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BEFORE THE EXECUTIVE DIRECTOR OF THE UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

In re Renewal of Radioactive Materials License No. UT 1900479 (Am. 8) for the White Mesa Uranium Mill (Feb. 16, 2018)	File No. _ Filing and Service Date: **March 15, 2018**

PETITION FOR REVIEW

The Grand Canyon Trust petitions for review of the Director of the Division of Waste Management and Radiation Control's permit order renewing Energy Fuels Resources (USA) Inc.'s radioactive materials license for the White Mesa uranium mill (License No. UT1900479, Am. 8), dated February 16, 2018 (the "License").

I. Legal Authority and Jurisdiction for Review[1]

1. The Director issued the License under Utah Code Title 19, Chapter 3 and Rule R313 of the Utah Administrative Code.[2] The Trust petitions for review of this "permit order,"[3]

[1] *See* Utah Code §§ 19-1-301.5(6)(d)(v)(A) & (B); Utah Code § 63G-4-201(3)(a)(iv); Utah Admin. Code R305-7-203(3)(d), (3)(e)(i)–(ii).

under Utah Code § 19-1-301.5 and Utah Administrative Code Rule R305-7-203(1). The Executive Director of the Utah Department of Environmental Quality has jurisdiction over this matter under Utah Code §§ 19-1-301.5 & 19-1-202 and Utah Admin. Code R305-7.

II. Names and Address of Recipients[4]

2. This petition is being sent to:

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[2] Utah Dep't of Envtl. Quality, Div. of Waste Mgmt. & Radiation Control, Radioactive Materials License No. UT1900479, Am. 8 at p. 1 (Feb. 16, 2018) ("2018 License"); *see also* Utah Code § 19-3-104; Utah Admin. Code R313-22-33, R313-24.
[3] *See* Utah Code §§ 19-1-301.5(1)(f)(i) & 19-1-301.5(1)(e).
[4] *See* Utah Code §§ 19-1-301.5(6)(d)(ii); Utah Code § 63G-4-201(3)(a)(i); Utah Admin. Code R305-7-203(3)(a).

III. Statement of Facts[5]

A. The Grand Canyon Trust

3. The Grand Canyon Trust is a membership-based, non-profit advocacy organization founded in 1985 that has over 3,000 members.[6] It is headquartered in Flagstaff, Arizona, and has offices in Castle Valley and Salt Lake City, Utah, and Durango and Denver, Colorado.[7] The mission of the Trust is to protect and restore the Colorado Plateau – its spectacular landscapes, flowing rivers, clean air, diversity of plants and animals, and areas of beauty and solitude.[8] Additional information about the Trust is set out in the Trust's Petition to Intervene and Statement of Standing, which is being filed and served along with this Petition for Review.

B. The White Mesa Mill

4. The White Mesa mill sits a few miles north of the centuries-old Ute Mountain Ute tribal community of White Mesa and a few miles south of downtown Blanding. It is an acid-leaching, uranium-processing mill that turns uranium ore and other uranium-bearing substances into a product called yellowcake, which is then enriched for use in nuclear reactors. Black flake, a substance used in other industrial processes, is also made at the mill by extracting vanadium from some feeds. Mostly what comes out of the mill, though, is radioactive waste. This waste, commonly called tailings, is discarded in big pits spanning about 275 acres next to the mill. There are five of these pits, or "impoundments," at the mill, named Cell 1, Cell 2, Cell 3, Cell 4A, and Cell 4B. Some of these pits have been used in the past to hold mostly solid wastes and, for that

[5] *See* Utah Code § 63G-4-201(3)(a)(vi).
[6] Reimondo Decl. ¶ 2 attached as Ex. A to the Grand Canyon Trust's Petition to Intervene and Statement of Standing (Mar. 12, 2018) ("Reimondo Decl.").
[7] *Id.*
[8] *Id.* at ¶ 3.

reason, are sometimes called "conventional impoundments."[9] Others have been used for mostly liquid wastes and are sometimes called "evaporation ponds" or "non-conventional impoundments."[10]

5. A company called Energy Fuels Nuclear, Inc., built the mill in the late 1970s to process low-grade uranium ore from the surrounding region.[11] Back then, the company planned to run the mill for 15 years, then close and reclaim it.[12] The radioactive tailings were to be cleaned up in roughly 4-year phases while the mill was operating.[13]

6. But that has not happened. Instead, Energy Fuels Nuclear, fired up the mill in 1980, made yellowcake for about three years, and pumped the resulting radioactive tailings into Cells 1, 2, and 3.[14] Then, when the price of yellowcake plummeted in 1983, the company

[9] *See, e.g.*, 40 C.F.R. § 61.251(h).
[10] *See, e.g.*, 40 C.F.R. § 61.251(i).
[11] Ex. 2 to Grand Canyon Trust, *Comments on the Proposed Renewal of Energy Fuels Resources (USA), Inc.'s Radioactive Materials License and Groundwater Discharge Permit for the White Mesa Mill* (July 31, 2017) ("Comment Ex.") at 1-3 (arguing that the mill has independent utility for the purpose of processing low-grade, regional ores); *id.* at 10-21 (observing that small mines with low-grade ore would not be economically viable without the mill); Energy Fuels Resources (USA) Inc., Reclamation Plan: White Mesa Mill, Blanding, Utah – Radioactive Materials License No. UT1900479, Revision 5.1B, p. 2-1 (Feb. 2018) ("Rec. Plan Rev. 5.1B").
[12] Comment Ex. 2 at iii (explaining that production will last for 15 years); *id.* at 1-1, 3-15 (same); *id.* at 3-18 (showing projected operating life of 15 years and phased reclamation schedule extending no more than 5 years beyond that); *id.* at 4-3 ("Based on the capacity of the tailings cells, the mill has a potential to operate 15 years."); Comment Ex. 3 at 1-2 ("The mill is planned to have a 2,000 tons-per-day capacity and a projected life of 15 years."); *id.* at 5-38 ("The area occupied by the proposed mill and tailing retention system (about 310 acres) would be committed until the life of the mill ends, about 15 years.").
[13] Comment Ex. 2 at 3-17 ("The tailings cells will be reclaimed sequentially as each cell is filled, beginning after about the fourth year of operation and every four years thereafter until termination of project operations.").
[14] Comment Ex. 4 at 11 (Table 3 showing "tailings placement period" beginning in 1980 for Cell 2, 1981 for Cell 1, and 1982 for Cell 3).

shuttered the mill and waited for prices to rise.[15] This pattern has continued ever since. An ore-processing "campaign" is run when yellowcake is fetching a good price, and then the mill lapses into "standby" when the price of yellowcake falls.[16] Though nearly 40 years have passed, not one of the mill's waste pits has been fully reclaimed.

7. Ownership of the mill has been similarly tumultuous. Over the years, it has changed hands at least four times.[17] Today, a company called Energy Fuels, Inc., owns and operates the mill through subsidiaries. A subsidiary called Energy Fuels Resources (USA) Inc. holds the radioactive materials license for the mill.

8. The mill's business model has also changed over time, no doubt due to volatility in the uranium market. Around the early 1990s, Energy Fuels Nuclear began pursuing a new source of revenue by processing "alternate feeds" and discarding the resulting waste at the mill. These feeds include uranium-bearing wastes from other contaminated places around the country. In 1998, for example, Energy Fuels[18] was paid over $4 million to process and dispose of radioactive soil that was contaminated not only by the Manhattan Project, but also by other industrial and chemical ventures.[19] From these sorts of feeds, the waste pits at White Mesa now

[15] Comment Ex. 5 at 2–3; Comment Ex. 6; Comment Ex. 7.
[16] Comment Ex. 4 at 5 (showing "standby" periods in 1984, 1991–1994, 2000–2004, with minimal production in 1998 and 2005).
[17] Rec. Plan. Rev. 5.1B at 2-1.
[18] At the time, the mill was owned by a company called International Uranium (USA) Corporation. For simplicity's sake, this petition generally refers to the mill's prior owners as Energy Fuels.
[19] *See* Comment Ex. 11 at 1 (observing that Energy Fuels would be paid a fee of $4 million to process and dispose of the material, an amount that far exceeded the value of the yellowcake to be produced); *id.* at 3 (explaining that the soil was waste from uranium extraction affiliated with the Manhattan Project); *In re Int'l Uranium (USA) Corp. (source material license amendment, Ashland 1 material)*, NRC Docket No. 40-8681, 1998 WL 906787 at *4, n.1 (Dec. 2, 1998) (describing contamination of Ashland 2 site by activities in addition to the Manhattan Engineering District).

contain radioactive and contaminated wastes from rare-metals mining,[20] uranium-conversion plants,[21] and contaminated defense-related facilities,[22] among other sources.

C. Wastes Generated by and Discarded at the White Mesa Mill

9. Two main waste streams are generated at the mill by processing ore and alternate feeds. The first is a radioactive slurry of crushed, watered-down, acid-soaked, leftover feed material that is pumped out of the mill from a series of eight big tanks called the counter-current-decantation circuit. The second is a uranium-depleted solution, sometimes called raffinate or "process solution," that is discharged from solvent-extraction circuits. Both waste streams are pumped into the waste pits next to the mill.

10. When the mill first started running in about 1980, Energy Fuels pumped the waste slurry from the counter-current-decantation circuit into Cell 2. Since about the same time, Cell 1 has been used to get rid of raffinate wastes. By the mid-to-late 1980s, Cell 2 was full, or nearly full, of tailings and the company stopped sending the slurry to that cell (though it may have eventually topped off the cell with tailings as late as the mid-1990s).[23] But the company did not close or reclaim the cell. Instead, it kept burying trash and contaminated wastes in Cell 2 for about two decades.[24] Throughout that time, when the mill was running, Energy Fuels pumped the waste slurry from the counter-current-decantation circuit into Cell 3.[25] In 2008, Energy Fuels

[20] *See* Comment Ex. 12 at 2–3.
[21] *See* Comment Ex. 13 at 1.
[22] *See, e.g.*, Comment Ex. 14 at 1–4.
[23] *See, e.g.*, Comment Ex. 4 at 11 (Table 3); Comment Ex. 15 (aerial photograph of the mill taken in 1983 showing Cell 2 to be mostly full of tailings); Comment Ex. 16 at App. L p. 1 (asserting that "Cell 2 ceased receiving tailings in 1995").
[24] Comment Ex. 4 at 18.
[25] Comment Ex. 4 at 11 (Table 3).

rerouted the slurry into Cell 4A. Eventually, the company plans to pump that slurry into Cell 4B, which is now used to hold wastes siphoned from Cell 4A.

D. Source-Material and Byproduct-Material Licensing

11. To mill uranium, Energy Fuels is required to have a radioactive materials license issued by the Director that authorizes the company to possess and process "source material"—which generally means uranium ore—and to dispose of the waste "byproduct material"—or tailings—that the mill generates.[26] The Director is authorized to issue this license under state law, exercising authority delegated to the state by the U.S. Nuclear Regulatory Commission.

12. The main requirements for managing and disposing of tailings originate from a federal law passed in 1978 called the Uranium Mill Tailings Radiation Control Act. Congress found in UMTRCA that "uranium mill tailings located at active and inactive mill operations may pose a potential and significant radiation health hazard to the public" and sought to regulate tailings in "a safe and environmentally sound manner … to prevent or minimize radon diffusion into the environment and to prevent or minimize other environmental hazards from such tailings."[27] Radon is a gas that can cause lung cancer and other serious health impairments.[28] To comply with UMTRCA, the Nuclear Regulatory Commission set standards in 1980 for managing and reclaiming tailings.[29] They appear in 10 C.F.R. Part 40, Appendix A. The State of Utah has

[26] Utah Code § 19-3-104; Utah Admin. Code R313-19-2(1).
[27] 42 U.S.C. § 7901(a).
[28] *See* "National Emission Standards for Hazardous Air Pollutants: Standards for Radon-222 Emissions from Licensed Uranium Mill Tailings," 51 Fed. Reg. 34,056, 34,056–57 (Sep. 24, 1986).
[29] Uranium Mill Licensing Requirements, 45 Fed. Reg. 65,521 (Oct. 3, 1980).

adopted most of Appendix A by reference, but the State has substituted its groundwater-protection rules for those in Appendix A.[30]

E. Reclamation Requirements

13. To renew its radioactive materials license, Energy Fuels was required to submit a plan for closing and reclaiming the mill that meets Appendix A's technical and financial requirements.[31] The Director is to deny Energy Fuels' license application if the company fails to "clearly demonstrate how the requirements and objectives set forth in appendix A have been addressed…."[32]

14. Appendix A's goal is to secure "permanent isolation of tailings and associated contaminants by minimizing disturbance and dispersion by natural forces, and to do so without ongoing maintenance."[33] To that end, it sets standards for where to put tailings-disposal sites, designing and building those sites, gathering baseline environmental data before milling operations begin, protecting groundwater, monitoring and inspecting tailings-disposal areas, closing and reclaiming those areas, and minimizing air-quality impairments from milling.[34] Two types of financial guarantees are also required.[35] First, mill operators must arrange a financial surety before they start milling uranium that guarantees enough money will be available to

[30] *See* Utah Admin. Code R313-24-4 (adopting Appendix A by reference but replacing Criteria 5B(1) through 5(H), 7A and 13 with Utah's groundwater-quality-protection rules).
[31] *See* 10 C.F.R. § 40.31(h) (requiring uranium-milling applications to include written specifications for the disposition of byproduct material to achieve the requirements and objectives of 10 C.F.R. Part 40, Appendix A); Utah Admin. Code R313-24-4 (incorporating 10 C.F.R. § 40.31(h) by reference).
[32] 10 C.F.R. § 40.31(h).
[33] 10 C.F.R. Part 40, Appendix A, Criterion 1.
[34] *See* 10 C.F.R. Part 40, Appendix A, Criteria 1–8A.
[35] *See id.* at Criteria 9–10.

properly reclaim the mill and its wastes if the mill operator defaults on that obligation.[36] Second, mill operators must pay the state a fee that generates enough interest to pay for long-term site surveillance by the state or federal government after the mill closes.[37]

15. As soon as a tailings impoundment at a uranium mill "ceases operation," Appendix A requires mill operators to expeditiously build a "final radon barrier" over the impoundment "in accordance with a written, Commission-approved reclamation plan."[38] The final radon barrier must be designed to work for at least 200 years and to limit average releases of radon to 20 picocuries per square meter each second (20 pCi/(m^2-sec)).[39] Other hazards posed by tailings impoundments—such as contaminants leaching into the ground or groundwater—must be controlled, eliminated, or minimized.[40] And impoundments must be closed to minimize future maintenance, meaning that the cover must hold up to earthquakes, floods, freezing, precipitation, burrowing animals and deep-rooted plants, erosion, and nature's other onslaughts.[41] Deadlines—or "milestones"—for finishing the final radon barrier, retrieving windblown tailings, and stabilizing the tailings impoundment are to be established in a reclamation plan and as conditions of each mill's radioactive materials license.[42]

[36] *Id.* at Criterion 9.
[37] *Id.* at Criterion 10.
[38] *Id.* at Criterion 6A.
[39] *See* Appendix A, Criteria 6 & 6A. A picocurie (pCi) is one trillionth of one curie (Ci), which is a unit for measuring the intensity of radioactivity of a material. *See* U.S. Nuclear Regulatory Commission, "Curie (Ci)," "Picocurie (pCi)" *available at* http://www.nrc.gov/reading-rm/basic-ref/glossary.html.
[40] 10 C.F.R. Part 40, Appendix A, Criterion 6(7).
[41] *Id.* at Criterion 6(7).
[42] *See id.* at "Reclamation Plan" and Criterion 6A.

F. Reclamation Plan Revision 5.1B

16. The License issued on February 16, 2018, incorporates by reference Revision 5.1B of Energy Fuels' reclamation plan ("Revision 5.1B"). Plan Revision 5.1B describes how Energy Fuels intends to go about closing and reclaiming the mill and its waste impoundments.[43] This version of the reclamation plan reflects changes that Energy Fuels volunteered to make in response to public comments on the version of the plan that was put out for public comment, which was called Revision 5.1.

17. Under Revision 5.1B, Energy Fuels plans to build a monolithic evapotranspirative cover—often called an "ET cover"—to serve as the "final radon barrier" over most of the mill's impoundments.[44] According to the company, the ET cover has four layers: (1) 2.5′ of interim cover, which is dirt that Energy Fuels is supposed to place over the mill's waste pits while they are in use to help reduce radon emissions; (2) a 3–4′ primary radon-attenuation layer made of highly compacted loam and clay; (3) a 3.5′ "growth medium layer" that is intended to store water, deter biointrusion, protect the primary radon-attenuation layer from frost, and further reduce radon emissions; and (4) a 0.5′ erosion-protection layer composed of topsoil or topsoil-gravel mixture.[45] The basic idea behind this design is to use vegetation to absorb and remove precipitation from the cover through evapotranspiration so that rain and snowmelt do not seep through the tailings and eventually contaminate groundwater.

18. This design departs from the one Energy Fuels has had in place since the late 1990s.[46] That plan called for construction of a "conventional" cover that Energy Fuels designed

[43] *See generally* Rec. Plan Rev. 5.1B at 3-1 to 6-10.
[44] *See* Rec. Plan Rev. 5.1B at I-2, 3-4.
[45] Rec. Plan Rev. 5.1B at 3-4.
[46] Comment Ex. 20; *id.* at 3-15.

in 1996 and the Nuclear Regulatory Commission approved sometime in the ensuing few years. That cover design would use a compacted clay layer placed on top of the interim cover to repel water infiltration into the tailings and it would be topped with rocks, rather than vegetation, to prevent erosion. From the bottom up, the cover would have a one-foot clay layer, two feet of compacted random fill, and 3 to 8″ of rock "armor" on the top and sides.[47]

19. Energy Fuels abandoned the 1996 conventional-cover design principally because research and modelling show that more water is likely to infiltrate into conventional covers than ET covers.[48] In 2010, to help develop Revision 5.1 of the reclamation plan, the company modelled infiltration and contaminant-transport for four possible cover types—three evapotranspirative designs and the 1996 conventional cover design.[49] Based on that modelling, Energy Fuels concluded without equivocation that the conventional cover should be eliminated from further consideration "because the model predicted much higher rates of infiltration."[50]

20. Division staff are skeptical of that conclusion. They are worried that Energy Fuels will not be able to establish enough vegetation on the ET cover for evapotranspiration to adequately reduce water infiltration through the cover.[51] So, rather than finish covering Cell 2

[47] Comment Ex. 20 at 3-7.
[48] Comment Ex. 22 at E-5 ("[R]ecent advances in cover design technology have emphasized the construction of vegetated, monolithic ET covers for minimizing infiltration through engineered cover systems, particularly in arid and semiarid regions.").
[49] Comment Ex. 22 at E-1.
[50] Comment Ex. 22 at E-8.
[51] Division, *Public Participation Summary: Radioactive Material License UT1900479 Renewal, Ground Water Quality Discharge Permit UGW370004 Renewal, and Sequoyah Fuels Alternate Feed Request, Energy Fuels Resources (USA) Inc. (Energy Fuels) White Mesa Uranium Mill, San Juan County, Utah*, p. 204 (January 23, 2018) ("2018 Pub. Participation Summ."); Comment Ex. 23 at 8 ("The [Division] staff had a number of concerns with the proposed cover system and has worked with [Energy Fuels] through several rounds of interrogatories to resolve those concerns.

with the 1996 conventional design or Revision 5.1's evapotranspirative design, the Director and Energy Fuels agreed in a Stipulation and Consent Agreement—executed in February 2017, before the public-comment period on the License—to build two small test sections of the ET cover in the corner of Cell 2 and gather performance data from them for seven years.[52] If the test sections meet performance criteria (for how much precipitation seeps through the cover and how much vegetation grows on the cover), then Energy Fuels will finish building the ET cover on Cell 2.[53] If the test sections do not meet those criteria, Energy Fuels will have a chance to revise the design to the Director's satisfaction.[54] If the Director is ultimately unsatisfied with Energy Fuels' proposed design, then the Consent Agreement commits Energy Fuels to building the conventional cover on Cell 2.[55] And Reclamation Plan Revision 5.1B calls for the cover selected for Cell 2 to eventually be built on Cell 3, Cell 4A, possibly part of Cell 1, and on Cell 4B depending on what kind of wastes go in that cell.[56]

IV. The Trust's Arguments, How They Were Preserved, and Why the Director's Decision is Clearly Erroneous[57]

A. The Director's rejection of public comments on the tailings-cover design was clearly erroneous, failed to follow prescribed procedures, was contrary to agency rule, and was otherwise arbitrary and capricious.

21. In its comments on the proposed License, the Trust advocated numerous changes in the ET cover design, such as adding a capillary break to minimize leachate that could

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Unfortunately, [Energy Fuels] could not resolve all of staff's concerns from information available during the review process.").

[52] Comment Ex. 21 at 4–5.

[53] Comment Ex. 21 at 7.

[54] *Id.*

[55] *Id.*

[56] Rec. Plan Rev. 5.1B at 3-3 to 3-6, 5-1 to 5-2.

[57] *See* Utah Code §§ 19-1-301.5(6)(d)(v)(C), (D), (G) & (H); Utah Code § 63G-4-201(3)(a)(vi); Utah Admin. Code R305-7-203(3)(e)(iii)–(iv), (vii)–(viii).

contaminate groundwater, adding a composite barrier of compacted clay and a geomembrane beneath the evapotranspirative layers, and adding a biointrusion layer to deter burrowing into the cover.[58] The Trust also argued that the Director should require Energy Fuels to develop and carry out a functional monitoring plan to measure percolation through the final cover and monitor other cover properties to help diagnose future problems, such as excessive infiltration of precipitation into the tailings.[59] And the Trust asked the Director to revise the Consent Agreement so that it does not allow Energy Fuels to revert to the 1996 conventional cover design without updating the design.[60] The Trust preserved these arguments by raising them in its comments.[61]

22. The Director rejected all these comments.[62]

23. The Director's determinations rejecting those comments were clearly erroneous, failed to follow prescribed procedures, were contrary to agency rule, and were otherwise arbitrary and capricious. The Director foreclosed the opportunity for meaningful public comment on the tailings-cover design by making binding commitments in the Stipulation and Consent Agreement—executed several months before the public-comment period on the license—that committed the Director to approving the plan Energy Fuels proposed. The Director also erroneously concluded that he lacks authority to require changes to the tailings-cover design that are ostensibly "more stringent" than federal law calls for or "more stringent" than the

[58] Grand Canyon Trust, *Comments on the Proposed Renewal of Energy Fuels Resources (USA), Inc.'s Radioactive Materials License and Groundwater Discharge Permit for the White Mesa Mill*, pp. 29–32 (July 31, 2017) ("Trust Comments").
[59] *See* Trust Comments at 33.
[60] Trust Comments at 22–29.
[61] Trust Comments at 22–33.
[62] *See* 2018 Pub. Participation Summ. at 211–212, 241–264.

conventional-cover design that was previously approved in the 1990s by the Nuclear Regulatory Commission. And the Director clearly erred by retaining approval of the 1996 cover design even though the evidence before the Director did not "clearly demonstrate" that the 1996 cover would satisfy Appendix A's criteria.[63]

24. The Director and Energy Fuels entered into the Consent Agreement in February 2017, several months before the Director put the license and reclamation plan out for public comment.[64] The Director did not seek public comments on the Consent Agreement.

25. The Consent Agreement obliged Energy Fuels to construct two test sections of the ET cover as described in Reclamation Plan Revision 5.1 and monitor various performance criteria on those test sections for about seven years.[65] Energy Fuels had already built the "primary test section" by the time the Consent Agreement was executed and well before public comments on the cover design were solicited.[66] If the test sections satisfy the performance criteria laid out in the Consent Agreement, Energy Fuels will build the ET cover on Cell 2 using the design described in the Consent Agreement and Reclamation Plan Revision 5.1—all of which were worked out before any public comment was sought on the reclamation plan.[67] And if the test sections fail the performance criteria, and an impasse is reached between the Director and Energy Fuels on modifications to that design, the Consent Agreement obliges Energy Fuels to build the 1996 conventional-cover design.[68] Reclamation Plan Revision 5.1B, in turn, commits Energy

[63] *See* 10 C.F.R. 40.31(h).
[64] *See* Comment Ex. 21.
[65] Comment Ex. 21 at §§ D.2 to D.4.
[66] Comment Ex. 21 at § D.2(a).
[67] Comment Ex. 21 at §§ D.7(a) & D.8.
[68] Comment Ex. 21 at § D.7(b).

Fuels to using the same design approved via the Consent Agreement to cover not only Cell 2, but also Cell 3, Cell 4A, and possibly Cell 4B and part of Cell 1.[69]

26. In the Consent Agreement, the Director made a binding commitment to approve Reclamation Plan Revision 5.1, agreeing in Section C.11 that "[t]he Director will approve Reclamation Plan 5.1 (the 'Approved Reclamation Plan') upon completion of a public notice and comment period, and in conjunction with and conditional upon the execution and delivery of this Agreement by [Energy Fuels] and the Director."[70]

27. Although this commitment allowed the Director to complete a public notice and comment period, it did not reserve to the Director any right to modify the Consent Agreement to account for public comments on the proposed reclamation plan. And other commitments in the Consent Agreement foreclosed the Director—absent Energy Fuels' consent—from agreeing to numerous comments that the Trust made on the Reclamation Plan.

28. The Director rejected or disagreed with every single comment the Trust raised about the reclamation plan.[71] The only changes to the reclamation plan that the Director has now accepted are those that Energy Fuels volunteered to make, and that were thus made with Energy Fuels' consent, consistent with the Consent Agreement.

29. Waste Management and Radiation Control Board rules provide that "[t]he Director shall give public notice of and provide an opportunity to comment on … [a] proposed major licensing action" for the type of license Energy Fuels holds.[72] To maintain its delegated

[69] Rec. Plan Rev. 5.1B at 3-3 to 3-6, at 5-1 to 5-2.
[70] Comment Ex. 21 at § C.11.
[71] 2018 Pub. Participation Summ. at 196–205, 208–212, 224–268.
[72] *See* Utah Admin. Code R313-17-2(1). Major licensing actions include "[p]ending issuance of a license renewal." *Id.* at R313-17-2(1)(a)(i)(B).

authority for regulating source and byproduct materials, the State of Utah must comply with numerous conditions in the Atomic Energy Act.[73] Among those conditions is a requirement that the State "provide procedures under State law which include … an opportunity, after public notice, for written comments and a public hearing, with a transcript [and] *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."[74]

30. By making commitments without public comment to approve Reclamation Plan Revision 5.1, test the ET cover as proposed by Energy Fuels, and build either that cover or the 1996 cover depending on the performance test, the Director did not base his determinations about the Reclamation Plan "upon the evidence presented during the public comment period."[75] His determinations were made before the public comment period ever began. The Director thereby foreclosed any meaningful opportunity during the license proceeding to comment on the design of the cover as described in the reclamation plan incorporated into the License. His determinations on the Trust's comments were therefore clearly erroneous, failed to follow prescribed procedures, were contrary to agency rule, and were otherwise arbitrary and capricious.

31. The Director also erroneously concluded that it could not require Energy Fuels to update the 1996 conventional cover design or require Energy Fuels to develop and carry out a

[73] 42 U.S.C. § 2021(d), (j).
[74] 42 U.S.C. § 2021(o)(3)(A) (emphasis added).
[75] *Id.*

functional monitoring plan because those requirements would be "more stringent" than the requirements imposed by the Nuclear Regulatory Commission.[76]

32. These determinations were contrary to law, clearly erroneous, and an abuse of discretion. It is consistent with federal law—not more stringent than federal law—to require Energy Fuels to "clearly demonstrate" how the "requirements and objectives" of Appendix A of "have been addressed" in its reclamation plan, both for the ET cover and for the 1996 conventional cover, since the plan requires one or the other to be built.[77] It is also consistent with Appendix A to require post-closure monitoring, which will help minimize ongoing maintenance and improve protection of public health and the environment.[78]

33. State law prohibits only the Utah Waste Management and Radiation Control Board from adopting rules that are more stringent than corresponding federal regulations unless the Board finds that the federal regulations "are not adequate to protect public health and the environment of the state."[79] That does not prevent the Director from implementing license conditions that satisfy the standards in Appendix A. Rather, the Director is obliged when approving a license amendment and reclamation plan under State and federal law to ensure that tailings are disposed of in a manner that protects public health and the environment.[80]

34. The Director also clearly erred: (1) by relying solely on the Commission's prior approval of the 1996 cover to determine that the cover would meet Appendix A's requirements

[76] 2018 Pub. Participation Summ. at 55, 212.
[77] 10 C.F.R. § 40.31(h).
[78] *See* 10 C.F.R. Part 40, Appendix A, Criterion 6(7) ("The licensee shall ensure that disposal areas are closed in a manner that minimizes the need for further maintenance."); Criterion 12 ("The final disposition of tailings, residual radioactive material, or wastes at milling sites should be such that ongoing active maintenance is not necessary to preserve isolation."); Criterion 1.
[79] Utah Code § 19-3-104(7)–(8).
[80] *See* Utah Admin. Code R313-22-33; 10 C.F.R. Part 40, Appendix A; 10 C.F.R. § 40.31(h).

and; (2) by determining that Energy Fuels has a "vested right" to build that cover system.[81] The evidence before the Director did not "clearly demonstrate" that the 1996 cover would satisfy Appendix A's criteria. On the contrary, Energy Fuels' modelling showed that the conventional cover would allow much more precipitation to flow through the 1996 cover than the ET cover.[82] And the evidence before the Director reveals that the modelling performed in the 1990s to support the 1996 cover design is outdated and unreliable.[83] It used incomplete or obsolete data for seasonal temperatures, annual freezing index, the length of historic frost seasons, soil-moisture content, tailings porosity, cover-material porosity, radium-226 activity in the tailings, and other variables.[84] No analysis of how biointrusion would affect the 1996 cover's performance has ever been performed.[85] Whatever conclusion the Nuclear Regulatory Commission reached about the 1996 cover's performance when approving it twenty years ago is therefore obsolete and unreliable. The evidence before the Director thus did not "clearly demonstrate" that the 1996 cover could meet Appendix A's requirements. It was clear error to approve the use of that cover design without updating the analysis underlying that design.

B. The Director clearly erred by failing to require milestones in Reclamation Plan Revision 5.1B for all tasks that are key to completing the final radon barrier.

35. Reclamation Plan Revision 5.1B lacks several impoundment-closure milestones that the plan is required to have. Appendix A mandates that reclamation plans have "milestones that are key to the completion of the final radon barrier…."[86] At a minimum, milestones must be

[81] 2018 Pub. Participation Summ. 54–55, 211, 242, 244–245, 252, 254.
[82] Comment Ex. 22 at E-7 (predicting an infiltration rate of 0.0092 cm/day for the conventional cover and a range of 0.00012 cm/day to 0.000031 cm/day for the evapotranspirative covers).
[83] Trust Comments at 25–28.
[84] *Id.*
[85] *Id*. at 27.
[86] 10 C.F.R. Part 40, Appendix A, "Reclamation Plan" & Criterion 6A.

established for retrieving windblown tailings, stabilizing the impoundment (including removing freestanding liquids, recontouring, and dewatering), and finishing the final radon barrier.[87] Milestones are not flexible goals. They are "an action or event that is required to occur by an enforceable date."[88]

36. Appendix A supplies procedural safeguards in Criterion 6A(2) to make sure that extensions of milestones are granted only for a good reason and to protect public health and the environment during periods of delay. Extensions may be granted only after an opportunity for public participation, only if radon levels are measured and are below 20 pCi/(m^2-sec) during the period of delay, and if an extension is sought based on cost, only after the Director makes additional findings.[89]

37. In response to the Trust's comments about reclamation milestones submitted during the public-comment period, Energy Fuels tendered changes to Section 6 of Plan Revision 5.1 to establish firm deadlines for removing freestanding liquids, recontouring, dewatering, and building layer 1 and layer 2 on conventional impoundments.[90] Energy Fuels established schedule commitments, rather than milestones, for other tasks, including placement of Layers 3 and 4 of the ET cover.[91] These schedule commitments are not subject to the procedural and other safeguards set out in Appendix A, Criterion 6A(2).[92]

38. In sur-reply comments solicited by the Director, the Trust argued that the Director should require Energy Fuels to establish milestones, not schedule commitments, for

[87] *Id.*
[88] 10 C.F.R. Part 40, Appendix A, "Milestone."
[89] 10 C.F.R. Part 40, Appendix A, Criterion 6A(2).
[90] Rec. Plan Rev. 5.1B at 6-1 to 6-7.
[91] Rec. Plan Rev. 5.1B at 6-5.
[92] Rec. Plan Rev. 5.1B at 6-1, 6-5.

placing Layers 3 and 4 of the ET cover.[93] The Trust preserved this argument by raising it in the Trust's initial comments and sur-reply comments on the proposed license renewal.[94]

39. The Director did not respond to this comment, aside from asserting that it considered sur-reply comments that were submitted.[95]

40. The Director's failure to require milestones for placing Layers 3 and 4 of the ET cover was clearly erroneous, contrary to law, and arbitrary and capricious. Milestones must be established in the reclamation plan for completing the "final radon barrier."[96] The "final radon barrier" is "the earthen cover (or approved alternative cover) over tailings or waste constructed to comply with Criterion 6 of [Appendix A] (excluding erosion protection features)."[97] Criterion 6 requires placement of an "earthen cover (or approved alternative)" over tailings or wastes that reduces the average radon release rate to 20 pCi/(m^2-sec).[98] Layers 1–4 of the ET cover (and Layers 1–3 of the conventional cover) are necessary to reduce radon emissions below 20 pCi/(m^2-sec).[99] Therefore, milestones must be established for placing Layers 3 and 4 of the ET cover.

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[93] Grand Canyon Trust, *Sur-reply Comments on the Proposed Renewal and Amendment of Energy Fuels Resources (USA), Inc.'s Radioactive Materials License and Groundwater Discharge Permit for the White Mesa Mill* pp. 7–8 (Nov. 17, 2017) ("Trust Sur-reply").
[94] Trust Comments at 16–20; Trust Sur-reply at 7–8.
[95] 2018 Pub. Participation Summ. at 83, 202.
[96] 10 C.F.R. Part 40, Appendix A, "Reclamation Plan" & Criterion 6A(1).
[97] 10 C.F.R. Part 40, Appendix A, "Final radon barrier."
[98] 10 C.F.R. Part 40, Appendix A, Criterion 6.
[99] *See, e.g.*, Comment Ex. 16 at App. C, Att. C.3, p. 2 (showing an exit flux of 20.18 pCi/(m^2-sec) through Layer 3 of the ET cover, which is identified in the radon-flux model as "Layer 4," i.e. the 107-cm thick "ET cover," and predicting the exit flux to fall to 20 pCi/(m^2-sec) only after accounting for all of the ET cover's layers, including the erosion-protection layer named "Layer 5" in the model); Comment Ex. 16 at 2 (describing Layer 3 of the ET cover as a secondary radon-attenuation layer and Layer 3 of the conventional cover (i.e. random fill) as a radon-attenuation layer).

C. The Director clearly erred by approving "voluntary" milestones for closing non-conventional impoundments rather than requiring those milestones by law.

41. In its comments, the Trust argued that milestones must be established in the reclamation plan for closing non-conventional impoundments at the mill.[100] Energy Fuels disputed that argument in its response to comments, but the company "voluntarily" agreed to include milestones in its reclamation plan for non-conventional impoundments.[101] In its sur-reply comments, the Trust argued again that milestones for non-conventional impoundments are required by law, and thus should not be deemed "voluntary" (and subject to later, voluntary revocation).[102] The Trust preserved this argument by raising it in the Trust's comments and sur-reply comments.[103]

42. The Director did not respond to the Trust's arguments in the sur-reply comments, but addressed and rejected the Trust's original comments on this subject.[104]

43. The Director's determination that milestones are not required for non-conventional impoundments is clearly erroneous, contrary to law, and arbitrary and capricious.

44. Appendix A requires that "[i]n disposing of waste byproduct material," uranium-mill licensees "shall place an earthen cover (or approved alternative) over tailings or wastes at the end of milling operations" in a way that meets various reclamation standards.[105] The term "byproduct material" under Appendix A means "tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material

[100] Trust Comments at 10–13.
[101] Energy Fuels Resources (USA), Inc., *Response to Public Comments on the White Mesa Mill Groundwater Discharge Permit and Radioactive Materials License*, pp. 30–31 (Oct. 23, 2017).
[102] Trust Sur-reply at 2–4.
[103] Trust Comments at 10–13; Trust Sur-reply at 2–4.
[104] 2018 Pub. Participation Summ. at 58–60, 208, 231.
[105] 10 C.F.R. Part 40, Appendix A, Criterion 6(1).

content…."[106] By its plain terms, Appendix A's definition of "byproduct material" includes everything that Energy Fuels puts in the cells at the mill: the mostly liquid raffinate wastes and the raffinate crystals that precipitate from those wastes, the semi-solid slurry from the counter-current-decantation circuit, tailings sands, and all the other uranium-milling wastes the company discards in the cells. It therefore includes the wastes remaining in non-conventional impoundments when they are taken out of operation.

45. Under Appendix A, Energy Fuels may forgo building a final radon barrier over the "byproduct materials" in non-conventional impoundments only if they are dug up and buried in another impoundment in a way that reduces the radium-226 concentration in the non-conventional impoundment's former footprint to the numeric thresholds set out in Criterion 6(6).[107] Once "final closure" of a non-conventional impoundment begins, milestones therefore must be triggered for building a final radon barrier over the residual byproduct material in that impoundment, and the only basis for not completing the final radon barrier according to those milestones is to clean up the impoundment to meet the radium-226 concentration limits.[108]

46. The Director's failure to require milestones for closing non-conventional impoundments at the mill and his approval of Reclamation Plan Revision 5.1B's description of milestones for non-conventional impoundments as voluntary is clearly erroneous, contrary to law, and otherwise arbitrary and capricious.

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[106] 10 C.F.R. § 40.4; Utah Admin. Code R313-24-4 (incorporating 10 C.F.R. § 40.4 by reference).
[107] *See* 10 C.F.R. Part 40, Appendix A, Criterion 6(6).
[108] *Id.*; *see also* 40 C.F.R. § 61.251(o) providing that the "[a]ctivities and milestones to be addressed" in reclamation plans "include … removal and disposal of non-conventional impoundments."

V. Permit Conditions to Which the Trust is Objecting and Modifications Requested[109]

47. The Trust objects to the renewal of the license in its entirety for having foreclosed a meaningful public comment opportunity on the reclamation plan, the approval of which is a precondition for renewing the license.[110] The Trust also objects to License Condition 13.1.AA, which incorporates Reclamation Plan Revision 5.1B into the License. The Trust requests that Plan Revision 5.1B be modified to redress the issues raised in this petition, including, but not limited to, adding milestones for placing Layers 3 and 4 of the ET cover, revising the milestones for closing non-conventional impoundments so that they are required by law, vacating approval of the 1996 cover design, and revising the plan to account for a new, objective and independent review by the Director of public comments on the plan.

VI. Claim for Relief[111]

48. In this proceeding, the Trust requests:

a. an order vacating the Director's decision to approve the permit order renewing the radioactive materials license for the White Mesa uranium mill (License No. UT1900479, Am. 8);

b. an order vacating—in whole or in part—the Stipulation and Consent Agreement dated February 23, 2017;

c. an order vacating approval of the 1996 conventional cover design;

d. an order remanding the license with instructions to undertake a new public-comment period on the license and ordering the Director to objectively and

[109] Utah Code §§ 19-1-301.5(6)(d)(v)(E) & (F); Utah Admin. Code R305-7-203(3)(e)(v)–(vi).
[110] 10 C.F.R. § 40.31(h).
[111] Utah Code § 19-1-301.5(6)(d)(v)(I); Utah Code § 63G-4-201(3)(a)(v); Utah Admin. Code R305-7-203(3)(e)(ix).

independently review comments on the reclamation plan, with instructions that any determinations flowing from this review be supported by substantial evidence and documented in the record;

e. a declaratory order that milestones are required for non-conventional impoundments;

f. an order requiring the Director to impose milestones for completing Layers 3 and 4 of the ET cover;

g. an order that the Director otherwise fulfill his obligations under state and federal law; and

h. any other or additional remedy the Executive Director deems appropriate.

Respectfully submitted this 15th day of March 2018.

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CERTIFICATE OF SERVICE

I hereby certify that on March 15th, 2018, I filed this Petition for Review by hand delivery and e-mail with the following:

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