerns.

During a previous inspection (040-08903/2019-001) conducted in March of 2019, the inspectors identified a violation associated with the licensee's failure to conduct a fire drill as required by License Condition 32 which references Regulatory Guide 8.31. The inspector reviewed the corrective action associated with this violation and determined that semi-annual fire drills had been recently conducted. Further details about this violation is provided in Section 1.2.f of this inspection report.

b. (Closed) Violation 040-08903/1901-03: Failure to Have Procedure for Incident/Event Reporting

During the March 2019 inspection (ADAMS Accession No. ML19129A405), the NRC identified a violation of License Condition 41 regarding the licensee's failure to have procedures to evaluate the consequences of a spill or incident/event against the reporting criteria specified in 10 CFR 20 and 40 CFR 60. As noted in NRC Inspection Report 040-08903/2019-001, Section 6.2, immediately after the onsite inspection, the licensee developed a procedure for evaluating and reporting of an incident/event. The

licensee forwarded this procedure to the inspectors for review. At that time, the inspectors confirmed that procedure SOP-1, "Emergency Response Procedure," Revision 2, included the incident/event reporting instructions as required by License Condition 41.

The licensee subsequently responded to the violation by letter dated August 28, 2020 (ADAMS Accession No. ML19248C356). The licensee stated SOP-1 had been updated to specify that any incident or event that resulted in a spill or unplanned release of licensed material must be evaluated and reported per SOP-21 (Spill Response and Reporting Procedure). The updated SOP-1 specifically addressed the reporting criteria specified in 10 CFR 20, Subpart M, and 10 CFR 40.60. During this inspection, the inspectors confirmed that SOP-1 included the information required by the license.

5.3 Conclusions

The licensee established and implemented emergency response procedures. The licensee also implemented semi-annual fire drills in response to a previously cited violation. A second previously cited violation involving the licensee's failure to have a procedure for evaluating the reportability of an incident/event was reviewed and closed.

6 **Follow-up of Confirmatory Action Letters or Orders (IP 92703)**

6.1 Inspection Scope

On March 28, 2017, the licensee agreed to, and was issued, Order EA-16-114 (ADAMS Accession Package No. ML17060A752) as a result of alternative dispute resolution mediation. Section V of the Order includes 16 conditions with actions the licensee is required to implement. Provided below is a summary of the status of the 16 conditions.

6.2 Observations and Findings

a. Condition 1

Condition 1 of the Order 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 submitted to the NRC will identify any changed made by the independent third-party reviewer and include a qualification statement of the third-party reviewer. This protocol will be used to complete Conditions 2, 3 and 4 of the Order.

On July 26, 2017, the licensee submitted an RCP containing edits from an independent third-party consultant, and a qualification statement from the consultant (ADAMS Accession No. ML17212A026). The licensee and its third-party consultant stated that they will use the "Five Whys Method" to determine the underlying factor or condition contributing to a non-compliance or other identified problems. During the September 2017 inspection, documented in NRC Inspection Report 040-08903/201-002 dated December 20, 2017 (ADAMS Accession No. ML17353A414), the inspectors determined that the "Five Whys Method" was adequate for use as the RCP. Condition 1 of the

Order was considered satisfied during inspection 040-08903/2018-02 dated November 26, 2018 (ADAMS Accession No. ML18303A199).

Condition 1 of the Order is considered satisfied.

b. Condition 2

Condition 2 of the Order 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 five apparent violations documented in the NRC's October 4, 2016 letter (ADAMS Accession No. ML1625A526). 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 of 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, by email dated August 24, 2017 (ADAMS Accession No. ML17243A234). The NRC subsequently provided 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 communications by licensee management to other licensee staff and corporate managers, and a lack of understanding of regulatory compliance by licensee management.

The licensee submitted the corrective action plan for the five apparent violations to the NRC by letter dated November 14, 2017 (ADAMS Accession Package No. ML17320A118). The licensee also provided an update for the corrective action plan by letter dated July 17, 2018 (ADAMS Accession No. ML18200A068).

Condition 2 of the Order will remain open until the NRC has reviewed and approved the licensee's proposed corrective actions associated with this condition and Condition 6.

c. Condition 3

Condition 3 of the Order requires, in part, the licensee to complete an assessment of all activities to determine whether the activities are authorized and are being conducted in compliance with the 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 an extension request by letter dated December 26, 2017 (ADAMS Accession No. ML17340B340). By letter dated August 31, 2018, (ADAMS Accession No. ML18248A265), the licensee submitted the self-assessment to the NRC. The NRC inspectors completed its audit of the licensee's self-assessment by letter dated March 19, 2020, and provided eight recommendations (ADAMS Accession No. ML19120A145).

Condition 3 of the Order is considered satisfied.

d. Condition 4

Condition 4 of the Order requires, in part, 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 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 with 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 when the consultant received it for review. Condition 4d states that the NRC will perform an audit of the assessment and the consultant's report. The licensee will be required to incorporate any of the NRC audit findings. Finally, Condition 4e states that the licensee will maintain copies of all reports at the site for NRC inspection.

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, ML17110A207, and ML17115A424). The NRC approved the consultants by correspondence dated April 19 and May 3, 2017 (ADAMS Accession Nos. ML1711A106 and ML17138A303). The inspectors verified that Condition 4a has been satisfied and is considered complete.

By letter dated August 31, 2018 (ADAMS Accession Nos. ML18248A259 and ML18248A260), the licensee submitted its self-assessment to the NRC for review. This satisfied Conditions 4b and 4c. The NRC inspectors completed its audit of the licensee's self-assessment by letter dated March 19, 2020 (ADAMS Accession No. ML19120A145), which included eight recommendations. Completion of the NRC inspectors audit satisfied Condition 4d. The licensee continued to maintain copies of the reports at the site for NRC review in accordance with Condition 4e, therefore Condition 4e is considered satisfied.

Condition 4 of the Order is considered satisfied.

e. Condition 5

Condition 5 of the Order requires, in part, that any changes or additions to the license or procedures resulting from this Order will be submitted to the NRC as a license amendment request for NRC approval or an update to the appropriate licensee procedure after notification to the NRC. Condition 5 requires that the licensee submit to the NRC all license amendment requests resulting from the Confirmatory Order within 60 days of receiving the results of the NRC audits. The Order requires three NRC audits under Conditions 4d, 8 and 10.

The NRC inspectors audit of the licensee's self-assessment submitted in response to Condition 4d was completed on March 19, 2020 (ADAMS Accession No. ML19120A145) and included eight recommendations. The NRC's audit of the licensee's mass balance methodology results, submitted in response to Condition 8, were provided to the licensee by letter dated October 29, 2019 (ADAMS Accession No. ML19221B533) and included three recommendations. The NRC audit results for the impact of exceedances submitted in response to Condition 10 were provided to the licensee by letter dated October 29, 2019 (ADAMS Accession No. ML19289B451) and included one recommendation. In the March 19, 2020, self-assessment audit letter, the NRC

inspectors reminded the licensee that the appropriate corresponding license amendment requests to Materials License SUA-1471 were required to be submitted within 60 days of receipt of the letter. By letter dated May 5, 2020 (ADAMS Accession No. ML20128J233), the licensee requested a 120-day extension to submit its proposed amendment requests or make procedural changes as required by Condition 5. By letter dated May 15, 2020 (ADAMS Accession No. ML20134H851), the NRC approved the extension to submit proposed amendment requests or make procedural changes under Condition 5 to September 19, 2020.

Condition 5 of the Order remains open.

f. Condition 6

Condition 6 of the Order requires, in part, the licensee to submit a revised GCAP 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 corrective action program due to the extended time frame needed to complete the self-assessment discussed in Condition 3 of the Order.

On October 11, 2018, the licensee requested that the due date for the revised GCAP be extended from January 1, 2019, to December 18, 2019 (ADAMS Accession No. ML18289A400). Based on a review of the information provided by the licensee, the NRC granted the extension request to allow the GCAP to be submitted on or before December 18, 2019 (ADAMS Accession No. ML18355A893). By letter dated December 18, 2019 (ADAMS Accession No. ML19354B960), HMC submitted a license amendment request to the NRC as a license tie-down document for groundwater corrective action at the Grants Reclamation Project, to replace the 1989 GCAP and the 1998 update to the GCAP specified in License Condition 35C. In addition, the letter stated that the Environmental Report associated with the license amendment request identified in Criterion 9 of 10 CFR 40 Appendix A and needed for the NRC to meet its obligations under 10 CFR 51, would be provided as a separate submittal by February 28, 2020. The licensee submitted the Environmental Report by letter dated February 28, 2020 (ADAMS Accession No. ML20080M078). The NRC inspectors reviewed the GCAP and Environmental Report and responded to the licensee with a request for supplemental information by letter dated June 18, 2020 (ADAMS Accession No. ML20142A195).

Condition 6 of the Order remains open.

g. Condition 7

Condition 7 of the Order requires, in part, that the licensee 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, the U.S. Environmental Protection Agency, and the New Mexico Environment Department over the Grants Reclamation Project 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.

The inspectors reviewed the status of the licensee's training program. The licensee conducted Regulatory Framework training as part of its Health, Safety and Environmental (HSE) Orientation training given annually to licensee employees and contractors. The licensee provided sign-in sheets for one session of "HSE Orientation" in 2019 attended by 4 licensee staff and 15 sessions of "HSE Orientation" attended by 62 licensee staff and contractors for year-to-date 2020. The NRC determined that the licensee had made reasonable efforts to comply with the requirements of Condition 7.

Condition 7 of the Order remains open. The licensee will continue to provide refresher training until the Confirmatory Order has been terminated by the NRC.

h. Condition 8

Condition 8 of the Order requires, in part, the licensee to use the mass balance methodology described in the revised 2012 groundwater corrective action program submittal to complete an analysis of the re-injection system's impact to the time estimate for completion of the GCAP. The analysis was required 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 teleconference on June 27, 2017. Notes summarizing the discussions during the teleconferences on June 26 and 27, 2017, as well as the licensee's presentations are publicly available (ADAMS Accession No. ML17352B067).

The licensee submitted the impact analysis for the re-injection system and exceedance apparent violations by letter dated July 26, 2017 (ADAMS Accession Package No. ML17212A010). Condition 8 of the Order requires the NRC to perform an audit of the analysis and provide in writing the NRC audit results, including any recommended changes. The NRC inspectors completed an audit of the July 26, 2017, submission and documented the results of its audit in a letter dated October 29, 2019 (ADAMS Accession No. ML19221B533). The NRC audit resulted in three recommendations.

Condition 8 of the Order remains open pending the licensee's incorporation of the audit results as described in Condition 5 of the Order.

i. Condition 9

Condition 9 of the Order requires, in part, that within 30 days from issuance of the Order, the licensee will perform adjustments to the operations of the RO 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 licensee notified the NRC by letter dated April 27, 2017 (ADAMS Accession No. ML17121A311), that adjustments were made to the treatment system to better ensure license compliance. The letter further stated that the requirements prescribed by License Condition 23 were evaluated during the development of the adjustment, and the adjustment was determined to be effective at the RO plant by increasing the fresh water used for blending. The inspectors reviewed the revised procedure and determined that the operational adjustments made at the RO plant were adequate for reducing effluent discharge to below the groundwater protection standards. As documented in Inspection Report 040-08903/2017-002 (ADAMS Accession No. ML17353A414), the requirement under Condition 9 of the Order to perform adjustments to the operations of the RO plant and evaluate the procedure required by License Condition 23 was satisfied.

Condition 9 of the Order is considered satisfied.

j. Condition 10

Condition 10 of the Order requires, in part, an analysis by the licensee using the methodology described in NUREG-1620, "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978," to determine the impact of exceedances discharged from the RO 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 the NRC audit results as described in Condition 5 of the Order.

The licensee discussed the methodology, data, and analysis with the NRC during a teleconference on June 26, 2017, and during a follow-on teleconference on June 27, 2017. Notes summarizing the discussions during the teleconferences on June 26-27, 2017, as well as the licensee's presentations are publicly available (ADAMS Accession No. ML17352B067). The licensee submitted the impact analysis for the re-injection system and exceedance apparent violations by letter dated July 26, 2017 (ADAMS Accession Package No. ML17212A010). Condition 10 of the Order requires the NRC to perform and audit of the analysis and provide in writing the NRC audit results, including any recommended changes. The NRC inspectors completed its audit of the July 26, 2017, submission in a letter dated October 29, 2019 (ADAMS Accession No. ML19289B451) and provided one recommendation.

Condition 10 of the Order remains open pending the licensee's incorporation of the audit results as described in Condition 5 of the Order.

k. Condition 11

Condition 11 of the Order directly modified License Condition 35.C when the Order was issued on March 28, 2017. Condition 11 was determined to be satisfied during inspection 040-08903/2017-002 dated December 20, 2017 (ADAMS Accession No. ML17353A414).

Condition 11 of the Order is considered satisfied.

l. Condition 12

Condition 12 of the Order requires, in part, that the licensee develop written procedures to ensure that monthly composite samples are obtained from Sampling Point 2 (SP2), and to ensure that results of those monthly composite samples are reported in the semi-annual and annual reports as 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 Sampling Point SP2 were submitted to the NRC by letter dated July 26, 2017 (ADAMS Accession No. ML17212A025). The inspectors previously reviewed the revised procedure and determined that it was adequate to ensure that monthly composite samples will be obtained from Sample Point SP2. Condition 12 was determined to be satisfied during inspection 040-08903/2018-001 dated May 3, 2018. The inspectors noted that the results of the monthly samples were reported in the most recent semi-annual report dated February 24, 2020 (ADAMS Accession No. ML20063J229).

Condition 12 of the Order is considered satisfied.

m. Condition 13

Condition 13 of the Order directly modified License Condition 15 when the Order was issued on March 28, 2017. This change provided clarifying language for when the semi-annual effluent and environmental monitoring reports are due. Condition 13 was determined to be satisfied during inspection 040-08903/2017-002 dated December 20, 2017 (ADAMS Accession No. ML17353A414).

Condition 13 of the Order is considered satisfied.

n. Condition 14

Condition 14 of the Order requires, in part, that the licensee identify sources of supply water, soil and groundwater data, and associated reports, and use that data to develop a land application assessment of any impacts due to the use of the 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 were not being used to produce crops for human consumption. The land application assessment was required to be submitted within 180 days of issuance of the Order.

As described in Section 4.2 of NRC Inspection Report 040-08903/2018-002 dated November 26, 2018 (ADAMS Accession No. ML18303A199), the licensee submitted the land application assessment to the NRC by letter dated September 25, 2017 (ADAMS Accession No. ML17270A066). By memorandum dated June 16, 2017 (ADAMS

Accession No. ML17328A507), the licensee provided verification that they were not using the former irrigation areas to produce crops for human consumption. 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 was intended to augment the existing soil data within the land application impact assessment that was submitted on September 25, 2017. The licensee subsequently submitted the final status survey report, documenting the results of the final status survey, to the NRC by letter dated July 2, 2018 (ADAMS Accession Nos. ML18186A567 and ML18186A568).

However, the NRC issued a request for additional information by letter dated August 17, 2018 (ADAMS Accession No. ML18205A460), in part, to ask the licensee about the radiological status of the piping and equipment used to support the irrigation activities. The licensee responded to the NRC request by letter dated September 20, 2018 (ADAMS Accession No. ML18269A123).

During the week of August 27, 2018, an NRC inspector and contractors from the Oak Ridge Institute of Science and Education performed a confirmatory survey of the land application areas. The results from this survey were provided to the NRC inspectors in a report dated February 12, 2019 (ADAMS Accession No. ML19046A072). The inspectors reviewed the licensee's land application assessment reports and the confirmatory survey report submitted by the NRC's contractor. The inspectors requested additional information by letter dated April 20, 2020 (ADAMS Accession No. ML20107J517). The licensee responded to the request for additional information by letter dated July 31, 2020, and the licensee's letter is currently under NRC review (ADAMS Accession No. ML20227A055).

Condition 14 of the Order remains open pending completion of the NRC review of the licensee's submittals, the results of the final status survey, and the results of the NRC's confirmatory survey.

o. Condition 15

Condition 15 of the Order requires, in part, that if the results of the analysis discussed in Condition 14 of the Order indicate 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 pending the NRC review of the licensee's response to the NRC's request for additional information noted in Condition 14 and completion of the NRC review of the licensee's submittals, the results of the final status survey, and the results of the NRC's confirmatory survey.

p. Condition 16

Condition 16 of the Order requires the licensee to 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 last two integrated tables were provided to the NRC by letters dated September 16, 2019 (ADAMS Accession No. ML19261A020) and April 8, 2020 (ADAMS Accession No. ML20099F534).

Condition 16 of the Order will remain open until all license and procedure changes under the Order are completed.

6.3 Conclusions

Confirmatory Order EA-16-114 Conditions 1, 3, 4, 9, and 11-13 have been evaluated and are determined to be satisfied. Confirmatory Order Conditions 2, 5-8, 10, and 14-16 remain open with pending actions and will continue to be evaluated by the NRC.

7 Exit Meeting Summary

The inspectors presented the inspection results to the licensee's representatives at the conclusion of the onsite inspection on July 30, 2020. A follow up conference call was held with the licensee's representatives on August 20, 2020, to discuss the impacts of reduced pond evaporative capacity on groundwater activities. During the inspection, the licensee did not identify any information reviewed by the inspectors as proprietary that was included in the report.

SUPPLEMENTAL INSPECTION INFORMATION

Partial List of Persons Contacted

Licensee

W. Archuleta, Maintenance Tech III
A. Arguello, Hydrologist III
B. Bingham, Safety, Health and Environmental/Regulatory Compliance Officer
C. Farr, Assistant Radiation Safety Officer, Environmental Restoration Group, Inc.
K. Martinez, Environmental Specialist/Radiation Safety Technician
D. Pierce, Closure Manager
R. Shirley, Site Engineer
R. Whicker, Radiation Protection Administrator, Environmental Restoration Group, Inc.

Inspection Procedures (IPs) Used

IP 83822	Radiation Protection
IP 88005	Management Organization and Controls
IP 88035	Radioactive Waste Processing, Handling, Storage, and Transportation
IP 88045	Effluent Control and Environmental Protection
IP 88050	Emergency Preparedness
IP 92703	Follow-up of Confirmatory Action Letters or Orders

Items Opened, Closed and Discussed

Opened

None

Closed

040-08903/1901-01	VIO	Failure to conduct environmental evaluation
040-08903/1901-02	VIO	Failure to implement Regulatory Guide requirements
040-08903/1901-03	VIO	Failure to have procedure for incident/event reporting
040-08903/1902-01	VIO	Failure to maintain instrument calibration

Discussed

040-08903/1902-02	VIO	Failure to develop SOP for activities involving radioactive material
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List of Acronyms Used

ADAMS	Agencywide Documents Access and Management System
ALARA	As Low As Reasonably Achievable
ARSO	Assistant Radiation Safety Officer
CFR	Code of Federal Regulations
EP	evaporation pond
GCAP	groundwater corrective action program
gpd/acre-foot	gallons per day per acre-foot
gpm	gallons per minute
HSE	Health, Safety, and Environment
IP	Inspection Procedure
LTP	large tailings pile
NRC	U.S. Nuclear Regulatory Commission
RCA	root cause analysis
RCP	root cause protocol
RO	reverse osmosis
RSO	Radiation Safety Officer
RST	Radiation Safety Technician
RWP	radiation work permit
SERP	Safety and Environmental Review Panel
STP	small tailings pile
VIO	violation

NRC INSPECTION REPORT 040-08903/2020-001 – DATED AUGUST 28, 2020

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