

**OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
AUDIT PLAN FOR THE HOMESTAKE MINING COMPANY OF CALIFORNIA
GROUNDWATER FLOW AND CONTAMINANT TRANSPORT MODEL**

Docket No. 040-08903

DRAFT AUDIT PLAN

Licensee: Homestake Mining Company of California (HMC)

Duration: Approximately one year from kickoff meeting

Locations: HMC, Grants Reclamation Project (GRP) office, Nuclear Regulatory Commission (NRC) Headquarters, with other meeting locations to be determined as needed, and the option to hold virtual meetings via Teams.

Audit Team: NRC staff
Department of Energy (DOE) staff and/or contractors
Environmental Protection Agency (EPA) staff and/or contractors
New Mexico Environment Department (NMED) staff

I. Background and Objectives

The licensee requested that the NRC staff conduct an audit of the HMC GRP groundwater flow and contaminant transport model (groundwater model) in a letter to the NRC dated June 10, 2024 ([ML24164A317](#)). Additionally, HMC proposed including representatives from the DOE, the EPA, and the NMED in the audit discussions. The NRC, DOE, EPA, and NMED (“the agencies”) and HMC will use the audit process to undertake a demonstration of the model to identify potential technical concerns.

The agencies agree to a multi-agency evaluation of HMC’s groundwater model, with the participation of HMC, because the model factors into the technical reviews and decision making of the EPA, NMED, and DOE, and the NRC staffs. The NRC will coordinate and organize audit team activities among the agencies and HMC consistent with NRC’s Licensing Process 111, Rev.1, Regulatory Audits.¹

The multi-agency audit of HMC’s groundwater model and supporting documentation will use an electronic reading room to share model files and documentation pertaining to the model, hold

¹ As discussed in this guidance, regulatory audits are a tool available to the staff that can help to efficiently gain understanding, verify information, and/or identify information that will require docketing to support a staff decision. Consistent with the principles of good regulation, as modern, risk-informed regulators, NRR staff are encouraged to use regulatory audits as frequently as is appropriate to improve efficiency and effectiveness in their regulatory activities.

periodic virtual meetings and hybrid meetings in Albuquerque, NM, and if the agencies deem it necessary, conduct an on-site visit to the GRP.

The objectives of this multi-agency audit:

- Conduct a multi-agency audit of the groundwater model with participation of hydrogeologists, geochemists, risk analysts, and other regulatory staff.
- Review the physical and chemical characteristics of the GRP (e.g., precipitation and infiltration, tailings seepage, hydrogeology, back diffusion from low permeability zones, and contaminant transport).
- Assess the assumptions and technical bases of HMC's groundwater model.
- Identify areas of technical agreement among the parties.
- Document the technical bases of resolved issues.
- Identify additional information that may be needed by the agencies to make future licensing and regulatory decisions.
- Develop a framework to address outstanding technical issues (e.g., identify relevant literature or analog sites, identify or conduct additional modeling sensitivity analyses, identify areas that need additional laboratory or field studies).

The audit team will not make licensing or regulatory decisions during the proposed audit; the audit is an information-gathering and assessment exercise, consistent with the LIC-111 (Sections 4.1 and 4.5). The audit will assist the parties in understanding the groundwater model, identifying potential concerns, and is expected to provide details that could inform future licensing actions, regulatory actions, and agency reviews. The proposed audit will not replace future requests for additional information on the groundwater model that may arise during future licensing actions or agency reviews. The parties of the audit team also reserve the right to disagree with the NRC over any aspects of model interpretations, conclusions or results with respect to their respective agencies' guiding regulations and future decisions.

II. Regulatory Audit Basis

Title 10 of the *Code of Federal Regulations* (CFR), Part 40, Appendix A, I. Technical Criteria, Criterion 5 and Criterion 7.

20.6.2.3103 NMAC - Standards of for Ground Water of 10,000 mg/l TDS Concentration or Less.

Relevant regulatory guidance includes:

- NUREG 1620, Rev. 1, "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."
- Office of Nuclear Reactor Regulation, Licensing Process (LIC) 111, Revision 1, Regulatory Audits ([ML19226A274](#)).

- Office of Nuclear Reactor Regulation, Licensing Process (LIC) 116, Preapplication Readiness Assessment ([ML20104B698](#)).

III. Regulatory Audit Scope

The scope of the proposed audit includes the review of files and documents related to HMC's groundwater model. To initiate the review of the groundwater model, the agencies request HMC to provide an initial set of model files and documents supporting the model. Additional information may be requested from HMC during the audit as it proceeds. The NRC staff will prepare an audit summary report at the conclusion of the audit and make the report publicly available on Agencywide Documents Access and Management System (ADAMS) and the NRC's Homestake webpage. Documents related to the groundwater model provided by HMC that are audited will be listed in the audit summary report.

IV. Information and Other Material Necessary for the Regulatory Audit:

HMC should be prepared to provide documents, reports, calculations, computer code verification, and other material, as applicable, supporting the analyses documented in the groundwater model. The NRC staff requests that HMC make these additional materials available in the electronic reading room for review by the agencies prior to the kickoff meeting. The electronic reading room will allow multiple auditors to examine documents simultaneously. At the conclusion of the audit, the NRC staff will notify HMC that these documents can be removed from the electronic reading room. Information identified by HMC as proprietary, pursuant to 10 CFR 2.390, will be controlled appropriately by staff during the audit.

V. Special Requests

The agencies may request additional sensitivity analyses from HMC, which would be prioritized by the agencies based upon risk significance. Sensitivity analyses may be completed by HMC at their discretion during the audit. However, if these sensitivity analyses cannot be addressed during the audit, these issues may need to be addressed in a separate preapplication audit or application review.

Prior to any virtual or in-person meetings, the agencies may request additional documentation from HMC. If HMC could make additionally requested documents available in the electronic reading room prior to scheduled audit meetings that will facilitate the audit process.

VI. Audit Team Assignments

The audit team is expected to consist of the DOE, EPA, NMED, and NRC staffs, which will review the groundwater model.

VII. Logistics

As part of the audit, the agencies' staff plan to meet in Albuquerque, NM with HMC to review and assess the model and supporting documents, as well as discuss technical questions and concerns.

In order to facilitate review progress, the staffs of the participating agencies are encouraged to provide the NRC staff preliminary comments and technical concerns and to identify relevant documents in advance of virtual or in-person meetings. The NRC staff will compile this information and provide it to HMC in advance of the meeting.

In addition to the proposed meetings below, the agencies' staff may meet internally and may request virtual audit meetings with HMC to discuss questions on the technical material. Meetings will be scheduled based on mutual availability.

Due to the complexity of the site hydrogeology, site history, and the groundwater model, as well as the extensive supporting documentation, the multi-agency team proposes to hold audit team meetings at 3-month intervals to allow participants adequate time to prepare.

The audit period may be reduced or extended, depending on the progress made by the agencies' staff in addressing audit questions. Additional audit activities may be planned as necessary to support the agencies' understanding of the model.

VIII. Deliverables

The NRC staff, in coordination with the agencies, will generate an audit results summary report upon completion of the audit to document the audit findings. The audit report may include: (1) issues on which there is technical agreement, (2) documentation of the technical bases of issues resolved, (3) the identification of outstanding technical concerns, and (4) the types of information that could resolve the technical concerns. NRC staff will share the report with the participating agencies for review and comment, after which the report will be provided to HMC. The audit summary report will be publicly available in ADAMS and on the NRC's Homestake webpage.

IX. Schedule (Tentative):

- Fall 2024 - HMC to provide the groundwater model and model files to the agencies.
- December 2024 – Virtual Kickoff Meeting (date to be determined).
 - Introduce team members of HMC and the agencies, refine audit goals, objectives, processes and procedures,
 - Describe the risk assessment context (i.e., what is the risk being assessed, why is it being assessed, and what is the scope of the assessment),
 - HMC to provide an overview of the model and supporting documents, and
 - Audit team members to ask HMC high-level questions on the model and its documentation (e.g., location of information, accessing and running the model, model organization).
- Clarification Teleconference Call(s) to be scheduled as necessary.
- Approximately 3 months after Kickoff Meeting – First hybrid technical meeting (in-person and virtual participation) will be held for the purpose of discussing site characterization, model input parameters, and model boundary conditions. (Date to be determined).
- Clarification Teleconference Call(s) to be held as necessary.
- Approximately 3 months after first technical meeting – Second hybrid technical meeting (in-person and virtual participation) will be held for the purpose of reviewing the site conceptual and mathematical models, model calibration, model and scenario uncertainty, and sensitivity analyses. (Date to be determined).
- Clarification Teleconference Call(s) to be scheduled as necessary.
- Approximately 3 months after second technical meeting – Third hybrid technical meeting (in-person and virtual participation) to review model verification, to identify which model assumptions are adequately supported and which require additional technical support. (Date to be determined).
- Clarification Teleconference Call(s) to be scheduled as necessary.
- Additional technical meeting(s) as agreed upon by the agencies and HMC.
- Approximately 3 months after third technical meeting – Audit Summary will be published to document Audit Team findings.