

UNIVERSITY OF WYOMING
Rare Earth Materials Research

University of Wyoming
Research and Economic Development Office

October 2014

[Pursuant to Wyoming Enrolled Act No.41, Section 330]

To the Joint Minerals, Business and Economic Development Interim Committee and the Joint
Appropriations Interim Committee

Wyoming Enrolled Act No.41 (page 106 and 107) 7 states:

[University of Wyoming – Rare Earths] (c) Notwithstanding W.S. 9-2-1008, 9-2-1012(e) and 9-4-20, any unexpended, unobligated monies authorized to the University of Wyoming college of engineering to conduct basic and applied research into rare earth material to determine new processing technologies, improved uses and new production methods under 2012 Wyoming Session Laws, Chapter 27, Section 2(b) (ix) shall not revert on June 30, 2014, and the legislature authorizes the department of environmental quality to submit new applications or modify existing applications to the federal office of surface mining to redirect those funds to the University of Wyoming for the period beginning July 1, 2014 and ending June 30, 2016. This subsection is effective immediately.

On June 30, 2014 the University of Wyoming College of Engineering submitted the required report “Rare Earth Materials: Opportunities for Wyoming” as required to the Wyoming legislature. In the prior legislative session \$700,000 in funding was provided to develop this report (House Bill 121, Section 2(b)(ix) enacted). Of that amount of money, \$475,482.10 was expended leaving an unobligated balance of \$224,517.90 which is the subject of the above statement from the Wyoming Session Laws. This report examined the following in some detail:

1. A full description of Rare Earth Materials what they are where they fit in the periodic chart of the Earth’s elements.
2. A summary of Extracting and processing Rare Earth Elements
3. A description of the marketplace for Rare Earth Elements both nationally and internationally
4. Potential environmental issues associated with the extraction and processing of Rare Earth Elements
5. A discussion of Rare Earth Elements in Wyoming (also the topic of a much more details report prepared submitted to the legislature by the Wyoming Geological Survey supported by House Bill 121 Section 2(b)(ix) enacted.
6. And in a Table the report outlines its findings relative to a rare earth industry in Wyoming. This table is extensive and outlines motivations and challenges in seven major areas.
7. Finally the report draws conclusions

During the writing of this report, it became obvious that research into the extraction, processing separation recycling, etc. of Rare Earth elements is very mature science and engineering. The

following Table demonstrates the areas of patent filings for Rare Earth elements during the time frame of January 1 to September 20, 2014.

Patent Application Type	Number filed 1-1 to 9-20, 2014
Extraction	49
Recovery	40
Production	10
Purification	25
Separation	29
Recycling	55
Use	2
Total	209

For example an analysis of filed patents in this area reveals at least 19 pages 1,863 filings of technology where patents were sought. Of the 209 analyzed for 2014, all but eight were filed by industrial entities, universities filed 4 and governmental entities filed two, private parties filed one. The intellectual property filings are from major U.S and international industries, universities worldwide and private inventors. After careful analysis it is now apparent that the faculty and students at the University of Wyoming have a very low likelihood of developing anything that is novel in this area. Therefore we have come to the difficult decision to not spend the remaining funds which are the subject of enrolled act 41 (found on page 106).

Of the appropriated amount of funding there were not expenditures. Thus the amount remaining is \$224,517.90.

Subsection (d) had \$100,000 of funding originally purposed to provide for a glass manufacturing that was repurposed for Rare Earth research. None of the funds in Subsection were expended, thus the entire \$100,000 remains unspent and unobligated

Finally Subsection (e) had \$250,000 of matching funds for Rare Earth research. None of the funds in Subsection (e) were expended, thus the entire \$250,000 remains unspent and unobligated.

\$574,517.90 total remain unspent and unobligated.