



# COLORADO

## Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

August 13, 2015

Mr. Rod Grebb  
Black Range Minerals  
613 Main Street, Suite 3  
Cañon City, Colorado 81212

Re: Request for Information, July 2015 White Paper

Dear Mr. Grebb,

We have received your White Paper entitled Description of Ablation Mining Technology Applied to Uranium Deposits dated July 2015. In order to properly proceed with our review, the following additional information must be provided to this Department:

1. An assessment of potential risks to the workers, members of the public, and the environment, resulted from the operation of Ablation Mining Technology (AMT). The assessment should include, but not limited to:
  - A quantitative estimation of the anticipated occupational doses, including internal and external, to the workers at every step of the AMT operation from ore crushing to preparation of shipping of the post-AMT products. This should also include an estimation of the anticipated gamma exposure rates at every step of the AMT operation.
  - An evaluation of potential risks to the members of the public and the environment from the AMT operation, and from any potential incidents associated with the AMT operation.
  - A comparison of the above estimation and evaluation between the AMT operation and other traditional ore mining operations and uranium milling operations.
  - A description of the assumptions used for the above estimation and evaluation and their bases. The assumptions should be made based on the anticipated commercial-scale AMT operation and the anticipated uranium (and its progeny) contents in the pre- and post-AMT materials.
2. Detailed description of the following items:
  - 2.1 The location and setting of the AMT unit:
    - Will the AMT unit always be located at mines sites? What will be the setting of the AMT unit at a mine?
    - Does Black Range Minerals anticipate building a new AMT unit at each mine with an AMT operation?
    - Please provide a detailed description of the anticipated commercial-scale AMT unit.
  - 2.2 The pre- and post-AMT materials:
    - How will the pre-AMT materials be obtained? Will there be any processing/mining operations conducted prior to AMT operation? If so, what will be these processing/mining operations?
    - What is the range of the anticipated uranium contents in the pre- and post-AMT materials? How is this value compared to those ores processed in traditional mining operations?



- What is the range of the anticipated particle sizes of the fine-grained post-AMT minerals? How is this value compared to the processed ores from traditional mining operations?
- How much moisture contents are expected to be in the fine-grained post-AMT minerals after dewatering but prior to shipping?

2.3 Please provide more details of the following AMT processes than those already presented in the White Paper:

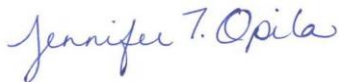
- Crushing
- Disassociation-- How does AMT repeat the needed collisions until the minerals are disassociated from the sand grains?
- Screening
- Dewatering of each fraction of the post-AMT materials
- Packaging of the fine-grained post-AMT minerals

2.4 Water in the AMT operation:

- How much water will be used in the AMT operation? Where will Black Range Minerals get this water from?
- What will be the anticipated uranium concentration in the post-AMT water during operation and when it is ready to be disposed of?
- How and when will the post-AMT water be disposed of, if not being re-circulated through the AMT system?

3. If available, please provide sample lab test results showing the mineral, physical, and chemical compositions of uranium and its progeny and any other major metals for the pre-AMT sandstone, post-AMT minerals, and the post-AMT waste rocks.

If you have any questions regarding this letter, please contact Shiya Wang at (303) 692-3447 or shiya.wang@state.co.us, or me at (303) 692-3403 or jennifer.opila@state.co.us.



Jennifer T. Opila, MPA  
Radiation Program Manager  
Hazardous Materials and Waste Management Division