TECHNICAL EVALUATION REPORT FOR KENNECOTT URANIUM COMPANY'S PROPOSED 2016 SURETY AND RE-BASELINE ESTIMATE FOR THE SWEETWATER URANIUM FACILITY

Docket No.: 040-08584 **License No.:** SUA-1350

DATE: November 1, 2016

FACILITY: Kennecott Uranium Company Sweetwater Uranium Facility

TECHNICAL REVIEWERS: James Webb, Reginald Augustus

PROJECT MANAGER: James Webb

SUMMARY AND CONCLUSIONS

By letter dated July 18, 2016 (ML16215A151), Rio Tinto Energy America, Kennecott Uranium Company (Kennecott), submitted the annual surety for its Sweetwater Uranium Facility to the U.S. Nuclear Regulatory Commission (NRC). The NRC staff reviewed the submission and has determined that the decommissioning and reclamation activities are adequately described and reasonable cost estimates for each activity were provided. Appropriate cost estimates were also provided for contingencies and long-term maintenance and surveillance. The NRC staff determined that Kennecott's method of increasing the cost estimate from the 2014 rebaselining report (ML14251A116) based on inflation using the Consumer Price Index (CPI), adequately demonstrates compliance with the requirements of 10 CFR Part 40, Appendix A, Criteria 9 and 10.

BACKGROUND

The Kennecott mill site is located in south-central Wyoming, in Sweetwater County, approximately 42 miles northwest of Rawlins, Wyoming. The mill was constructed in 1980 and processed ore from an adjacent open pit mine from 1981 until April 1983. The facility has been in standby status since 1983, and the original buildings and equipment are maintained. There is one tailings impoundment that has ponds on the top that are used in the pump and evaporate program to remediate groundwater contamination due to past leakage from the impoundment. The NRC bonded area of the site is approximately 1633 acres.

In 2014, Kennecott's surety update included a rebaseline cost estimate. Kennecott's 2015 surety update (ML15236A070) was based on inflation as determined from the CPI. The 2015 approved surety amount was $11,695,000 which is covered by a Letter of Credit, with the NRC named as the beneficiary. For 2016, Kennecott is again proposing an increase to its cost estimate based on CPI for a new surety amount of $11,811,000. This increase is based on a CPI increase of between May 2015 (237.805) and May 2016 (240.236) of 1.02 percent.

TECHNICAL EVALUATION

The NRC staff evaluated the surety update and rebaseline report against 10 CFR 40, Appendix A, Criterion 9 and 10, License Condition 9.7 (LC), and the guidance in NUREG-1620, Appendix

C. Criteria 9 and 10 of 10 CFR 40, Appendix A, require the licensee to supply sufficient information to the NRC to verify that the amount of coverage provided by the financial assurance will permit the completion of all decontamination and reclamation of the site, including the costs for contingencies and long-term surveillance. LC 9.7, among other things, requires that the licensee submit the annual surety update at least 3 months prior to its anniversary date. Additionally, the cost estimates must be calculated on the basis of completion of all activities by a third party and must be updated annually.

In determining whether an adjustment to increase the surety amount based solely on CPI would be adequate, the NRC staff looked at several factors, including:

- Spills, leakage or migration of radioactive material leading to additional contamination;
- Waste inventory increase above previous estimate;
- Facility modifications;
- Any changes to authorized possession limits
- Actual remediation costs above previous cost estimate; and
- Any other conditions that affected the costs

Kennecott's Sweetwater Uranium Facility remains in standby status with no recorded events of spills or leaks. In addition, there has been no change to the amount of waste inventory, changes to the facility, or changes in its authorized possession limits. Furthermore, there has been no increase to the actual remediation costs of the site nor any other known conditions affecting the cost estimate. Therefore, the NRC staff finds that an increase to the cost estimate based solely on CPI is reasonable.

The NRC staff determined that the submittal met the license requirement for a surety update to be submitted at least 3 months prior to the October 30 anniversary date specified in Kennecott's license. The costs are estimated based upon third party costs to reclaim, remediate, and decommission facilities and lands affected by past project operations. All unit costs, labor and equipment overhead, as well as contractor profit, were included. Unit costs taken from external sources such as the RS Means Cost Data or Wyoming Department of Environmental Quality Guideline No. 12, "Standardized Reclamation Performance Bond Format and Cost Calculation Methods" were selected such that overhead was included and contractor profit of 10% was added where not included. Also, the licensee added 15 percent for contingencies and long-term surveillance fees as required. The final cost was rounded to the nearest thousand dollars.

(1) Facility Decommissioning

The mill facility, including major equipment, structures, and concrete support, will be dismantled and disposed of in the tailings impoundment. The listing of major equipment, structures, and concrete structures that will be demolished, including quantity, volume and unit cost, are identified in Appendix A of the 2014 Kennecott Five Year Rebaseline Report, under "Mill Area Decommissioning." Funds have been set aside for revegetation of this area. All equipment, structures, and concrete from the mill area decommissioning effort, and all 11e.(2) byproduct material, will be placed within the tailings impoundment.

(2) Cleanup of Contaminated Soils

The 2014 rebaseline report identifies the mill area and the tailings area for cleanup of contaminated soils. Costs were estimated for the cleanup of contaminated soils beneath the mill and solvent extraction buildings that were discovered during the excavation of the catchment basin in 2007, along the west wall of the excavation. The costs were estimated based on the assumption that the depth of contamination would be the same as observed within the catchment basin, averaging 40 feet. The assumption of lateral movement west of the catchment basin was assumed to be roughly the same as observed within the catchment basin excavation, and encompassing the mill and tank battery west of the catchment basin and southeast of the mill.

The extent of the windblown tailings around the existing tailings impoundment was estimated in the 1997 pre-scoping survey. A total of 88 acres was identified as potentially contaminated. The reclamation cost estimate includes the cost for removal of the first 6 inches of soil over the entire 88 acres and the replacement of 12 inches of topsoil.

A total of 140,000 cubic yards and 71,000 cubic yards have been identified for cost estimates for these two areas, respectively. A summary of the cost estimate for these areas is provided in Appendix A of the 2014 Kennecott Five Year Rebaseline Report, under “Cleanup of Contaminated Soils.”

(3) Groundwater Remediation

Cost estimates for groundwater remediation and well decommissioning assume that seven pump back wells and 14 monitoring wells (2 monitoring wells are also pump back wells) will continue to operate and be sampled quarterly for hydrocarbons and three metals, per License Condition 11.3. The time for the ground water pumping program needed will likely exceed 10 years; the current cost estimate was based on an assumed 20-year remediation program. A summary of the cost estimate for groundwater remediation and well decommissioning is provided in Appendix A of the 2014 Kennecott Five Year Rebaseline Report.

(4) Existing Impoundment Reclamation

Future activities for the existing impoundment reclamation include the completion of dewatering, covering the tailings surface with embankment soil to a level close to the natural pre-construction ground surface, placing soil and revegetation, and monitoring for radon emanation and settlement. A summary of the cost estimate for the existing impoundment reclamation is provided in Appendix A of the 2014 Kennecott Five Year Rebaseline Report.

(5) Radiological Surveys and Monitoring

Major cost areas for radiological surveys and monitoring include soil sampling, release of decommissioning equipment (scanning and free release), verification gamma surveys, environmental monitoring, and personnel monitoring. Costs for soil analysis for radionuclide concentrations were estimated based on published cost data for a local laboratory (Energy Labs, 2014).

(6) Project Management and Mobilization/Demobilization

Mobilization and demobilization of equipment was assumed to be 3.5 percent of the subtotal of reclamation costs. Project management was assumed to be 3.0 percent of the subtotal of reclamation costs and was based on Wyoming Department of Environmental Quality Guideline No. 12.

(7) Contingency and Long-Term Surveillance Fee

A contingency fee of 15 percent of the subtotal was included in the overall total cost of the decommissioning and reclamation project. The long-term maintenance and surveillance fee was determined from the Bureau of Labor Statistics Consumer Price Index (CPI).

Conclusion:

The NRC staff determined that the Kennecott surety cost estimate for the Sweetwater Uranium Facility adequately reflects the decommissioning activities, unit costs, and contingency and long-term surveillance fees as required by 10 CFR Part 40, Appendix A. Also, the staff determined that the CPI calculation increase adequately demonstrates compliance with the requirements of 10 CFR Part 40, Appendix A, Criteria 9 and 10.

Proposed License Condition Change:

Revise License Condition 9.7 to change the required surety amount to read: $11,811,000.00.