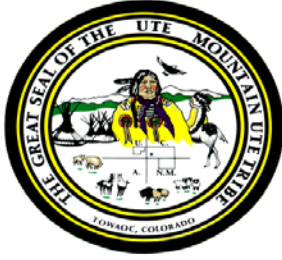


Exhibit R



UTE MOUNTAIN UTE TRIBE
ENVIRONMENTAL PROGRAMS DEPARTMENT

Exhibit R to December 16, 2011 Comments on DUSA RML Renewal
Re: Particular Concerns with Alternative Feed Material

1. DUSA is Not Properly Monitoring Disbursement of Components of the Alternative Feed Material

DUSA's semi-annual effluent monitoring program fails to detect, diagnose, and disclose information pertaining to alternative feed material components and their effects to the health and welfare of the public and environment. DUSA's semi-annual effluent monitoring program is limited to measuring gross gamma radiation, natural uranium (U-238) and its progeny Th-230, Ra-226, Pb-210 and Rn-222 (*White Mesa Uranium Mill Semi-Annual Effluent Monitoring Report* 2010). Radionuclides other than natural uranium and its decay products may be of more concern in particulate matter form from the delivery, storage and processing of alternative feed materials. A link to the deficiency is apparent in DUSA's current practice with alternative feed material on the ore storage pads. When alternative feed material has a percent uranium concentration greater than Arizona 1 ores (0.637% U₃O₈), the policy is to cover the feed with "less" radioactive materials. SER at p. 10. This policy does not make sense when there are two separate circuits for alternative feed material and conventional ore and where there exists the possibility for cross contamination in storage (unless a policy exists for strict regulation to segregate the storage of alternative feed and conventional ore in this regard). Also, if lower activity (than Arizona 1 Ore) grade alternative feed material is delivered and left uncovered, the material is more than likely to be less coarse than conventional ore, enabling a higher rate of wind dispersion. See Section 2, *infra*. With the possibility of cross contamination during ore storage, DUSA is hampering the ability to discern the components of alternative feed material and conventional ore. DRC should require DUSA to customize the semi-annual effluent monitoring to include radionuclides characteristic of alternative feed materials and DRC should prohibit DUSA from mixing alternative feed material and conventional ore on the ore storage pad.

2. Alternative Feed Material is More Susceptible to Wind Dispersion than Other Licensed Materials at the WMM Facility

NRC Regulatory Guide 3.59 states that: "compositions and physical and chemical characteristics, particle size distributions, site characteristics, and operational procedures are among the factors that affect the degree to which dust is dispersed into the atmosphere" (NRC Guide 3.59, *Methods for Estimating Radioactive and Toxic Airborne Source Terms for Uranium Milling Operations*, p. 21 1987). Because alternative feed material has different compositions and physical and chemical characteristics from conventional ore, modeling efforts to track air

dispersion of alternative feed material and efforts to control radioactive fugitive dust should be tailored to the alternative feed materials.

Although the Tribe does not have complete access to the composition of alternative feed material allowed into the WMM facility, DUSA's *Environmental Report In Support of the License Renewal Application* Table 3.13-24, p. 130, provides a list of alternative feed materials licensed to date for processing at the Mill. This list includes soils contaminated with uranium and other radionuclides and with Monazite sands and soils, which indicates that the alternative feed material contains a more diverse mixture of fine grade radionuclide-laden dust. The Fugitive Dust Control Plan for Moab Mill Tailings, which controls materials comparable to some of the alternative feed materials stored at the WMM facility, states that, "the physical form of the radioactive contaminants (i.e., uranium mill tailings) at the Moab Site is primarily best described as a fine-grained, sand-like material, which is **highly susceptible to wind erosion**" (emphasis added). Moab Site Fugitive Dust Control Plan, p. 7 (Attached as Exhibit 1 to the Tribe's RAA, which is attached as Exhibit B to these comments). This indicates that alternative feed material at the WMM facility is more susceptible to wind dispersion than other materials stored at the WMM facility.

Because radioactive dust is the main concern at the Mill site (section 4.4, Appendix E of the RML Renewal),¹ DRC should require DUSA to implement stricter procedures for dust minimization practices for alternative feed materials based upon alternative feed materials' susceptibility to wind dispersion.

3. DUSA is Not Properly Modeling the Dose Assessment of Alternative Feed Material

The MILDOS-AREA code is used to estimate potential radiation doses to members of the public from the processing of Colorado Plateau and Arizona 1 Ores at their respective activity levels and process rates (*Dose Assessment in Support of the License Renewal Application and ER for White Mesa Uranium Mill*, section 3.3). The MILDOS-AREA model utilized by DUSA does not include activity levels, process rates of alternative feed materials, or process emission factors and bulk density of the ore. Although alternative feed material has its own Derived Air Concentration (DAC) value, it is not utilized for area sources on the Mill site (including the ore delivery and storage pads), and it is not utilized in the MILDOS-AREA model.

The DAC for various radionuclides at the Mill sets the maximum level of radioactivity in air particulate that full time employees breathe for an entire year as not to exceed the Mill's ALARA regulatory limit of 1,250mrem/year. This DAC is a primary component of the MILDOS-AREA model. The DAC set for conventional ore, the primary source of offsite migration of radioactive dust, is much more restrictive than the yellowcake area because of the diverse radionuclide mixture (although the yellowcake area is much more radioactive). Alternative feed material at the WMM facility likely has a diverse radionuclide mixture, but no additional monitoring for alternative feed is performed because the Mill's ALARA standards of 1250mrem/year are met. SER at p. 10. The MILDOS-AREA code holds assumptions for the ore

¹ This is consistent with Appendix A in the Environmental Protection Agency's *Guidance for Implementing Radionuclide NESHAPS*, Section 1.1, p. A-1 1991 (stating that U-234 and U-238 are of most concern in particulate matter form).

storage pad, including very coarse material and 50% control of fugitive emissions for the delivery and storage of conventional Colorado Plateau and Arizona 1 ore. These assumptions are inappropriate estimates of the fine ore dispersion qualities of alternative feed material. *See* Section 2, *supra*. The MILDOS-AREA model also includes estimates of bulk density of ore for both Colorado Plateau and Arizona 1 Strip Ore, but does not include that measure for alternative feed materials. *See Dose Assessment in Support of the License Renewal Application and ER for DUSA*, Section A.2.5, p.A. DRC should require DUSA to correct the deficiencies in the assumptions and estimates made in the MILDOS-AREA code to properly model radiation doses from alternative feed materials to the public.

4. Specific Requests

DRC must require DUSA to initiate stricter control, mitigation, monitoring and modeling of radionuclide laden dust, with special regard to alternative feed materials as requested below.

- ❖ DRC must require DUSA to install a windbreak to prevent offsite migration of radionuclide-laden dust for alternative feed around the storage pads.
- ❖ DRC must require DUSA to monitor for the longer-lived radioisotopes present in all assayed alternative feed material.
- ❖ DRC must require DUSA to have fugitive dust standards, action levels, and response actions in place for real time meteorological monitoring times of high winds for alternative feed material and other stored ores. *See Moab Site Fugitive Dust Control Plan* p. 17.
- ❖ DRC must require DUSA to increase the meteorological stations datalogger collection frequency for wind speed and direction to be every 10 minutes, to be included in emissions and MILDOS-AREA modeling for more precise estimates in dose assessment levels to the public.
- ❖ DRC must require DUSA to include and disclose specific activity levels in pCi/g for all deliverable alternative feed material to be included in MILDOS-AREA modeling for dose assessment levels to the public.
- ❖ DRC must require DUSA to include bulk density estimates for all alternative feed material in MILDOS-AREA modeling when estimating radioactive particulate emission rates and dose assessment levels to the public.
- ❖ DRC must require DUSA to have strict work practice standards in place for the storage of varying grade alternative feed materials, and work practice standards in place for mitigating wind dispersion of differing grade ores and materials based on acquired bulk density estimates.
- ❖ DRC must require DUSA to utilize the strictest alternative feed Derived Air Concentration (DAC) value for the alternative feed material for delivery of and storage of in MILDOS-AREA modeling for dose assessment levels to the public and workers safety.
- ❖ DRC must require DUSA to utilize empirical data from the existing High Volume PM10 monitors to assess Total Effective Dose Limits (TEDEs) to the public.
- ❖ DRC must require DUSA to include Radon and its 'daughters' to be included in the annual release rate calculation for the ore storage pads, for both alternative

feed material and conventional ore, as opposed to just U-Nat and its decay products and Radon, for compliance with 10 CFR 20.1301.

References:

Denison Mines (USA) Corp. *Dose Assessment in Support of the License Renewal Application and Environmental Report for the White Mesa Uranium Mill*. Environmental Report. Richmond Hill, Ontario: SENES Consultants Limited, 2007.

Denison Mines (USA) Corp. *White Mesa Uranium Mill Environmental Monitoring Report in Support of License Renewal Application*. Denver, Colorado, 2007.

Department of Energy. "Moab Project Site Fugitive Dust Control Plan." 2002.

United States Environmental Protection Agency Office of Radiation Programs. *Guidance on Implementing the Radionuclide NESHAPS*. Washington, D.C., 1991.

United States Nuclear Regulatory Commission. "Regulatory Guide 3.59, Methods for Regulating Radioactive and Toxic Airborne Source Terms for Uranium Milling Operations." 1987.