September 1, 2005

Mr. Thomas E. Gieck
Remediation Leader
Umetco Minerals Corporation
P.O. Box 1029
Grand Junction, CO 81502

SUBJECT: THE UMETCO MINERALS CORPORATION FINAL STATUS SURVEY REPORT, ADDENDUM 2 (TAC LU0087)

Dear Mr. Gieck:

By letter dated May 11, 2005, the Umetco Minerals Corporation (Umetco) submitted Addendum 2 of the Final Status Survey Report (FSSR) for the Gas Hills uranium mill tailings site, for review by the U.S. Nuclear Regulatory Commission (NRC) staff. Addendum 2 of the FSSR provided the results of the gamma exposure rate surveys for the A-9 Repository and soil sampling from a portion of the Susquehanna Haul Road for the presence of byproduct materials. The gamma exposure rate measurements for the A-9 Repository were supplemented with soil sampling, for Ra-226 content, and radon emission rate measurements from the A-9 Repository cover material.

The staff has completed its review of the FSSR, Addendum 2, and concludes that the direct gamma exposure from the A-9 Repository has been reduced to background levels in compliance with 10 CFR Part 40, Appendix A, Criterion 6(1). The staff also concludes that the Ra-226 specific activity in the A-9 Repository cover is consistent with background levels and the radon emission rate from the cover complies with the limit in 10 CFR Part 40, Appendix A, Criterion 6(2). Lastly, the staff concludes that the Susquehanna Haul Road is not contaminated with byproduct material. The staff's review is documented in the enclosed Technical Evaluation Report (TER). This letter and the enclosed TER should be referenced in the forthcoming Construction Completion Report for the Gas Hills tailings site.

If you have any questions regarding this letter, please contact Rick Weller, the NRC Project Manager for the Gas Hills tailings site, at (301) 415-7287 or by e-mail to RMW2@nrc.gov.

In accordance with 10 CFR 2.390 of the NRC's Rules of Practice, a copy of this letter will be available electronically from the Publicly Available Records (PARS) component of NRC's document system Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Sincerely,

/RA/

Gary S. Janosko, Chief
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-0299
License No.: SUA-648

Enclosure: Technical Evaluation Report for
Final Status Survey Report, Addendum 2

cc: M. Moxley, WDEQ

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TECHNICAL EVALUATION REPORT FOR
UMETCO MINERALS CORPORATION
FINAL STATUS SURVEY REPORT, ADDENDUM 2,
FOR THE
GAS HILLS URANIUM MILL TAILINGS SITE

DOCKET NO.: 40-0299

LICENSE NO.: SUA-648

FACILITY: Umetco Minerals Corporation Gas Hills Uranium Mill Tailings Site

TECHNICAL REVIEWER: Rick Weller

PROJECT MANAGER: Rick Weller

BACKGROUND:

In a letter dated May 11, 2005, Umetco Minerals Corporation (Umetco) submitted Addendum 2 of the Final Status Survey Report (FSSR) as part of Umetco's continuing effort to document the results of reclamation and cleanup of 11e.(2) byproduct material at the Gas Hills Uranium Mill Tailings Site. Specifically, Addendum 2 of the FSSR documents the results of the gamma radiation exposure rate surveys for the A-9 Repository (tailings) and soil sampling from the portion of the Susquehanna Haul Road which is not contained within a designed disposal cell. As the Susquehanna Haul Road was previously used as a designated return route for trucks disposing of uranium mill tailings material in the A-9 Repository, it had the potential for becoming contaminated with tailings material. As such, soil samples were obtained at selected locations and depths along the road to be analyzed for the presence of byproduct material. Addendum 2 of the FSSR supplements the information on cleanup progress documented in the FSSR and Addendum 1 submitted by Umetco letter dated September 2, 2004. The staff's review of the September 2, 2004 FSSR and Addendum 1 was provided in a letter dated September 27, 2004.

TECHNICAL EVALUATION:

A-9 Repository Gamma Exposure Surveys:

10 CFR Part 40, Appendix A, Criterion 6(1), states that "Direct gamma exposure from the tailings or waste should be reduced to background levels." To demonstrate compliance with this requirement, Umetco surveyed the completed earthen cover of the A-9 Repository for direct gamma exposure rates. A mean gamma exposure rate of 30 microroentgen per hour (μR /hr) was previously established as the site-wide value for background at the Gas Hills site. One-meter high gamma exposure rate measurements were taken along grid lines approximately 10 meters apart. Both bare and collimated gamma detector readings were taken because of the contribution to exposure rates from gamma "shine" from adjacent naturally occurring radioactive

materials on the south, east, and west boundaries of the below grade A-9 Repository. A total of 38,698 measurements were recorded with the bare detector and 33,446 were recorded with the collimated detector. While the September 2000 Final Status Survey Plan specified a density of one gamma exposure rate measurement per acre of repository surface, the density of readings taken over the 60 acre A-9 Repository was in excess of 550 measurements per acre.

The gamma exposure rate measurements were supplemented with soil sampling, for Ra-226 content, of the final 2 feet of A-9 Repository cover material utilized as frost protection, for comparison with the site-wide background value of 10 picocuries per gram (pCi/g) for Ra-226 specific activity. Lastly, radon emission rates were measured from the A-9 Repository cover for comparison with the regulatory limit in 10 CFR Part 40, Appendix A, Criterion 6(2), of 20 picocuries per square meter per sec (pCi/m^2s) and the radon emission rate data from the Above Grade and Heap Leach Repositories. The soil sample and radon emission rate results were utilized by Umetco to support their determination that the elevated gamma exposure rates from bare detector measurements were due to “shine” not related to materials in the A-9 Repository.

The mean gamma exposure rates for the A-9 Repository were 33 µR/hr from the bare detector surveys and 28 µR/hr from the collimated detector surveys. The collimated detector surveys are consistent with the site-wide value of 30 µR/hr for background at the Gas Hills site. Analysis of composite samples from 23 grid locations within the A-9 Repository cover indicated that the Ra-226 specific activity is also consistent with the site-wide background value of 10 pCi/g. Lastly, the radon emission rate for the A-9 Repository cover was determined to be 3.5 pCi/m^2s, well within the regulatory limit of 20 pCi/m^2s in 10 CFR Part 40 and consistent with radon emission rate measurements from the Above Grade (1.4 pCi/m^2s) and Heap Leach Repositories (1.1 pCi/m^2s).

Susquehanna Haul Road

The Susquehanna Haul Road was previously used by trucks potentially contaminated with uranium mill tailings material and portions of that road are now contained within the Heap Leach and GHP-2 Repositories. However, approximately 722 feet of the road remain that are not contained within a designed tailings cell. As such, Umetco collected soil samples at various grid locations and depths in that portion of the road to analyze for the presence of byproduct material contamination. To analyze for the presence of byproduct material, Umetco obtained soil samples from 22 ten meter square grid locations along the center of the road. Five soil sample locations were selected within each grid to develop a composite sample for each grid. The composite samples were analyzed for Ra-226,Th-230, and U-nat specific activity where U-238 comprises about half of the U-nat activity. The ratio of Ra-226 to U-238 was used to determine the presence of byproduct material.

Regarding the tailings material at Gas Hills, the ratio of Ra-226 to U-238 activity is 13.7, whereas, the ratio of Ra-226 to U-238 in background samples ranges from 2.0 to 0.5. The mean ratio of Ra-226 to U-238 for the 22 grid locations on the Susquehanna Haul Road was 2.01 which corresponds with the upper value of the ratio for Ra-226 to U-238 in background materials at the Gas Hills site. Thus, soil sampling of the Susquehanna Haul Road does not indicate the presence of contamination from tailings or byproduct material.

SUMMARY AND CONCLUSIONS:

The staff concludes that the direct gamma exposure from the A-9 Repository has been reduced to background levels in compliance with 10 CFR Part 40, Appendix A, Criterion 6(1). The staff also concludes that the Ra-226 specific activity in the A-9 Repository cover is similar to background levels and the radon emission rate from the cover complies with the limit in 10 CFR Part 40, Appendix A, Criterion 6(2). Lastly, the staff concludes that the Susquehanna Haul Road is not contaminated with byproduct material.