



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
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MAR 24 2011

Mr. Keith I. McConnell
Deputy Director
Decommissioning and Uranium Recovery Licensing Directorate
United States Nuclear Regulatory Commission
U.S. Nuclear Regulatory Commission
Mail Stop T-8F5
11545 Rockville Pike
Rockville, MD 20852

RE: Focused Review of Specific Recommendations
Addendum to the Remediation System Evaluation (RSE) for the
Homestake Mining Company Site
Final Report – December 2010

Dear Mr. McConnell,

This letter is directed to your office pursuant to the general purpose of the 1993 Memorandum of Understanding between the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA) concerning the Homestake Uranium Mill, to assure that remedial actions occur in a timely and effective manner.

As you know, the United States Army Corps of Engineers (USACE) on behalf of EPA recently completed a Remediation System Evaluation (RSE) for the current remediation system at the Homestake Mining Company Site (HMC). The EPA approaches RSEs as optimization studies for ongoing remedial actions, initially as a way to conserve taxpayer funding at Fund-Lead Superfund Sites by making long term remedial actions more effective and less costly, but more recently applied to a wider variety of sites. The RSE process involves an independent team of experts that evaluates the performance of a remedy and makes recommendations to improve protectiveness, reduce costs, improve technical operation, and facilitate site closure. A number of RSE studies have been completed at Superfund Sites across the country. More information on RSEs generally can be found at:

< http://www.cluin.org/techfocus/default.focus/sec/Remediation_Optimization/cat/Overview/ >.
RSE observations and recommendations are not intended to imply a deficiency in the remedial work conducted by site managers but are offered as constructive suggestions.

The RSE for the HMC Site was conducted by the USACE on behalf of EPA. The final RSE report, issued in December of 2010, contains a number of recommendations for remedy

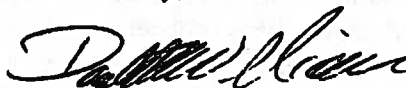
optimization. Given the scope and limitations of the study, EPA carefully reviewed each of the recommendations and concluded that many are uncertain as to the protectiveness either in the short term or the long term. In some instances, the report recommends discontinuing certain features of the remedial action without recommending replacement methods.

However, many of the recommendations in the RSE report can be expected to enhance the current remedy in place. The EPA review team recommends that NRC work with Homestake Mining Company to implement RSE recommendations 1 (partly, see Enclosure), 2, 3, 5, 9, 11, 13, 17 and 18 as those most likely to result in significant improvements to the current remedy. We also recommend that NRC consider recommendations 6, 8, 12, 14, 15 and 16 which may enhance the remedy currently being implemented and increase the information base for evaluation. EPA respectfully disagrees with recommendations 4, 7 and 10. A summary of EPA's view on each of the RSE Report recommendations is enclosed with this letter. The technical bases for these action items are presented in more detail in the final RSE report.

HMC is currently revising the 2006 version of the Corrective Action Plan (CAP) for site closure under its Nuclear Regulatory Commission license, and plans to submit the document for the regulatory agency review by mid-year in 2011. We respectfully request that NRC incorporate the EPA recommendations listed above into the CAP revision, along with a schedule integrating these activities into the other response measures required by the CAP.

If you have any questions or wish to discuss the recommendations in more detail, my staff is available to confer with you at your convenience. Please contact me at (214) 665-2731, or Sai Appaji, EPA Remedial Project Manager, at (214) 665-3126 to set up a time for a meeting or teleconference. Thank you for your consideration.

Sincerely,




Charles Faultry
Associate Director
Superfund Remedial Branch

Enclosure

Cc: John Buckley, Project Manager, NRC
Dana Bahar, SOS Manager, NMED
Jerry Schoeppner, Project Manager, NMED
Angelo Ortell, Project Manager, NMED

ENCLOSURE

The following is the list of recommendations made in the Final RSE report and the corresponding EPA position.

RSE Recommendation #1

The flushing of the tailings pile should be ended. If this is not adopted, a pilot test of the potential for rebound in concentrations should be conducted in a portion of the tailings pile. Monitoring should be conducted in depth specific wells with short screen lengths.

EPA Response

EPA does not agree with this recommendation to stop the flushing program. EPA believes that HMC has demonstrated significant progress in reducing the source term contaminant concentrations since the inception of the flushing program. HMC's goal of the flushing program is to achieve a target level of 2 mg/L of uranium concentration in the large tailings pile (LTP). According to modeling data HMC expects to achieve this target level in 2014. Based on the progress made in reducing the uranium concentration in the LTP, EPA believes that the program should be given an opportunity to reach target level.

EPA does recommend that HMC consider a pilot study in a portion of the LTP to demonstrate that rebound will not occur once the flushing program has ended. If HMC has already collected enough data to demonstrate that rebound will not occur then HMC should submit this data for agency review. EPA also recommends that HMC continue exploring other alternate treatment technologies in addition to the zeolite pilot study conducted at the LTP for ground water restoration.

RSE Recommendation #2

Simplification of the extraction and injection system is necessary to better focus on capture of the flux from under the piles and to significantly reduce dilution as a component of the remedy.

EPA Response

EPA agrees and recommends that HMC evaluate the extraction and injection system to minimize any dilution component of the remedy. EPA acknowledges that HMC has indicated in its May 7, 2010, response to the draft RSE report that it is willing to consider this evaluation.

RSE Recommendation #3

Further evaluate capture of contaminants west of the northwestern corner of the large tailings pile.

EPA Response

EPA agrees and recommends that HMC evaluate the capture of contaminants west of the LTP. EPA acknowledges that HMC in its May 7, 2010, response to the draft RSE report has indicated its willingness to conduct this evaluation.

RSE Recommendation #4

If not previously assessed, consider investigating the potential for contaminant mass loading on the ground water in the vicinity of the former mill site.

EPA Response

EPA does not agree with this recommendation as there is no strong evidence of contaminants leaching to groundwater in this area. The cleanup of the former mill site is well documented and any potential leaching from buried debris appears to be unlikely.

RSE Recommendation #5

Additional collection of geochemical parameters, including dissolved oxygen and oxidation reduction potential, of the groundwater beneath and downgradient of the LTP to characterize the geochemical environment and the role that reducing conditions induced by the flushing have had in immobilizing selenium (and the potential that cessation of the flushing may lead to less reducing conditions and release of selenium).

EPA Response

EPA agrees with this recommendation that HMC should collect additional geochemical parameters to evaluate the potential for long-term reducing conditions and rebound.

RSE Recommendation #6

If the field pilots to reduce uranium concentrations in the groundwater through adsorption or in-situ precipitation are approved and the results from the pilots are promising, apply in larger scale to applicable portions of the LTP and the groundwater.

EPA Response

EPA agrees with this recommendation and requests that HMC submit the details of the pilot study and results for the agency review. EPA strongly recommends that HMC consider implementing the treatment of ground water in the LTP and the west and south plumes.

RSE Recommendation #7

Further investigate the extent of contaminants, particularly uranium, in the Upper and Middle Chinle aquifers and resolve questions regarding dramatically different water levels among wells in the Middle Chinle.

EPA Response

EPA does not agree with this recommendation as the plumes in the upper and middle Chinle appear to be well characterized and documented in the annual reports.

RSE Recommendation #8

Consider geophysical techniques, such as electrical resistivity tomography to assess leakage under the evaporation ponds.

EPA Response

EPA agrees with this recommendation to evaluate the integrity of the liner in EP-1 as it is a single liner that is at its' design life and it does not have a leak detection system. Even if

leakage rates cannot be determined by the referenced methods at least a qualitative measurement must be made to assure some level of confidence in the integrity of pond liner for EP-1. EPA does acknowledge HMC's assertion that water levels and contaminant concentrations in the downgradient monitor well is an indicator of evidence of leak, and currently there is no such evidence. However, the EPA still recommends that HMC complete a qualitative evaluation to assure the integrity of the liner system given the fact that nearby injection is affecting water levels and contaminant concentrations in monitoring wells in the vicinity, thus making any leakage if it is occurring, as well as the fact that EP-1 is planned as the final repository for waste.

RSE Recommendation #9

Assure decommissioning of any potentially compromised wells screened in the San Andres Formation is completed as soon as possible.

EPA Response

EPA agrees and recommends that HMC complete this task as soon as possible and submit the completion report for agency review for wells under HMC's control or ownership.

RSE Recommendation #10

Consider construction of a slurry wall around the site to control contaminant migration from the tailings piles. The decision for implementing such an alternative would depend on the economics of the situation. Note that HMC has reportedly considered a slurry wall in the past, and not found the economics favorable. We recommend revisiting this issue in light of current conditions.

EPA Response

EPA does not agree with this recommendation as HMC has demonstrated progress in clean up of the source term contaminant concentrations through the flushing program. Building a slurry wall system at depths exceeding 80 -100, feet poses many technical challenges and achieving protectiveness is uncertain. EPA believes that HMC should continue the flushing program as planned and switch to alternate in-situ treatment system only if it is protective of the public's health.

RSE Recommendation #11

Relocation of the tailings should not be considered further by any means given the risks to the community and workers and the greenhouse gas emissions that would be generated during such work.

EPA Response

EPA agrees with this recommendation as the health and safety risk to the community and workers is far greater than the benefit if this option were to be pursued. EPA believes that this option is risky because of the potential exposure to the public during the transport of mill tailings and strong possibility that there may be a fatality during the project. Furthermore, a new repository would have to be established that could accept the mill tailings and the contamination in the ground water underneath the LTP would still need to be remediated. For these reasons the EPA does not believe that the tailings should be relocated.

RSE Recommendation #12

Consider either the pretreatment of high concentration wastes in the collection ponds as is currently being pilot tested, or adding RO capacity to increase treatment plant throughput and reduce discharge to the ponds.

EPA Response

EPA concurs with this recommendation and requests that HMC submit progress on additional pretreatment of the collection ponds for the agencies review.

RSE Recommendation #13

Review of the spray evaporation equipment and potential optimizations of the equipment to increase the rate and efficiency of evaporation.

EPA Response

EPA concurs with this recommendation and requests that HMC review newer equipment in the market that may be more efficient than the current system. If more efficient systems are available and a cost benefit analysis supports replacement, then HMC should consider replacing the old equipment to optimize the evaporative capacity of the pond.

RSE Recommendation #14

Selection of the area of the additional pond based on the evaporative capacity needed after optimization of the treatment and evaporative spraying systems and operations.

EPA Response

The new evaporation pond EP3 has been constructed and currently in operation. HMC should optimize the evaporative capacity of the evaporation ponds 1, 2 and 3 after implementing recommendation 13.

RSE Recommendation #15

Develop a comprehensive, regular, and objectives-based monitoring program.

EPA Response

EPA agrees with this recommendation. EPA does acknowledge that HMC already has a comprehensive monitoring program in place; however, the plan needs to be updated as current conditions have changed at the site and needs to reflect Data Quality Objectives.

RSE Recommendation #16

Quantitative long-term monitoring optimization techniques are highly recommended.

EPA Response

EPA agrees with this recommendation and requests that HMC update the monitoring plans in the CAP to optimize long term monitoring.

RSE Recommendation #17

Adjust Air Monitoring Program to perform sampling of radon decay products to confirm equilibrium assumption, consider use of multiple radon background locations to better represent the distribution of potential concentrations and assess the radon gas potentially released from the evaporation ponds, especially during active spraying.

EPA Response

EPA agrees and recommends that HMC demonstrate the validity of the equilibrium assumptions as part of the current radon study and submit a plan to the regulatory agencies for review. HMC has shared information with EPA regarding the radon study it is currently conducting to identify background location(s) that is/are better representative of the site. EPA also acknowledges that HMC has conducted radon gas emission from the evaporation ponds. However, HMC has not proposed conducting any confirmation of the equilibrium assumption. EPA respectfully requests that HMC share the radon data from the study with the agencies and not wait until the study is complete.

RSE Recommendation #18

Though risks appear minimal with the current irrigation practice, consider treatment of contaminated irrigation water via ion exchange prior to application as a means to remove contaminant mass from the environment.

EPA Response

EPA strongly recommends that HMC implement alternate treatment methods including the zeolite and other in-situ pilot test that are currently being evaluated by HMC to treat extracted ground water prior to discharge as irrigation water. EPA recognizes that NMED has currently prohibited HMC to continue this practice of irrigation. HMC has recently submitted a request to NMED seeking permission to continue irrigation in 2011; however, the discharge water will have much lower uranium and selenium concentrations than historical concentrations.