



State of Utah

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Environmental Quality

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DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL

Scott T. Anderson
Director

July 25, 2018

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 25, 2018, Source Assessment Report for MW-14,
White Mesa Uranium Mill
Groundwater Discharge Permit No. UGW370004 (Permit)

Dear Ms. Weinel:

The Division of Waste Management and Radiation Control has completed review of the Energy Fuels Resources (USA) Inc. (EFR), June 25, 2018 document titled *Source Assessment Report for MW-14 White Mesa Uranium Mill* (SAR). The SAR includes an assessment of fluoride in monitoring well MW-14 which went into out-of-compliance status (OOC) in accordance with Part G.2 of the Permit during December 2017 (two consecutive ground water compliance limit (GWCL) exceedances). Based on the OOC status, EFR has provided a plan and time schedule for assessment of the source of the consecutive exceedances (dated March 2, 2018) and the SAR. Based on its review of the SAR, the Division noted that the second consecutive exceedance of the GWCL for fluoride in MW-14 is an outlier in the data set and likely not representative of groundwater concentrations. The Division does note that additional data has been collected since the determination of the current Permit GWCL and has considered re-evaluation of the GWCL pertinent to the SAR.

EFR is proposing that the use of a higher GWCL for fluoride be allowed for consideration under Utah Administrative Code R-317-6 and proposes a revised GWCL of 2 mg/L. EFR states that the use of a fraction approach of the State Ground Water Quality Standard is in conformance with the Director-approved statistical flow chart for GWCLs in this case. However, contrary to this conclusion, based on the Division's review, testing for normality, reviewing data trends (all flat or decreasing trends), recalculating the mean and standard deviation and the use of mean + 2 standard deviations is the appropriate method to calculate the GWCL and is in conformance with the statistical flow chart. Furthermore, the data is showing a decreasing trend for fluoride in MW-14, there is no implicated source for decreasing concentrations and, since the cause of the consecutive exceedances appears to be due to an outlier in the data, it is not expected that higher concentrations will persist at the well.

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EFR notes in the SAR that a change in laboratory and analytical method for fluoride occurred in 2012 and that the new method identified that extreme outliers noted in the data were most likely the result of an “analytical interference issue” and began diluting fluoride samples to remove matrix interference. The December 2017 sample for fluoride in MW-14 may therefore be due to matrix interference during laboratory analysis.

According to the Division’s review of the data, it appears that a data point of inflection occurred earlier in the data than the 2012 change in laboratory and method. A clear point of inflection is observed starting with the February 2, 2010 sample. According to the EPA Unified Statistical Guidance, it is appropriate to use the more recent data from this point of inflection and eliminate earlier data from the data set. This resulted in a Division culled data set of 38 laboratory results of more recent data. Based on the Division’s calculations, there was one outlier in the culled data set (verified using Rosners Test) which, as discussed above, was the apparent reason that monitoring well MW-14 went into out-of-compliance status. The Division also removed three non-detected concentrations from the data set. This resulted in a total data set of 34 laboratory results. Elimination of the outlier resulted in a normal distribution of data for the Division culled data set. Based on evaluation of this data set, the mean + 2 standard deviations calculation was 0.21 mg/L.

The EFR calculation of mean + 2 standard deviations based on the entire data set (with verified outliers removed) was 0.22 mg/L and is included in Appendix B-1 of the SAR. Although the EFR data set (61 laboratory results) did not show normal or lognormal distribution, likely due to the decreasing trend, the EFR result is within the range of the Division’s calculations and therefore, the EFR result appears to be protective and reflective of the fluoride data.

MW-14 Approved Modified Fluoride GWCL

In accordance with the SAR Section regarding proposed modifications to the GWCLs and statistical analysis of the data, and a telephone conference with Division representatives and EFR representatives on July 17, 2018, it was agreed that the GWCL will be modified in the White Mesa Uranium Mill Ground Water Permit for monitoring well MW-14 as summarized on the table below:

Well Number	Parameter	Current GWCL	Modified GWCL	Method of Analysis
MW-14	Fluoride	0.2 mg/L	0.22 mg/L	Mean + 2 Standard Deviations

Please note that the modified GWCL will not be effective until future issuance of a revised Groundwater Discharge Permit and that the modification will be subject to formal public notice and public participation requirements. This is expected to take place in fall or winter of 2018.

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

Sincerely,



Scott T. Anderson, Director
Division of Waste Management and Radiation Control

STA/TR/ka

- c: Kirk Benge, Health Officer, San Juan Public Health Department
- Rick Meyer, Environmental Health Director, San Juan Public Health Department
- Scott Hacking, P.E., DEQ District Engineer