



State of Utah

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Department of
Environmental Quality

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DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL

Rusty Lundberg
Acting Director

January 10, 2019

Scott A. Bakken
Energy Fuels Resources (USA) Inc.
225 Union Blvd. Suite 600
Lakewood, CO 80228

RE: Radioactive Material License Number UT 1900479 and Groundwater Discharge Permit
No. UGW370004: Cells 5A and 5B License and GWDP Amendment Request; Interrogatories

Dear Mr. Bakken:

On July 12, 2018, Energy Fuels Resources (USA) Inc (EFRI) submitted an application to amend Radioactive Materials License No. UT1900479 and Groundwater Discharge Permit No. UGW370004. The purpose of this amendment request was to build two new tailings impoundments known as 5A and 5B. The Division of Waste Management and Radiation Control staff have reviewed this amendment request and have prepared the attached interrogatories.

If you have any questions, please call Russ Topham at (801) 536-4256.

Sincerely,

Rusty Lundberg, Acting Director
Division of Waste Management and Radiation Control

RL/RMJ/kb

Enclosure: Cells 5A/5B Interrogatories Final (DRC-2019-000273)

c: Kirk Benge, Health Officer, San Juan Public Health Department
Rick Meyer, Environmental Health Director, San Juan Public Health Department
Scott Hacking, P.E., DEQ District Engineer
Logan Shumway, Manager, Energy Fuels White Mesa Uranium Mill

DRC-2019-000271

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**STATE OF UTAH
DEPARTMENT OF ENVIRONMENTAL QUALITY**

First Round Interrogatories

Impoundments 5A/5B

Energy Fuels Resources (USA) Inc.
White Mesa Uranium Mill

**Utah Division of Waste Management and Radiation Control
1/1/2019**

An Amendment Request to Radioactive Material License UT 1900479 and Utah Groundwater Discharge Permit UGW 370004, to approve addition of Impoundments 5A and 5B

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Glossary of Terms

Below is a list of words, terms, and acronyms used for this licensing action. These words, terms and acronyms are based on regulatory, technical and industry definitions and are not always the same definition found in dictionaries and other common reference sources. The definitions that come from regulatory sources are the required definitions the Utah Division of Waste Management and Radiation Control Staff (the Division, or Staff) use. When appropriate, photographs were added to provide context to the definition.

11e.(2) - Refers to the paragraph in the Atomic Energy Act (AEA) of 1954, as amended which defines source material and byproduct material.

11e.(2) Byproduct Material - As stated in the AEA “The term "byproduct material" means...(2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.” 11e.(2) byproduct material generated at in-situ leach (ISL) uranium recovery facilities is sometimes referred to as ISL byproduct material or ISL decommissioning debris. NRC does not refer to 11e.(2) material as waste. Therefore, this document will *not* refer to 11e.(2) byproduct material as waste. Such a reference would be inappropriate since 40 CFR (EPA regulations) contains a specific definitions of various classes of waste (e.g., solid waste, hazardous waste, non-hazardous waste) that differ substantially from this definition, and 11e.(2) byproduct material cannot be disposed as any of these classes of waste. Furthermore, the definition of radioactive waste reported below specifically excludes 11e.(2) byproduct material.

ALARA - An acronym that stands for As Low As Reasonably Achievable. In the Utah Administrative Code (UAC) R313-12-3 ALARA is defined as “making every reasonable effort to maintain exposures to radiation as far below the dose limits as is practical, consistent with the purpose for which the licensed or registered activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed or registered sources of radiation in the public interest.”

Agreement State - As defined in UAC R313-12-3 “Any State with which the Nuclear Regulatory Commission has entered into an effective agreement under subsection 274b. of the Atomic Energy Act of 1954, as amended.” (Also found in 10 CFR 40.4)

Atomic Energy Act of 1954 - Also known by the acronym AEA. The Act requires that civilian uses of nuclear materials and facilities be licensed, and it empowers the NRC to establish by rule or order, and to enforce, such standards to govern these uses as "the Commission may deem necessary or desirable in order to protect health and safety and minimize danger to life or property." Under section 274 of the Act, the NRC may enter into an agreement with a State for discontinuance of the NRC's regulatory authority over some materials Licensees within the State.

The State must first show that its regulatory program is compatible with the NRC's and adequate to protect public health and safety. The NRC retains authority over, among other things, nuclear power plants within the State and exports from the State. (NRC.gov)

Best Available Technology - R317-6-1 defines best available technology as the application of design, equipment, work practice, operation standard or combination thereof at a facility to effect the maximum reduction of a pollutant achievable by available processes and methods taking into account energy, public health, environmental and economic impacts and other costs

Committed Dose Equivalent - Also known by the acronym CDE. As defined in UAC R313-12-3 “means the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake”

Committed Effective Dose Equivalent - Also known by the acronym CEDE. As defined in UAC R313-12-3 “is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to each of these organs or tissues.”

Conventional Impoundment - 40 CFR 61.125 defines a conventional impoundment as a permanent structure located at any uranium recovery facility which contains mostly solid uranium byproduct material or tailings from the extraction of uranium from uranium ore. This feature is distinguished from a non-conventional impoundment, which is defined below.

Deep Dose Equivalent - Also known by the acronym DDE. As defined in UAC R313-12-3 “which applies to external whole body exposure, means the dose equivalent at a tissue depth of one centimeter (1000 mg/cm²).”

Director - As defined in UAC R313-12-3 “means the Director of the Division of Waste Management and Radiation Control.”

Dose - As defined in UAC R313-12-3 “is a generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent.” For purposes of this document, "radiation dose" is an equivalent term.

DOT - As defined in 49 CFR 171.8, as incorporated by reference in UAC R313-19-100, “means U.S. Department of Transportation”

Effective Dose Equivalent - Also known by the acronym EDE. As defined in UAC R313-12-3 “means the sum of the products of the dose equivalent to each organ or tissue (H_T), and the weighting factor (w_T) applicable to each of the body organs or tissues that are irradiated.”

ER - Acronym for the Environmental Report for the White Mesa Uranium Project written by Dames and Moore for Energy Fuels Nuclear, Inc. in January 1978.

FES - Acronym for the Final Environmental Statement for the White Mesa Uranium project written by the NRC in May 1979. (NUREG-0556)

Half-life (radiological) - From the glossary on nrc.gov. “The time required for half the atoms of a particular radioisotope to decay into another isotope. A specific half-life is a characteristic property of each radioisotope. Measured half-lives range from millionths of a second to billions of years, depending on the stability of the nucleus. Radiological half-life is related to, but different from, the biological half-life and the effective half-life.

IAEA - Means International Atomic Energy Agency.

ISL - An acronym that stands for the In Situ Leach facility. These facilities are also known as In Situ Recovery facility (ISR). According to NRC.gov, ISL/ISR facilities are another type of uranium recovery facility (11e.(2) facility) that according to the NRC.gov “recover uranium from low-grade ores where other mining and milling methods may be too expensive or environmentally disruptive. This method uses the following process, as illustrated in the figure to the right [The referenced figure appears along with the quoted narrative on NRC.gov, but has been omitted here.]:

1. A solution called lixiviant (typically containing water mixed with oxygen and/or hydrogen peroxide, as well as sodium carbonate or carbon dioxide) is injected through a series of wells into the ore body to dissolve the uranium.
2. The lixiviant is then collected in a series of recovery wells, through which it is pumped to a processing plant, where the uranium is extracted from the solution through an ion-exchange process.
3. The uranium extract is then further purified, concentrated, and dried to produce a material, which is called “yellowcake” because of its yellowish color.
4. Finally, the yellowcake is packed in 55-gallon drums to be transported to a uranium conversion facility, where it is processed through the stages of the nuclear fuel cycle to produce fuel for use in nuclear power reactors.”

The White Mesa Mill takes 11e.(2) material from these facilities and disposes the material directly in to the conventional (tailings) impoundments.

License - Also known by the acronym RML (Radioactive Material License). As defined in UAC R313-12-3 “means a license issued by the Director in accordance with the rules adopted by the Board.”

Licensee - As defined in UAC R313-12-3 “means a person who is licensed by the Department in accordance with these rules and the Act.”

Licensed Material - As defined in UAC R313-12-3 “means radioactive material, received, possessed, used or transferred or disposed of under a general or specific license issued by the Director.”

MILDOS-AREA - A computer code developed by Argonne National Laboratory. It is used to estimate the radiological impacts from airborne emissions from uranium milling facilities. The code is used by license applicants and U.S. Nuclear Regulatory Commission or Agreement State staff to perform routine radiological impact and compliance evaluations for various uranium recovery operations. (Argonne, 2017)

Mill - Means the White Mesa Uranium Mill.

Monitoring - As defined in UAC R313-12-3 “means the measurement of radiation, radioactive material concentrations, surface area activities or quantities of radioactive material, and the use of the results of these measurements to evaluate potential exposures and doses. For purposes of these rules, radiation monitoring and radiation protection monitoring are equivalent terms.”

Natural Uranium - As defined in 49 CFR 173.403, as incorporated by reference in UAC R313-19-100, “means uranium (which may be chemically separated) containing the naturally occurring distribution of uranium isotopes (approximately 99.28% uranium-238 and 0.72% uranium-235 by mass).” From the glossary at nrc.gov: “Uranium containing the relative concentrations of isotopes found in nature (0.7 percent uranium-235, 99.3 percent uranium-238, and a trace amount of uranium-234 by mass). In terms of radioactivity, however, the radiation emitted by natural uranium comes approximately 2.2 percent from uranium-235, 48.6 percent from uranium-238, and 49.2 percent from uranium-234. Natural uranium can be used as fuel in nuclear reactors.”

NESHAP - An acronym that stands for National Standards for Hazardous Air Pollutants (40 CFR Part 61). Subpart W is the National Emission Standards for Radon Emissions from Operating Mill Tailings. These standards are part of the Mill’s Air Approval Order issued by the Utah Division of Air Quality.

Non-conventional impoundment - 40 CFR 61.125 defines a non-conventional impoundment as an impoundment used for managing liquids from uranium recovery operations and contains uranium byproduct material or tailings suspended in and/or covered by liquids. These structures are commonly known as holding ponds or evaporation ponds and can be located at any uranium recovery facility. They are typically not permanent structures unless they transition to become used as conventional impoundments. Impoundments constructed for the purpose of managing liquids from closure or remediation activities (e.g., contaminated groundwater), and which are used solely for that purpose, are not subject to the requirements of 40 CFR Part 61 Subpart W.

Note that the function of non-conventional impoundments is fluid management, and any tailings introduced therein, if any, will be of a negligible quantity.

Nuclear Regulatory Commission - Also known by the acronym NRC. The NRC was established by the Energy Reorganization Act of 1974. The NRC is assigned the regulatory and licensing responsibilities for the civilian uses of nuclear materials and facilities. (NRC.gov)

Occupational Dose - As defined in UAC R313-12-3 “means the dose received by an individual in the course of employment in which the individual's assigned duties for the Licensee or registrant involve exposure to sources of radiation, whether or not the sources of radiation are in the possession of the Licensee.”

Operation - There are two definitions of operation:

1. As defined by 10 CFR 40 Appendix A as is incorporated by reference in UAC R313-24-4 “means that a uranium or thorium mill tailings pile or impoundment is being used for the continued placement of byproduct material or is in standby status for such placement. A pile or impoundment is in operation from the day that byproduct material is first placed in the pile or impoundment until the day final closure begins.”
2. As defined by 40 CFR 61 subpart W (NESHAP) “means that an impoundment is being used for the continued placement of uranium byproduct material or tailings or is in standby status for such placement. An impoundment is in operation from the day that uranium byproduct material or tailings are first placed in the impoundment until the day that final closure begins.

Ore - In the September 22, 1995, Federal Register Vol. 60 No. 184 pg. 49296 the NRC defined ore as: “Ore is a natural or native matter that may be mined and treated for the extraction of any of its constituents or any other matter from which source material is extracted in a licensed uranium or thorium mill.”

OSL Badges -OSL is an acronym for optically stimulated luminescence. These dosimetry badges are made by Landauer. The Mill uses these badges to measure exposure to gamma radiation for occupational dose and environmental/public dose calculations.

Perched Aquifer - From the Underground Storage Tank Site Guide Glossary at EPA.gov. “A lens of saturated soil above the main water table that forms on top of an isolated geologic layer of low permeability.”

Pico - From the glossary at nrc.gov. “A prefix that divides a basic unit by one trillion (10^{-12}). For example picocurie (pCi). $1.00E-12 = 0.000000000001$.

Public Dose - As defined by UAC R313-12-3 “means the dose received by a member of the public from exposure to radiation or to radioactive materials released by a Licensee, or to any other source of radiation under the control of a Licensee or registrant. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive material and released in accordance with Rule R313-32, or from voluntary participation in medical research programs.” As per R313-15-301 a member of the public may not receive more than 0.1 rem or 100 mrem from a licensed facility.

Quality factor - As defined in UAC R313-12-3 “means the modifying factor, listed in Tables 1 and 2 of Section R313-12-20 that is used to derive dose equivalent from absorbed dose.”

Rad - As defined in UAC R313-12-3 “means the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 erg per gram or 0.01 joule per kilogram.”

Radiation - As defined in UAC R313-12-3 “means alpha particles, beta particles, gamma rays, x-rays, neutrons, high speed electrons, high speed protons, and other particles capable of producing ions. For purposes of these rules, ionizing radiation is an equivalent term. Radiation, as used in these rules, does not include non-ionizing radiation, like radiowaves or microwaves, visible, infrared, or ultraviolet light.”

Radiation Area - As defined in UAC R313-12-3 “means an area, accessible to individuals, in which radiation levels could result in an individual receiving a dose equivalent in excess of 0.005 rem (5 mrem), in one hour at 30 centimeters from the source of radiation or from a surface that the radiation penetrates.’

Radiation Level - As defined in 49 CFR 173.403, as incorporated by reference in UAC R313-19-100, “means the radiation dose-equivalent rate expressed in millisieverts per hour or mSv/h (millirems per hour or mrem/h). It consists of the sum of the dose-equivalent rates from all types of ionizing radiation present including alpha, beta, gamma, and neutron radiation.”

Radiation Safety Officer - As defined in UAC R313-12-3 “means an individual who has the knowledge and responsibility to apply appropriate radiation protection rules and has been assigned such responsibility by the Licensee.”

Radioactive Material - As defined in UAC R313-12-3 “means a solid, liquid, or gas which emits radiation spontaneously.” In addition, as defined in 49 CFR 173.403, as incorporated by reference in UAC R313-19-100, “means any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in the table in § 173.436 or values derived according to the instructions in § 173.433.”

Radioactivity - As defined in UAC R313-12-3 “means the transformation of unstable atomic nuclei by the emission of radiation.”

Rem - As defined in UAC R313-12-3 “means the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rem is equal to the absorbed dose in rad multiplied by the quality factor.”

Restricted Area - As defined in UAC R313-12-3 “means an area, access to which is limited by the Licensee for the purpose of protecting individuals against undue risks from exposure to sources of radiation.”

SERP Committee - SERP is an Acronym for Safety and Environmental Review Panel. This committee is required by License Condition 9.4. At a minimum the committee is comprised by someone from Mill management, someone from Operations and the Radiation Safety Officer. This committee is to evaluate any changes to the facility or its processes, changes to procedure and/or conduct tests or experiments to determine if these changes meet applicable regulations, do not degrade environmental and safety commitments and are consistent with approved Mill operations.

SHPO - An acronym that stands for the State of Utah’s State Historic Preservation Office. According to their webpage their job is to “State and federal agencies that undertake projects must “take into account” how their project activities will affect historic and archaeological resources”

Site Boundary - As defined in UAC R313-12-3 “means that line beyond which the land or property is not owned, leased, or otherwise controlled by the Licensee or registrant.”

Source Material Milling - For this Licensing action this is known as Uranium Milling. As defined in UAC R313-12-3 “means any activity that results in the production of byproduct material as defined by (b) of "byproduct material".”

Source Material - (1)Uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of: (i) Uranium, (ii) thorium or (iii) any combination thereof. (10 CFR 40.4)

Source of Radiation - As Defined in UAC R313-12-3 “means any radioactive material, or a device or equipment emitting or capable of producing ionizing radiation.”

Surety - The term used in this licensing action to describe the decommissioning funding plan that is required by UAC R313-22-35 for facilities that possess radioactive materials with half-lives greater than 120 days such as Uranium Mill facilities. R313-22-35(3)(h) requires Licensee’s surety to meet the applicable criteria found in the NRC document NUREG-1757, Volume 3, "*Consolidated NMSS Decommissioning Guidance: Financial Assurance, Recordkeeping, and Timeliness*" (9/2003). The Licensee is also required to follow the requirements found in the RML in License Condition 9.5.

Survey - Also known as Radiological Survey. As defined in UAC R313-12-3 “means an evaluation of the radiological conditions and potential hazards incident to the production, use, transfer, release, disposal, or presence of sources of radiation. When appropriate, such evaluation includes, but is not limited to, tests, physical examinations and measurements of levels of radiation or concentrations of radioactive material present.”

Total Effective Dose Equivalent- Also known by the acronym TEDE. As defined in UAC R313-12-3 “the sum of the effective dose equivalent for external exposures and the committed effective dose equivalent for internal exposures.” (TEDE=EDE+CEDE)

Total Organ Dose Equivalent - Also known by the acronym TODE. As defined in UAC R313-12-3 “means the sum of the deep dose equivalent and the committed dose equivalent to the organ receiving the highest dose. (TODE=DDE+CDE)

UAC - An acronym that stands for Utah Administrative Code. The Utah Administrative Code is the body of all effective administrative rules as compiled and organized by the State of Utah’s Office of Administrative Rules. The State of Utah’s Radiation Control Rules are found in Title R313 and the Ground Water Protection Rules are found in Title R317.

Units of Exposure and Dose - As defined by UAC R313-12-20(2)(b)&(c)(2) As used in these rules, the units of dose are:

(b) Rad is the special unit of absorbed dose. One rad is equal to an absorbed dose of 100 erg per gram or 0.01 joule per kilogram. One rad equals 0.01 Gy.

(c) Rem is the special unit of any of the quantities expressed as dose equivalent. The dose equivalent in rem is equal to the absorbed dose in rad multiplied by the quality factor. One rem equals 0.01 Sv.

Units of Radioactivity - As defined by UAC R313-12-40. For purposes of these rules, activity is expressed in the SI unit of becquerel (Bq), or in the special unit of curie (Ci), or their multiples, or disintegrations or transformations per unit of time.

Unrestricted Area - As defined by UAC R313-12-3 “means an area, to which access is neither limited nor controlled by the Licensee or registrant. For purposes of these rules, "uncontrolled area" is an equivalent term.”

Waste - As defined in UAC R313-12-3 “means those low-level radioactive wastes containing radioactive material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level radioactive waste means radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in paragraphs (b), (c), and (d) of the definition of byproduct material found in Section R313-12-3.”

Week - As defined in UAC R313-12-3 “means seven consecutive days starting on Sunday.”

Whole Body - As defined in UAC R313-12-3 “means, for purposes of external exposure, head, trunk including male gonads, arms above the elbow, or legs above the knees.”

Worker - As defined in UAC R313-12-3 “means an individual engaged in work under a license issued by the Director and controlled by a Licensee or registrant, but does not include the Licensee or registrant.”

Year - As defined in UAC R313-12-3 “means the period of time beginning in January used to determine compliance with the provisions of these rules.”

Yellowcake - From the glossary at nrc.gov. “The solid form of mixed uranium oxide, which is produced from uranium ore in the uranium recovery (milling) process. The material is a mixture of uranium oxides, which can vary in proportion and color from yellow to orange to dark green (blackish) depending on the temperature at which the material is dried (which affects the level of hydration and impurities), with higher drying temperatures producing a darker and less soluble material. Yellowcake was commonly referred to as U_3O_8 , because that chemical compound historically comprised the majority of the yellowcake produced by uranium recovery facilities utilizing conventional milling methods. Most modern uranium recovery facilities utilize in situ recovery methods and produce a yellowish compound comprised mostly of uranyl peroxide dihydrate. This material is then transported to a uranium conversion facility, where it is transformed into uranium hexafluoride (UF_6), in preparation for fabricating fuel for nuclear reactors.”

Introduction

With a cover letter dated July 12, 2018, Energy Fuels Resources (USA) Inc. (EFRI) submitted to the Utah Division of Wasted Management and Radiation Control (DWMRC) an application to amend the White Mesa Uranium Mill's Radioactive Materials License (RML) UT 1900476 and Groundwater Discharge Permit (Permit) UGW370004 in order to obtain permission from the Director of the DWMRC to construct and operate two new tailings impoundments according to State of Utah Administrative Code (UAC) R313-24-3(2).

Prior to submitting the application EFRI and the DWMRC met in a pre-license meeting to discuss the proposed project. This meeting occurred on April 12, 2018. In this pre-licensing meeting the following was discussed:

- The reason for the amendment (i.e. New Tailing Impoundment 5A/5B);
- What information will need to be provided
 - Topics
 - Regulatory requirements
- What needs to be included with the amendment request
 - Environmental Analysis
 - MILDOS-AREA Modeling
 - Archeological Survey - to be reviewed by State Historic Preservation Office (SHPO)
 - Engineering design
 - Reclamation Plan
 - Changes to the GWQDP
 - Changes to Standard Operating Procedures; Environmental Monitoring Plan, & etc.
- How to implement Tribal Consultation
 - Which Tribes need to be included:
 - White Mesa - Ute Mountain Ute and Navajo Tribes;

After the July 12, 2018 submittal was received by the DWMRC Staff, a Completeness review and a Technical review were performed. These reviews went as follows:

Staff Completeness Review

- The Completeness Review verified that:
 - All topics have been addressed;
 - All attachments have been included;
 - All figures, tables and maps referenced in the application and attachments have been included; and
 - All referenced documents are available to the Division.

The letter documenting the Completeness Review was sent to EFRI on August 10, 2018 (See Attached). DWMRC Staff then began the technical review of the July 12, 2018 submittal.

Staff Technical Review

- Section Manager assigned appropriate Staff for the formal review and determined:
 - Which expertise was needed for project (Engineering, Groundwater, and Health Physics); and
 - Who is project lead (the Engineer);
- Each Staff member assigned to the project read the application and submittals.
- Each Staff member assigned to the project compares each topic to the appropriate rules and regulation and guidance documents. Determine if:
 - The information provided in each topic meets the regulatory requirement;
 - The information provided meets the technical need for the project; and
 - The Environmental analysis for the application meets the regulatory requirement.
- Using the notes from each staff member, the interrogatories were written.

On August 27, 2018 EFRI submitted a Class III Cultural Resource Inventory for the 5A/5B Tailing Impoundments amendment request. This document identifies potential cultural resources within the boundary of the proposed tailings impoundments. On October 4, 2018 this document was forwarded by the DWMRC to SHPO for their review and concurrence. On October 5, 2018, SHPO sent the DWMRC a concurrence letter that they had received the document and would begin their technical review. The SHPO, the Licensee and Licensee's contractors/consultants will determine further actions that may be necessary to protect and preserve cultural resources within the proposed project impact area. Therefore, cultural resource issues are not and it that is being completed by SHPO.

A description of the format for the interrogatories is as follows:

INTERROGATORY STATEMENT:

The Interrogatory Statement identifies what additional information the Licensee needs to provide for the topic of the section. If the information provided by the Licensee is complete, by addressing the information required, then this section will state that the information provided is sufficient.

BASIS FOR INTERROGATORY:

If additional information is required, a justification is provided for the additional information. If the information provided by the Licensee is sufficient then this section provides a justification of why the information provided by the Licensee is complete.

APPLICABLE RULE(S) OR REGULATION(S):

The DWMRC will list the UAC and the Federal Regulations that apply to the section topic.

REFERENCES:

The DWMRC Staff will list and reference any document(s) used in the review of the section. These include but not limited to NRC Regulatory Guides, NRC NUREGs, the 11e.(2) RML License Conditions, DWMRC Forms and etc.

1. Proposed Activities

INTERROGATORY STATEMENT 1.0(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Licensee provided information on the proposal to build two new tailing impoundments, 5A/5B, which will be located in the same location and encompass the same area as the Tailings Impoundment 5 shown on the original site layout for the proposed tailing impoundments found in the 1978 Environmental Report.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

10 CFR 40.31(h) Application for Specific License

R313-24-4. Clarifications or Exceptions

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 *Application for Radioactive Material License, Section 6 Purpose For Which Licensed Material Will Be Used.*

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 1.0: Proposed Activities.*

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.1.1: Purpose and Need for the Proposed Action.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 1: Proposed Activities.*

2. Site Characterization

2.1 Site Location and Layout

INTERROGATORY STATEMENT 2.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The narrative description of the location and the use of maps and figures adequately document the Mill's location and layout.

APPLICABLE RULE(S) OR REGULATION(S):

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h) Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1 and 4

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01
Application for Radioactive Material License, Section 3 Storage Use and Location.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, *Section 2.1: Site Location and Layout.*

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, *Section 4.1: Site Characterization.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 2.1: Geography and Demography.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 2: 2.1 Site Location and Layout.*

2.2 Corporate Organization and Qualifications

INTERROGATORY STATEMENT 2.2(1):

Provide an updated corporate organizational chart and identify which corporate officers who are authorized to request changes to the RML.

BASIS FOR INTERROGATORY:

There have been several changes to the corporate organization since the February 2007 License Renewal Application. Therefore, an updated organizational chart is warranted.

APPLICABLE RULE(S) OR REGULATION(S):

R313-22-32 Filing Application for Specific Licenses.

R313-22-33(1)(a) General Requirements for the Issuance of Specific Licenses.

R313-24-4 Clarifications or Exceptions

10 CFR 40.31(h) Application for Specific Licenses

REFERENCES:

Division of Waste Management and Radiation Control Application for Radioactive Material License, Form DWMRC-01, Section 4 *Name of Person to be Contacted About this Application* and Section 13 *Certification*.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, *Section 4.1: Corporate Organization and Administrative Procedures*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills.

INTERROGATORY STATEMENT 2.2(2):

Provide documentation of the qualifications of the Radiation Safety Officer (RSO) and Radiation Safety Staff. This documentation may include but not limited to resumes and training certificates.

BASIS FOR INTERROGATORY:

The July 12, 2018 application for RML amendment stated that Mr. David E. Turk is the RSO for the White Mesa Mill and it references the February 2007 License Renewal Application for the documentation of his qualification. However, Mr. Turk is no longer employed by EFRI and the Mill has a new RSO and changes to its radiation safety staff. Therefore, the documentation of their qualifications needs to be updated.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-15-101. Radiation Protection Programs

R313-22-33(1)(a). General Requirements for Issuance of Specific License

REFERENCES:

Division of Waste Management and Radiation Control Application for Radioactive Material License, Form DWMRC-01, Section 7 *Individual(s) Responsible for Radiation Safety Program and their Training and Experience.*

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 4.4: *Qualifications for Personnel Conducting the Radiation Safety Program.*

U.S. Nuclear Regulatory Commission Regulatory Guide 8.31: Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities will be As Low As is Reasonably Achievable, Section 1.2 *Radiation Safety Officer* and Section 2.4. *Technical Qualifications of Health Physics Staff.*

2.3 Use of Adjacent Lands and Water

INTERROGATORY STATEMENT 2.3(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The numbers presented in Section 2.5 of the FES are outdated and probably don't represent current conditions. However, EFRI submitted a land use survey on June 25, 2018 that was reviewed by the DWMRC Engineering staff and found to be compliant with License Condition 12.3. This land use survey can be used to supplement what was provided in the License Amendment Application. The land use survey documents land ownership, groundwater wells and mineral extraction activities within a 5-km radius.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h) Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1, 5B and 8

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 12.3.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.1: *Site Location and Layout*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 4.1: *Site Characterization*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.1: *Land Use*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.1: *Geography and Demography*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.2 Uses of Adjacent Lands and Waters*.

2.4 Population Distribution and Socioeconomic Profile

INTERROGATORY STATEMENT 2.4(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section with the referenced tables and figures adequately describe the population distribution and socioeconomic profile. Table 2.3-1 gives the population and distance to the main populated areas within a 50-mile radius. This section also gives recent economic information.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1, 5B and 8

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 12.3.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.1: *Site Location and Layout*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.10: *Socioeconomic*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.1: *Geography and Demography*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.3 Population Distribution*.

2.5 Historic, Scenic and Cultural Resources (State Historic Office of Preservation Review)

INTERROGATORY STATEMENT 2.5(1):

The Licensee provided the necessary information. No further information is required at this time.

BASIS FOR INTERROGATORY:

The Licensee is working with SHPO and any interrogatories or additional requirements will be addressed through a different review. Any conclusions, recommendations, and changes from the cultural resource survey as determined by SHPO will be documented in the Division's Environmental and Technical review document.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40 Appendix A Criterion 7

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 9.7.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.2: *Historical Investigations*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.8: *Historic and Cultural Resources*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.4 Regional, Historic, Archeological, Architectural, Scenic, Cultural, and Natural Landmarks*

2.6 Geology and Soils

2.6.1 Regional Geology

INTERROGATORY STATEMENT 2.6.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section discusses the geology of the Canyonlands section of the Colorado Plateau physiographic province with referenced figures that adequately describe the regional geology.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 3, 4, and 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 1.0: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.3: *Geology and Soils*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.5 Geology and Soils*.

2.6.2 Local Geology

INTERROGATORY STATEMENT 2.6.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report adequately describes the local geology surrounding the Mill.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 3, 4, and 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 1.0: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.3: *Geology and Soils*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.5 Geology and Soils*.

2.6.3 Site-Specific Geology

INTERROGATORY STATEMENT 2.6.3(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section with the references the report titled *Hydrogeology of the White Mesa Uranium Mill and Recommended Locations of New Perched Wells to Monitor Proposed Cells 5A and 5B*, July 11, 2018 and provided this report as part of the amendment application in appendix B. This section also references figure 2.5-1 with the narrative provided in environmental report adequately describe the specific geology.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 3, 4, and 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 1.0: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.3: *Geology and Soils*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.5 Geology and Soils*.

2.6.4 Soils

INTERROGATORY STATEMENT 2.6.4(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

Section 2.8 FES and a geotechnical study of the proposed area of tailing impoundments 5A and 5B that was included in Section 2.4 of the Design Report found in Appendix D of the Amendment Application was referenced in this section and it adequately describes to soils at the site.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 3, 4, and 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.5: Soil.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 1.0: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.3: *Geology and Soils*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.5 Geology and Soils*.

2.7 Seismology

INTERROGATORY STATEMENT 2.7(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

Section 2.5 of 1978 ER, Section 2.7.3 FES and Section 1.6.3 of the Mill's Reclamation plan, Rev. 5.1B was referenced in this section of the Environmental Report and it adequately describes the seismology of the area.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 3, 4, and 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 1.0: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.3: *Geology and Soils*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.4: *Geology and Seismology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.6 Seismology*.

2.8 Hydrology

2.8.1 Ground Water

INTERROGATORY STATEMENT 2.8.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section with the references the report titled *Hydrogeology of the White Mesa Uranium Mill and Recommended Locations of New Perched Wells to Monitor Proposed Cells 5A and 5B*, July 11, 2018 and provided this report as part of the amendment application in appendix B. This section with the narrative provided in environmental report adequately describe the groundwater at the Mill.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

R317-6-6.3: Application Requirements for a Ground Water Discharge Permit

R317-6-6.9: Permit compliance Monitoring

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 10.21.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.7.1: *Groundwater Hydrology-Regional and Site Specific*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 4.1: *Site Characterization*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.4: *Water Resources*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.3: *Hydrology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.7.1 Ground Water*.

2.8.1.1 Perched Zone Hydrogeology (Site Specific)

INTERROGATORY STATEMENT 2.8.1.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section has a detailed discussion on the hydrogeology of the perched aquifer formation in the Burro Canyon Formation. This section also references the report titled *Hydrogeology of the White Mesa Uranium Mill and Recommended Locations of New Perched Wells to Monitor Proposed Cells 5A and 5B*, July 11, 2018 and provided this report as part of the amendment application in appendix B. This section also references figure 2.7-1 with the narrative provided in environmental report and report referenced adequately describe the Perched Zone Hydrogeology.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

R317-6-6.3: Application Requirements for a Ground Water Discharge Permit

R317-6-6.9: Permit compliance Monitoring

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 10.21.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.7.1: *Groundwater Hydrology-Regional and Site Specific*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 4.1: *Site Characterization*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.4: *Water Resources*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.3: *Hydrology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.7.1 Ground Water*.

2.8.1.2 Perched Groundwater Flow

INTERROGATORY STATEMENT 2.8.1.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section has a detailed discussion on the hydrogeology of the perched aquifer formation in the Burro Canyon Formation. This section also references the report titled *Hydrogeology of the White Mesa Uranium Mill and Recommended Locations of New Perched Wells to Monitor Proposed Cells 5A and 5B*, July 11, 2018 and provided this report as part of the amendment application in appendix B. This section also references figures 2.7-2 and 2.7-3 with the narrative provided in environmental report and report referenced adequately describe the Perched groundwater flow.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

R317-6-6.3: Application Requirements for a Ground Water Discharge Permit

R317-6-6.9: Permit compliance Monitoring

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 10.21.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.7.1: *Groundwater Hydrology-Regional and Site Specific*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 4.1: *Site Characterization*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.4: *Water Resources*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.3: *Hydrology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.7.1 Ground Water*.

2.8.2 Surface Water

INTERROGATORY STATEMENT 2.8.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

Section 2.6.2 of the 1978 ER and 2.6.1 of the FES and Section 1.4 of Rec Plan 5.1B were referenced in the Environmental Report and these sections adequately describe surface water conditions at the Mill site.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.7.2: *Surface Water Hydrology-Regional and Site Specific*.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 4.1: *Site Characterization*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.4: *Water Resources*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.3: *Hydrology*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.7.2 Surface Water*.

2.9 Climate and Meteorology

INTERROGATORY STATEMENT 2.9(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

As found in the 1978 ER and Section 5.2 of the current MILDOS model, the information is a little outdated but Section 1.1 of Rec Plan 5.1B which is also referenced does provide more recent data. The most recent windrows provided in Appendix C does give some more recent information. In addition the MILDOS evaluation also provides more recent data on Climate and Meteorology.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.3: Meteorology.

U.S. Nuclear Regulatory Commission NUREG 1620: *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, Section 4.1: Site Characterization.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.6: Meteorology, Climatology, and Air Quality.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 2.2: Meteorology.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2:2.8 Meteorology.

2.10 Ecology

INTERROGATORY STATEMENT 2.10(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

Section 2.8 of the 1978 ER and 2.9 of the FES and Section 1.7 of Rec Plan 5.1B were referenced in the Environmental Report and they provide a good narrative on the Ecology on the Mill site and surrounding area.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.5: Ecology.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 2: Site Characteristics.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 2: 2.9 Ecology.*

2.11 Background Radiological and Non-Radiological Characteristics

INTERROGATORY STATEMENT 2.11(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

Section 2.9 of the 1978 ER and 2.10 of the FES and 2007 ER were referenced in the Environmental Report and these sections document what the Background (baseline) radiological conditions were prior to Mill activity

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5 & 7

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 2.8: *Preoperational Monitoring*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.11: Public and Occupational Health*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 2: 2.10 Background Radiological Characteristics and 2.11 Background Nonradiological Characteristics*.

3. Design of Impoundments 5A and 5B

3.1 Impoundment Design

INTERROGATORY STATEMENT 3.1(1):

Indicate which of the two proposed liner systems is the preferred option. Demonstrate that the proposed liner constitutes best available technology.

BASIS FOR INTERROGATORY:

Two liner systems were proposed by EFRI, one consisting of three synthetic membranes and one of two synthetic membranes underlain by a geosynthetic clay layer. The option used in the design and construction of Impoundment 4B consisted of two synthetic liners with an underlying geosynthetic clay layer (GCL). The third artificial membrane in the alternative system included in the current proposal will function considerably differently than the GCL. Both systems proposed have advantages and disadvantages. Data are required to evaluate the operation of the two options and to determine, on a balance, which might satisfy the current definition of best available technology.

EFRI needs to select the best option based off a comparison matrix. EFRI needs to demonstrate which option is best available technology and defend the conclusion. If both designs are equivalent then please justify the option selected.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

R317-6-6.4.A.3 Issuance of Discharge Permit

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 *Application for Radioactive Material License, Section 11 Waste Management.*

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 3.3: *Design of Surface Impoundments.*

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 4.2: Liquids and Solids.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.*

INTERROGATORY STATEMENT 3.1(2):

If the two synthetic plus GCL layer option is selected, then resolve conflict between manufacturer specification and EFRI design.

BASIS FOR INTERROGATORY:

The specification for liner installation Option A (three synthetic membranes) calls for rock protrusions above the surface of the prepared subgrade of no more than 0.7 inch. The design report should clearly show that this standard comports with the manufacturer's recommendations for subgrade preparation. § 3.4.5.2, Secondary GCL Liner, of the Design Study Report, treats this topic while discussing the option using the GCL. On p. 16, in the first bullet, the Report states: "The puncture protection analysis of the GCL indicated that a 3 oz/yd² geotextile and 6 oz/yd² geotextile above and below (respectively) the GCL and a maximum subgrade protrusion height of ½- inch will provide puncture protection for the secondary HDPE geomembrane. The design analysis considers a 60-mil geomembrane placed directly on the subgrade which is more conservative than the GCL placed directly on the subgrade and beneath the 60-mil geomembrane." This addresses a 0.5-inch protrusion versus the 0.7-inch protrusion allowable under the proposed specification. This also includes a GCL. With these differences, this will not demonstrate the efficacy of a third membrane, absent a GCL, placed directly on a surface with 0.7-inch allowable protrusions.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

R317-6-6.4.A.3 Issuance of Discharge Permit

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 3.3: Design of Surface Impoundments.

U.S. Nuclear Regulatory Commission NUREG 1748: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section C1: Proposed Activities 4.2: Liquids and Solids.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.

INTERROGATORY STATEMENT 3.1(3):

As per regulatory requirements, please indicate between each phase of the impoundment use (construction, non-conventional use, conventional use and decommissioning) Director approval shall be obtained.

BASIS FOR INTERROGATORY:

Energy Fuels intends to construct the impoundments in sequence, as needed, to use the impoundments initially as nonconventional (fluid management) impoundments, and later convert them to conventional use (tailings plant-or in-situ leach-generated 11e.(2) byproduct material disposal) as needed. Director approval is required for each stage of the life cycle: planning, construction, service as a nonconventional impoundment, service as a conventional impoundment, and decommissioning.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-4. Clarifications or Exceptions

R317-6-6.4.A.3 Issuance of Discharge Permit

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 Application for Radioactive Material License, Section 11 Waste Management.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 3.3: Design of Surface Impoundments.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for In Situ Leach Uranium Extraction License Applications, NUREG 1569, Section 1.0: Proposed Activities.

U.S. Nuclear Regulatory Commission NUREG 1748: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section C1: Proposed Activities 4.2: Liquids and Solids.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.

INTERROGATORY STATEMENT 3.1(4):

Please revise the tailings dewatering forecast calculations to reflect updated information on tailings transmissivity included in the Tailings Data Analysis Report (2014) and any additional data obtained while installing piezometers in Impoundment 2 (2017) or monitoring those piezometers since installation.

BASIS FOR INTERROGATORY:

The slimes drain calculations bear a completion date of December 13, 2012. Energy Fuels has undertaken considerable work since that date to improve understanding of the characteristics, especially hydraulic transmissivity, of the tailings. The Design Study Report omits mention of this additional work. A portion of this additional work was presented in the Tailings Data Analysis Report (2014), and more data was gathered while installing piezometers in Impoundment 2 (2017). If the investigative work has resulted in a better understanding of the tailings performance, the design would benefit from that input. If not, a statement to that effect could be helpful.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

R317-6-6.4.A.3 Issuance of Discharge Permit

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 Application for Radioactive Material License, Section 11 Waste Management.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 3.3: Design of Surface Impoundments.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for In Situ Leach Uranium Extraction License Applications, NUREG 1569, Section 1.0: Proposed Activities.

U.S. Nuclear Regulatory Commission NUREG 1748: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section C1: Proposed Activities 4.2: Liquids and Solids.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.

INTERROGATORY STATEMENT 3.1(5):

The plan must fully address decommissioning, including incorporation of a fully-approved cover system.

BASIS FOR INTERROGATORY:

The decommissioning plan provided with the design refers to the evapotranspirative cover system currently under study but includes no reference to the currently approved cover system. Without an approved cover system in the decommissioning plan, the proposal cannot receive Director approval.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-4. Clarifications or Exceptions

R317-6-6.4.A.3 Issuance of Discharge Permit

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 Application for Radioactive Material License, Section 11 Waste Management.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 3.3: Design of Surface Impoundments.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for In Situ Leach Uranium Extraction License Applications, NUREG 1569, Section 1.0: Proposed Activities.

U.S. Nuclear Regulatory Commission NUREG 1620: Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978, Section 2.5: Disposal Cell Cover Engineering Design.

U.S. Nuclear Regulatory Commission NUREG 1748: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section C1: Proposed Activities 4.2: Liquids and Solids.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.

INTERROGATORY STATEMENT 3.1(6):

Cited standards should be complete and unambiguous.

BASIS FOR INTERROGATORY:

The construction specifications call out ASTM D 1557 without reference to which revision of the standard was intended. A complete reference should indicate which revision is required. The current revision is Revision 12e1. The specifications should reference this revision or such later revision as is in force at the time of construction.

The narrative calls for applying sufficient compactive energy to achieve 90% of ASTM D 1557. Higher compactive effort should lead to reduced settlement and greater structural integrity. However, this additional effort may not be warranted. Please discuss the rationale for selecting the 90% threshold for this specification.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-4. Clarifications or Exceptions

R317-6-6.4.A.3 Issuance of Discharge Permit

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 Application for Radioactive Material License, Section 11 Waste Management.

United States Nuclear Regulatory Commission (NRC): Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 3.3: Design of Surface Impoundments.

U.S. Nuclear Regulatory Commission NUREG 1748: Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section 4.2: Liquids and Solids.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.

3.2 Liner Compatibility

INTERROGATORY STATEMENT 3.2(1):

Provide information (data) on liner chemical compatibility with chloroform at the levels found in tailing impoundments

BASIS FOR INTERROGATORY:

The Design Study Report states that the design incorporates a liner selected for its resistance to chemical attack. The site has a chloroform plume currently under remediation. The remediation strategy for the chloroform plume includes directing the chloroform-laden water to a non-conventional impoundment.

The application package included a technical memorandum that addressed generally the liner compatibility issue (Tischler, 2018, included as Appendix E to Attachment A to the License Amendment Request), but the memorandum only addressed acids and metal salts. The memorandum was silent regarding compatibility with chloroform. Recognizing that chloroform plume remediation may continue during the active life of these impoundments, consideration of liner resistance to chloroform seems necessary.

According to manufacturer specifications, HDPE liners do not perform well with respect to chloroform. Monitoring results indicate the presence of chloroform in fluids in the impoundments. The observed concentrations are less than 100 parts per trillion (Denison Mines 2010a, 2010b and 2011). Please provide a technical justification for the use of HDPE with the observed concentrations of chloroform in the fluid to be retained.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4 & 5

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 *Application for Radioactive Material License, Section 11 Waste Management.*

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 3.0: Description and Design of Proposed Facility.*

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.3.12: Waste Management.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 4.2: Liquids and Solids.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 4: 4.1 Site Preparation and Construction.*

3.3 Modification of Restricted Area Boundary

INTERROGATORY STATEMENT 3.3(1):

Please describe how the new restricted area fence will be constructed (i.e. barbed wire or chain-link). Include the height and length of the new fence. Describe if a chain-link fence will be built around 5A/5B similar to 4A/4B. Document how the fence will deter human intruders and wildlife.

BASIS FOR INTERROGATORY:

In Section 3.3 of the Environmental Report EFRI states that the restricted area fence will be moved to the south. Details on the type and construction of the fence were not included.

APPLICABLE RULE(S) OR REGULATION(S):

R313-15-801 Security and Control of Licensed or Registered Sources of Radiation.

R313-24-3(1). Environmental Analysis

R313-24-4 Clarifications or Exceptions

10 CFR 40.31(h) Application for Specific Licenses

10 CFR 40 Appendix A Criterion 8

REFERENCES:

Utah Department of Environmental Quality, Division of Radiation Control, Form DRC-01 *Application for Radioactive Material License, Section 9 Facilities and Equipment.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section 5.4 *Security.*

U.S. Nuclear Regulatory Commission Regulatory Guide 8.31: Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities will be As Low As is Reasonably Achievable, Section 3.2 *Access Control.*

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 4.6:Security.*

4. Environmental Effects Related to Construction of Impoundments 5A and 5B

INTERROGATORY STATEMENT 4.0(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Licensee provided information on the proposal to build two new tailing impoundments 5A/5B, which will be in the same location as the original tailing Impoundment 5 documented in the original 1978 Environmental Report. The Division is not aware of additional environmental effects that have not been previously evaluated or addressed.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4, 5 & 8

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 5.0: *Operational Environmental Monitoring*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.4.13: *Waste Management Impacts*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 4: *Environmental Effects of Site Preparation, Mill Construction and Mine Opening*.

5. Environmental Effects Related to Operation of Impoundments 5A and 5B

5.1 Groundwater Pathway Impact

INTERROGATORY STATEMENT 5.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Licensee provided information on the proposal to build two new tailing impoundments 5A/5B, which will be in the same location as the original tailing Impoundment 5 documented in the original 1978 Environmental Report. The Division is not aware of additional environmental effects that have not been previously evaluated or addressed.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4, 5 & 8

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, 5.0: *Operational Environmental Monitoring*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.4.13: *Waste Management Impacts*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 5: *Environmental Effects of Mill and Mine Operation*.

5.2 Radiological Impact (MILDOS Dose Modeling)

INTERROGATORY STATEMENT 5.2(1):

The Licensee had not provided the MILDOS Dose Modeling at the time of these interrogatories. Therefore, any interrogatories associated with the modeling will be done in another interrogatory document.

BASIS FOR INTERROGATORY:

The Division has not received or reviewed this document.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4, 5 & 8

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 6.3: *Exposure Calculations*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.4.12: *Public and Occupational Health Impacts*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 5: *5.2 Radiological Impact on Humans*.

6. Effluent and Environmental Monitoring Programs

6.1 Proposed Additional Groundwater Monitoring

INTERROGATORY STATEMENT 6.1(1):

Conduct a well spacing model based on the proposed 5A/5B impoundments which simulates potential leaks from these proposed impoundments to ensure that a minimum 95% monitoring efficiency is achieved and that potential leaks will be timely detected.

BASIS FOR INTERROGATORY:

A meeting between EFR and Division of Waste Management and Radiation Control (DWMRC) representatives, regarding the upcoming proposal for tailings impoundments 5A and 5B was held in the DEQ office on April 12, 2018. During a portion of the meeting, issues related to the design of a groundwater monitoring network for the new impoundments were discussed. During the meeting, DWMRC discussed that the new monitoring wells need to show a 95% well efficiency based on well spacing modeling, taking into consideration local hydraulic parameters and potential small leaks from the tailings impoundment bottom on representative parts of the impoundment to ensure timely detection of contamination potentially released from the proposed new tailings impoundments. It was also discussed that current information regarding groundwater flow directions and the delineation of dry zones in the proposed impoundment construction area will need to be further clarified for the localized area of the proposed new impoundments.

Based on the April 12, 2018 meeting and the July 12, 2018 EFR Impoundment 5A/5B application, this portion of the interrogatory is to ensure that EFR has prepared and submitted adequate documentation, evaluation and modeling regarding groundwater monitoring requirements, groundwater flow and gradient descriptions required by groundwater rules and regulations.

In addition to the April 12, 2018 meeting, the subject of the well spacing analysis was discussed amongst DWMRC, EFR and Hydro Geo Chem representatives via conference call on June 7, 2018. Per that conference call EFR reported that a spacing analysis had been done previously for installation of monitoring well at the Mill tailings Impoundments 1 and 2.

EFR subsequently submitted the September 25, 2001 Hydro Geo Chem Monitoring Well Assessment Report and a cover letter written by Hydro Geo Chem via e-mail on June 11, 2018. Although not submitted with the subsequent EFR Request, the DWMRC review of the September 25, 2001 Assessment Report is included in this interrogatory to determine adequacy and completeness of the previously submitted document related to the Impoundments 5A/5B Request.

Previous DWMRC review of the September 25, 2001 Hydro Geo Chem Report was conducted, when the document was originally submitted, to evaluate the effectiveness of the monitoring well network at that time; and to evaluate potential improvements if additional wells were constructed between the existing tailings Impoundments 1 and 2. The EFR conclusion was that the existing network was adequate. Contrary to this, it was found by the Utah Division of Radiation Control

that additional monitoring wells were justified between existing tailings impoundments to ensure timely detection of a potential tailings wastewater release.

The 2001 evaluation uses a 3-dimensional finite difference numerical flow and transport model, TRACRN, developed at the Los Alamos National Laboratories. Based on current DWMRC review, DWMRC is concerned that model inputs should be re-evaluated to determine whether updated or more relevant information regarding hydraulic inputs could be used. This includes both field determined input criteria (e.g. Permeability) as well as criteria input based on cited literature (e.g. Dispersivity).

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4, 5 & 8

R317-6-6.3: Application Requirements for a Ground Water Discharge Permit

R317-6-6.9: Permit compliance Monitoring

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 10.21.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 5.2: *Operational Environmental Monitoring-Groundwater*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.4: *Water Resources*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.7.1 Ground Water*.

INTERROGATORY STATEMENT 6.1(2):

Provide revised figures for the Hydrological Report including the additional piezometers for Director review and approval.

BASIS FOR INTERROGATORY:

The basis for this interrogatory is the Division of Waste Management and Radiation Control (DWMRC) review of the Energy Fuels Resources (EFR) July 12, 2018 Request to Amend the White Mesa Uranium Mill (Mill) Radioactive Materials License (License No. UT1900479) and Groundwater Discharge Permit (Permit No. UGW370004). Specifically, this interrogatory is regarding issues related to the groundwater monitoring network for proposed new tailings impoundments 5A and 5B.

The EFR Request included a copy of the currently approved Hydrogeological Report for the Mill with inclusions related to the new impoundment construction and groundwater monitoring. The Hydrological Report was re-dated July 11, 2018. This is included as Appendix B of the EFR Request. Specifically, the revised Hydrogeological Report includes new figures 33, 34, 35, 36, 37, and 38 which are titled as below:

Figure 33 - Proposed Impoundments 5A and 5B (showing kriged Q4 2017 perched water levels and cross sections in proposed cell areas), White Mesa Site.

Figure 34 - Interpretive East-West Cross Section (WNW-ESE), Proposed Cell 5A/5B Area.

Figure 35 - Interpretive East-West Cross Section (W-E), Proposed Cell 5A/5B Area.

Figure 36 - Proposed Locations of Cells 5A and 5B (showing kriged Q4 2017 perched water levels and inferred perched water flow paths downgradient of the tailings management system).

Figure 37 - Proposed Locations of Cells 5A and 5B (showing kriged Q4 2017 perched water levels and inferred shortest flow path to closest discharge point), White Mesa Site.

Figure 38 - Proposed Locations of New Perched Wells to Monitor Proposed Cells 5A and 5B (showing kriged Q4 2017 perched water levels), White Mesa Site.

Per review of the Report Proposed Revised Figure 38 (Page 219 of 1327) it was noted that the proposed monitoring well locations do not include monitoring wells or groundwater head monitoring at the southeast corner of proposed impoundment 5B. One existing well, MW-17 is included on the east (upgradient) side of proposed impoundment 5B, however, this one well does not appear adequate to support the groundwater elevation contour lines in the area proposed 5B.

This issue was discussed during a conference call between DWMRC and EFR on September 10, 2018. It was agreed that two additional wells/piezometers would be installed in this area. Specifically, one piezometer would be proposed at the southwest corner of proposed impoundment 5B and another would be proposed east of impoundment 5B. Also per review of the Report Proposed Revised Figure 38 it was noted that a large “dry” area is plotted at the northwest corner area of proposed impoundment 5A. Per review, the extent of the

dry area is based on limited well data to delineate the area of the dry zone. Monitoring wells have not been proposed in this area based on the extrapolated extent of the dry zone. In order to verify that the dry zone is present in the area depicted, water level monitoring needs to be included in the groundwater monitoring network for this proposed impoundment.

A piezometer needs to be placed between existing monitoring well MW-33 and proposed monitoring well MW-41 to verify that the perched aquifer is dry in the plotted area. It is recommended that the piezometer be designed and installed to allow groundwater sampling in the event that groundwater is encountered at that location. Per September 10, 2018 telephone conference call between DWMRC and EFR, it was agreed that a piezometer needed to be included in this location.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4, 5 & 8

R317-6-6.3: Application Requirements for a Ground Water Discharge Permit

R317-6-6.9: Permit compliance Monitoring

REFERENCES:

State of Utah Radioactive Materials License UT1900479, License Condition 10.21.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 5.2: *Operational Environmental Monitoring-Groundwater*

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Section 5.3.4: *Water Resources*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 2: *2.7.1 Ground Water*.

6.2 Proposed Additional Operational Environmental Monitoring

INTERROGATORY STATEMENT 6.2(1):

Evaluate the need for an additional air monitoring station between BHV6 and the new proposed location of BHV4.

BASIS FOR INTERROGATORY:

The Mill proposes in Appendix G of the application to move BHV4 approximately 1 mile south-southwest from its current location. The placement of BHV4 is to be along the south-southwesterly windrose. The problem with this placement is there is no population to the South-southwest of the Mill and thus the placement and data will be valuable for an environmental assessment it would not be helpful in a public dose assessment. Therefore, there needs to be another air monitoring station between the proposed new location of BHV4 and BHV-6 to assess the windrose for the south-southeast and the public dose that might occur at the community of White Mesa.

APPLICABLE RULE(S) OR REGULATION(S):

R313-15-101 Radiation Protection Manual

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4 Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40 Appendix A Criterion 7

REFERENCES:

Division of Waste Management and Radiation Control Application for Radioactive Material License, Form DWMRC-01, Section 10 *Radiation Safety Program*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.5: Standard Format and Content of License Applications for Uranium Mills, Section 5.5 *Radiation Safety*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 6: 6.1.3 Air*.

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.6: Environmental Measurements and Monitoring Programs*.

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities, NUREG 2126, Section 5.3: Operational Airborne Monitoring*.

7. Accidents

7.1 Tornado

INTERROGATORY STATEMENT 7.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report references the Mill's Emergency response plan which is sufficient.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-22-32(8)(a). Filing Application for Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 8.0: Accidents.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 6: Accidents.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 7: *Environmental Effects of Accidents*.

7.2 Major Earthquake

INTERROGATORY STATEMENT 7.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report references the Mill's Emergency response plan which is sufficient.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-22-32(8)(a). Filing Application for Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 8.0: Accidents.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 6: Accidents.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 7: *Environmental Effects of Accidents*.

7.3 Tailings Accidents

7.3.1 Flood Water Breaching of Retention System

INTERROGATORY STATEMENT 7.3.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report references the Mill's Emergency response plan which is sufficient.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-22-32(8)(a). Filing Application for Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 8.0: Accidents.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 6: Accidents.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 7: *Environmental Effects of Accidents*.

7.3.2 Structural Failure of Tailings Dikes

INTERROGATORY STATEMENT 7.3.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report references the Mill's Emergency response plan which is sufficient.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-22-32(8)(a). Filing Application for Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 8.0: Accidents.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 6: Accidents.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 7: *Environmental Effects of Accidents*.

7.3.3 Seismic Damage to Transport System

INTERROGATORY STATEMENT 7.3.3(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report references the Mill's Emergency response plan which is sufficient.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-22-32(8)(a). Filing Application for Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 8.0: Accidents.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 6: Accidents.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 7: *Environmental Effects of Accidents*.

7.4 Terrorist and/or Bomb Threat

INTERROGATORY STATEMENT 7.4(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This section of the Environmental Report references the Mill's Emergency response plan which is sufficient.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d). General Requirements for issuance of Specific Licenses

R313-22-32(8)(a). Filing Application for Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 8.0: Accidents.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 6: Accidents.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 7: *Environmental Effects of Accidents*.

8. Cost and Benefits

INTERROGATORY STATEMENT 8.0(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Licensee provided information on the proposal to build two new tailing impoundments 5A/5B, which will be in the same location as the original tailing impoundment 5 documented in the original 1978 Environmental Report.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 1 & 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.7: Cost-Benefit Analysis.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 8: Economic and Social Effects of Mill Construction and Operation.*

9. Decommissioning, Reclamation and Long Term Impacts

INTERROGATORY STATEMENT 9.0(1):

Include the approved rock cover design for the cover system as per the stipulation agreement

BASIS FOR INTERROGATORY:

In the proposed changes to the reclamation plan documented in Appendix H of the Environmental Report. EFRI references the ET cover design only. The ET cover design is not the approved cover system for the tailing impoundments.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(b). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 4, 5 & 6

REFERENCES:

United States Nuclear Regulatory Commission (NRC): *Standard Review Plan for Conventional Uranium Mill and Heap Leach Facilities*, NUREG 2126, Section 7.0: *Reclamation and Decommissioning Plan*.

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills*, Section 5.5: *Radiation Safety*.

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills*, Chapter 9: *Decommissioning and Reclamation*.

10. Alternatives

INTERROGATORY STATEMENT 10.0(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The lists of alternatives listed in the Environmental Report were appropriate for the proposed action. EFRI proposed two different liner designs and the DWMRC Staff added optional liner designs as alternative engineering methods and moved it to alternatives considered.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternatives to the Proposed Action.*

10.1 Issuance of Amendment for Impoundments 5A and 5B

INTERROGATORY STATEMENT 10.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This is a possible action that could occur and is appropriate to have in the list of possible actions.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives..*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternatives to the Proposed Action.*

10.2 No Action Alternative

INTERROGATORY STATEMENT 10.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

This is a possible action that could occur and is appropriate to have in the list of possible actions.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternatives to the Proposed Action.*

10.3 Alternatives Considered But Eliminated

INTERROGATORY STATEMENT 10.3(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The list of alternatives listed but eliminated in the Environmental Report were appropriate for the proposed action. EFRI proposed two different liner designs and the DWMRC Staff added optional liner designs as alternative engineering methods and moved it to alternatives considered.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives..*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternatives to the Proposed Action.*

10.3.1 Consideration of Alternative Sites

INTERROGATORY STATEMENT 10.3.1(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Mill has been sited since 1978 and moving the Mill is not feasible. However, an alternate location for the tailing impoundments is a possibility but the DWMRC Staff has not identified a reason to move the tailing impoundments at the time of this review. License Condition 9.7 does consider the possibility of finding an alternate location if SHPO identifies a significant cultural resource in the proposed construction boundaries but nothing has been identified.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives..*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternatives to the Proposed Action.*

10.3.2 Consideration of Alternative Engineering Methods (Double Liner or Triple Liner)

INTERROGATORY STATEMENT 10.3.2(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Licensee considers this option as an eliminated consideration. However, the Licensee provided two different liner designs so the DWMRC Staff considers these as alternative engineering methods and would designate them as alternatives considered. Interrogatories with these designs would be found in Section 3 of this document.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternatives to the Proposed Action.*

10.4 Cumulative Effects

INTERROGATORY STATEMENT 10.4(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

A fifth tailings impoundment was considered in the original EIS for this uranium mill site. The 5A/5B designation is for compliance purposes with NESHAP regulation but the foot print is similar to the original proposal. The Mill has not changed its process and does not process any feed materials that have not been evaluated. Therefore the cumulative effects will not change from previous evaluations of this mill site and its processes.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(d & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5 & 7

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.8: Summary of Environmental Consequences.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 5: Environmental Effects of Mills and Mine Operation.*

10.5 Comparison of the Predicted Environmental Impacts

INTERROGATORY STATEMENT 10.5(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

A fifth tailings impoundment was considered in the original EIS for this uranium mill site. The 5A/5B designation is for compliance purposes with NESHAP regulation but the foot print is similar to the original proposal. The Mill has not changed its process and does not process any feed materials that have not been evaluated. Therefore the predicted environmental impacts will not change from previous evaluations of this mill site and its processes.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(b). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 5: Environmental Effects of Mills and Mine Operation.*

10.6 Updates & Changes to Factors That May Cause Reconsideration of Alternatives

INTERROGATORY STATEMENT 10.6(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

If SHPO identifies a significant cultural resource that would require the relocation of the proposed tailing impoundments, then there may need to be a reconsideration of alternate tailing impoundment locations.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(e & f). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.31(h). Application for Specific License

10 CFR 40.41(c). Terms and conditions of licenses

10 CFR 40 Appendix A Criterion 5A

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.2: Alternatives.*

U.S. Nuclear Regulatory Commission, Regulatory Guide 3.5: *Standard Format and Content of License Applications for Uranium Mills, Section 8: Evaluation of Alternatives..*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 10: Alternates to the Proposed Action.*

11. Environmental Approvals and Consultations

INTERROGATORY STATEMENT 11.0(1):

The Licensee provided the necessary information. No further information is required.

BASIS FOR INTERROGATORY:

The Environmental Report references the Mill's RML, Permit and Air Permit.

APPLICABLE RULE(S) OR REGULATION(S):

R313-24-1(3). Purpose and Authority

R313-19-2(2). General

R313-22-33(1)(c). General Requirements for issuance of Specific Licenses

R313-24-3(1). Environmental Analysis

R313-24-4. Clarifications or Exceptions

10 CFR 40.41(c). Terms and conditions of licenses

REFERENCES:

U.S. Nuclear Regulatory Commission NUREG 1748: *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, Section 5.1.4: Applicable Regulatory, Permits and Regional Consultations.*

U.S. Nuclear Regulatory Commission Regulatory Guide 3.8: *Preparation of Environmental Reports for Uranium Mills, Chapter 12: Environmental Approvals and Consultations.*

12. References

- Dames & Moore (1978) *Environmental Report White Mesa Uranium Project San Juan County, Utah for Energy Fuels Nuclear, Inc.*
- Denison Mines (USA), 2010a, *White Mesa Uranium Mill Groundwater Monitoring Report 1st Quarter 2010*. (DRC-2010-003272)
- Denison Mines (USA), 2010b, *White Mesa Uranium Mill Nitrate Monitoring Report 2nd Quarter 2010*. (DRC-2010-004829)
- Denison Mines (USA), 2011, *White Mesa Uranium Mill Chloroform Monitoring Report 4th Quarter 2010*. (DRC-2011-003369)
- Energy Fuels Resources. September 25, 2001. "Assessment of the Effectiveness of Using Existing Monitoring Wells for GWDP Detection Monitoring at the White Mesa Uranium Mill, Blanding, Utah." Resubmitted to DWMRC under separate cover letter dated June 8, 2018. (DRC-2018-013571)
- Energy Fuels Resources. July 12, 2018. "White Mesa Uranium Mill, Blanding, Utah, Radioactive Materials License No. UT1900479, Groundwater Discharge Permit No. UGW370004, Cells 5A and 5B License and GWDP Amendment Request." (DRC-2018-006864)
- Energy Fuels Resources Inc. (2018) *Energy Fuels Resources (USA) Inc., White Mesa Mill, Radioactive Materials License # UT1900479, Amendment 8, Condition 12.3, Bi-annual Land Use Survey Report*, (DRC-2018-006354)
- Energy Fuels Resources Inc. (2018) *Reclamation Plan, White Mesa Mill Blanding, Utah Radioactive Materials License No. UT1900479, Revision 5.1B*, (DRC-2018-001449)
- MWH Americas, Inc. *Energy Fuels Resources (USA) Inc. White Mesa Mill, Tailings Data Analysis Report*. October, 2014. (DRC-2014-006294)
- NRC (1979) *Final Environmental Statement related to operation of White Mesa Uranium Project San Juan County, Utah*, Office of Nuclear Material Safety and Safeguards, NUREG-0556