

# Grants Reclamation Project



ACL Application Public Meeting | September 9, 2026

# Agenda

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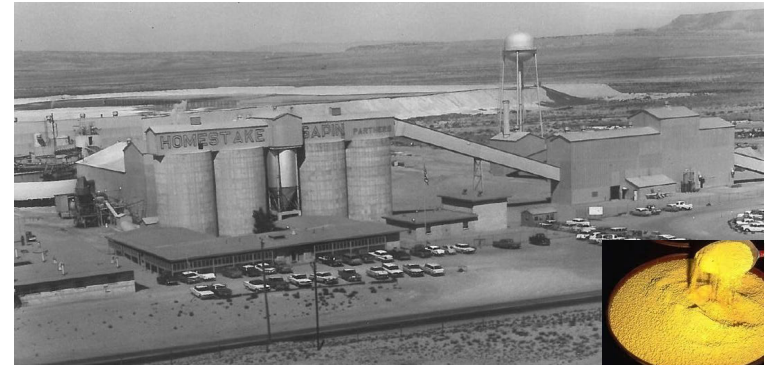
- Historical Context
- ACL Application
- Questions Received
- Q&A



# Historical Context

## ➤ 1950s – 1980s

- ❖ Homestake partnered with the US Government to provide critical supplies of uranium products to the U.S. government for national defense and later nuclear energy generation.
- ❖ The site facilities were constructed to industry standards applicable at the time under the Atomic Energy Commission oversight; however, prior to the environmental practices and laws have progressed leading to the robust rules and regulations in place today.
- ❖ Although the Homestake site facilities were constructed to industry standards and legal requirements of the time, constituents of concerns released and migrated into groundwater requiring remedial response actions starting in 1975.



# Historical Context – Reclamation

## ➤ 1980s – 1990s

- ❖ Clean up of approx. 1,200 acres of surface soils.
- ❖ Decommissioning and demolition of Milling Facilities
- ❖ Partial rock armor cover and interim cover placed tailings facilities.

## ➤ 1990s – Present

- ❖ Concurrent reclamation, monitoring and maintenance.
- ❖ Decommissioning and demolition of obsolete facilities.
- ❖ Plugging and abandonment of over 800 obsolete wells.
- ❖ Final large tailings pile cover.



# Historical Context – Groundwater Remediation

## ➤ Remedial Actions 1975-Present Day:

- ❖ Municipal Water Supply
- ❖ Source Control
- ❖ Containment
- ❖ Collection
- ❖ Evaporation
- ❖ Land Application
- ❖ In-situ Treatment
- ❖ Ex-situ Treatment
- ❖ Institutional Controls

## ➤ Results:

- ❖ Over 80% Uranium contaminant mass removed
- ❖ Over 1.3 million pounds of Uranium removed
- ❖ Over \$400M spent



# Context – Path to ACL Application

- **2017 – NRC Confirmatory Order re-evaluation of the Groundwater Corrective Action Plan (GCAP)**
- **2018-2020 – GCAP Characterization & Modelling**
  - ❖ Geochemical characterization, groundwater modelling and updated GCAP demonstrates technical infeasibility of achieving groundwater protection standards within a reasonable timeframe. Alternative Concentration Level (ACL) Application Process initiated.
- **2021-2022 – Groundwater Modelling & Application**
  - ❖ 1,000-year GW model developed confirming technical infeasibility. NRC conducted a pre-submission audit, and the ACL Application was submitted 8/26/2022
- **2022-2024 – NRC ACL Application Review**
- **2024-25 – Multi-Agency ACL Application Audits – NRC/DOE/EPA/NMED**
  - ❖ Audits were conducted on the GW model, ALARA demonstration, and Institutional controls
- **2026 – Revised ACL Application**
  - ❖ NRC conducted a pre-submission audit, and the ACL Application Revision 1 was submitted 6/30/2026

# ACL Application Revision 1

## ➤ **NRC License SUA-1471**

- ❖ As required by 10 CFR 40 Appendix A and in accordance with NUREG 1620 and 1757, Homestake has submitted a License Amendment Request and Alternate Concentration Limit (ACL) Application Revision 1 to the Nuclear Regulatory Commission (NRC) which is currently under agency review.

## ➤ **Key Components**

- ❖ Source and Contamination Characterization
- ❖ Hazard & Exposure Assessment
- ❖ Human Health & Environmental Risk Assessment
- ❖ Environmental Report
- ❖ Corrective Action Alternatives Analysis
- ❖ Groundwater Modeling Calibration and Prediction Reports
- ❖ Alternate Concentration Limits - design, analysis and calculation
- ❖ Groundwater Monitoring

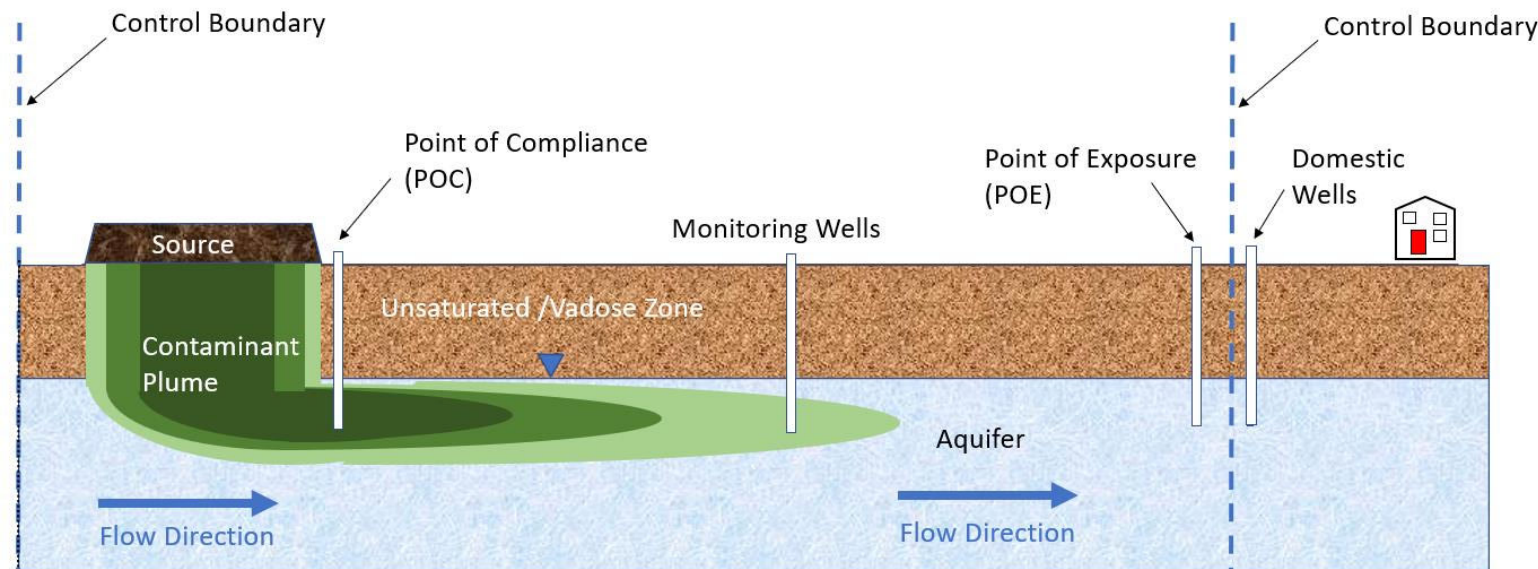
# ACL- Key Terms of Reference

**Alternate Concentration Limit (ACL)** - concentration applied at the POC, based upon a concentration at the POE that is protective of human health and the environment for 1,000yrs.

**Control Boundary** - Area subject to controlled access to groundwater.

**Point of Compliance (POC)** - Location where groundwater ACL concentrations must be met.

**Point of Exposure (POE)** - Location where groundwater meets standards and is accessible.



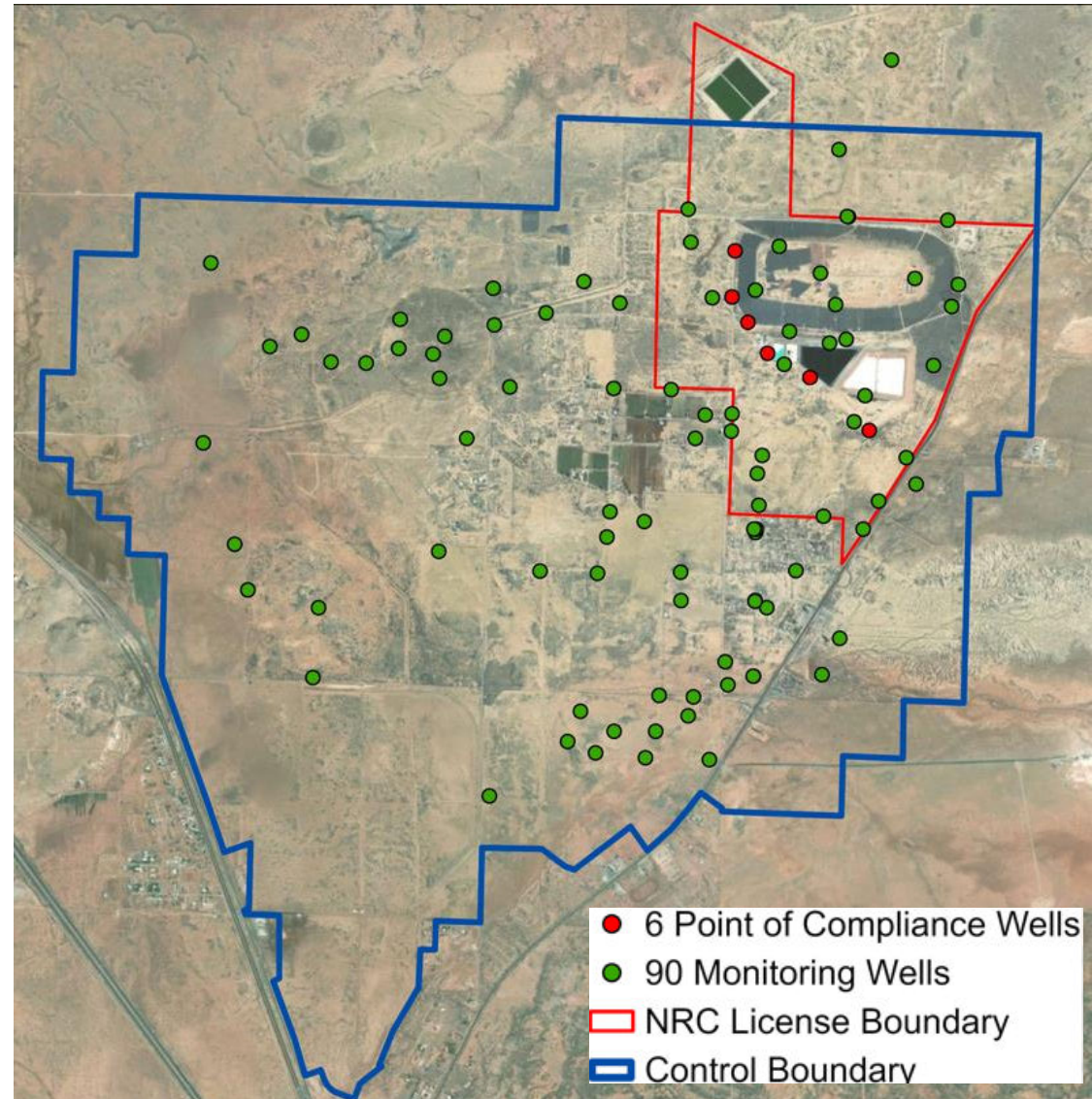
# Control Boundary

## ➤ Control Boundary

- ❖ Area in which long-term controls eliminate exposure pathways to residual contaminants ensuring protectiveness of human health & the environment.

## ➤ Long-Term Controls

- ❖ Alternative municipal water supply
- ❖ Land ownership & transfer to Department of Energy
- ❖ Well abandonment
- ❖ State of New Mexico Well Prohibition
- ❖ State of New Mexico Health Advisory
- ❖ Declaration of restrictive covenants
- ❖ Access control fencing
- ❖ Demolition of attractive nuisances
- ❖ Confirmatory monitoring & reporting



# NRC License Amendment Request Process

## ➤ Acceptance Review

- ❖ Determination of whether the application provided sufficient administrative and technical information
- ❖ Upon acceptance, NRC provides the proposed schedule and resources needed for the review.
- ❖ Typically 30-90 days in length

## ➤ Technical Review

- ❖ Conducted using NRC's standard review plan, NUREG-1620.
- ❖ Involves Requests for Additional Information as the mechanism for NRC staff utilization to gather information
- ❖ 3 possible outcomes following technical review: 1. Approval, 2. Denial, or 3. Approval with license conditions

# Questions Received

## ➤ Question 1:

- ❖ The Multi-Agency Groundwater Audit summary noted that Homestake's groundwater model fails to assess or include 1) greater contaminant flux from the saturated LTP, 2) potential saturation of the alluvial aquifer, and 3) a source term for the STP. Will Homestake's revised groundwater model simulate these scenarios so the results will be more protective of our members' health and safety, the health and safety of nearby and downstream communities, and that of future generations?

## ➤ Answers 1.1-1.3

- ❖ 1.1: The revised model bounding case evaluation includes a source term from the Large Tailings Pile (LTP) assuming pre-flushing conditions (45 mg/L) with an assumed infiltration over sixty times higher than predicted from the cover design.
- ❖ 1.2: The revised model is well calibrated to a 21-year period with transient conditions from site operations. The calibration to transient conditions provides confidence that the model can accurately predict future conditions including predictions of future saturation in the vicinity of the site.
- ❖ 1.3: The revised model includes a source term for the STP.

# Questions Received (cont.)

## ➤ **Question 2:**

- ❖ Does the groundwater model depict the San Mateo Creek and underlying alluvium as a preferential flow path from the LTP to its confluence with the Rio San Jose?

## ➤ **Answer 2:**

- ❖ The model represents the actual conditions of both the alluvium and interbedded basalt that connects the San Mateo Creek Alluvium to the Rio San Jose alluvial system based upon decades of data.

## ➤ **Question 3:**

- ❖ Will the revised groundwater model assess the impact of the east and west faults on contaminant flow from the mill tailings?

## ➤ **Answer 3:**

- ❖ Yes, the model incorporates geologic features such as the east and west faults. As documented in the Annual Performance Monitoring reports, the difference in water levels across the faults indicate there is no transmissive pathway associated with the faults.

# Questions Received (cont.)

## ➤ Question 4:

- ❖ Will the revised groundwater model allow for a transient decline in groundwater heads in the Rio San Jose rather than keeping them fixed to ensure that the predicted hydraulic gradients driving uranium migration are realistic?

## ➤ Answer 4:

- ❖ The model allows for transient conditions in all model layers. The only fixed condition in the Rio San Jose is the general head boundary upgradient of the confluence with San Mateo Creek, supported by 15 years of steady water levels at well Y2(M).

## ➤ Question 5:

- ❖ Can Homestake's groundwater model simulate how long contaminant flow in the alluvial aquifer from the LTP will persist if back-diffusion from the immobile domain to the mobile domain is used as an ongoing uranium source term?

## ➤ Answer 5:

- ❖ Yes, diffusion will be incorporated into the model under the dual domain model construct. The predicted source term from the Large Tailings Pile (LTP) and Small Tailings Pile (STP) is also included in model runs.

# Questions Received (cont.)

## ➤ **Question 6:**

- ❖ What measures have been taken to assess groundwater contamination in other SAG wells around well 943 since it was plugged and abandoned? Have other SAG wells in the vicinity experienced similar increases?

## ➤ **Answer 6:**

- ❖ No other San Andres Glorietta (SAG) wells in the vicinity of 943 have experienced increases.

## ➤ **Question 7:**

- ❖ Was the flushing of the LTP with freshwater from the SAG aquifer consistent with best practices under UMTRCA?

## ➤ **Answer 7:**

- ❖ No San Andres Glorietta (SAG) wells were used in the Large Tailings Pile (LTP) flushing program. Wells from the alluvium and Chinle formations were used and varied from year to year. Section 2 of the Annual Performance Monitoring Report specifies which wells were used from year to year.

# Questions Received (cont.)

## ➤ Question 8:

- ❖ What effect did land application of contaminated water for 12 years have on groundwater flow in the western portion of the alluvial groundwater plume? Or did the contaminants attenuate to soil in the application plots? Can this be simulated in the groundwater model?

## ➤ Answer 8:

- ❖ Section 4 of the Annual Performance Monitoring Report (APR) shows concentrations in groundwater were reduced as a result of the land application program and there are no discernable impacts on groundwater from the land application in the north pivot area. In the vicinity of that pivot, uranium concentrations in groundwater decreased from a high of ~0.7 mg/L to ~0.2 mg/L. Data, from the annual irrigation reports to the New Mexico Environmental Department (NMED), shows contaminants were mostly captured in the upper 5 feet of the soil . The pumping of wells used was incorporated into the groundwater model calibration period. No unsaturated transport was conducted as part of the groundwater model, but infiltration in the irrigation areas was increased during the period of operation to reflect the increased recharge . The former land treatment areas were evaluated by NRC and in 2021, they concluded the areas required no additional radiological restrictions.

# Questions Received (cont.)

## ➤ **Question 9:**

- ❖ Has Homestake assessed the drawdown impacts related to its extensive use of the SAG aquifer over the last 50 years?

## ➤ **Answer 9:**

- ❖ Yes, water levels are monitored and reported in Section 8 of the Annual Performance Monitoring Report (APR) which show no apparent response to the decreases in San Andres Glorietta (SAG) usage at the site starting in 2016 (when we limited usage to 500 ac-ft/yr) or in 2024 (when we ceased use of it for supplemental injection). The regional decrease in water levels in the San Andres Glorietta (SAG) aquifer predated the operation of the millsite and the aquifer supports a broad range of use (irrigation, municipal, industrial).

## ➤ **Question 10:**

- ❖ Will the NRC consider revising its groundwater protection standards based on EPA and NMED's revised background groundwater values for the Homestake site?

## ➤ **Answer 10:**

- ❖ No Comment as this question is directed to NRC.

# Questions Received (cont.)

## ➤ Question 11:

- ❖ MASE and BVDA submit that Homestake should use the best available science and technology to collect and treat seepage from its mill tailings to protect the region's drinking water supply. Will NRC consider requiring ongoing collection and treatment of contaminated groundwater at the Homestake site, potentially for a period of 30 years?

## ➤ Answer 11:

- ❖ Homestake responds to the first sentence as follows: Under NRC, EPA and NMED oversight, Homestake has successfully used the best available science and technology to collect and treat seepage from the mill tailings for nearly 5 decades. Furthermore, the analysis of correction alternatives in the Alternate Concentration Limit (ACL) Application indicates additional treatment would unnecessarily consume the groundwater resource that the treatment is intended to protect with little change the Control Boundary thereafter.
- ❖ No comment to the question in the second sentence as it is directed to NRC.

# Questions Received (cont.)

## ➤ **Question 12:**

- ❖ How will Homestake expansion of the long-term care boundary, in conjunction with cessation of its hydraulic barrier, impact contaminant flow migration in the alluvial aquifer over the next 200-1000 years? How will an expanded boundary protect human health, the San Mateo Creek, the Rio San Jose, or the region's SAG only freshwater aquifer over the next 200-1000 years?

## ➤ **Answer 12:**

- ❖ The groundwater model is deliberately highly conservative and demonstrates the monitoring proposed in the Alternate Concentration Limit (ACL) Application will confirm that no site-derived hazardous constituent concentrations above standards will extend beyond the proposed Control Boundary in the next 1000 years. Furthermore, the groundwater model predicts no concentrations above standards will occur in the San Andres Glorietta (SAG) over 1000 years.

# Questions Received (cont.)

## ➤ **Question 13:**

- ❖ Will NRC allow inclusion of the San Andres Glorietta (SAG) subcrop in the proposed expanded site boundary? MASE/BVDA submit it should be outside the boundary, and alluvial wells upgradient of the subcrop and inside the proposed expanded site boundary should be monitored long-term for potential effects on the San Andres Glorietta (SAG) aquifer.

## ➤ **Answer 13:**

- ❖ No Comment as this question is directed to NRC.
- ❖ Homestake responds to the second sentence as follows: The Alternate Concentration Limit (ACL) Application includes monitoring in both the alluvium, Chinle units and the San Andres Glorietta (SAG) within the Control Boundary. Exclusion of the subcrop area is inappropriate due to alluvial aquifer concentrations elevated above standards in the vicinity of the subcrop within 1000 years. The groundwater model predicts no concentrations above standards will occur in the San Andres Glorietta (SAG) over 1000 years.

# Questions Received (cont.)

## ➤ Question 14:

- ❖ How does Homestake's new crosswalk approach satisfy NRC License Conditions No. 35F and No. 42 for submitting a performance review of its corrective action program by March 31 of each year that details the progress towards attaining groundwater protection standards?

## ➤ Answer 14:

- ❖ No Comment as this question is directed to NRC.

## ➤ Question 15:

- ❖ Did Homestake evaluate potential subsidence of the LTP after saturation from flushing prior to placement of the radon barrier and the ET cover? Note that NRC License SUA-1471 Amendment 62 addressed this issue, but it was deleted in Amendment No. 65?

## ➤ Answer 15:

- ❖ Yes, HMC has monitored settlement at the top surface of the Large Tailings Pile (LTP) since 1993 by taking annual survey measurements at 53 monument locations with settlement plates located within the tailings of the Large Tailings Pile (LTP). Data is available in the Annual Report Appendix D Inspection of Tailings Piles and Ponds, Section 5 Monitoring Data, 5.1 Large Tailings Pile, 5.1.1 Settlement Monitoring. Additionally, License SUA-1471 Amendment 65, 2025 LTP ET Cover Design, Appendix E Settlement and Cover Cracking Evaluation presents the methods, assumptions, results, and conclusions of the settlement and cover cracking analysis.

# Questions Received (cont.)

## ➤ Question 16:

- ❖ Homestake's annual radon flux surveys have demonstrated increasing trends for the large and small tailings piles. What has been determined to be the cause of the increased radon flux? NRC License SUA-1471 Condition 36E?

## ➤ Answer 16:

- ❖ Results of measurements on the interim cover are highly variable therefore we are unable to draw conclusions. However, the installation of a state of art ET Cover reviewed and approved by the NRC, which includes lower and upper radon barriers, is scheduled for completion at the end of and 2026 is the final solution for the Large Tailings Pile (LTP). Lower radon barrier was completed, and flux measurements were taken in August 2026. The average radon flux for the 100 measurements made on the Lower Radon Barrier is 1.62 pCi/m<sup>2</sup>-sec which is well below the 20.0 pCi/m<sup>2</sup>-sec requirement. There is 3.7 feet of Upper Radon Barrier and erosion protection being placed over the Lower Radon Barrier which will further reduce radon flux.

# Questions Received (cont.)

## ➤ **Question 17:**

- ❖ Does DOE, formerly the Atomic Energy Commission, share equal liability with Homestake-Barrick Gold for air, soil, and groundwater contamination at the Homestake site?

## ➤ **Answer 17:**

- ❖ As specified by Subtitle A of Title X of the Energy Policy Act of 1992 the Federal Government pays 51.2% of the cost associated with decontamination, decommissioning and reclamation activities at the site. 51.2% represents the percentage of yellow cake produced and sold to the Federal Government.

# Questions Received (cont.)

## ➤ **Question 18: MASE/BVDA Post May Public Meeting**

- We are concerned about exposure of people living in the subdivisions to radon from past and ongoing releases. We would like updated radon measurements in the subdivisions south of the Homestake site. We don't feel that the current location of the air monitoring stations will provide this information.

## ➤ **Answer 18:**

- EPA selected a "no further action" in a record of decision for OU3 in 1989. At that time, "EPA determined the radon contamination in indoor and ambient (outdoor) air at the subdivisions was from naturally occurring background levels of radon. EPA concluded that the large tailings pile, though a potential source of radon emissions, did not contribute significantly to the radon contamination in the subdivisions."
- "EPA has concluded that the principal cause of elevated indoor radon concentrations in homes (homes having annual average radon concentrations exceeding 4 pCi/l) is related to local, native soil sources of radon in the subdivisions, and is a function of the type and quality of housing construction."
- "From 2010 to 2014, EPA conducted additional investigations and performed a supplemental human health risk assessment for the neighboring subdivisions due to concerns raised by the community. The results of the investigations led EPA to conduct removal actions to mitigate indoor air radon levels, in 2012, and soil contamination at residential yards, in 2014. The indoor air radon and soil contamination were not attributed to the Site."
- In 2025, as part of the Human Health Risk Assessment, EPA concluded from its own modeling that the site's contributions to measured radon concentrations in the subdivisions was estimated to be 3.09%, with the remaining 96.9 percentage coming from background contributions.
- As documented in the Semi-Annual Reports public dose monitoring and calculations continually demonstrated compliance with NRC regulatory requirements.

# Questions Received (cont.)

## ➤ **Question 19: MASE/BVDA Post May Public Meeting**

- We were surprised to hear from Homestake at our April 16th meeting that no SAG water was not used to flush the LTP. According to the 2016 Annual Monitoring report, pg. 6: "In the past, a mixture of clean water and treated water was used to flush the groundwater through injection wells. The flushing operation was terminated in 2015." Could you please confirm whether SAG aquifer water was ever used to flush the LTP during the flushing program?

## ➤ **Answer 19:**

- HMC was unable to find the quote referenced in the 2016 APR, however page 1.1-1 provides a similar articulation but explicitly states the reference to use of fresh and treated water for flushing was specific to the alluvial and Chinle formations. SAG water was never used for the tailings flushing program. The statement that the flushing operation was terminated in 2015 is accurate for the tailings flushing program.

# Questions Received (cont.)

## ➤ **Question 20: MASE/BVDA Post May Public Meeting**

- Has the flushing program decreased the long-term stability of the LTP?

## ➤ **Answer 20:**

- ❖ Settlement monitoring of the Large Tailings Pile (LTP) conducted before, during, and after flushing clearly demonstrated that the LTP had completed primary consolidation prior to flushing and secondary consolidation continued without impact through to this day. Additionally, a settlement and cracking analysis was completed as a part of the ET Cover application confirming that the LTP consolidation and stability were suitable for placement of the final cover.

# Questions Received (cont.)

## ➤ **Question 21: MASE/BVDA Post May Public Meeting**

- We recommend that the current treatment and hydraulic barrier be continued until the LTP draindown is complete.

## ➤ **Answer 21:**

- ❖ Today, HMC estimates the seepage rate to be less than 5 gpm, which is significant less than the peak of 200 gpm estimated in the past. This seepage rate will continue to decline as it approaches equilibrium with the amount of water that infiltrates through the cover, which is less than 0.1 gpm.
- ❖ Furthermore, the analysis of correction alternatives in the Alternate Concentration Limit (ACL) Application indicates additional treatment would unnecessarily consume the groundwater resource that the treatment is intended to protect with little change the Control Boundary thereafter.

# Questions Received (cont.)

## ➤ **Question 22: MASE/BVDA Post May Public Meeting**

- The concentration of contaminants in the plumes will increase if the hydraulic barrier is removed. This will make the plumes chemically unstable for an extended period of time. Does the NRC have a requirement that the plumes are stable to approve an ACL application?

## ➤ **Answer 22:**

- ❖ No Comment as this question is directed to NRC.

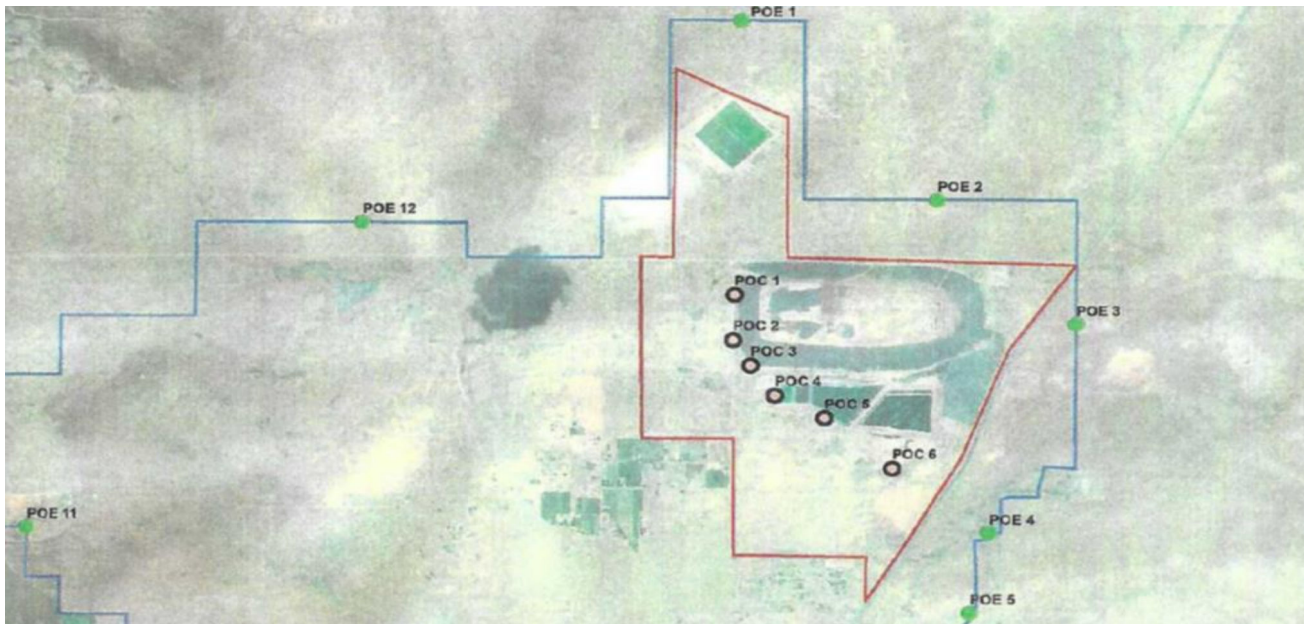
# Questions Received (cont.)

## ➤ Question 23: MASE/BVDA Post May Public Meeting

- What is the dark colored area to the west of the LTP in HBG's Enlarged Control Boundary shown on the map below?

## ➤ Answer 23:

- ❖ It is the shadow of a cloud.



# Questions Received (cont.)

## ➤ **Question 24: MASE/BVDA Post May Public Meeting**

- Financial assurance should be increased to cover the potential for contamination of the SAG aquifer via the SAG subcrop, which was not contemplated when the current financial assurance amount was calculated.

## ➤ **Answer 24:**

- ❖ The groundwater model predicts no concentrations above standards will occur in the San Andres Glorieta (SAG) over 1000 years.

# Questions Received (cont.)

## ➤ **Question 25: MASE/BVDA Post May Public Meeting**

- We recommend that Homestake's proposed long term care boundary be adjusted to exclude the SAG subcrop. We also recommend that groundwater monitoring locations be added upgradient of the subcrop to provide an early warning system.

## ➤ **Answer 25:**

- ❖ Exclusion of the subcrop area is inappropriate due to alluvial aquifer concentrations elevated above standards in the vicinity of the subcrop within 1000 years. The groundwater model predicts no concentrations above standards will occur in the San Andres Glorietta (SAG) over 1000 years.
- ❖ The Alternate Concentration Limit (ACL) Application includes monitoring in both the alluvium, Chinle units and the San Andres Glorietta (SAG) within the Control Boundary.

# Questions Received (cont.)

## ➤ **Question 26: MASE/BVDA Post May Public Meeting**

- Is the SAG subcrop included in the groundwater model? Is the SAG aquifer included in the groundwater model – not just as a no-flow boundary but with hydraulic conductivity, thickness, groundwater elevations, etc.?

## ➤ **Answer 26:**

- ❖ Yes, the subcrop and SAG aquifer are incorporated into the model domain and are included as part of the model calibration.

# Requested Map

