

April 18, 2018

Mr. Ken Kalman
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Mr. Paul Davis
Oklahoma Department of Environmental Quality
707 North Robinson
Oklahoma City, OK 73101

Mr. Robert Evans
U.S. Nuclear Regulatory Commission
1600 East Lamar Blvd; Suite 400
Arlington, TX 76011-4511

Re: Docket No. 70-925; License No. SNM-928
Determination of Maximum Conservative Enrichment for Groundwater at the Cimarron Site

Dear Sirs:

Environmental Properties Management LLC (EPM) submitted *Facility Decommissioning Plan* to the US Nuclear Regulatory Commission (NRC) and the Oklahoma Department of Environmental Quality (DEQ) in December 2015. NRC issued requests for additional information (RAIs) on the D-Plan in February 2017. One of those RAIs (SER-14) required EPM to conduct a nuclear criticality evaluation to assess the potential for licensed material to achieve criticality.

EPM retained Enercon Services, Inc. (Enercon) to conduct this evaluation, and in July 2017 EPM submitted a document entitled *Criticality and Uranium Loading Calculations*. This document was generated for inclusion as an appendix in *Facility Decommissioning Plan – Rev 1*, in response to RAI SER-14. That evaluation was based on uranium activity data obtained by alpha spectrum analysis.

In May 2017, EPM submitted a technical memorandum, prepared by Enercon, which presented data showing that isotopic analysis by inductively coupled plasma – mass spectroscopy (ICP-MS). Analysis by ICP-MS yielded isotopic mass concentration data with far lower relative uncertainty (uncertainty relative to the result). EPM proposed to use ICP-MS analysis to determine the U-235 enrichment in groundwater. NRC approved the use of ICP-MS analysis for this purpose in a February 2018 e-mail. EPM decided to direct Enercon to determine the maximum U-235 enrichment in groundwater to verify that the nuclear criticality evaluation already performed still represented a bounding condition.

The attached technical memorandum presents the evaluation of mass concentration data that was performed. The maximum anticipated enrichment is significantly lower than had been

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previously calculated, decreasing from 7.33% based on alpha spectroscopic data, to 4.76%. The previous nuclear criticality evaluation is therefore yet more conservative than when first prepared in 2017.

1. The purpose of this memorandum was to determine whether, based on ICP-MS analysis, we would need to re-do the nuclear criticality analysis which we will be attaching to the D-Plan as Appendix P. This has no relationship to our calculation of the U-235 enrichment of uranium in groundwater influent.
2. Since the maximum calculated enrichment is lower than the maximum enrichment calculated using alpha spec data, the nuclear criticality evaluation that NRC has already reviewed and accepted continues to represent a bounding condition. We just consider that bounding condition to be still more conservative than before. Appendix P will contain the already-accepted nuclear criticality evaluation.
3. We anticipate that analysis of spent resin will provide evidence that the bounding condition assessed in Appendix P will be shown to be still more conservative. We believe that the enrichment of uranium in influent lines composed of a mixture of uranium from multiple extraction wells will be significantly less than the estimated maximum enrichment calculated in this memo.

If you have questions or comments about the enclosed report, please contact me at 405-642-5152 or at jlux@envrpm.com.

Sincerely,



Jeff Lux, P.E.
Project Manager

Enclosure