

Uranium Watch

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July 31, 2017

via electronic mail

Scott Anderson
Director
Utah Division of Waste Management and Radiation Control
P.O. Box 144880
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RE: Energy Fuels Resources (USA) Inc., White Mesa Mill, License No. UT 1900479.
December 15, 2011, License Renewal.

Dear Mr. Anderson:

Below please find comments on the licensing package associated with the operation of the White Mesa Uranium Mill, San Juan County, Utah. The Mill is owned and operated by Energy Fuels Resources (USA) Inc. (Energy Fuels, or Licensee) under Radioactive Material License No. UT 1900479 and Utah Ground Water Discharge Permit No. UGW370004. The comments are submitted to the Utah Division of Waste Management and Radiation Control (DWMRC, or Division). Any older reference to the Division of Radiation Control (DRC) means the DWMRC.

Comments are submitted by Uranium Watch, Living Rivers, and the Utah Chapter of the Sierra Club. These comments incorporate by reference comments submitted by the Ute Mountain Ute Tribe and the December 21, 2011, comments submitted by Uranium Watch et al.

The comments below will address 1) the Utah Division of Waste Management and Radiation Control (DWMRC) Radioactive Material License No. UT 1900479 and Utah Ground Water Discharge Permit No. UGW370004, "Technical Evaluation and Environmental Assessment" (DRC-2017-002761) 2) MILDOS-AREA Model (DRC-2017-002763), and 3) the Draft Renewal of Radioactive Materials License

Number UT1900479, Amendment 8 DRC-2017-002764).

1. GENERAL COMMENTS

1.1. The Division should not have included the Reclamation Plan Rev. 5 and the License Amendment request to process Sequoyah Fuels Corporation waste at the White Mesa Mill in the License Renewal Process. These were 3 separate proposed licensing actions that should not have been included in one notice and comment opportunity, one hearing held at Blanding, Utah, and one hearing and opportunity for cross examination that was held in Salt Lake City. Combining 3 important but separate licensing actions in one process was onerous for the public and, most likely, for Division staff. It made it difficult to focus the questions provided to the Division for the June 8, 2017, hearing in Salt Lake City. It will likely delay the review and final decisions on these licensing actions.

1.2. The TEEA includes a list of references at the end. However, the list does not identify each record individually and does not provide links to all of the specific records.

1.3. Prior to the development of the TEEA, the Division should have conducted a scoping period to receive comments from the public on the scope of the environmental analysis of the White Mesa License Renewal and Groundwater Discharge Permit Renewal. The Division should also have provided an opportunity for the public to comment on the scope of the environmental analysis of the White Mesa Mill Reclamation Plan. Since the Division has not produced an environmental analysis on either the License Renewal, Groundwater Discharge Permit Renewal, or the Reclamation Plan, commenters request that the Division commence a scoping period for those analyses.

1.4. The draft renewed license references several documents that have been submitted by the Licensee over the years. Yet, those documents are not readily available on the Division's webpage for the White Mesa Mill, nor are they available on the Department of Environmental Quality (DEQ) Electronic Document Management System (EDMS, or E-Z Records). Therefore, the commenters did not have an opportunity to review these documents as part of the comment period.

1.5. The draft renewed License uses various formats for license condition subsections that are referenced in other sections: for example, LC 11.3A, LC 11.3.A., LC 11.3.A, and 11.3(A). The License should have a single format for license condition subsections that are referenced in other sections of the License.

1.6. The License Renewal package included the Public Participation Summary for Comments Received between October and December 21, 2011. However, the Division did not make available the attached written and oral comments. Some, but not all, of the oral comments are available in the E-Z Records documents.

1.7. The last renewal of the White Mesa Mill License was in 1997. That License was for a 10-year period, not a 20-plus year period. It will be over 10 years since the expiration of the license before the License is renewed. There is no excuse for the extensive delay in renewing the License.

2. TECHNICAL AND ENVIRONMENTAL ASSESSMENT

2.1. The Utah Division of Waste Management and Radiation Control (DWMRC) Radioactive Material License No. UT 1900479 and Utah Ground Water Discharge Permit No. UGW370004, “Technical Evaluation and Environmental Assessment,” White Mesa Uranium Mill; Energy Fuels Resources; May 2017, is 22 pages. Regarding the Purpose of the document, the Technical Evaluation and Environmental Assessment (TEEA) states:

The purpose of this Technical Evaluation and Environmental Assessment (TEEA) is to supplement the Safety Evaluation Report (SER) that the former Utah Division of Radiation Control (DRC) released in October of 2011. The SER and the TEEA are to identify and summarize the information the Division of Waste Management and Radiation Control (formerly the DRC) evaluated in its review of Energy Fuels Resources, Inc. (formerly Denison Mines Corp.) (Licensee) White Mesa Mill’s February 2007 License Renewal Application (LRA) and the grounds upon which the Division of Waste Management and Radiation Control (DWMRC) staff concluded whether regulatory requirements are satisfied for the renewal of the Licensee’s radioactive materials license (RML).

The TEEA references applicable regulations in the Utah Code Annotated and refers to federal regulations and Nuclear Regulatory Commission (NRC) Regulatory Guides. There is no mention of any provisions of the Atomic Energy Act (AEA) that are applicable to the proposed License Renewal and other licensing actions. The 22-page TEEA includes 1) a White Mesa Uranium Mill RML History, 2) TEEA Outline, 3) MILDOS Write-up and Analysis, 4) discussion of the Reclamation and Decommissioning Plan Rev. 5.1, 5) discussion of Sequoyah Fuels Alternate Feed Request (URS Review and Write-up), 6) Summary and Explanation of License Changes, 7) discussion of Groundwater Quality Discharge Permit (GWQDP) Renewal, 8) Environmental Analysis of the Proposed Licensing/Permitting Action, 9) Technical Evaluation of the Proposed Licensing/Permitting Action, 10) Conclusion, 11) list of references, and 12) list of attachments.

The “Environmental Analysis” for the License Renewal is one paragraph:

The DWMRC Staff conducted a review of the Licensee’s 2007 renewal application and the Licensee’s MILDOS-Area assessment of the estimated annual dose to an individual from the Mill operations at specific locations surrounding the property boundary of the Mill. The DWMRC also performed an independent MILDOS-AREA assessment for Mill

operations. The MILDOS-AREA modeling includes the environmental sampling results. Environmental sampling results are reviewed semi-annually by Staff and are determined to be representative of Mill operations. The DWMRC has determined that the Licensee complies with all of the State of Utah and Federal regulatory requirements including dose limits to individuals from Mill operations. Therefore, the DWMRC staff has concluded that the Mill operates within acceptable environmental parameters.

COMMENT

2.1.1. The TEEA discussion of the Reclamation and Decommissioning Plan Rev. 5.1 (pages 8 - 9) does not include an Environmental Analysis of the proposed Reclamation Plan Rev. 5.1.

2.1.2. The TEEA discussion of the Sequoyah Fuels Alternate Feed Request (URS Review and Write-up) does not include an Environmental Analysis of the proposed license amendment. However, the full URS Professional Solutions, LLC (URS) Review Sequoyah Fuels Alternate Feed Request is included in the License Renewal package and includes an analysis of the environmental impacts of the proposed license amendment.

2.1.3. In sum, the Environmental Analysis for the Renewal of the White Mesa Mill License is one paragraph, with no details regarding the impacts to the environment associated with the continued operation of the Mill. The TEEA does not contain any environmental analysis of the Reclamation and Decommissioning of the Mill.

2.2. The 2017 License Renewal documents included the “Public Participation Summary For Comments Received Between October 14 and December 21, 2011.” The Public Participation Summary responded to comments regarding the AEA and Environmental Analysis Requirements (Comment Topic #08, pages 14-15). Comment Topic #08 quotes from a February 22, 2017, letter to the DWMRC from the State of Utah’s Office of the Attorney General regarding compliance with AEA by the State of Utah when conducting an independent environmental analysis ((DRC-2017-001282). That opinion was sent to Sarah Lopas, Office Allegation Coordinator Office of State and Tribal Programs, NRC, on March 2, 2017, by Scott Anderson, Director, DWMRC, in response to Uranium Watch’s January 26, 2017, letter, “Allegations Regarding Utah Agreement State Program and Division of Waste Management and Radiation Control Actions.” Uranium Watch responded to Mr. Anderson’s letter and the legal opinion on March 14, 2017. The Public Participation Summary quote from the legal opinion states that “there is also no language in the AEA or any other authority that requires an Agreement State to perform completely independent environmental analysis,” and that, “it is acceptable for an Agreement State to review and analyze environmental analysis submitted by a Licensee.”

The Public Participation Summary (Comment Topic # 10: Environmental Assessment) pages 15-16) also states:

The DWMRC is not required to create a stand-alone analysis of the environmental report. The DWMRC is well aware of the environmental analysis/report requirements of UAC R313-24-3 and the need to require compliance with these requirements. Here, EFRI provided an Environmental Report in Volume 4 of its 2007 License Renewal Application. The DWMRC provided its review of the Environmental Report in the October 2011 SER. This is all that is required by the AEA. The DWMRC has the ability to title its environmental analysis as they deem appropriate. Such titles may include but are not limited to: Technical Analysis, Statement of Basis, Safety Evaluation Report, Technical Assessment, or Environmental Assessment. The purpose of the report required by UAC R313-24-3 is to advise the public of the environmental issues of concern.

The referenced UAC R313-24-3(3) requires that “The Director shall provide a written analysis of the environmental report which shall be available for public notice and comment pursuant to R313-17-2.” Rule R313-24-3(3) does not require a written environmental analysis, contrary to the requirements set out in Section 2021(o)(3)(C) of the AEA.

COMMENT

2.2.1. The TEEA relies on the Utah Division of Radiation Control, October 2011, “Safety Evaluation Report For The Denison Mines White Mesa Mill 2007 License Renewal Application” (2011 SER). The October 2011 SER provides a limited review of the 2007 White Mesa Licensee's Environmental Report. The 2011 SER did not claim to be an analysis of the environmental impacts of the proposed licensing action, pursuant to the requirements of the AEA or Utah Regulations implementing those AEA requirements. As stated in the 2011 SER, its purpose was to identify and summarize the information the DWMRC evaluated in its review of February 2007 License Renewal Application and the grounds upon which the DRC staff concluded whether regulatory requirements are satisfied.

2.2.2. The October 2011 SER and the 2007 Licensee Environmental Report are out of date. There is new information regarding the operation of the Mill and the impacts to the environment from the Mill operation. The TEEA does not provide an update on the environmental impacts of the White Mesa Mill operation over the past decade. For example, there are no analyzes of the impacts from spills of material being to shipped to the Mill for direct disposal or processing. Such spills have occurred recently. There is no analysis of the impacts from the disposal of wastes from the processing of wastes from other mineral processing operations since 2007 and other changes in the Mill operation.

2.2.3. The TEEA references the 2017 SER, developed by a DWMRC contractor, which assesses the environmental impacts associated with the Amendment Request to process 11e.(2) byproduct material from Sequoyah Fuels Corporation. That SER contradicts the DWMRC's claim that the Director only needs to provide a written analysis of the Licensee's environmental report in order to fulfill the requirements for an environmental analysis at 42 U.S.C. § 2021(o)(3)(C).

The SER for the License Amendment for the processing of the Sequoyah Fuels material states:

In accordance with UAC R313-22-38 and R313-24-3, this SER has been prepared to:

1. Assess the radiological and non-radiological impacts to the public health.
2. Assess any impact on waterways and groundwater.
3. Consider alternatives, including alternative sites and engineering methods.
4. Consider long-term impacts including decommissioning, decontamination, and reclamation impacts.
5. Present information and analysis for supporting UDRC findings and conclusions with respect to approval of the proposed license amendment.

As discussed in the January 26, 2017, Uranium Watch Allegation, the provisions in R313-24-3 do not meet the AEA requirements for Agreement State statutory and/or regulatory requirements for an Agreement State environmental analysis of a proposed licensing action.

2.2.4. The Division claims that the Environmental Analysis required under the AEA can have other titles, as developed by the Division. However, that is confusing. It is confusing to combine the environmental analysis with a technical analysis or to call an Environmental Analysis a "Technical Analysis" or other name. The Environmental Analysis falls under specific federal statutory requirements and should be identified as the document that fulfills those requirements. The Environmental Analysis must also include all of the required analyses and additional pertinent analyses of the impacts of the proposed licensing action.

2.3. Atomic Energy Act Requirements

2.3.1. The relevant section in the AEA that applies to NRC Agreement States, as codified in statute at 42 U.S.C. § 2021(o)(3), states:

- (o) State compliance requirements: compliance with section 2113(b) of this title and health and environmental protection standards; procedures for licenses, rulemaking, and license impact analysis; amendment of

agreements for transfer of State collected funds; proceedings duplication restriction; alternative requirements

(3) procedures which—

(A) in the case of licenses, provide procedures under State law which include—

(i) an opportunity, after public notice, for written comments and a public hearing, with a transcript,

(ii) an opportunity for cross examination, and

(iii) a written determination which is based upon findings included in such determination and upon the evidence presented during the public comment period and which is subject to judicial review;

(C) require for each license which has a significant impact on the human environment a written analysis (which shall be available to the public before the commencement of any such proceedings) of the impact of such license, including any activities conducted pursuant thereto, on the environment, which analysis shall include—

(i) an assessment of the radiological and nonradiological impacts to the public health of the activities to be conducted pursuant to such license;

(ii) an assessment of any impact on any waterway and groundwater resulting from such activities;

(iii) consideration of alternatives, including alternative sites and engineering methods, to the activities to be conducted pursuant to such license; and

(iv) consideration of the long-term impacts, including decommissioning, decontamination, and reclamation impacts, associated with activities to be conducted pursuant to such license, including the management of any byproduct material, as defined by section 2014 (e)(2) of this title; and

(D) prohibit any major construction activity with respect to such material prior to complying with the provisions of subparagraph (C).
[Emphasis added.]

2.4. The TEEA and the requirements of 42 U.S.C. § 2021(o)(3)(C).

COMMENT

2.4.1. The TEEA does not fulfill the requirements of the 42 U.S.C. § 2021(o)(3)(C) for an environmental analysis of the Renewal of the White Mesa Mill Materials License.

The TEEA did not 1) assess all of the radiological and nonradiological impacts to the public health of the activities to be conducted pursuant to such license; 2) assess the impacts on any surface water and groundwater resulting from such activities; 3) consider alternatives, including alternative sites and engineering methods, to the activities to be conducted pursuant to such license; or 4) consider the long-term impacts, including decommissioning, decontamination, and reclamation impacts, associated with activities to be conducted pursuant to such license, including the management of any byproduct material, as defined by section 2014(e) (2) of the AEA.

2.4.2. The TEEA, including the MILDOS-AREA evaluation, does not provide a full “assessment of the radiological and nonradiological impacts to the public health of the activities to be conducted pursuant to such license.” There is no analysis of how the Mill will “use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA), as required by Utah Rule R313-15-101(4) and 10 C.F.R. § 20.1101.

2.4.3. The TEEA does not provide an assessment of impacts on surface water or groundwater resulting from the operation of the Mill or consideration of alternatives. The TEER, even though the License Renewal Packet included the Reclamation Plan for the Mill, fails to consider “the long-term impacts, including decommissioning, decontamination, and reclamation impacts, associated with activities to be conducted pursuant to such license, including the management of any byproduct material.” Nor does the TEEA provide an assessment of other environmental impacts. The AEA Section 2021(o) (C)(3) requirements for an environmental analysis were not meant to limit that analysis to the requirements in Section 2021(o)(C)(3)(i) - (iv).

2.4.4. The TEEA references the information in the 2011 SER. The 2011 SER was developed about 5 years after the 2007 License Renewal Application was submitted to the Division. Not only was the 2011 SER not an analysis of the environmental impacts of the License Renewal, but it relied on an outdated application, data, and information.

2.4.5. The TEEA’s 1-paragraph Environmental Analysis of the License Renewal and other TEEA sections and the 2011 SER do not meet the AEA requirements for an environmental analysis of the License Renewal.

2.4.6. The DWMRC did not develop an environmental analysis for the 2017 White Mesa Mill Reclamation Plan Rev. 5.1, as required by 42 U.S.C. Section 2021(o)(C)(3). The DWMRC Staff concluded that the Mill met all technical requirements with respect to the Reclamation Plan. However, the TEEA does not provide 1) an assessment of the radiological and nonradiological impacts to the public health associated with the Reclamation Plan, 2) an assessment of impact to the groundwater as a result of decommissioning and reclamation, 3) consideration of decommissioning and reclamation engineering alternatives; and 4) consideration of the long-term impacts, including decommissioning, decontamination, and reclamation impacts. Nor does it provide an

assessment of other environmental impacts associated with the reclamation and long-term presence of uranium mill tailings at White Mesa. The AEA Section 2021(o)(C)(3) requirements for an environmental analysis were not meant to limit that analysis to the requirements in Section 2021(o)(C)(3)(i) - (iv).

2.5. TEEA - MILDOS Write-up

The TEEA contains a discussion of the MILDOS-AREA Model Report calculations and compliance with federal radiological emission standards.

COMMENT

2.5.1. The TEEA (page 3) states, “In estimating doses from uranium recovery facilities, MILDOS Report calculates doses from the radionuclides of the uranium-238 (U-238) decay chain.” However, there is no mention of the dose from the thorium-232 decay chain. The Mill has received, stored, processed, and disposed of material containing thorium-232 and thorium-232 progeny. The mill owner proposes to receive, store, and process additional materials containing thorium-232 and thorium-232 progeny. Yet, there is no mention of how the radiological emissions from thorium-232 and thorium-232 progeny have been calculated and incorporated in the estimates of exposure to nearest receptors. Therefore, any calculation of the estimated radiation releases from the Mill must include an estimate of the radionuclide releases from thorium-232 and thorium-232 progeny, and technical justification for those estimates.

2.5.2. The discussion of the MILDOS-AREA Model does not provide any information regarding the assessment of the radionuclide emissions from liquid effluents at the Mill—Cells 1, 3, 4A, and 4B. Both the Environmental Protection Agency (EPA)¹ and Energy Fuels have determined that the radon releases from liquid effluents at the Mill are not zero. Therefore, any calculation of the estimated radiation releases from the Mill must include an estimate of the radionuclide release from liquid effluents, and technical justification for those estimates.

2.5.3. It is unclear if the MILDOS-AREA Model includes radionuclide releases from in situ leach (ISL) facility waste that is disposed of in Cell 3. That information should be provided by the DWMRC.

2.5.4. There is little information regarding the total amount of “Alternate Feed” that has been received and processed from each specific source of feed. The Division should provide information on how they calculated the total amount of material received and the radiological content of the wastes from those materials after processing. A gross

¹ Risk Assessment Revision for 40 C.F.R. Part 61 Subpart W — Radon Emissions from Operating Mill Tailings; Task 5 — Radon Emission from Evaporation Ponds. Environmental Protection Agency, Office of Radiation and Indoor Air. November 9, 2010.
<https://www.epa.gov/sites/production/files/2015-05/documents/riskassessmentrevision.pdf>

estimate of the “Alternate Feed” does not provide sufficient information regarding each particular feed source.

2.5.5. The TEEA (pages 5 and 6) states: “The first of these requirements is in R313-15-101(4) of the Rules. This requirement states that there is a constraint on air emissions of radioactive material to the environment, excluding radon and its decay products, such that an individual member of the public will not be expected to receive a TEDE in excess of 100 mrem in a calendar year from the Licensee's operations.”

The requirements in R313-15-101(4) are found in 10 C.F.R. Part 20, § 20.1101, which states, at (d): “Excluding Radon-222 and its daughters, the individual member of the public likely to receive the highest dose will not be expected to receive a total effective dose equivalent in excess of **10 mrem** (0.1 mSv) per year from these emissions.” (Emphasis added.) Therefore, the total effective dose equivalent limit (excluding radon) is 10 mrem per year, not 100 mrem. This should be corrected.

2.5.6. The MILDOS-AREA discussion should address other regulatory stipulations, including 10 C.F.R. § 20.1101(b) and (c):

Section 20.1101 Radiation protection programs

(b) "The Licensee shall use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA)."

(c) "The Licensee shall periodically (at least annually) review the radiation protection program content and implementation."

The TEEA should describe and evaluate how, exactly, the Licensee is complying with the requirement to “use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA).” The TEEA should also discuss the Licensee’s annual reviews of the radiation protection program content and implementation since 2007.

2.5.7. The MILDOS Model calculations are from 2007 to 2014. That means that data from 2014 to 2017 have not been included. The TEEA should explain how the data from 2014 to 2017 affects the offsite doses to the public.

2.5.8. The TEEA should have, but did not, provide data and information on the actual radiological and non-radiological emissions from each source at the Mill, based on data and information provided to the Division since 1997. The TEEA should provide information on each possible source of emissions, whether or not those emissions are monitored or measured during Mill operation.

2.5.9. The TEEA should have included, but did not, an assessment of the “radiological and nonradiological impacts to the public health of the activities to be conducted pursuant to such license,” as required under the AEA.

2.6. Reclamation and Decommissioning Plan Rev. 5. The TEEA includes less than a single page discussion of the Reclamation and Decommissioning Plan Rev. 5.

COMMENT

2.6.1. As discussed above, the TEEA does not provide an analysis of the environmental impacts of the Reclamation Plan Rev. 5 or other aspects of the Reclamation Plan. There is no description of, or technical analysis of, the Plan, except for the mention of a test sections on the radon cover for Cell 2 and a February 23, 2017 Stipulation and Consent Agreement for implementation of the Plan.

2.6.2. The TEEA fails to mention of the requirement for the establishment of milestones for completion of the final radon barrier, a portion of the radon barrier, and other actions that lead to the reclamation, such as, completion of groundwater corrective actions, clean up of windblown tailings, dewatering of tailings cells, completion of interim covers or related cover plans. Enforceable reclamation milestones are required under NRC and EPA regulations and should be considered in the TEEA.

2.7. Environmental Analysis of the Proposed Licensing/Permitting Action.

COMMENT

2.7.1. Environmental Analysis of the Proposed Licensing/Permitting Action is one short paragraph that references the Division’s MILDOS-AREA analysis. The Environmental Analysis states that “The DWMRC has determined that the licensee complies with all of the State of Utah and Federal regulatory requirements including dose limits to individuals from Mill operations;” and that, “therefore, the DWMRC staff has concluded that the Mill operates within acceptable environmental parameters.” The brief paragraph and referenced MILDOS-AREA analysis do not fulfill the AEA requirements for an Environmental Analysis of the License Renewal, Ground Water Discharge Permit Renewal, and Reclamation Plan Rev. 5. Those requirements are set forth in Section 2.3, above.

2.7.2. The Environmental Analysis fails to define the scope of the analysis.

2.7.3. The Division must provide a scoping period for the public to comment on the scope of the environmental analyses for the License Renewal and Reclamation Plan that are required under the AEA.

3. MILDOS-AREA MODEL (DRC-2017-002763)

COMMENT

3.1. A title page is not included in the MILDOS-AREA Model document (Attachment A) provided by the Division. The MILDOS Model document should have a title page, including the authors of the documents.

3.2. The MILDOS Model document should have included data through 2016, rather than stopping at 2014.

3.3. The MILDOS Model fails to mention the receipt and disposal of waste from in situ leach (ISL) processing facilities. The receipt and disposal of the wastes contribute to the radionuclide emissions at the Mill. Recently, there have been spills of this material at the Mill and near the Mill.

3.4. It is helpful to the public for the Division and contractors to the Division to use regular numbers, rather than notation, to express various levels of radioactivity and other technical parameters. The Division should try to make tables of information more accessible to the public understanding. In the future, the Division should use common numbers, not the “E” notation, when expressing pico Curies (pCi), wind speed, release rates, amounts of radionuclides or other chemical constituents, or any other type of measurement. The tables should be easy to read and understand.

3.5. The MILDOS Model does not include emissions and doses from the thorium-232 decay chain. The Mill has stored and processed and disposed of material containing thorium-232 and thorium-232 progeny. The mill owner proposes to receive, store, and process additional materials containing thorium-232 and thorium-232 progeny. Yet, there is no mention of how the radiological emissions from thorium-232 and thorium-232 progeny have been calculated and incorporated in the estimates of exposure to nearest receptors. Therefore, any calculation of the estimated radiation releases from the Mill must include an estimate of the radionuclide releases from thorium-232 and thorium-232 progeny, and technical justification for those estimates.

3.6. The MILDOS Model does not provide a reference to, or link to, the documents that provided the data for this report. Citations and links to the data and information that was used in the MILDOS Model should have been included.

3.7. The MILDOS Model does not include radionuclide releases from ISL waste that is disposed of in Cell 3. That data should have been included in the Model.

3.8. The MILDOS Model does not include a discussion of the emissions from contaminated soils, broken sacks of “Alternate Feed,” windblown dust, and other visible and not-so-visible emissions. That data should have been included in the Model.

3.9. The discussion in the MILDOS Model should, but does not, include data and information about the emissions of radon from the tailings cells, as measured and reported to the EPA and the Utah Division of Air Quality, pursuant to 40 C.F.R. Part 61 Subpart W. The Model should include all data on all of the emissions from all sources that are measured over time.

3.10. The MILDOS Model does not include any information regarding the assessment of the radionuclide emissions from liquid effluents at the Mill—Cells 1, 3, 4A, and 4B. As discussed above at Section 2.5.2, the radon releases from liquid effluents at the Mill are not zero. Therefore, any calculation of the estimated radiation releases from the Mill must include an estimate of the radionuclide release from liquid effluents, and technical justification for those estimates.

4. DRAFT RADIOACTIVE MATERIALS LICENSE — RENEWAL

4.1. The Proposed License Condition 9.4.B. states:

The licensee shall file an application for an amendment to the license, unless the following conditions are satisfied.

(3) The change, test, or experiment is consistent with the conclusions of actions analyzed and selected in the Nuclear Regulatory Commission (NRC) Environmental Assessment dated February 1997.

COMMENT

4.1.1. This condition references conclusions of actions analyzed and selected in the 1997 Environmental Assessment (EA)—20-year old assessment of the environmental impacts of the operation of the White Mesa Mill. The 1997 EA is 110 pages of information that is incomplete and out-of-date. This document should have been updated by the Division in an environmental analysis, pursuant to the requirements of the AEA (42 U.S.C. § 2021(o)(3)(C)).

4.1.2. The License Condition that states the License must submit a license amendment, unless (among other things) the change, test, or experiment is “consistent with the conclusions of actions analyzed and selected” by the NRC in the 1997 EA is vague. The term “consistent with” is not defined. The “conclusions of actions analyzed and selected” by the NRC in the 1997 EA have not been fully identified. The 1997 EA contains a section entitled “Conclusion Including Environmental License Conditions.” Some of these conditions are part of the current and proposed License. The renewed License should not rely on a 20-year-old assessment and conclusions. The Division should completely update the 1997 EA, provide an opportunity to comment on the scope of the new environmental analysis of the renewed operation of the Mill (including

cumulative impacts), and provide an opportunity for public comment on that document and the development of new “conclusions” and new license conditions, if warranted.

4.1.3. The References provided in the 1997 EA are out of date. The White Mesa Mill documents have been updated and the NRC Regulatory Guides have been revised:

- "Design, Construction and Inspection of Embankment Retention Systems for Uranium Mills," NRC Regulatory Guide 3.11, December 1977, was revised in 2008.²
- "Operational Inspection and Surveillance of Embankment Retention Systems for Uranium Mill Tailings," NRC Regulatory Guide 3.11.1, October 1980, was withdrawn, and any revisions incorporated into the 2008 Regulatory Guide 3.11.
- “Radiological Effluent and Environmental Monitoring at Uranium Mills, Regulatory Guide 4.14, April 1980, was last revised in 2014.³
- "Quality Assurance for Radiological Monitoring Programs (Normal Operations) Effluent Streams and the Environment," NRC Regulatory Guide 4.15, February 1979, was revised in 2007.⁴
- "Bioassays at Uranium Mills," NRC Regulatory Guide 8.22, Rev. 1, August 1988, was revised in 2014.⁵

The Division should not reference a 20-year old NRC EA that references and was based on even older NRC Regulatory Guidances, which have been revised and updated within the last 10 years.

4.1.4. The 1997 EA contains information that is incomplete and outdated; for example: 1) the processing of feed material other than “ore;” 2) the disposal of waste from in-situ leach uranium recovery operations; 3) spills of material shipped to and from the Mill; 4) changes in the mill operation since 1997; 5) groundwater impacts; 6) issues and concerns that have arisen since 1997; 7) new tailings Cells 4A and 4B; 8) cultural resource impacts since 1997; 9) cumulative air quality impacts; 10) compliance with NRC, Division of Waste Management and Radiation Control, Mine Safety and Health Administration, EPA, and Utah Division of Air Quality regulations; 11) off-site dispersal of contaminants; 12) quality of construction of Cells 1, 2, and 3; 12) impacts from the dewatering of Cell 2; 13) closure and partial reclamation of Cell 2; 14) impacts to seeps and springs; 15) effluent monitoring data; 16) Groundwater Discharge Permit requirements and data; 17) sources and use of water; 18) worker and community impacts; 19) impacts of fluctuations in Mill workers, pay, benefits, hours of work, etc.; 19) impacts to local minority and low income residents; 20) long-term impacts; and 21) other impacts (including historical and cumulative impacts) of the Mill. These environmental impact

² <https://www.nrc.gov/docs/ML0823/ML082380144.pdf>

³ <https://www.nrc.gov/docs/ML1707/ML17075A491.pdf>

⁴ <https://www.nrc.gov/docs/ML0717/ML071790506.pdf>

⁵ <https://www.nrc.gov/docs/ML1335/ML13350A638.pdf>

and other information should have been updated and included in a new Environmental Analysis for the Mill.

4.2. License Condition 9.4.D. License Condition 9.4.D. states: The licensee’s SERP shall function in accordance with the **most version of the** standard operating procedures submitted by letter to the Director NRC dated February 27, 2007.

COMMENT

4.2.1. The words “in accordance with the **most version of the** standard operating procedures” needs a word to indicate which version the License Condition is referred to. It probably should read: “in accordance with the **most recent version of the** standard operating procedures.”

4.3. License Condition 9.7. License Condition 9.7 states: “As per the Memorandum of Agreement (MOA) negotiated by the Utah State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), the NRC and Energy Fuels Nuclear Inc. (EFN) and ratified on August 20, 1979 and as amended on May 3, 1983 and substantially as implemented in NRC License SUA-1358.”

COMMENT

4.3.1. The referenced MOA is not readily available on the Division website for White Mesa Mill, or in the White Mesa Licensing documents accessioned to the DEQ EDMS. It is important for the public and the Division staff to have documents that are referenced in the Mill’s License are readily available, since they are part of the License. Any document referenced in the License should be posted on the webpage for the White Mesa Mill.

4.3.2. The 1979 MO, as amended on May 3, 1983, is out of date and should be revised and updated.

4.4. License Condition 9.7 (continued). License Condition 9.7 also states:

The licensee shall avoid by project design, where feasible, the archaeological sites designated “contributing” in the report submitted by letter to the NRC dated July 28, 1988. When it is not feasible to avoid a site designated “contributing” in the report, the licensee shall institute a data recovery program for that site based on the research design submitted by letter from C. E. Baker of Energy Fuels Nuclear to Mr. Melvin T. Smith, Utah State Historic Preservation Officer (SHPO), dated April 13, 1981.

COMMENT

4.4.1. The list of archaeological sites dated July 28, 1988, is incomplete, inaccurate, and outdated. None of the sites on the Bureau of Land Management (BLM) land transferred to Energy Fuels Nuclear (EFN, the original Licensee) are listed. Several sites that have not been excavated are listed as "excavated," and a site that was excavated is listed as a site "to be excavated." There is conflicting information regarding which sites are "contributing" and which are "undetermined." The April 13, research design is also outdated. These documents should be reviewed by Energy Fuels and the Division and updated. The Licensee should be required to submit a new research design for any White Mesa Mill activities associated with the destruction of archaeological sites and cultural resources on and adjacent to the Mill site.

4.5. License Condition 10.1. License Condition 10.1, at subsections A and B, states:

A. The licensee may not dispose of any material on site that is not "byproduct material," as that term is defined in 42 U.S.C. Section 2014(e)(2) (Atomic Energy Act of 1954, Section 11(e)(2) as amended).

B. The licensee may not receive or process any alternate feed material without first applying for and obtaining approval of a license amendment. For any such proposal, the licensee shall demonstrate that it will comply with Condition 10.1(B). Any such demonstration shall include:

COMMENT

4.5.1. Subsection A should read: "The licensee may not dispose of any material on site that is not "byproduct material," as that term is defined in 42 U.S.C. Section 2014e(e)(2) (Atomic Energy Act of 1954, Section 11e.(2), as amended)."

4.5.2. Subsection B contradicts requirements in Subsection A, and should be deleted from the License, based on the information provided herein in Exhibit A.

4.6. License Condition 10.8. The proposed License Condition 10.6 would authorize the receipt and processing of 11e.(2) byproduct material from the Sequoyah Fuels Corporation Facility, Gore, Oklahoma.

COMMENT

4.6.1. For reasons outlined in Exhibit A, hereto, and comments on the proposed License Amendment to process the SFC 11e.(2) byproduct material submitted in a separate comment submittal, the Division should not authorize the processing of the SFC Material.

4.7. License Condition 10.19. License Condition 10.19 authorizes the receipt and processing of materials from the FMRI Muskogee Facility, Muskogee, Oklahoma.

COMMENT

4.7.1. The FMRI material is shipped to the Mill in large sacks. There have been problems with the sacks breaking due to exposure to sunlight and other impacts during extended periods of storage at the Mill. License Conditions 10.8 (proposed) authorizes the receipt of materials that arrive at the Mill in large sacks, sometimes referred to as “Super-Saks.” The proposed License Condition 10.8 provides specific provisions that apply to off-loading and on-site storage of the the sacks to prevent damage, control any damage, and provide shielding from radioactive emissions. The Division should amend License Condition 10.19 to require similar handling of the FMRI sacks and protection from radioactive emissions and particulate dispersion during handling and storage.

4.8. License Condition 11.2. License Condition 11.2 requires the implementation of an effluent and environmental monitoring program.

COMMENT

4.8.1. The effluent monitoring program should include the measurement of the radium content of the liquid effluents in Cells 1, 3, 4A, and 4B in order to determine the radon emissions from the radium-bearing liquid effluents. The EPA has determined that the radon emissions from liquid effluents at conventional mills are not zero, as previously claimed. The EPA developed a formula for determining the radon emissions, based on the radium content and local meteorological conditions.⁶ Energy Fuels did not agree with the EPA formula and conclusions based on the formula or data submitted to the Division on the gross alpha content of the effluents as a means to determine radium content of the liquid effluents. However, Energy Fuels found that the radon emissions from the effluents were not zero, based on single radium sampling events and an adjusted formula. Since the radium content fluctuates during the year, the Licensee and Division should develop a monitoring plan to obtain base-line information on the radium content of the liquid effluents over a few years (during various operational and meteorological conditions) and agree on a formula for determining the radon emissions over time. The Licensee should be required to determine the radon emissions from the liquid effluents throughout the year, and report the findings to the Division.

4.8.2. By letter of July 23, 2014, regarding Request to Cease Monthly Radon Flux Sampling Tailings Cell 2, Radioactive Material License Number UT 1900479, the Division ordered Energy Fuels to monitor the radon emissions from Cell 2 and report the

⁶ Risk Assessment Revision for 40 C.F.R. Part 61 Subpart W — Radon Emissions from Operating Mill Tailings; Task 5 — Radon Emission from Evaporation Ponds. Environmental Protection Agency, Office of Radiation and Indoor Air. November 9, 2010.

<https://www.epa.gov/sites/production/files/2015-05/documents/riskassessmentrevision.pdf>

results twice a year in the Semi-Annual Effluent Report (DRC-2014-004489). It is Uranium Watch's understanding that the monitoring will continue until the final radon barrier is placed on Cell 2. The requirements to monitor and report the Cell 2 radon flux and take corrective actions if the radon emissions are over 20 pCi/m²-sec should be included in the License.

4.8.3. The Division should also require the Licensee to monitor and report the radon flux from the surface of solid tailings on Cells 4A, 4B, and any other "new" tailings impoundments at the Mill. The EPA regulations applicable to the radon emissions from operating uranium mills (40 C.F.R. Part 61 Subpart W) do not require the monitoring and reporting of the radon emissions from Cells 4A and 4B and any other tailings impoundments constructed after December 15, 1989.⁷ The EPA relies, instead on a design and work practice standard, rather than a numerical emission standard, to control the emissions from "new" impoundments. Subpart W limits the size of the impoundments to 40 acres. However, the radon emissions from the dry tailings will remain unknown, and there will be no requirement to take mitigative measures if the emissions exceed 20 pCi/m²-sec, as they have in the past at the White Mesa Mill.

The EPA did not take into consideration 1) the cumulative impacts of radon emissions from several tailings impoundments at an operating mill; 2) the emission of radon from the decay of the radium isotopes from the decay of thorium-232, which is present in the Mill tailings; 3) the presence of tailings from the processing of materials other than natural ore that contain higher levels of radium from both uranium and thorium-232 decay; and 4) the disposal of 11e.(2) byproduct from in-situ leach operations and other sources. As was demonstrated by the history of Cell 2, the monitoring of the radon is necessary to keep the radon emissions as low as reasonably achievable. The monitoring alerts the Licensee and the Division that the radon emissions have increased; for example, due to the dewatering of the tailings or uneven placement of tailings with higher levels of radium. If the radon emissions increase, clean material that is placed on the impoundment reduces the radon emissions. Monitoring of various sections of the tailings provides information regarding which areas of the tailings cell need clean material, the effectiveness of the placement of clean material, and any major changes in the Mill operation. Cells 4A and 4B are the only "new" tailings impoundments in the United

⁷ 40 C.F.R. Part 61 Subpart W. <https://www.ecfr.gov/cgi-bin/text-idx?node=sp40.9.61.w>

States that are subject to the 40 C.F.R. § 261.252(a)(2) standard.⁸ Therefore, neither the EPA, the Utah Division of Air Quality (which administers and enforces that standard in Utah, nor the DWMRC know if the design and work practice standard for “new” impoundments will significantly reduce the radon emissions, as compared to the emissions from earlier impoundments (Cells 2 and 3 at the Mill). Therefore, the monitoring of Cells 4A and 4B, pursuant to the requirements of 40 C.F.R. § 61.252.(a)(1) and 61.253, would provide important data on the effectiveness of the standard for “new” impoundments.

Requiring the monitoring, reporting of the radon emissions from the “new” impoundments and mitigative measures is an important measure to be taken to protect the health of the public and the workers at the Mill and assure that the radon emissions from “new” tailings impoundments are kept as low as reasonably achievable, as required by NRC and Utah regulation.

4.9. License Condition 11.4. License Condition 11.4. applies to the annual collection of data for air emissions from the Mill.

COMMENT

4.9.1. The air sampling is only required annually. There is no indication that annual sampling will provide data that is representative of the Mill emissions and operation over the sample year. The sampling should occur more frequently. Continuous air sampling should be required.

4.9.2. License Condition 11.4. only requires that the Licensee analyze the mill feed or production product for U-nat, Th-230, Ra-226, and Pb-210 and use the analysis results to assess the fundamental constituent composition of air sample particulates. However, the feed material also contains thorium-232, thorium-228, radium-228, and radium-224. Therefore, the Licensee should also be required to analyze the Mill feed and production product for these elements and use the analysis results to assess the fundamental constituent composition of air sample particulates.

⁸ (a) Each owner or operator of a conventional impoundment shall comply with the following requirements:

•••

(2) After December 15, 1989, no new conventional impoundment may be built unless it is designed, constructed and operated to meet one of the two following management practices:

(i) Phased disposal in lined impoundments that are no more than 40 acres in area and comply with the requirements of 40 CFR 192.32(a)(1). The owner or operator shall have no more than two conventional impoundments, including existing conventional impoundments, in operation at any one time.

(ii) Continuous disposal such that uranium byproduct material or tailings are dewatered and immediately disposed with no more than 10 acres uncovered at any time and shall comply with the requirements of 40 CFR 192.32(a)(1).

4.10. License Condition 13.1.AA and Reclamation Plan Revision 5.1. License Condition 13.1 lists various Licensee submittals that the Licensee must comply with: “Except as specifically provided otherwise by this license, the licensee shall conduct operations in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below.” License Condition 13.1.AA lists: “White Mesa Uranium Mill Reclamation and Decommissioning Plan Rev 5.1, from Energy Fuels dated August 10, 2016 and February 23, 2017 to UDWMRC.”

COMMENT

4.10.1. The Renewed License should have a specific Section and License Condition for the Reclamation Plans, not just a reference at the end of a list of other Licensee submittals. If the Division approves Reclamation Plan Rev. 5.1. there should be a separate License Condition that reflects that submittal and any other submittals (such as the 2017 “Stipulated Consent Agreement”)that should be referenced in a License Condition set aside for Reclamation Plans incorporated into the License.

4.10.2. The draft License does not include any reclamation milestones associated with the reclamation Plan, specifically milestones for the closure of Cell 2. Enforceable reclamation milestones are required under EPA⁹ and NRC¹⁰ regulations applicable to operational uranium mills. Milestones include dates for the placement of the interim cover, dewatering, cleanup of windblown tailings and other on-site and off-site contamination, and placement of the final radon barrier. The Licensee is in the process of dewatering Cell 2, placing an interim radon barrier, and other closure activities. Yet, the draft License and TEEA makes no mention of the need for the establishment of reclamation milestones.

4.10.3. Reclamation Plan Rev. 5.1, regarding the establishment of reclamation milestones for the reclamation of Cell 2—the only Mill tailings impoundment undergoing closure—at Section 6.22 Deadlines and Interim Milestones for Closure of Cell 2 (page 6-3), states:

The deadlines and interim milestones for closure of Cell 2 will be set out in the SCA. The requirements set out in the SCA, when finalized, will be incorporated by reference into this Plan as if set out in this Plan.

The signed “Stipulated Consent Agreement” (SCA) was submitted to the DWMRC by Energy Fuels on February 20, 2017. The SCA includes a proposed reclamation milestones for Cell 2 under Phase 1 Cover Construction in the “Agreement,” page 3:

⁹ 40 C.F.R. Part 192, Section 192.32(a)(3).

¹⁰ 10 C.F.R. Part 40 Appendix A, Criterion 6A(1)

Cell 2 Phase 1 cover placement commenced in April 2016, and will be completed on or before August 31, 2017, or such later date as may be approved by the Director.

Other pertinent reclamation milestones are indicated, but without any dates certain. The milestone for the completion of the Cell 2 Phase 1 cover should be incorporated into the License as a license condition. If the the August 31, 2017, date is not feasible, then it is the responsibility of the Licensee to notify the DWMRC and request an extension of the milestone. It is however, unclear if the SCA is a License Amendment request, or the Licensee must submit a separate request for the establishment of the milestones for Cell 2 outlined in the SCA.

4.10.4. The License must submit license amendment requests for the establishment of any reclamation milestone and any extensions on established reclamation milestones. The Division cannot establish or amend a reclamation milestone, only approve a proposed milestone. Further, the Division is required by the EPA to publish a notice and request public comment on any licensee request for, or amendment to, a reclamation milestone and publish a notice and request public comment on the Divisions proposed approval of a reclamation milestone or amendment to established milestone.¹¹ In this instance, the Division did not notice the Licensee's proposed milestone for completion of Cell 2 Phase 1 cover. The Licensee should have submitted a separate amendment request for approval of a the milestone for completion of Cell 2 Phase I Cover. Division should have issued a separate notice and opportunity to comment on the establishment of the milestone, rather than hiding the proposed milestone within Reclamation Plan Rev. 5.1 and the SCA.

4.10.5. The Division should incorporate time frames for other submittals indicated in the SCA within another Reclamation Plan license conditions, but not as reclamation milestones until a date certain has been proposed by the Licensee and approved by the Division.

4.11. License Condition 4. Expiration Date. License Condition 4 sets an expiration date (to be adjusted) that would be 10 years from the date of the final approval of the Renewed

¹¹ "EPA expects the NRC and Agreement States to act consistently with their commitment in the MOU and provide for public notice and comment on proposals or requests to (1) incorporate radon tailings closure plans or other schedules for effecting emplacement of a permanent radon barrier into licenses and (2) amend the radon tailings closure schedules as necessary or appropriate for reasons of technological feasibility (including factors beyond the control of the licensees). Under the terms of the MOU, NRC should do so with notice timely published in the *Federal Register*. In addition, consistent with the MOU, members of the public may request NRC action on these matters pursuant to 10 CFR 2.206. EPA also expects the Agreement States to provide comparable opportunities for public participation pursuant to their existing authorities and procedures." 59 Fed. Reg. 36280, 36285, column 3.

<https://www.epa.gov/sites/production/files/2015-08/documents/subpartt1994.pdf>

License.

COMMENT

4.11.1. The proposed License Expiration Date means, given past history, that the renewed license would be good for approximately another 20 years, not 10. Therefore, the Division must consider 1) limiting the License extension to 5 to 7 years or 2) requiring that the License submit the License Renewal application at least 1 year before the License expires. It is very troubling that it should take over 10 years for a License Renewal application to be approved by the DWMRC.

4.12. Other

COMMENT

4.12.1. The Division should make all of the documents referenced in the License available on the White Mesa Mill webpage and on the EDMS. The documents should be posted separately, rather than being included in another document. The referenced documents are part of the License and should be readily available to Division Staff and the public. The documents include:

- A. Drainage Report, January 10, 1990. License Condition 10.3.A.
- B. Licensee's submittals to the NRC dated December 12, 1994 and May 23, 1995. License Condition 10.4.
- C. Licensee's submittal to the NRC dated May 20, 1993. License Condition 10.5.
- D. Amendment request to the NRC dated June 15, 1993. License Condition 10.6.
- E. Amendment request to the NRC dated September 20, 1996, and amended by letters to the NRC dated October 30, 1996 and November 11, 1996. License Condition 10.7.
- F. License submittals dated August 30, 2013, and October 21, 2013. License Condition 10.8 (proposed).
- G. Amendment request to the NRC dated April 3, 1997, as amended by submittals to the NRC dated May 19, 1997 and August 6, 1997. License Condition 10.9.
- H. Amendment request to the NRC dated June 4, 1998, and by the submittals to the NRC dated September 14, 1998, September 16, 1998, September 25, 1998, October 7, 1998, and October 8, 1998. License Condition 10.11.

- I. Amendment request to the NRC dated December 19, 2000, and supplemental information in letters dated January 29, 2001, February 2, 2001, March 20, 2001, August 15, 2001, October 17, 2001, and November 16, 2001. License Condition 10.17.
- J. Amendment requests and submittals to the Director dated March 7, 2005, June 22, 2005, and April 28, 2006. License Condition 10.19.
- K. Submittal to the NRC dated March 15, 1986. License Condition 11.2.E.
- L. Licensee's letter to the NRC dated August 23, 1991 (including the license renewal application). License Condition 13.1.B.
- M. Licensee's revision submitted to the NRC January 13, 1992. License Condition 13.1.C.
- N. Licensee's revision submitted to the NRC April 7, 1992. License Condition 13.1.D.
- O. Licensee's revision submitted to the NRC November 22, 1994. License Condition 13.1.E.
- P. Licensee's revision submitted to the NRC July 27, 1995. License Condition 13.1.F.
- Q. Licensee's revision submitted to the NRC December 13, 1996. License Condition 13.1.G.
- R. Licensee's revision submitted to the NRC December 31, 1996. License Condition 13.1.H.
- S. Licensee's revision submitted to the NRC January 30, 1997. License Condition 13.1.I.
- T. Licensee's Current Standby Trust Agreement. License Condition 13.1.A.

Thank you for providing the opportunity to comment.

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