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DIVISION OF WASTE MANAGEMENT  
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August 6, 2020

Kathy Weinel, Quality Assurance Manager  
Energy Fuels Resources (USA) Inc.  
225 Union Blvd., Suite 600  
Lakewood, CO 80228

RE: Energy Fuels Resources (USA) Inc. June 24, 2020, Source Assessment Report for MW-31,  
White Mesa Uranium Mill  
Utah Groundwater Discharge Permit No. UGW370004 (Permit)

Dear Ms. Weinel:

The Division of Waste Management and Radiation Control (DWMRC) has completed review of the Energy Fuels Resources (USA) Inc. (EFR), June 24, 2020 document titled "*Source Assessment Report for MW-31 White Mesa Uranium Mill*" (SAR). The SAR includes an assessment of sulfate and Total Dissolved Solids (TDS) in monitoring well MW-31.

Source Assessment

Per review it was noted that Energy Fuels provided a source assessment and calculated, by several methods, proposed revised Ground Water Compliance Limits (GWCL's) for sulfate and TDS in monitoring well MW-31. Monitoring Well MW-31 is located hydraulically downgradient from the eastern portion of Cell 2 and from the mill processing areas and is within the defined nitrate/chloride plume. Per the SAR, EFR notes that all SAR parameters were identified as having an increasing concentration trend since the development of the Existing Wells Background Report. DWMRC data review confirms that the SAR parameters all show increasing concentration trends.

Based on DWMRC review of the SAR, it appears that Mill activities are not influencing SAR studied concentrations at monitoring well MW-31. This is based on the findings of several lines of evidence in the SAR including; 1. Potential effects from a 2011 well redevelopment project; 2. A change in analytical laboratory in 2012; 3. Addition of several pumping wells to the nitrate/chloride and chloroform corrective action plan (2013, 2014, 2015); 4. Decreasing pH trend effects on monitoring well geochemistry; 5. Evaluation of tailings solution indicator parameters (chloride, sulfate, fluoride and

(Over)

DRC-2020-013442

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uranium); 6. Site-wide comparison of parameters in MW-31 and upgradient and downgradient wells (MW-31 shows relatively low concentrations of SAR parameters); 7. Potential effects of pyrite oxidation releasing selenium and sulfate, and other trace metals, into solution; 8. Location of MW-31 within the nitrate/chloride plume, 9. Findings of the 2007/2008 University of Utah Groundwater Study; and, 10. Mass balance Analyses.

### Statistical Analysis

Based on DWMRC review of the SAR statistical analysis, it was noted that analysis was conducted for the complete historic data set for MW-31; for a post September 2012 data set; and for a post May 2014 data set. Per DWMRC review of the MW-31 data plots for sulfate and TDS it was noted that the trend is increasing more steeply per recent data. The complete data set and post September 2012 data did not show normal or log normal distribution for sulfate or TDS. The post May 2014 data set did show log normality for sulfate but not for TDS. Statistical methods used included: 1. Descriptive statistics for the complete and modified data sets; 2. Mean and Standard Deviation Calculation; 3. Shapiro-Wilk Test for normality; and, 4. Mann-Kendall Trend Analysis (non-normally distributed data sets). Proposed GWCL's were calculated based on Highest Historical Value and Background Mean Concentration x 1.5. The calculations and findings are summarized on a table in the SAR (Appendix B-1 of the SAR).

Per the DWMRC approved statistical flow chart for the White Mesa Mill groundwater monitoring wells, it was noted that if an upward trend is apparent for an analyte then a modified approach should be considered. The modified approach should allow for a GWCL which considers the increasing concentrations. Based on this, EFR calculated GWCL's according to the Utah Groundwater Rules (Utah Administrative Code R317-6) which allow maximums to be set according to Mean + 2 Standard Deviations, 0.5 times the GWQS (Class III Water), or 1.5 times the background concentration. DWMRC findings note that setting the GWCL at a maximum value for these parameters is reasonable, given that the wells will likely exceed a more conservative GWCL in a short period of time due to the increasing trends. This is also consistent with the 2017 MW-31 SAR review and continues to be appropriate considering the high and steepening concentration trends for sulfate and TDS in MW-31.

Sulfate in MW-31 shows a defined change in background data pre-October 2012. Per DWMRC review of the 2017 SAR for MW-31 it was noted that the EPA 2009 Unified Statistical Guidance Section 5.3, and based on verification that the increases are due to background influences, it is appropriate to use the data collected after the point of inflection and therefore, at that time, based on guidance it was determined that GWCL's for selenium and sulfate would use the post-September 2012 data set. Per review of the current SAR and additional collected data set, the October 2012 sulfate inflection point is still apparent, and it is additionally noted that by choosing a data set starting in June 2014 a number of relatively lower concentrations would be culled from the data set. The increasing trend is therefore better represented by omitting the October 2012 to May 2014 data.

Regarding the TDS time series plot, a clear point of inflection due to the laboratory change during 2012 is not evident. However, like the sulfate plot, the TDS plot indicates an inflection point and increased rising TDS concentrations post May 2014. Therefore, it is also appropriate to use the Post May 2014 data set for TDS based on increasing trends and more recent data.

When comparing the calculated GWCL's included in the SAR, it is appropriate to set GWCL's for sulfate and TDS according to 1.5 times background concentration for post May 2014 data sets. These values are in conformance with the approved statistical flow chart, the Utah Groundwater Rules, EPA Statistical Guidance and consider the increasing data trends which are not related to Mill activities.

MW-31 Approved Modified GWCL's

Per review of the SAR Section regarding proposed modifications to the GWCL's and statistical analysis of the data the GWCL's will be modified in the White Mesa Uranium Mill Ground Water Permit for monitoring well MW-31 sulfate and TDS as summarized on the table below:

Well Number	Parameter	Current GWCL	Modified GWCL	Method of Analysis
MW-31	Sulfate	993 mg/L	1,170.5 mg/L	Background X 1.5*
MW-31	TDS	2,132 mg/L	2,664 mg/L	Background X 1.5*

\*Based on 1.5 times the background data mean of the post May 2014 data set for MW-31

Note that the modified GWCL's will not be effective until future issuance of a Permit, and that the modifications will be subject to formal public notice and public participation requirements. These Permit modifications are anticipated to be made during calendar year 2021.

If you have any questions, please call Tom Rushing at (801) 536-0080.

Sincerely,



Phil Goble, Uranium Mills and Radioactive Materials Manager  
Division of Waste Management and Radiation Control

PG/TR/as

- c: Kirk Benge, Health Officer, San Juan Public Health Department  
Rick Meyer, Environmental Health Director, San Juan Public Health Department  
Russell Seeley, UDEQ District Engineer