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Ref: 8EPR-N

Chris Krassin
Lander Field Office
Bureau of Land Management
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Lander, WY 82520-0589

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Re: Sheep Mountain Uranium Project, Draft EIS; CEQ # 20150003

Dear Mr. Krassin:

In accordance with our responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency Region 8 has reviewed the *Sheep Mountain Uranium Project Draft Environmental Impact Statement* (EIS) prepared by the Lander Field Office of the Bureau of Land Management. It is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project, including rating the magnitude of potential environmental impacts and the adequacy of the environmental analysis in the NEPA document.

The Sheep Mountain Uranium Project is a conventional uranium mine with both open-pit and underground mining located near Jeffrey City, Wyoming. The mine is located in the Crooks Gap-Green Mountain mining district which has been mined extensively since the 1950s. Uranium ore from the mine would either be processed on-site or trucked and processed at the existing Sweetwater Mill. If the uranium ore is processed on the Sheep Mountain site, an additional EIS would be prepared by Nuclear Regulatory Commission (NRC) for the issuance of a new source material license.

EPA Rating of EIS

The proposed open pit and underground uranium mine and mill as noted in the draft EIS has the potential for significant, permanent adverse environmental impacts. The project is proposed in an area that has already had extensive mining disturbance, and it is not in a "greenfield", an area that has not had previous industrial use. The environmental impact and success of environmental controls and management of the operation rely heavily on the future regulatory activities:

- Amendment to Wyoming, Department of Environmental Quality(DEQ), Land Quality Division mining permit 381C;
- Financial assurance arrangements for reclamation under the State mining permit,
- BLM's Plan of Operation;

- Potential Nuclear Regulatory Commission (NRC) license for the proposed on-site acid leach pad; and the
- Wyoming DEQ's stormwater and traditional WPDES discharge permits.

We have rated the draft EIS as "Environmental Concerns – Insufficient Information" (EC-2). The "EC" rating signifies that the EPA's review has identified environmental impacts that should be avoided in order to adequately protect the environment. The "2" rating signifies that the draft EIS does not contain sufficient information to fully evaluate environmental impacts that should be avoided in order to fully protect the environment. Detailed comments are attached and a full description of the EPA's rating system can be found at:
www.epa.gov/compliance/nepa/comments/ratings.html

As mentioned above, the EPA's main concerns for the proposed uranium mine and optional on-site mill are the successful development and implementation of the State mining and WPDES permits, the BLM Plan of Operation, financial assurance to complete reclamation and the future NRC licensing process for the optional on-site mill. Our other main concerns are:

- Lack of specificity and permitting for discharges from the mine site into surface waters. As described in the attached detailed comments, the wastewater treatment plant design for mine drainage needs to be more fully developed in the proposed alternatives and the proponent will need to apply for an individual WPDES permit in advance of mine dewatering. The WPDES permits will need to be in effect before any discharges to surface waters occur.
- Crooks Creek has been designated for aquatic life and drinking water uses. The local surficial aquifers have also be been identified as having the potential to be used for drinking water and may be currently used for drinking water. The final EIS should include additional information to clarify the measures and permits that need to be developed to protect water quality and designated uses.
- Environmental protection at the proposed mine and potential optional mill will be based on development and implementation of controls and mitigation measures, monitoring and taking corrective actions if problems occur. In the final EIS, we recommend additional monitoring and more fully developed trigger levels for corrective actions. We have also recommended better descriptions and a more comprehensive list of the various control measures, permits, mitigation measures, monitoring and reclamation requirements.

We understand that Wyoming is considering seeking authorization to take over regulation of uranium milling from the Nuclear Regulatory Commission. In the draft EIS, the majority of the site-specific environmental impact analyses for the proposed mill have been deferred until the NRC conducts its own environmental review for NRC licensing of the proposed on-site mill or the amendment of the license for the existing Sweetwater mill. If the proposed bill passes or if it appears that Wyoming will assume the program before the NRC makes its licensing decision, we recommend adding the full environmental analysis for the proposed on-site mill to this EIS as a federal action directly connected to the mine operation. It appears that about half of the area within the NRC license boundaries will be on lands managed by the BLM, which could make approval of the on-site mill a federal action under NEPA even though Wyoming may be the licensing agency.

We appreciate the opportunity to comment on this document and hope our suggestions for improving it will assist you with preparation of the Final EIS. We would be happy to meet to discuss these comments and our recommendations. If you have any questions or requests, please feel free to contact either me at 303-312-6704, or Dana Allen of my staff at 303-312-6870 or by email at allen.dana@epa.gov.

Sincerely,

Philip Strobel, Acting Director
NEPA Compliance and Review Program
Office of Ecosystems Protection and Remediation

EPA's Detailed Comments on the Sheep Mountain Uranium Project Draft Environmental Impact Statement

Outline of Detailed Comments

A. Mine Water Treatment

1. **Incorporate Water Treatment into Alternatives**. As noted in several places in the DEIS (e.g., pages 4-25 & 26), the proposed mine will need to dispose of surplus water, particularly if the ore is milled off-site. Based on the water quality data from the Lidstone (2013) reports and the water quality standards and regulations for surface water discharge, mine drainage water will need to be treated before it is discharged. Because it is integral to the mine operation and relevant to assessing environmental impacts, we recommend more fully integrating the water treatment plant into the proposed alternatives (Section 2.3.11.3), including identifying likely treatment processes, pollutants of concern, and capacity. The impact analysis should also be revised to include potential impacts from the water treatment plant including: chemical use and transportation and disposal of sludge, brine or other waste products.

2. **Treatment Plant Capacity**. The capacity of the proposed wastewater treatment plant should be more closely evaluated. Page 2-43, Section 2.3.11 Water Management Plans notes the following dewatering rates:

Congo Pit	260 gpm year 1
	640 gpm year 4
	330 gpm year 8
Sheep	
Underground	750-1000 gpm, year 1
	250 - 400 gpm, steady-state
Treatment	
Plant capacity	200 gpm

There appears to be disconnection between the anticipated dewatering rates and the water treatment plant capacity. Although we understand that much of the water would be used for dust suppression, the mine facility needs to be also prepared for weather or operating conditions which create substantial surplus water such as during major runoff events, high snowfall years, winter weather or after temporary shutdowns.

3. **Individual WPDES Permit.** As there is a potential to discharge mine drainage (e.g., water from the mine pits, shafts, ore stockpiles and some waste rock/spoil areas), the final EIS should clarify that an individual WPDES wastewater discharge permit will be needed in addition to the WPDES industrial stormwater permit discussed most frequently in the DEIS. We do note that an individual WPDES permit is alluded to at several places in the draft EIS such as on pages 4-25 and 4-26. However, the discussion does not include enough information to determine if the future WPDES permits will provide sufficient controls to prevent the mine from causing unnecessary or undue degradation to Crooks Creek for designated water uses.

4. **WPDES (NPDES) Effluent Guidelines Regulations.** The permit would need to be developed to meet the more stringent of water quality standards and the effluent guidelines for uranium mining and milling at 40 CFR 440.3 developed under the Clean Water Act. The Effluent Guidelines discharge limitations are based on wastewater treatment technologies costs and removal efficiencies for specific industries. For the uranium mining and milling subcategory there are limits for chemical oxygen demand (COD), zinc, radium 226 (both dissolved and total) uranium and pH for mine drainage. No discharges from the mill would be allowed. The requirements of the effluent guidelines would be implemented through the individual WPDES discharge permit and should be factored into evaluating surface water impacts to Crooks Creek. The requirement to obtain an individual NPDES permit and comply with the Effluent Guidelines should also be added to Table 1.3-1 – Major Federal and State Laws, Regulations and Applicable Permits.

5. **Use of Mine Drainage for Dust Suppression.** The final EIS should clarify whether untreated mine drainage from the facility will be used outside of the mine or mill areas for dust suppression or equipment washing. For example, in the last paragraph of page 2-10, the DEIS states that mine drainage from the Sheep I and Sheep II shafts could be used for dust suppression on roads, fire suppression and washing equipment. This is of concern both for water quality and under the NPDES permit regulations. Water quality data for mine drainage from the historic mine indicates that treatment will be required for several pollutants before it can be used in areas that are regulated under only the industrial stormwater permit or areas outside the area covered by the stormwater permit.

B. Groundwater Quality

6. **Groundwater/Surface Water Connection.** The draft EIS includes a very limited evaluation of the effects of the proposed project to groundwater quality and the subsequent impacts to surface water when the surficial groundwater discharges to Crooks Creek after the water table rebounds post mining. This appears to be one of the more important issues for determining whether the mine project will cause unnecessary or undue degradation. The EIS discussion of impacts to groundwater flow and quantity provides a starting point in identifying potential impacts from groundwater to Crooks Creek. For example, we note on page 4-31, 2nd to last paragraph the statement: "Based on the elevation of the groundwater table and the flow direction, discharge of some water from the Battle Spring Aquifer to the alluvial deposits along Crooks Creek is likely."

On page 4-33, the first paragraph summarizes that the Congo Pit and Sheep underground mine would create areas of less consolidated material within the Battle Springs Aquifer increasing permeability that are likely to provide faster recharge to the groundwater system. The second paragraph on page 4-33 discusses the interconnection through permeable pathways within the Battle Spring Aquifer as a result of historic surface and underground mining as well as future mining. The impacts from potentially faster recharge were determined to be minor in the draft EIS test noted on page 4-33.

During mining operations water quality impacts from surfacing groundwater would be a minor issue due to the substantial dewatering of surficial aquifers. However, as the groundwater table recovers post mining or during mine shutdowns, groundwater flow will rebound. The buffer of no surface disturbance within 500 feet from Crooks Creek is a good mitigation measure to protect Crooks Creek but it is not clear what that is based on and whether there may be preferential pathways such as faults that may more directly convey groundwater from the expanded mines to Crooks Creek.

We recommend that the final EIS discuss the anticipated flow rates and potential water quality effects from surficial groundwater on Crooks Creek. This may be disclosed as a potential loading to Crooks Creek. The final EIS should also more fully describe the mitigation and/or reclamation measures that will be taken to protect groundwater quality or reduce poor quality groundwater flows from the mining area into Crooks Creek.

7. **Acid Generation / Waste Rock & Overburden Materials Needing Special Handling.** The main premise of the groundwater quality environmental analysis is that since groundwater quality has generally remained the same since the 1970s, it will continue to do so. There are several factors that indicate further analysis should be undertaken or additional mitigation measures should be more formally developed to isolate waste rock/spoils that are potentially acid generating or otherwise release pollutants including radium. First, as noted in the draft EIS in section 3.2.3 Geologic Hazards on page 3-25, Energy Fuel's analysis determined that the rock associated with the ore zone to be of concern for radium, radon, sodium absorption ratio, boron, acid base potential, selenium and molybdenum. The second factor is existing water quality data for the site found higher metals and lower pHs in several areas. For example, piezometer (PZ-1) and several of the groundwater monitoring wells have pH values that are much lower than surrounding monitoring wells. It is not clear if these lower pH values are due to oxidation of minerals and acid generation. However, the environmental analysis of geologic chemical hazard on page 4-16 in section 4.2.2 of the draft EIS implies that all of the rock with geologic hazards would be ore and problems could be addressed as they occur.

   We recommend that the final EIS estimate the potential volume of waste rock, monitoring and mitigation measures that should be developed to identify waste rock that may need special handling prior to disposal. The process for determining special handing and the levels for triggering the need for special handing should also be disclosed. The alternatives should also identify waste repository locations and design practices that will be implemented to isolate problematic waste rock from surface and groundwater.

8. **Ground Water Analysis.** The groundwater analysis in the draft EIS did not have enough information to understand potential groundwater quantity and quality impacts. Fortunately, the BLM was able to send us the two Lidstone and Associates, Inc. Reports (2013a and 2013b) which filled in many of the gaps in the draft EIS surface and groundwater analysis. Similarly, the

State mining permit 381C, Addendum D6-1 -Hydrology Update 2011 was also reviewed along with the draft EIS. We recommend that these documents be available as technical reports for the FEIS. The other main document that is missing is the revised mine permit 381C. We understand that the document is still being reviewed by the State of Wyoming; however, much of the environmental review and mitigation measures are based on documents which are part of the mine permit. We also recommend that the mine permit be included as a technical document for the final EIS.

9. **Portal Declines.** The level of mine design in the draft EIS is not sufficient to determine whether the portal declines have the potential to discharge water to the surface when the water table recovers after mining. It appears that ground elevations on the west side of the Congo Pit are in the same range as the 2013 water table elevation (Lidstone 2013). It is not clear if the bulkheads described on pages 2-27 and 2-70 are designed to prevent discharges to surface and groundwater. Also it is not clear if there are seasonal variations in the water table. We recommend clarifying these two issues and that additional design considerations be added to reduce the likelihood of groundwater discharging through the portal declines.

10. **Faults.** On Page 3-46, Section 3.2.5.2, The EIS states that "It is unknown how shallow normal faults or underground mine workings within the Battle Spring Formation on Sheep Mountain may influence the groundwater in the Battle Spring aquifer. Historic mine workings and abandoned drill holes may influence communication between localized aquifers within the Project Area but has not been enumerated due to a lack of data." We recommend that the FEIS examine this unknown issue through groundwater modeling and a proposed monitoring program to begin to fill some of these critical data gaps. If needed, mitigations measure should also be specified.

C. Water Quality Standards and Uses

11. **Crooks Creek Classification.** Page 3-43 of the draft EIS identifies the Wyoming stream classifications for Crooks Creek and Sheep Creek as Category 3 waters, with a portion of Crooks Creek classified as Category 5. The State's Surface Water Quality standards updated as of July 26, 2013, identify both Crooks Creek and Sheep Creek as Class 2AB waters. As noted in the draft EIS, Crooks Creek continues to be listed as impaired from the confluence with Mason Creek to 1.4 miles downstream due to oil and grease; however, the impaired segment continues to be classified as a 2AB water. The 2AB classification means that water quality is to be protective of additional designated uses such as drinking water, fisheries and fish consumption.

12. **Drinking Water and Agricultural Uses of Water.** We note on page 3-49 that there are 2 groundwater wells on-site that are permitted for domestic use, as well as 10 wells in the area of the mine that have been identified for domestic and/or livestock watering uses. We also note in Table 3.2-10 that there are a number of surface water rights in the area that are designated for domestic use, stock watering or irrigation uses; several of the diversion points for the surface rights are immediately downstream of the project area. The groundwater in the project area has also been designated as Zone 3 by the Source Water Assessment Program which identifies watersheds that could be within the capture zone of a public water supply well. The environmental consequences of the proposed action were not analyzed for local water users in the draft EIS. We recommend adding a section to the final EIS analyzing potential impacts to local water users. Depending on the magnitude of potential impacts additional monitoring may be needed.

As part of this evaluation of potential impacts to domestic or agricultural water users, we recommend collecting more specific information about the water source such as well information, target aquifer, well screen interval, total depth, and water quality data.

D. Water Monitoring

13. **Mine Water Monitoring Plan.** Appendix 2-B of the draft EIS briefly describes Energy Fuels monitoring plan. It would be helpful to attach a more complete water monitoring plan as an appendix or technical report to the final EIS. We also recommend that the monitoring plan identify who will be conducting the monitoring. We assume the agency column denotes the agency(s) that will be reviewing the monitoring data. We note that several monitoring locations are to be monitored only annually which does not seem to be sufficient to identify trends and seasonal variations. We recommend a minimum sampling frequency of quarterly.

14. **Additional Monitoring Locations.** In evaluating the monitoring and sample location map 2.3-3 on page 2-46; it is unclear if the PZ-7 and MW-7 are located sufficiently downstream to monitor the effects of the Hanks Draw Spoils pile. We recommend adding groundwater and surface water monitoring points down gradient of the spoils pile. We also recommend adding a monitoring point for Sheep Creek, to determine if any faults or other preferential path for groundwater are impacting the Creek.

15. **Fish Pond**. We recommend adding water quality and potentially fish monitoring for the Fish Pond (Western Nuclear Pond) located on the south edge of the project area, southeast of the McIntosh pit. Although, the groundwater and surface water technical reports prepared by the Lidstone indicate that Fish Pond water quality was unlikely to be affected by the proposed mine, the pond is used as a recreational fishery. Because of direct human consumption of the fish, we recommend adding precautionary monitoring.

E. Mitigation, Control Measures, and Contingency Planning

16. For projects regulated by multiple agencies and for those with complex environmental impacts, we recommend more fully describing the applicable controls (e.g., permits), mitigation and monitoring measures that will be implemented through: the Wyoming mining and other permits, the BLM Plan of Operation, the BLM Record of Decision, the NRC license and the DOE legacy site management program. We would recommend adding a table or separate section to the final EIS which lists the:
    - Permits, license, plans, Record of Decision, etc. that include controls and mitigation measures for the project (e.g. Storm Water Pollution Prevention Plans, WPDES and mining permits);
    - The types of mitigation and control measures, (e.g., design requirements, monitoring, reporting, inspections, permit limits, performance criteria, management practices);
    - Note whether the controls and/or mitigation measures are mandatory or recommended/voluntary;
    - Monitoring and reporting requirements and the agency receiving the information,
    - Identify the Lead agency for enforcing the measures and/or other follow-up actions.

17. **Trigger Levels and Corrective Actions.** The discussion of mitigation measures should also summarize or reference the procedures that would be used if "operational monitoring detects conditions in excess of expected or permitted levels considering background conditions and

variability" [Page 2-52, draft EIS]. If the trigger levels and corrective actions have already been defined through the Wyoming mining permit or other mechanisms, then procedures should be included or referenced in the final EIS. Some examples of how to identify important trigger levels and corrective action procedures include:

Groundwater –

- What are the water quality criteria that sample results will be compared against?
- If those criteria are exceeded what happens: additional sampling, groundwater pumping and treatment, and/or corrective active or operational controls?

Storm water – What procedures will be in place when mine site stormwater ponds may need to discharge? A contingency plan might include:

- Monitoring freeboard, evaluating projected weather conditions and snowpack,
- Pond maintenance procedures, and
- Sampling of water quality to determine if treatment is needed prior to discharge.

F. Mine Reclamation

18. Page 2-31, Section 2.3.5.11 Evaluation of Reclamation Success. This Section discusses the reclamation conditions of the WDEQ-LQD permit 381C for the existing and proposed mines. We recommend that the Section be clarified in the final EIS to discuss which mining areas are under permit 381C. From the draft EIS we understand that the state Abandoned Mine Lands program will be completing reclamation for the McIntosh pit but it is unclear if the other mines on Sheep Mountain have been successfully reclaimed.

19. Section 2.3.5.11 also mentions that groundwater will need to be returned to pre-mining water quality. We agree that is an excellent goal for aquifers which can be used for drinking water and are tributary streams with aquatic life standards. However, we think that it could be a challenging goal depending on how "pre-mining groundwater quality goals" have been defined. Is the goal to return groundwater quality to current water quality or is the goal to clean up water to estimated conditions prior to any mining, circa 1940? We recommend that the final EIS clarify the groundwater cleanup goals and how the goals were determined. If available, the specific cleanup goals should be included with the final EIS. We note that groundwater in the two uppermost aquifers in the vicinity of the proposed project are considered as potential underground sources of drinking water based upon the criterion of < 10,000 mg/L TDS.

20. We recommend that the final EIS include additional information on the relationship between long term care and reclamation between the BLM and the State LQD mining permit and the NRC license and DOE legacy long-term care [Reclamation Overview Section 2.3.5.1]. We have listed below several questions about the relationship between the agencies' reclamation and post closure activities that we recommend be addressed in the final EIS:

    - Will there be any DOE involvement with post closure maintenance of the mine including the pit, spoils piles and or storage areas?
    - Is it correct that the DOE legacy site program only applies to the NRC regulated portions of the facility such as the ore processing mill or heap leaching facility? Or could additional areas of the historic or proposed mining sites be proposed for the legacy program if certain conditions are present?
    - Are there any legacy areas in the Sheep Mountain/McIntosh Mine areas currently designated for DOE control?

21. **Top Soil.** Page 4-22, section 4.2.4.3 No Action Alternative – This section mentions the activities that would be conducted under Energy Fuels' reclamation plan in the WDEQ-LQD Permit to Mine 381C application revision and the WDEQ-AML reclamation plan that would be implemented to restore previously disturbed areas. We recommend that the final EIS examine whether there is enough available topsoil resource to achieve reclamation performance standards for both the WDEQ-LQD 381C Permit to Mine application revision and the WDEQ-AML reclamation plan.

22. **Water Quality Data in the Draft EIS.** In Appendix 3-B – Water Quality Monitoring Data, Table 5 (page 3B-5); the monitoring data from the three storm water monitoring locations (SW-1, SW-2 and SW-3) have been averaged together. We recommend that the data be presented separately for each storm water monitoring location so that the reader can determine if different storm drainage areas have different water quality.

23. In Appendix 3-B, Table 4, Energy Fuels Crooks Creek Water Quality Summary, on page 3B-4 we recommend adding the water quality standards for Crooks Creek or highlighting potential exceedances of the standards. Similarly, we recommend adding water groundwater quality standards to Table 6 – Groundwater Quality Mean Values.

G. Sediment and Erosion

The EPA's water quality concerns regarding erosion and sediment are generally well addressed in the BLM preferred alternative through the reclamation and revegetation plans, travel/road plan and storm water permits during construction and operations. There are a few areas that should be improved:

24. **Sediment.** Page 4-27, Section 4.2.5.1.1, Surface Water Quality discusses mitigation measures for minimizing sediment transport impacts. Although the draft EIS discloses several important commitments related to minimizing sediment transport, it does not provide the information needed to assess the probable hydrologic consequences of the mining and reclamation plans as required by [mining-impacted] Hydrology Guidance 8 (WDEQ/LQD). We recommend a sediment yield evaluation plan be included in the FEIS (or technical reports) as required by Guidance 8, Appendix 2, to establish a pre-mining baseline to evaluate whether attainment of interim reclamation standards is met.

    We also note in the first bullet on page 4-27, that the Spill Prevention Control and Countermeasure Plan (SPCC) is not associated with sediment transport. Under the Oil Pollution Act, the SPCC is a facility's plan to prevent and contain oil spills. It is likely that this bullet intended to refer to the Storm Water Pollution Prevention Plans that would be required through the storm water WPDES permits.

25. **Design Storms.** On page 2-18, Section 2.3.4.2, the draft EIS mentions sediment ponds will be sized to contain the 100-year, 24-hour storm plus the estimated sediment storage volume for one year. As noted in the EIS the more conservative design was selected because of the potential for radium to be present in storm water. We are pleased to see a more conservative design storm then the 10-year, 24-hour storm required by the WDEQ regulations for sediment ponds. We recommend the final EIS discuss whether the more conservative design be required through BLM's approval of the Plan of Operation. We also recommend that this discussion address the factors used to arrive at the 100-year design storm basis.

The DEIS states that the 25-year, 24-hour storm was selected as the design storm for sizing of diversions, culverts, and stilling basins. We recommend consideration of a 50- or even 100-year storm event return period based upon a more conservative approach to the expected life of the diversion and the anticipated increased frequency of severe precipitation events during this era of climate change effects. The overall project life is anticipated to be 20 years from initial construction to final reclamation as stated on Page 2-32. We note that WDEQ Guidance 8 for Mining-impacted Hydrology recommends a 50-year, 24-hour design storm basis for temporary diversion channel and culverts.

26. **Ore Spills.** We recommend the final EIS list required design or mitigation measures to prevent and clean up spills from the ore conveyor. We have found in our reclamation and cleanup activities at other mine sites that storm water drainage or acid generation from spilled ore can be a major contributor to poor water quality. It appears that much of the conveyor system would be outside of the area controlled through the water quality permits and storm water controls for the mine. This issue may be addressed through expanding the area for storm water controls or best management practices to prevent runoff from ore spills.

27. **Ground Water Drawdown Model.** We recommend including additional information about the groundwater drawdown model presented in Figure 4.2-2, on page 4-32 of the draft EIS, and the factors used in the model. More specifically the following types of information would clarify the model assumptions, and address concerns with post-mining aquifer recovery:

    - Identify the specific hydrologic model, and the assumptions and inputs used to determine the drawdown contours on Figure 4.2-2 such as aquifer characteristics, boundary conditions and precipitation scenarios
    - The discussion summarizes the historical quantities dewatered and the subsequent recovery of the aquifer to within 90% of pre-mining water levels. However, it is unclear if predictions have been made to project water table elevation and recovery time after the proposed mine is reclaimed. We recommend that the final EIS include the estimated time of recovery and elevation of the Sheep Mountain groundwater table.

28. **Septic Tank and Leach Field for Processing Plant.** Domestic liquid wastes would be disposed through a permitted septic leach system at the processing facility (Page 2-41). The final EIS should discuss what wastes are included under the term domestic liquid wastes and estimate volumes. In particular, laundry wastewater can be of concern from facilities handling hazardous materials.

29. **Drinking Water Source for the Mine and Mill.** Pages 2-43 & 2-44 – Given the historic impacts in the project area, it will be important to assure that mine workers have a safe supply of drinking water. We recommend the final EIS identify the location(s) of the well and target aquifer for the potable water treatment system during operations.

H. Radionuclide NESHAPS

30. **Radionuclide NESHAPS.** Under 40 CFR Part 61 Subpart W (National Emission Standards for Radon Emissions from Operating Mill Tailings), the EPA regulates radon emissions from uranium recovery facilities. This source is subject to Subpart W and is required to receive a Construction Approval from EPA, prior to construction of the source. EPA recommends that Table 1.3-1 include that Subparts A (General Provisions that any NESHAP facility must meet), B (National Emission Standards for Radon Emissions from Underground Uranium Mines) and

W; and explain that regulated sources require construction approvals be granted by EPA prior to construction. Additionally, EPA has proposed changes to the Subpart W rules, which we will take into consideration as appropriate in processing the Construction Approval. We also offer assistance to BLM regarding questions about the NESHAP regulations.

The requirements of NESHAPS Subpart W listed in Table 1.3-1 are not correct regarding "…for existing uranium mill tailings. . ." as the regulated sources at this facility will be considered "new", and EPA recommends revising the Table accordingly.

31. **Compliance with NESHAPS.** The EPA recommends that the dose estimate to the public from the underground mines, Sheep 1 and Sheep 2, be determined using the COMPLY-R computer program or equivalent computer model that has received prior approval from EPA, to show compliance with Subpart B of the radionuclide NESHAPS. We recommend that the final EIS disclose the results of COMPLY-R.

32. **Disposal of Radioactive Byproduct Material**. Page 2-42, last paragraph of Section 2.3.10.3 mentions that, "During Construction and Operation, all solid 11(e)(2) byproduct material, other than processed ore in the Heap Leach Pad, would be temporarily held in an interim solid waste management area identified within the Processing Facility." This interim solid waste management area may be subject to the requirements of 40 CFR Part 61 Subpart W, as determined by the EPA. It is recommended that this information be disclosed in the Final EIS.

I. Radiation Protection

33. **Disclosure of Radiation Impacts.** We recommend that the final EIS include additional information to improve the disclosure of potential risks from radiation. As the draft EIS is currently written, it is unclear how radiation exposures will change as a result of the proposed mine expansions and on-site mill and the relative magnitude of radiation levels for employees, visitors, local residents, and those that use neighboring land. We recommend that the analysis in Chapter 4 present a summary table of the pre-operational radionuclide monitoring data, as compared to predicted radiation levels expected during construction, operations, reclamation and post reclamation, for at least four classes of receptors: employees, visitors to the facility, recreation/hunting uses, and nearby residents. Also, a table of regulatory dose limits should be included, for comparison to the estimated dose received. It is recommended that BLM model the dose to the public and workers that would be observed during the most conservative operational year (e.g., surface mining, underground mining and processing are all in operation) over a range of anticipated emission rates, and provide a summary of the model results.

For an example of a well written summary of radiation impacts, we recommend the *Final Uranium Leasing Program Programmatic Environmental Impact Statement* (ULP-EIS), dated March 2014 at: http://ulpeis.anl.gov/documents/fpeis/index.cfm. For more specifics, please see Volume 1 of the EIS:

- Section 3.5 (specifically Table 3.5-1) on (page 3-84 in the EIS pdf),
- Section 4.1.5 Human Health for Alternative 1 (very similar to Sheep Mountain no action alternative),
- Sections 4.3.5 & Section 4.4.5 Evaluates the human health impacts for Alternatives 3 & 4 of the ULP-EIS for four scenarios: (1.) worker exposures - uranium miners; (2.) worker exposure - reclamation workers; (3.) general public exposure - residential scenario; and (4.) general public exposures – recreationist scenario

- Appendix D.5. Starting on page 224/578 in Volume 2 of the ULP-EIS.

34. **Background Radiation.** When summarizing the background radiation information mentioned in the comment above, we recommend that additional information be added to the Tables presented in Appendix 3-A. First, we recommend that the data be summarized with an average and range of values over the sampling period. We also recommend adding guidelines, standards and criteria as applicable, so that the reader can understand the magnitude of the background radiation monitoring. The data descriptions/terms should also be defined and explained as needed. For example, in the Air Particulates Monitoring tables on pages 3A-9 through 3A-28, it is not clear how the reporting limit was determined and how the magnitude of the results indicates a low radio particulate concentration in air across the site. Please also explain how the data were handled/processed where "precision" is greater than "reporting limit".

35. Section 3.2.4.3 (pages 3-38 & 3-39) includes some exposure rates in μR/hr. The EPA recommends that these values be related to doses received. We also recommend that the significance of the values be addressed, considering the high standard deviation values of 42.3 μR/hr and 128 μR/hr referenced (this data needs to be made relatable in some way).

J. Radiation Modeling, Monitoring and Impacts

36. The EPA recommends that the final EIS discuss how the monitored values or background conditions relate to the MILDOS results for dose from particulate radionuclides to the receptors modeled.

37. The EPA recommends that the final EIS provide further explanation as to why radionuclide particulates from the Congo Pit were not included in the estimated radiological dose to the public or workers.

38. The EPA recommends that the final EIS provide information on the operational radiological monitoring plan and include how the data collected will be used to ensure protection of workers, public health, livestock and game. It is unclear from Tables 1 and 2 in Appendix 2-B what monitoring is planned during operation and whether Table 1 is for pre-operational monitoring only. The EPA recommends that the final EIS include more detailed information about the operational monitoring plan, including what media will be monitored, what standards/limits the results will be compared to, and what actions will be required if standards/limits are exceeded.

39. It is unclear from Table 4.4-10 – Modeled TEDE Doses from Mining and Or Processing (4-93), if the modeled TEDE doses includes dose from radon. Please clarify in the final EIS. Also for Table 4.4-10 please clarify:
    - If the doses modeled were done at the maximum predicted mining/processing conditions.
    - How the "Mill" TEDE" values were determined.
    - There is a math error for the total for "Maximum NRC – processing max (NRC3/NLA-N1)". It should be 102.3 mrem/yr, instead of 26.4, as indicated.

40. Please clarify whether the Claytor Ranch is the nearest resident. We recommend more clearly identifying the nearest resident and whether there was any passive gamma or radioparticulate monitoring conducted at the nearest resident location as well as whether any future monitoring is planned there.

41. The EPA recommends discussing the anticipated level of radiological impact to livestock and wild game during the operation and post-reclamation phases of the project.

42. **Radiological Impacts Analysis Technical Document (RIATD).** EPA recommends that Appendix B of the Air Quality Technical Support Document (Appendix 4-A of draft EIS) be revised to more clearly model anticipated radiologic impacts and better explain model inputs as follows:
    a. The emissions inventory indicates that particulate emissions are high from the Congo Pit. Considering this information, the EPA recommends that the final EIS consider radio particulate emissions in the dose estimations.
    b. The final EIS should disclose if there are any plans to compare modeled particulate dose to those determined through monitoring data?
    c. The EPA recommends that the important parameters (Table 3, RIATD) be put into the model over a range of anticipated values so that the anticipated range of doses can be predicted.
    d. Please provide additional information on why the spoils pile concentration of 40 pCi/g of uranium decay chain concentrations is considered conservative. There is a wide range of Ra-226 concentrations in waste rock material.
    e. Clarify that the modeled doses in Table 4 of the RIATD are from mine activity. Page 15 states that the doses are considered conservative estimates. This is not true considering that the processing facility dose contribution was not taken into account.
    f. Page 16 of the RIATD: the EPA recommends that the Rn-222 dose from the mine adits should also be presented as results from a model created using COMPLY-R, the program required to show compliance with the 40 CFR 61.22 standards of 10 mrem/yr.
    g. Page 3 of the RIATD states that, "The purpose of this report is to describe potential doses to members of the public from mining-related activities including the Congo Pit, stockpiling of ore, storage of spoils materials and releases from the underground mine adits." Page 17 provides information on potential doses from the processing facility. Please expand upon how the dose contribution from the processing facility was determined, including what assumptions were made and what inputs were used to arrive at the dose contribution. This document should address the potential dose to the public from the connected action of the on-site processing facility and background dose. The total dose would serve as the cumulative impact for radiation dose.

K. NAAQS and Modeling

43. **Air Quality Impacts and Modeling.** The air quality modeling conducted for the draft EIS may not capture maximum impacts, as noted in our earlier comments during the modeling process. The modeled predicted impacts were not projected to exceed the levels of the National Ambient Air Quality Standards (NAAQS); however, the analysis shows the particulate matter (24-hour $PM_{2.5}$) and nitrogen oxide (1-hour NO_2) impacts are approaching the NAAQS for all modeled scenarios (89% to 93% for the 24-hour $PM_{2.5}$). The air quality analysis also shows that impacts from operations were projected to be greater than the 24-hour PM_{10} and 24-hour PM_{25} Class II increments. As the model used may under predict air impacts and air quality impacts are approaching standards, we recommend that additional air mitigation measures be developed in the final EIS to reduce PM and NO_2 impacts.

    The main modeling issues that make it difficult to determine whether air modeling predictions are accurate are: (1) it is not clear whether the methodology used to analyze the near field air quality modeling results for this project used the averaging approach consistent with EPA

guidance for the NAAQS comparisons; and (2) it is also not clear whether the data used to support the in-stack ratio assumptions for the near-field modeling were representative because this information is not present in the modeling documents.

It appears that the ozone impacts refer back to an older version of the air modeling from the Continental Divide-Creston (CD-C) EIS. A number of important changes were made to improve the CD-C air modeling since the version referenced in the Sheep Mountain draft EIS. We recommend that the final Sheep Mountain EIS be updated to incorporate the air modeling results from the final CD-C EIS.

L. Air Mitigation Measures

44. To assure that emissions from the project do not approach or exceed the $PM_{2.5}$, or NO_2 NAAQS, or significantly change air quality, BLM may want to consider additional mitigation for the project in the final EIS.

45. The top five project-related sources of $PM_{2.5}$ are all related to fugitive dust from the mine and roads including: (1) surface mobile sources, mine-wide unpaved road travel [vehicles on dirt roads]; (2) overburden removal; (3) wind erosion of stockpiles; (4) dozing; and (5) wind erosion of open acres. Dust controls would likely offer the most mitigation benefit toward reducing particulate emissions. We also recommend consideration of PM monitoring during construction and operation of the mine with adaptive management to reduce PM impacts for instances when monitored values are approaching or exceeding the NAAQS. It may also be useful to engage WDEQ on the subject of potential WDEQ requirements for PM monitoring or controls so that those considerations can be taken into account by the NEPA process.

46. Up to 96% of the project's predicted NO_x emissions are expected to come from engine emissions associated with surface mobile/nonroad sources and underground mine mobile sources. Requiring lower emitting engine technology would reduce $PM_{2.5}$ and NO_x emissions as well as having the added benefit of reducing other pollutants such as carbon monoxide and hazardous air pollutants. Diesel particulate filters may also reduce $PM_{2.5}$ emissions and impacts from diesel equipment.

M. Climate Change Comments

47. **Greenhouse Gas (GHG) and Climate Change.** We appreciate the inclusion of quantitative estimates for GHG emissions for construction and operation of the proposed project and alternatives. We note that that the draft EIS estimates both on-site and off-site production alternatives as having exactly the same amount of GHG emissions as shown in Table 4.2-4 of the draft EIS. However, based on the emission inventory of combustion pollutants, summarized in Tables 4.2-2 and 4.2-3, it appears that the alternative considering off-site processing would more GHG emissions due to surface mobile sources associated with ore haulage to the Sweetwater Mill. We recommend that BLM re-evaluate these calculations and make any necessary revisions to the GHG estimates.

48. In future environmental reviews, we recommend that Greenhouse Gases discussions such as on page 4-10 of the draft EIS be updated to be consistent with the CEQ *Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts* at: http://www.whitehouse.gov/administration/eop/ceq/initiatives/nepa/ghg-guidance. Although we recognize that climate impacts are not attributable to any single action, but are exacerbated by a series of smaller

decisions. As such, it is not useful to compare GHG emissions from a proposed action to national or global emissions. As noted in the CEQ revised draft guidance, such an approach does not reveal anything beyond the nature of the climate change challenge itself: the fact that diverse individual sources of emissions each make relatively small additions to global atmospheric GHG concentrations that collectively have a huge impact. With regard to draft EIS statements referencing the infeasibility of assessing the degree of impact a single project may have on global climate change or the "controversy" around whether changes to natural systems can be quantified, as noted by CEQ, estimated GHG emissions may be used as a reasonable proxy for assessing potential climate change impacts.