FEASIBILITY STUDY FOR BECOMING AN AGREEMENT STATE UNDER THE ATOMIC ENERGY ACT OF 1954 FOR THE REGULATION OF SOURCE MATERIAL RECOVERY AND 11E.(2) BYPRODUCT MATERIAL

Prepared for the State of Wyoming Pursuant to Enrolled Act No. 100

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STATE OF WYOMING AGREEMENT STATE FEASIBILITY STUDY EXECUTIVE SUMMARY

PREAMBLE

Pursuant to a services contract executed by and between Thompson & Pugsley, PLLC and the State of Wyoming in April of 2013, Thompson & Pugsley, PLLC is pleased to submit this feasibility study in accordance with the State of Wyoming's (the "State") House of Representatives Enrolled Act No. 100 (Enrolled Act) passed in the Sixty-Second Legislature of the State of Wyoming, 2013 General Session. Prior to engaging in active study of the methodology associated with becoming an Agreement State and the responsibilities associated with such an Agreement, the Preamble sets forth the scope of this feasibility study pursuant to the Enrolled Act and the manner in which the study's analysis will be conducted. Thompson & Pugsley, PLLC believes that the study format described below will provide the reader with a clear view of the process to become an Agreement State, the strategic decisions involved in that process, and an understanding of the regulatory issues and responsibilities associated with the maintenance of an Agreement State program after receiving approval from the United States Nuclear Regulatory Commission (NRC).

FEASIBILITY STUDY SCOPE

The State's Enrolled Act sets forth the parameters for conducting this feasibility study with respect to the types of Atomic Energy Act of 1954, ("AEA") as amended by the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), materials *and* operations for which the State potentially can seek Agreement State status under Section 274 of the AEA. Section 1 of the Enrolled Act specifically states that the feasibility study is intended to cover "the licensing of source material and source material recovery…."[1] The Enrolled Act's language implies that the intended scope of the feasibility study is focused on recovery of source material (either natural uranium and/or thorium in any form)[2] and the wastes associated with recovery of such source material from ores processed *primarily* for their source material content (i.e.; 11e.(2) byproduct material pursuant to UMTRCA). While source and 11e.(2) byproduct material are addressed in AEA Sections (11(z) and 11(e) respectively the process by which source material is recovered at AEA licensed uranium recovery facilities and the 11e.(2) byproduct material generated as a result of such uranium recovery operations are part of a class of AEA licensed operations that will be called "source material recovery/milling" in this feasibility study. These AEA operations are expressly recognized to encompass both the generation of the two aforementioned AEA materials at NRC licensed source material recovery mills as well as such materials generated in Section 274 Agreement States that have accepted authority.[3] Thus, it is Thompson and Pugsley,

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[1] Enrolled Act at Section 1 (Exhibit 1).

[2] As a practical matter, although the term "source material" includes both uranium and thorium, Thompson & Pugsley, PLLC assumes that this feasibility study will be addressing source material uranium recovery.

[3] Several examples of final Section 274 Agreements are included for reference purposes (Exhibit 2).

PLLC's conclusion that the intended scope of this feasibility study is to address *only* "source material recovery" and its related AEA materials (i.e.; "source material" and 11e.(2) byproduct material).

FEASIBILITY STUDY FORMAT

With that said, the feasibility study will address directly all parameters indicated in Section 1 of the Enrolled Act, and any other parameters that will provide insight into understanding the process to become an Agreement State and to operate and maintain an approved Agreement State program. These study parameters will be incorporated a three-tiered, process flow approach that addresses three distinct phases of the process.

DESCRIPTION OF FEASIBILITY STUDY ANALYTICAL CATEGORIES

The following discussion will outline the three-tiered, process flow approach recommended by Thompson & Pugsley, PLLC for the State to follow if it decides to pursue NRC Agreement State status. The three categories that will be utilized in this feasibility study are: (1) Applying for and Becoming an Agreement State; (2) Transition to Agreement State Status; and (3) Operation and Maintenance of Agreement State Status. Thompson & Pugsley, PLLC believes that this approach will be beneficial on a number of fronts including historical and factual information, budgetary analysis, and staffing.

HISTORICAL PREFACE

Prior to providing the foregoing process-flow breakdown of Thompson & Pugsley, PLLC's suggested approach for pursuing Agreement State status, the identified candidate AEA process of "source material recovery" and AEA material "11e.(2) byproduct material" currently are addressed by a robust regulatory program that has developed in great detail since the 1978 passage of UMTRCA. Over that thirty-five (35) year time period, NRC and its current Agreement States have developed a rather unique and comprehensive approach to regulating source material recovery facilities and interpreting such facilities' licenses. Given that the specifically identified purpose of the Enrolled Act and this feasibility study is to investigate the potential for becoming an Agreement State to eliminate dual jurisdiction issues between the State and NRC, a complete historical preface is provided.

The initial purpose of this historical preface is to provide the reader with a complete understanding of the scope of regulatory authority that the State is seeking to obtain from NRC. While the Enrolled Act mentions potential Agreement State jurisdiction over "source material" and "source material recovery," the explicit identification of resolving dual jurisdiction issues in the Enrolled Act only applies to "source material recovery." Based on this conclusion, this feasibility study has been developed to address only "source material recovery" facilities and the "source material" and 11e.(2) byproduct material generated at such facilities.

In order to properly understand the scope of this feasibility study and the regulatory framework generated by UMTRCA and NRC regulations over the past 35 years, this study's initial historical sections provide a complete discussion of the reasons behind UMTRCA's development and passage as it amends the AEA and the process by which NRC promulgated its initial, and later revised, source material recovery regulations and related guidance and other policy-based documents. While the substance of this Preface is to provide a historical frame of reference, there are several key points discussed in these sections that address items which the State will need to evaluate throughout the course of the Agreement State process, if it intends to proceed forward.

The AEA was passed first in 1946, and later amended in 1954, providing the then-Atomic Energy Commission (AEC) with authority to promote the peaceful use of atomic energy and, in part thereof, to issue licenses for source material recovery. To the contrary, NRC is an independent regulatory agency with the authority the review license applications and issue licenses for source material recovery, but it is not empowered to actively promote such activity. Being an independent regulatory agency, NRC is not directly subject to the substantive aspects of the National Environmental Policy Act (NEPA) (but rather the procedural aspects). Further, under its AEA-granted authority, NRC's licensing action review authority is limited to one of three possible outcomes: (1) approve, (2) approve with conditions or (3) deny. Since NRC can only act on license applications submitted to it (except in cases of imminent hazards), as a general proposition under the AEA, the licensee is primarily responsible for the safe and effective management of AEA materials and operations.

NRC's jurisdictional scope regarding the generation of source material is divided into two separate "intent-based" operations. The first operation where a generator of source material is not generating such material from ores *primarily* for the source material content, NRC's statutory mandate applies only to the source material generated and not to the wastes generated by such processes. Such source material is subject to a two-tiered regulatory approach, the first of which is whether the generated source material requires an AEA license at all. Section 62 of the AEA states that licenses shall not be issued for quantities of source material deemed to be unimportant. Accordingly, based on current NRC regulations, if a generator generates and possesses only "unimportant quantities," no AEA license is required.

Under the second tier of this regulatory approach, if more than "unimportant quantities" is generated, either a general or specific AEA license will be required. The former license type does not require an NRC or Agreement State license application other than the completion of a simple form and does not require compliance with a multitude of specific license requirements such as radiation protection and financial assurance. The latter license type requires a complete NRC or Agreement State license application following applicable agency guidance and compliance with all specific licensing requirements, including the aforementioned radiation protection and financial assurance requirements.

The second type of "intent-based" source material generation is referred to as "source material recovery" in this feasibility study. As stated above, the first class of source material

generation is not deemed to be "recovery" because its primary intent is not to recover the source material; but rather to perform some other form of activity such as remediating a water source, which results in generation of source material as a byproduct. However, in the case of source material recovery/milling, the generator is processing source material-bearing ores *primarily* for the source material content. Thus, this necessitates a "source material recovery" or "milling" license. Pursuant to UMTRCA in 1978, Congress determined that mill tailings and other wastes generated from source material recovery/milling operations posed a unique threat to public health and safety and needed special controls limit potential public exposure.

UMTRCA created a new AEA material known as "11e.(2) byproduct material." 11e.(2) byproduct material is broadly defined to encompass *all* wastes associated with the generation of source material at AEA-licensed source material recovery facilities by processing ores *primarily* for their source material content. The materials encompassed within the scope of the term "11e.(2) byproduct material" include a multitude of waste streams including, but not limited to, mill tailings, process fluids (e.g., ISR bleed), restoration fluids, contaminated soils and even mill contaminated components. The term 11e.(2) byproduct material not only encompasses each of these types of materials, but it also includes both the radiological and *non*-radiological components of such materials. As is discussed below, and in the feasibility study in great detail, this fact is the primary cause of dual jurisdiction issues associated with 11e.(2) byproduct material spanning the timeframe of 1978-2000.

The remaining discussions of UMTRCA, its development, and its potential influence on the development of a State's Agreement State program lies in the compliance requirements in NRC regulations. Under UMTRCA, Congress designated EPA as the lead agency for the promulgation of *generally applicable standards* for the regulation of 11e.(2) byproduct material during active operations, site reclamation, and decommissioning and decontamination (D&D). After these standards were promulgated by EPA, UMTRCA requires that NRC promulgate regulations that conform to these standards. While this approach seems straightforward, the initial promulgation of final EPA standards and final NRC conforming regulations took approximately ten (10) years after final passage of UMTRCA.

At the end of that timeframe, NRC final had a complete set of regulations for "conventional" source material recovery and management of 11e.(2) byproduct material, which are found at 10 CFR Part 40, Appendix A. While the Criteria located at Appendix A are discussed in great detail in the feasibility study, it is worth highlighting a few points. First, Appendix A Criteria were created as broad performance-oriented criteria rather than prescriptive requirements. Second, these performance-oriented criteria were designed to allow for flexibility in implementation primarily due to the fact that all source material recovery sites have site-specific aspects that may influence proper application of Appendix A's requirements. Thus, NRC allows licensees seeking to apply such requirements to seek approval of site-specific alternatives to satisfy such requirements. Per regulation, NRC requires that such alternatives be at least as stringent, if not more stringent, than Appendix A requirements to safely recover source material and to stabilize and contain all 11e.(2) byproduct material. Further, 10 CFR Part 40, Appendix A, Criteria 9 & 10 specifically address financial assurance for source material

recovery facilities both during active operations and site D&D, as well as when a closed conventional milling (or heap leaching) site is transferred to DOE for final long-term surveillance and monitoring (LTSM).

The last critical element of NRC's "conventional" source material recovery program worth highlighting here is the UMTRCA Section 83 requirement that title to all 11e.(2) byproduct material must be transferred to either the recovery facility's resident State or DOE for LTSM. The transfer of this material, *and the land necessary to contain such material*, must be done simultaneously with NRC termination of the licensee's license and the receiving entity becomes a general licensee of NRC *in perpetuity*. This transfer also must be done at no cost to the government, thus the Criterion 10 requirement mentioned above for licensee contribution to the United States Treasury for LTSM. This factor becomes important to Wyoming's consideration of Agreement State status, because NRC maintains final "sign-off" authority on all license termination and property transfer and it will define the class of licensees Wyoming will regulate upon successful transition to Agreement State status.

As stated previously, the Enrolled Act's mandate for this feasibility study and seeking Agreement State status for source material recovery is to eliminate dual jurisdiction issues. This final portion of the historical preface in this feasibility study provides the reader with an overview of how dual jurisdiction issues started and lays the foundation for the dispute between NRC and States over the subsurface activities of ISR source material recovery operations. Essentially, immediately after the passage of UMTRCA, States believed that, legally, they retained active regulatory jurisdiction over the *non*-radiological component of 11e.(2) byproduct material, while NRC had authority over the radiological components. This so-called "concurrent jurisdiction" issue received full legal review from NRC's Office of the Executive Legal Director (OELD) (now the Office of the General Counsel (OGC)). Initially, the OELD concluded that the legal evaluation of this issue was "so close" that "concurrent jurisdiction was legally permissible:

> "[W]e conclude that the question is so close that the Commission could reasonably choose either interpretation, but that the better legal view is that non-Agreement States and the NRC have concurrent jurisdiction to regulate the non-radiological hazards of mill tailings, both before and after the November 8, 1981 date upon which the Mill Tailings Act becomes fully effective."[4]

However, source material recovery licensees and the National Mining Association (NMA) disagreed with this legal position and prepared a White Paper for submission to NRC for review in 1997. In this White Paper, NMA and its member licensees argued that the OELD opinion was in direct conflict with federal law as the AEA, as amended by UMTRCA, specifically

[4] Memorandum from Howard K. Shapar, Executive Legal Director, NRC, to Chairman Ahearne. NRC, *OELD Legal Opinion on Two Questions Relating to the Operation of the Uranium Mill Tailings Radiation Control Act of 1978*, Attachment B, 2-3 (April 28, 1980) (emphasis added).

addressed both the potential radiological *and non*-radiological hazards associated with 11e.(2) byproduct material:

> "the Commission deems appropriate to protect the public health and safety and the environment from radiological and *non*-radiological hazards associated with the processing and with the possession and transfer of such material, taking into account the risk to the public health, safety, and the environment, with due consideration of economic costs and such other factors as the Commission deems appropriate."[5]

This argument by NMA highlighted the potential dual/overlapping jurisdiction between NRC and States over remedial action programs involving the *non*-radiological component of 11e.(2) byproduct material at source material recovery facilities and the potential for such conflict impeding eventual transfer of a site to DOE for LTSM.

Three (3) years after submission of this NMA White Paper and consideration of its legal position by NRC Staff and the Commission, it was determined by the Commission that, through the AEA as amended by UMTRCA, NRC maintains exclusive, federal preemptive jurisdiction over both the radiological and *non*-radiological components of 11e.(2) byproduct material, thus removing the State from all aspects of its regulation. This legal position has been aggressively maintained since the year 2000 and shows no signs of being altered.

Other dual jurisdiction issues have been spawned from the "concurrent jurisdiction" decision as NRC's UMTRCA-based regulatory program has continued to evolve. First, as ISR operations have become the predominant form of source material recovery in the United States, industry raised a question as to whether the subsurface activities at ISR facilities are NRC-regulated activities. The same 1997 NMA White Paper argued that NRC, had no regulatory jurisdiction over the wellfields (i.e., subsurface activities) at ISR facilities. Unlike the "concurrent jurisdiction" decision where it concurred with NMA's position, the Commission disagreed with NMA's position on jurisdiction in ISR wellfields and, further, determined that, in addition to regulation of ISR operations, restoration fluids at such facilities are 11e.(2) byproduct material and, thus, under its exclusive, federal preemptive regulatory authority

As a result of this so-called "milling underground decision," NRC Staff was forced to determine how and if its current 10 CFR Part 40 regulations and Appendix A Criteria, which originally were intended only for conventional source material recovery, apply to such ISR operations. Since NRC did not engage in the promulgation of ISR-specific regulations, NRC Staff determined that Part 40 and Appendix A should be applied to ISR operations on an "as appropriate" basis. This results in the issuance of license conditions interpreting Part 40 and Appendix A requirements regulating ISR licensees.

[5] 42 U.S.C. § 2114(a)(1).

However, NRC Staff now has determined that 10 CFR Part 40, Appendix A, Criterion 5(B)(5) groundwater protection standards apply *as a matter of law* to ISR wellfields. This interpretation now means that ISR facilities must directly comply with Criterion 5(B)(5) groundwater protection standards, including obtaining formal alternate concentration limits (ACL) from NRC in the event that groundwater restoration does not result in achieving primary or secondary restoration goals (i.e., Commission-approved baseline or a maximum contaminant level (MCL), whichever is higher). This legal interpretation further defines the divide between NRC and State regulated-actions.

CATEGORY 1: APPLYING FOR AND BECOMING AN AGREEMENT STATE

With the historical preface and its contents in mind, the first portion of this feasibility study will be entitled *Applying for and Becoming an Agreement State* (Category 1). Initially, this Category will offer a detailed overview of NRC's AEA Agreement State program and its legal origins. While Congress sought to create a pervasive, comprehensive statutory and regulatory regime for AEA materials and operations, it also provided provisions for the Commission to *withdraw* or *discontinue* regulatory authority over some of materials and processes in the event that a State desires to assume such AEA authority and can demonstrate that it has a regulatory program and personnel in place to provide protection of public health and safety that is at least as stringent as that of NRC. Specifically, Section 274 of the AEA allows for the Commission to *withdraw* or *discontinue* its regulatory authority over four classes (11.e(1-4)) of byproduct material (including "source material recovery"), source material, and special nuclear materials in quantities not sufficient to form a critical mass. The AEA and Commission regulations also expressly reserve regulatory authority to the Commission over certain AEA materials and operations such as regulation of special nuclear material in quantities sufficient to form a critical mass, operation of nuclear power reactors, and ocean disposal of source or byproduct material. Further, within the class of 11e.(2) byproduct material and "source material recovery," UMTRCA has reserved to the Commission final "sign-off" authority over the closure of sites containing 11e.(2) byproduct material, including ISR sites, and if a conventional/heap leach facility, their final transfer to DOE or the resident State for LTSM. As stated above, this is an item that greatly influences the classes of licensees an Agreement State will regulate.

Category 1 analyses also discuss the hallmark of NRC's Agreement State program which is that all regulations adopted by an Agreement State for AEA materials and operations must meet *adequacy and compatibility* requirements. First, "adequacy" is a relatively simple and straightforward concept in that all Agreement State regulations must be "adequate to protect public health and safety if administration of the program provides reasonable assurance of protection of public health and safety in regulating the use of agreement material." *See* Exhibit 56.

Second, Agreement State regulations must be "compatible" with NRC regulations in order to pass review. "Compatibility" as a concept is slightly more complicated than "adequacy," as NRC has "compatibility charts" addressing each of its regulatory programs that

may be adopted by an Agreement State with varying levels of compatibility requirements. As discussed in STP Procedure SA-200, the compatibility categories are discussed as follows:

(1) Category A is defined as "[b]asic radiation protection standard or related definitions, signs, labels or terms necessary for a common understanding of radiation protection principles. *The State program element should be essentially identical to that of NRC*;"

(2) Category B is defined as "[p]rogram element with significant direct transboundary implications. *The State program element should be essentially identical to that of NRC*;"

(3) Category C is defined as "[p]rogram element, the essential objectives of which should be adopted by the State to avoid conflicts, duplications or gaps. *The manner in which the essential objectives are addressed need not be the same as NRC, provided the essential objectives are met*;"[6]

(4) Category D is defined as program elements "that do not meet any of the criteria of Category A, B, or C…and, thus, do not need to be adopted by Agreement States for purposes of compatibility;"

(5) Category "Health and Safety" are defined as program elements "that are not required for compatibility…but have been identified as having a particular health and safety role (i.e., adequacy) in the regulation of agreement material within the State."

(6) Category "Areas of Exclusive NRC Regulatory Authority" are defined as items that are expressly reserved to the Commission such as regulation of nuclear power generation facilities

Each of these "compatibility categories" carries their own requirements and must be thoroughly reviewed before finalization of Agreement State regulations. In several areas, this feasibility study suggests that a candidate Agreement State adopt Category A and B regulations "as is" to avoid any potential compatibility issues during program reviews. However, each Agreement State must address its regulations prior to transition to ensure that there are no NRC objections to such regulations.

[6] United States Nuclear Regulatory Commission, Office of State and Tribal Programs, *Compatibility Categories and Health and Safety Identification for NRC regulations and Other Program Elements,* STP Procedure SA-200 (October 8, 2004). Previously, Category A compatibility regulations required identical language to that of NRC.

This Category also will explain and analyze all activities from a final State decision to proceed with an application to NRC for Agreement State status: (1) commencing the Agreement State process by filing a letter with the NRC Chairman; (2) preparing the application package for submission to NRC; and (3) commencing the transition period to active Agreement State status after NRC approval. Category 1 is, by far, the largest portion of the process-flow approach that encompasses a wide range of State-driven activities including passage of legislation (i.e., Radiation Control Act), rulemaking leading to promulgation of NRC-compatible regulations, frequent interactions with NRC Staff regarding such activities and evaluation of NRC guidance and policy statements for potential incorporation into a State-based Agreement State regulatory program. Further, Category 1 addresses public participation in the Agreement State process and the potential impact on an Agreement State application program on other than AEA statutory programs that directly affect NRC licensing processes but that are not applicable directly to States, (i.e. the National Historical Preservation Act (NHPA) and National Environmental Policy Act (NEPA)). Category 1 analyses also will offer suggestions on strategic decision-making and cost-cutting measures to streamline the process of becoming an Agreement State. These measures include, but are not limited to, cross-referencing existing State statutes and regulations with relevant AEA provisions and NRC regulations according to compatibility criteria, analyses of NRC guidance and policies in terms of their relevance to operating as an Agreement State, and some recommendations about how to efficiently incorporate them into an Agreement State program.

Included in Category 1 is an overview discussion of four (4) Agreement States and NRC's uranium recovery program and how they operate their programs so that Wyoming may obtain a better idea of the staffing and budget necessary to create an NRC-approved Agreement State program for "source material recovery" and 11e.(2) byproduct material. Three of the Agreement States evaluated in this feasibility study, the States of Colorado, Texas, and Utah, all have Agreement State programs that include "source material recovery" and 11e.(2) byproduct material. The remaining Agreement State, the Commonwealth of Virginia, does not have these materials and operations within its Section 274 Agreement, but is a recent example of a *non*-Agreement State pursuing Agreement State status. Finally, NRC's uranium recovery program, including its decommissioning branch, is evaluated as the vast majority of current or soon-to-be licensees are located or proposed to be located in the State of Wyoming. Thompson & Pugsley, PLLC is confident that these case studies will further assist Wyoming in its attempt to better understand the resources necessary to run an Agreement State program. The projections for staffing and resources required for a Wyoming "source material recovery" and 11e.(2) byproduct material are projected to be as follows:

Category 1 analyses provide projections, to the extent practicable, of potential major licensing actions (applications/amendments) involving currently identified and potential future uranium recovery license applicants/licensees. This feasibility study begins this discussion with an overview of how NRC regulates "source material recovery" licensees and, more importantly, how entities attempt to approach this "reactive," independent regulatory agency in order to engage in AEA source material recovery operations and manage 11e.(2) byproduct material. These licensing actions are divided into and discussed as three (3) categories: (1) operating

license applications; (2) license amendment applications; and (3) license renewals. Each of these licensing actions carries different NRC requirements from a public health and safety and an environmental protection perspective.

This discussion continues with an overview of how NRC regulates AEA materials and operations through a four-tiered regulatory structure. The first component of this regulatory structure, regulations, is the benchmark for NRC's AEA authority over "source material recovery" and 11e.(2) byproduct material. As stated above, the primary focus of NRC's source material recovery program is set forth in 10 CFR Part 40 and its Appendix A Criteria. However, there are several other sets of NRC regulations that apply either directly or indirectly to source material recovery facilities, including those at 10 CFR Part 20 (radiation protection), 10 CFR Part 51 (environmental reviews), 10 CFR Part 71 (radioactive materials transportation), and 10 CFR Parts 170-171 (licensing fees). Each of these sets of regulations, and any others deemed appropriate, are applied in concert to source material recovery facilities and the management of 11e.(2) byproduct material to fulfill the AEA's statutory mandate.

The second component of this regulatory structure, guidance, is a frequently employed by NRC Staff as a Commission-approved interpretation of its regulations where such regulations are not necessarily detailed or prescriptive enough to inform license applicants or licensees of what is required of them in applications. The level of available NRC guidance is extensive ranging from NUREG series publications such as standard review plans (SRP) to Regulatory Guides specifically focused on an aspect of source material recovery. To the maximum extent practicable, lists of these guidance documents are provided in the feasibility study.

The third component of this regulatory structure, policy statements and other regulatory interpretations, involves documents that reflect Commission policy on its regulation of AEA materials and operations or NRC Staff interpretations of regulations. These types of regulatory documents come in several forms such as Policy Statements, Regulatory Issue Summaries (RIS), and Generic Communications. While not binding, Agreement States are free to adopt such regulatory documents in full, in part or not at all.

Within the context of Commission policy, there are several aspects of NRC's regulatory program that are worth mentioning. The first, Memoranda of Understanding (MOU), are a typically used for agreements between federal agencies, federal and State agencies, and interagency (within States) to achieve certain goals for review and approval of licensing actions. Several examples of these MOUs exist in the context of AEA licensing including one between NRC and the Bureau of Land Management (BLM) to find efficiencies in the environmental review context and one between NRC and WDEQ on similar matters. These mechanisms are useful tools that Thompson and Pugsley, PLLC suggests Wyoming should explore and employ wherever possible to assist with resource allocation and licensing action review efficiency.

Another Commission policy utilized by NRC Staff and is suggested for use by Agreement States and those candidate States seeking to become Agreement States is performance-based licensing. The feasibility study provides a detailed discussion of the development of this policy

by the Commission for AEA-licensees, to the extent practicable, and the application of codified 10 CFR Part 50.59 nuclear power reactor requirements for such licensing to source material recovery facilities. The Commission concluded that:

> "[w]here appropriate, a risk-informed regulatory approach can also be used to reduce unnecessary conservatism in deterministic approaches, or can be used to identify areas with insufficient conservatism and provide the bases for additional requirements or regulatory actions."

See United States Nuclear Regulatory Commission, SECY-98-144, *White Paper on Risk-Informed and Performance-Based Regulation* (June 22, 1998).

This approach has yielded positive results in obtaining regulatory efficiencies in the regulatory workplace and, when coupled with NRC's approach of "risk-informing" its regulations of AEA-licensed facilities, offers a safe and resource-efficient approach to regulation of such facilities. This marriage of concepts yielded the use of safety and environmental review panels (SERP), which are licensee-composed committees, with NRC approval, dedicated to ensuring that the license conditions reflecting the 10 CFR Part 50.59 requirements for performance-based licensing are satisfied. Several current Wyoming-based NRC licensees currently utilize such license conditions and they have been successful employing such conditions.

NRC's regulatory approach also incorporates several statutory mandates that are not necessarily required of State Agreement State agencies, but do in fact require attention from candidate Agreement States. Examples such as the National Historic Preservation Act of 1966 (NHPA) and 10 CFR Part 51 Commission-implemented regulations for environmental reviews under the National Environmental Policy Act of 1969 are items that Wyoming must address if implementing an Agreement State program. To the extent that the candidate State has regulations addressing these items, they should be reviewed and employed to the maximum extent practicable. However, with respect to environmental reviews, the candidate State must be sure to satisfy the UMTRCA-mandated requirement that all AEA environmental review requirements be *similar* to those prescribed by NRC.

The fourth component of NRC's regulatory structure is inspection and enforcement. On its face, it makes sense that a regulatory agency would have inspection and enforcement authority over materials and operations within its jurisdiction. The AEA-NRC program is no different. For "source material recovery" licensees, NRC's inspection and enforcement program is centered in its Region IV Texas office from which inspectors visit licensed sites and inspect their performance and compliance with NRC regulations, relevant guidance where applicable, and license conditions. NRC's inspection authority provides it with the ability to evaluate such performance and compliance measures and determine whether the licensee is indeed following its NRC-approved license. In the event of a violation of license requirements or other relevant regulations is determined, then NRC will issue a violation and discussions between the licensee and NRC will be required. Depending on the severity of the violation, NRC will issue a fine or

other form of penalty, including immediately enforceable actions, necessary to bring the licensee into compliance.

Next, in order to provide Wyoming with an appropriate overview of the number of licensees it would be regulating when and if it becomes an Agreement State, Category 1 provides a projected list of existing source material recovery licensees, pending new operating license applications and other licensing actions for existing licensees, and projected future licensing action applications. These lists are designed to serve as a precursor to Category 2 lists that attempt to determine how many operating licenses Wyoming will be regulating upon transition.

Category 1 analyses also contain a list of product deliverables that are required to seek Agreement State status including descriptions of their form and content. Further, the list and descriptions will identify the most significant strategic decisions that will need to be made by the State if developing an application to NRC. Some of these items will fall under the classification of "interim study" items that are suggested for review during a yet to be identified time period prior to deciding whether to pursue Agreement State status.

Finally, Category 1 analyses provide an evaluation of two (2) potential alternatives to pursuing Agreement State status in order to better address the purpose of the Enrolled Act and to alleviate current dual jurisdiction issues between the State and NRC. These two alternatives are identified as: (1) challenging NRC's aforementioned "milling underground" decision; and (2) revising the existing NRC/WDEQ memorandum of understanding (MOU) regarding deferral of groundwater restoration regulation. Each alternative will be described by issue and process with an assessment of the potential for success in solving dual jurisdiction issues. Further, each alternative discussion offers cursory analysis of the legal ramifications of pursuing each alternative. Thompson & Pugsley, PLLC believes that this feasibility study will be more useful if State decision makers are provided will a complete suite of options that can be evaluated from cost and potential for success perspectives.

CATEGORY 2: TRANSITION TO AGREEMENT STATE STATUS

The second Category of activities in this feasibility study will be entitled *Transition to Agreement State Status* (Category 2). Category 2 is the least activity-intensive phase of the Agreement State process as it encompasses only the activities taking place just before final NRC-approval of a proposed Section 274 Agreement State program through the actual execution of an Agreement with NRC. However, while this phase of the process is the least activity-intensive, it does not lack for activities that need to be considered by the State in order to enter the maintenance phase of Agreement State Status efficiently.

During the timeframe associated with this Category, Thompson & Pugsley, PLLC recommends that the State undertake several activities prior to actually engaging in the transition process, most of which involve future regulatory workload analyses and forecasting. Initially, Category 2 analyses will discuss the identification processes used to determine the

timeframes and frequency of major license applications and the necessary financial/staffing resources to address them. Such potential major licensing actions include applications for new facility operating licenses, major amendments to existing licenses (e.g., in situ leach uranium recovery (ISR) satellites and alternate concentration limits (ACLs)), and projection of licensee oversight activities (e.g. ISR wellfield package approval and facility decommissioning). To the extent that proposed dates for these potential major licensing actions are available, they will be incorporated into the feasibility study. To the extent that reasonable projections can be made based on typical progress and lifecycle timeframes, such projections will be incorporated. This activity will be conducted during the months leading up to the final execution of any Section 274 Agreement with NRC. As noted above, Category 1 analyses will offer a current list of license applicants/licensees and current and future potential major licensing actions; Category 2 will update those analyses to assure that staffing and financial resource allocations will be adequate. Given that the NRC Agreement State process is flexible on timing, the State can avail itself of any additional time necessary to bring an Agreement State program into compliance with necessary resource requirements.

Category 2 analyses will include a discussion of major decisions in the transition process for Agreement State programs, including specifically the development of a State policy on transition. This policy will address a multitude of items including, but not limited to, adoption and/or translation in whole or in part of existing NRC guidance and policy statements, analysis of potential impacts on existing State statutes and regulations, including State primacy authority from the United States Environmental Protection Agency (EPA) for EPA's Underground Injection Control (UIC) program under the federal Safe Drinking Water Act (SDWA), delegated EPA authority under the Clean Air Act (CAA), and transition of existing or to-be-approved NRC licenses or licensing actions to Agreement State licenses or licensing actions. Either immediate transition or phased transition are options for Wyoming, though immediate transition developed with NRC is the typical approach.

This Category also will include a list of product deliverables for this phase of the Agreement State process including a final list of potential uranium producers, a description of the current licensing status of current or potential future uranium producers in the State and, accordingly, potential budgeting/staffing and training requirements. A comprehensive chart of NRC guidance and policy statements will be discussed with respect to their form, content, and significance with initial recommendations on how to address adoption and/or translation of such guidance and policies. Category 2 analyses will discuss items that are to be prepared after initiation of the Agreement State process and just prior to final transition to Agreement State status.

CATEGORY 3: OPERATION AND MAINTENANCE OF AGREEMENT STATE STATUS

The third Category of activities in this feasibility study will be entitled *Operation and Maintenance of Agreement State Status* (Category 3). Category 3 is to be considered an ongoing phase of the Agreement State process and is intended to encompass activities from the

execution of a Section 274 Agreement with NRC to the activities that are required for continued operation and maintenance of an Agreement State program. This Category will be formatted with a series of identified mechanisms by which the State can maintain some understanding of existing and future market conditions that may or may not give rise to an upturn or downturn in uranium production with any accompanying increase or decrease in licensing (i.e., license and license amendment applications) annual decommissioning and license termination activities, and opportunities to monitor ongoing uranium production-related activities through public/media communications, manuals or memoranda of understanding (MOU) with relevant federal agencies such as the United States Bureau of Land Management (BLM) and the United States Forest Service (USFS). Using three separate timeframes for uranium market overviews, the study will show how the uranium market, like any other international commodity market, is dictated by related and unrelated factors which, taken together, can have a profound impact on market price and supply and demand.

Category 3 also will provide the reader with an overview of the processes associated with relinquishing Agreement State status and the transfer of authority back to NRC. In the past, States have engaged in these processes to relinquish all or part of their Agreement State program for a variety of reasons including a lack of staffing/resources and desire to not continue with the regulation of certain types of AEA materials and/or operations. Using three (3) separate examples of prior Agreement State-related processes, this analysis will describe how the process of relinquishing Agreement State authority works and a brief description of some potential reasons for such relinquishment.

CONCLUSION

Thompson & Pugsley, PLLC appreciates the opportunity to prepare and present this feasibility study to the State and intends to prepare a series of presentation slides discussing the analyses in this study for subsequent meetings with State officials to facilitate the development of any additional questions regarding the process for moving forward should the State choose to do so. Thompson & Pugsley, PLLC emphasizes that this feasibility study is intended to provide the reader with a comprehensive overview of the “how-to-become” an Agreement State process, and approaches that potentially could streamline the process but this feasibility study will not provide the State with any recommendations as to whether it should choose to pursue or choose not to pursue Agreement State status. In the event that the State determines that pursuing Agreement State status is appropriate, Thompson & Pugsley, PLLC is prepared to continue as advisors to the State in its endeavor should the State so choose.

Perhaps the most important part of this feasibility study, with the exception of the Table listed above on required FTE and costs for maintaining an Agreement State program, is the FTE and costs associated with Years 1-5 of the Agreement State process. While the details of these estimates are discussed in more depth in the feasibility study, the following charts provide timelines for the following: (1) Gantt Chart for Interim Study Activities; (2) Gantt Chart for Agreement State Process; (3) Table for Interim Study Activities; and (4) Table for Years 1-6 of the Agreement State Process:

BUDGET AND STAFFING PROJECTIONS FOR INTERIM STUDY ITEMS

PRODUCT DELIVERABLE	DESCRIPTION	PERSONNEL	APPROXIMATE/ESTIMATED COST
MONITOR STATE OF GEORGIA IMPEP REVIEW	EXECUTIVE SUMMARY LEVEL REPORT	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)	
URANIUM MARKET UPDATE	EXECUTIVE SUMMARY LEVEL REPORT	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)	
WDEQ STAFFING PLAN	ADDRESS THE FOLLOWING: (1): EXISTING WDEQ STAFF AND ROLE IN AGREEMENT STATE PROGRAM; (2): NEW STAFF FOR PROGRAM; (3): EQUIPMENT AND OTHER MATERIAL/SUPPORT NEEDS; (4): IDENTIFICATION OF APPROPRIATE STATE AGENCY STRUCTURE FOR AGREEMENT STATE PROGRAM	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)	

NRC/WDEQ REGULATORY CROSS-REFERENCE CHART & PRELIMINARY FEE STRUCTURE	**ASSESS WHAT WDEQ REGULATIONS CAN BE USED IN AGREEMENT STATE PROGRAM AND ADDITIONAL REGULATIONS NEEDED**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
OUTLINE OF PUBLIC PARTICIPATION/RULEMAKING PROCEDURES	**INITIAL DRAFT OF RULEMAKING AND OTHER PUBLIC INVOLVEMENT PROCESSES**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
OUTLINE OF GUIDANCE ADOPTION POLICY	**ASSESS VIABILITY OF NRC GUIDANCE DOCUMENTS FOR STATE ADOPTION AND POTENTIAL USE OF EXISTING WDEQ GUIDANCE**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
ASSESSMENT OF MOU APPROACH AND EXISTING STATE MOUS	**DETERMINE WHETHER MOUs OR OTHER INFORMAL RELATIONSHIPS CAN ASSURE ADEQUATE STAFF EXPERTISE**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
TOTAL COST			**STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)**

AGREEMENT STATE PROGRAM COST BREAKDOWN (YEARS 1-6)[7]

AGREEMENT STATE PROCESS YEAR	DESCRIPTION[8]	PERSONNEL	APPROXIMATE/ESTIMATED COST[9]
INTERIM STUDY YEAR	ITEMS IDENTIFIED IN TABLE 13	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)
YEAR 1 (NOT DATE-SPECIFIC AT THIS TIME)	(1): DRAFT AND SEND GOVERNORS LETTER TO PROCEED (2): DRAFT AND ENACT LEGISLATION AUTHORIZING GOVERNOR'S LETTER TO PROCEED (3): BEGIN DRAFTING: (A) LEGISLATION AUTHORIZING AGREEMENT STATE PROGRAM; (B): AGREEMENT STATE	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)

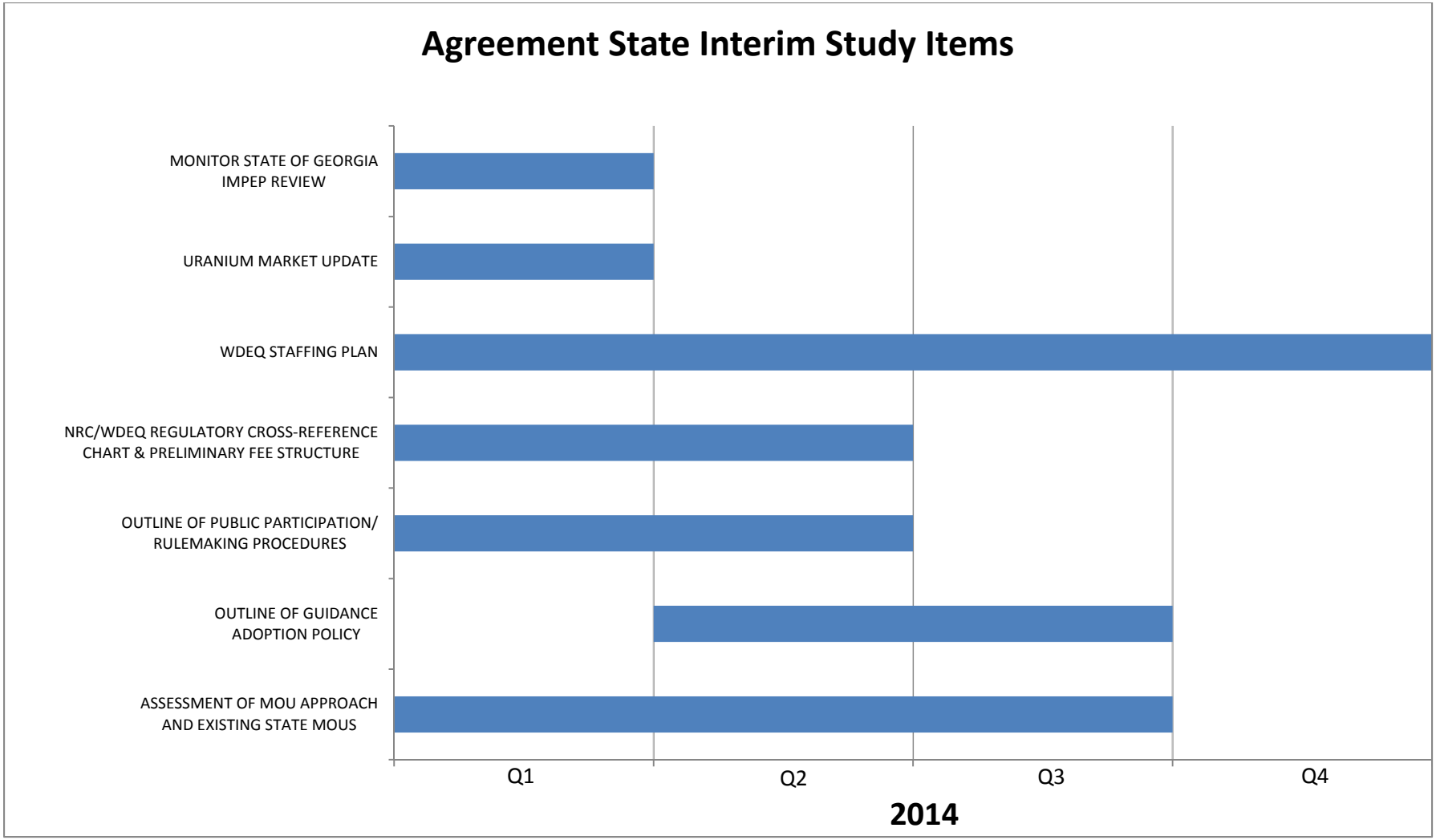
[7] The years identified in this Table are not targeted at a specific date as no decision has been made by the State to proceed with development of an Agreement State program. Thus, for purposes of this Table, it should be assumed that the process will involve the following: (1) up to one (1) year for interim study items; (2) up to five (5) years for completion of Category 1 through transition; and (3) the final year (Year 6) being the first year of the program's operation post-transition.

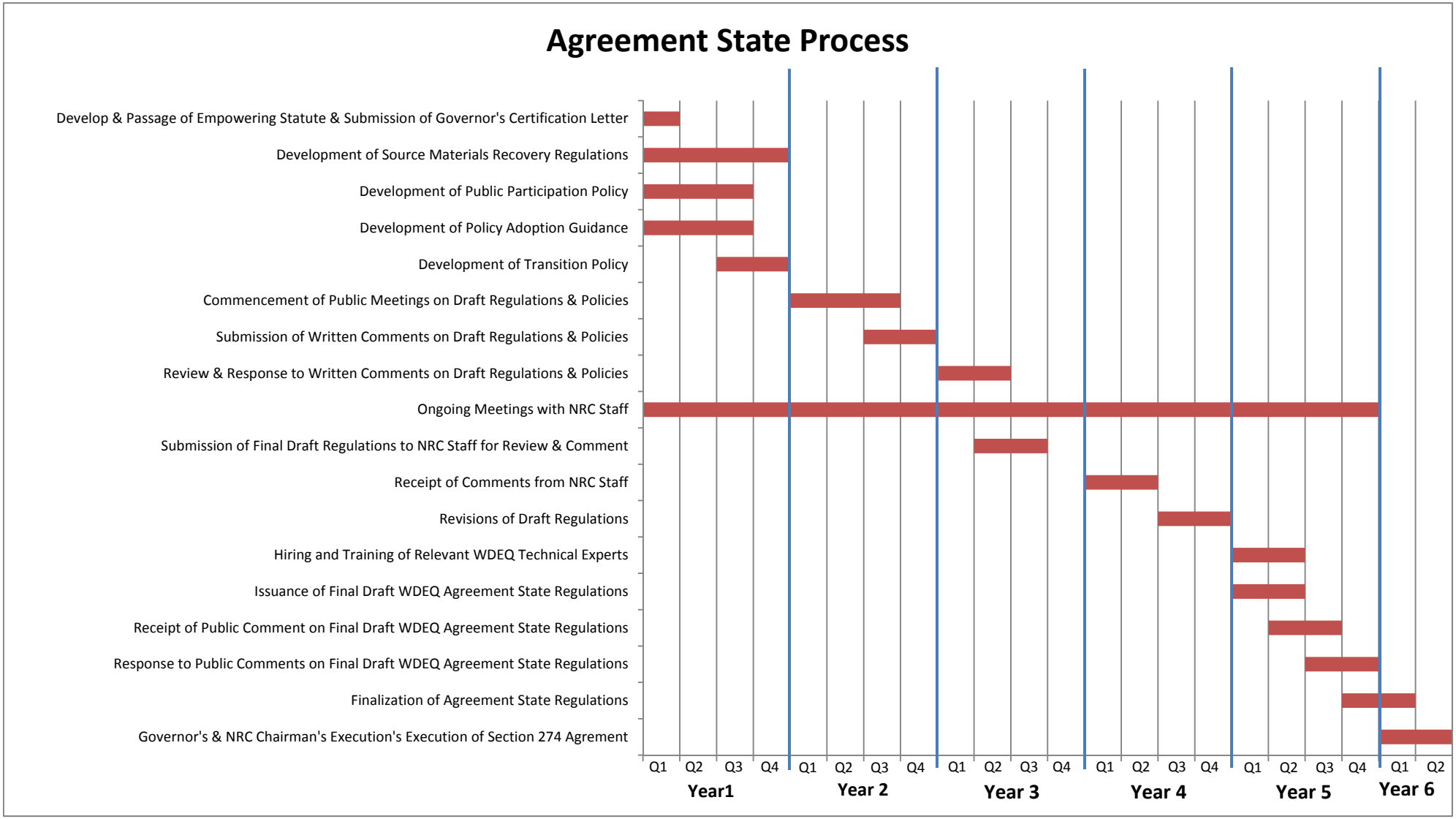
[8] Please note that the "Description" inserted in this Table for each item is not exhaustive of all required actions.

[9] Please note that cost items such as equipment purchases, travel reimbursement, and other expenses are not included and will be fleshed out in the staffing plan described in Table 13 above.

	PROGRAM REGULATIONS; (C): COMPLETED PUBLIC PARTICIPATION POLICY; (D): COMPLETED GUIDANCE ADOPTION POLICY; (E): INITIAL MEETINGS WITH INTERESTED STAKEHOLDERS IDENTIFIED BY NRC STAFF		
YEAR 2	(1): COMMENCEMENT OF PUBLIC MEETINGS ON PROGRAM; (2): COMMENCMENT OF RULEMAKING PROCESS FOR PROGRAM REGULATIONS; (3): ONGOING NRC STAFF CONSULTATION	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)
YEAR 3	(1): REVIEW OF AND PROCESSING PUBLIC AND NRC STAFF COMMENTS ON PROGRAM REGULATIONS; (2): ONGOING NRC STAFF CONSULTATIONS; (3): UPDATE TO WDEQ STAFFING PLAN; (4): DEVELOP TRANSITION POLICY; (5): TRAINING OF HEALTH PHYSICS STAFF	2 STATE (WDEQ) FTE: (DEQ PROGRAM DIRECTOR & HEALTH PHYSICS STAFFER) 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $430,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)

YEAR 4	**(1): FINALIZATION OF RESPONSE TO PUBLIC AND NRC STAFF COMMENTS ON DRAFT PROGRAM REGULATIONS; (2): ONGOING NRC STAFF CONSULTATION; (3): FINALIZE STAFFING PLAN AND PREPARE FOR EQUIPMENT PURCHASES (RFP); (4): HIRING AND TRAINING OF ADDITIONAL PERSONNEL**	**4 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)**	**STATE FTE COST: $690,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)**
YEAR 5	**(1): FULL ACTIVE PERSONNEL AND COMMENCEMENT AND/OR COMPLETION OF AGREEMENT STATE PROGRAM TRAINING (2): COMPLETION OF EQUIPMENT PURCHASES**	**8 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)**	**STATE FTE COST: $1,230,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)**
YEAR 6 (EFFECTIVE UPON TRANSITION)	**FULL PROGRAM OPERATION 11 LICENSEES ACTIVE OR STANDBY 1 LICENSEE AWAITING SITE CLOSURE AND LICENSE TERMINATION**	**8 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANTS**	**STATE FTE COST: $1,230,000 CONTRACTOR COSTS AT STATE DISCRETION**


Agreement State Interim Study Items
MONITOR STATE OF GEORGIA IMPEP REVIEW
URANIUM MARKET UPDATE
WDEQ STAFFING PLAN
NRC/WDEQ REGULATORY CROSS-REFERENCE CHART & PRELIMINARY FEE STRUCTURE
OUTLINE OF PUBLIC PARTICIPATION/ RULEMAKING PROCEDURES
OUTLINE OF GUIDANCE ADOPTION POLICY
ASSESSMENT OF MOU APPROACH AND EXISTING STATE MOUS
Q1
Q2
Q3
Q4
2014


Agreement State Process
Develop & Passage of Empowering Statute & Submission of Governor's Certification Letter
Development of Source Materials Recovery Regulations
Development of Public Participation Policy
Development of Policy Adoption Guidance
Development of Transition Policy
Commencement of Public Meetings on Draft Regulations & Policies
Submission of Written Comments on Draft Regulations & Policies
Review & Response to Written Comments on Draft Regulations & Policies
Ongoing Meetings with NRC Staff
Submission of Final Draft Regulations to NRC Staff for Review & Comment
Receipt of Comments from NRC Staff
Revisions of Draft Regulations
Hiring and Training of Relevant WDEQ Technical Experts
Issuance of Final Draft WDEQ Agreement State Regulations
Receipt of Public Comment on Final Draft WDEQ Agreement State Regulations
Response to Public Comments on Final Draft WDEQ Agreement State Regulations
Finalization of Agreement State Regulations
Governor's & NRC Chairman's Execution's Execution of Section 274 Agrement
Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2
Year1
Year 2
Year 3
Year 4
Year 5
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LIST OF ACRONYMS

ACL	Alternate Concentration Limit
ADR	Alternative Dispute Resolution
AEA	Atomic Energy Act of 1954
AEC	Atomic Energy Commission
ALARA	As Low As Reasonably Achievable
AMC	American Mining Congress
ANC	American Nuclear Corporation
ANPR	Advanced Notice of Proposed Rulemaking
BLM	United States Bureau of Land Management
BTP	Branch Technical Position
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CPP	Central Processing Plant
CRCPD	Council of Radiation Control Program Directors
CRR	Completion Review Report
D&D	Decommissioning & Decontamination
DOE	United States Department of Energy
DGEIS	Draft Generic Environmental Impact Statement
EA	Environmental Assessment
EDF	Environmental Defense Fund
EDO	NRC Executive Director of Operations
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
FCFF	Fuel Cycle Facilities Forum
FSME	Office of Federal and State Materials and Environmental Management
GAO	General Accountability Office
GEIS	Generic Environmental Impact Statement on Uranium Milling
GWCAP	Groundwater Corrective Action Program
HRI	Hydro Resources, Inc.
IMPEP	Integrated Materials Performance Evaluation Program

ISR	**In Situ Leach Uranium Recovery**
ISR GEIS	**NUREG-1910**
IUSA	**International Uranium (USA) Corporation**
IX	**Ion-Exchange**
LEU	**Low Enriched Uranium**
LTSM	**Long-Term Surveillance & Monitoring**
LOI	**Letter of Intent**
MCL	**Maximum Contaminant Limit**
MOU	**Memoranda of Understanding**
MRB	**Management Review Board**
NAS	**National Academies of Science**
NEPA	**National Environmental Policy Act**
NHPA	**National Historical Preservation Act**
NMA	**National Mining Association**
NRC	**United States Nuclear Regulatory Commission**
NRDC	**Natural Resources Defense Council**
OAS	**Organization of Agreement States**
OBRA	**Omnibus Budget Reconciliation Act of 1990**
OCFO	**NRC's Office of the Chief Financial Officer**
OELD	**Office of the Executive Legal Director**
OGC	**Office of General Counsel**
PBLC	**Performance-Based License Condition**
POC	**Point of Compliance**
POE	**Point of Exposure**
POO	**Plan of Operations (BLM)**
PRP	**Potentially Responsible Party**
RAP	**Restoration Act Plan**
RCRA	**Resource Conservation and Recovery Act**
RER	**Rare Element Resources**
RIS	**Regulatory Issue Summary**
SA	**State Agreements**
SARI	**Strategic Assessment Re-Baselining Initiative**
SDWA	**Safe Drinking Water Act**
SEIS	**Supplemental Environmental Impact Statement**
SERP	**Safety and Environmental Review Panel**
SRM	**State Requirements Memorandum**
SRP	**Standard Review Plans**

STP	**State and Tribal Programs**
TDS	**Total Dissolved Solids**
TSCA	**Toxic Substances Control Act**
UEC	**Uranium Energy Corp.**
UIC	**Underground Injection Control**
UMTRCA	**Uranium Mill Tailings Radiation Control Act of 1978**
URFO	**Uranium Recovery Field Office**
URI	**Uranium Resources, Inc.**
USDW	**Underground Source of Drinking Water**
USFS	**United States Forest Service**
WDEQ	**Wyoming Department of Environmental Quality**
WNI	**Western Nuclear, Inc.**

FEASIBILITY STUDY FOR BECOMING AN AGREEMENT STATE UNDER THE ATOMIC ENERGY ACT OF 1954 FOR THE REGULATION OF SOURCE MATERIAL RECOVERY AND 11E.(2) BYPRODUCT MATERIAL

Prepared for the State of Wyoming Pursuant to Enrolled Act No. 100

Prepared by Thompson & Pugsley, PLLC
Anthony J. Thompson, Esq.
Christopher S. Pugsley, Esq.

STATE OF WYOMING AGREEMENT STATE FEASIBILITY STUDY

PREAMBLE

Pursuant to a services contract executed by and between Thompson & Pugsley, PLLC and the State of Wyoming in April of 2013, Thompson & Pugsley, PLLC is pleased to submit this feasibility study in accordance with the State of Wyoming's (hereinafter the "State") House of Representatives Enrolled Act No. 100 (Enrolled Act) passed in the Sixty-Second Legislature of the State of Wyoming, 2013 General Session. Prior to engaging in active study of the methodology associated with becoming an Agreement State and the responsibilities associated with such an Agreement, this Preamble will set forth the scope of this feasibility study pursuant to the Enrolled Act and the manner in which the study's analysis will be conducted. Thompson & Pugsley, PLLC believes that the study format described below will provide the reader with a clear view of the process to become an Agreement State, the strategic decisions involved in that process, and an understanding of the regulatory issues and responsibilities associated with the maintenance of an Agreement State program after receiving approval from the United States Nuclear Regulatory Commission (NRC).

FEASIBILITY STUDY SCOPE

The State's Enrolled Act sets forth the parameters for conducting this feasibility study with respect to the types of Atomic Energy Act of 1954, (AEA) as amended by the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), materials *and* operations for which the State potentially can seek Agreement State status under Section 274 of the AEA. Section 1 of the Enrolled Act specifically states that the feasibility study is intended to cover "the licensing of source material and source material recovery…."[1] The Enrolled Act's language implies that the intended scope of the feasibility study is focused on recovery of source material (either natural uranium and/or thorium in any form)[2] and the wastes associated with recovery of such source material from ores processed *primarily* for their source material content (i.e.; 11e.(2) byproduct material pursuant to UMTRCA). While source and 11e.(2) byproduct material are addressed in AEA Sections 11(z) and 11(e) respectively the process by which source material is recovered at AEA licensed uranium recovery facilities and the 11e.(2) byproduct material generated as a result of such uranium recovery operations are part of a class of AEA licensed operations that will be called "source material recovery/milling" in this feasibility study. These AEA operations are expressly recognized to encompass both the generation of the two aforementioned AEA materials at NRC licensed source material recovery mills as well as such materials generated in Section 274 Agreement States that have accepted authority therefore.[3] Thus, it is Thompson and Pugsley, PLLC's conclusion that the intended scope of this feasibility study is to address *only*

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[1] Enrolled Act at Section 1 (hereinafter "Exhibit 1").

[2] As a practical matter, although the term "source material" includes both uranium and thorium, this feasibility study will be addressing "source material recovery" as defined therein.

[3] Several examples of final Section 274 Agreements are included for reference purposes (hereinafter "Exhibit 2").

"source material milling" and its related AEA materials (i.e.; "source material" and "11e.(2) byproduct material").

FEASIBILITY STUDY FORMAT

With that said, the feasibility study will address directly all parameters indicated in Section 1 of the Enrolled Act, and any other parameters that will provide insight into understanding the process to become an Agreement State and to operate and maintain an approved Agreement State program. These study parameters will be incorporated a three-tiered, process flow approach that addresses three distinct phases of the process.

DESCRIPTION OF FEASIBILITY STUDY ANALYTICAL CATEGORIES

The following discussion will outline the three-tiered, process flow approach recommended by Thompson & Pugsley, PLLC for the State to follow if it decides to pursue NRC Agreement State status. The three categories that will be utilized in this feasibility study are: (1) Applying for and Becoming an Agreement State; (2) Transition to Agreement State Status; and (3) Operation and Maintenance of Agreement State Status. Thompson & Pugsley, PLLC believes that this approach will be beneficial on a number of fronts including historical and factual information, budgetary analysis, and staffing.

CATEGORY 1: APPLYING FOR AND BECOMING AN AGREEMENT STATE

The first Category of activities will be entitled *Applying for and Becoming an Agreement State* (Category 1). This Category will explain and analyze all activities from a final State decision to proceed with an application to NRC for Agreement State status: (1) commencing the Agreement State process by filing a letter with the NRC Chairman; (2) preparing the application package for submission to NRC; and (3) commencing the transition period to active Agreement State status after NRC approval. Category 1 is, by far, the largest portion of the process-flow approach that encompasses a wide range of State-driven activities including passage of legislation (i.e., Radiation Control Act), rulemaking leading to promulgation of NRC-compatible regulations, frequent interactions with NRC Staff regarding such activities and evaluation of NRC guidance and policy statements for potential incorporation into a State-based Agreement State regulatory program. Further, Category 1 addresses public participation in the Agreement State process and the potential impact on an Agreement State application program of other than AEA statutory programs that directly affect NRC licensing processes but that are not applicable directly to States, (i.e. the National Historical Preservation Act (NHPA) and National Environmental Policy Act (NEPA)). Category 1 analyses also will offer suggestions on strategic decision-making and cost-cutting measures to streamline the process of becoming an Agreement State. These measures include, but are not limited to, cross-referencing existing State statutes and regulations with relevant AEA provisions and NRC regulations according to compatibility criteria analyses of NRC guidance and policies in terms of their relevance to operating as an Agreement State and some recommendations about how to efficiently incorporate them into an Agreement State program.

Category 1 analyses also will provide projections, to the extent practicable, of potential major licensing actions (applications/amendments) involving currently identified and potential future uranium recovery license applicants/licensees. Such potential major licensing actions include applications for new facility operating licenses, major amendments to existing licenses (e.g., *in situ* leach uranium recovery (ISR) satellites and alternate concentration limits (ACLs)), and projection of licensee oversight activities (e.g. ISR wellfield package approval and facility decommissioning). To the extent that proposed dates for these potential major licensing actions are available, they will be incorporated into the feasibility study. To the extent that reasonable projections can be made based on typical progress and lifecycle timeframes, such projections will be incorporated.

Category 1 analyses also will provide an evaluation of potential alternatives to pursuing Agreement State status in order to alleviate current dual jurisdiction issues between the State and NRC. Each alternative will be described by issue and process with an assessment of the potential for success in solving dual jurisdiction issues. Thompson & Pugsley, PLLC believes that this feasibility study will be more useful if State decision makers are provided will a complete suite of options that can be evaluated from cost and potential for success perspectives.

Finally, Category 1 analyses will conclude with a list of product deliverables that are required to seek Agreement State status including descriptions of their form and content. Further, the list and descriptions will identify the most significant strategic decisions that will need to be made by the State if developing an application to NRC.

CATEGORY 2: TRANSITION TO AGREEMENT STATE STATUS

The second Category of activities in this feasibility study will be entitled *Transition to Agreement State Status* (Category 2). Category 2 is the least activity-intensive phase of the Agreement State process as it encompasses only the activities taking place just before final NRC-approval of a proposed Section 274 Agreement State program through the actual execution of an Agreement with NRC. However, while this phase of the process is the least activity-intensive, it does not lack for activities that need to be considered by the State in order to enter the maintenance phase of Agreement State Status efficiently.

During the timeframe associated with this Category, Thompson & Pugsley, PLLC recommends that the State undertake several activities prior to actually engaging in the transition process, most of which involve future regulatory workload analyses and forecasting. Initially, Category 2 analyses will discuss the identification processes used to determine the timeframes and frequency of major license applications and the necessary financial/staffing resources to address them. This activity will be conducted during the months leading up to the final execution of any Section 274 Agreement with NRC. As noted above, Category 1 analyses will offer a current list of license applicants/licensees and current and future potential major licensing actions; Category 2 will update those analyses to assure that staffing and financial resource allocations will be adequate. Given that the NRC Agreement State process is flexible

on timing, the State can avail itself of any additional time necessary to bring an Agreement State program into compliance with necessary resource requirements.

Category 2 analyses will discuss the establishment of a fee program for funding the operation and continued maintenance of an Agreement State program during the third phase of the process. These analyses will discuss the differences between initial funding of the Agreement State program prior to transition and the operation and structure of a fee program to continue operation and maintenance of said program. As will be described in this feasibility study, NRC operates a fee program that allows the agency to comply with its statutory responsibilities under the Omnibus Budget Reconciliation Act of 1990 (OBRA).[4] This program offers insights into the development of an adequate fee program, along with fee programs currently used by existing Agreement States.[5]

Category 2 analyses will include a discussion of major decisions in the transition process for Agreement State programs, including specifically the development of a State policy on transition. This policy will address a multitude of items including, but not limited to, adoption and/or translation in whole or in part existing NRC guidance and policy statements, analysis of potential impacts on existing State statutes and regulations, including State primacy authority from the United States Environmental Protection Agency (EPA) for EPA's Underground Injection Control (UIC) program under the federal Safe Drinking Water Act (SDWA), delegated EPA authority under the Clean Air Act (CAA), and transition of existing or to-be-approved NRC licenses or licensing actions to Agreement State licenses or licensing actions.

This Category also will include a list of product deliverables for this phase of the Agreement State process including a final list of potential uranium producers, a description of the current licensing status of current or potential future uranium producers in the State and, accordingly, budgeting/staffing and training requirements. A comprehensive chart of NRC guidance and policy statements will be discussed with respect to their form, content, and significance with initial recommendations on how to address adoption and/or translation of such guidance and policies. Category 2 analyses will discuss items that are to be prepared after initiation of the Agreement State process and just prior to final transition to Agreement State status.

CATEGORY 3: OPERATION AND MAINTENANCE OF AGREEMENT STATE STATUS

The third Category of activities in this feasibility study will be entitled *Operation and Maintenance of Agreement State Status* (Category 3). Category 3 is to be considered an ongoing phase of the Agreement State process and is intended to encompass activities from the execution of a Section 274 Agreement with NRC to the activities that are required for continued

[4] *See* 65 Fed. Reg. 16250 (March 27, 2000) (hereinafter "Exhibit 3).
[5] *See e.g.,* State of Colorado, Department of Public Health and Environment (Hazardous Materials and Waste Management Division), 6 CCR 1007-1 (hereinafter "Exhibit 4").

operation and maintenance of an Agreement State program. This Category will be formatted with a series of identified mechanisms by which the State can maintain some understanding of existing and future market conditions that may or may not give rise to an upturn or downturn in uranium production with any accompanying increase or decrease in licensing (i.e., license and license amendment applications) annual decommissioning and license termination activities, and opportunities to monitor ongoing uranium production-related activities through communication, manuals or memoranda of understanding (MOU) with relevant federal agencies such as the United States Bureau of Land Management (BLM) and the United States Forest Service (USFS).

Category 3 also will provide the reader with an overview of the processes associated with relinquishing Agreement State status and the transfer of authority back to NRC. In the past, States have engaged in these processes to relinquish all or part of their Agreement State program for a variety of reasons including a lack of staffing/resources and desire to not continue with the regulation of certain types of AEA materials and/or operations. This analysis will describe how the process of relinquishing Agreement State authority works and a brief description of some potential reasons for such relinquishment.

CONCLUSION

Thompson & Pugsley, PLLC appreciates the opportunity to prepare and present this feasibility study to the State and intends to prepare a series of presentation slides discussing the analyses in this study in subsequent meetings with State officials to facilitate the development of any additional questions regarding the process for moving forward should the State choose to do so. Thompson & Pugsley, PLLC emphasizes that this feasibility study is intended to provide the reader with a comprehensive overview of the Agreement State process and approaches that potentially could streamline the process but this feasibility study will not provide the State with any recommendations as to whether it should choose to pursue or choose not to pursue Agreement State status. In the event that the State determines that pursuing Agreement State status is appropriate, Thompson & Pugsley, PLLC is prepared to continue as advisors to the State in its endeavor should the State so choose.

STATE OF WYOMING AGREEMENT STATE FEASIBILITY STUDY

HISTORICAL PREFACE

A. OVERVIEW OF SOURCE MATERIAL RECOVERY AND 11E.(2) BYPRODUCT MATERIAL

The State Enrolled Act No. 100 specifically requires that this feasibility study address the AEA materials generated at "source material recovery" facilities known as "source material" (uranium and thorium) and "11e.(2) byproduct material" and the specific AEA operation known as "source material milling." In order for the State to make an informed decision regarding whether to pursue Agreement State status from NRC, it is critical that this feasibility study provide a comprehensive discussion of the type of materials and operations within the proposed scope reflected in the above-noted State Enrolled Act and the history behind the AEA's treatment of "source material," "11e.(2) byproduct material," and "source material milling." This historical context also will provide the State with an understanding of the origins of current overlapping jurisdictional issues between the State and NRC, why these issues exist, and the role federal preemption plays in such issues. The AEA, as amended, by UMTRCA and its legislative history provide the fundamental historical context regarding these AEA materials and "milling" operations that need to be addressed per the requirements of the Enrolled Act. Given that the Enrolled Act specifically states that its main purpose is to address and eliminate dual jurisdiction issues between NRC and the State, the following historical discussion is critical to laying the foundation for the remainder of the study.

1. SOURCE MATERIAL RECOVERY AND 11E.(2) BYPRODUCT MATERIAL HISTORY

The AEA, as enacted in 1954 and amended by UMTRCA in 1978 provides the bases for the development of NRC's and all Agreement State regulatory programs for "source material" and "source material recovery." With respect to *source material*, Congress used the AEA to establish a system by which the identification, extraction, possession and transfer of uranium or thorium would be regulated using licenses containing specific license requirements or conditions. In Chapter 7 of the AEA, Congress created a program under which entities seeking to engage in the production of *source material* could be required to obtain licenses from the Atomic Energy Commission (AEC now NRC) so that such *source material* could be used for a variety of purposes such as research and development and the creation of special nuclear material.[6] It is extremely important to note that, under the AEA's statutory framework, NRC now is solely an *independent* regulatory agency and, as such, "has no authority to encourage and promote the development of atomic energy for peaceful purposes. Nor does it bear any responsibility for the development or regulation of other energy sources."[7] Thus, a private entity (e.g., source material recovery company) or governmental entity (e.g., United States

[6] 42 U.S.C. § 2093(a)(1-4) (hereinafter "Exhibit 5").
[7] 49 Fed. Reg. 9352, 9353 (March 12, 1984) (hereinafter "Exhibit 6").

Department of the Army) is required to voluntarily submit license or license amendment applications to the Commission in order to possess, use, and transfer AEA materials to which NRC reacts.[8] "[T]he Commission has no power to compel an applicant to come forward or to require an applicant, once having come forward, to prepare and submit a totally different proposal."[9] When reviewing a license or license amendment application, "the available alternatives [to NRC] are to grant the application, grant the application subject to certain conditions, or deny the application, either with or without prejudice."[10] Thus, under this scheme, the licensee, and not the Commission, is *primarily* responsible for the safe management of AEA materials.

Prior to implementing a licensing program for *source material*, Congress needed to define the point at which the AEC's jurisdictional authority over *source material* would be triggered. Given that there are delineations between *source material* (i.e., uranium or thorium) as it resides in nature, the extraction of *source material ore*s by mining, and the *processing* of such *ore*s to recover their *source material* content, Congress determined that the AEC's jurisdiction should be invoked only after removal of *source material from its place in nature*. As stated in Section 62 of the AEA:

> "[u]nless authorized by a general or specific license issued by the Commission…no person may transfer or receive in interstate commerce,
> transfer, deliver, receive possession of or title to, or import into or export
> from the United States any *source material after removal from its place in nature*…."[11]

AEC's/NRC's 10 CFR Part 40 regulations define a class of *source material ore*s that, nevertheless, is not subject to Commission regulation termed *unrefined and unprocessed ores* that have been removed from their place in nature. Such ores is defined as "*ore* in its natural form *prior to any processing,* such as grinding, roasting or beneficiating, or refining."[12] Thus, *source material ore* that has not undergone *processing* activities such as those that take place at a uranium *mill* (e.g., crushing, grinding, and beneficiating) is not subject to NRC's jurisdiction.

The meaning of the phrase "after removal from its place in nature" was further clarified in NRC's 1980 Generic Environmental Impact Statement on uranium milling (GEIS), which explains that this phrase refers to *source material* "associated with processing" (i.e., at a licensed uranium mill):

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[8] In the event of a potential imminent hazard such as national security concerns, NRC can issue orders without waiting for a licensee to propose an action (e.g., "compensatory measures" or "immediately effective orders").
[9] *Id.*
[10] *Id.*
[11] 42 U.S.C. § 2092 (emphasis added) (hereinafter "Exhibit 7").
[12] *See* 10 CFR § 40.4 (hereinafter "Exhibit 8").

> "Section 205(a) of the UMTRCA [Uranium Mill Tailings Radiation Control Act of 1978] amends the Atomic Energy Act of 1954 by adding a new Section 84 which states in part that 'the Commission shall insure that the management of any *byproduct material*, as defined in section 11e.(2) , is carried out in such a manner as…the Commission deems appropriate to protect public health and safety and the environment from radiological and nonradiological hazards *associated with the processing* [of source material ore] and with the possession and transfer of such material…"[13]

Similarly, the Atomic Safety and Licensing Appeal Board in *In the Matter of Rochester Gas and Electric* states:

> "The Atomic Energy Commission's jurisdiction in this area was transferred to the NRC on January 19, 1975, by the Energy Reorganization Act of 1974, 42 U.S.C. § 5841(f). As the quoted observation indicates, the Commission's authority over uranium *ore* and other '*source material*' attaches only '*after* removal from its place of deposit in nature,' and *not when the ore is mined*."[14]

Therefore, *source material* in uranium *ore* at a uranium *mill* is subject to AEC/NRC jurisdiction, while *source material* in uranium *ore* at a uranium *mine* or during transport to a uranium *mill* prior to *processing* is not subject to AEC/NRC jurisdiction, regardless of its *source material* concentration.

Section 62 of the AEA requires that entities seeking to transfer or receive in interstate commerce or to transfer, deliver, receive possession of or title to or to import into or export from the United States *source material* obtain a license from the Commission.[15] Section 62 also addresses *unimportant quantities* of *source material* (which Congress empowered the AEC to define) by stating that "licenses *shall not be required* for quantities of *source material* which, in the opinion of the Commission, are unimportant.[16] By regulation, the AEC/NRC defined "unimportant quantities" of *source material* to mean, "[a]ny person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, transfers or delivers *source material* in any chemical mixture, compound, solution, or alloy in which the *source material* is by weight less than one-twentieth of 1 percent (0.05 percent) of the mixture, compound, solution or alloy."[17] Quantities of *source material* exceeding the 0.05% or 500 parts per million (ppm), by

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[13] GEIS at A-89 (emphasis added) (hereinafter "Exhibit 9").
[14] 8 NRC 551, *6 (November 17, 1978), *citing* 42 U.S.C. § 2092 (2005) (emphasis added) (hereinafter "Exhibit 10").
[15] *See* Exhibit 7.
[16] *Id.*
[17] 10 CFR § 40.13(a) (hereinafter "Exhibit "11").

weight, threshold often are referred to as *licensable source material*. The AEC General Counsel's evaluation of Section 62 determined that its provisions are *mandatory*.[18]

The AEC's choice of the 0.05%/500 ppm, by weight, threshold for *licensable source material* had little to do with potential radiological risks to public health and safety or the environment. At the time the "unimportant quantities" determination was issued, the Commission was attempting to gauge the types of uranium-bearing *ore*s that likely would be necessary to create special nuclear material.[19]

In addition, current NRC regulations provide for a second type of "unimportant quantities" exemption from regulation under AEA Section 62. As stated in 10 CFR § 40.13(c)(1)(vi), "rare earth metals and compounds, mixtures, and products containing not more than 0.25/2,500 ppm percent by weight thorium, uranium, or any combination of these" are exempt from licensing.[20] This exemption often plays a crucial role at rare earths (e.g., lanthanides) recovery facilities that recover source material as part of a "side-stream" recovery process or that produce waste streams containing source material.

2. THE CREATION OF A SOURCE MATERIAL RECOVERY AND 11E.(2) BYPRODUCT MATERIAL MANAGEMENT PROGRAM

As noted above, while the initial development of a "source material" licensing program finds its origins in the 1954 version of the AEA, the further development and evolution of the "source material recovery" regulatory program finds its origins UMTRCA, as amended.

i. URANIUM MILL TAILINGS RADIATION CONTROL ACT OF 1978 STATUTORY PROGRAM AND MANDATE

During the early period of the domestic uranium recovery industry, the AEC did not consider the tailings from uranium or thorium recovery to be a threat to public health and safety or the environment and, as a result, little regulatory attention focused on such tailings. Indeed, the AEC believed that its general radiation protection regulations at 10 CFR Part 20

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[18] *See* Letter to H. L. Price, Director, Division of Licensing and Regulation from Neil D. Maiden, Acting General Counsel, Atomic Energy Commission, *Re: Mill Tailings* (December 7, 1960) (hereinafter "Exhibit 12").

[19] The basis for the selection of the "unimportant quantities" threshold was recently highlighted in 2003 when an Interagency Working Group recommended to the Commission that a legislative amendment to the AEA be obtained to limit Commission authority over quantities of source material under the "unimportant quantities" threshold. This recommendation was rejected by the Commission stating: "Although the Commission agrees that the proposed approach is the most efficient way to address the issue, because the probability of success is very limited, the Commission does not wish to expend the resources." *See* SRM-SECY-03-0068 – *Interagency Jurisdictional Working Group Evaluating the Regulation of Low-Level Source Material or Materials Containing Less Than 0.05 Percent By Weight Concentration Uranium and/or Thorium*, (October 9, 2003) (hereinafter "Exhibit 13").

[20] *See* Exhibit 11.

would adequately address any potential radiation hazard posed by tailings pile overflows or seepage, as well as any airborne radiation exposure.[21] However, in the late 1960s and early 1970s, concerns about the control of uranium and thorium mill tailings began to surface. For example, the AEC learned that uranium mill tailings in Grand Junction, Colorado had been dispersed and used in the construction of residential and commercial buildings and that there existed a potential threat of adverse health impacts to the occupants of such buildings from radon gas generated by the radium in such tailings.[22]

In this timeframe, during active uranium recovery operations, the AEC (and later NRC) implemented a series of "Branch Technical Positions" (BTP) and "Regulatory Guides" to oversee the management and disposition of uranium mill tailings. However, at that time, the AEC took the position that it was without the authority to regulate uranium mill tailings after cessation of active uranium recovery operations and license termination. Later, in light of the potential health risks associated with mill tailings, the AEC re-evaluated potential regulation of mill tailings. The AEC determined that the then-recently enacted National Environmental Policy Act of 1969 (NEPA), in combination with its broad AEA authority provided it with the ability to regulate uranium mill tailings. A 1973 memorandum prepared by the AEC's Office of the General Counsel expressed the view that:

> "While judicial attitudes are difficult to predict, it would appear likely that license termination in question would be held subject to NEPA section 102(2)(c). Therefore, it is likely that AEC has the authority to require environmental protection measures with regard to the mill tailings."[23]

This opinion was elaborated upon further by NRC legal staff:

> "The termination of a license is a procedure authorized by the Atomic Energy Act of 1954, as amended, and may be a major federal action with a significant environmental effect. NEPA provides a supplemental grant of *substantive* authority to condition the termination for the purpose of environmental protection. (See Sections 103 and 105 of NEPA)
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> Accordingly, the Commission would have the authority to respond favorably to the petition to establish regulations for the post-license environmental control of uranium mill tailings. The basis of environmental

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[21] *See generally American Mining Congress, Commingled Uranium Mill Tailings-A Historical Perspective,* (March 4, 1985).

[22] *Use of Uranium Mill Tailings for Construction Purposes: Hearings Before the Raw Materials Subcomm. of the Joint Comm. on Atomic Energy*, 92d Cong. At 4-17, 70-92 (1971).

[23] *AEC Authority to Require that a Uranium Mill Licensee Provide Environmental protection Measures with Respect to Mill Tailings as a Condition to License Termination*, Memorandum from Howard K. Shapar, Assistant General Counsel, Licensing and Regulation Division, AEC to L. Manning Muntzing, (March 29, 1973) (hereinafter "Exhibit 14").

> authority is NEPA, as implemented through the licensing authority of the Atomic Energy Act of 1954, as amended."[24]

Subsequently, however, federal court decisions determined that NEPA is purely a *procedural* statute and *does not* provide an agency with *supplemental* substantive authority to regulate in a given area; an agency derives its jurisdiction to regulate in any area solely through its organic statute.[25] As a result, it became increasingly clear that legislation would be required to authorize the control of uranium mill tailings after license termination.

As noted above, in 1978, Congress enacted UMTRCA to provide express statutory authority to regulate the production, containment, and monitoring of uranium and thorium mill tailings during and after active recovery operations. UMTRCA was based upon a finding that uranium and thorium mill tailings located at *active* (i.e., licensed) and *inactive* (i.e., abandoned) mill sites may pose a significant, potential radiation health hazard to members of the public.[26] In explaining the need for UMTRCA, the House Report accompanying the legislation relied upon the description of the potential public health hazard of mill tailings in the testimony of then-NRC Chairman, Dr. Joseph Hendrie:

> "The NRC believes that long-term release from tailings piles may pose a radiation health hazard if the piles are not effectively stabilized to minimize radon releases and prevent unauthorized use of the tailings."

The centerpiece of this new grant of direct authority to regulate uranium mill tailings was the creation of a new category of AEA-regulated materials. Specifically, the definition of "byproduct" material was modified when Congress created "11e.(2) *byproduct material*," which is defined to mean:

> "the tailings or wastes produced by the extraction or concentration of uranium and thorium from any *ore* processed *primarily* for its source material content."[27]

This class of material was (and is) unique among the materials regulated under the AEA, because it is not defined solely in terms of its radiological characteristics, but instead is defined

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[24] Memorandum from Joanna Becker, Chief Regulations Counsel, NRC to L.C. Rouse (October 17, 1975) (emphasis added).

[25] *See e.g., NRDC v. EPA*, 822 F.2d 104 (D.C. Cir. 1987) (holding that NEPA does not act to broaden an agency's substantive powers); *see also Cape May Greene, Inc. v. Warren*, 698 F.2d 179 (3rd Cir. 1983) (stating that NEPA does not grant an agency jurisdiction outside the scope of the jurisdiction set forth in its organic statute) (hereinafter "Exhibit 15").

[26] Pub L. No. 95-604, at 2(a), 92 Stat. 3021-22 (hereinafter "Exhibit 16").

[27] AEA Section 11e.(2) (42 U.S.C. § 2014(e)(2)) (emphasis added). Previously, "*byproduct material*" had been defined to mean "any radioactive material (except special nuclear material) yielded or made radioactive by exposure to radiation incident to the process of producing or utilizing special nuclear material." *See* 42. U.S.C. § 2014(e)(1). This definition is currently located at Section 11e.(1) of the AEA.

broadly enough to encompass "all wastes"—both radioactive and *non*-radioactive—resulting from uranium *ore* processing at licensed uranium recovery facilities.[28] Since this new definition of "*byproduct material*" is intended to be expansive and to cover the broad range of wastes associated with uranium milling, the tailings and *all* other wastes associated with uranium recovery produced at AEA-licensed uranium milling facilities are referred to as "11e.(2) *byproduct material*." *The relationship between source material and 11e.(2) byproduct material is the fundamental driving force behind uranium recovery regulations, relevant guidance and policies, and licenses/permits from 1978 to the present*.

Further, given that the statute was enacted to respond to potential health risks associated with the potential long-lived threat posed by 11e.(2) *byproduct material* (mill tailings), the second focus of UMTRCA's regulatory program (other than the creation of a licensing program) is the requirement that all 11e.(2) *byproduct material* and the land on which such material is deposited be transferred to the federal government or the State in which the material and land is located for long-term surveillance and monitoring.[29] Section 83 of the AEA, as amended by UMTRCA, states that:

> "ownership of any *byproduct material*, as defined in section 11e.(2), which resulted from such licensed activity shall be transferred to (A) the United States or (B) in the State in which such activity occurred if such State exercises the option under subsection b. (1) to acquire land used for disposal of *byproduct material*."[30]

Section 83(b) also provides for the transfer of land used for disposal of 11e.(2) *byproduct material* to either the United States or the State "unless the Commission determines prior to such termination [of a license] that transfer of title to such land and such *byproduct material* is not necessary or desirable to protect the public health, safety or welfare or to minimize or eliminate danger to life or property."[31] Further, UMTRCA mandates that the long-term custodian be a licensee of NRC in perpetuity and that the 11e.(2) *byproduct material* and its associated land be transferred *at no cost to the government*.[32]

Later, in 1983 and in response to discontent manifested by Agreement State regulators and uranium recovery licensees seeking to propose site-specific alternatives, Congress amended Section 84 of the AEA to allow NRC to approve licensee or Agreement State-proposed "alternatives" to the Commission's requirements if the proposed alternatives provide a level of

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[28] *See* 57 Fed. Reg. 20,525, 20,526 (1992) (hereinafter "Exhibit 17").
[29] *See generally* 42 U.S.C. § 2113 *et seq* (hereinafter "Exhibit 21").
[30] 42 U.S.C. § 2113(a)(2).
[31] 42 U.S.C. § 2113(b)(1)(A).
[32] *Id.* It is also worth noting that UMTRCA provides for unique "land status" requirements for 11e.(2) *byproduct material* produced at facilities under a license in effect on UMTRCA's effective date (i.e., November 8, 1981). As stated in Section 83(b)(4) of the AEA, "the Commission shall take into consideration the status of the ownership of such land and interests therein and the ability of the licensee to transfer title and custody thereof to the United States or a State."

protection that is "equivalent to, to the extent practicable, or more stringent than" the level of protection afforded by NRC applicants.[33] Congress' 1983 amendments also clarified NRC's responsibilities under Section 84(a) of the AEA by specifically requiring that EPA/NRC consider environmental and economic costs and balance those costs against potential risks when developing standards and requirements for the management of 11e.(2) *byproduct material*.[34] In its report on these amendments, the conference committee explained that:

> "The conferees are of the view that the economic and environmental costs associated with standards and requirements established by the agencies should bear a reasonable relationship to the benefits expected to be derived. This recognition is consistent with the accepted approach to establishing radiation protection standards, and reflects the view of the conferees that, in promulgating such general environmental standards and regulations, EPA and NRC should exercise their best independent technical judgment in making such a determination."[35]

The regulatory scheme created by the UMTRCA amendments to the AEA was and is unique because of the manner in which jurisdiction over the radiological and *non*-radiological aspects of 11e.(2) *byproduct material* is divided among three major federal agencies: EPA, NRC, and the United States Department of Energy (DOE). Each federal agency is assigned different responsibilities associated with creation and implementation of a uniform and comprehensive regulatory regime for the active oversight and long-term control of 11e.(2) *byproduct material*.

In Title I of UMTRCA, Congress established a program to identify and remediate so-called "inactive" sites; that is, sites at which uranium milling operations had occurred in the past or that contained tailings and other wastes produced during such operations and that were not covered by an existing license.

Under the program set out in Title I of UMTRCA, DOE is authorized to enter into "cooperative agreements" with States containing *inactive* sites for the purpose of remediating those sites. Remedial actions undertaken by DOE under Title I are required to have the Commission's concurrence and to conform with *generally applicable standards* developed by EPA for the protection of public health and safety and the environment from potential radiological and *non*-radiological hazards associated with tailings and other uranium milling wastes.[36] Following remediation of these *inactive* sites, title to the tailings and wastes from the sites and to the land used for their disposal resides with DOE, and the sites are to be maintained by DOE in perpetuity pursuant to license issued by the Commission.[37] In addition, the Commission is authorized to require that DOE, as the custodian of remediated inactive sites, undertake such monitoring, maintenance, and emergency measures as the Commission

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[33] 52 Fed. Reg. 43,553 (1987) (hereinafter "Exhibit 18").
[34] Pub. L. No. 97-415 § 22 (1983).
[35] S. Rep. No. 97-113 (1982), reprinted in 1982 U.S.C.C.A.N. 3592, 3617.
[36] 42 U.S.C. § 7918 (1994).
[37] 42 U.S.C. § 7914 (1994); *see also* 10 CFR § 40.28.

may deem necessary to protect public health and safety.[38] The Commission also can require DOE to take other actions that the Commission deems necessary to comply with EPA's generally applicable standards for protection against potential radiological and *non*-radiological hazards associated with uranium mill tailings and related wastes.[39]

For purposes of this study, the State of Wyoming has two (2) Title I UMTRCA sites: (1) the Spook site located in Converse County which was operated by the Wyoming Mining and Milling Company from 1962 to 1965 and (2) the Riverton site located near Riverton which was operated by Susquehanna-Western, Inc. from 1958 to 1963. As per the UMTRCA Title I program discussed above, these "legacy" sites have been reclaimed and currently under the active management of DOE. These two sites are not the responsibilities of the State and the Wyoming Department of Environmental Quality (WDEQ), but the State does maintain active communication with DOE on the management of these sites.

In parallel with the Title I program is Title II, wherein Congress granted EPA and NRC expansive authority to regulate directly all aspects of the management and disposition of uranium mill tailings and related wastes generated at "active" (i.e., licensed) uranium mill tailings sites.[40] Like Title I, Title II establishes a tripartite jurisdictional scheme involving EPA, NRC, and DOE,[41] each of which have a defined role. Under Title II, NRC has the lead on addressing regulation and closure of sites, and DOE has only the long-term surveillance and monitoring responsibility that it also has under Title I. EPA's responsibilities are essentially the same under both Titles I and II.

The State of Wyoming currently has nine (9) Title II UMTRCA sites that are undergoing some phase of active reclamation, site closure, and/or license termination. These nine sites are as follows: (1) the Highland site operated most recently by Exxon/Mobil north of Glenrock; (2) the Bear Creek site operated most recently by Bear Creek Uranium Company near Glenrock; (3) the Petrotomics site in the Shirley Basin (this site has been transferred to DOE); (4) the Pathfinder site in Shirley Basin which was operated most recently by Pathfinder Mines (and currently subject to purchase by Ur-Energy, LLC); (5) the Sweetwater site currently on standby

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[38] *See* 42 U.S.C. § 2113(b)(5).

[39] In many respects, the role assigned to DOE under Title of UMTRCA is akin to that of a super "potentially responsible party" or (PRP) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 *et seq*., since DOE is responsible for remediating Title I sites and maintaining them in perpetuity, and the agency is responsible for most of the costs associated with those efforts. Indeed, because of the unique role performed by DOE at Title I sites, Congress deemed it appropriate to specifically exclude those sites from the reach of CERCLA. *See* 42 U.S.C. § 9601(22).

[40] Under Section 274 of the AEA, States can enter into agreements with NRC under which the States assume the authority of the Commission with respect to the regulation of uranium mill tailings and related wastes.

[41] In 1974, the AEC was terminated and divided into a promotional and a regulatory agency. The Energy Research and Development Administration, the precursor to the current DOE, was the promotional agency. The new regulatory agency was NRC.

and operated by Kennecott Uranium Company south of Jeffrey City; (6) the UMETCO site in the Gas Hills north of Jeffrey City which is currently in the process of being transferred to DOE; (7) the American Nuclear Corporation (ANC) site in the Gas Hills; (8) the Lucky Mc site previously operated by Pathfinder Mines Corporation in the Gas Hills; and (9) the Split Rock site operated previously by Western Nuclear, Inc. (WNI) near Jeffrey City, which is presently in the process of being transferred to DOE. Each of these sites (with the exception of the Petrotomics site) currently are regulated under an active NRC license regardless of what stage of site reclamation and closure has been completed.

Pursuant to Section 275 of the AEA, Congress assigned EPA the authority to promulgate *generally applicable standards* for the protection of public health and safety and the environment from the potential radiological and *non*-radiological hazards associated with the possession, transfer, and disposal of 11e.(2) *byproduct material*.[42] For the *non*-radiological hazards associated with 11e.(2) *byproduct material*, these *generally applicable standards* are to provide equivalent protection to that provided by EPA's Resource Conservation and Recovery Act (RCRA) standards.[43] As a result, 11e.(2) *byproduct material* is specifically exempted from EPA regulation under RCRA[44] and permitting authority over such material is deliberately withheld from EPA.

While the regulations developed for the Title I "inactive" uranium mill tailings sites are not relevant to this paper's discussion of regulatory regimes associated with active or future uranium recovery operations, a discussion has been included here to provide a complete overview of the evolution of the UMTRCA regulatory program applicable to source material recovery operations. Implementing UMTRCA's mandate, EPA issued its first set of *generally applicable standards* in 1983 which applied only to "inactive" mill tailings sites (i.e., sites regulated under Title I of UMTRCA that were no longer operated under an active license).[45] This occurred a full three years after NRC issued its GEIS and its initial regulations for uranium milling. Although these types of sites were not addressed in NRC's initial regulations, EPA's inactive site regulations opened a window on some important differences between EPA and NRC requirements, particularly with respect to the establishment of standards for control of radon emissions from mill tailings. For example, EPA adopted a radon emission standard of 20 picocuries per meter squared per second ($pCi/m^2/s$), while NRC had adopted a much more stringent standard of 2 $pCi/m^2/s$ within a minimum of ten (10) feet of cover. In addition, EPA's regulations did not include any specific requirements for construction of radon barriers (since, arguably, EPA does not have any authority to impose such a control requirement on tailings facilities) although, in its rulemaking materials, EPA indicated that its 20 $pCi/g/m^2/s$ radon standard was premised on the use of thick radon barriers.

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[42] 42 U.S.C. § 2022(b) (hereinafter "Exhibit 20").
[43] *See* Exhibit 21.
[44] *See* 40 CFR § 261.4 (hereinafter "Exhibit 22").
[45] 48 Fed. Reg. 590 (January 5, 1983) (hereinafter "Exhibit 23").

EPA's inactive site regulations also established what has come to be known as the "5/15" clean-up standard for radium-226 in soil, primarily due to "windblown" tailings or tailings spills. Under this standard, radium concentrations in soil are to be reduced to levels of no more than 5pCi/g in the first 15 cm of soil and no more than 15 pCi/g in each descending 15 cm soil horizon averaged over 100 square meter segments. In addition, EPA required that disposal systems be designed to provide "reasonable assurance" of achieving the radon emission standard for 1,000 years, but no less than 200 years and to do so without the need for "active" maintenance. Finally, EPA did not, in its inactive sites regulations, establish any *generally applicable standards* for groundwater contamination because, in EPA's view at the time, the risks from groundwater contamination were not sufficiently significant to require the development of such standards. Thus, in the preamble to its inactive sites regulations, EPA explained:

> "We do not believe that the existing evidence indicates that groundwater contamination from inactive mill tailings is or will be a matter of regulatory concern. We have decided, therefore, not to establish general substantive standards on this subject."[46]

Consequently, instead of establishing *generally applicable groundwater standards* in its inactive sites regulations, EPA concluded that groundwater issues would have to be addressed by DOE on a site-by-site basis.[47]

Later that same year, EPA issued its *generally applicable standards* for active sites (i.e., licensed sites regulated under Title II of UMTRCA).[48] As with the inactive site standards, EPA's active site regulations require that radon emanation from mill tailings disposal sites be limited to 20 pCi/m²/s,[49] that the controls provide "reasonable assurance" of achieving this standard for 1,000 years, but not less than 200 years,[50] and EPA's active site regulations also incorporate the "5/15" standard for radium-226 in soil.[51] Even though EPA's *generally applicable standards* for "inactive" and "active" mill sites are essentially the same with respect to these requirements, the "active" sites regulations deviate significantly with respect to the *generally applicable* groundwater standards.[52] The groundwater standards in EPA's *active* sites regulations, which were directed at both potential radiological and *non-radiological* (i.e., hazardous) constituents, are intended to provide a level of protection for *non*-radiological (i.e., hazardous) constituents equivalent to that provided by EPA's regulations under RCRA.[53] The latter were lifted directly from EPA's RCRA hazardous waste groundwater corrective action requirements at 40 CFR Part 264 *et seq*. The groundwater standards were divided into a *primary* standard and a *secondary* standard. The *primary* standard is a *design* standard,

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[46] *Id*.
[47] *Id*.
[48] 48 Fed. Reg. 45,926 (1983).
[49] *Id.* at 45,947.
[50] *Id.*
[51] *Id.*
[52] *See* 60 Fed. Reg. 2854 (1995) (hereinafter "Exhibit 24").
[53] *See* Exhibit 21.

requiring the installation of a bottom liner under all new tailings impoundments and under new extensions of existing impoundments. The *secondary* standard is a *performance* standard, requiring that groundwater at the point of compliance (POC) (i.e., the downgradient edge of the tailings impoundment) meets background levels or drinking water standards (i.e., maximum contaminant limits (MCL), whichever is higher. Additionally, in the event that neither background nor an MCL is achievable, licensees can seek an alternate concentration limit (ACL) which is a site-specific, risk-based limit. ACLs assure that concentrations at the POC will result in groundwater constituent concentrations that are protective of public health, safety, and the environment at the point of exposure (POE). Interestingly enough, although neither EPA's initial "inactive" sites regulations nor NRC's initial regulations for "active sites" provided such standards for groundwater corrective action, site closure experience indicates that, in most cases, the ACL-based POE will determine the geographical boundaries of Title II sites to be turned over to DOE for long-term custodianship.

Pursuant to the *American Mining Congress v. Thomas*[54] case in the United States Court of Appeals for the Tenth Circuit (Tenth Circuit), EPA was required to review its "inactive" site program and to conform its "inactive" site regulations for groundwater to those for "active" sites, which EPA eventually did.

Under UMTRCA, Congress specifically designated NRC as the lead agency for implementing and enforcing EPA's *generally applicable standards* through licensing.[55] Section 275(d) of the AEA provides that "[i]mplementation and enforcement of the standards promulgated [by EPA] pursuant to subsection (b) of this section shall be the responsibility of the Commission in the conduct of its licensing activities under this Act."[56] In addition, Congress expanded NRC's regulatory authority under Section 84 of the AEA to develop its own requirements for the management of 11e.(2) *byproduct material*. Specifically, Section 84(a) of the AEA directs NRC to ensure that any 11e.(2) *byproduct material* is managed in a manner:

(i) that the Commission deems appropriate to protect health, safety, and the environment from the potential radiological and non-radiological hazards associated with such materials;
(ii) that *conforms* with the generally applicable standards developed by EPA; and
(iii) that conforms with the general requirements established by NRC, comparable to standards applicable to similar hazardous materials regulated under the Solid Waste Disposal Act [42 U.S.C. § 6901 et seq.]."[57]

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[54] *American Mining Congress v. Thomas*, 772 F.2d 617, 640 (10th Cir. 1985) ("On remand, the EPA will have to treat these toxic chemicals that pose a ground water risk as it did in the active mill site regulation.") (hereinafter "Exhibit 25").
[55] *See* Exhibit 20.
[56] *Id.*
[57] *See* Exhibit 21.

Pursuant to its new UMTRCA authority, in April of 1979, NRC issued a Draft Generic Environmental Impact Statement (DGEIS) examining the potential environmental ramifications of uranium milling activities and possible regulatory standards pertaining to those activities. A few months later, NRC issued proposed regulations governing active uranium milling and long-term control and maintenance of mill tailings facilities.[58] These proposed regulations were controversial for two reasons. First, they incorporated very conservative standards (e.g., a maximum radon emanation rate of 2 pCi/m²/s with a required minimum cover of at least ten (10) feet to address radiation risks that were admitted to be quite small for potentially exposed individuals. Second, the proposed regulations were controversial, because they were issued before EPA had developed its *generally applicable standards* for such sites. Since, under the regulatory scheme set out in UMTRCA, regulations developed by NRC governing uranium mill tailings (11e.(2) *byproduct material* generally) are to *conform* to the *generally applicable standards* promulgated by EPA, it was argued at the time that NRC's proposed regulations were premature.

However, despite these objections, NRC proceeded to finalize these proposed regulations. In the fall of 1980, NRC published its final regulations for uranium milling activities[59] contained in 10 CFR Part 40, Appendix A and also announced the availability of the final GEIS.[60] In keeping with its proposed regulations, NRC's final regulations adopted extremely conservative standards for the management and disposal of uranium mill tailings. In addition, the final regulations were directed, for the most part, at abating radon which, at the time, was seen to be the primary potential threat to health posed by uranium mill tailings and related wastes. Notably, groundwater protection issues were left to be addressed on a site-by-site basis.

Then, since EPA's *generally applicable standards* for "active" sites were issued after the Commission issued its regulations under UMTRCA and, because its regulations must *conform* to EPA's standards, NRC was forced to revise its regulations. In 1985, NRC focused its conformance efforts on EPA's standards for surface stabilization and radon protection.[61] The Commission published a final rule in 1985 that replaced its 2 pCi/m²/s radon standard with EPA's 20 pCi/m²/s standard. Similarly, the Commission eliminated the requirement in its original regulations for a minimum cover of ten (10) feet and adopted in its place EPA's longevity standard under which the system employed to contain mill tailings must provide "reasonable assurance" of remaining effective for 1,000 years and, in any event, at least 200 years utilizing "passive" controls.[62] Also, NRC modified its regulations to specify that radon and longevity standards apply only to portions of a site or disposal area that exceed the "5/15" radium in soil standard.[63] In 1990, NRC issued final surface stabilization guidance[64] which

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[58] 44 Fed. Reg. 50,015 (1979) (hereinafter "Exhibit 26").
[59] 45 Fed. Reg. 65,521 (1980) (hereinafter "Exhibit 27").
[60] *See* NRC GEIS, NUREG-0706 (1980).
[61] 50 Fed. Reg. 41,852 (1985) (hereinafter "Exhibit 28").
[62] *Id.* at 41,856
[63] *Id.* at 41,860.

required most licensees to revise their approved surface closure plans. Although NRC conformed its regulations to EPA's radon and surface stabilization standards reasonably quickly, it took significantly longer to conform its regulations to EPA's groundwater standards. Indeed, although NRC published an advance notice of proposed rulemaking in November of 1984, it was not until three (3) years later, at the end of 1987, that NRC's final groundwater requirements in Appendix A were promulgated.[65] Those regulations, like EPA's groundwater regulations, include a design standard and a performance standard. Also, like the EPA regulations, NRC's performance standard requires the licensee to achieve background concentrations, drinking water standards or an ACL. Further, the Commission initiated a program by which licensees are required to implement groundwater corrective action programs (GWCAP) within eighteen (18) months if contamination is found to pass the POC to ensure compliance with relevant groundwater standards.

NRC's failure to promulgate final groundwater regulations prior to 1987 created difficulties for some mill operators. Since world uranium market conditions were beginning to depress the domestic uranium recovery industry, many uranium mills were placed on "standby" status and began to address final site closure seriously. However, achieving final site closure was, as a practical matter, impossible until NRC's groundwater regulations were completed, and such closure efforts were further delayed due to NRC's failure to timely issue guidance on obtaining ACLs. Indeed, NRC did not issue "final" guidance on ACLs until December of 1992. Thus, as a practical matter, it was not until 1993 that NRC's regulatory requirements and associated guidance were in place so that licensees could proceed to final site closure and license termination with reasonable assurance about the "rules of the game."

ii. <u>10 CFR PART 40, APPENDIX A CRITERIA FOR SOURCE MATERIAL RECOVERY</u>

With this evolution of mill tailings control requirements in mind, currently, the Commission's regulations providing for the safe disposal, containment, and long-term oversight of 11e.(2) *byproduct material* are contained in the Criteria set forth in 10 CFR Part 40, Appendix A.

Appendix A sets forth broad, performance-oriented *Criteria* governing uranium recovery activities and waste disposal. At a time when emerging environmental regulations were typically extremely prescriptive (e.g., EPA), Appendix A can be classified as somewhat "ahead of its time" because NRC sought to develop performance-oriented *Criteria* rather than prescriptive regulations so that uranium recovery licensees could address site-specific circumstances effectively.[66] In total, Appendix A contains thirteen (13) *Criteria* designed to require licensees to properly locate, manage, and decontaminate and decommission (D&D) their sites.

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[64] *See* United States Nuclear Regulatory Commission, Final Staff Technical Position, *Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites* (August 1990) (hereinafter "Exhibit 29").
[65] 52 Fed. Reg. 43,553 (1987) (hereinafter "Exhibit 30").
[66] NRC Staff developed these Appendix A Criteria "mindful of the fact that the problem of mill tailings management is highly site-specific. The precise details of a program can be worked out only when the

As noted above, NRC's performance-oriented *Criteria* in Appendix A and applicable guidance are specifically designed to allow licensees to take into account site-specific conditions. The Introduction to Appendix A states:

> "In many cases, *flexibility* is provided in the criteria to allow achieving an optimum tailings disposal program on a site-specific basis…Licensees or applicants may propose *alternatives* to the specific requirements in this appendix. The *alternative* proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology."[67]

Since Appendix A was promulgated with the intention of maintaining *flexible* performance-oriented criteria and Section 84(c) of the AEA as amended by UMTRCA specifically authorizes it, NRC will evaluate site-specific *alternatives* proposed by a licensee in conjunction with a licensee's operations or D&D proposals. As stated in the Introduction to Appendix A:

> "the Commission may find that the proposed *alternatives* meet the Commission's requirements if the *alternatives* will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and non-radiological hazards associated with the sites, which is equivalent, to the extent practicable, or m*ore* stringent than the level which would be achieved by the requirements of this appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR part 192, subparts D and E."[68]

Alternatives under Appendix A can be viewed from two (2) perspectives: (1) alternatives to a single Criterion or Criterion requirements and (2) a single "package" of legal/regulatory and/or technical items that is an *alternative*. The former is the most common form of *alternative* as licensees may propose alternative groundwater standards from those prescribed in Criterion 5(B)(5) such as the use of supplemental groundwater standards (originally intended for Title I sites). The latter is a less commonly used, but currently accepted and effective, approach such as the package of groundwater modeling, durable institutional controls, and revised long-term surveillance boundary (LTSB) with subsequent land purchase and the aforementioned institutional controls used by WNI at the Split Rock Title II site and approved by NRC Staff and the Commission. Either approach is permitted in Appendix A and is a legal right for any source material recovery licensee.

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unique conditions of a site are known." Indeed, the word "requirements" in the Introduction to "Appendix A" was replaced with the word "criteria", Exhibit 9 at A-81, 82.

[67] *See* 10 CFR Part 40, Appendix A (emphasis added) (hereinafter "Exhibit 61").

[68] To be successful, licensee-proposed *alternatives* to NRC or EPA regulatory *requirements* likely will require substantial justification, thorough review by NRC Staff, a public comment period, and, ultimately, a decision by the Commission.

Criterion 1 discusses the general goals and broad objectives for locating a uranium recovery and/or tailings disposal site. Generally, proper location of a site should be based on the "permanent isolation of tailings and associated contaminants by minimizing disturbance and dispersion by natural forces, and to do so without ongoing maintenance." Four specific factors are listed for a licensee's consideration when selecting a site's location including:

(1) Remoteness from populated areas;
(2) Hydrological and other natural conditions as they contribute to continued immobilization and isolation of contaminants from ground-water sources; and
(3) Potential for minimizing erosion, disturbance, and dispersion by natural forces over the long term; and
(4) The site selection process must be an optimization to the maximum extent reasonably achievable in terms of these features.

Criterion 1 also prioritizes the location and isolation of a site's tailings over any short-term conveniences or impacts that might occur from site selection. Tailings disposal plans also must require that no *active* maintenance for the preservation of site conditions will be necessary.

Criterion 2 briefly addresses the disposal of wastes from uranium recovery activities at remote and/or small sites and the need for transportation of waste for disposal versus the costs of such transportation. Indeed, in an effort to "avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance operations," Criterion 2 states that *byproduct material* from various types of source material recovery operations such as from small above-ground uranium recovery operations or ISR facilities are to be disposed of at *existing* large mill tailings sites rather than establishing and characterizing new disposal sites. The scenario in which it would be appropriate to develop and assess a new disposal site (e.g., for ISR-generated 11e.(2) *byproduct material*) is when it can be demonstrated that the nature of the wastes to be disposed and the costs and environmental impacts from the transport of such wastes to an existing disposal site are shown to be impracticable or its benefits clearly outweigh the benefits of disposal in existing tailings impoundments.[69]

Criterion 3 states that the "prime option" for disposal of tailings is placing them below grade in either mines or specially excavated pits. Further, in the case that an evaluation of site geologic and hydrological conditions demonstrates that disposal fully below grade may be impractical, "it must be demonstrated that an above-grade disposal program will provide reasonably equivalent isolation of the tailings from natural erosional forces."

Criterion 4 lists site and design *criteria* that must be followed regardless of whether the tailings are disposed above or below grade. The main focus of these requirements are

[69] Criterion 2's non-proliferation of sites policy fits comfortably with NRC's policy favoring waste disposal over storage and with the concept of using and not losing existing licensed disposal capacity for disposal and long-term isolation of *similar non*-11e.(2) *byproduct material* wastes.

controlling geologic forces that could cause shifting and escape of their contents from disposal units including final rock cover designs and topographical features which provide good wind erosion protection. Topographical features such as the steepness of underlying slope formations and contouring of impoundment surfaces are also discussed.

Perhaps the most extensive criterion, Criterion 5, incorporates the basic groundwater protection standards as promulgated by EPA in 40 CFR Part 192, Subparts D & E which, as noted above, incorporate RCRA standards in 40 CFR Part 264 *et. seq.* and which apply both during operations and to final closure. The *primary* standard in Criterion 5 focuses on the type of liner necessary to protect groundwater during the management of uranium or thorium mill tailings. Additionally, a *secondary* groundwater standard is provided requiring that hazardous constituents entering groundwater must not exceed concentration limits in the "uppermost aquifer beyond the point of compliance during the compliance period." Criterion 5 prescribes a specific course of action for implementing *primary* and *secondary* groundwater standards which include provisions for ACLs, the classification of hazardous constituents, and whether they may be exempted from the regulation.

Criterion 6 addresses the construction and compliance of a "final radon barrier." The barrier must be completed as "expeditiously as practicable considering technological feasibility after the pile or impoundment ceases operation"[70] according to a Commission-approved reclamation plan. When disposing of *byproduct materials*, a licensee must place an "earthen cover" or other approved *alternative* over tailings and wastes after milling operations cease and close the disposal site providing reasonable assurances of control of radiological hazards effective for "1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years, and…limit releases of radon-222 from uranium *byproduct materials*…so as not to exceed an average release rate of 20 pCi/m²/s…"[71]

Additionally, NRC included what has been termed the "5/15" standard in Criterion 6(6), which is the benchmark for determining whether the requirements for longevity and control of radon releases apply to any portion of land containing *byproduct material*. The radon release requirements (i.e., cover and 200-1,000 year passive controls) will apply to portions of land

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[70] This "expeditiously as practical" language and other related language was inserted in Criterion 6 as part of a comprehensive settlement between EPA, the American Mining Congress (AMC), individual licensees, the Environmental Defense Fund (EDF), and the Natural Resources Defense Council (NRDC) that involved EPA rescinding 40 CFR Part 61, Subpart T and an NRC rulemaking in response thereto to avoid overlapping regulation of finally decommissioned Title II mill tailings sites. The goal of these changes was to add regulatory teeth to Criterion 6 to stimulate expeditious covering of tailings impoundments to limit radon emissions at Title II sites which are no longer on standby or actively processing. Another change is the requirement to actually test a reclaimed tailings site (or portions thereof in the event of staged reclamation) to see that, as reclaimed, it satisfies the 20 pCi/m²/s" standard. This effectively changed the 20 pCi/m²/s standard from a *design* standard to a *performance* standard.

[71] United States Nuclear Regulatory Commission, Final Staff Technical Position, *Design of Erosion Protection Covers for Stabilization of Uranium Mill Tailings Sites* (August 1990); *see* Exhibit 29.

containing *byproduct material* unless, averaged over areas of 100 square meters, radium concentration does not exceed background levels by m*ore* than: "(i) 5 pCi/g of radium-226…averaged over the first 15 centimeters ("cm") below the surface, and (ii) 15 pCi/g of radium-226…averaged over 15-cm thick layers m*ore* than 15 cm below the surface. NRC later modified Criterion 6(6) to deal with questions raised by its new so-called 25 mrem D&D standard for fuel cycle facilities[72] (which is expressly inapplicable to uranium recovery facilities) to address surface clean up requirements for radionuclides other than radium found at such facilities such as uranium and thorium. As a result, now dose from the 5/15 radium-in-soil standard provides a *benchmark* dose for cleanup of concentrations of other radionuclides.[73]

Criterion 7 requires that at least one year prior to major site construction and operations, a monitoring program must be conducted providing baseline data on a mill site's conditions. Additionally, during mill operations, a monitoring program must be conducted to ensure that all aspects of the mill are in compliance with applicable standards and regulations. The purposes for such programs and guidelines for their implementation according to license issuance dates also are included.

Criterion 8 summarizes its primary purposes by stating that "milling operations must be conducted so that all airborne effluent releases are reduced to levels as low as is reasonably achievable ("ALARA")." Emissions controls would be the primary method to control such effluent releases and institutional controls such as extending the boundaries of the site also may be employed as necessary.

Criterion 9, which has become an increasing source of potential regulatory scrutiny in recent years, deals with the financial criteria associated with starting site operations and subsequent final D&D for license termination purposes. Though somewhat ambiguous in its language, Criterion 9 requires that a licensee post a surety bond or other financial instrument to guarantee that proper funding will be available for an *independent contractor* to perform reclamation activities at the site according to an *approved* reclamation plan, when the licensee either can no longer continue licensed activities or goes into bankruptcy.[74] The surety bond or financial instrument must be updated annually to adjust for changes in inflation, reclamation activities, or any other factors that might influence costs either up or down. This must be done pursuant to a Commission-approved license amendment which carries with it the potential for interested parties to seek a public hearing on any such amendment.

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[72] *See* 10 CFR § 20.1400 et seq.

[73] *See* 10 CFR Part 20, Subpart E, §1401 et seq (hereinafter "Exhibit 31).

[74] NRC is especially attentive to inadequate surety concerns in light of the American Nuclear and Atlas Corporation bankruptcies. As a result, licensees (and in particular those seeking to process alternate feeds or directly dispose of other than 11e.(2) byproduct material wastes) should pay particular heed to thorough justification of reclamation estimates. Adequate surety and, perhaps, some additional funding for LTSM by DOE may help to mitigate state and local opposition to such unconventional licensed activities by providing long-term surveillance and monitoring (LTSM) resources above and beyond the minimum in Criterion 10.

Criterion 10 mandates that a minimum of $250,000 in 1978 dollars (i.e., currently approximately $900,814.70 (adjusted according to the 2013 Consumer Price Index) must be paid to the United States General Treasury or to the appropriate State agency prior to the termination of a uranium or thorium mill license to cover the costs of long-term site surveillance.[75] Further, it is required that site-specific surveillance and any *active* control requirements be analyzed to determine *if costs likely will be greater* than those assumed in Criterion 12 (e.g., no "*active*" maintenance) and, in any such case, the Commission may require an increase in funding requirements to address such costs. The need to adjust the funding annually for inflation is reiterated and the total amount for funding of long-term surveillance must be adequate taking into account an estimated one (1) percent real interest rate.

Criterion 11 begins the discussion of site and *byproduct material* ownership and applies to all licenses terminated, issued, or renewed after November 8, 1981. Any uranium or thorium mill license must contain Commission-approved requirements that ensure the licensee's compliance with ownership requirements in this Criterion. Title to *byproduct material* and the land on which it is located must be transferred either to the United States (i.e., DOE) or to the resident State in which the site is located at the State's option. DOE ownership is likely and a licensee must make "serious efforts" to maintain subsurface rights (i.e., mineral rights) so that the primary goal of geographic isolation of tailings can be achieved. A licensee must provide notice in public land records that the land will be used for radioactive material disposal and that it will be subject to general or specific NRC guidelines regarding such activity. Any material and/or land transferred to the United States or a State must be done *at no cost to that government* other than applicable administrative and legal transfer costs and, if the Commission determines that use of the surface or subsurface parts of the land will endanger the public health, safety or the environment, then use of the land in accordance with provisions provided in Appendix A is permitted. These provisions do not apply to land the United States holds in trust for Indian tribes or land owned by such Indian tribes subject to a United States restriction against alienation.

Criterion 12 requires that ongoing *active* maintenance *should not be necessary* to preserve isolation of the tailings after final disposition. Annual site inspections should be conducted to confirm the integrity of the site and the potential necessity of any maintenance. The Commission may approve more frequent inspections based on the *site-specific characteristic*s.

Criterion 13 contains EPA's RCRA hazardous constituents list with which the *secondary* groundwater standards discussed in Criterion 5 must comply. The list of hazardous constituents shown in this Criterion are not considered exhaustive and any other prospective hazardous constituents must be evaluated on a case-by-case basis independent of EPA's listing in 40 CFR Part 192.

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[75] Criterion 10 directly addresses the requirement in Section 83(b)(7) of the AEA, as amended, that requires 11e.(2) *byproduct material* sites be transferred to the United States or the State "at no cost to the government." *See* 42 U.S.C. § 2113(b)(7).

Under UMTRCA, DOE is designated as the primary responsible party for long term surveillance and monitoring of all 11e.(2) *byproduct material* and the land(s) on which such material is deposited. Under Section 83 of the AEA, as amended, as stated above, Congress mandated that title to all 11e.(2) *byproduct material* and the land(s) on which such material is deposited be transferred to either (1) the United States or (2) the State in which such material is deposited.[76] In each case where a mill tailings site has been transferred for long-term surveillance and monitoring, the site has been transferred to DOE as States (specifically including Wyoming) generally do not wish to avail themselves of the opportunity to take title to such sites.

As a result, in January of 1998, DOE, in conjunction with NRC, generated a protocol for the transfer and licensing of mill tailings sites to DOE for long-term surveillance and monitoring following site closure and license termination. This *Working Protocol of Long-Term Licensing of Commercial Uranium Mills* (NRC/DOE Working Protocol) sets forth a number of principles for NRC and DOE to follow in affecting the transfer of these sites. For example, the Protocol specifies that NRC will require current licensees to demonstrate that all applicable NRC requirements have been met before the Commission will terminate current licenses. In addition, the Protocol provides that NRC "will not terminate any site-specific license until the site licensee has demonstrated that all issues with state regulatory authorities have been resolved."[77]

As a general proposition, regardless of whether a mill tailings facility is located in an Agreement of *non*-Agreement State, the Commission has the final "sign-off" on whether site closure and license termination is appropriate.[78] As a result, the Commission has generally required that DOE be informed of the status of mill tailings sites destined for site closure and license termination and that DOE concur with all proposed site-specific issues such as groundwater containment and monitoring, institutional controls, and engineered barriers. Licensees have maintained, however, that this "concurrence" requirement is merely inter-agency courtesy, as any final NRC decision regarding final site closure is binding on DOE.

When an 11e.(2) *byproduct material* site has satisfied its Commission-approved reclamation plan, pursuant to 10 CFR § 40.51, the licensee is then required to transfer title to all 11e.(2) *byproduct material* and the lands within the long-term surveillance site boundary to DOE or the State in which the site is located. [79] This transfer must be completed at no cost to the government (i.e., federal or state government) and must be accompanied by a transfer of funds equal to the amount prescribed in Appendix A, Criterion 10 or to another amount

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[76] 42 U.S.C. § 2113(b)(1)(A).
[77] *See* United State Nuclear Regulatory Commission, *License Termination/Site Transfer Protocol Between the U.S. Department of Energy and the U.S. Nuclear Regulatory Commission* (1998) (hereinafter "Exhibit 32).
[78] *Id*.
[79] 10 CFR § 40.51(b) (Exhibit 61).

designated by NRC. At the time of transfer, as required by 10 CFR § 40.51(c), DOE or the State will possess the site as a licensee of NRC in perpetuity and subject to all appropriate site-specific license conditions, as imposed by the Commission.[80]

11e.(2) byproduct material also is very different from source material with respect to the manner in which it will be licensed as a stand-alone AEA material. While source material is licensed by NRC under 10 CFR §§ 40.13 and 40.22 using a two-tiered model to determine if a specific license is required (i.e., "unimportant quantities" under Part 40.13 and general and specific licenses under Part 40.22), NRC has determined that all 11e.(2) byproduct material, regardless of quantity, requires a specific NRC license for possession and use. In 1993, when NRC operated a uranium recovery field office (URFO) in Colorado for all non-Agreement State source material recovery licensees, the URFO Director Ramon Hall issued a letter in response to an inquiry from industry regarding the licensing of 11e.(2) byproduct material. This letter response essentially concluded that there is no *de minimis* quantity of 11e.(2) byproduct material.[81] Thus, NRC requires that any generator *or* possessor of 11e.(2) byproduct material must have an NRC specific license for such material under 10 CFR Part 40.

Based on this determination, there are two types of generators/possessors of 11e.(2) byproduct material. The first and most easily identified type of generator/possessor of 11e.(2) byproduct material is a source material recovery entity. These entities generate 11e.(2) byproduct material through the conduct of source material recovery operations under Section 11(z) of the AEA and typically possess and dispose of the 11e.(2) byproduct material at the licensed site in 11e.(2) tailings impoundments (conventional and heap leach operators) or possess and then transfer 11e.(2) material for disposal to licensed 11e.(2) disposal sites (ISR operators). The license sought and obtained by these operators typically is referred to as combined source and 11e.(2) byproduct material or source material milling (recovery) licenses and carries with it 11e.(2) byproduct material possession authority. These generators do not apply for separate 11e.(2) byproduct material licenses.

The second type of generator/possessor of 11e.(2) byproduct material affected by this NRC determination is entities that only possess 11e.(2) byproduct material but do not generate such material through the process of source material recovery. These entities include laboratories testing samples of 11e.(2) byproduct material for uranium recovery producers and, potentially, other licensees. Given that there is no *de minimis* quantity of 11e.(2) byproduct material, each entity possessing any amount of 11e.(2) byproduct material must have a specific license.

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[80] 10 CFR § 40.51(c) (Exhibit 61).

[81] *See* United States Nuclear Regulatory Commission, Letter from Ramon Hall, Director Uranium Recovery Field Office, to Uranium Recovery Licensees (October 5, 1993) (hereinafter "Exhibit 33").

iii. OTHER SOURCE MATERIAL RECOVERY REGULATORY PROGRAMS

In addition to the robust statutory/regulatory program for source material recovery enacted and promulgated under the AEA, there are several other statutory/regulatory regimes that are relevant to aspects of source material recovery facilities. For purposes of this feasibility study, we will confine our analysis to the following items: (1) EPA's SDWA statutory and regulatory authority over ISR facilities through its aquifer exemptions and UIC permits and (2) EPA's CAA regulations for radon emissions from tailings impoundments.

a. EPA's SAFE DRINKING WATER ACT REGULATIONS

To assure safe and effective underground injection throughout the United States, in 1974, the United States Congress enacted the Safe Drinking Water Act (SDWA),[82] which, in part, authorized establishment of an underground injection control (UIC) program so that injection wells would not endanger current and future underground sources of drinking water (USDW). The SDWA empowered the EPA with the primary authority to regulate underground injection to protect current and future sources of drinking water. EPA also was authorized to provide States with the opportunity to assume primary authority over UIC programs in accordance with final regulations promulgated by EPA in 1980, which set minimum standards for State programs to meet to be delegated primary enforcement responsibility (i.e., *primacy*) over such programs.[83] UIC regulations establish specific performance criteria for each well class (ISR injection and production wells generally are Class III wells) to assure that drinking water sources, actual and potential, are not rendered unfit for such use by underground injection of the fluids common to that particular class of wells.

Between 1981 and 1996, EPA granted primacy to 34 States for all injection wells (except those on Tribal lands). EPA implements the UIC program directly in 10 States and shares responsibility in six (6) other States. Wyoming has *primacy* for the UIC program, so WDEQ directly implements UIC programs for all classes of wells for a proposed ISR project in the State. Unless authorized by rule or by permit, any underground injection is unlawful and is in violation of the SDWA and UIC regulations.

Before NRC-licensed ISR operations can commence at any proposed ISR site, an ISR operator must have obtained two authorizations: (1) an aquifer exemption for the aquifer or portion of the aquifer wherein ISR operations will occur and (2) a UIC permit. Underground injection is broadly defined as the technology of placing fluids underground in porous formations of rocks through wells or other similar conveyance systems. Thus, all ISR injection well activities require these relevant authorizations.

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[82] While NRC does not have jurisdiction over matters covered by Wyoming's "primacy" mandate under the SDWA and its UIC program, it is important to understand the comprehensive, and often redundant, regulatory programs applicable to ISR operations.

[83] *See* 42 U.S.C. § 300h(1) (2005) (hereinafter "Exhibit 34).

As noted above, EPA's UIC program was created to protect current or future USDWs. A USDW is defined as an aquifer, or portion thereof, which serves as a source of drinking water for human consumption, or contains a sufficient quantity of water to supply a public water system, and contains fewer than 10,000 mg/liter of total dissolved solids (TDS). The broad definition of a USDW was mandated by Congress in Section 1421(d)(2)[84] of the SDWA to ensure that future USDWs would be protected, even where those aquifers were not currently being utilized as a drinking water source or could not be used without some form of water treatment.

Within this regulatory framework, however, some aquifers or portions of aquifers, which can meet the broad regulatory definition of a USDW, cannot *reasonably* be expected to serve as a current or future source of drinking water. As a result, the UIC program regulations allow EPA to *exempt* portions of an aquifer from delineation as a USDW and allow for injection into such aquifers or portions thereof. EPA regulations at 40 CFR § 146.4 specifically state:

> "An aquifer or a portion thereof which meets the criteria for an 'underground source of drinking water' in § 146.3 may be determined under 40 CFR § 144.8 to be an *'exempted aquifer'* if it meets the following criteria:
>
> a. It does not currently serve as a source of drinking water; and
> b. It cannot now and will not in the future serve as a source of drinking water…; or
> c. The total dissolved solids content of the ground water are more than 3,000 and less than 10,000 mg/L and it is not reasonably expected to supply a public water system."[85]

According to EPA, aquifers meeting these criteria generally are associated with *in situ* mineral recovery and enhanced oil recovery. If an operator, licensee or permittee wishes to inject into a USDW for the purpose of recovering minerals (e.g., uranium), a demonstration must be made that the proposed aquifer meets at least one of the exemption criteria noted above. EPA has issued guidance on the standards that must be satisfied to qualify for an aquifer exemption. To the best of Thompson & Pugsley, PLLC's knowledge, there is no provision in the SDWA authorizing revocation of an aquifer exemption granted pursuant to 40 CFR § 144.8, nor has EPA promulgated regulations establishing criteria for revocation of an aquifer exemption nor has it ever actually revoked such an exemption.

In addition, it is notable that EPA's SDWA UIC regulations do not require post-operation groundwater restoration for exempted aquifers, because such exempted aquifers will not be used as a drinking water source at any time before, during or after ISR operations are complete. However, as described in 40 CFR § 146.7, EPA's UIC regulations do require corrective action/remediation for any contamination of adjacent, non-exempt aquifers in accordance with the purpose of the SDWA and the UIC program which is to protect USDWs.

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[84] *See* 42 U.S.C. § 300h(b)(1) (2005) (Exhibit 34).
[85] *See* 40 CFR § 146.4 (2010) (emphasis added).

With respect to aquifer exemptions, a State is not granted primacy (functional equivalent of Agreement State status under the AEA) to unilaterally grant such exemptions. This is the case, because the SDWA specifically created State programs where, upon passage of the statute in 1974, State directors were required to submit a roster of aquifers to be exempted going forward. After that roster was submitted and approved, State directors were required to receive applications from prospective permittees and then apply to EPA for an amendment to the existing State program. However, this regulatory process is largely standardized and easily understood. Currently, the State of Wyoming folds its aquifer exemption application into part of its Permit to Mine process.

To obtain a UIC permit for a new Class III well (injection wells located in a given wellfield and not production wells) or a Class I deep-disposal well, the owner/operator or permittee must file an application with the UIC Director for the relevant jurisdiction containing specific information listed in 40 CFR Part 146 or in applicable State requirements. Once a UIC permit application has been reviewed, the applicant will be notified of the items needed to complete the application, if any. After a complete application is received, an initial decision to grant or deny the permit is issued. UIC regulations also provide opportunities for public participation and comment.

A UIC permit for each site is a necessary prerequisite for the operation of any ISR project. Such a permit necessarily assumes that the aquifer or portion thereof to be used for underground injection *cannot now or in the future be used as a USDW.* Without this fundamental assumption being reflected in an aquifer exemption, a UIC permit for ISR operations will not be issued.

Thus, EPA's UIC program specifically recognizes that many aquifers or portions thereof cannot now or ever in the future serve as viable USDWs. In many cases, the contamination in such water sources is created by the presence of high concentrations of minerals (e.g., uranium) that may be recovered using underground injection methods. As such, the UIC program provides for aquifer exemptions, *which must be obtained prior to the commencement of underground injection* for the purposes of ISR operations.

Although, as noted above, EPA's UIC regulations do not require groundwater restoration in exempted aquifers, Wyoming's UIC regulations and NRC's Appendix A Criteria require restoration of ISR recovery zone groundwater (exempted aquifer groundwater) consistent with *pre-operational or baseline water quality* or a maximum contaminant level (MCL) prescribed for given constituents under the SDWA, *whichever is higher*, *or* an alternate concentration limit (ACL). These restoration standards are not intended to create a new drinking water source within the designated recovery zone; but rather, are intended to minimize or eliminate the potential for post-restoration migration of recovery solutions from the exempted aquifer to adjacent, non-exempt aquifers, or portions thereof.

With respect to UIC permits, the State of Wyoming maintains a UIC program with primacy from EPA to receive and approve applications for all UIC well classes (I, II, III, IV, and V).

Maintenance of primacy status is contingent upon ongoing EPA approval that the State's regulatory program is at least as stringent as EPA's. As stated above, unlike EPA's UIC regulations, the State's UIC regulations mandate groundwater restoration for ISR facilities. Typically, the State's approach to restoration is that it should be complete to pre-mining background levels or, in the event those levels cannot be reached, to prior class of use. Currently, "class of use" can only serve as one of the justifications for an ACL at NRC.

b. EPA's CLEAN AIR ACT REGULATIONS FOR RADON EMISSIONS FROM SOURCE MATERIAL MILL TAILINGS IMPOUNDMENTS

Another regulatory regime that is applicable to source material recovery facilities is EPA's CAA regulations at 40 CFR Part 61, Subpart W entitled *National Emissions Standards for Radon Emissions from Operating Mill Tailings*. In addition to the authority vested in EPA under UMTRCA, Congress granted EPA additional authority to regulate certain aspects of uranium recovery facilities. In 1977, Congress enacted the CAA under which EPA was directed to address potentially hazardous *radiological* air emissions at a variety of facilities, including uranium mills. In response to this statutory mandate and pursuant to Section 112 of the CAA, EPA promulgated 40 CFR Part 61 to address radiological air emissions from such facilities.

40 CFR Part 61, Subpart T *National Emission Standards for Radon Emissions from the Disposal of Uranium Mill Tailings* were promulgated by EPA to address potential hazardous air pollutants (e.g., including *radon*) (*particulate emissions* were addressed effectively under 40 CFR Part 190 fuel cycle regulations) at mill tailings facilities regulated under Title II of UMTRCA, which were *no longer operational*. Subpart T stated, in pertinent part:

> "Radon-222 emissions to the ambient air from *uranium mill tailings pile* that are no longer operational shall not exceed 20 pCi/(m^2 -sec) (1.9 pCi/(ft^2 -sec)) of radon-222."

Subsequently, after challenges to Subpart T were filed in the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit), Subpart T was the subject of settlement discussions between AMC (now NMA), EPA, NRC, and environmental groups, with NRC and Agreement States monitoring as interested, but not litigating, parties. These negotiations ultimately led to NRC revising its mill tailings regulations to require licensees to achieve enforceable "milestones" leading to accelerated placement of radon barriers at *non-operational* (i.e., no longer actively milling or on standby) Title II mill tailings disposal sites[86] to satisfy EPA's and the environmental groups' concerns that the potential threat from radon emissions be addressed by the prompt placement of radon barriers over disposal areas.[87] After

[86] 59 Fed. Reg. 28,220 (1994) (hereinafter "Exhibit 35").

[87] EPA was clearly concerned with prompt placement of radon barriers over tailings piles and EPA, thus, indicated that the primary purpose of the settlement was:

> "to ensure that owners of uranium mill tailings disposal sites ... bring those piles into

NRC finalized its revisions to 10 CFR Part 40, Appendix A in accordance with this settlement, EPA rescinded Subpart T of its 40 CFR Part 61 regulations and, as such, its requirements no longer apply to operating uranium mills.[88]

40 CFR Part 61, Subpart W entitled *National Emission Standards for Radon Emissions from Operating Mill Tailings* was promulgated to address radon emissions at *active* (including standby) uranium mill tailings facilities. Thus, Subpart W applies to operators of uranium mill tailings facilities while they are processing uranium/thorium ores and creating 11e.(2) byproduct material:

> "The provisions of this subpart apply to owners or operators of facilities licensed to manage uranium byproduct materials during and following the processing of uranium ores, commonly referred to as uranium mills *and their associated tailings*. This subpart does not apply to the disposal of *tailings*."

New tailings impoundments constructed after December 15, 1989 must comply with one of two *work practice* standards:[89] (1) *phased disposal* in lined impoundments of forty (40) acres and meet the requirements of 40 CFR § 192.32(a) with no more than two impoundments in operation at one time; or (2) *continuous disposal* of tailings that are dewatered and immediately disposed of with no more than ten acres uncovered at one time.[90] Compliance with these *work practice* standards in Subpart W makes the measurement for radon emanations during active operations unnecessary, however, EPA's radon measurement Method 115 does require measurement of the different "regions" of tailings disposal facilities except those covered by water.[91]

> compliance with the 20 pCi/m^{2}s flux standard as expeditiously as practicable considering technological feasibility . . . with the goal that all current disposal sites be closed and in compliance with the radon emission standard by the end of 1997, or within seven years of the date on which existing operations and standby sites enter disposal status.

59 Fed. Reg. 36,280, 36,282 (1994) (hereinafter "Exhibit 36).

[88] *See* 61 Fed. Reg. 68972 (December 30, 1996) (emphasis added) (hereinafter "Exhibit 37").

[89] 40 CFR § 61.252(a) (2007).

[90] It is obvious that the continuous disposal work practice standard cannot apply to evaporation/storage ponds, since it requires *dewatering* and soil cover.

[91] The Response to Comments to EPA's Final Rule on radon-222 emissions from licensed mill tailings demonstrates that EPA considered an emission standard and determined that "boundaries could be changed to comply with an emission standard which is not an acceptable practice under the Clean Air Act. Also, methods to determine emissions from tailings piles also have not been sufficiently developed to provide accurate and consistent measurements of radon emissions." United States Environmental Protection Agency, Office of Radiation Programs, *Final Rule for Radon-222 Emissions from Licensed Uranium Mill Tailings*, Response to Comments (August, 1986) (hereinafter "Exhibit 38").

B. ORIGINS OF DUAL JURISDICTION ISSUES

As described in the Enrolled Act, Section 1(b), the primary purpose of the feasibility study is to identify existing dual jurisdiction issues and to develop information and analyses to develop an approach for obtaining NRC Agreement State status to eliminate such issues should the State determine to do so. The primary source of these dual jurisdiction issues comes from the exclusive, federal preemptive jurisdiction granted to NRC by Congress over AEA materials and operations and the subsequent legal and policy determinations made by NRC in further development of its source material recovery program.

When enacting UMTRCA, Congress intended that 11e.(2) *byproduct material* be regulated under a uniform regulatory regime by NRC/Agreement States and consistent with *generally applicable standards* promulgated by EPA. However, there was no language in UMTRCA that expressly granted preemptive regulatory authority over both the radiological *and non*-radiological aspects of such material to EPA/NRC. Thus, in April of 1980, NRC's Office of the Executive Legal Director (OELD) issued an advisory opinion addressing the question of whether, and to what extent, federal law preempts *non*-Agreement State authority over the *non*-radiological aspects of 11e.(2) *byproduct material*. In reaching this conclusion, OELD conceded:

> "[W]e conclude that the question is so close that the Commission could reasonably choose either interpretation, but that the better legal view is that non-Agreement States and the NRC have concurrent jurisdiction to regulate the non-radiological hazards of mill tailings, both before and after the November 8, 1981 date upon which the Mill Tailings Act becomes fully effective."[92]

Thus, despite the fact that the arguments favoring federal preemption were persuasive, OELD concluded that *non*-Agreement States could exercise *concurrent jurisdiction* over the *non*-radiological aspects of 11e.(2) *byproduct material*.[93]

OELD's advisory opinion presented significant potential regulatory problems for uranium recovery licensees (e.g., the NRC/DOE Working Protocol requirement to resolve all issues with

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[92] Memorandum from Howard K. Shapar, Executive Legal Director, NRC, to Chairman Ahearne. NRC, *OELD Legal Opinion on Two Questions Relating to the Operation of the Uranium Mill Tailings Radiation Control Act of 1978*, Attachment B, 2-3 (April 28, 1980) (emphasis added) (hereinafter "Exhibit 39").

[93] NRC's legal staff subsequently reaffirmed this position in a letter dated October 28, 1993 to the Attorney General of the State of Wyoming. *See* Letter from William L. Brown, Regional Counsel, NRC, to Mike Barrish, Senior Assistant Attorney General, State of Wyoming (October 28, 1993). Interestingly, the Attorney General of Wyoming concluded in 1971 that UMTRCA preempted State regulation of *both* radiological and *non*-radiological hazards associated with mill tailings. *See* Memorandum from John D. Troughton, Attorney General, State of Wyoming, to Ed Herschler, Governor, State of Wyoming (December 1, 1979) (emphasis added) (hereinafter "Exhibit 40").

State regulatory authorities). As a result, NMA's 1997 White Paper[94] presented a detailed analysis arguing that the advisory opinion's conclusion was incorrect and was not a "close" question in light of the then-*current* regulatory environment. NMA asserted that, when viewing the *then-current* UMTRCA-based regulatory environment, the federal scheme set out by the statute satisfied two separate tests established by the Supreme Court, either one of which would be sufficient to demonstrate federal preemption with respect to the *non*-radiological aspects of 11e.(2) byproduct material.

Briefly stated, according to the federal preemption doctrine, the Supremacy Clause of the United States Constitution elevates federal law above the laws of the individual states by declaring federal law to be the "supreme law of the land."[95] The United States Supreme Court has identified three different circumstances under which State law will be preempted. First, State authority will be preempted in cases where Congress *expressly* indicates, in the language of a statute, its intent to displace State regulation in a given area.[96] Second, even if Congress fails to expressly signal its intent to preempt State law, such intent may be implied from a scheme of federal regulation that is "*so pervasive* as to make reasonable the inference that Congress [intended to leave] no room for the States to [augment] it."[97] Congress' intent to displace State law also will be implied in instances where federal law touches upon an area in which "the federal interest is so dominant that the federal system will be assumed to preclude enforcement of state laws…."[98] Finally, the courts have held that State law will be preempted to the extent that it *actually conflicts* with federal law: if it is "[physically] impossible" to comply with both laws or where a state law "stands as an obstacle to accomplishment and execution of the full purposes and objectives of Congress,"[99] State law will be preempted.

Addressing these doctrines, NMA first argued that the AEA, as amended by UMTRCA, establishes a *pervasive federal scheme* for the regulation of uranium mill tailings and their

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[94] National Mining Association, *Recommendations for a Coordinated Approach to regulating the Uranium Recovery Industry*, (1997).

[95] U.S. Constitution, Article VI, clause 2 (hereinafter "Exhibit 41").

[96] *See e.g., English v. General Electric Co.*, 496 U.S. 72, 78-79 (1990) (hereinafter "Exhibit 42"); *Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Comm'n*, 461 U.S. 190, 203 (1983).

[97] *English v. General Electric, Co.*, 496 U.S. at 79 (emphasis added).

[98] *Id.*

[99] *Id.* (emphasis added). State courts also have recognized preemption where there is a serious incompatibility between State and federal laws. In *Hermes Consolidated, Inc. v. Illinois*, 849 P.2d 1302 (Wyo. 1993), the Supreme Court of Wyoming held that a federal consent decree entered into under RCRA preempted the hazardous waste remediation plan issued by the State Department of Environmental Quality and noted:

> "If Congress has not entirely displaced state regulation over the matter in question, state law is still preempted to the extent it actually conflicts with federal law, that is…*where the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress*."

Hermes at 1306 (emphasis added) (hereinafter "Exhibit 43").

related wastes (i.e., 11e.(2) *byproduct material*). As discussed above, no less than three federal agencies play an active role in regulating mill tailings. Pursuant to Section 275 of the AEA, as amended, EPA has issued detailed, *generally applicable standards* to address both radiological and *non*-radiological hazards associated with 11e.(2) *byproduct material*. The standards for potential *non*-radiological hazards are "lifted from" EPA's RCRA regulations. In turn, NRC has incorporated these regulations into its criteria for the management, closure, and long-term monitoring of mill tailings sites, as set out in 10 CFR Part 40, Appendix A. Under UMTRCA, NRC or an Agreement State has the responsibility for implementation and enforcement of all AEA requirements applicable to active uranium mill tailings sites and final disposal of the tailings themselves. Indeed, with respect to final disposal and license termination of an active uranium recovery site, any Agreement State decision to terminate a license must be approved by the Commission pursuant to Section 274(c) of the AEA. Finally, thus far, DOE completes the federal oversight "circle" of 11e.(2) *byproduct material* by becoming the permanent long-term custodian and perpetual licensee of sites used for the disposal of such wastes under Title II of UMTRCA, as well as exercising primary responsibility for selecting and overseeing the remediation of inactive uranium mill tailings sites and permanent custodianship thereof under Title I of UMTRCA.

The OELD opinion was issued at a time when the federal regulatory program governing uranium mill tailings and their related wastes was in its infancy. At that particular time, the roles of the federal agencies (i.e., EPA, NRC, and DOE) assigned under UMTRCA in implementing the statutory regime had not yet been developed in regulations. In addition, it appeared at the time that the radiological hazards (e.g., radon emissions) associated with those tailings and wastes would be the primary focus of regulatory concern (e.g., note that initially both EPA's "inactive" site and NRC's "active" site regulations addressed groundwater only on a site-by-site basis). Indeed, the OELD cited this apparent focus on radiological hazards as supporting the conclusion that federal regulation of mill tailings preempted *non*-Agreement State regulation *only* with respect to the radiological aspects of 11e.(2) *byproduct material*. However, over the nearly twenty years since the OELD opinion was written, NMA argued the regulatory scheme set out in UMTRCA had developed into a robust and comprehensive federal program that actively regulates both radiological and *non*-radiological components of 11e.(2) *byproduct material*, from the point of generation through to ultimate disposition. The pervasiveness of this federal regime indicates that Congress did not intend to allow *non*-Agreement States to exercise concurrent jurisdiction over either the radiological or the *non*-radiological aspects of 11e.(2) *byproduct material*.

Second, NMA argued that the exercise of concurrent jurisdiction over 11e.(2) *byproduct material* conflicts with federal law, because it is inconsistent with the overall statutory scheme created by the AEA, as amended by UMTRCA, and it frustrates Congress' purpose in enacting UMTRCA to grant NRC the authority to regulate 11e.(2) *byproduct material*. This inconsistency is most evident in the impact of concurrent jurisdiction on the Agreement State program. While Agreement States must carefully conform their regulation of radiological and *non*-radiological hazards associated with 11e.(2) *byproduct material* to federal standards, as required by Section 274(o) of the AEA, as amended, *non*-Agreement States would be free to

regulate 11e.(2) *byproduct material* without any regard to consistency with federal standards. In other words, Agreement States that have to comply with NRC requirements to achieve and retain their Agreement State status have less authority (at least with respect to 11e.(2) *byproduct material*) than they would otherwise have as *non*-Agreement States. Such a result, NMA argued, denigrates and devalues the Agreement State program.

Similarly, the exercise of concurrent jurisdiction by *non*-Agreement States would conflict with the role established for NRC under Section 84 of the AEA, which directs the Commission to ensure that the management of any 11e.(2) *byproduct material* is carried out in a manner that:

> "the Commission deems appropriate to protect the public health and safety and the environment from radiological and *non*-radiological hazards associated with the processing and with the possession and transfer of such material, taking into account the risk to the public health, safety, and the environment, with due consideration of economic costs and such other factors as the Commission deems appropriate."[100]

If *non*-Agreement States are allowed to exercise concurrent jurisdiction over *non*-radiological aspects of 11e.(2) *byproduct material*, then *non*-Agreement States could force licensees to perform remedial actions above and beyond those required by NRC, regardless of the net risk, cost or environmental impact and, conceivably, even after termination of the license granted by NRC.[101] Under this policy, the Commission would be unable to weigh the impacts of State-imposed actions with the other factors mandated for consideration by the statute, thereby leading to inappropriate management of 11e.(2) *byproduct material*, in contravention of Section 84 of the AEA.

Finally, NMA argued that the exercise of concurrent jurisdiction would interfere with license termination and final site closure at Title II active uranium mill tailings sites. After operating for many years under federal standards governing *non*-radiological hazards and having implemented groundwater corrective action programs based on those standards, some facilities were faced with the prospect of having to comply with additional requirements imposed by the State, which the Working Protocol with DOE noted above had made a condition

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[100] 42 U.S.C. § 2114(a)(1) (Exhibit 21).

[101] Indeed, potential *non*-Agreement State assertions of regulatory authority over *non*-radiological constituents after license termination were a matter of special concern to DOE as the likely long-term custodian. In particular, DOE might attempt to refrain from taking title to such sites because of the possibility that the additional regulatory burdens imposed by the *non*-Agreement State after license termination, and the economic costs associated with those regulatory burdens, would conflict with the directive contained in Section 83 of the AEA, which requires that the transfer of title to DOE occur *without cost to the government* other than administrative and legal costs associated with the transfer itself. This concern was, in part, based on the waiver of sovereign immunity under the Federal Facilities Compliance Act with respect to management of *hazardous* substances under State law or delegated authority.

of site closure.[102] If concurrent jurisdiction were exercised, NMA argued that, not only would closure costs increase substantially, but license termination, particularly in instances where the State-imposed requirements were technologically or economically infeasible, could be delayed or even denied. Nowhere in UMTRCA is this potential result contemplated and, allegedly, this result also would be unacceptable to NRC. By impeding final site closure and license termination, the exercise of concurrent jurisdiction by *non*-Agreement States would frustrate one of the primary goals underlying UMTRCA (i.e., the orderly, timely closure and remediation of mill tailings sites). NMA noted that this effect would be greatly amplified by the large number of Title II sites that were preparing for final site closure.

After reviewing NMA's analysis regarding concurrent jurisdiction over 11e.(2) *byproduct material*, on August 11, 2000, the Commission held that any regulation of the *non*-radiological hazards of AEA materials by *non*-Agreement States is federally preempted.[103] As stated by former NRC Chairman Richard Meserve in his comments on the issue, "there is pervasive evidence that Congress intended to establish a comprehensive regulatory regime over the *non*-radiological hazards of mill tailings that is exactly parallel to the NRC's jurisdiction over radiological hazards."[104] Chairman Meserve, noting that there is no explicit language in UMTRCA calling for preemption of State regulatory authority, cited the Supreme Court's decision in *Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Comm'n*[105] to demonstrate NRC's preemptive authority over the radiological safety aspects of the construction and operation of nuclear power plants. Congress, when enacting UMTRCA, placed radiological and *non*-radiological hazards on "the same footing" and, Chairman Meserve suggested that Congress intended the same "sweeping federal preemption to cover both types of hazards."[106]

Additionally, Chairman Meserve cited the United States Court of Appeals for the District of Columbia Circuit's (D.C. Circuit's) decision in the *Brown v. Kerr-McGee Chemical Corp.* case as support for federal preemption. The D.C. Circuit stated that UMTRCA was enacted "to provide

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[102] *See* Exhibit 32.

[103] Commission Voting Record, SECY-99-0277, *Concurrent Jurisdiction of Non-Radiological of Uranium Mill Tailings* (August 11, 2000) (hereinafter "Exhibit 44").

[104] *Id.* (emphasis added).

[105] Quoting their decisions in *Fidelity Federal Savings & Loan Ass'n v. De la Cuesta* and *Rice v. Santa Fe Elevator Corp.*, the Court stated that:

> "Absent explicit preemptive language, Congress' intent to supersede State law altogether may be found from a 'scheme of federal regulation…so pervasive as to make reasonable the inference that Congress left no room for the States to supplement it," because 'the Act of Congress may touch a field in which the federal interest is so dominant that the federal system will be assumed to preclude enforcement of State laws on the same subject," or because 'the object sought to be obtained by the federal law and the character of obligations imposed by it may reveal the same purpose."

461 U.S. 190, 203-204 (1982) (hereinafter "Exhibit 45").

[106] *See* United States Nuclear Regulatory Commission, SECY-99-277, *Concurrent Jurisdiction of Non-Radiological Hazards of Uranium Mill Tailings* at 4 (hereinafter "Exhibit 46").

a comprehensive remedial program for the safe stabilization and disposal of uranium and thorium mill tailings."[107] Further citing the *Kerr-McGee* case, Chairman Meserve stated that "it was logical for Congress to link radiological and *non*-radiological hazards together because both hazards arise from the same material and are 'inextricably intermixed.'"[108]

Agreement States also are subjected to various conditions and constraints on their AEA/UMTRCA regulatory power over 11e.(2) *byproduct material*. They are required to follow certain procedures in licensing cases, including detailed reporting requirements for public hearings and judicial scrutiny.[109] Chairman Meserve concluded that "it would be anomalous in the extreme for Congress to require Agreement States to comply with these various requirements and constraints and yet to allow *non*-Agreement States to regulate non-radiological impacts without any such limitations."[110] Chairman Meserve, with two other Commissioners concurring, concluded that *non*-Agreement States cannot exercise concurrent jurisdiction over the *non*-radiological hazards associated with 11e.(2) *byproduct material*.

After the Commission issued its opinion, several States asserted their displeasure but did not take affirmative action to challenge the Commission's decision. The States of Wyoming, Utah, and New Mexico all voiced their objections and concerns to uranium recovery licensees and NRC Staff. While these States were mulling potential legal challenges to the Commission's decision, in June of 2001, NRC Staff notified such States that, in no uncertain terms, NRC preempts State authority over the *non*-radiological components of 11e.(2) *byproduct material* and that the States were expected to accept the decision.

In summary, NRC's revised position on concurrent jurisdiction plays a crucial role for all types of source material recovery sites (i.e., conventional mills, heap leach facilities, and ISR sites). By exercising exclusive regulatory control over *all* components of 11e.(2) *byproduct material*, NRC has made clear that there is one set of regulatory standards that must be followed and that there is no threat of dual or overlapping jurisdiction over such material. Further, NRC has also demonstrated that its authority cannot be superseded by EPA or *non*-Agreement States under statutes such as RCRA, even though there are *non*-radiological (hazardous) constituents in 11e.(2) *byproduct material*. Most importantly, it also prevents *non*-Agreement States from interfering by right in final site closure and license termination decisions at active source material recovery sites and, similarly, removes the threat of their intervention in DOE long-term surveillance and monitoring actions after license termination at mill tailings sites.[111]

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[107] 903 F.2d 1, 8 (D.C. Cir. 1990) (hereinafter "Exhibit 47").
[108] 767 F.2d 1234, 1241 (7th Cir. 1985), *cert. denied*, 175 U.S. 1066 (1986) (emphasis added) (hereinafter "Exhibit 48").
[109] *See* 42 U.S.C. § 2021(o).
[110] Commission decision on SECY-99-0277 at 5-6 (emphasis added) (Exhibit 46).
[111] *See Waste Action Project v. Dawn Mining Corp.*, 1998 U.S. App. LEXIS 4115 (9th Cir., 1998) (emphasis added) (hereinafter "Exhibit 50"). In this opinion, the Ninth Circuit held that EPA lacks the authority to regulate the discharge of *byproduct material* into the nation's waterways under the Clean Water Act ("CWA"), noting that 11e.(2) byproduct material was excluded from the definition of "pollutants" within

1. RECENT DUAL JURISDICTION ISSUES

i. "AS APPLIED" APPENDIX A CRITERIA TO ISR FACILITIES

With the "concurrent jurisdiction" decision in the year 2000 now part of NRC legal doctrine, the past decade has seen the development of numerous legal and policy interpretations of NRC's source material recovery program that have had a profound effect on dual jurisdiction issues. First, in the same 1997 White Paper prepared by NMA in which the concurrent jurisdiction decision found its origin, the Commission also considered the question of which entity (NRC or States) possessed jurisdiction over subsurface activities in wellfields at ISR sites. The ISR technique involves subsurface exploration processes similar to those used for conventional uranium recovery. However, rather than using surface or underground excavation techniques, ISR facilities use subsurface well-fields to bring uranium to the surface in solution for production. Typically, each well-field usually is composed of a number of "five-spot" patterns which involve the installation of two types of wells in a given *ore* zone. For the typical "five-spot" pattern, the uranium recovery operator installs four *injection* wells to inject into the mineralized *ore* zone a solution known as lixiviant. This lixiviant typically consists of groundwater containing dissolved oxygen and carbon dioxide and has similar physical and chemical characteristics to club soda. At the same time, a single *production* well located at the center of the "five-spot" pattern draws lixiviant through the mineralized *ore* zone. In each well-field, these *injection* and *production* wells create a circuit that continuously injects native groundwater into and draws such water through the *ore* zone, oxidizing and dissolving uranium, to bring it to the surface. When the uranium-bearing "pregnant" solution is brought to the surface, it is run through ion-exchange (IX) units which remove uranium from the solution in much the same way that water softener units remove minerals from "hard" water. Then, the "barren" solution is re-fortified with lixiviant and returned to the injection circuit to be pumped back into the *ore* zone for further uranium recovery. The recovered uranium, which is attached to IX resins, is then stripped from the resins, treated to precipitate the uranium, and dewatered, filtered, and dried to produce yellowcake.

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the meaning of the Act. More importantly, the Ninth Circuit flatly rejected plaintiff's assertion that Section 275(e) of the AEA implicitly "preserved" EPA's regulatory authority over 11e.(2) *byproduct material* under the CWA. The Ninth Circuit held:

> "The AEA 'created a *pervasive* regulatory scheme vesting exclusive authority to regulate' with the AEC [now NRC] and "*pre-empting*" regulation by other agencies…Thus, Congress intended to exclude materials regulated under the AEA from the definition of "pollutant" under the CWA…'"

Dawn Mining, 1998 U.S. App. LEXIS at 1430, *citing Train v. Colorado Public Int. Research Group*, 426 U.S. 1, 16 (1975).

Prior to the enactment of the Mill Tailings Act [UMTRCA], the EPA was not regulating tailings. The NRC had been regulating uranium mill tailings at active sites under its licensing power, but it had no authority to regulate tailings at *inactive* sites. Thus, the Mill Tailings Act [UMTRCA] was enacted in part to close the regulatory gap and give NRC the express power to regulate mill tailings at [licensed but] *inactive* sites."

As a general proposition, ISR facilities have been subject to the same regulations as conventional uranium mill facilities (i.e., 10 CFR Part 40, Appendix A) *where relevant*. While some of the Part 40 regulations are not relevant to ISL uranium recovery (e.g., tailings impoundment design), many of them have been applied directly. For example, Criterion 9, which later became the subject of intense litigation at the Commission, has been directly applied to financial surety arrangements for ISR licensees. Given that both conventional and ISR facilities require D&D at some level, Criterion 9 requirements can be applied universally. Another example is the aforementioned "5/15" standard for radium in soil, including its use as a reference criteria for cleanup of other radionuclides in soil (e.g., uranium) in Appendix A, Criterion 6, which also applies to surface soil during D&D at ISR facilities.

ii. "MILLING UNDERGROUND" DECISION

In addition, another Commission legal staff advisory opinion in 1980 (1980 ISL Memorandum)[112] claimed NRC had jurisdiction over both the above-ground and below-ground aspects of ISR operations. NMA disagreed and argued in its White Paper that NRC's fundamental premise that the subsurface component of an ISR facility is not really a "mine," but rather is more like the "processing" portion of a conventional uranium recovery facility (i.e., underground milling) was erroneous. NMA also argued that the 1980 ISL Memorandum's continued reliance on the National Environmental Policy Act of 1969 (NEPA) as providing "supplemental authority" to regulate ISR well-fields was in error and that NRC Staff's position ignored the fact that the mining stream retrieved from the underground *ore* body contains less than 0.05%, by weight, uranium and, thus, does not constitute *licensable source material* and has not "been removed from its place in nature" until it reaches the surface at the IX unit (at the earliest). Finally, NMA argued that the Memorandum ignored the fact that NRC regulations over well-fields are unnecessarily duplicative, since EPA or States with primacy already regulate the wells, including radiological constituents, pursuant to the SDWA's UIC program.[113] On July 26, 2000, the Commission issued SRM/SECY 99-013 which reaffirmed its authority to regulate ISR production activities and expanded its authority to regulate *restoration* waste water and sludges as 11e.(2) byproduct material. This change in Commission policy (i.e., restoration wastes were not previously regulated as 11e.(2) byproduct material as restoration is conducted *primarily* for cleanup of the mining zone and not *primarily* for *source material* recovery) introduced some significant uncertainty into ISR regulation, including specifically surety and license termination decisions.[114] In this decision, NRC determined that it has exclusive, preemptive AEA jurisdiction over production *and* restoration in ISR wellfields and, thereby, created the largest source of dual jurisdiction with *non*-Agreement States for ISR source material recovery facilities.

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[112] *See* Exhibit 40.

[113] NMA's arguments on this issue may be found in NMA's 1997 White Paper entitled *Recommendations for a Coordinated Approach to the Uranium Recovery Industry*.

[114] United States Nuclear Regulatory Commission, Staff Requirements-SECY-99-013, *Recommendations on Ways to Improve the Efficiency of NRC Regulation at in Situ Leach* Uranium Recovery Facilities (July 26, 2000) (hereinafter "Exhibit 52").

After issuance of the "milling underground" decision, NRC and the States of Wyoming and Nebraska entered into discussions regarding potential deferral of NRC regulatory authority over uranium production and groundwater restoration to the States. Both States possessed *primacy* over SDWA UIC requirements, and it was postulated that such States could actively assume regulatory authority over production and groundwater restoration in accordance with any NRC requirements. The ultimate end of these negotiations was intended to be an MOU between NRC and the States allowing for such States to assume groundwater restoration regulatory authority and to maintain active communication with NRC regarding the status of regulatory activities. However, this process faltered when the Commission declined to pursue such an Agreement.[115] Since that time, negotiations have not resumed.

In response to industry concerns regarding ISR versus conventional mill regulations, NRC Staff prepared SECY-99-011 entitled *Draft Rulemaking Plan: Domestic Licensing of Uranium and Thorium Recovery Facilities—Proposed New 10 CFR Part 41* in an effort to consolidate regulation of uranium recovery facilities into a regulatory regime separate from NRC's generic *source material* licensing regulations. However, on behalf of members of the uranium recovery industry, NMA requested that NRC postpone the Part 41 rulemaking because of the financial difficulties the uranium recovery industry had been experiencing due to depressed uranium prices. Since, by statute, NRC is mandated to recover most of its budget during any specific fiscal year[116], NMA was concerned that a new Part 41 rulemaking would force uranium recovery licensees to pay significant NRC fees which they could ill afford to pay. So that the uranium recovery industry could remain viable, which NRC noted is in the public interest,[117] NRC decided to forego the Part 41 rulemaking and, instead, to address changes and developments in alternate feed processing and direct disposal through standard review plans (SRPs) that were being prepared.

Lastly, NRC recently evaluated the applicability of 10 CFR Part 40, Appendix A Criteria to ISR facilities with respect to groundwater restoration. After extending its authority to subsurface operations in ISR wellfields, NRC evaluated the applicability of Criterion 5 to groundwater restoration and determined that Criterion 5(B)(5) requirements for groundwater quality at conventional mill facilities directly applies to ISR wellfields. Thus, an ISR operator seeking a license for an ISR project is required to comply with Criterion 5(B)(5) groundwater quality standards, including for final groundwater restoration, prior to NRC approval of such

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[115] *See* Exhibit 53, which includes a package of documents, authored by NMA and NRC Staff/the Commission, on this issue.

[116] Pursuant to the FY 2001 Energy and Water Development Appropriations Act, NRC is only required to recover 98 percent of its budget as compared to 100 percent the prior fiscal year. This percentage will decrease by two (2) percent per year until 2005.

[117] "The continued existence of the [Sweetwater] mill is in the public interest as it is one of only six uranium mills remaining in the United States and the only one remaining in Wyoming." Letter from Melvyn Leach, Acting Chief, Fuel Cycle Licensing Branch, division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards, to Oscar Paulson, *Re: Sweetwater Uranium Mill (SUA-1350)-Five (5) Year Postponement of Initiation of Decommissioning*, (July 17, 2001) (hereinafter "Exhibit 54").

restoration. This creates another dual jurisdiction issue with respect to Wyoming groundwater restoration standards imposed under its UIC primacy program. Further, since NRC has determined that the AEA directly applies to ISR surface and subsurface activities, State jurisdiction over wellfield activities such as process fluid spills is likely preempted. Finally, now that NRC has determined the AEA applies all to ISR activities, the aforementioned discussion of potential deferral of regulatory authority over groundwater to States through an MOU is even more problematic as such deferral potentially could be considered to be in violation of the Agreement State provisions of the AEA.

I. CATEGORY 1: APPLYING FOR AND BECOMING AN AGREEMENT STATE

A. UNITED STATES NUCLEAR REGULATORY COMMISSION AGREEMENT STATE PROGRAM

1. NRC AGREEMENT STATE PROGRAM BACKGROUND

Under the AEA, Congress sought to create a pervasive, comprehensive statutory and regulatory regime in which the AEC/NRC would have the primary authority for implementation and enforcement of AEA requirements for the licensing of *source*, *special nuclear*,[118] and *byproduct material*. However, Congress also empowered NRC to *withdraw* its regulatory authority over AEA materials and to enter into an "agreement" permitting State regulatory authorities to regulate certain materials in accordance with the AEA.

Congress enumerated the requirements for States to assume such authority in Section 274 of the AEA entitled *Cooperation With States*.[119] Under Section 274, Congress authorized the Commission to enter into agreements with State regulatory authorities "providing for *discontinuance* of the regulatory authority of the Commission …with respect to any one or m*ore* of the following materials within the State:

(1) *byproduct material*s as defined in section 11e.(1);
(2) *byproduct material*s as defined in section 11e.(2);
(3) *source material*s;
(4) special nuclear materials in quantities not sufficient to form a critical mass."[120]

Congress also prohibited the Commission from discontinuing regulatory authority over the construction of a production or utilization facility (i.e., nuclear power plants, gaseous diffusion or enrichment facilities), the *export* or *import* of AEA materials, and the ocean disposal of AEA materials.[121]

With respect to 11e.(2) *byproduct material*, Congress also noted that "[t] he Commission shall also retain authority under any such agreement to make a determination that all applicable standards and requirements have been met prior to termination of a license for

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[118] States under Section 274 of the AEA are only permitted to regulate special nuclear material in quantities not sufficient to form a critical mass. Regulation of special nuclear material in quantities sufficient to form a critical mass is expressly reserved to the Commission.
[119] 42 U.S.C. § 2021.
[120] 42 U.S.C. § 2021(b)(1-4) (emphasis added). It is also important to note that in the Energy Policy Act of 2005, Congress created two new classes of "byproduct material" known as 11e.(3) & 11e.(4) byproduct material. However, neither of these AEA materials are relevant to this feasibility study.
[121] 42 U.S.C. § 2021(c).

byproduct material, as defined in [S]ection 11e.(2)."[122] Thus, 11e.(2) *byproduct material* facilities require final "sign-off" by the Commission of an Agreement State-approved closure, prior to final site closure and license termination. The form and process of this final licensing determination is critical to the State's understanding of its relationship with NRC while it operates its Agreement State program. Accordingly, a more thorough discussion of this licensing action will be discussed in Section II(A)(7) below.

In June of 1981, representatives of Agreement States complained that NRC was not permitting those States to develop their own site-specific requirements for regulation of uranium milling facilities in lieu of the requirements promulgated by NRC, even if those State alternatives provided levels of protection equivalent to those afforded by NRC regulations. Indeed, Senator Pete Domenici summarized the testimony succinctly:

> "NRC is saying that regardless of what the law says with reference to an equivalent, to the extent practicable, or more stringent than, that their interpretation now is since they have no EPA standard, it will be [the NRC standards] or nothing else."[123]

Similar problems were reported by a number of licensees, who found NRC unwilling to accept any licensee-proposed alternatives to the standards promulgated by the Commission.

In response, Congress amended the AEA to modify certain sections previously added by UMTRCA.[124] In particular, Section 274 of the AEA was amended to provide Agreement States with explicit authority to adopt "alternatives (including, where appropriate, site-specific alternatives) to the requirements adopted and enforced by the Commission" provided they achieve a level of protection "equivalent to, to the extent practicable, or more stringent than" the level of protection afforded by NRC's standards.[125]

In becoming an Agreement State, States are not required to assume jurisdiction over *all* AEA materials and operations under a Section 274 Agreement. States are free to request either the entire suite or portion thereof of AEA materials and operations regulated under the AEA (to the extent the powers are not expressly reserved to the Commission). There are numerous examples of Agreement States in the United States that have accepted and maintained Agreement State programs that do not include specific AEA materials and/or operations. Thus, the State of Wyoming is free to apply for jurisdiction over only source material recovery and 11e.(2) byproduct material.

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[122] 42 U.S.C. § 2021(c).
[123] Implementation of the Uranium Mill Tailings Radiation Control Act of 1978: Hearings Before the Subcomm. On Nuclear Regulation of the Senate Comm. on Environment and Public Works, 97th Cong. 17 (1981).
[124] Pub. L. No. 97-415, 96 Stat. 2067 (1983) (hereinafter "Exhibit 55").
[125] *Id. codified* at 42 U.S.C. § 2021(o).

2. AGREEMENT STATE PROGRAM REQUIREMENTS: ADEQUACY AND COMPATIBILITY

As the Agreement State program is currently constituted, in order for the Commission to *withdraw* its regulatory authority over one or more AEA materials listed in Section 274(b), the petitioning State must demonstrate to the Commission the following:

(1) that the State desires to assume regulatory responsibility for the relevant AEA material(s); and

(2) that the State has a radiation control program adequate to protect public health and safety from the potential hazards of the relevant AEA material(s)[126]

NRC's Agreement State requirements carry with them two key components. The first requirement is that an Agreement State's proposed regulations be *adequate* to promote the purposes of the AEA. The term "adequacy" is defined in NRC's *Policy Statement on Adequacy and Compatibility of Agreement State Programs* as "adequate to protect public health and safety if administration of the program provides reasonable assurance of protection of public health and safety in regulating the use of agreement material."[127] This is in accord with Section 274 of the AEA that requires Agreement State standards to be at least as stringent as NRC regulations.

Second, the relevant State must adequately demonstrate to the Commission that its radiation safety program for AEA materials is *compatible* with AEA/NRC requirements.[128] When the Commission determines that the proposed agreement with the relevant State should become effective, the AEA requires that such agreement be published once a week for four consecutive weeks so that the public may submit comments.[129] After such comments are reviewed, the Commission will determine whether or not the agreement should be executed or whether revisions to such agreement are required.

Pursuant to the AEA, the Commission retains the authority to suspend or cancel a State's Section 274 Agreement if it determines that such program is either insufficient to protect public health and safety or is incompatible with the AEA and the Commission's regulatory program. With respect to ongoing review of Agreement State programs, NRC has developed a system of compatibility categories under which all aspects of a State radiation control program, including its statutory and regulatory sources of authority, are classified. STP Procedure SA-200 defines the relevant compatibility categories for Agreement States to follow when creating radiation safety program regulations:

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[126] 42 U.S.C. § 2021(d).
[127] *See* United States Nuclear Regulatory Commission, *Policy Statement on Adequacy and Compatibility of Agreement State Programs; State of Principles and Policy for the Agreement State Program*, (hereinafter "Exhibit 57").
[128] 42 U.S.C. § 2021(d)(2).
[129] 42 U.S.C. § 2021(e)(1).

(1) Category A is defined as "[b]asic radiation protection standard or related definitions, signs, labels or terms necessary for a common understanding of radiation protection principles. *The State program element should be essentially identical to that of NRC*;"

(2) Category B is defined as "[p]rogram element with significant direct transboundary implications. *The State program element should be essentially identical to that of NRC*;"

(3) Category C is defined as "[p]rogram element, the essential objectives of which should be adopted by the State to avoid conflicts, duplications or gaps. *The manner in which the essential objectives are addressed need not be the same as NRC, provided the essential objectives are met*;"[130]

(4) Category D is defined as program elements "that do not meet any of the criteria of Category A, B, or C…and, thus, do not need to be adopted by Agreement States for purposes of compatibility;"

(5) Category "Health and Safety" are defined as program elements "that are not required for compatibility…but have been identified as having a particular health and safety role (i.e., adequacy) in the regulation of agreement material within the State."

(6) Category "Areas of Exclusive NRC Regulatory Authority" are defined as items that are expressly reserved to the Commission such as regulation of nuclear power generation facilities

These compatibility requirements serve as a primary basis for NRC's Office of Federal and State Materials and Environmental Protection's (FSME) Integrated Materials Performance Evaluation Program (IMPEP). Under the IMPEP reviews of Agreement State radiation safety programs are conducted to ensure that such programs are adequately protective of public health and safety and are compatible with AEA/NRC requirements.

i. NRC COMPATABILITY A CATEGORY

The first category is classified as "Compatibility Category A." Category A is generally defined as program elements: "*An Agreement State should adopt program elements essentially identical to those of NRC to provide uniformity in the regulation of agreement material on a*

[130] United States Nuclear Regulatory Commission, Office of State and Tribal Programs, *Compatibility Categories and Health and Safety Identification for NRC Regulations and Other Program Elements,* STP Procedure SA-200 (October 8, 2004). Previously, Category A compatibility regulations required identical language to that of NRC (hereinafter "Exhibit 56").

nationwide basis."[131] In NRC's source material recovery program, a representative example of Compatibility A requirements are the 10 CFR § 40.4 definitions of "source material," "[11e.(2)] byproduct material," and "uranium milling."[132] Each of these definitions requires that an Agreement State adopt an essentially identical definition of these terms and employ them as such during operation of the Agreement State program. Indeed, at one point, the State of Texas' Agreement State program attempted to re-define the definition of "byproduct material" by attempting to insert additional types of radioactive material into that class of AEA material ("and other tailings having similar radiological characteristics"). In an IMPEP report dated December 28, 1994, NRC determined that Texas' definition of "byproduct material" was not compatible with the AEA's and NRC's definition and needed to be revised.[133] The "Assessment" Section of this report specifically addressed the reasons for NRC's decision including the fact that byproduct material regulations address both the radiological and non-radiological components of the waste stream and that changes to the definition could unwittingly endanger the future transfer of 11e.(2) byproduct material disposal sites to DOE or the State if materials that traditionally are not defined as 11e.(2) byproduct material are disposed of in tailings impoundments. Even though the recommended revision to the definition was minimal, it serves as an example of how NRC can direct an Agreement State to amend its program for Compatibility A requirements.

ii. NRC COMPATIBILITY B CATEGORY

The second category is classified as "Compatibility B" requirements. Compatibility B requirements do not carry exactly the same weight as Compatibility A requirements; but, they do carry significant potential for national/transboundary implications, including transportation requirements. Two good examples of Compatibility B requirements are the 10 CFR § 40.13 regulations for "unimportant quantities" of source material and the 10 CFR § 40.22 general licensing requirements. As stated in Section 2 of Category 1, "unimportant quantities" of source material are based on Section 62 of the AEA and is the threshold requirement for *licensable source material*. General licensing requirements are the next step in determining the type of AEA regulation that is to be imposed on quantities of *licensable source material* (general or specific licenses). These basic regulatory requirements have a profound effect on how source material is regulated in both non-Agreement and Agreement States. Thus, NRC recommends that compatibility requires that essentially the same language be adopted. If there are incompatibility issues, transfer of source material between States with different regulations could be affected significantly and cause regulatory confusion. With respect to source material recovery (i.e., source material milling), these two regulations generally do not

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[131] *See* United States Nuclear Regulatory Commission, *Management Directive 5.9: Adequacy and Compatibility of Agreement State Programs* (February 27, 1998) (hereinafter "Exhibit 58")

[132] It is important to note that each of the definitions in 10 CFR Part 40, Appendix A are considered Compatibility A requirements.

[133] *See* Exhibit 59, which includes a package of documents describing the State of Texas' correspondence with NRC Staff regarding its definition of "11e.(2) byproduct material."

apply because all source material milling licensees are specific licensees due to the possession of 11e.(2) byproduct material.

iii. NRC COMPATIBILITY C CATEGORY

The third category is classified as "Compatibility C" requirements. Compatibility C requirements should be adopted "to avoid conflicts, duplications, or gaps in the regulation of agreement material on a nationwide basis and that, if not adopted, would result in an undesirable consequence."[134] These unintended consequences include, but are not limited to, "[exposure to an individual in a different jurisdiction in excess of the basic radiation protection standards established for compatibility in Category A" and "[p]reclusion of an effective review or evaluation by the Commission and Agreement State programs for agreement material with respect to protection of public health and safety."[135] An example of Compatibility C requirements are the 10 CFR Part 40, Appendix A, Criteria 1-10 for source material recovery facilities.[136] These Criteria reflect NRC requirements for such facilities and typically are adopted "as-is" by Agreement States[137] to ensure that a licensed source material recovery site ultimately can have its license terminated in accordance with AEA requirements and can be released for "unrestricted use" (ISR) or transferred to DOE for LTSM (conventional mills, heap-leach facilities, 11e.(2) disposal facilities)[138].

iv. NRC COMPATIBILITY D CATEGORY

The fourth category is classified as "Compatibility D" requirements. Compatibility D requirements essentially are a "catch-all" under which such requirements "do not meet any of the criteria of Category A, B, or C…and are not required for compatibility purposes. Examples of Compatibility D requirements include several 10 CFR Part 40.4 definitions that are not directly defined in the AEA such as "license" and "purpose & scope" and the requirements for "specific exemptions" as Agreement States are not required to have provisions for such exemptions. 10 CFR Part 40 requirements for issuance of specific licenses also carry a "Compatibility D" classification as Agreement States typically are allowed to issue "permits" or "licenses" and Agreement State project managers can determine what is required for a satisfactory application.

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[134] *See* United States Nuclear Regulatory Commission, *Handbook for Processing an Agreement*, (July 19, 2007) (hereinafter "Exhibit 60").
[135] *Id.*
[136] *Id.*
[137] *Id.*
[138] Unlike these facilities, ISR facilities are released for *unrestricted use* at license termination rather than transferred to DOE or the resident State for LTSM. However, NRC still retains ultimate "sign-off" authority for site closure and license termination for ISRs.

v. NRC COMPATIBILITY "H&S" CATEGORY

The fifth category is classified as "Compatibility Health and Safety (H&S)" requirements. Compatibility H&S requirements are not specifically required to be compatible, but potentially could have a link to a particular health and safety issue if it would cause an entity to exceed Category A radiation protection standards. For purposes of this study, most Compatibility H&S requirements do not fall under source material recovery regulations. However, some financial assurance requirements under 10 CFR Part 40.36 do have an "H&S" classification. But, Agreement States typically handle financial assurance independently of compatibility requirements; although, the financial assurance requirements in 10 CFR Part 40, Appendix A, Criterion 9 applicable to source material recovery facilities will be NRC's starting point for any review of Agreement State decisions.

vi. NRC COMPATIBILITY "EXCLUSIVE" CATEGORY

Lastly, the final category is classified as "Compatibility: Exclusive NRC Regulatory Authority." Simply put, "Compatibility Exclusive" requirements reflect those that the AEA expressly reserves to the Commission. In the source material recovery realm, an representative example would be that the Commission retains exclusive authority to "sign-off" on final site closure and license termination of uranium recovery facilities prior to release for unrestricted use (ISR) or transfer to DOE for LTSM (conventional mill). Agreement States can be empowered to, and, indeed, are and have been empowered under a "source material recovery" Agreement, to review and approve all final D&D activities for a particular licensed/permitted site. However, as noted above NRC retains the right to "final sign-off" on the work and evaluations performed by the Agreement State program and the license cannot be terminated until such approval has been obtained. An example of this is the currently ongoing negotiations between the State of Colorado and NRC Staff on the Hecla Durita heap leach site in western Colorado. Colorado finalized its evaluation of final D&D of the Durita site and submitted a draft report to NRC in 2003 for final concurrence. While Colorado, deemed its work to be complete for site closure and license termination, NRC continues to review the submission and prepare its final determination. Numerous site visits and reviews have been conducted by Colorado, but because of NRC's exclusive authority to approve final site closure and license termination, the Durita site has not yet been transferred to DOE for LTSM.[139]

3. NRC AGREMENT STATE PROCESS AND PROCEDURES

One positive feature of a State attempting to become an NRC Agreement State is that NRC's process and procedures to do so are largely standardized and relatively easy to follow. The 1998 NRC Directive 5.9 provides additional guidance for States seeking Agreement State status including a series of sections that allow the Agreement State program director to properly categorize NRC regulations based on compatibility for translation to Agreement State

[139] *See* United States Regulatory Commission, *FSME Procedure Approval: Termination of Uranium Milling Licenses in Agreement States*, SA-900 (May 17, 2013) (hereinafter "Exhibit 63").

regulations. The Directive also references a number of other documents that can be used by the Agreement State program director to determine how a program should be constructed and how ongoing changes to NRC regulations through rulemaking or policy determinations from the Commission or by NRC Staff can and should be implemented. While it is typical to refer to the Agreement State process as a "14-step" process, as will be discussed below, this feasibility study consolidates all steps into a "3-step" process.

However, the 1998 NRC Directive 5.9 is merely the starting point for a State purporting to pursue Agreement State status. After evaluating this Directive and its subsequent Policy Statements and determinations and determining that pursuit of Agreement State status is appropriate for a State, the detailed process for becoming an Agreement State can be found in NRC's guidance document entitled *SA-700: Processing an Agreement and* the *Handbook for Processing an Agreement*.

SA-700 provides the State with guidance on the manner in which NRC expects a candidate State to conduct the Agreement State application process. SA-700 is the standard guidance document to be used by candidate Agreement States and, as is the case with all NRC guidance documents, it is a manual that prescribes what NRC Staff is looking for when processing an application. Standard NRC procedure for guidance is if you provide NRC Staff reviewer with exactly what is in the guidance, then your process should continue without the need for additional information. However, flexibility typically is built into NRC guidance documents to allow approaching an application in a manner which varies from the guidance, but major variations can require significant justification.

Pursuant to SA-700, both the candidate State and NRC Staff have specific responsibilities. From a programmatic perspective, the candidate State is responsible for installing and certifying that they have an adequate and compatible radiation protection program (with Governor's certification); while NRC Staff has the responsibility of certifying that the Agreement State program satisfies all relevant AEA requirements, including the 1998 NRC Directive 5.6. NRC Staff personnel are specifically named and their roles are discussed in SA-700 in great detail.

Prior to engaging in the SA-700 process and during the process itself, it is highly recommended that the State engage in frequent interaction with appropriate NRC Staff. Especially prior to engaging in Step 1, the State should engage in a series of meetings with NRC staff to assure that each party fully understands what is expected of them during the process. Interactions with any federal agency that relies on guidance effectively mandates that these meetings occur because confusion between State and federal agency will result in delays in the process and can require more State-based resources to achieve success. With specific respect to NRC, industry members and past candidate Agreement States have realized major benefits by having frequent interaction pre-Step 1 with NRC Staff so that each exchange of documents and information can be accomplished on the first submission without the need for significant revisions or additional information. Experiences in the source material recovery industry have demonstrated that the expenditure of resources responding to additional questions causes

resource expenditures to increase significantly. While NRC does not bill a candidate State for work done during the Agreement State application process, the candidate State will continue to expend its resources to complete the process. Minimization of expended resources should be one of the ultimate goals of this process for an Agreement State application.

i. PROCESS STEP ONE: GOVERNOR'S CERTIFICATION LETTER & STATE DRAFT REQUEST

Step 1 of the Agreement State process under SA-700 guidance is the submission of a letter of intent by the State (signed by the Governor) to the NRC Chairman to initiate the Agreement State application process. SA-700 specifically references other guidance documents such as the aforementioned *Handbook* and its Appendix C for the format and content of such a letter.

This first Step may appear to be simplistic, but it is not for a variety of reasons. First, the State (Governor) must certify in the letter that the resources to pursue Agreement State status are officially committed. While as noted above, NRC does not bill the State for standard Agreement State process staff time, the State does have to commit adequate resources moving forward so that NRC can justify the expenditure of its Staff resources to the Commission. Second, and most importantly, the candidate State program director must prepare a formal request for a Section 274 Agreement in accordance with Handbook Section 3.4. The preparation of this request is much more detailed than the Governor's letter to the Chairman. The draft request should contain a draft certification letter and description of the Agreement State materials regulatory program, as well as draft text for the proposed Agreement.[140] While this draft is being prepared, the candidate State program director is advised to provide NRC with at least two (2) months advance notice of when the draft will be submitted. At that time, NRC will assign Staff contacts for the candidate State during the process. Once the draft request is received, NRC will perform the functional equivalent of an "acceptance review"[141] to determine whether the Agreement request is adequate to justify the expenditure of Staff resources for a "detailed review." After this acceptance/completeness review is completed (time period for review varies),[142] NRC Staff team members prepare and send a letter to the Agreement State program director detailing the results of the acceptance/completeness review. Prior to the release of this report, NRC's guidance encourages the candidate State to

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[140] A sample Agreement are attached as part of Exhibit 60. Refer to NRC Management Directive 5.8 entitled *Proposed Section 274b Agreements with States.*

[141] As a general matter, an "acceptance review" is used by NRC Staff to determine if an application for an AEA-based action (e.g., applying for Agreement State status) contains sufficient detail to warrant "detailed review." Due to the fact that NRC's budget is limited by Congressional appropriations, NRC Staff is forced to determine whether to expend resources on a review that will minimize potential resource expenditures on an annual basis. Rejection of an application for an AEA-based action is a public matter and can result in the need to revise the entire submittal.

[142] This is another area where frequent interaction with NRC Staff can conserve resources as more discussions on the form and content of a draft request will minimize timeframes for review. This has been the case in the source material recovery field for the past six to seven years.

schedule frequent phone calls with NRC Staff to discuss the progress of the review. These conversations typically can result in identification of omissions or other items of interest in the draft report allowing them to be corrected prior to completion of the acceptance/completeness review.

After issuance of the report, the State is responsible for correcting any deficiency(ies) in the submitted request. NRC Staff guidance directs the candidate State to revise the original submitted request and to re-submit such request with the recommended revisions and/or additions. When these revisions and/or additions are completed, the State Governor is to certify and re-submit the request. It is anticipated that, at this stage of the process, that the candidate State is prepared to proceed with the formal NRC Agreement State process for discontinuance of Commission regulatory authority over the requested AEA materials/operations.

ii. PROCESS STEP 2: FORMAL STATE REQUEST & DOCUMENT PACKAGE

When the formal request for Agreement State status is finally submitted, the next step in the process is NRC Staff review of the adequacy of the formal request. The *Handbook's Appendix C* provides a detailed list of the criteria for approval of the formal request. NRC Staff is charged with reviewing the formal request in accordance with these criteria and, if deemed acceptable, will become the subject of a draft Federal Register notice that must be approved internally by NRC Staff up to the designated Staff officer (typically the FSME Director signs the notice). Any additional deficiencies identified by NRC Staff must be remedied prior to publication of this notice.

The aforementioned notice contains several important pieces of information. The notice will contain the Staff's draft assessment of the candidate State's formal request for an Agreement as well as any unique features of the proposed Agreement text, including but not limited to the scope of the request (e.g., in the case of this study only requesting source material milling authority), any changes in language from the typical Agreement template, and any variations from recommended SA-700 guidance. In addition, the notice will contain a proposed effective date for the Agreement. When this document is completed, the Staff then prepares additional elements of this package of documents such as a draft press release and letters to appropriate Congressional offices (NRC's Oversight Committees and State delegation members).

iii. PROCESS STEP 3: COMMISSION APPROVAL

After completion of this document package, NRC Staff prepares a Staff paper to accompany the package and submits it to the Commission for approval. This paper also includes a proposed Project Schedule for processing, signing, and implementing the requested Agreement. Simultaneously, NRC Staff prepares a series of letters to interested Federal agencies such as BLM, USFS, and EPA and all States are notified in an "All States Letter." For this part of the process, the candidate Agreement State is strongly encouraged to be prepared

to provide NRC with a high confidence level analysis of the proposed schedule for enacting an appropriate Radiation Protection Act statute and implementing rulemaking to promulgate appropriate regulations. A description of the rulemaking process is also recommended, so that NRC Staff can provide input on items such as the public comment period and any stakeholder involvement.

After formal submission of the package to the Commission through a SECY paper and obtaining its approval through a Staff Requirements Memorandum (SRM), the FSME Director signs the notice for publication. When this package is available for publication, NRC Staff issues the package to the aforementioned interested federal agencies, Congressional offices, and States. Upon issuance of this package for publication, a public comment period commences providing any interested stakeholder with the opportunity to comment on the proposed Agreement. It is at this point that the State can and should be prepared to encourage and facilitate public comment from interested stakeholders in the State. Several mechanisms are available for the State to maximize public participation. The State should consider posting the notice and document package on an Agreement State program website and potentially holding a series of public meetings announcing the ability to comment on the proposed Agreement. This is the first of many instances where transparency in the process can be promoted.

An additional point regarding the public comment period is that the candidate State is also considered to be an interested stakeholder. This means that the State is free to submit its own public comments on the proposed draft Agreement and other portions of the document package. In most cases, comments are not necessary as the candidate State should have interacted with NRC Staff enough times to agree on the contents of the package. But, this opportunity to comment is available to address any conclusions regarding acceptability of process.

Upon the closing of the public comment period, NRC Staff's responsibility is to process all public comments and, to the extent necessary, analyze and revise any portion of the document package. As is the case with 10 CFR Part 51 Environmental Impact Statement (EIS) and Supplemental EIS (SEIS) documents, NRC Staff considers each public comment and, to the extent necessary, prepares and publishes an analytical summary of such comments. This summary then becomes part of the final NRC Staff assessment of the Agreement request. When this is complete, NRC Staff prepares a second document package that includes the final Agreement text, a draft notice announcing approval and signing of the Agreement, final Staff assessment, Staff's analytical summary of public comments, and a completed General Accountability Office (GAO) form required by the Congressional Review Act. A draft press release and draft Congressional delegation letters are also included in the package. Other contents of the package will be discussed in the Category 2 and 3 Sections of this study as they are relevant to both transition and maintenance elements of an Agreement State program.

B. AGREEMENT STATE CASE STUDIES

Prior to offering specific recommendations for an Agreement State *process* to the State, this study will provide summary descriptions of four (4) potential case studies of States that currently operate Agreement State programs, particularly the latter three (3) specific examples where those States currently operate source material recovery Agreement State programs as part of their overall Agreement State program: (1) Commonwealth of Virginia (most recent participant in the Agreement State process); (2) State of Colorado; (3) State of Texas; and (4) State of Utah.[143] Each of these studies will be discussed in turn below:

1. COMMONWEALTH OF VIRGINIA

The Commonwealth of Virginia is one of the most recent additions to NRC's list of active Agreement States having received Agreement State status in 2009. While Virginia did not seek to obtain regulatory authority over source material recovery operations and 11e.(2) byproduct material, the State did obtain regulatory authority over source material, 11e.(1), 11e.(3), and 11e.(4) byproduct materials, and special nuclear material in quantities not sufficient to form a critical mass.[144]

Virginia's Agreement State process was conducted in accordance with the aforementioned NRC guidance (State Agreements or SA, http://nrc-stp.ornl.gov/procedures.html#stateagree) and commenced in 2005. At the time the Agreement State process was initiated, the first staff hire was the Program Manager. After necessary staff were interviewed and hired, the process continued with the statutory and regulatory requirements including the appropriate empowering statute being drafted prior to (in 2007) and submitted for enactment in the Commonwealth's 2008 session. On a parallel path, the appropriate regulations for implementing the empowering statute were drafted in 2007 and approved after undergoing the Commonwealth's rulemaking process in 2008-2009. Upon approval of these regulations, the Commonwealth's Agreement State program superseded any existing regulations that potentially could have contradicted the Agreement State regulations.[145]

Virginia's regulations addressed all aspects of the Agreement State program requirements, including the institution of a fee system to sustain the program on an annual basis. The Commonwealth followed the format of 10 CFR Parts 170 and 171 in developing its fee recovery system and tailored the costs to reflect budgetary needs and the number of licensees from which it would charge fees. The empowering statute also addressed a potential

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[143] For purposes of providing a more complete overview of potential costs to the State for a "source material recovery" Agreement State program and given that the vast majority of NRC-regulated sites are in the State, NRC is included in Table 1 as another case study.

[144] A copy of the Commonwealth of Virginia's Section 274 Agreement with NRC is attached as Exhibit 2.

[145] In Virginia, this was addressed with language in the regulations stating that other existing regulations that could contradict or conflict with the Agreement State program would be superseded.

Miscellaneous Receipts Act question in that it contained a clause stating that the collected fees would not revert to the Commonwealth's general fund, but rather to the Agreement State program. In absolute time, Virginia's Agreement State process took approximately 42 months (3 and ½ years) to complete. Virginia's Agreement State program statistics are listed in Table 1 below.

During transition, Virginia agreed with NRC Staff on a transition process for existing licenses and pending license applications. In this case, Virginia agreed that it would transition existing licenses directly (as is common practice), and would allow NRC Staff to complete the reviews of pending license applications received prior to the effective date of the Agreement. Anything submitted after the Agreement's effective date would be submitted directly to the Agreement State program. Virginia also created its own guidance for its licensees instead of incorporating NRC guidance by reference.

With respect to public participation, Virginia held a total of five (5) regional meetings within the Commonwealth with existing licensees to inform them of its intent to pursue Agreement State status and to educate them on how the Commonwealth would operate post-transition. Virginia also availed itself of mass mailings and website advertisements to inform the public. Funding was necessary directly from the Commonwealth directly to move these programs forward, which also is typical.

2. STATE OF COLORADO

The State of Colorado became an Agreement State in 1968 and obtained regulatory authority over source material, 11e.(1) byproduct material, and special nuclear material in quantities not sufficient to form a critical mass. After enactment of UMTRCA by Congress, Colorado then amended its Agreement to include source material recovery and 11e.(2) byproduct material.

Colorado's Agreement State process was conducted well before the creation of the NRC guidance documents for such process. Information regarding how this process was conducted is not readily available. However, current conditions in the program over the last 5-10 years are available. This feasibility study will only discuss the source material recovery program portion of Colorado's Agreement State program.

Colorado's Agreement State regulations are essentially similar to NRC regulations and, in the case of Appendix A Criteria, are identical.[146] In addition, the State creates its own guidance for license reviews and uses NRC guidance to the extent practicable. Further, Colorado's empowering statute imposes strict time requirements (480 days) for completion of licensing/permitting reviews, including additional public processes after that timeframe has elapsed. This limited timeframe is intended to include the initial review of the specific license

[146] *See* State of Colorado, Department of Public Health and Environment, Hazardous Materials and Waste Management, 6 CCR 1007-1 (hereinafter "Exhibit 65").

application, issuance of preliminary determination to grant or deny, and public participation processes. Colorado's Agreement State program keeps personnel for source material recovery separate from other portions of the program such as source material licenses. The full-time personnel in the source material recovery program are trained in both licensing and inspection so that all such personnel can perform either or both functions as the need arises. In addition to full-time personnel, the Program Director devotes approximately sixty (60) percent of his FTE to this program. The State of Colorado also follows the NRC format for fee recovery in terms of charging both annual and hourly review fees. Hourly fees are currently at $152 per hour.

Colorado is an Agreement State that recently reviewed and approved a license application for the first conventional uranium mill to be licensed in the United States since the 1970s for Energy Fuels Resources' proposed Pinon Ridge Mill in Western Colorado. To the extent practicable, NRC guidance and previous analyses for conventional mills was incorporated into the license application and the review. Litigation followed on this license application and approval and, per the Agreement State program, costs for such litigation were not invoiced to the license applicant/licensee, but rather was absorbed by the State. The State of Colorado's Agreement State program statistics are listed in Table 1 below.

The State of Colorado also uses a series of working relationships between individual agencies in the State government to ensure that they have the requisite expertise to adequately review a given license application. For example, these relationships allow for the Agreement State program to solicit review and input from personnel with engineering experience for tailings impoundment design, well construction or other relevant portions of a license application. Using this process, the Agreement State program keeps track of the time spent on a given license application review by outside personnel and bills them out to the applicant using its hourly fee program. As will be discussed later in this study, this approach can also be accomplished using memoranda of understanding (MOU) in order to formalize the relationships. However, it is not necessary to accomplish such a task through such MOUs.

3. STATE OF TEXAS

The State of Texas became an Agreement State in 1963 and obtained regulatory authority over source material, 11e.(1) byproduct material, and special nuclear material in quantities not sufficient to form a critical mass. After the passage of UMTRCA in 1978, Texas amended its Agreement to include source material recovery and 11e.(2) byproduct material.[147]

Texas is currently the Agreement State with the most active source material recovery program. The program regulates several licensees that obtained their licenses well before the revitalized interest in source material recovery, recently addressed a change of control application for the Hobson ISR facility on two occasions from Everest Minerals, Inc. to Uranium One Americas and from Uranium One Americas to Uranium Energy Corp. (UEC) and addressed a newly licensed/permitted ISR facility for UEC (Goliad). Further, the State also addressed

[147] *See* Exhibit 2.

transfer and licensing matters for UEC for the La Palangana site and ongoing restoration and other matters for Uranium Resources, Inc. (URI) at several of their ISR sites. Thus, the structure of this program is considered to be an excellent representative example for Wyoming's consideration. The State of Texas' Agreement State program statistics are listed in Table 1 below.

In terms of personnel, the State of Texas follows NRC guidance on requirements for such personnel and has engineers, hydrologists, and health physicists on staff, as well as access to a biologist to the extent necessary. Texas also has the ability to outsource work to reviewers in other disciplines as the need arises. License review personnel occasionally will participate in inspections. The costs associated with these personnel are passed on to the license applicant or licensee.

TABLE 1: AGREEMENT STATE PROGRAM STATISTICS

FEDERAL/ STATE	REGULATORY PROGRAM	NO. OF LICENSEES	FTE	SALARY RANGE (PER YEAR)	PERSONNEL TYPE & NUMBER	ANNUAL BUDGET
NRC	SOURCE MATERIAL RECOVERY (URANIUM RECOVERY)	8 SOURCE MATERIAL RECOVERY LICENSEES 11 SOURCE MATERIAL RECOVERY LICENSED SITES IN DECOMMISSIONING	APPROXIMATELY 20	EIGHT (8) GS-15s; FIVE(5) GS-14s; ONE (1) GS-13: GS-15: $123,000-$155,000 GS-14: $105,000-$136,000 GS-13: $90,000-$115,000	FIVE (5) HYDROGEOLOGISTS; FIVE(5) HEALTH PHYSICISTS; NINE(9) SAFETY PROJECT MANAGERS; FIVE (5) ENVIROMENTAL PROJECT MANAGERS	$2.5-$3.0 MILLION DOLLARS
VIRGINIA	SOURCE MATERIAL, 11E.(1) BYPRODUCT MATERIAL, SPECIAL NUCLEAR NOT IN CRITICAL MASS	409 SPECIFIC LICENSEES (NONE ARE SOURCE MATERIAL RECOVERY)	7	$48,000-$54,000	1-DIRECTOR 5-SPECIALISTS (LICENSING/INSPECTIONS) 1-ADMINISTRATIVE ASSISTANT	$800,000
COLORADO	SOURCE MATERIAL RECOVERY	APPROXIMATELY 7 (SEVERAL IN FINAL SITE CLOSURE MODE)	3 +60% OF PROGRAM MANAGER; OTHER DEPARTMENT STAFF AS NEEDED; SEPARATE CONTRACTORS FOR SUPPORT ON TWO SITES	$76,800-92,400	REGULATORY SPECIALIST; HEALTH PHYSICIST; ENVIROMENTAL PROTECTION SPECIALIST; MANAGER AS NEEDED, GEOTECHNICAL ENGINEER, CONSTRUCTION OVERSIGHT, PROCESS ENGINEER, COMMUNITY INVOLVEMENT /COMMUNICATIONS	NOT FIXED; KEYED TO SALARIES BUT FUNDED BY LICENSEES THROUGH ANNUAL AND HOURLY FEES
TEXAS	SOURCE MATERIAL & SOURCE MATERIAL RECOVERY	APPROXIMATELY 10	8 STAFF, 3 ADJUNCT STAFF OR CONTRACT EMPLOYEES	NOT AVAILABLE	1 PROGRAM MANAGER; 1 HYDROLOGIST; 1 ENGINEER (1 ADJUNCT); 1 GEOLOGIST; 4 HEALTH PHYSICISTS; 1 ADJUNCT BIOLOGIST; 1 ADJUNCT ECONOMIST (ALL ARE NOT SPECIFIC TO SOURCE MATERIAL RECOVERY)	TCEQ BUDGET CAN BE FOUND HERE AND BROKWN DOWN BY REVENUE SOURCE. NO SPECIFIC SOURCE MATERIAL RECOVERY BUDGET IS AVAILABLE. http://www.tceq.texas.gov/about

C. SUGGESTED APPROACH FOR DEVELOPMENT OF AGREEMENT STATE PROGRAM

The discussion below incorporates product deliverables for Category 1 by reference.

1. DRAFT AN EMPOWERING STATUTE FOR GOVERNOR'S AUTHORIZATION TO PROCEED

First, the State is required by NRC guidance to enact a statute authorizing the Governor to enter into an Agreement with NRC (See *Handbook* at Section 4.1.1.2, page 13). As a technical matter, this legislation can be passed at any time prior to the Governor signing the Agreement, because NRC regulations will not allow the NRC Chairman to sign a Section 274 Agreement without authorization by the State legislature and the Governor, including the necessary staffing and funding in place at the time the Agreement is set to be signed. Model legislation for this is available in NRC's Handbook.

But the candidate State legislature can avoid the need for multiple legislative actions by passing legislation authorizing this action as well as allowing the Governor to send the aforementioned formal request to NRC. Given that legislative processes can be unpredictable, it is recommended that legislation authorizing the pursuit of Agreement State status include a variety of items such as contingent language authorizing the signing of the Agreement. NRC guidance has model legislation and several examples of current Agreement States have used similar model legislation. Further, the development of the format and timeframe for rulemaking to implement Agreement State regulations should be pursued. Until the formal Agreement is approved by NRC and executed by the Governor, any such legislation and regulations directly implementing the program are unenforceable; however, it does strengthen the ultimate formal request, if completed, prior to submission to NRC.

2. COMMENCE CONSULTATIONS WITH INTERESTED PARTIES

The State should immediately begin consultations with all interested federal agencies, Congressional delegation members, and other entities that will be part of the notification process. Giving these entities advance notice of the State's plan to pursue Agreement State status will ensure that transparency is maintained in the process and elected and appointed leaders are given ample opportunity to offer their input. The State should consider a series of "scoping meetings" to keep interested stakeholders abreast of the process' status. While NRC's guidance on the Agreement State process is fairly self-explanatory, it still is dense with facts and recommendations that may not necessarily be easily understood by those unfamiliar with the program. Further, transparency again will be maintained during the process. It is imperative that the formal request, when finalized, be a strong and defensible document that does not result in rejection during an NRC acceptance/completeness review. Any rejection likely will result in the expenditure of additional State-based resources as well as considerable additional time. As noted above, frequent interaction with NRC Staff is critical.

Lastly, it is recommended that the State actively consult with other representatives in existing Agreement States, especially the State of New Jersey and Commonwealth of Virginia (as they are the most recent candidate Agreement States) and the States of Texas, Colorado, and Utah (as they are States with active source material recovery Agreement State programs), as well as the Organization of Agreement States (OAS)[148] and the Council of Radiation Control Program Directors (CRCPD)[149] to obtain as much insight as possible into all aspects of the Agreement State process and to obtain input on proposed schedules, regulations/guidance, and a suitable fee program.

3. DRAFT AN EMPOWERING STATUTE FOR AGREEMENT STATE PROGRAM

Unlike Recommendation 1, this legislation is the main component of a State's ability to proceed with development of an Agreement State program and promulgation of implementing regulations. All Agreement States are required to have these empowering statutes in place prior to executing a Section 274 Agreement and, as such, model legislation is available for the State's use. This statute can be enacted by the legislature without the expenditure of any State resources on rulemaking, because the AEA provides NRC with preemptive regulatory jurisdiction over AEA materials and operations in lieu of a Section 274 Agreement. Thus, at its initial stage, this statute is merely meant to provide the State with the ability to proceed with the development of an Agreement State program and is otherwise unenforceable. This factor provides the State with ample time to assemble the necessary resources to fund Agreement State program development on its own timeline. It is recommended that this statute also include provisions and funding for rulemaking as described in Recommendation 4.

This recommendation also carries with it a recommendation that the State designate a lead agency for conducting the Agreement State process. Typically, this can be conducted by a division of an existing State regulatory entity (e.g., WDEQ) or by a newly created entity depending on currently available regulatory structures and mandates. It is more advisable to designate an agency that can move forward with a State statutory mandate quickly without the need for delays due to procedures. WDEQ has two divisions that could conceivably take the lead on this process; either LQD or WQD. Unless the State determines that a new Agreement State entity would need to be formed, one of these two divisions could take the lead.

A common theme in this study is that a candidate State should not "re-invent the wheel," this theme is not different for drafting an empowering statute. As is the case with source material recovery regulations, current Agreement State empowering statutes used to create Agreement State programs serve as a useful model. For purposes of this study, the current Commonwealth of Virginia empowering statute will serve as the model.

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[148] *See* http://www.agreementstates.org/.

[149] *See* http://www.crcpd.org/. It is also important to note that the CRCPD maintains an active electronic mail service where job posting for Agreement or other State radiation control program positions can be published to a large audience. This is a service the State should consider employing if the decision to move forward is made.

Virginia enacted a single statute in order to provide NRC with adequate understanding of how the framework of its Agreement State program would be constructed. This statute is referred to as the Radiation Control Act and inserted into the Commonwealth's administrative code as *Code of Virginia*, Section 32.1-277 *et al.*[150] This portion of the Virginia Code lays out the statutory provisions required for a State to promulgate appropriate regulations and, more importantly, justify to NRC that its proposed Agreement State program will be adequate to protect public health and safety with an appropriate radiation control and protection program.

While most of the aspects of this statutory language can be best understood by reviewing the attached outline and other Agreement State program radiation control statutes, the following itemized list offers examples of topic areas that must be included in an empowering statute:

(1) Definitions (e.g., source material, 11e.(2) byproduct material;
(2) Agreement State authority's responsibilities;
(3) Effects on current State/Commonwealth and local regulations;
(4) Governor's authority to enter Agreement's with federal government;
(5) Authorization to regulate uranium and/or thorium recovery facilities including disposal of mill tailings (11e.(2) byproduct material);
(6) Section 8 of CSG suggested legislation;
(7) Avoid creation of gaps in regulation between NRC & State or intra-State agencies;
(8) Authorization to issue licenses for regulation of AEA materials and/or operations;
(9) Authorize the use of license conditions to regulate and to address site-specific or licensee-specific items;
(10) Authorize the use of exemptions to permit actions that do not adversely affect public health and safety;
(11) Authorize suspension or revocation of a license for continued non-compliance;
(12) See Section 4.1.1.4 of NRC handbook for 11e.(2) byproduct material licenses at page 15.

It is important to note that this list is not exhaustive, but the expenditure of State-based resources to construct this empowering statute is orders of magnitude less than promulgation of regulations. Further, NRC Staff does allow for pre-Governor's certification letter discussions on draft statutory and regulation language. This is a tactical decision based on resource availability, but the process of drafting statutory and regulatory language should be considered an ongoing, iterative process.

[150] *See* Commonwealth of Virginia, *Laws, Regulations, and Guidance*: *Radiation Laws* (hereinafter "Exhibit 67").

4. DRAFT AGREEMENT STATE PROGRAM REGULATIONS

After passage of the legislation identified in Recommendation 3, the State can proceed with rulemaking to develop an Agreement State regulatory program. It is well-understood that rulemaking is necessary to proceed with the Agreement State process, but the real question is how and when to do so. The State first should create a comparison chart between WDEQ and NRC regulations to ensure that there are no omissions in the draft regulations and that the State does not "re-invent the wheel" when promulgating regulations. After completion of that chart, the State should decide whether resources are available to begin drafting Agreement State regulations to have them prepared by the time the aforementioned Recommendation 3 is enacted. These decisions should be made by the State in advance and then factored into the Recommendation 5 document for both public participation and NRC Staff consultation requirements.

In addition, it is recommended that the State consult model regulations for source material recovery created by CRCPD and members of OAS from Agreement States with source material recovery programs to obtain recommendations for developing appropriate regulations. These recommendations can be extremely useful given that these State radiation protection personnel Agreement States have been involved with development and implementation of radiation protection programs and successfully passed IMPEP reviews of such regulations in the past that have been deemed adequate and compatible.

It is critical to the successful completion of this item that a cross-referencing of existing State-based regulations be conducted. This will identify any gaps in the regulations and assist in the minimization of resource expenditure. But, this does not relieve the State of the need for radiation protection regulations and other related administrative procedures.

5. DRAFT POLICY ON GUIDANCE ADOPTION

As stated in this Section, it is recommended that the State also draft a policy on adoption of NRC guidance and other non-binding policies, procedures, and interpretations. This feasibility study provides the State with a comprehensive list of guidance and other documents that can be evaluated in conjunction with such a policy. Existing licensees and future license applicants likely will find this policy useful to address their licenses or license applications in a manner that comports with State expectations upon transition to Agreement State status. This policy can be subject to the State's policy on public participation to the extent the State deems it practicable. Whether such a policy, or portions thereof, should be included in any prospective rulemaking is a decision left to the State.

6. DRAFT PUBLIC PARTICIPATION PROCESS FOR RULEMAKING

Finally, Recommendation 6 is for a State to draft a schedule for its entire Agreement State process ranging from pre-process public interactions, whether with NRC Staff, interested stakeholders or both, to the required Agreement State rulemaking, and to additional policies or procedures developed by the State during the process. It is important that transparency be maintained in this process and, due to the recommendation of this feasibility study that frequent NRC and public interaction take place, a draft schedule for the process likely will help facilitate and effective and efficient process. NRC Staff meetings generally are public meetings where interested stakeholders are permitted to participate. State-organized meetings presumably will be pursuant to WDEQ policies, which can include potential "scoping" meetings in various parts of the State and more informal sessions where input on Agreement State issues can be solicited.

7. IDENTIFY EXISTING MEMORANDA OF UNDERSTANDING AND DETERMINE WHICH NEED UPDATING/REVISIONS AND IF NEW MEMORANDA OF UNDERSTANDING ARE REQUIRED

The use of informal State agency relationships or MOUs to guarantee that adequate technical and environmental expertise is available whenever the Agreement State program requires it for review of a licensing action request or ongoing license maintenance activities can be a valuable staffing tool. The State of Wyoming already maintains several MOUs with outside agencies such as EPA and BLM and with State agencies. An evaluation of the current viability of existing MOUs and the need for additional MOUs is recommended to allow WDEQ to determine whether the use of such MOUs and the resource expenditure to revise existing and develop new MOUs. If this direction is not worth the resource expenditure, then Agreement State program staffing and budgeting will be impacted. However, as is the case in Colorado, it may not be necessary to formalize such relationships in MOUs; but rather, WDEQ could simply negotiate personnel availability for given topic areas to ensure adequate expertise is available.

8. DEVELOP A FEE PROGRAM AND RULEMAKING PROCESS

As stated previously, the foundation for an effective and viable Agreement State program is its fee structure. Agreement States are permitted to budget for their program in any way they see fit, including the potential for annual State appropriations without the use of a fee structure. However, many Agreement States have found success modeling their fee structure with that of NRC. As discussed above, NRC's fee structure is modeled on the use of two types of fees: annual and hourly. Agreement State such as the State of Colorado and the Commonwealth of Virginia utilize both forms of fees and operate viable Agreement State programs. It is recommended that a thorough evaluation of NRC's fee program and the development of a fee structure *prior* to moving forward with the Agreement State process be conducted. This will provide the State with assurances that there will be adequate revenue available for successful operation of the program. This evaluation also includes a determination

that no Miscellaneous Receipts Act-equivalent exists and that fees can be routed for use by the Agreement State program.

D. NRC & WDEQ REGULATORY PROCESS OVERVIEW

Category 1 of this feasibility study will provide the State with insight as to the existing and reasonably foreseeable license and license amendment applications at NRC for source material recovery facilities. For purposes of this section of the study, Thompson & Pugsley, PLLC will refer to a Gantt chart generated by NRC Staff that shows the status of existing license applications for new operating licenses or license amendments for satellite ISR wellfields to support our analysis.

1. AEA/NRC LICENSING ACTIONS FOR SOURCE MATERIAL RECOVERY

Before addressing the status of these licensing actions, it is important to provide the State with an overview of the types of licensing actions that currently are or could be before NRC for source material recovery. Again, it is important to note that the only licensing actions that are relevant to the State's proposed Agreement State program are license and license amendment applications and license maintenance activities associated with source material *recovery/milling* and not what is known as *side-stream* or *byproduct* source material recovery, because the latter processes do not result in the generation of 11e.(2) byproduct material. Attached to this feasibility study is a copy of NMA's 1998 White Paper in which there is a detailed discussion of the legal bases for this position which are grounded in UMTRCA's legislative history.

As a general proposition, the AEA, as amended, mandates that NRC be a reactive independent regulatory agency in that it is not permitted to actively promote the licensing and production of AEA materials. As a reactive agency, NRC waits for individual entities (a person, companies, consortiums) to submit license applications to engage in operations involving AEA materials. When it receives any form of licensing application, NRC can review it and act in one of three ways: (1) approve in full, (2) approve with conditions or (3) deny. Accordingly, under the AEA, the licensee is primarily responsible for the safe management of AEA materials and the safe conduct of AEA operations pursuant to its license(s). NRC retains enforcement authority under its AEA regulations and conducts regular inspections to determine if the licensee is acting in compliance with its issued license conditions. Standard license conditions are requirements imposed on a licensee above and beyond the scope of license applicant-specific public health and safety and environmental procedures and safeguards voluntarily committed to by the licensee in its license application. Accordingly, active licenses have a standard license condition that incorporates licensee submittals and all associated commitments by reference.

i. OPERATING LICENSE APPLICATIONS

The first type of source material recovery licensing action is a standard operating license issued under 10 CFR Part 40, and Appendix A Criteria. Operating license applications apply to all categories of source material recovery operations (i.e., conventional uranium milling, heap-leach recovery, ISR, and conventional thorium milling). As stated above, NRC regulations prescribe that an operating license submission satisfy both a safety (10 CFR Part 40) and an environmental (10 CFR Part 51) review. These regulations and associated guidance prescribe specific requirements for operating license applications in terms of form and content, as well as NRC Staff review procedures. The guidance contains extensive information on interpretations by NRC Staff so license applicants have enough insight into the required data and analyses for grant of a license.

An operating license is the benchmark for the conduct of AEA operations and the generation and management of AEA materials. In many cases, an operating license is the only licensing action necessary to conduct AEA operations at source material recovery facilities such as conventional uranium mills and heap leach recovery facilities. In some cases, the operating license is the starting point for attempting initiation of additional recovery operations such as ISR satellite wellfields. Depending on the scope of activities encompassed in a requested operating license application, subsequent license amendment requests could involve proposed new activities such as alternate feed processing at conventional uranium mills or satellites at ISR facilities.

Each operating license is evaluated on a site-specific basis because, despite the standardization of source material recovery technologies, each proposed licensed site has site-specific conditions that require assessment prior to the issuance of a license. As stated above, NRC regulates through evaluation and application of site-specific license conditions but it also utilizes programmatic guidance such as generic environmental impact statements to minimize unnecessarily duplicative reviews involving generally acceptable operating conditions.

ii. LICENSE AMENDMENT APPLICATIONS

License amendment applications are submitted by existing licensees for a variety of reasons, including but not limited to, changing facility design, increasing production output, expanding existing licensed site footprints, and changes in operating plans from the original license application and license conditions. The table below identifies a comprehensive, but not necessarily exhaustive, list of potential license amendments. For purposes of this feasibility study, the table will identify both administrative and major amendments or, in some cases where requested actions could be both depending on the site-specific circumstances. An administrative amendment to an existing license is not deemed to require a formal “license amendment” even though they do amend a portion of an existing license; whereas, a “major” amendment under NRC regulations triggers a requirement for a formal technical review under

10 CFR Part 40 and Appendix A and an environmental review (such as an EA on a finding of no significant impact (FONSI) under 10 CFR Part 51). Depending on the magnitude of the "major" amendment, a full technical and environmental review can require more resources than one of less magnitude. However, regardless of what type of amendment it is, each one will require the expenditure of State-based resources to evaluate, process, and ultimately approve, approve with conditions or disapprove:

TABLE 2: LICENSE AMENDMENT REQUESTS BY TYPE AND LEVEL (REPRESENTATIVE EXAMPLES)

AMENDMENT REQUEST	FACILITY TYPE	MAJOR OR ADMINISTRATIVE OR BOTH
ACLS	ALL	MAJOR
SATELLITE WELLFIELD ADDITIONS	ISR	MAJOR
FACILITY UPGRADES	ALL	DEPENDS ON THE UPGRADE AND WHETHER IT FALLS UNDER PERFORMANCE-BASED LICENSE CONDITION
INCREASE IN ANNUAL PRODUCTION LIMIT	ALL	MAJOR
WELLFIELD PACKAGE ("REVIEW")	ISR	ADMINISTRATIVE
WELLFIELD PACKAGE ("REVIEW AND VERIFICATION")	ISR	ADMINISTRATIVE
WELLFIELD PACKAGE ("REVIEW AND APPROVAL")	ISR	LICENSE AMENDMENT/ADMINISTRATIVE
SITE DECOMMISSIONING PLANS	ALL	MAJOR
GROUNDWATER RESTORATION	ISR	SEE ACL
NEW TAILINGS IMPOUNDMENTS	CONVENTIONAL (HEAP LEACH)	MAJOR
SITE CLOSURE/LICENSE TERMINATION	ALL	MAJOR

iii. LICENSE RENEWALS

Given that the AEA authorizes NRC and its Agreement States to regulate through the issuance of licenses,[151] both NRC and its Agreement States must determine the duration of any license's effectiveness. Currently, all AEA licenses are limited in time ranging from up to twenty (20) additional years (from an original forty (40) year operating life) for nuclear power reactors to ten (10) years for source material recovery facilities. With respect to source material recovery licenses, up until the late 1990s, such licenses were issued by NRC as five (5) year licenses. Then, NRC amended its license timeframe and extended such licenses to ten (10) year timeframes. Due to the limited timeframes associated with these licenses and the fact that many project lifecycles will exceed that initial timeframe (given that 1-2 years or more can be needed to construct and put the facility into operation and varying timeframes will be required for D&D and license termination), NRC licenses are subject to applications to "renew" the existing license for a further 10 year period.

NRC's guidance for its source material recovery licensees does not specifically address the requirements of license renewal applications in great detail. However, the general approach for licensees preparing such applications is that they should address two subjects: (1) a comparison between that which was proposed and approved in the initial operating license application and that which has occurred up to the end of the license term; and (2) the licensee's projections going forward with existing or additional operations from the point of license renewal until the expiration of the next license term of 10 years. NRC currently has several license renewal applications before it in varying stages of review. It is anticipated that these license renewals will be approved by NRC prior to transition to any Wyoming Agreement State program. However, even given the potential five (5) year Agreement State process and depending on issuance of these license renewals, the State likely could expect several license renewal applications in the first 4-5 years as an Agreement State. The table below shows license renewals currently before NRC and anticipated decision dates, as well as dates for issuance of new licenses assuming a decision in 2014 to pursue Agreement State status and a 5 year process (projecting to 2019):

[151] While SA-700 requires that a proposed Agreement State's empowering statute include language that specifically authorizes the State to regulate AEA materials and operations through the issuance of "licenses," Agreement States are allowed to issue "permits." For purposes of this study, the terms "license" and "permit" have been and will continue to be used interchangeably.

TABLE 3: PROJECTED LICENSE RENEWALS

COMPANY NAME	LICENSED FACILITY	LICENSE TYPE	RENEWAL ISSUED OR ANTICIPATED	PROJECTED NEXT RENEWAL FILING
Power Resources, Inc. d/b/a Cameco Resources	Smith Ranch-Highland	ISR	Current Renewal Anticipated in 2015-2016	2025-2026
Uranium One Americas	Willow Creek	ISR	Issued in 2013	Anticipated in 2023
Uranium One Americas	Moore Ranch	ISR	Issued in 2010	Anticipated in 2020
Uranerz Energy Corp.	Hank & Nichols Ranch	ISR	Issued in 2011	Anticipated in 2021
Ur-Energy/Lost Creek ISR, LLC	Lost Creek	ISR	Issued in 2011	Anticipated 2021
Strata Energy, Inc.	Ross	ISR	Anticipated Issuance in 2024 (Initial License Issuance)	Anticipated in 2024
AUC, LLC	Reno Creek	ISR	Anticipated Issuance in 2015 (Initial License issuance)	Anticipated in 2025
Kennecott Uranium Company	Sweetwater	Conventional (Standby)	Renewed in 2006	Anticipated 2016

Energy Fuels Resources	Sheep Mountain	Heap Leach	Anticipated Issuance in 2016-17	Anticipated 2026-2027
Ur-Energy	Shirley Basin	Conventional/ISR	Active	Not Yet Known

With all this said, this feasibility study strongly suggests that if the State decides to seek Agreement State Status, WDEQ should make a concerted effort to not "re-invent the wheel" when constructing an Agreement State program. The first and most obvious way to construct such a program efficiently is to have a complete understanding of NRC's regulatory program and to try to mirror the substance and procedures of that program. From Thompson and Pugsley, PLLC's point of view, NRC regulates its source material recovery licensees using (1) regulations; (2) guidance, policy statements, and other interpretative mechanisms; and (3) inspection and enforcement. **Each of these will be discussed in greater detail below; and, hopefully, it will become apparent why Thompson & Pugsley, PLLC, strongly suggests WDEQ to construct any Agreement State program to mirror, as closely as possible, NRC's approach to its regulations, and its interpretations of those regulations should the State determine to proceed.**

2. NRC REGULATORY FORMAT: HOW NRC REGULATES

As discussed above, there are a wide variety of potential licensing action requests for source material recovery facilities that are submitted to NRC Staff for review under three categories: (1) operating licenses; (2) license amendments; and (3) license renewals. However, each of these three licensing action requests are subject to a comprehensive, robust regulatory regime that has evolved over more than thirty five (35) years since the passage of UMTRCA.

i. FEDERAL REGULATIONS

The Commission implements the statutory authority reflected in Congress' mandate in the AEA, as amended, through promulgation of regulations. Through Commission-sanctioned rulemaking processes, these regulations are promulgated to ensure that use of AEA materials and conduct of AEA operations by licensees will be "adequately protective of public health and safety and the environment." Commission regulations are promulgated upon its own initiative, per a directive from Congress and, in some cases per a petition for rulemaking by an interested stakeholder (e.g. licensees, trade associations, and members of the public). Further, some regulations can be impacted by further rulemaking processes to clarify an existing regulation or by Commission decisions interpreting regulations in administrative litigation. Generally, however, NRC regulations are subject to the traditional rulemaking processes involving an advance notice of proposed rulemaking (ANPR), a proposed rule with oral and written public comment opportunities, environmental evaluation, and a final rule including a final environmental evaluation and responses to public comments. To the extent necessary, new or amended regulations may be accompanied by interim staff implementation guidance.

With respect to source material recovery, NRC regulations that are directly applicable to the entirety of the recovery process are as follows: (1) 10 CFR Part 40 source material regulations and Appendix A Criteria for source material recovery facilities; (2) 10 CFR Part 20 radiation protection regulations; (3) 10 CFR Part 71 transportation requirements to the extent

they supplement DOT regulations; (4) 10 CFR Part 51 environmental review regulations[152] and (5) 10 CFR Part 170 and 171 fee regulations.[153]

a. NRC REGULATIONS: 10 CFR PART 40

Beginning with 10 CFR Part 40, these regulations can be and are applied directly to the regulation of source material and, to the extent appropriate, source material recovery facilities. Some portions of the Part 40 regulations (excluding Appendix A Criteria) are not necessarily relevant to regulation of source material recovery facilities and, as such, need not be adopted by an Agreement State seeking only authority to regulate such facilities. As part of its Agreement State program and as is the case with 10 CFR Parts 20 and 71, NRC Staff has created several compatibility charts that identify which compatibility categories these regulations fall under so that the State can adopt these regulations directly or in appropriate form into its Agreement State regulations. **Generally, it is recommended that any Compatibility A or B regulation be directly adopted verbatim into the State's proposed regulations when constructing a program.**

b. NRC REGULATIONS: APPENDIX A CRITERIA

Appendix A Criteria in 10 CFR Part 40, Appendix A were designed specifically to address regulation of uranium recovery facilities. At the time of their promulgation they were focused on regulating conventional uranium mills/heap leach facilities, because at that time conventional uranium milling was the primary form of source material recovery while ISR was more in its infancy stage. This fact is evidenced in NRC's 1980 GEIS which specifically states that ISR is identified in the study only for "completeness" and was not considered to be a primary form of uranium recovery. Appendix A is designed to provide for "flexibility" in the implementation of its Criteria due to the highly site-specific nature of conventional uranium mills/heap leach facilities. One hallmark of this flexibility is the idea that uranium recovery licensees can propose "alternatives" to any of the requirements in the Criteria so long as they provide for at least as stringent protection of public health and safety.[154]

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[152] 10 CFR Part 51 regulations are discussed in detail in Section I(D)(3)(vi) below.

[153] Under the OBRA of 1990, NRC is currently required to recover 90 percent of its annual budget from fees assessed to licensees. The remaining 10 percent is deemed to be discretionary funds that the Commission may allocate on its own. For example, in 2005, the Commission allocated discretionary resources to be used by NRC Staff in developing NUREG-1910 or the ISR GEIS.

[154] The preamble to 10 CFR Part 40, Appendix A (Exhibit 61) specifically states that Appendix A Criteria were designed to allow flexibility with respect to compliance with its requirements. This "flexibility" allows for "alternatives" to be proposed by licensees based on site-specific circumstances. An example of this is WNI's NRC-licensed Title II uranium recovery site (Split Rock) near Jeffrey City. For a variety of reasons, WNI was required to conduct detailed groundwater modeling on groundwater to properly determine where its final LTSB would be located. However, given that the closure plan required a site boundary encompassing significantly more property than the original licensed area, the Commission required WNI to make good faith efforts to acquire either fee title to or durable institutional controls on

Prior to the recent "renaissance" of uranium recovery applications, NRC Staff traditionally applied Appendix A Criteria to ISR facilities "as appropriate" because, as stated above, the Criteria initially were intended to apply to conventional uranium mills/heap leach facilities. The mechanism used by NRC Staff to implement requirements "as appropriate" such as financial assurance and groundwater restoration has been site-specific license conditions. However, recently the Commission determined that Criterion 5(B)(5) for groundwater protection is applicable to all ISR facilities.

Since Appendix A Criteria serve as the benchmark for regulation of uranium recovery facilities, it is strongly recommended that a State consider adopting Appendix A Criteria verbatim.[155] The vast majority of Appendix A Criteria fall under compatibility categories that require language be essentially identical or where changes could potentially cause a health and safety issue. Changing the language of these Criteria potentially could lead the State to negative compatibility findings in an IMPEP review or conflicts with critical NRC policy or guidance relevant thereto. The State of Colorado currently regulates source material recovery with fully incorporated Appendix A Criteria. Wyoming also should ensure that verbatim adoption of these regulations is done in a way that allows for adequate time to review any revisions to such regulations, appropriately train its personnel, and conduct a rulemaking to adopt their language into State regulations. Consultation with NRC Staff on this is highly recommended.

There is a possibility that WDEQ regulations for Permits to Mine may include requirements that mirror current NRC 10 CFR Part 40 requirements. To the extent that these existing requirements mirror NRC's regulations and are at least as stringent as such regulations, the State can consider evaluating its regulations to determine if they should remain in place without change as AEA-based regulations. To the extent that WDEQ does not have regulations currently in place that mirror NRC regulations, WDEQ should evaluate the compatibility requirements in the compatibility charts and determine if verbatim adoption is warranted. In most scenarios, verbatim adoption is highly recommended to avoid complications associated with oversight of existing licenses and to ensure no negative findings in an IMPEP inspection.

c. NRC REGULATIONS: 10 CFR PART 20 RADIATION PROTECTION REGULATIONS

With respect to 10 CFR Part 20, these are the Commission's programmatic regulations for radiation protection from both a public and occupational dose perspective. NRC Staff directly applies 10 CFR Part 20 regulations to source material recovery facilities and requires

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lands within this proposed LTSB. The combination of this groundwater model, previously approved ACLs, and property acquisitions/durable institutional controls serves as an ideal example of an Appendix A "alternative."

[155] One possible area for variations would be the addition of some ISR-specific criteria as was considered in the late 1990s when NRC delayed a potential rulemaking, including some specifically for ISR, at the request of NMA due to the financial circumstances of the uranium recovery industry at the time.

that its license applicants demonstrate that their licensed activities will meet all relevant public and occupational dose standards and that its licensees demonstrate through semi or annual reporting that these licensed activities are, indeed, meeting these requirements.

The primary difference between an AEA/NRC regulatory program and a State-based mining program that does not have Agreement State authority is that the latter generally does not have an AEA material-specific radiation protection program. Thus, it is strongly recommended that the State consider adopting 10 CFR Part 20 requirements verbatim to the maximum extent practicable. After consulting NRC's compatibility chart for Part 20, it is evident that the vast majority of definitions and regulatory requirements fall under the "Compatibility A" category, and thus, require essentially the same language in an Agreement State program as in Part 20. More specifically, the major components of 10 CFR Part 20.1301 for dose to individual members of the public and workers all are "Compatibility A" requirements and since they must be adopted with essentially identical language to NRC's, it would be easiest to adopt identical language.

d. NRC REGULATIONS: 10 CFR PART 71 TRANSPORTATION REGULATIONS

10 CFR Part 71 regulations are NRC's implementation of transportation requirements for AEA materials. These regulations essentially are reflective of DOT requirements for AEA materials that fall into specific classes of DOT-regulated materials. License applicants for new operating licenses typically certify that they will follow these regulations and DOT regulations in a manner which is appropriate. NRC's uranium recovery website does not specifically mention 10 CFR Part 71 regulations as directly applicable to source material recovery facilities, but they are applicable to a limited extent. **It is recommended that the State evaluate its existing regulations with respect to transportation and determine to what extent Part 71 regulations can be incorporated into any Agreement State program.**

e. NRC REGULATIONS: 10 CFR PART 170 & 171 FEES

With respect to 10 CFR Parts 170-171, these regulations are critical elements of NRC's regulatory program, because they set forth the fee structure that all license applicants and licensees must follow when having license applications reviewed and approved or when operating a licensed facility and/or generating licensed material. As stated previously, NRC sustains its regulatory program by receiving appropriations from Congress annually, whether in the form of a Congressional appropriation or as part of a continuing resolution. NRC's budget is then factored into its plans to address its current licenses, licenses that may be terminated in a given fiscal year, and forecasts of new licensing action requests. At the end of its budgetary analysis, NRC is required by OBRA to recover 90 percent of its budget from its licensees and license applicants.

NRC's fee structure involves two-tiers: (1) annual fees and (2) hourly staff fees. 10 CFR Part 170 sets forth the hourly rates for NRC Staff personnel when dealing with existing or proposed licensees. Currently, pursuant to 10 CFR Part 170.20, the hourly rate for NRC Staff personnel is $274 per hour. These fees are charged for (1) license and license amendment and renewal reviews; (2) pre-application meetings/pre-submission audits; (3) site inspections; (4) groundwater restoration reviews; (5) decommissioning plan reviews; and (6) title transfer to long-term custodian. 10 CFR Part 170.31 also mandates that this hourly rate applies to all types of source material recovery facilities. 10 CFR Part 170.32 states that inspections and other health and safety items associated with a given license will be charged at the full hourly rate. NRC issues invoices with the aggregate of fees billed to license applicants or licensees on a quarterly basis and, per the Miscellaneous Receipts Act (31 U.S.C. § 3302), the received fees are required to be deposited into the General Fund of the federal Treasury for appropriation by Congress.

Several current Agreement States, whether regulating source material recovery facilities and/or other AEA materials or operations, have implemented fee programs that are roughly similar to the structure of NRC with respect to the two tiers (i.e.; hourly and annual fees). These programs typically are implemented pursuant to the State's applicable rulemaking requirements as part of the total Agreement State program regulatory package. This study recommends that a State not address the Agreement State regulatory package in parts. The fee program for the State of Colorado is attached as an example as Exhibit 4. If the State decides to pursue Agreement State Status it is strongly recommended to adopt an approach similar to that used by these States and NRC.

Typically, NRC conducts a Parts 170-171 rulemaking on an annual basis to either maintain or revise their annual and hourly fees in accordance with the projected amount of licensing work for all phases of the nuclear fuel cycle, industrial and medical use, and other AEA-based materials and operations. Since NRC is required by federal statute to recover ninety (90) percent of its budget through fees, each year NRC Staff must craft a rulemaking reconciling the aforementioned projected licensing work with its budget. However, the State is free, absent State statute(s) to the contrary, to structure its fee program to meet its budgetary needs whatever they may be. A factor in this approach is when and how often the State should conduct a rulemaking to adjust the fee structure accordingly. The State is free to conduct rulemakings at its discretion, again absent State statute to the contrary, but it would be prudent to consider the conduct of such rulemaking on either an annual or bi-annual basis or to provide for administrative authority to adjust fees in accordance with statutory guidelines in the empowering statute for creating an Agreement State program. As discussed in Section III(B) below (Market Conditions) and as is the case in many instances, the potential for increases or decreases in the flow of proposed licensing actions and license maintenance actions is largely uncertain. Thus, unless and until market conditions become more certain, **Thompson & Pugsley, PLLC strongly suggests that the State consider annual rulemakings or a statutory grant of administrative authority to determine and adjust fees as part of its overall strategy if it decides to move forward with the Agreement State process.**

A final item on fees that the State should be aware of is the aforementioned federal Miscellaneous Receipts Act. Many States have State-based equivalents of this statute that prohibit "earmarking" of funds received and, instead, mandate deposit of monies received by the State into its general treasury fund pending appropriation by the legislature. **Accordingly, it is suggested that the State inquire with the Attorney General's office to determine first if a State-based equivalent of this federal statute exists, second, if Agreement State program fees received can be earmarked under the current statute for operation of the program and, third, if such fees cannot be earmarked under current Wyoming statutes, whether the empowering statute necessary for becoming an Agreement State can be structured to contain language specifically directing that such fees be used to fund maintenance and operation of the Agreement State program.**

3. NRC GUIDANCE, POLICY STATEMENTS, AND OTHER REGULATORY INTERPRETATIONS

To facilitate a thorough understanding of its regulations and how they are to be implemented NRC provides its license applicants and licensees with guidance, policy statements, and other interpretations of its regulations.

i. NRC GUIDANCE

Commission approved guidance documents are designed essentially to provide approved format and substance recommendations on a variety of items such as operating license applications for all source material recovery facilities, mill tailings impoundment design criteria, ACL license amendments, site D&D plans, soil and groundwater sampling, and alternate feed processing. NRC guidance documents come in a variety of forms such as: (1) NUREGs developed by NRC Staff, Staff contractors or other expert entities; (2) Regulatory Guides; and (3) Standard Review Plans (SRP), NRC guidance documents are not considered to be binding on Agreement States as they are not regulations and are not assigned a compatibility classification for purposes of NRC IMPEP reviews. However, in many cases, the information offered in guidance, especially SRPs for operating or other license applications can be relevant to whether the Agreement State program is implementing NRC regulations in a compatible manner.

NRC's website maintains a complete database of all relevant guidance documents associated with a source material recovery program. Listed in the Table below are guidance documents that are relevant to such a program:

TABLE 4: NRC GUIDANCE DOCUMENTS[156]

DOCUMENT CODE	DOCUMENT NAME	DOCUMENT TYPE	FACILITY TYPE & PURPOSE
NUREG-0706	GENERIC ENVIRONMENTAL IMPACT STATEMENT ON URANIUM MILLING	NRC-PREPARED NUREG (GENERIC EIS)	CONVENTIONAL URANIUM MILLS AND HEAP LEACH FACILITIES
NUREG-0936	NRC REGULATORY AGENDA	NRC-PREPARED NUREG	SEMIANNUAL DESCRIPTION OF RULEMAKING ACTIONS
NUREG-1569	STANDARD REVIEW PLAN FOR IN SITU LEACH URANIUM EXTRACTION LICENSE APPLICATIONS	NRC-PREPARED NUREG	OUTLINE OF FORMAT AND CONTENT OF ISR LICENSE APPLICATIONS
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	NRC-PREPARED NUREG	OUTLINE OF CONVENTIONAL/HEAP LEACH RECLAMATION PLAN APPLICATIONS
NUREG-1623	DESIGN OF EROSION PROTECTION FOR LONG-TERM STABILIZATION	NRC-PREPARED NUREG	MILL TAILINGS IMPOUNDMENT GUIDANCE FOR FINAL SITE CLOSURE
NUREG-1748	ENVIRONMENTAL REVIEW GUIDANCE FOR LICENSING ACTIONS ASSOCIATED WITH NMSS PROGRAMS	NRC-PREPARED NUREG	OUTLINE FOR ENVIRONMENTAL REPORTS FOR LICENSE APPLICATIONS.
NUREG-1910	GENERIC ENVIRONMENTAL IMPACT STATEMENT FOR IN-SITU LEACH URANIUM MILLING FACILITIES	NRC-PREPARED NUREG (GENERIC EIS)	GENERIC EIS FOR ISR LICENSE APPLICATIONS AND REVIEWS
REGULATORY GUIDE 3.5	STANDARD FORMAT AND CONTENT OF LICENSE APPLICATIONS FOR URANIUM MILLS	REGULATORY GUIDE	GUIDANCE FOR CONVENTIONAL MILL AND HEAP LEACH FACILITY LICENSE APPLICATIONS
REGULATORY GUIDE 3.8	PREPARATION OF ENVIRONMENTAL REPORTS FOR URANIUM MILLS	REGULATORY GUIDE	GUIDANCE FOR CONVENTIONAL MILL ENVIRONMENTAL REPORTS (TO BE USED IN TANDEM WITH NUREG-1748)
REGULATORY GUIDE 3.11	DESIGN, CONSTRUCTION, AND INSPECTION OF EMBANKMENT RETENTION SYSTEMS AT URANIUM RECOVERY FACILITIES	REGULATORY GUIDE	GUIDANCE FOR IMPOUNDMENT DESIGN IN LICENSE APPLICATIONS

[156] This list of NUREG and Regulatory Guide documents is not intended to be exhaustive.

DOCUMENT CODE	DOCUMENT NAME	DOCUMENT TYPE	FACILITY TYPE & PURPOSE
REGULATORY GUIDE 3.46	STANDARD FORMAT AND CONTENT OF LICENSE APPLICATIONS, INCLUDING ENVIRONMENTAL REPORTS, FOR IN SITU URANIUM SOLUTION MINING	REGULATORY GUIDE	LICENSE APPLICATIONS FORMAT GUIDANCE
REGULATORY GUIDE 3.51	CALCULATIONAL MODELS FOR ESTIMATING RADIATION DOSES TO MAN FROM AIRBORNE RADIOACTIVE MATERIALS RESULTING FROM URANIUM MILLING OPERATIONS	REGULATORY GUIDE	HEALTH PHYSICS GUIDANCE FOR SOURCE MATERIAL RECOVERY FACILITIES
REGULATORY GUIDE 3.56	GENERAL GUIDANCE FOR DESIGNING, TESTING, OPERATING, AND MAINTAINING EMISSION CONTROL DEVICES AT URANIUM MILLS	REGULATORY GUIDE	HEALTH PHYSICS GUIDANCE FOR SOURCE MATERIAL RECOVERY FACILITIES
REGULATORY GUIDE 3.59	METHODS FOR ESTIMATING RADIOACTIVE AN TOXIC AIRBORNE SOURCE TERMS FOR URANIUM MILLING OPERATIONS	REGULATORY GUIDE	HEALTH PHYSICS GUIDANCE FOR SOURCE MATERIAL RECOVERY FACILITIES
REGULATORY GUIDE 3.63	ONSITE METEORLOGICAL MEASUREMENT PROGRAM FOR URANIUM RECOVERY FACILITIES—DATA ACQUISITION AND REPORTING	REGULATORY GUIDE	GUIDANCE FOR ENVIRONMENTAL REPORTS
REGULATORY GUIDE 3.64	CALCULATION OF RADON FLUX ATTENUATION BY EARTHEN URANIUM MILL TAILINGS COVERS	REGULATORY GUIDE	DEISGN AND HEALTH PHYSICS GUIDANCE FOR MILL TAILINGS IMPOUNDMENTS
REGULATORY GUIDE 4.14	RADIOLOGICAL EFFLUENT AND ENVIRONMENTAL MONITORING AT URANIUM MILLS	REGULATORY GUIDE	HEALTH PHYSICS GUIDANCE FOR SOURCE MATERIAL RECOVERY FACILITIES
REGULATORY GUIDE 8.11	APPLICATIONS OF BIOASSAY FOR URANIUM	REGULATORY GUIDE	GUIDANCE ON URANIUM TESTING
REGULATORY GUIDE 8.22	BIOASSAY AT URANIUM MILLS	REGULATORY GUIDE	GUIDANCE ON URANIUM TESTING
REGULATORY GUIDE 8.30	HEALTH PHYSICS SURVEYS IN URANUM RECOVERY FACILITIES	REGULATORY GUIDE	HEALTH PHYSICS GUIDANCE FOR SOURCE MATERIAL RECOVERY FACILITIES

REGULATORY GUIDE 8.31	INFORMATION RELEVANT TO ENSURING THAT OCCUPATIONAL RADIATION EXPOSURES AT URANIUM RECOVERY FACILITIES WILL BE AS LOW AS IS REASONABLY ACHIEVABLE	REGULATORY GUIDE	HEALTH PHYSICS GUIDANCE FOR SOURCE MATERIAL RECOVERY FACILITIES

As stated above, while these guidance documents are not assigned an individual compatibility code by NRC Staff, they do have a direct relationship with NRC Staff's interpretation of what is required for license applications, ongoing operations, and final site D&D. Some guidance documents have more of a direct connection than others. It is strongly recommended that the State consider a full evaluation of each relevant guidance document and the connection it may have to regulating source material recovery facilities to assure maintenance of an adequate and compatible Agreement State program. To the extent that certain guidance documents have a strong connection to satisfying NRC compatibility requirements, a State should consider full or substantial incorporation of such guidance into its Agreement State program.[157]

ii. NRC POLICY STATEMENTS AND OTHER REGULATORY INTERPRETATIONS

With respect to Policy Statements and other regulatory interpretations, these documents are considered to be either the Commission's policy statements associated with regulation of AEA materials and operations or NRC Staff's interpretation of regulations. These documents also come in a variety of different forms including, but not limited to: (1) Policy Statements; (2) Regulatory Issue Summaries (RIS); and (3) Generic Communications.

These documents typically, as is the case with guidance documents, are not considered to be binding on Agreement States, and thus, they need not be adopted in full or in part by such States. However, these documents contain interpretations that directly affect NRC regulatory oversight and generally are created with direct involvement of NRC's Office of General Counsel (OGC). The table below shows a preliminary list of the Policy Statements and other regulatory interpretations that are relevant to source material recovery programs:

[157] As discussed above, one guidance document that has a unique relationship with NRC regulations and potential compatibility requirements is the Alternate Feed Guidance. As stated above, this was developed as "guidance," but its viability was endorsed in administrative litigation before the Licensing Board and the Commission. Thus, whether an Agreement State would be required to adopt this particular guidance or not is a question that needs to be addressed in the Agreement State process or in advance of such process.

TABLE 5: NRC POLICY STATEMENTS AND REGULATORY INTERPRETATIONS

DOCUMENT CODE	DOCUMENT NAME	DOCUMENT TYPE	FACILITY TYPE & PURPOSE
RIS 12-06	NRC Policy Regarding Submittal Of Amendments For Processing Of Equivalent Feed At Licensed Uranium Recovery Facilities	Regulatory Issue Summary	ISR
RIS 11-11	Regarding Long-Term Surveillance Charge for Conventional or Heap Leach Uranium Recovery Facilities Licensed Under 10 CFR Part 40	Regulatory Issue Summary	Conventional/Heap Leach
RIS 09-14	Licensing Approach For Uranium In Situ Recovery Facility Applications	Regulatory Issue Summary	ISR
RIS 09-12	Uranium Recovery Policy Regarding Site Preparation Activities At Proposed, Unlicensed Uranium Recovery Facilities	Regulatory Issue Summary	All
RIS 09-05	Uranium Recovery Policy Regarding: (1) The Process For Scheduling Licensing Reviews of Applications For New Uranium Recovery Facilities And (2) The Restoration Of Groundwater At Licensed Uranium In Situ Recovery Facilities	Regulatory Issue Summary	All

As is the case with NRC guidance documents, it is strongly recommended that the State evaluate each of the relevant documents to assess the potential implications associated with adopting or declining to adopt them for any Agreement State program, although the State is not confined to simply accepting or rejecting these Policy Statements or other interpretations. Such documents can be incorporated in part or suggested by the State to its licensees for usage so long as it is done in accord with Agreement State program requirements.

iii. MEMORANDA OF UNDERSTANDING

NRC and its Agreement States also frequently utilize MOUs to cooperate with federal and State agencies when licensing and regulating AEA materials and processes. NRC has entered into MOUs with several federal and State agencies with respect to regulation of source material recovery facilities. Currently, the State (WDEQ) has an MOU with NRC regarding cooperation between the agencies, including information sharing and coordination on reviews of documents and analyses. As discussed below, one of the alternatives examined by this feasibility study is revising this MOU to attempt to mitigate or eliminate existing dual jurisdiction issues.

NRC's most recent MOU is the first revised version of the MOU between NRC and BLM regarding licensing of source material recovery facilities.[158] Both the original and first revised versions of this MOU have been used to allow for increased coordination between the agencies in an attempt to streamline the licensing process and avoid duplicative reviews of safety and environmental data and analyses. Indeed, this MOU has been successful in integrating BLM into at least two current ISR operating license reviews that also required BLM Plans of Operation (POO), so that a single supplemental environmental analysis document (SEIS) can be generated that satisfies both agency mandates.

If the State determines to pursue Agreement State status, this study recommends that the State immediately pursue MOUs with relevant federal agencies (e.g., EPA, USFS, BLM) or revise existing MOUs to reflect the Agreement State program and the manner in which the agencies will coordinate review efforts. This will assist the Agreement State program in conserving resources by streamlining the licensing process and reducing the workload on WDEQ personnel to the extent practicable.

Further, as stated above, it is important for the State to assess its potential Agreement State program requirements to determine what, if any, intra-State agency MOUs need to be updated and/or drafted to ensure that sufficient expertise is available for licensing action reviews. As discussed in the State of Colorado case study above, Agreement State programs can benefit greatly from the use of intra-agency personnel as no additional FTE are required

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[158] *See* Exhibit 62. The NRC/BLM MOU went through two stages of development. The first stage involved the development of an interagency relationship between NRC and BLM so that environmental reviews of concurrent NRC license and BLM POO reviews could be coordinated and, in appropriate cases, a "cooperating agency" relationship could be utilized under CEQ regulations. The second stage amended this MOU to include coordination on items such as financial assurance.

and such personnel can be made to fit within the program's fee structure. Intra-agency entities such as a State's Homeland Security Department may be brought in to consult on a policy going forward on items such as transportation accidents and site-specific scenarios.

iv. PERFORMANCE-BASED LICENSING

One interesting Commission "policy" warranting significant attention from any Agreement State that has been translated to source material recovery regulation from the nuclear power reactor context (10 CFR Part 50.59) is the concept of performance-based licensing. A history of how this "policy" has translated into standardized license conditions for all NRC source material recovery licensees is discussed below.

Congress enacted the AEA to promote national security and peaceful uses of atomic energy in the United States. At the time of the AEA's passage, the AEC's primary focus was the development of nuclear weapons but that focus expanded to regulation of construction and safe operation of civilian nuclear power reactor facilities. In order to adequately regulate the highest potential risk activity in the civilian nuclear fuel cycle, the AEC expended considerable resources to quantify systematically the risks associated with nuclear power reactors, AEC, and later NRC, promulgated and implemented a detailed and restrictive regulatory program (10 CFR Part 50) so that such facilities could be operated efficiently with the necessary assurance that public health and safety and the environment would be adequately protected. However, even in the context of this higher potential risk activity, NRC determined that certain reactor-related activities involve levels of risk that are sufficiently low to justify "scaled-down" NRC regulatory oversight that does not require *active day-to-day* oversight. [159]

Since NRC's regulatory regime includes a wide range of licensed activities involving various ranges of potential risk, NRC decided to analyze operational issues and design

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[159] An example of "scaled down" regulatory oversight in the 10 CFR Part 50 reactor regulatory program is 10 CFR § 50.59 entitled *changes, tests and experiments.* Furthermore, Section 50.59(c)(1) states, in pertinent part "A licensee may make changes in the facility as described in the final safety analysis report (as updated), make changes in the procedures as described in the final safety analysis report (as updated), and conduct tests or experiments not described in the final safety analysis report (as updated) without obtaining a license amendment pursuant to §50.90 *only if*…." (emphasis added)

(i) a change to the technical specifications incorporated into the license is not required; and

(ii) the change test or experiment does not meet any of criteria in paragraph c(2) of this section - - e.g:

(i), (iii) & (iv) if it results in more than a minimal increase in the frequency of occurrence, consequences, or type of accident or
(ii), (iv) & (vi) if it results in more than a minimal increase in likelihood of occurrence, consequences or result of a malfunction.

regulatory oversight in conjunction with relative levels of risk. Using this "risk-informed" approach, NRC evaluated a wide range of challenges to the safety aspects of various licensed activities, including prioritizing potential risks based on operating history and industry experience, engineering judgment and consideration of relative levels of uncertainty in safety and environmental analyses for specific activities. As stated by NRC, "[w]here appropriate, a risk-informed regulatory approach can also be used to reduce unnecessary conservatism in deterministic approaches, or can be used to identify areas with insufficient conservatism and provide the bases for additional requirements or regulatory actions." *See* United States Nuclear Regulatory Commission, SECY-98-144, *White Paper on Risk-Informed and Performance-Based Regulation* (June 22, 1998).

NRC married another regulatory oversight concept with its efforts to "risk-inform" its program - - i.e; performance-based regulation. Former NRC Chairman Shirley Jackson initiated NRC's 1995 Strategic Assessment and Rebaselining Initiative (SARI), to promote a more risk-informed regulatory approach to NRC licensing and oversight and to consider broader uses of performance-based licensing concepts. Performance-based licensing, as opposed to conventional prescriptive licensing, is designed to minimize the amount of active regulatory oversight over a licensed activity by providing "performance" criteria or requirements for licensees while, at the same time, assuring that public health and safety will be adequately protected. As stated by NRC Staff in SECY-98-144:

> "A performance-based requirement relies upon measurable (or calculable) outcomes (i.e., performance results) to be met, but provides more flexibility to the licensee as to the means of meeting those outcomes. A performance-based regulatory approach is one that establishes performance and results as the primary basis for regulatory decision-making, and incorporates the following attributes: (1) measurable (or calculable) parameters (i.e., direct measurement of the physical parameter of interest or of related parameters that can be used to calculate the parameter of interest) exist to monitor system, including licensee, performance against clearly defined, objective criteria, (2) licensees have flexibility to determine how to meet the established performance criteria in ways that will encourage and reward improved outcomes; and (3) a framework exists in which the failure to meet a performance criterion, while undesirable, will not in and of itself constitute or result in an immediate safety concern. The measurable (or calculable) parameters may be included in the regulation itself or in formal license conditions, including reference to regulatory guidance adopted by the licensee."

See id.

NRC has determined that "risk-informed, performance-based" regulation is an approach under which risk insights, engineering analysis and judgment, and performance history are used, to (1) focus attention on the most important activities, (2) establish objective criteria based upon risk insights for evaluating performance, (3) develop measurable or calculable

parameters for monitoring system and licensee performance, and (4) focus on the results as the primary basis of regulatory decision-making." *Id.*

One benefit of performance-based licensing is that it may be implemented "without the need to develop risk insights" at every stage. *Id.* Risk-informed analyses and experience have provided a framework within which objective performance criteria for licensed activities can be established and licensees can be given flexibility regarding management of their technologies or processes so long as the performance criteria are satisfied. Performance criteria, which are focused more on results rather than processes, also can be combined with prescriptive requirements (i.e., mandatory license conditions) to create a licensing approach that more efficiently fits a particular licensed activity. As stated by NRC, a "performance-based approach does not supplant or displace the need for compliance with NRC requirements, nor does it displace the need for enforcement action, as appropriate, when noncompliance occurs." *Id.*

This "marriage" of concepts led NRC to conclude that, for lower-risk activities, these "concepts and definitions should prove equally suitable provided that NRC adopts a flexible framework for the implementation of risk-informed, and ultimately performance-based regulation across the full spectrum of the materials, processes, and facilities regulated by NRC." *Id.*

During the late 1990s, NRC Staff began consideration of performance-based licenses and license conditions (PBLC) in the context of conventional and ISR uranium recovery licenses. As a result, such source material recovery licensees utilize performance-based license conditions and, indeed, even Envirocare of Utah's (now Energy Solutions) 11e.(2) byproduct material disposal facility license contains performance-based license conditions. Any Agreement State program wishing to conserve resources should evaluate PBLCs in detail to assure it understands the concepts in practice and application.

v. <u>SAFETY AND ENVIRONMENTAL REVIEW PANEL</u>

Assuming the issuance of a performance-based license, an important component of that license will be the safety and environmental review panel (SERP). A SERP generally consists of a minimum of three (3) permanent members, each of which possesses expertise in a relevant area of concern for the proposed licensed activity. For example, in many instances, permanent SERP members will require expertise in: (1) business management affairs, (2) engineering and/or technical issues, and (3) environmental/radiation safety (i.e., radiation safety officers (RSO)). SERPs also may include additional permanent members with expertise in health physics or other relevant subject-matters, as well as temporary members with expertise in legal and regulatory affairs.

The SERP's primary function is to monitor ongoing licensee operations and determine whether the licensee can, in its own discretion, engage in a particular activity without obtaining a license amendment and, therefore, without violating the mandatory conditions in its license.

Any activities assessed by the SERP and determined to be within the scope of its PBLC must be documented and made available to NRC inspectors upon request.[160] SERPs may not alter or amend mandatory license conditions or engage in activities outside the scope of the PBLC without NRC approval through a license amendment.

Evaluation and potential adoption of this PBLC concept by an Agreement State raises interesting issues. While performance-based licensing typically is viewed as a Commission "policy" as to source material recovery operations, it is based on application of the 10 CFR Part 50.59 performance-based licensing "regulation" for nuclear power reactors. This concept also was litigated in the HRI litigation and was endorsed both by the Licensing Board and the Commission on appeal, which in legal space gives it the force and effect of law. NRC's 10 CFR Part 40 compatibility chart does not evaluate performance-based licensing and, thus, provides no guidance to perspective Agreement States during the process. Thus, this study recommends that the State fully analyze the use of performance-based licensing from a compatibility perspective and then determine whether it should be incorporated as a policy in whole or in part prior to finalizing a proposed rulemaking for public comment.

vi. NRC VERSUS STATE REQUIREMENTS

It is worth noting that some Policy Statements and other regulatory interpretation documents address issues that are not relevant to Agreement State programs, because certain of these documents are issued to address matters only affecting federal (but not State) regulatory regimes. An example is Section 106 Tribal consultation pursuant to the NHPA[161] which imposes requirements on federal agencies for Tribal consultation involving *major federal actions* through regulations at 36 CFR Part 800. Further, President Clinton issued Executive Order 13175 addressing federal agencies conduct of Tribal consultations. While NRC is an independent regulatory agency, and thus not subject to Executive Orders, the Commission has issued a Policy Statement that it intends for NRC Staff to act in accord with the spirit of the aforementioned Executive Order.[162] As such, the Commission has issued a draft Tribal Protocol for the public's consideration and various branches of NRC Staff, including FSME, have developed or are developing Tribal consultation guidance to assist both the agency and the license applicant/licensee in the conduct of the Section 106 Tribal consultation process associated with NRC licensing activities.

As noted above, the NHPA, the Executive Order, and 36 CFR Part 800 are meant to be binding on and followed by federal agencies and not State agencies. States are not required to follow any of the requirements associated with the NHPA or the Executive Order, and as of the

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[160] Failure to fulfill SERP requirements or to document activities within the scope of performance criteria can result in enforcement action. SERP decisions and actions based thereon are at the licensee's risk as inappropriate decisions also can lead to NRC enforcement action "after-the-fact."

[161] *See* Public Law 89-665, 16 U.S.C. 470 *et seq*. (1966)

[162] *See* Executive Order 13175, *Consultation and Coordination With Indian Tribal Governments* (November 6, 2000).

writing of this study, we are unaware of any authority that forces State agencies to consult with Tribes on any action under an Agreement State program. This prospect is not atypical because States also are not directly subject to NEPA for environmental review of major federal actions.[163]

Agreement States, however, are free to adopt requirements for Tribal consultation within an Agreement State program if they so desire. Indeed, many Agreement and non-Agreement States have adopted regulations to address the evaluation and protection of Native American Tribal properties and interests. There are several examples of States, Agreement or not, that have adopted regulations specifically tailored to addressing the identification and preservation of historic and cultural resources without regard to the NHPA requirements. These regulations may or may not apply to "major actions" depending on a State definition of such an action or the State's particular view of the needs for Tribal consultation. This could incorporated into a rulemaking as part of the State's Agreement State program rulemaking or maintained as an independent portion of the agency's regulatory program, to the extent it is deemed appropriate.

In the event that a Candidate Agreement State decides development of such regulations are appropriate, 36 CFR Part 800 provides guidance for conducting the functional equivalent of the aforementioned Section 106 process and the State can rely in whole or in part on any guidance developed by NRC Staff. In the event that a State is interested in pursuing the adoption of regulations and/or guidance regarding subject-matters that are not directly applicable to the State, it is recommended that the State add any such regulations to its empowering statute for enactment and to its rulemaking plan for Agreement State regulations. It is unlikely that any such components of both a statute and implementing regulations will impact NRC's Agreement State review, but it will help to expedite implementation of required Agreement State program materials. Even if statutory language and regulations need to be in separate legislation and rulemaking, the process likely will not be affected adversely. However, Thompson & Pugsley, PLLC makes no recommendations for the State of Wyoming regarding whether such regulations should be adopted and, if so, what the characteristics of such regulations should be since these issues will be addressed by relevant federal agencies (e.g,. BLM, USFS) if on federal land while privately-held land raises significant access issues for NRC's Section 106 process.

A second item that is important for a candidate Agreement State to evaluate is the adoption of environmental review regulations for licensing actions. Currently, NRC's environmental review regulations reside at 10 CFR Part 51 and outline the Commission's interpretation of NEPA requirements as prescribed by the federal Council on Environmental Quality (CEQ). Part 51 regulations prescribe the type of environmental analysis required for,

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[163] Even though States are not subject to NEPA, Agreement States are required to conduct environmental reviews in a manner that is similar to NEPA requirements under UMTRCA. *See* College of William & Mary Law School, *Uranium Mining and Milling in Virginia: An Analysis of regulatory Choice*, (1984). But the procedural requirements of NEPA are not directly applicable to Agreement States

amongst other things, source material recovery licensing actions as identified above (i.e., operating license applications, license amendment applications, and license renewals). For example, Part 51.20(b)(8) expressly requires an environmental impact statement (EIS) level environmental review for new source material recovery license applications. At this time, NRC conducts SEIS-level environmental reviews for new ISR facilities due to the programmatic EIS assessment conducted in the aforementioned NUREG-1910. New source material recovery license applications for conventional mills and heap leach facilities will require a full EIS due to the unavailability of a programmatic assessment as updated as NUREG-1910. EIS and SEIS level reviews trigger the need for some form of scoping and public comment. In the case of the aforementioned ISR SEISs, NRC conducted extensive scoping, including three (3) public meetings for the ISR GEIS (NUREG-1910), thereby obviating the need for scoping on each individual site-specific SEIS in accord with Part 51 regulations. SEISs currently do come with a public comment period on the draft document for approximately 45-60 days depending on NRC Staff's determinations. However, EISs for conventional mills/heap leach facilities require mandatory Part 51 scoping processes and public comment.

License amendment and renewal applications do not require such an extensive environmental review and, per the guidance at NUREG-1748, begin with an environmental assessment (EA) level analysis and, if site-specific circumstances are warranted, can be elevated to an EIS level review. Typically, very few source material recovery licensing actions that begin with an EA level environmental review are elevated to an EIS level review. EAs, unlike EISs, do not require mandatory scoping under Part 51 or a public comment period.

The critical question for a candidate Agreement State is how the State will conduct an environmental review that is similar to NRC's AEA-based reviews. As a general matter, NEPA is a federal statute and Agreement States are not subject to its provisions. However, UMTRCA contains a provision that directs Agreement States to adopt "similar" environmental review regulations/requirements. As a result, while current Agreement States with source material recovery facility authority though not subject to NEPA, have adopted and maintain environmental review regulations that have been deemed adequate and compatible in an IMPEP review. Thus, should Wyoming decide to move forward with becoming an Agreement State, promulgation of environmental review regulations and either creation of new or adoption of existing NRC guidance will be required.

Several factors are important to consider when adopting Agreement State environmental review regulations. First, the environmental review regulations must be adequate and compatible with NRC regulations. As discussed previously, Part 51 (and relevant Part 40) regulations have compatibility requirements and the candidate Agreement State should follow them as described above. Second, as discussed previously, some Agreement States do adopt statutory provisions putting time limits on the issuance of initial determinations for a proposed licensing action. These time limits presumably would include the completion of the required environmental review documentation. Depending on the scope and extent of the Agreement State adopted environmental review requirements, any time limit that could be proposed likely will be affected. The State should take into account all aspects of any proposed

environmental review regulations, including any State Tribal consultation requirements (which are included in NRC's environmental review), when considering a statutory review timeframe. Prescribed timeframes likely will have an impact on budgeting and staffing. Third, States like Wyoming have a proven track record of issuing Permits to Mine for source material recovery facilities and, presumably, the environmental aspects of such permits. In order to conserve resources in the initial phase of becoming an Agreement State, the State should evaluate its current Permit to Mine requirements and cross-reference all such requirements with NRC regulations. Where such regulations coincide, the State should incorporate its requirements into its new regulatory program. Where such requirements need to be added or supplemented, such action can be taken by comparing NRC regulations/guidance with State-based regulations/guidance.

4. NRC INSPECTION AND ENFORCEMENT

After NRC issues a license to an entity, the agency regulates the compliance with its licenses through its inspection and enforcement program. As facilities are licensed, are constructed and begin to operate, NRC imposes reporting requirements on its licensees regarding compliance with regulations and license conditions; however, NRC does not just regulate its licensees from afar.

i. NRC INSPECTION AUTHORITY AND PROCESS

Section 161 of the AEA specifically authorizes NRC to conduct inspections and investigations and to issue orders associated with such inspections/investigations. NRC Staff has created an inspection and enforcement program for AEA-licensed source material recovery facilities that is operated primarily out of its Region IV Texas office that results in NRC Staff conducting on-site inspections of licensed source material recovery facilities, regardless of whether they are on standby in active operations, groundwater restoration, final site D&D or on the brink of license termination.

NRC's source material recovery licensee inspectors that are stationed at NRC's Region IV office are separate from the primary regulators that address license amendment applications, rulemaking, guidance documents, etc. stationed at NRC Headquarters. In some instances, NRC Staff members stationed at NRC Headquarters are involved in inspections because of their familiarity with regulations and regulatory interpretations. Inspections are conducted by NRC Staff on timelines that are directly related to the potential radiation risk associated with the given licensed operations. For example, an operating facility can be inspected several times a year due to the ongoing possession and use of AEA materials whereas a facility undergoing site D&D or on standby would be subject to inspection less frequently (i.e., once per year).

NRC inspections and their substance are discussed in great detail in NRC's Inspection Manual.[164] Items subject to inspection are directly related to the general overview of the license activity and materials and site-specific license conditions. For source material recovery facilities, inspections involve several different aspects of the licensed operation including, but not limited to, management organization and controls, radiation protection, chemical materials, radioactive waste management, emergency preparedness, fire safety, environmental protection, and onsite construction and maintenance. After completion of an inspection, NRC inspectors prepare a report which is made publicly available on its ADAMS database.

ii. NRC ENFORCEMENT POLICY AND PROCESS

An inspection report can trigger NRC's enforcement responsibilities. Inspections that yield no negative findings obviously do not lead to any enforcement action. For source material recovery facilities, inspection violations are characterized by NRC using a scale of "safety-significance" as described in NRC's Enforcement Policy. Violations of "low" safety significance may or may not trigger an enforcement action depending on the ability to rectify the problem and prevent future non-compliance. Violations of larger safety significance likely will trigger enforcement action by NRC. Section 6.3 of the Enforcement Policy offers examples of materials licensee violations.

NRC's Enforcement Policy discusses how enforcement actions are pursued by NRC with its licensees. As discussed previously, the first step is to process the facility inspection report and to identify any violations. After any and all violations have been identified, NRC Staff assesses the safety significance of the violations. The Enforcement Policy describes the factors affecting the significance of a violation and will then dictate the type of penalty, if any, that is assessed to the licensee. After the violation has been analyzed and violation level has been assigned, NRC Staff then determines the type of penalty to be assessed, which can range from no penalty and rectification, to a civil penalty (monetary fine), to orders that mandate immediate licensee compliance with a prescribed action or a combination of any of the above.

NRC's Enforcement Policy also discusses the rights of a licensee subject to a violation. Such licensees are entitled to participate in the enforcement process and, in the event that NRC does make a unilateral decision to proceed with an enforcement action, can avail themselves of a pre-decisional enforcement conference at which the licensee is permitted to present information regarding the alleged violation and why the violation is either not warranted or not as severe as originally determined. If a pre-decisional enforcement conference is not held, the licensee still can be permitted to respond in writing to a proposed enforcement action. Other aspects of the enforcement program include the possibility of alternative dispute resolution

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[164] *See* United States Nuclear Regulatory Commission*, NRC Inspection Manual: Manual Chapter 2600: Fuel Cycle Facility Operational Safety and Safeguards Inspection Program* (January 27, 2010) (hereinafter "Exhibit 74").

(ADR) as an alternative to a formal enforcement process and the use of enforcement discretion to allow for violations to either be reduced in severity level or dismissed altogether.

E. LICENSE APPLICANT AND LICENSEE OVERVIEWS AND REQUESTS

This Section of the feasibility study is intended to provide the State with an overview of the scope of source material recovery licensing activities currently ongoing within the State, those currently being reviewed by NRC Staff, and those that potentially could be before NRC Staff in the coming five (5) years. The analysis assumes that the aforementioned timeframe for initiating and completing the Agreement State process is approximately five (5) years. It is important to note that an additional projection of these licensing actions will be discussed in Category 2 of this feasibility study. Category 1 analysis above discussed currently identified licensees, license applicants and future applicants. Category 2 will address projections of activities involving current licensees including license amendments and potential future license applications beyond the potential five (5) year timeframe for becoming an Agreement State.

First, the current status of Wyoming NRC licensees provides potential future State regulators with two important pieces of information. As is obvious, this information provides the State with a preliminary number of active licenses that will be transferred to the State Agreement State program upon execution of a Section 274 Agreement by NRC and the Governor. Each of these licenses likely will be in varying stages of their respective project lifecycles, anywhere from commencing construction, to active operations and potentially groundwater restoration, decommissioning and/or site closure and license termination. As such, the State can identify the licensees within its potential regulatory authority, but also can project where those licensees will be in their project lifecycles when an Agreement State process is completed and transition occurs. It is possible that some licensees may be terminated prior to the transition phase and some may reach final site closure and require that the State take over the SA-900 license termination procedures prior to final NRC sign off. While these dates cannot be identified precisely, as noted below, they can be projected using best available information based on past reviews of licensing actions.

The identification of licensing actions currently before NRC provides the State with insight into licensees or additional licensed facilities (satellite ISR wellfields) that will fall under the State's Agreement State program upon execution of the Section 274 Agreement. Based on standard review times of approximately 24-30 months for new operating licenses and less time for other license amendment actions (with the exception of ACLs)[165], it is reasonable to

[165] As a practical matter, ACLs for a conventional milling facility reviewed by NRC typically have varied in review time periods depending on a number of factors including, but not limited to, (a) the number of ACLs requested; (b) the potential impacts to the proposed LTSM approach; and (c) any unusual aspects of the proposed applications such as the use of durable institutional controls. It is likely that issuance of an ACL for a conventional uranium mill will take longer than the issuance of an ACL for an ISR facility. However, to date, NRC has not fully evaluated a requested ACL from an ISR licensee. Although, NRC has approved groundwater restoration in the past and such reviews vary in timeframe based on site-specific groundwater conditions.

speculate that some of these license applications and other licensing actions will become subject to Agreement State jurisdiction in the transition process after execution of any Agreement. It is unlikely that licensing actions actively being reviewed by NRC Staff now will still be pending by the time that the State completes an Agreement State process and engages in transition. Any licensing actions that already may have been completed during the Agreement State application process will provide the State with insight into how to transition such licenses to State oversight and how future additional licensing actions on such licenses will need to be addressed.

Lastly, it is important to understand what the "licensing pipeline" looks like for current and potential future licensees regarding their future plans, to the extent that such information is publicly available. This "licensing pipeline" is intended to include current license applicants, future license applicants, and both such entities that may have additional license maintenance activities and license amendment applications coming in the near future. With this information, the State will be able to project more accurately necessary financial resources for initiating and maintaining an Agreement State program.

1. CURRENT LICENSEES

TABLE 6: CURRENT LICENSEES

COMPANY	PROJECT NAME	PROJECT TYPE	LICENSING STATUS
AMERICAN NUCLEAR CORPORATION	GAS HILLS	CONVENTIONAL	INACTIVE
BEAR CREEK URANIUM COMPANY	BEAR CREEK	CONVENTIONAL	AWAITING LICENSE TERMINATION
EXXON/MOBIL	HIGHLAND	CONVENTIONAL	INACTIVE & RECLAIMED
KENNECOTT URANIUM COMPANY	SWEETWATER	CONVENTIONAL	STANDBY
UR-ENERGY/PATHFINDER	SHIRLEY BASIN	CONVENTIONAL/ISR	INACTIVE
PATHFINDER	LUCKY MC	CONVENTIONAL	INACTIVE & RECLAIMED
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	SMITH RANCH-HIGHLAND/SATELLITES	ISR	ACTIVE
UMETCO	GAS HILLS	CONVENTIONAL	INACTIVE & RECLAIMED
URANERZ ENERGY CORP.	HANK & NICHOLS RANCH	ISR	ACTIVE
URANIUM ONE AMERICAS	WILLOW CREEK ET AL	ISR	ACTIVE
UR-ENERGY/LOST CREEK, LLC	LOST CREEK	ISR	ACTIVE
WESTERN NUCLEAR, INC.	SPLIT ROCK	CONVENTIONAL MILL	INACTIVE & RECLAIMED

2. PENDING NRC LICENSE APPLICATIONS

TABLE 7: PENDING LICENSE APPLICATIONS

COMPANY	PROJECT NAME	PROJECT TYPE	LICENSING ACTION REQUESTED
AUC, LLC	RENO CREEK	ISR	NEW OPERATING LICENSE
EXXON/MOBIL	HIGHLAND	CONVENTIONAL MILL	REVISED ACLS AND LONG-TERM SURVEILLANCE BOUNDARY
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	MARSELAND	ISR	SMITH RANCH-HIGHLAND SATELLITE
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	SMITH RANCH-HIGHLAND	ISR	LICENSE RENEWAL
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	THREE CROW	ISR	SMITH RANCH-HIGHLAND SATELLITE
STRATA ENERGY, INC.	ROSS	ISR	NEW OPERATING LICENSE
UR-ENERGY/LOST CREEK, LLC	LOST CREEK KM EXPANSION	ISR	AMENDMENT TO LOST CREEK OPERATING LICENSE
URANIUM ONE AMERICAS	LUDEMAN	ISR	WILLOW CREEK SATELLITE
WESTERN NUCLEAR, INC.	SPLIT ROCK	CONVENTIONAL MILL	LICENSE TERMINATION & SITE TRANSFER TO DOE

3. PROJECTED LICENSE APPLICATIONS

TABLE 8: FUTURE LICENSE APPLICATIONS (Those Who Have Submitted Letters of Intent to NRC Staff)

COMPANY	PROJECT NAME	PROJECT TYPE	LICENSING ACTION REQUESTED
ENERGY FUELS RESOURCES	SHEEP MOUNTAIN	HEAP LEACH	NEW OPERATING LICENSE
ENERGY FUELS RESOURCES	GAS HILLS	HEAP LEACH	NEW OPERATING LICENSE
KENNECOTT URANIUM COMPANY	SWEETWATER	CONVENTIONAL MILL	LICENSE RENEWAL
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	BROWN TRACT 1	ISR	SMITH-RANCH-HIGHLAND SATELLITE
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	RUBY RANCH	ISR	SMITH RANCH-HIGHLAND SATELLITE
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	SHIRLEY BASIN	ISR	SMITH RANCH-HIGHLAND SATELLITE
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	RUTH	ISR	SMITH-RANCH HIGHLAND SATELLITE
RARE EARTH RESOURCES	BULL HILL PROJECT	SOURCE MATERIAL[166]	NEW OPERATING LICENSE
CROSSHAIR/THE BOOTHEEL PROJECT	BOOTHEEL	ISR	NEW OPERATING LICENSE (RESIN PRODUCTION)
UR-ENERGY/LOST CREEK, LLC	LC EAST	ISR	LOST CREEK LICENSE EXPANSION
UR-ENERGY	SHIRLEY BASIN	ISR	POTENTIAL EXPANSION TO EXISTING LICENSE
UR-ENERGY	LOST SOLDIER	ISR	LOST CREEK LICENSE AMENDMENT
URANERZ ENERGY CORP.	JANE DOUGH	ISR	HANK & NICHOLS RANCH SATELLITE
URANIUM ONE AMERICAS	IRIGARY EXPANSION	ISR	WILLOW CREEK LICENSE EXPANSION
URANIUM ONE AMERICAS	ALLEMAND ROSS	ISR	WILLIOW CREEK SATELLITE
WILDHORSE ENERGY	WEST ALKALI CREEK	ISR	NEW OPERATING LICENSE

F. PRODUCT DELIVERABLES

TABLE 9: CATEGORY 1 PRODUCT DELIVERABLE CHART

PRODUCT DELIVERABLE	DESCRIPTION
DRAFT LEGISLATION FOR INITIATION OF AGREEMENT STATE PROCESS	NRC REQUIRES THAT THE CANDIDATE STATE ENACT LEGISLATION AUTHORIZING THE GOVERNOR TO INITIATE AND EXECUTE THE AGREEMENT STATE PROCESS. MODEL LEGISLATION IS AVAILABLE FOR THIS LINE-ITEM AND SHOULD NOT REQUIRE ANY SIGNIFICANT ALTERATIONS. AS RECOMMENDED PREVIOUSLY, THIS LEGISLATION SHOULD PROVIDE THE GOVERNOR WITH THE AUTHORITY TO INITIATE THE AGREEMENT STATE PROCESS *AND* TO EXECUTE THE NRC AGREEMENT AT THE END OF THE PROCESS.
DRAFT LEGISLATION FOR IMPLEMENTATION OF AGREEMENT STATE PROGRAM	NRC REQUIRES THAT THE CANDIDATE STATE ENACT LEGISLATION SUPPORTING THE DEVELOPMENT OF AN AGREEMENT STATE PROGRAM AND INITIATING A RULEMAKING TO CREATE AGREEMENT STATE PROGRAM REGULATIONS. MODEL LEGISLATION IS AVAILABLE FOR THIS FROM A NUMBER OF EXISTING AGREEMENT STATES, SO THE PREPARATION OF THIS LEGISLATION SHOULD NOT BE ONEROUS.
DRAFT IMPLEMENTING REGULATIONS FOR AGREEMENT STATE PROGRAM, INCLUDING RULEMAKING	PRIOR TO EXECUTING A SECTION 274 AGREEMENT WITH NRC, THE AGENCY REQUIRES THAT THE CANDIDATE STATE INITIATE A PROCESS TO ADOPT REGULATIONS THAT ARE ADEQUATE AND COMPATIBLE WITH NRC REGULATIONS. MANY AGREEMENT STATES HAVE MODEL REGULATIONS FOR SOURCE MATERIAL RECOVERY (E.G., COLORADO, TEXAS) AND THEY SHOULD SERVE AS MODELS FOR THE STATE. THIS LINE-ITEM IS INEXTRICABLY LINKED TO THE LINE-ITEM BELOW WITH RESPECT TO PUBLIC PARTICIPATION.

PRODUCT DELIVERABLE	DESCRIPTION
PUBLIC RELEASE SCHEDULE (NRC INTERACTION & PUBLIC PARTICIPATION)	WHILE NOT NECESSARILY REQUIRED BY NRC REGULATIONS OR GUIDANCE, IT IS CRITICAL THAT THE STATE DEVELOP A "PUBLIC RELEASE SCHEDULE" DETAILING A CRITICAL PATH INCLUDING STATUTE ENACTMENT, REGULATION PROMULGATION, GOVERNOR'S SUBMISSION OF THE AGREEMENT STATE PROGRAM REQUEST, PUBLIC MEETINGS AND COMMENT PERIODS, ETC.
COMPARISON CHART OF WDEQ STAFFING TO MEET NRC REQUIREMENTS	WHILE IT IS BRIEFLY DISCUSSED IN THIS FEASIBILITY STUDY, THIS PRODUCT DELIVERABLE IS INTENDED TO PROVIDE THE STATE WITH A COMPARISON CHART OF NRC AGREEMENT STATE STAFFING REQUIREMENTS WITH EXISTING WDEQ STAFFING AND POTENTIAL ADDITIONS. THIS CHART ALSO WILL PROVIDE A COMPARISON OF OTHER AGREEMENT STATE PROGRAMS STAFFING AND RESOURCES.

G. EVALUATION OF POTENTIAL ALTERNATIVES TO AGREEMENT STATE STATUS

Thompson & Pugsley, PLLC believes that this feasibility study is made more valuable and provides a more complete understanding of the goal of the Enrolled Act (to eliminate dual jurisdiction over source material milling) by discussing potential alternatives to pursuing Agreement State status. Based on past history and experience, Thompson & Pugsley, PLLC has determined that two potential alternatives to pursuing Agreement State status should be evaluated briefly in this feasibility study: (1) a challenge to NRC's 2000 "milling underground" decision which declared restoration fluid to be 11e.(2) byproduct material and granted NRC exclusive, federal preemptive jurisdiction over both surface and subsurface activities at ISR facilities and (2) to re-visit the scope of a potential WDEQ/NRC MOU that would allow WDEQ primary responsibility for subsurface activities at ISR facilities in Wyoming. As will be discussed below, although each of these alternatives has some potential benefits they still may not result in elimination of dual jurisdiction over source material recovery facilities.

1. THE "MILLING UNDERGROUND" DECISION

The first alternative, reversing NRC's "milling underground" decision should be evaluated from several perspectives, including assessing the likelihood of success and the potential results of succeeding in reversing the decision. When NRC reconsidered the question of whether it could regulate ISR wellfields,[166] NRC Staff prepared a SECY paper for submission to the Commission that presented several potential regulatory interpretations for consideration. The preferred legal option endorsed by NRC Staff was that NMA's legal conclusion that NRC had no jurisdiction over the subsurface activities at an ISR facility was correct and that restoration fluids are not 11e.(2) byproduct material. Two Staff members submitted a dissenting opinion to the preferred option in the SECY paper arguing that NRC did have the authority to regulate ISR wellfields and that restoration fluid is indeed 11e.(2) byproduct material because such fluids are so closely related to uranium production operations. In its SRM, the Commission determined that the dissenting opinion was correct and the current NRC legal interpretation is that both surface and subsurface activities at ISR facilities are under NRC's AEA jurisdiction. This decision effectively gives NRC preemptive federal jurisdiction over the entirety of an ISR operation, both surface and subsurface. Given that the AEA was intended to provide NRC with preemptive jurisdiction over the possession and use of AEA materials and the conduct of AEA operations, a challenge to this decision potentially could raise questions over whether the State has any authority at all to issue Permits to Mine for source material recovery operations.

A challenge to this decision requires an assessment of both NRC Staff and the Commission's likely reaction to a challenge of this decision. First, NRC Staff likely would prepare and submit a SECY paper to the Commission for its consideration with a range of

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[166] *See Letter to Malcolm Knapp, Chairman, Transition Oversight Team, United States Nuclear Regulatory Commission, from Anthony J. Thompson, Esq. Re: NRC Jurisdiction Over In-Situ Leaching of Uranium*, (March 10, 1994) (hereinafter "Exhibit 75").

options, most of which likely would be similar to those offered in the 1999 SECY paper. But, the key question is which of these options NRC Staff would propose to the Commission as the preferred option. Given that the "milling underground" decision has been the "law of the land" for over twelve years and that NRC Staff has built its new licensing process/guidance around the premise that they must review and approve ISR applications by reviewing proposals for both surface and subsurface activity, it is reasonable to expect that NRC Staff likely will not espouse its previous position supporting reversal of the decision, although neither of the dissenting NRC Staff members currently are active in source material recovery issues at NRC and the prime author of the Commission opinion (former Chairman Richard Meserve) is no longer at NRC.

Second, the Commission will be required to approve an option reversing the "milling underground" decision regardless of what option the Staff endorses. It is unclear whether the current Commission or a potentially reconfigured Commission in the next few years will be in favor of reducing its role in regulating ISR facilities.

A vote to remove NRC from subsurface regulation will still be an "incomplete" alternative, because even a favorable outcome only will remove NRC from ISR wellfields but will not remove NRC from surface operations associated with source material recovery. The dual jurisdiction issue will remain as ISR operators still will be required to obtain a Permit to Mine and an NRC license for surface source material recovery operations in the central processing plant that essentially mirror the back end of the conventional milling process and that generate of 11e.(2) byproduct material. Accordingly, ISR production activities in the Central Processing Plant and final site surface D&D activities will implicate NRC jurisdiction and licensing. Wellfield injection and groundwater will no longer be subject to active NRC oversight, however, NRC still will retain authority to approve *final* groundwater restoration, surface decommissioning and license termination.

Moreover, the licensing process for NRC likely still will require a 10 CFR Part 51.20(b)(8) supplemental EIS level environmental review for all new ISR source material milling applications albeit confined primarily to the more limited set of issues associated only with surface operations. In other words, for new operating ISR licenses, the surface activities are still considered source material milling and accordingly a SEIS will be required but with a much more limited scope.

A second perspective from which this alternative should be analyzed is from a process and resource perspective. In order to create an environment where the viability of the "milling underground" decision might be reconsidered, the State could avail itself of a number of approaches. The State could simply prepare an extensive legal and regulatory analysis of why the decision should be reversed and present that analysis to NRC Staff for its consideration. A risk associated with this process is that NRC Staff is not required by regulation to act on this type of request and can decline to prepare a SECY paper for submission to the Commission. The State also can present its case directly in person to the Commissioners in advance of preparing and submitting its legal and regulatory analysis to determine interest of the

Commissioners in the issue and to promote the idea that NRC Staff should prepare a SECY paper.

The State also could wait for a new license application to be submitted to NRC and then request a hearing before NRC's Atomic Safety and Licensing Board for a legal determination that the "milling underground" decision should be reversed. There are several drawbacks to this approach. First, the Licensing Board is restrained from issuing rulings that are in conflict with Commission-level precedent per *stare decisis*. The "milling underground" decision can be considered Commission-level precedent and, thus, the Licensing Board likely will not unilaterally reverse such precedent. Any such negative decision by the Board could be directly appealed to the Commission so the State could avail itself of the opportunity to reverse the decision at the Commission level. The Licensing Board also is free, under NRC regulations,[167] to "certify" a legal question to the Commission for its review. This could result in a decision from the Commission on the legal question presented to the Licensing Board. Both of these processes require extensive legal work and participation in a hearing process that is also open to other intervenors. The timing on this process likely could be as much as eighteen (18) months or more, assuming the process works as outlined above.

Should the State decide to pursue reconsideration of the "milling underground" decision Thompson & Pugsley, PLLC's suggested approach is to prepare a legal and regulatory analysis for submission to NRC Staff or the Commission for consideration and request that a SECY paper be prepared for consideration by the Commission. Important State officials should meet with the Commissioners and present the case and legal/regulatory analysis. Since it would be coming from a State it likely will be considered too high profile for the Staff to refuse to bring it to the Commission for the Commission to refuse to consider it. Accordingly, this approach appears to carry the least amount of risk and also can be prepared and executed in the shortest timeframe. Timing for responses from the Staff and the Commission is unpredictable, based on Staff work load and depending whether visits with the Commissioners will stimulate some sense of urgency. But, when comparing this approach to the Licensing Board alternative, this approach appears to carry the least risk of going off of the rails "during" the process.

From a resource perspective, pursuing this alternative will require the expenditure of a considerable amount of resources for legal and regulatory advice and execution of the process. The State Attorney General's office likely will lead the effort on preparation of a legal and regulatory analysis with the assistance of outside counsel with expertise on this issue. Financial resource expenditures are mitigated by the availability of a considerable amount of legal and regulatory analysis on the issue from the 1998 NMA White Paper and related efforts. However, these materials will need to be updated with legal references and arguments that address directly the previous "milling underground" decisions and subsequent NRC legal

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[167] *See* 10 CFR Part 2 entitled *Agency Rules of Practice and Procedure* and can be found at http://www.ecfr.gov/cgi-bin/text-idx?SID=26e264c05b517f15dc0118340b78632c&c=ecfr&tpl=/ecfrbrowse/Title10/10cfrv1_02.tpl.

interpretations. Further, the State will be required to expend both FTE-equivalent time and outside counsel time to negotiate with both NRC Staff and the Commissioners to minimize the risk of no action by NRC Staff/Commissioners and maximize the potential for a reversal of the decision. Other potential items where resources will be expended will be ongoing consultation with NRC Staff during the process and, if necessary, participation in a briefing or hearing before the Commission. Finally, these resources could become sunk costs at the end of the process because there is no level of certainty that the process will result in a favorable outcome. While the costs involved with this first alternative will be far less than pursuing Agreement State status and operating as an Agreement State, the Agreement State process is a codified and defined process that *will* result in transfer of source material recovery authority to the State.

2. REVISION TO CURRENT NRC/WDEQ MEMORANDUM OF UNDERSTANDING

With respect to the second alternative, currently there is a WDEQ MOU with NRC addressing AEA-licensable source material recovery operations. This MOU serves as the basis by which consultations on the review of source material recovery applications can be conducted. As discussed earlier, at one point, WDEQ attempted to negotiate an MOU with NRC Staff that would have resulted in NRC's deferral of regulatory authority over subsurface activities to the State. Unfortunately, several years of negotiation resulted in little progress on such an MOU.

Thus, for the State to determine to pursue this alternative, the primary question to be addressed is whether a revised or new MOU can be devised that could end the dual jurisdiction problems between WDEQ and NRC. Central to the answer to this question is whether the Commission has the legal authority to defer regulatory authority to any State in the absence of a Section 274 Agreement. After the 2000 "milling underground" decision, the Commission determined that the entirety of an ISR process, both surface and subsurface, is under NRC's exclusive, federal preemptive jurisdiction because essentially all waste fluids generated from the ISR process now are classified as 11e.(2) byproduct material. NRC additionally has determined that, its Criterion 5 requirements directly apply to groundwater restoration rather than their previous policy of applying some State groundwater quality regulations on a license-by-license basis. Given this determination, it is current NRC legal doctrine that the AEA directly applies to all ISR subsurface operations.

With that said, it appears unlikely that revision of the current or creation of a new MOU between WDEQ and NRC will accomplish the purpose of the Enrolled Act. Most existing MOUs between NRC and other federal or State agencies are more procedural than substantive in nature. Under the AEA which is the Commission's empowering statute, the methodology prescribed by Congress for discontinuing regulatory authority over any AEA material or operation is the Section 274 Agreement State process. To the best of our knowledge, there is no other mechanism available for NRC to relinquish its regulatory authority over such materials or operations. Even if NRC and WDEQ agreed to pursue this alternative, the legal grounds upon which such an MOU would rest potentially could be challenged in a legal proceeding and

possibly overturned. It is unclear at this time whether NRC is even able to defer regulatory authority over any AEA material or operation without the execution of a Section 274 Agreement.

Even if NRC could try to mitigate legal risk of a deferral type of MOU by imposing some sort of detailed oversight on State regulation of ISR production and restoration activities, it is unclear how such oversight could work in a manner that eliminates dual jurisdiction issues. Indeed, a revised or new MOU likely will not eliminate all existing dual jurisdiction issues because NRC still will be in an oversight position with final say on groundwater issues and, in any case, will retain jurisdiction over the surface activities at an ISR site and the State still will require operators to submit Permit to Mine requests as is the case now. Thus, a revised or new MOU appears to be an incomplete solution based on the purpose of the Enrolled Act.

II. CATEGORY 2: TRANSITION TO AGREEMENT STATE STATUS

This Category 2 section of the feasibility study is intended to provide the State with projections of reasonably foreseeable licensing and license maintenance actions that will be transferred to the State upon execution of a Section 274 Agreement with NRC for regulatory authority over "source material recovery" materials and operations. This study's Category 1 analysis presented three (3) tables of existing licensees, pending license applications and licensing actions, and anticipated future license or license amendment applications. This section is intended to expand upon the scope of that analysis to project reasonably foreseeable licensing applications *and* license maintenance activities that will be pending before NRC at the time of transition and those that likely will be submitted post-transition. Many of the identified licensing actions or license maintenance activities are considered to be nothing more than "best-guess" projections based on currently available information and past practices at source material recovery facilities.

Prior to presenting additional tables of potential licensing actions and license maintenance activities, Thompson & Pugsley, PLLC continues to emphasize the analysis provided in Section 1 of this study's Category 2 analysis in which the process for transition to Agreement State status is discussed. In that section, several key items are identified that the State should address prior to the initiation of the transition process. These items include, but are not limited to, development of a policy on transition of existing licenses into State-based licenses/permits and the manner of interaction with NRC Staff on pending licensing actions such as new operating licenses and license amendment requests. Typically, NRC Staff retains review authority over pending licensing actions already submitted for its detailed review, which does not limit the State's opportunity to interact as an interested party in those licensing action reviews. This type of interaction is very similar to this study's previously discussed recommendation that the State interact as often as possible with identified NRC Staff team leaders to ensure that all Agreement State program issues are properly addressed.

In addition, this feasibility study will provide a brief overview of different types of licensing actions that potentially could be pending before NRC during transition or that could become the subject of immediate State review upon completion of transition and the potential implications they could have for State program regulation. For purposes of this discussion, assume that each of the currently pending NRC licensing actions identified in Category 1, Table 7 have been reviewed and approved by NRC Staff.

A. IDENTIFICATION OF CURRENT, PENDING, AND FUTURE LICENSING ACTIONS

In order to properly understand the budgeting and staffing requirements for a Wyoming-based Agreement State program before and after transition, this feasibility study will take a forward-looking approach at types and frequency of potential licensing actions that could be before the Agreement State program after the potential five (5) year period for becoming an Agreement State. The following list of items is by no means exhaustive, but it

does encompass the most prevalent and time and resource-consuming potential licensing actions. Full budget and staffing estimates are located at Tables 13 and 14 below.

1. ALTERNATE CONCENTRATION LIMITS

Prior to its current legal interpretation of 10 CFR Part 40, Appendix A, Criterion 5 and its applicability to ISR facilities, ACLs typically applied only to groundwater contamination at conventional uranium mills and heap leach facilities. Numerous examples of ACLs are available for review, including NRC approval of ACLs at the WNI Split Rock site in the State in 2004-5 and at WNI's Split Rock site in 2006. ACLs are available to such licensees as a matter of "regulatory right". Further, there are ACLs in place at the Exxon/Mobil Highland site and an application is currently before NRC Staff to revise these ACLs moving towards license termination. Other sites in the State have ACLs in place or potentially could require such ACLs in the future.

As a practical matter, ACLs have been necessary at every conventional uranium mill because uranium mill tailings piles impoundments developed in the early days of the domestic uranium recovery industry were designed to leak for fluid management. These ACLs then became part of the site-specific package of post-closure controls that were transferred to DOE for LTSM. However, as stated previously, NRC currently interprets Criterion 5 to apply to ISR facilities. This interpretation means that ISR wellfields are subject to the same groundwater quality standards as conventional uranium mills. Thus, during groundwater restoration, NRC and/or the Agreement State program will have to make groundwater restoration approvals contingent on meeting such standards. If a constituent in a particular wellfield does not satisfy the primary and secondary limits in 10 CFR Part 40, Appendix A, Criterion 5(B)(5), then the licensee will have to apply for and receive an ACL to get final approval of restoration efforts and to reclaim the wellfield (i.e.; pumps, pipes, header houses etc.). This fact already has manifested itself in the recent submission of an ACL application by Cameco Resources to NRC for the Smith Ranch-Highland Mine Unit B wellfield. As new wellfields are activated during the projected five (5) year Agreement State approval process, it is probable that, in order to complete groundwater restoration, many wellfields will require ACL approvals.

Based on currently available information at NRC, a typical ACL for a conventional mill has taken anywhere from three to five (3-5) years to approve. In the past at some of ISR facilities in the event of a constituent or constituents not meeting background, the State (i.e., Wyoming) reviews of restoration efforts by licensees relied on prior "class of use" to satisfy final restoration. Because of NRC's application of Criterion 5, "class-of-use" can no longer be used as the appropriate criterion to establish successful restoration, although NRC Staff has stated that "class of use" can be used as one of the factors to justify an ACL. Thus, even if the State receives a large number of these ACL applications, the current regulatory structure within the State's existing regulations as modified per Criterion 5 likely will have to be used to address such applications effectively. The only issue will be staffing requirements, but successful completion of the Agreement State process should ensure that this requirement is satisfied. In order to properly estimate necessary staff resources, Thompson & Pugsley, PLLC highly

recommends that the State develop as much information as possible on the number of wellfields at each approved or pending ISR site and then develop a projection or "best guess" estimate of when and how many ACLs likely will be required.

2. NON-11E.(2) BYPRODUCT MATERIAL DIRECT DISPOSAL

A licensing action that carries with it several regulatory nuances is the potential direct disposal of waste materials not defined as 11e.(2) byproduct material. While the uranium market was significantly depressed, conventional uranium recovery facilities were left with both considerable processing and disposal capacity that was in danger of remaining unused or of being shut down. In light of the scarcity of revenues for conventional uranium recovery facilities and since the available alternatives for disposal of high volume, low activity radioactive wastes in the United States are and will be limited, licensees sought to obtain NRC's permission to dispose of materials other than 11e.(2) byproduct material in their licensed mill tailings impoundments. Such factors as the *similarity* to mill tailings in volume, radioactivity, and toxicity and the high costs associated with their disposal in traditional low level radioactive waste (LLRW) disposal Compact facilities prompted generators of these wastes to view uranium mill tailings piles as an attractive choice for disposal.

On August 7, 1991, NRC Staff issued SECY-91-243 informing the Commission that guidance had been developed in response to applicants'/licensees' requests to dispose of *non*-11e.(2) byproduct material in mill tailings impoundments. The Commission issued two SRMs expressing concerns about NRC Staff's proposed guidance and directing the publication of such guidance for public comment. As noted above, on April 30, 1992, the Commission approved a Federal Register notice combining both the proposed direct disposal and alternate feed guidance and the notice was published on May 13, 1992. Review and comments were sought from the public including specifically DOE, EPA, Agreement States, and LLRW Compacts.[168]

In order to address issues raised by public commenters, NRC Staff refined its proposed guidance and issued its *Final Revised Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11e.(2) Byproduct material in Tailings Impoundments* which required that the following requirements be satisfied prior to a direct disposal request being approved:

(1) Since mill tailings impoundments are already regulated under 10 CFR Part 40, licensing of the receipt and disposal of such material should also be under Part 40;

[168] On October 28, 1992, an Advance Notice of Public Rulemaking (ANPR) on 10 CFR Part 40 was published in the Federal Register and the proposed alternate feed and direct disposal guidance were the primary issues for public comment. The direct disposal issues identified in this ANPRM were identical to those in the May 13, 1992 Federal Register notice. No new issues were mentioned.

(2) Radioactive material not regulated under the AEA shall not be authorized for disposal in an 11e.(2) byproduct material impoundment;

(3) *Special nuclear material* and Section 11e.(1) byproduct *material* waste should not be considered as candidates for disposal in a tailings impoundment, *without compelling reasons to the contrary*. If staff believes that such material should be disposed of in a tailings impoundment in a specific instance, a request for approval by the Commission should be prepared;

(4) The 11e.(2) licensee must demonstrate that the material is not subject to applicable RCRA regulations or other EPA standards for hazardous or toxic wastes prior to disposal. To further ensure that RCRA hazardous waste is not inadvertently disposed of in mill tailings impoundments, the 11e.(2) licensee also must demonstrate, for waste containing *source material*, as defined under the AEA, that the waste does not also contain material classified as hazardous waste according to 40 CFR Part 261. In addition, the licensee must demonstrate that the *non*-11e.(2) material does not contain material regulated under other Federal statutes, such as the Toxic Substances Control Act (TSCA). Thus, source material physically mixed with other material, would require evaluation in accordance with 40 CFR Part 261 or 40 CFR Part 761. (These provisions would cover material such as: *characteristic*ally hazardous waste; *listed* hazardous waste; and polychlorinated biphenyls). The demonstration and testing should follow accepted EPA regulations and protocols;

(5) The 11e.(2) licensee must demonstrate that there are no CERCLA issues related to the disposal of the *non*-11e.(2) byproduct material;

(6) The 11e.(2) licensee must demonstrate that there will be no significant environmental impact from disposing of this material;

(7) The 11e.(2) licensee must demonstrate that the proposed disposal will not compromise the reclamation of the tailings impoundment by demonstrating compliance with the reclamation and closure criteria of Appendix A of 10 CFR Part 40;

(8) The 11e.(2) licensee must provide documentation showing approval by the Regional Low-Level Waste Compact in whose jurisdiction the waste originates as well as approval by the Compact in whose jurisdiction the disposal site is located;

(9) The DOE and the State in which the tailings impoundment is located, should be informed of the NRC findings and proposed action, with a

request to concur within 120 days. A concurrence and commitment from either DOE or the State to take title to the tailings impoundment after closure must be received bef*ore* granting the license amendment to the 11e.(2) licensee;

(10) The mechanism to authorize the disposal of *non*-11e.(2) byproduct material in a tailings impoundment is an amendment to the mill license under 10 CFR Part 40, authorizing the receipt of the material and its disposal. Additionally, an exemption to the requirements of 10 CFR Part 61, under the authority of § 61.6, must be granted. (If the tailings impoundment is located in an Agreement State with low-level waste licensing authority, the State must take appropriate action to exempt the *non*-11e.(2) byproduct material from regulation as low-level waste). The license amendment and the § 61.6 exemption should be supported with a staff analysis addressing the issues discussed in this guidance.[169]

This new guidance attempted to respond to all potential regulatory and policy concerns raised by the Commission, NRC Staff, and public commenters.

In response to this new guidance, NMA argued in its White Paper that this new guidance would impose so many burdensome requirements on licensees that it would be extremely difficult, if not impossible, to dispose of *non*-11e.(2) byproduct material in tailings impoundments. This guidance, NMA asserted, was inconsistent with the goal of optimizing protection of public health, safety, and the environment by encouraging disposal rather than storage of wastes and generally not in keeping with sound public policy, given the many advantages that would be available to waste generators by making direct disposal an economically and legally viable option.

Further, NMA argued that direct disposal of *non*-11e.(2) byproduct material in tailings impoundments would promote maximum utilization of available capacity for radioactive waste disposal given the shortage of options in the marketplace for disposal of high volume, low activity radioactive waste that is *similar* to uranium mill tailings (i.e., contaminated soils, sludges, and rubble). Indeed, as NRC commented in the preamble to the proposed guidance on direct disposal issues:

> "In most of the proposals the staff has seen, *disposal of these materials in tailings impoundments would not significantly increase the effect on the public health, safety, and environment*…These wastes are similar to the tailings in volume, radioactivity, and toxicity."[170]

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[169] U.S. Nuclear Regulatory Commission, *Final Revised Guidance on Disposal of Non-Atomic Energy Act of 1954, Section 11e.(2) Byproduct Material in Tailings Impoundments* (August 15, 1995). (emphasis added).

[170] 57 Fed. Reg. at 20527 (emphasis added).

In some cases, *non*-11e.(2) materials likely will pose even fewer potential radiological and *non-radiological* hazards than existing uranium mill tailings.[171] Finally, NMA emphasized that NRC Staff's *non*-11e.(2) direct disposal guidance could be more efficient if *generic* waste acceptance criteria were developed by NRC Staff.

In response, NRC Staff's SECY paper proposed three possible courses of action to the Commission: (1) retain the guidance in its current form; (2) revise the guidance to allow for m*ore* flexibility in using the disposal capacity of mill tailings impoundments or; (3) seek legislative changes with regard to the type of materials to be placed in a tailings impoundment under the long-term care of DOE.[172] In response, the Commission issued an SRM approving the second proposed course of action and expressly disapproved of the third proposed course of action.[173] The Commission stated that "the disposal of material other than 11e.(2) *byproduct material*, which may include *listed* hazardous wastes, in mill tailings impoundments should be allowed only if: (1) there is adequate protection of the public health, safety, and the environment; (2) the long-term custodian of the site has indicated its willingness to accept responsibility for maintenance of the site prior to NRC approving the disposal; and (3) necessary approvals of other affected regulators (e.g., States, EPA) have been obtained.[174] The Commission also stated that consideration should be given to obtaining written approval of the long-term custodian (i.e., DOE) before approving a direct disposal request.[175]

The Commission ordered that new revisions to the Final Guidance should be codified in a final rule after proper interaction with important stakeholders such as DOE, EPA, States, and the uranium recovery industry.[176] The direct disposal of *non*-11e.(2) byproduct materials, the Commission stated, should be allowed if the above-mentioned criteria are met and the materials are "radiologically, physically, and chemically *similar* to and compatible with materials already being disposed of in mill tailings impoundments."[177] Also, the Staff should pursue a

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[171] Additional regulatory and policy arguments on this issue may be found in NMA's White Paper.
[172] SECY-99-0012, Use of Uranium Mill Tailings Impoundments for the Disposal of Waste Other than 11e.(2) *Byproduct material* and Reviews of Applications to Process Material Other than Natural Uranium *Ores,* April 8, 1999.
[173] United States Nuclear Regulatory Commission SRM-SECY-99-0012, Use of Uranium Mill Tailings Impoundments for the Disposal of Waste Other Than 11e.(2) *Byproduct Material* and Reviews of Applications to Process Material Other Than Natural Uranium *Ores,* July 26, 2000.
[174] *Id*. Presumably, the "necessary approvals" language refers to EPA or delegated State RCRA authority over *characteristic* or *listed* constituents and, possibly CWA permit issues, if any. Such approvals may no longer be necessary for alternate feeds that qualify as *source material ore*. *See In the Matter of International Uranium (USA) Corporation* (White Mesa Mill), LBP-02-19, 56 NRC 113 (August 28, 2002) (hereinafter "Exhibit 77").
[175] *Id*.
[176] *Id*.
[177] SRM, SECY-99-0012, Use of Uranium Mill Tailings Impoundments for the Disposal of Waste Other Than 11e.(2) Byproduct Material and Reviews of Applications to Process Material Other Than Natural Uranium Ores, July 26, 2000. (emphasis added).

generic exemption to Part 61 requirements so that individual exemptions from those requirements for each disposal request could be avoided.[178]

In light of the Commission's apparent intent to pursue a more flexible approach to direct disposal, NMA, in conjunction with the Fuel Cycle Facilities Forum (FCFF), prepared a second White Paper entitled *The National Mining Association's and the Fuel Cycle Facilities Forum's White Paper on Direct Disposal of Non-11e.(2) Byproduct materials in Uranium Mill Tailings Impoundments* (NMA/FCFF White Paper). The NMA/FCFF White Paper was tailored specifically to direct disposal and NMA's past attempt to expand the scope of candidate *non*-11e.(2) *byproduct material*s for disposal in mill tailings impoundments. The focus of NMA/FCFF's approach was the proposed *generic* waste acceptance criteria for a variety of candidate *non*-11e.(2) *byproduct material*s with a particular emphasis on the following materials: (1) *source material* in the form of thorium or depleted uranium-contaminated wastes, (2) special nuclear material contaminated wastes, (3) naturally occurring radioactive materials (NORM), including technologically enhanced NORM (TENORM), and (4) low activity mixed wastes. NMA/FCFF proposed that NRC adopt generic waste acceptance criteria for each category of waste using a practical "upper bound" approach to assess potential radiological and *non*-radiological constituents so that specific waste streams could be accepted without the need for multiple license amendment requests. In exchange for this flexibility, NMA/FCFF proposed that licensees seeking to use such waste acceptance criteria to dispose of *non*-11e.(2) *byproduct material*s and, in light of the potentially different radionuclides and *non*-radiological constituents, commit to certain site-specific requirements such as: (1) working with NRC to develop a site-specific occupational health and safety program for mill workers, (2) developing and implementing incremental safeguards to its existing monitoring program for potential air, soil or groundwater contamination, (3) creating adequate surface stabilization and reclamation plans for site closure and license termination, (4) obtaining appropriate memoranda of understanding (MOUs) from agencies such as EPA, DOE and States to accept waste streams without the threat of dual or overlapping jurisdiction and (5) supplying adequate financial assurance for the eventual long-term custodian.

Further, in an effort to promote their proposal, NMA/FCFF offered comments on EPA's 2003 ANPR regarding expansion of disposal options for low activity radioactive and mixed wastes and expressly stated that regulatory agencies should consider mill tailings impoundments as a viable option from both a health and safety and an economic perspective.[179] Generally speaking, NMA/FCFF's comments focused on adding mill tailings impoundments as an option to the regulatory marketplace and allowing the marketplace to determine whether disposal of low activity radioactive and mixed wastes in such impoundments would be cost-effective and environmentally sound. The submission of these comments, in conjunction with additional work with the Health Physics Society (HPS) also resulted in the submission of this option to the National Academy of Sciences (NAS) for consideration in its report entitled *Improving the Regulation and Management of Low-Activity*

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[178] *Id*.

[179] 68 Fed. Reg. 65120 (November 18, 2003) (hereinafter "Exhibit 78").

Radioactive Wastes.[180] In this report, NAS briefly but favorably discussed mill tailings impoundments as a potential option for direct disposal and as an example of how regulatory frameworks do not necessarily result in a risk-based approach to waste disposal. The NMA/FCFF White Paper was submitted to NRC in 2005 and resulted in several discussions with NRC Staff. However, due to a lack of resources, NRC Staff indicated that progress on the White Paper's recommendations would be accelerated if a licensee were to propose *generic* waste acceptance criteria in a license amendment request.

These "direct disposal" licensing actions do not have any real case history after the adoption of NRC's new policy. To the best of Thompson & Pugsley, PLLC's knowledge, there has not been any attempt by conventional uranium mill facilities to obtain Commission approval for direct disposal of a shipment of non-11e.(2) byproduct materials. This lack of history renders us unable to determine how such licensing actions would be approved by an Agreement State in practice. However, it appears based on the numerous criteria that are required for approval of a direct disposal action plus the fact that the Commission would need to "sign-off" on such an action as well as obtaining DOE consent, it is likely that the State would be required to spend significant time evaluating these requests. Given that the State has one conventional mill (Kennecott's Sweetwater Mill) that has significant disposal capacity and the possibility of two (2) heap leach facilities (Energy Fuels Sheep Mountain and Gas Hills sites) , this is an important potential licensing issue to be aware of at this time.

3. ALTERNATE FEED PROCESSING

Prior to 1992, some conventional milling licensees submitted requests to NRC to process feed material that was not *natural* uranium *ore* and to dispose of the resulting tailings and other wastes in their mill tailings impoundments. For example, between 1982 and 1987, NRC approved several license amendments to Rio Algom's *source material* license for its Lisbon, Utah mill site to receive secondary processing wastes from a uranium hexafluoride conversion facility, a niobium-tantalum recovery facility, and an yttrium-lanthanides recovery facility.[181] Likewise, in 1987, NRC permitted the Quivira Mining Company to process sludge from a hexafluoride conversion plant. The uranium content of these wastes, ranging from 0.6 to 1.17 percent by weight, was typically higher than that of the average natural *ore*, thus making them particularly attractive candidates for process feed. In addition to processing wastes from other mining operations, some uranium mills also have sought NRC approval to process wastes generated during treatment of uranium mine wastewater containing significant concentrations of uranium.

With the increases in requests for the processing of these so-called "alternate feed materials," from 1991 to 1995, NRC Staff and the Commission engaged in a rigorous process to

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[180] National Academy of Sciences, *Improving the Regulation and Management of Low-Activity Radioactive Wastes*, The National Academies Press, Washington, D.C. (2006) (hereinafter "Exhibit 79").
[181] *See* 57 Fed. Reg. 20,531 (1992) (Exhibit 17).

create guidance for licensees seeking to process such materials. After consultation with the Commission, final consideration of public comments, and several iterations of draft guidance, on August 15, 1995, NRC Staff issued its *Final Position and Guidance on the Use of Uranium Mill Feed Material Other than Natural Ores*,[182] which contained three (3) key requirements. First, a proposed alternate feed must qualify as *ore*. Under the AEA and as described above, 11e.(2) *byproduct material* is defined as "the tailings or wastes produced by the extraction or concentration of uranium or thorium from *any ore* processed *primarily* for its *source material* content."[183] Accordingly, if the proposed alternate feed does not qualify as *ore*, wastes resulting from its processing do not constitute 11e.(2) *byproduct material* and cannot be disposed of routinely in a uranium mill tailings impoundment. Although UMTRCA does not specifically define what constitutes *any ore*, the Commission has developed the following definition:

> "[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."[184]

This definition was developed intentionally to be sufficiently broad so that secondary processing wastes from other mineral recovery operations (e.g., yttrium-lanthanides recovery wastes) and wastes from the treatment of mine water having significant uranium content could qualify as *ore.* NRC Staff emphasized the fact that, since the phrase *any ore*, rather than the phrase *any unrefined and unprocessed ore* is used in the definition of 11e.(2) *byproduct material,* it implies Congressional intent to include a broad range of materials in the definition of *ore*.

Second, NRC Staff's 1995 guidance reaffirmed that any material containing a *listed* hazardous waste subject to EPA's RCRA regulations could not be processed as an alternate feed. This ban did not, however, apply to alternate feeds (except sludge from the treatment of wastewater) exhibiting only *characteristics* of hazardous waste (e.g., ignitability, corrosivity, etc.), since such material is exempt from the RCRA definition of "hazardous waste" when reclaimed.[185]

Third, the 1995 guidance required that a licensee demonstrate that the *ore* is being processed primarily for its *source material* content to alleviate concerns regarding "sham disposal." To satisfy this requirement, NRC Staff required licensees to satisfy either the "co-disposal" or "licensee certification" test.[186]

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[182] *Id.* As noted above, this guidance also set forth the requirements for direct disposal of *non*-11e.(2) *byproduct material*s in uranium mill tailings impoundments.
[183] *See* 42 U.S.C. § 2014(e)(2) (emphasis added).
[184] 57 Fed. Reg. at 20,531 (emphasis added) (Exhibit 17).
[185] *See* 40 CFR § 261.2(c)(3).
[186] The "co-disposal" test required that "if the feed material would be approved for disposal in the tailings impoundment…it can be concluded that if a mill operator proposes to process it [the alternate

Three years later, on April 26, 1998, NMA responded to NRC Staff's 1995 guidance in its above-noted 1997 White Paper. Specifically, NMA recommended two revisions to the 1995 guidance so that a wider variety of *alternate feeds* could be processed without jeopardizing the integrity of NRC's uranium recovery program. First, NMA recommended that NRC carefully reconsider the its requirements to demonstrate *source material* content. To satisfy the "co-disposal" test, NMA argued, would be too onerous as licensees would be required to satisfy all nine (9) criteria for the direct disposal of *non*-11e.(2) *byproduct material*.[187]

Further, NMA argued that the notion of "sham disposal" was unsound and unwarranted. The notion of "sham disposal" was built on the assumption that alternate feeds are not actually processed for their *source material* content, because the value of the recovered uranium could not be justified without a recycling/disposal fee received by the licensee. However, NMA argued that the regulatory status of an alternate feed should not be based on NRC's perception of the economic viability of uranium/thorium extraction from a feed material, since such viability will vary with market conditions, existing contracts, future commitments, and other factors, regardless of whether or not the feed material contains higher or lower *source material* concentrations than that of most traditional natural *ores* being processed in U.S. uranium mills.

NMA also stated that *ore* being stockpiled at a mill, regardless of *source material* concentration, is subject to AEA regulation. NMA further also offered portions of UMTRCA's legislative history in support of its final argument that uranium mills, by definition and by virtue of undergoing the rigorous process of obtaining a 10 CFR Part 40 uranium recovery license, process *ores primarily* for their *source material* content:

> "The Commission is informed that there are a few mills currently using feedstock of less than 0.05 percent uranium. As high-grade *ores* become scarcer, there may be greater incentive in the future to turn to such low grade materials. Since such operations should be covered by any regulatory regime over mill tailings, the Commission would suggest that the definition of *byproduct*

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feed], the processing is primarily for its *source material* content." Under this test, the alternate feed would have to be "physically and chemically similar to 11e.(2) *byproduct material* and not be subject to RCRA or other EPA hazardous waste regulations…." The second test, the "licensee certification test," required that a licensee affirm, under oath and subject to the penalties of perjury, that the proposed feed material:

> "is being reclaimed or recycled in accord with RCRA or does contain RCRA hazardous waste; and is to be processed primarily for the recovery of uranium and for no other primary purpose."

57 Fed. Reg. at 20,533 (Exhibit 17).

[187] 57 Fed. Reg. at 20,531 (Exhibit 17).

> *material*…be revised to include tailings produced by extraction of uranium or thorium from *any ore* processed *primarily* for its *source material* content."[188]

Based on this statement, NMA concluded that considerable flexibility had been built into the statutory definition of 11e.(2) *byproduct material* to allow for processing a wide variety of feed materials, as *ores*, in order to treat the resulting wastes as 11e.(2) *byproduct material*.

NMA further cited the *Kerr-McGee Chem. Corp. v. NRC* case as evidence wherein the D.C. Circuit rejected NRC's argument that an *ore* processed first for its rare earth content and second for its *source material* content was not processed *primarily* for its *source material* content and, thus, would not create wastes qualifying as 11e.(2) *byproduct material*.[189] The D.C. Circuit determined that NRC's argument would frustrate the purpose of UMTRCA, which was enacted to bring the tailings and other wastes generated during the processing of uranium/thorium-bearing materials for their *source material* content under NRC regulatory oversight:

> "NRC construes the word "primarily" to mean that the extraction of thorium or uranium must be the first, chief, or principal reason for processing the *ore* brought to a mill in order for the resulting tailings to be characterized as "*byproduct material*.
>
> As the Supreme Court has pointed out, the word "primarily" is capable of a range of meanings extending from "first" or "chief" to "substantially" ….Had the agency adopted the latter meaning, it could easily have found that the offsite tailings had been derived from *ore* that had been "substantially" processed for its thorium content."[190]

Thus, NMA argued, both case law and legislative history provide persuasive support for adopting the presumption that an NRC-licensed source material recovery mill is processing alternate feeds *primarily* for their *source material* content. NMA recommended that NRC adjust its "co-disposal" test to reflect this presumption as this approach is consistent with the Commission's policy of linking the definition of 11e.(2) *byproduct material* to the nuclear fuel cycle. As stated by the Commission,

> "The definition [of 11e.(2) *byproduct material*] continues to be tied into the nuclear fuel cycle. Because the extraction of uranium in a licensed mill remains the primary purpose of processing the feed material, it

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[188] Statement of Dr. Joseph Hendrie, Chairman, U.S. Nuclear Regulatory Commission in *Uranium Mill Tailings Radiation Control Act of 1978* (emphasis added.) Indeed, the draft GEIS assumed an average *ore* grade of 0.15% which was revised downward in final GEIS to 0.10% to reflect the projection that average *ore* grades would continue to decrease, NUREG-0706, Vol. II p. A-12,13.
[189] 903 F.2d 1 (D.C. Cir. 1990) (Exhibit 47).
[190] *Id.* at 7 (emphasis added) (Exhibit 47).

> excludes secondary uranium side-stream recovery operations at mill processing *ore* for other metals."[191]

As a result, the Commission does not consider wastes generated by secondary, side-stream recovery of uranium by facilities that *primarily* process *ore*s for their rare earth content to be 11e.(2) *byproduct material*:

> "Frequently, natural *ores* that are processed for rare earth or metals have significant concentrations of radioactive elements. Examples include copper, zirconium, and vanadium *ores*. Sometimes, the uranium is captured in a *side-stream* recovery operation…Although this *side-stream* recovery operation is licensed by NRC, the tailings…are not 11e.(2) *byproduct material*. This is because the *ore* was not processed *primarily* for its *source material* content, but for the rare earth or other metal."[192]

Based on this, NMA argued that uranium mill should be permitted to recover other minerals or metals (e.g., tantalum, vanadium) from *ore*s processed at their facilities pursuant to an AEA/Agreement State *source material* license with the resulting wastes still qualifying as 11e.(2) *byproduct material*. Even though additional minerals or metals were recovered from these *ore*s, an NRC- licensed source material recovery mill still would be processing the *ore*s *primarily* for their *source material* content. Finally, NMA argued that only a uranium recovery facility whose *primary* purpose was to recover *source material* would undergo the rigorous process of obtaining an AEA license with its irrevocable commitments regarding long-term control and management of tailings. In other words, a facility not seeking to be *primarily* a uranium recovery facility would not assume the rigorous financial and regulatory burdens associated with being an AEA source material recovery licensee.

The second recommendation from NMA was that NRC should discard its prohibition on the use of feed material containing *listed* RCRA hazardous waste. NMA argued that NRC was being overly concerned with dual regulation when, in fact, UMTRCA created a regulatory regime that addresses both radiological and *non*-radiological constituents in 11e.(2) *byproduct material*. NRC standards for the management and disposal of uranium mill tailings—10 CFR Part 40, Appendix A—fully incorporate RCRA groundwater protection standards for *non-radiological* (i.e., hazardous) wastes. Wastes generated during processing of alternate feed materials containing RCRA hazardous waste, thus, would be sufficiently controlled when they are disposed of in mill tailings impoundments. Citing NRC, NMA noted:

> "Constituents with hazardous *characteristic*s that were feed materials processed at a uranium mill would eventually end up in the tailings impoundment as 11e.(2) *byproduct material*. As such, they would be

[191] 57 Fed. Reg. at 20,532 (emphasis added) (Exhibit 17).
[192] *Id*. at 20527 (emphasis added) (Exhibit 17).

> regulated under Appendix A of 10 CFR Part 40 which provides for monitoring and control of hazardous constituents. *Thus, the ultimate fate of hazardous constituents that might be in uranium mill feed would not escape regulatory oversight*."[193]

NMA also emphasized that the existing 11e.(2) *byproduct material* regulatory regime is extremely stringent and provides public health protection beyond that provided by RCRA's stringent regulations. The tailings must be stabilized through the use of *passive* controls (engineered barriers) to contain potential radiological and *non-radiological* hazards without benefit of *active* maintenance for a minimum of 200 and, to the extent practicable, 1,000 years. These time periods, NMA stated, are much greater than RCRA's regulatory horizon (i.e., 30 years) and even NRC's 10 CFR Part 61 LLRW standards (i.e., 300-500 years) and the federal government (i.e., DOE) as the long term custodian is projected to be an NRC licensee in perpetuity.[194]

Later, International Uranium (USA) Corporation (IUSA), a conventional uranium recovery licensee, submitted a petition to NRC regarding NRC's alternate feed policy entitled *Petition for Reconsideration of The Nuclear Regulatory Commission's "Final Position and Guidance on the Use of Uranium Feed Material Other than Natural Ores"* (hereinafter referred to as "IUSA Petition).

IUSA's Petition proposed that the Commission substantially modify the requirements in NRC's alternate feed guidance for demonstrating that a proposed alternate feed material is being processed *primarily* for its *source material* content. IUSA argued that its proposed modifications would be consistent with the Congressional intent as reflected in the AEA, as amended by UMTRCA, and address regulatory issues consistent with NRC's statutory mission (i.e., protection of public health, safety, and the environment, reclamation, and the long-term management of uranium mills and mill tailings).

IUSA proposed that NRC's "co-disposal" and "licensee certification" tests be replaced with the following test:

> A material will be considered to have been processed *primarily* for its *source material* content if:
>
> (a) *source material* is extracted in a *licensed* uranium or thorium mill; and,

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[193] 57 Fed. Reg. 20525, 20533 (1992) (emphasis added) (Exhibit 17).

[194] Unlike a private corporate entity which, as demonstrated by the Atlas Corporation bankruptcy proceeding, may not exist for long periods of time, presumably the federal government will exist for much longer time periods and guarantee consistent and stable regulatory oversight. If the federal government ceases to exist, it is unlikely that LTSM responsibilities for uranium mill tailings will be a major concern.

(b) processing the material at a *licensed* uranium or thorium mill and disposal of the resulting tailings in the tailings cells:

1. will not cause significant incremental adverse effects to public safety, health, and the environment; and,

2. will not compromise the reclamation of the tailings impoundment and will be in compliance with the reclamation and closure criteria set forth in 10 CFR Part 40, Appendix A.

In determining whether or not conditions (a) and (b) are satisfied, it shall be irrelevant whether or not it is economically viable to process the material for its *source material* content, either alone or together with other minerals, and whether or not a toll milling, recycling, disposal or other fee is paid to the owner of the mill in connection with the milling of the material.

To support this proposal, IUSA argued that (1) the legislative history of the AEA, as amended by UMTRCA, existing case law, and past Commission policies supported the *presumption* that, *by definition*, a licensed uranium or thorium mill that is processing alternate feed materials for recoverable uranium is doing so *primarily* for the *source material* content; (2) NRC concerns about "sham disposal" are unfounded; (3) recycling should be a prime focus of NRC's alternative feed guidance and; (4) the *co-disposal* test is too cumbersome to be of any use and the *certification* test should be eliminated.

After review of NMA's White Paper and IUSA's Petition, NRC Staff revised its alternate feed guidance and issued *Regulatory Issue Summary 00-023: Recent Changes to Uranium Recovery Policy* (RIS) in which NRC Staff proffered its current alternate feed guidance:

(1) the alternate feed material must be an *ore*;
(2) the alternate feed material must not contain any *listed* RCRA hazardous wastes;[195]
(3) the alternate feed material must be processed *primarily* for its *source material* content;[196] and
(4) the alternate feed material must be processed in accordance with 10 CFR Part 40 requirements and Appendix A Criteria.[197]

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[195] The RIS also states that "[t]he [NRC]staff will modify the prohibition in item 2 on feed material containing *listed* hazardous waste, to allow such feed material provided that the licensee obtains approval of the U.S. Environmental Protection Agency (EPA) or the State, and a commitment from the long-term custodian to accept the tailings after site closure."

[196] Pursuant to the its decision in the *International Uranium (USA) Corporation* case against the State of Utah, the RIS states, "The staff will revise the manner in which it determines whether the *ore* is being processed primarily for its *source material* content, to focus on the product of the processing, and eliminate any inquiry into the licensee's economic motives for the processing." *See In the Matter of International Uranium (USA) Corporation*, CLI-00-01, 51 NRC 9 (February 10, 2000).

This policy is currently applicable to all uranium recovery facilities in both *non*-Agreement and Agreement States.[198]

The State currently has one conventional uranium mill on standby (Kennecott Sweetwater) and one former conventional milling facility (Pathfinder/Ur-Energy-Shirley Basin) that continues to have an active license where new conventional milling facilities could be installed. Further, at least two (2) heap leach facilities have been proposed within the State (Energy Fuels-Sheep Mountain & Gas Hills) where milling facilities may be constructed that could accept alternate feed materials. As stated previously, it is important for the State to develop a policy going forward in the Agreement State process on how to incorporate NRC regulations, guidance, and policy either by reference or in some other form prior to entering the transition phase. Further, staffing on these issues likely will be minimal because the review criteria for an alternate feed license amendment are much less than for a new operating license or an ACL application.

4. WELLFIELD PACKAGES

As ISR projects in Tables 7 & 8 are approved by NRC Staff, license conditions are issued requiring the submission of wellfield packages to NRC prior to engaging in active uranium recovery operations in such wellfields. Depending on whether there are *anomalous* conditions present at a given wellfield (which can be addressed by the site-specific license conditions), wellfield packages fall under a variety of different standards of review by NRC Staff. In most scenarios, wellfield packages are merely "reviewed" by NRC Staff, which essentially means that a licensee sends the wellfield package documentation to NRC and where it is reviewed. However, submission of the documentation is the only requirement necessary prior to moving forward with pre-operational inspection and operations.[199] In some scenarios, wellfield packages are sent to NRC Staff for "review and verification," which is a slightly higher standard of review but does require *NRC Staff approval* of the package. For the remainder of wellfield packages and in the event of any *anomalous* conditions, NRC Staff requires that such packages be subject to "review and approval." In this instance, NRC Staff has to "sign off" on each such wellfield package, which requires preparation and issuance of a document package justifying such "sign off."

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[197] *See* United States Nuclear Regulatory Commission, *Regulatory Issue Summary 00-023: Recent Changes to Uranium Recovery Policy*, Attachment 2 (2000).

[198] In the *International Uranium (USA) Corporation* case referenced above and subsequent cases thereafter, the Commission affirmed NRC Staff alternate feed guidance in an administrative legal proceeding. Thus, the alternate feed guidance has the force of law when applied to Agreement State programs.

[199] In such cases, routine wellfield packages are assessed by the licensee's SERP pursuant to a performance-based license condition (PBLC), which is discussed in more detail *supra* at Section I(D)(3)(v) of this study**.** The SERP review typically is based on the equivalent level of analysis utilized in license amendment applications.

Currently, the State engages in review of wellfield packages for ISR licensees. This means that the State will be perfectly capable of reviewing wellfield packages as an Agreement State but the major question is whether existing staffing will be sufficient to sustain review of several wellfield packages simultaneously. The only representative example we have of agency staffing for ISR wellfield package review is the State of Texas which currently is dealing with both licensed sites and their wellfield packages. The staffing requirements for the State will not be too dissimilar from Texas because these packages do not necessarily come in "all at once." But, there is a necessity to ensure that there are adequate hydrological experts on staff to facilitate proper wellfield package review.

An important point is that the State is not necessarily subject to NRC Staff license conditions imposing the three aforementioned standards of review, depending on how or whether the State incorporates existing NRC license conditions and how it interacts with NRC Staff on license and license amendment application reviews during the transition period. The State is free to adopt its own approaches to the existing and pending licenses to the extent that they are deemed to be compatible with NRC's regulations and license conditions.

A second point on wellfield packages is the timing for such packages to be prepared and submitted by licensees or license applicants. Currently, industry members are unclear when they can install an entire wellfield, perform necessary, detailed pump and other testing, and identify and locate wells in its monitoring well network. The complication here can be found in NRC's newly revised 10 CFR Part 40.32(e) (otherwise known as the "construction rule"). The revised rule identifies specific site activities that meet the definition of "construction" (e.g., installation of an entire wellfield) and, therefore, should not be completed prior to issuance of an operating license. The rule is written to grant NRC Staff discretion to deny a license in the event that such activities are conducted prior to the issuance of a license. The assumption that underlies this rule is that complete 10 CFR Part 51 environmental review should take place prior to an applicant engaging in such activities. However, the wording of the rule does not conclusively state that if a license applicant engages in such activities the requested license *will* be denied. The compatibility category for Part 40.32(e) is "H&S" meaning that the regulation does not necessarily require complete adoption; but it could require significant State attention because of its potential implications for ISR facility development given weather constrictions on the timing of such activities in Wyoming. This will be relevant when and if the State decides to begin development of model regulations for an Agreement State program. NRC Staff's recent discussions with NMA have yielded a path forward on a RIS to further clarify its interpretation of this regulation. It is recommended that the State monitor the development of this RIS as its consideration of the Agreement State process progresses.

Lastly, the State has an advantage from a staffing perspective for wellfield packages, because current Permit to Mine regulations already have the State's reviewers approving wellfield packages for ISR permittees. This demonstrates that the State currently has the expertise to address the hydrological issues associated with these types of licensing actions.

Thus, budgeting and staffing may not be impacted for these actions in the event the State decides to move forward and become an Agreement State.

5. SITE DECOMMISSIONING AND DECONTAMINATION PLANS

Site D&D plans are major documents that require significant review time for all types of uranium recovery facilities. These plans are developed at different stages of projects depending on the applicable license conditions and the type of source material recovery facility implicated. For ISR facilities, NRC currently requires via the Hydro Resources, Inc. (HRI) litigation decisions at both the Licensing Board, Commission, and Tenth Circuit levels, that all ISR license and satellite facility license amendment applicants include the functional equivalent of a restoration action plan (RAP) in their application. These RAPs are intended to be stand-alone documents that provide the reviewing regulator with a "one-stop-shop" reference guide for the ISR operator's groundwater restoration process and site D&D plan. Each line-item in these RAPs is designed to be accompanied by a cost estimate that contributes to the grand total of financial assurance required to be maintained by the license. By regulation (10 CFR Part 40, Appendix A, Criterion 9), ISR licensees are required to update their RAPs and associated financial assurance cost estimates on an annual basis. Several licensees and license applicants have prepared and submitted RAPs to NRC for its consideration that should be considered useful templates for RAP preparation should the State become an Agreement State. Further, typical NRC ISR licenses contain a condition requiring submission of a D&D plan at least 12 months prior to the initiation of full site decommissioning such as demolition and decontamination of the CPP, surface soil cleanup, etc. These D&D plans are reviewed by NRC during the course of operations and/or groundwater restoration depending on the timing of final recovery operations and whether the CPP will continue to operate for toll milling.

A point of contention that will be relevant in the coming year regarding site D&D is NRC's 10 CFR Part 40.42 "timeliness in decommissioning" requirements and their applicability to ISR wellfields. When this regulation was first promulgated and applied to source material recovery facilities, it required conventional uranium mills to reclaim site tailings impoundments within twenty-four (24) months of cessation of use of the impoundment in accordance with the timeliness provision of the rule. Subsequently, as it became apparent that it was impossible for a conventional uranium mill licensee to fully reclaim such impoundments within the prescribed 24 month period due to items such as sheer size of the impoundment, dewatering requirements, the erosion and armoring controls necessary to stabilize the impoundment, and the necessity for ACLs. As a result of litigation by AMC and settlement discussions with NRC Staff, a rulemaking was initiated to revise the rule to exempt conventional mill tailings impoundments from the 24 month requirement. In the past two (2) years, NRC Staff issued an interpretation that the aforementioned 24 month requirement applies to ISR facilities. NRC Staff's interpretation assumes that the definition of D&D activities includes wellfield restoration, groundwater stabilization monitoring, and wellfield equipment removal and any necessary surface reclamation. As with the original application of this rule to mill tailings facilities, this interpretation as applied to ISR facilities is impossible to comply within 24

months. In the coming year, it is likely that NRC and NMA will re-visit this issue with the potential for a rulemaking to revise Part 40.42's language.

For conventional uranium mills and heap leach facilities, site D+D plans are required to be submitted in accordance with NUREG-1620 entitled *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* in a site-specific license application. These D&D plans are relatively similar in concept to the aforementioned RAPs in that they are intended to serve as a reference guide for reviewing regulators when assessing a specific license or license termination application. The plan's line-items also are accompanied by cost estimates to allow for calculation of appropriate financial assurance. Like ISR RAPs, these D&D plans also require annual updates per NRC regulation (Appendix A, Criterion 9). Further, the D&D plan must be revised according to site-specific activities dealing with unknowns such as potential impoundment leakage which triggers mandatory groundwater corrective action under 10 CFR Part 40, Appendix A, Criterion 5.

6. FACILITY RESTARTS

One additional potential licensing action that currently has been evaluated by NRC Staff in the State and that potentially could be evaluated by a future Agreement State program is a facility restart. Facilities that are either in the process of decommissioning or on standby can seek authorization from NRC or an Agreement State to recommence active source material recovery operations. These facility restart applications typically are dictated by license conditions prescribing specific items that must be addressed to ensure that the facility is adequate to satisfy health and safety requirements. ISR facilities that proceed to decommissioning and/or are in the process of final groundwater restoration are still permitted to pursue facility restart assuming that they can demonstrate that ISR recovery solutions can be contained safely within the monitoring well network and that site facilities remain in adequate technological condition to operate in accordance with public and occupational dose standards. Conventional uranium mills and heap leach facilities also are entitled to pursue facility restart assuming they have sufficient 11e.(2) byproduct material disposal capacity and site facilities are appropriate to recommence ore processing. The examples of requirements stated above are not exhaustive and do not account for any site-specific requirements imposed by NRC through license condition for facility restart.

7. SITE CLOSURE AND LICENSE TERMINATION

Another potential licensing action for a State seeking Agreement State status over source material recovery and one that applies to *all* source material recovery facilities is site closure and license termination. Conventional mills and heap leach facilities have different closure standards than ISR facilities, as the former two facilities are required to be closed and transferred to DOE or the State at no cost to the government for a minimum of 200 and, to the

maximum extent practicable, 1,000 years while the latter is required to be closed and released for unrestricted use. However, regardless of the closure requirements for each facility type, the process by which such facilities in Agreement States are closed and their licenses are terminated is the same.

For all source material recovery facilities in Agreement States, the process by which sites are closed and licenses are terminated involves a two-step approach. The first step involves the Agreement State program review and approval of the completion of a site D&D plan, including complete groundwater restoration for ISR wellfields and tailings impoundment closure and long-term monitoring (if necessary) for conventional mills and heap leach facilities. Essentially, the Agreement State will engage in the same process pursuant to its adequate and compatible regulations as if the State were the entity making the final decision on site closure and license termination. After the Agreement State makes a finding that all requirements for site closure are satisfied, the second step is preparation of a CRR for submission to NRC for review and approval. The reason for this CRR is the AEA, as amended by UMTRCA, gives NRC (the Commission) the final "sign-off" authority for the closure of source material recovery sites and the termination of their licenses. As required by UMTRCA, NRC is to approve transfer of conventional mill or heap leach sites[200] for the safe containment of 11e.(2) byproduct material to DOE or the resident State.

The importance of the time and resource commitment of this particular type of licensing action should not be overlooked as the timeframe associated with the State preparation of a CRR and NRC's review process for a CRR is not insignificant. A good example of this is the Durita site in western Colorado currently licensed to Hecla. The CRR prepared by the State of Colorado was submitted to NRC Staff for its review and concurrence in draft form in 2003 and is still awaiting approval and license termination. NRC can raise concerns regarding an Agreement State's CRR, and this is the case with the Durita site. Due to these complications, the review of the Durita CRR is still ongoing. While this long timeframe continues, the Agreement State is still required to treat the licensed site as active, triggering the need to satisfy appropriate license conditions such as inspections and annual reporting reviews. Given that the State of Wyoming has nine (9) (one of which has been transferred to DOE for LTSM) UMTRCA Title II sites and the potential for three (3) additional active licenses (see Table 6), this is potentially a large budget line-item and may require several years of active regulation to complete.

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[200] ISR sites are not included this discussion because, absent some site-specific anomaly, the Commission has waived the LTSM requirements under UMTRCA for such sites due to the lack of potential significant risk to public health and safety and the environment. The surface of an ISR facility is required to be restored for *unrestricted use* and the subsurface is required to undergo groundwater restoration to ensure no migration of recovery solutions to adjacent, non-exempt aquifers occurs. As reported by NRC Staff to the Commission on July 10, 2009, there have been no reports of such contamination since ISR production commenced in the United States. *See* United States Nuclear Regulatory Commission, *Staff Assessment of Groundwater Impacts from Previously Licensed In-Situ Uranium Recovery Facilities*, (July 10, 2009).

It is important to note that the list of potential licensing actions discussed above is not exhaustive as there are several types of licensing actions that can be requested by a source material recovery license applicant or licensee of an Agreement State program. ISR licensees can request authorization for items such as increase in annual production limits, expansion of licensed site boundaries to include additional wellfields, and retrofitting new recovery facilities. Conventional uranium mills and heap leach facilities can request authorization for items such as the addition of new or expansion of existing tailings impoundments, addition of new technologies for ore processing (e.g., IX columns), and partial site closure. It is recommended in this study that a further evaluation of these potential licensing actions be pursued immediately following submission of this report. This is critical, because regardless of the number of current licensees that achieve site closure and license termination prior to transition to Agreement State status, any licensee that is currently active or on standby, as well as those proposed for licensing after transition, will have to proceed to license termination at some point in time.

Shown below is a table of current or future licensees in the State that likely will remain or become licensees upon State transition to Agreement State status. This list cannot be considered exhaustive because given the approximately 5 year timeframe for the Agreement State process, new companies may pursue and receive operating licenses during the process. However, this chart can be updated on an annual basis as the State sees fit:

TABLE 10: EFFECTIVE LICENSES UPON TRANSITION (PROJECTED OVER 5 YEAR PERIOD (2020)): (DOES NOT INCLUDE SITES IN DECOMMISSIONING)[201]

COMPANY	PROJECT NAME(S)	PROJECT TYPE	POTENTIAL LICENSING ACTIONS
URANIUM ONE AMERICAS	WILLOW CREEK MOORE RANCH	ISR	SATELLITES/EXPANSIONS, ACLS/RESTORATION APPROVALS, WELLFIELD PACKAGES, INCREASE IN ANNUAL PRODUCTION RATE, LICENSE RENEWAL
URANERZ ENERGY CORP.	HANK & NICHOLS RANCH	ISR	SATELLITES/EXPANSIONS, ACLS/RESTORATION APPROVALS, WELLFIELD PACKAGES, INCREASE IN ANNUAL PRODUCTION RATE, LICENSE RENEWAL
UR-ENERGY/LOST CREEK, LLC	LOST CREEK SHIRLEY BASIN	ISR ISR (PLANNED)	SATELLITE EXPANSIONS, ACLS/RESTORATION APPROVALS, WELLFIELD PACKAGES, INCREASE IN ANNUAL PRODUCTION RATE, LICENSE RENEWAL
KENNECOTT URANIUM COMPANY	SWEETWATER URANIUM MILL	CONVENTIONAL URANIUM MILL	FACILITY RESTART, LICENSE AMENDMENTS, LICENSE RENEWAL
POWER RESOURCES, INC. D/B/A CAMECO RESOURCES	SMITH RANCH-HIGHLAND	ISR	SATELLITE EXPANSIONS, ACLS/RESTORATION APPROVALS, WELLFIELD PACKAGES, INCREASE IN ANNUAL PRODUCTION RATE, LICENSE RENEWAL
AUC, LLC	RENO CREEK	ISR	SATELLITE EXPANSIONS, ACLS/RESTORATION APPROVALS, WELLFIELD PACKAGES, INCREASE IN ANNUAL PRODUCTION RATE
STRATA ENERGY, INC.	ROSS	ISR	SATELLITE EXPANSIONS, ACLS/RESTORATION APPROVALS, WELLFIELD PACKAGES, INCREASE IN ANNUAL PRODUCTION RATE, LICENSE RENEWAL
ENERGY FUELS	SHEEP MOUNTAIN	HEAP LEACH	LICENSE AMENDMENTS
ENERGY FUELS	GAS HILLS	HEAP LEACH	LICENSE AMENDMENTS

[201] NRC's LOI database also contains two (2) additional potential license applications during the proposed five (5) year Agreement State process from two companies identified in Table 8 above. However, over the past twelve (12) month period, there has been no additional information made available on this database regarding updates to license application schedules and, thus, they are omitted from budget and staffing below.

B. THE TRANSITION PROCESS

Using the Tables in previous Sections regarding existing licensees, projected license applications and other licensing actions that may be before NRC during the transition phase of the Agreement State process, this Section identifies procedures for transitioning to Agreement State status and identifies potential paths forward for transition of existing licenses and pending licensing actions to the State from NRC. Product deliverables have been identified in the feasibility study's Scope of Work and are intended to be completed in the 8-12 months immediately preceding completion of the Agreement State process. It is likely that the majority of the work necessary to complete these product deliverables will be nothing more than updates to Tables and Charts in this study. Thus, the State can conserve resources on completion of this work.

1. THE TRANSITION PROCESS: WHICH APPROACH MAKES SENSE?

The transition process typically begins with a complete evaluation of the Agreement State process immediately preceding execution of the Section 274 Agreement by the Governor and the NRC Chairman. At this point in the process, the State should have completed all of the action items from Category 1 and will have in place the following mandatory items: (1) empowering statutes for Governor's execution of the Agreement and to develop an Agreement State program; (2) completion of rulemaking process including NRC comments proposed implementing regulations and finalization of such regulations; (3) NRC-approved adequate staffing with necessary training in place; and (4) the chosen governmental structure for the Agreement State program. Other action items also will be completed at this point such as the Category 1-recommended public participation. Further, approaches on adoption of NRC guidance and policy can be finalized by the State at this point.

Most importantly, the State should have consulted with and obtained concurrence on a transition process for existing licenses to WDEQ equivalent licenses/permits and agreed upon a process for review of pending license applications with NRC. Development of this policy is critical to an efficient and effective transition process. With respect to the former, transition to WDEQ-equivalent licenses/permits is relatively straightforward. The State is free to accept the existing licenses "as is" and proceed with future license amendments or renewal in a manner consistent with its Agreement State program. By engaging in this process, the State can make the transition process for existing licenses simple and avoid any potential compatibility issues or the expenditure of resources for unnecessary regulatory actions. For example, when the State of Utah obtained Agreement State authority over source material recovery in 2004, it accepted the existing license for then-IUSA's, now Energy Fuels Resources', White Mesa Mill verbatim and then proceeded to address all future licensing actions in accordance with its Agreement State program.

The State is also free to amend existing licenses to the extent it is necessary to transition site-specific license conditions to comport with Agreement State program requirements.

Typically, these amendments are administrative in nature by cross-referencing from NRC regulations or license conditions to any new Agreement State program format for its regulations or license conditions. More sweeping amendments such as substantively altering license conditions are not recommended at least initially as they could change license conditions that already have been deemed adequate to satisfy NRC regulations which, by implication, satisfy Agreement State adequacy and compatibility requirements. In the event that amendments are to be made that extend beyond essentially administrative actions the State can address such items for existing licenses in the next license renewal application.

The transition process for pending licensing actions provides different administrative challenges. The two best available options for the State to consider when developing a proposed transition policy are (1) transferring all existing review documents and conclusions on pending licensing actions directly to the State immediately upon execution of the Section 274 Agreement or (2) allowing NRC to complete the review process for pending licensing actions while the State receives and reviews any new licensing actions submitted either directly to the State or to NRC prior to its conduct of detailed technical review.

The former transition process has both positive and negative characteristics. On the positive side, when all pending licensing actions and their reviews are transferred to the State, the Agreement State program effectively has taken over the process and such pending licensing actions can be reviewed under the new program. This ensures that a newly issued operating license or license amendment will be in accord with Agreement State program requirements and will provide adequate, representative examples for IMPEP review by NRC. On the negative side, it is impossible to predict until the very end of the Agreement State process where all pending licensing actions are in the review process. The following Table shows examples of where pending licensing actions may be in the review process and approximate timeframes for final agency action:

TABLE 11: NRC REVIEW PROCESS IN PHASES (PROJECTED)

LICENSING REVIEW PHASE	WORK COMPLETED	ESTIMATED FINAL AGENCY ACTION TIMEFRAME
ACCEPTANCE REVIEW	DETERMINATION OF ADEQUACY TO PROCEED TO DETAILED REVIEW	60-90 DAYS FROM SUBMISSION
RAI PHASE	ISSUANCE OF QUESTIONS FOR COMPLETION OF DETAILED REVIEW	185-215 DAYS FROM DOCKETING 30 DAY ACCEPTANCE REVIEW PERIOD FOR RAI RESPONSES
FINAL DRAFT SER	PRELIMINARY FINDINGS OF SAFETY REVIEW	180 DAYS FROM RECEIVING AND ACCEPTING RAI RESPONSES
DRAFT LICENSE CONDITIONS	PRELIMINARY LICENSE CONDITIONS	120-150 DAYS AFTER ACCEPTING RAI RESPONSES
DRAFT PART 51 DOCUMENT (EIS, SEIS, EA)	PRELIMINARY FINDINGS OF PART 51 REVIEW (IN EIS & SEIS CASES, PENDING PUBLIC COMMENT)	240 DAYS AFTER ACCEPTING RAI RESPONSES
FINAL SER	FINAL SAFETY REVIEW FINDINGS	PRIOR TO ISSUANCE OF PART 51 DOCUMENT
FINAL LICENSE CONDITIONS	FINAL CONDITIONS ATTACHED TO LICENSE APPLICATION IF APPROVED	30-45 DAYS BEFORE LICENSING
FINAL PART 51 DOCUMENT	FINAL ENVIRONMENTAL REVIEW FINDINGS	30-45 DAYS BEFORE LICENSE ISSUANCE
LICENSE ISSUED	FINAL AGENCY ACTION	24-30 MONTHS FROM DOCKETING

2. TRANSITION OPTIONS AND EVALUATION

i. IMMEDIATE TRANSITION

Immediate transition of these pending licensing actions to the State potentially could result in a series of delays and duplicative reviews, because State regulators would be required to re-assess the work already completed by NRC Staff. Depending on the phase of the review, the State may have to re-review RAIs or draft license conditions that might not comport with the Agreement State program. Further, for mandatory NRC processes such as the NHPA Section 106 process, immediate transition may result in inconsistencies in these processes, especially when States either do not subscribe to such processes or have related processes that are inconsistent with NRC's. Additionally, for site-specific environmental reviews, the documentation prepared by NRC Staff for new operating licenses (EIS for new conventional mills/heap leach facilities and SEIS for ISR facilities) may be inconsistent with WDEQ's adopted environmental review requirements. In that case, additional time and resources will need to be expended.

ii. PHASED TRANSITION

The option of transition of existing licenses and pending licensing actions not yet in detailed technical review at NRC and allowing NRC to complete review of remaining pending licensing actions in detailed review also has positive and negative aspects. On the positive side, by following this process, the State will be avoiding the potential inconsistencies and unnecessarily duplicative licensing reviews. However, on the negative side, WDEQ likely will have to expend resources to integrate itself into NRC Staff's review process to understand the analyses being performed and the approvals being issued. Further, the State will be required to expend additional time and resources transitioning newly issued licenses to WDEQ-equivalent licenses/permits or integrating approved license amendments or renewals into existing and already transferred licenses. It is recommended that the State consult extensively with NRC Staff during the Agreement State process to determine which approach is more practicable and, if necessary, explore potential alternatives.

Prior to engaging in transition, the State also should assess the comparative analyses performed under the recommended action items in Category 1 and 2 for promulgated Agreement State regulations and whether there are any contradictory or duplicative regulations in WDEQ Land Quality Division (LQD) or Water Quality Division (WQD). For example, since the State has SDWA primacy for a UIC program, WQD has regulations pertaining directly to groundwater restoration. However, NRC has interpreted the AEA to provide it with authority over groundwater restoration when dealing with AEA operations such as ISR. In the promulgated Agreement State regulations, the State should evaluate whether and/or how WQD regulations comport with the Agreement State program regulations. This analysis should be conducted for all promulgated Agreement State regulations.

D. SUGGESTED APPROACH FOR CATEGORY 2

1. DEVELOP A PROPOSED TRANSITION POLICY FOR EXISTING LICENSES AND PENDING LICENSING ACTIONS

As stated above, Recommendation 1 is to develop a proposed transition policy for discussion with NRC. Frequent interaction with NRC Staff will be necessary to obtain concurrence on the proposed transition process, so that transition happens smoothly and without any unnecessary delays, which always results in unnecessary expenditure of time and resources. In furtherance of this policy, the State should consider developing a set of meetings with existing licensees and license applicants, potentially with NRC Staff present, to explain the State's policy and how transition will be effected.

2. DEVELOP NEW LEGISLATION AND/OR REGULATIONS FOR INCONSISTENCIES OR CONTRADICTORY REQUIREMENTS/EVALUATE FEDERAL RULEMAKING CHANGES

After an evaluation of the promulgated Agreement State regulations, the State should determine whether new legislation will be required and whether any new rulemaking proceedings will be necessary to revise or eliminate any inconsistencies or contradictory regulations. Further, the assessment should evaluate whether the current administrative structure of WDEQ/LQD and WQD needs restructuring and whether new legislation is needed for this. With respect to regulatory inconsistencies or contradictions, NRC's input should be solicited.

3. UPDATE LICENSEE AND LICENSE APPLICANT LISTS FROM CATEGORY 1

Recommendation 3 suggests that the State update the Category 1 lists of existing licenses and pending licensing actions prior to transition, so the State will better understand the level of resources necessary to commence operation of an Agreement State program. There is considerable flexibility in this aspect because, for example, the State of Idaho, its Agreement was executed several months before it became effective. Thus, the State has sufficient advance time to assess resources. It is important to do this because as the uranium market and proposed licensing actions change, the requisite budget and staffing requirements will change over the proposed five (5) year timeframe. Thus, the lists in Category 1 will change as proposed actions are approved by NRC, under NRC review, delayed in submission or not proposed at all.

4. FINALIZE GUIDANCE POLICY AND FEE STRUCTURE APPROACH

The Category 1 recommendation on adoption of NRC guidance and policy should be finalized prior to transition. By this time, the State should have obtained NRC Staff's concurrence on the policy and should be prepared to discuss any additional changes with NRC. Upon finalization of this adoption policy, the State should develop a database similar to that of

NRC so that licensees, license applicants, and interested stakeholders can easily find and use any incorporated guidance.

The following chart details the budget and staffing requirements for each of these recommendations:

TABLE 12: PRODUCT DELIVERABLE CHART FOR CATEGORY 2

PRODUCT DELIVERABLE	DESCRIPTION
DEVELOP PROPOSED TRANSITION POLICY	NEGOTIATE AND DEVELOP DRAFT TRANSITION POLICY DOCUMENT WITH NRC STAFF ASSISTANCE
DEVELOP NEW LEGISLATION AND/OR REGULATIONS FOR INCONSISTENCIES/EVALUATE RULEMAKING CHANGES	ADDRESS EXISTING OR DRAFT NEW LEGISLATION AND REGULATION DOCUMENTS FOR LEGISLATIVE CONSIDERATION AND RULEMAKING EVALUATION
UPDATE LICENSEE & LICENSE APPLICANT LISTS FROM CATEGORY 1	REVIEW NRC ADAMS DATABASE AND SOLICIT LICENSEE INPUT ON UPDATES TO PROJECTED LICENSING ACTION SCHEDULES
FINALIZE GUIDANCE ADOPTION, PUBLIC PARTICIPATION, AND FEE STRUCTURE APPROACHES	COMPLETE ALL DOCUMENTATION AND INTEGRATE INTO PROPOSED REGULATIONS AND/OR POLICIES WHERE APPROPRIATE

III. CATEGORY 3: MAINTENANCE AND OPERATION OF AGREEMENT STATE STATUS

A. ASSESSMENT OF PROCESS TO RELINQUISH ALL OR PART OF AGREEMENT STATE STATUS

As a matter of law under the AEA (Section 274(j)) and Commission regulations, States that pursue, obtain, and operate an Agreement State program are permitted to relinquish all or part of the regulatory authority granted under a Section 274 Agreement. Since Agreements can cover one or more AEA materials and/or processes, partial relinquishment of an Agreement is permissible. There are examples available that show how a Section 274 Agreement can be terminated by NRC and regulatory authority over the relevant AEA materials and operations can be restored to NRC. These examples are discussed below:

1. PROCESS OF RELINQUISHING PARTIAL OR COMPLETE AGREEMENT STATE AUTHORITY

Prior to describing some examples of relinquishing (Idaho and Georgia), failure to accept newly granted authority (New Mexico) or having all or part of its program put on probationary status (Georgia), it is important to describe NRC's process for relinquishing Agreement State authority. As a general matter, a Section 274 Agreement can be terminated either upon the request of the Agreement State or upon the initiative of NRC. Reasons for these types of actions range from a State lacking adequate resources to operate the program to continued violation of compatibility and adequacy requirements or failure to maintain the Agreement State program in accordance with NRC requirements. For purposes of this feasibility study, the process for terminating an Agreement, regardless of cause, is what is relevant.

NRC's procedures for terminating a Section 274 Agreement can be found in its guidance document labeled SA-115 entitled *Termination of a Section 274b Agreement*.[202] More specifically, this guidance states that:

> "Section 274j of the [Atomic Energy] Act, as amended, allows the Commission, upon its own initiative after reasonable notice and opportunity for hearing to the State, or upon request of the Governor of such State, to terminate its Agreement with a State if such termination is required to protect the public health and safety, or if the State has not complied with one or more of the requirements of Section 274 of the Act (e.g., is found to be not compatible with the Commission's program)."[203]

While a significant portion of the SA-115 guidance refers to policies and procedures associated with terminating an Agreement upon the Commission's initiative, for purposes of this study, Thompson & Pugsley, PLLC will discuss the process associated with termination upon the

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[202] United States Nuclear Regulatory Commission, *SA-115, Termination of a Section 274b Agreement*, September 25, 2007).
[203] *Id.*

State's initiative. As is shown below, the internal NRC procedures associated with terminating a Section 274 Agreement are not too dissimilar from those associated with initiating and completing the Agreement State process.

In Section V of SA-115, NRC states that "[a]t the request of the Governor, the NRC may terminate all or part of its Agreement with a State and reassert its authority." Based on the guidance, the first step in terminating an Agreement with NRC is for the Governor to prepare and send a letter to the NRC Chairman stating the State's intention to relinquish all or part of its Agreement and the reasons therefore. Upon receipt of this letter, NRC's Management Review Board (MRB), which is tasked with considering all aspects of Agreement State program review and with advising the Commission whether a program should be terminated, will process the State's request and consider each and every reason noted by the Governor as to why the Agreement should be terminated in whole or part. Upon final processing of this request, the MRB discusses its findings with the Executive Director for Operations (EDO) and, if a recommendation is warranted, such recommendation will be made to the Commission to terminate.

If the recommendation to the Commission is to initiate termination proceedings for the State's Agreement, then FSME will take the lead in the development of a Commission paper wherein NRC Staff will inform the Commission of MRB's findings and recommendations as well as other relevant items including, but not limited to, potential resource implications for the agency to reassert regulatory authority. A sample Commission paper and accompanying Federal Register notice is attached to this study.[204] Should the Commission decide to terminate the Agreement, a second Commission paper will be prepared. SA-115, Appendix C is a sample Commission paper wherein the State requests termination. Like the Agreement State process described above in Category 1, FSME will draft and submit a press release, letters to appropriate Congressional committees and delegations, as well as relevant federal agencies, State licensees, and Agreement and non-Agreement States.

The remainder of the termination process is relatively straightforward when the State requests such termination. Section 274(j)(1) of the AEA does not require that the Commission grant the State an opportunity for a hearing on the proposed termination. This makes sense because the only potentially interested party in such a proceeding will be the State and, in this instance, there will no issue of law, regulation or fact. Without the need for a hearing, the Commission then proceeds to make a final decision on the State's request.

During the time period from when the Governor formally requests termination of the State's Agreement, SA-115 directs NRC and the State to coordinate regulatory activities including items such as inspections and licensing action reviews so that public health and safety is protected. According to SA-115, "FSME will coordinate with the State and Region as to any technical assistance necessary to ensure this continued protection [of public health and safety]." Upon final determination to terminate, NRC prepares and issues letters to relevant

[204] *Id.* at Appendix A.

federal agencies and all Agreement and non-Agreement States advising them of the date of the Agreement's termination.

With respect to interactions with the State post-termination, NRC's RSAO will direct the State to provide it with a complete listing of all general and specific licenses handled by the Agreement State program at the time of termination. Upon receipt of this list, NRC will draft and issue letters to each licensee informing them of the Agreement's termination, reassertion of the Commission's authority, and other information as necessary. Upon identifying these licensees, the Regional Office (Region IV in this case), OGC, and Office of the Chief Financial Officer (OCFO) will organize and hold a meeting with State licensees to explain the transition back to NRC authority, including reinstatement of NRC's fee program. After completion of all these items, the State's Agreement effectively can be considered terminated. Lastly, SA-115 specifically states that any State that relinquishes all or part of a Section 274 Agreement is permitted to re-apply at a later date to reacquire regulatory authority from the Commission. The guidance states that the re-applying State will be treated as any other State seeking regulatory authority from the Commission.

2. REPRESENTATIVE AGREEMENT STATE CASE STUDIES

In order to properly illustrate the potential for relinquishing all or part of Agreement State status in the event the State of Wyoming elects to proceed towards such status, this feasibility study is offering cursory discussions of several Agreement States that have experienced part of this process. These examples are discussed below:

i. STATE OF IDAHO

Effective October 1, 1968, the State of Idaho executed a Section 274 Agreement with NRC to obtain regulatory authority over byproduct material, source material, and special nuclear material in quantities not sufficient to form a critical mass.[205] At the time this Agreement was executed, Congress had not yet enacted UMTRCA, which created the separate class of AEA material known as 11e.(2) byproduct material generated by the AEA-licensed operation known as source material recovery. To the best of Thompson and Pugsley, PLLC's knowledge, Idaho never attempted to obtain regulatory authority over 11e.(2) byproduct material and source material recovery after passage of UMTRCA in 1978.

Idaho operated this program from October 1, 1968, until then Governor Cecil Andrus submitted a letter to NRC requesting that the agency resume regulatory authority over the aforementioned AEA materials. The Federal Register notice associated with this letter notes that the Governor requested Agreement termination "because of severe budget constraints, as well as other compelling reasons."[206] This notice also contained several pieces of information

[205] *See* Exhibit 2.
[206] *See* Exhibit 83.

regarding the transition of regulatory authority back to NRC, including a directive that any entities seeking licenses for these AEA materials apply to the appropriate NRC Regional office. According to a 1993 GAO Testimonial record entitled *NRC's Nuclear Materials Program Needs Improvement to Protect Public Health and Safety*, in as early as 1987, Idaho began to experience problems due to inadequate staffing and resources that resulted in overdue inspections and the inability to appoint additional personnel for regulation of AEA materials. This appears to have prompted the Governor's action to terminate the State's Agreement with NRC.

Essentially, Idaho relinquished its Agreement State program due to a lack of resources and determined that it would be unable to continue operating the Agreement State program. It is unclear as to whether this decision was reached after discussions with NRC or unilaterally by the State; however, for purposes of this study, the critical element is the process by which the State voluntarily relinquished its Agreement State program.

ii. <u>STATE OF NEW MEXICO</u>

Effective May 1, 1974, the State of New Mexico entered into a Section 274 Agreement similar to that entered into by Idaho. This Agreement sought regulatory authority over byproduct material, source material, and special nuclear material in quantities not sufficient to form a critical mass. As with Idaho, New Mexico's Agreement was executed before Congress' passage of UMTRCA and the creation of 11e.(2) byproduct material generated by AEA- licensed source material recovery as AEA materials and operations. However, unlike Idaho, New Mexico continued to regulate uranium mills within its boundary until UMTRCA's passage. Thus, the term "byproduct material" in the 1974 Agreement did not explicitly or implicitly include regulatory authority over 11e.(2) byproduct material.

Due to this factor and up until the Governor's request, New Mexico continued to regulate the uranium mills in its jurisdiction under the existing 1974 Agreement. However, upon receipt of the Governor's request to relinquish this authority, the process as articulated in SA-115 commenced. A 1986 Commission decision on the Governor's request to relinquish regulatory authority over 11e.(2) byproduct material and source material recovery stated, "its Agreement does not include a needed amendment to cover the continued regulation by the State of the byproduct material (as defined in Section 11e.(2) of the [Atomic Energy] Act) produced by the extraction or concentration of source material from source material ore. *For this and other reasons, the Governor of the State has advised the Commission that the State is no longer in a position to administer that portion of its Agreement State program and has requested its return to Commission jurisdiction.*"[207]

[207] After the passage of UMTRCA and the creation of a separate regulatory program for "source material recovery" and "11e.(2) byproduct material," Agreement States currently regulating source material recovery facilities were given an opportunity to apply for and obtain an amendment to its then-current Section 274 Agreement to add this program. As shown above, New Mexico did not choose to obtain this amendment.

iii. STATE OF GEORGIA

The State of Georgia is a recent example of how NRC can put an Agreement State on "probation" and then how the State can voluntarily relinquish part of its Agreement State authority. Recently, NRC placed Georgia's Agreement State program on probation citing a 2008 MRB review that placed Georgia's program on a condition of "Monitoring" due to the program's deficiencies.

After its recent IMPEP review, NRC found Georgia's program to be "compatible" within the scope of Agreement State criteria, but a failure in two "performance indicators:" (1) technical quality of inspections and (2) technical quality of incident and allegation activities resulted in the need for the program to be put on "probation." The program also was found to be "satisfactory" but needing improvement for three (3) performance indicators: (1) technical staffing and training, (2) status of materials inspection program, and (3) technical quality of licensing actions. As a result of this, the MRB scheduled a January, 2014 IMPEP review to evaluate whether the State adequately addressed the "performance indicators" identified above. Should the State adequately address these indicators, the MRB could recommend that the "probation" status be lifted.

After the issuance of this finding, Georgia determined that it would voluntarily relinquish part of its Agreement State program. On August 22, 2013, NRC issued a Federal Register notice announcing that the portion of Georgia's Agreement State program devoted to "evaluating and approving sealed sources and devices" was to be returned to NRC and that the agency would re-assume regulatory authority over such actions. The Notice also stated that the State had voluntarily requested that this authority be returned to NRC by a letter from the Governor dated June 5, 2013. This letter indicated that the reason for this request was that "it has become increasingly challenging for Georgia to recruit and retain the personnel necessary to perform the specialized…activities…." Thus, it appears that the availability of sufficient skilled personnel played a large role in the State's decision.

As can be demonstrated by the three (3) examples above, one where the entire Section 274 Agreement was returned to NRC (Idaho), one where the State relinquished a small portion of its Agreement State status (Georgia), and one where newly created authority was never accepted (source material recovery and 11e.(2) byproduct material) was left with NRC (New Mexico), relinquishing Agreement State authority upon the initiative of the State is a well-understood and straight-forward process.

B. MAINTENANCE AND OPERATION OF AGREEMENT STATE STATUS

1. URANIUM MARKET OVERVIEW

To the extent practicable, this feasibility study will discuss forecasts of uranium supply and demand over the next ten (10) years in an effort to assist in a determination whether or not there will be sufficient source material recovery in the State of Wyoming over that period

to ensure that adequate funding through a fee program will be available to sustain a proposed Agreement State program. Over the past decade, the uranium market has been volatile and has seen both spot market and long-term contract prices fluctuate based on an initially depressed market, followed by a significant upturn, and a recent downturn but with a positive outlook on the horizon. This Section will attempt to characterize the recent ten (10) year timeframe of the uranium market and describe potential future conditions that may contribute to an increase or decrease in supply and commodity price.

2. MARKET CONDITIONS

i. MARKET CONDITIONS (PRE-2005)

From 1973 to 1975, the price of uranium approximately tripled for a variety of reasons including the forecast of a uranium shortfall and growing demand for new nuclear power reactors. But, due to the incident at Three Mile Island in the Commonwealth of Pennsylvania in 1979, subsequent cancellation of nuclear power reactor orders, an halts in construction of new nuclear power reactor units, demand for uranium in the United States was limited to existing power reactors and other nuclear facilities such as naval vessels and submarines. On the international side, a similar downturn in the demand for uranium worldwide was manifested and utilities maintained large stockpiles of uranium from previous purchases.

Government agreements and programs also have contributed negatively to uranium prices by generally increasing available supplies of uranium. Domestically, DOE had (and has) a large uranium inventory that when released into the market becomes a negative influence on uranium prices. DOE has seen this inventory as a source of value to fund enrichment decommissioning activities. Theoretically, DOE is required by DOE Order 410.2 entitled *Management of Nuclear Materials* to assess and avoid potential negative impacts of a transfer/sale of any portion of this inventory on the domestic uranium recovery industry. Over time and despite uranium industry arguments to the contrary, DOE has transferred significant portions of this inventory in the form of natural or low enriched uranium (LEU) that has significantly and negatively influenced uranium prices.

In addition, President Clinton implemented a program in 1993 called the Megatons to Megawatts.[208] This program was an agreement between the United States and Russia to foster non-proliferation by allowing for the transfer of Russian high enriched uranium (HEU) from nuclear weapons to a United States-based facility for down-blending into LEU for use in nuclear power reactors or other facilities requiring nuclear fuel. This agreement had a goal of eliminating approximately 500 metric tons of Russian weapons-grade HEU by the end of its term. As of December of 2012, approximately 472.5 metric tons of this HEU had been eliminated and downblended into LEU for nuclear fuel. Basically electricity generated from this program has supplied 1 in 10 American homes with electricity. To understand the impact of this on the uranium market, from 1993 to 2004, the program downblended approximately five

[208] *See* http://en.wikipedia.org/wiki/Megatons_to_Megawatts_Program.

hundred (500) metric tons of HEU for LEU nuclear fuel, which has supplied 13% of the world's or 45% of the United States' annual uranium needs.

With these negative influences present in the marketplace and the lack of new nuclear power plant construction, in 2004, the spot market price of uranium stood at $7.50 per pound. To put this perspective, in 2004, a pound of uranium generated from conventional uranium milling operations cost approximately $40-50 per pound to recover. A pound of natural uranium generated from ISR operations cost approximately $25-30 per pound to recover. As can be seen from these scenarios, the uranium market in 2004 was not favorable to the recovery of uranium. Indeed, according to the Energy Information Administration (EIA), United States-based facilities generated approximately two (2) million pounds of uranium. Given that there were 104 operating nuclear power reactors in the United States at that time and they require 500,000 pounds of natural uranium equivalent per year to re-load, domestic uranium production re-fueled only four (4) of these 104 reactors.

ii. MARKET CONDITIONS (2005-2013)

In 2005, the interest in seeking new sources of electricity from nuclear power began to grow. The demand for new nuclear power reactor units began to rise fueled by increased interest from overseas markets, most notably India and China with growing populations and significant increases in demand for efficient generation of electricity. Indeed, on an international basis, there have been announcements for the construction of approximately 60 new nuclear power reactor units in thirteen (13) different countries, including the four (4) already-licensed new reactor units in the United States and over 100 proposed reactors units in China and India alone.[209] This potential increase in demand coincided with a potential shortfall of uranium supplies for nuclear utilities and a lack of available primary production. Accordingly, at this point, uranium prices slowly began to rise. From 2005 to 2006, the spot market price of uranium rose from approximately $10 per pound to $20 per pound and continued to rise until it reached a thirty year high of approximately $135 per pound in 2007. As a result, agencies like BLM experienced a significant increase in mining claims for uranium on public lands and private claims also significantly increased. Starting in 2005, potential and current domestic uranium producers began to file letters of intent (LOI) with NRC indicating that they would be submitting license applications for new operating licenses (Uranium One Americas/Moore Ranch, Uranerz Energy Corp/Hank & Nichols Ranch, and Ur-Energy-Lost Creek ISR, LLC/Lost Creek). This increase in pressure on agency resources led NRC to request Commission authorization for development of a generic environmental impact statement for ISR facilities, given industry's indication that ISR would be the primary source of domestic uranium production. NRC Staff's request was granted and the ISR GEIS (NUREG-1910) was generated. As noted in Tables 6 & 7 above, since the ISR GEIS (NUREG-1910) development approximately five (5) new operating

[209] *See http://www.world-nuclear.org/info/Current-and-Future-Generation/Plans-For-New-Reactors-Worldwide/.*

licenses have been applied for in the State of Wyoming alone (three (3) issued) and eight (8) new operating licenses in total.

Even with this increased interest in licensing and constructing new uranium recovery facilities, the uranium price has remained volatile. After reaching a spot market price high of $135 per pound in 2007 noted above, the price of uranium began to stabilize at approximately $100 per pound. Then, in 2010, the nuclear incident at Japan's Fukishima Dai'ichi nuclear facility occurred due to failure of secondary systems to respond to the impact of a tsunami that struck the nuclear plant facilities. This incident sparked a sharp downturn of uranium prices to $50 per pound as of June of 2012. From June, 2012 to the present day, the price of uranium rests at $38.25 per pound.

iii. MARKET CONDITIONS (2013-2023)

Prior to engaging in a discussion of potential future prices in the uranium commodity market, it is important to note that statements made in this Section are speculative and are relying solely on publicly available information. As all commodity markets can be unpredictable, this discussion will rely on logical conclusions from the aforementioned information.

Despite some recent decisions by industry members to cease further wellfield development, to not construct the entirety of their facility or to enter into toll milling agreements with existing producers, license applications for new operating licenses and for additional satellite facilities added onto existing operating licenses have continued to be submitted to NRC and its Agreement States for approval. As stated in Table 7 above, industry members now have several applications before NRC and Agreement States for new operating licenses or satellite ISR facilities. This appears to indicate that industry members believe that uranium prices will rise to a level where additional production can be justified.

Further, market analysts around the globe have consistently been estimating that the price of uranium will rise significantly from the current low of $38.25 per pound. Several factors are contributing to this analysis, most notably the lapsing of the aforementioned Megatons to Megawatts program at the end of 2013. As stated above, the goal of the program was to downblend approximately 500 metric tons of Russian weapons-grade HEU to LEU for nuclear fuel. The program will meet this goal at the end of 2013 and the agreement will lapse. Indications are that the agreement will not be renewed for an additional term likely based on Russia's desire to dispense with the remaining uranium at its own discretion. The lapsing of this agreement potentially will result in a significant increase in demand for natural uranium in the next decade to fill that gap. Added to this, the increased interest in constructing new nuclear power reactors both domestic and international, the diminishing uranium stockpiles at existing nuclear utilities and delayed development of primary uranium production capacity worldwide

has caused market analysts to believe that the uranium price will increase to approximately $70-80 per pound by 2015.[210]

Should the uranium price sustain itself at approximately $70 dollars per pound, it is likely that the State will see an increase in uranium production by the time it would achieve Agreement State status in approximately 2019. Based on current operations, operating licenses awaiting construction and production, pending license applications before NRC, and LOI-indicated future license applications, it is likely that a properly implemented fee program can sustain a Wyoming Agreement State program. However, the uranium market has been unpredictable in the past and it is unclear whether or not unforeseen market or other forces will contribute either positively or negatively to the uranium price. Thus, it is the recommendation of this feasibility study that the State authorize continued monitoring of market conditions and foster interaction with industry and the State regarding the status of the market both domestically and internationally on the following items: (1) proposed new nuclear reactor facilities; (2) status of the Megatons to Megawatts program; (3) DOE inventory actions on an annual basis; and (4) status of license applications before NRC by company and type.

3. INTERNATIONAL EXAMPLES OF FUTURE PRODUCTION AND DELAYS

A contributing factor to speculating what the uranium market conditions will be for the five (5) year period for becoming an Agreement State and the five (5) years after the process is complete is the progress made on current uranium production projects worldwide. Every uranium project that is currently projected to come online in this coming ten (10) year timeframe faces a wide array of challenges depending on where such projects are on their critical path. For example, projects that have not yet entered their respective licensing processes face challenges from regulatory authorities regarding the length and resource requirements of the processes themselves depending on the country where the project is located. In the United States, there are multiple regulatory approvals required for different types of uranium recovery projects, each of which take varying time periods. Further, smaller companies with initial projects face challenges from a resource perspective because significant expenditures are required to prepare and submit an application and to pay the fees associated with their review. Projects that are in the licensing process or that have received the requisite regulatory approvals face capital investment challenges for construction and initiation of production operations. In an ever-tightening economy and with the current spot-market price of uranium at approximately $35 per pound, many projects face significant investment challenges. Other projects that have proceeded through the construction phase also face challenges regarding initiation of production operations such as personnel shortages, mechanical failures, and other natural or anthropogenic issues (e.g., mine flooding and changes in political governance).

[210] *See* Exhibit 85, which is a package of financial articles providing a sampling of current press on status and future of the uranium commodity market.

While there are many projects worldwide that are attempting to come online to add to future uranium production, this study will address two representative examples that illustrate the potential for delays. The first example is Cameco's Cigar Lake project in the Athabasca Basin in Canada. The Cigar Lake project is identified as the largest *undeveloped* high-grade uranium deposit in the world by Wikipedia. Cameco began full-scale mine construction at Cigar Lake in 2005 and experienced significant inflow of water in 2006. This resulted in a delay in order to de-water the mine and, after the initial inflow was addressed, a second inflow of water occurred in 2008 while de-watering was being attempted. Completion of the de-watering effort was accomplished in 2010 and Cameco has proposed a 2014 startup date. However, due to the initial flooding and subsequent efforts to de-water the mine, production has been delayed for approximately seven (7) to (8) years.

The second example is BHP Billiton's Olympic Dam project in Australia. The Olympic Dam deposit is known as the largest single uranium deposit in the world based on the amount of uranium in the deposit and not by grade. It was purchased by BHP Billiton in 2005 from Western Mining Corporation and began production of uranium. In 2008, BHP Billiton announced the completion of a pre-feasibility study regarding potential expansion of the mine's operations with the potential for initial startup in 2013. BHP Billiton received government approval for the expansion in 2011; however, considerable political opposition was launched against the expansion and, in 2012, BHP Billiton announced it was suspending such expansion pending review of new technology for the mine. Thus, expansion was delayed until an unknown time in the future.

Delays at uranium mining/recovery facilities can experience delays for any number of reasons. The aforementioned examples are but a small part of the range of possible delays. This is one of the reasons that the current uranium commodity market remains uncertain at this time.

C. SUGGESTED APPROACH FOR CATEGORY 3:

The following recommendations are offered to the State as items that should be done during the first phase of the Agreement State process, so that the State can properly evaluate how the Agreement State program will proceed after transition and whether it would be feasible to maintain the program over time:

1. MONITOR THE 2014 IMPEP REVIEW OF THE STATE OF GEORGIA

It is recommended that the State continue to monitor the progress of the State of Georgia through its scheduled 2014 IMPEP review to obtain additional information to supplement the discussion in Section III(A)(2)(iii). This is merely an information-gathering exercise that will supplement this study's analysis. It can be completed simply by monitoring NRC's Agreement State program's database and seeing what the outcome is of the review.

2. RE-ASSESS URANIUM MARKET CONDITIONS IN 2014

The State should consult with appropriate analysts regarding uranium market conditions in the third quarter of 2014. The timing of this assessment is appropriate, because the Megatons to Megawatts programs will have terminated six (6) to seven (7) months prior to the assessment allowing for the uranium market to react appropriately and new projects may come online prior to that date which may influence the market as well. Further, it is likely that DOE will render another evaluation of its existing inventories and will make a decision on whether to release more uranium into the market. Again, this recommendation does not require significant resource expenditure.

TABLE 13: BUDGET AND STAFFING PROJECTIONS FOR INTERIM STUDY ITEMS

PRODUCT DELIVERABLE	DESCRIPTION	PERSONNEL	APPROXIMATE/ESTIMATED COST
MONITOR STATE OF GEORGIA IMPEP REVIEW	EXECUTIVE SUMMARY LEVEL REPORT	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)	
URANIUM MARKET UPDATE	EXECUTIVE SUMMARY LEVEL REPORT	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)	
WDEQ STAFFING PLAN	ADDRESS THE FOLLOWING: (1): EXISTING WDEQ STAFF AND ROLE IN AGREEMENT STATE PROGRAM; (2): NEW STAFF FOR PROGRAM; (3): EQUIPMENT AND OTHER MATERIAL/SUPPORT NEEDS; (4): IDENTIFICATION OF APPROPRIATE STATE AGENCY STRUCTURE FOR AGREEMENT STATE PROGRAM	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)	

NRC/WDEQ REGULATORY CROSS-REFERENCE CHART & PRELIMINARY FEE STRUCTURE	**ASSESS WHAT WDEQ REGULATIONS CAN BE USED IN AGREEMENT STATE PROGRAM AND ADDITIONAL REGULATIONS NEEDED**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
OUTLINE OF PUBLIC PARTICIPATION/RULEMAKING PROCEDURES	**INITIAL DRAFT OF RULEMAKING AND OTHER PUBLIC INVOLVEMENT PROCESSES**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
OUTLINE OF GUIDANCE ADOPTION POLICY	**ASSESS VIABILITY OF NRC GUIDANCE DOCUMENTS FOR STATE ADOPTION AND POTENTIAL USE OF EXISTING WDEQ GUIDANCE**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
ASSESSMENT OF MOU APPROACH AND EXISTING STATE MOUS	**DETERMINE WHETHER MOUs OR OTHER INFORMAL RELATIONSHIPS CAN ASSURE ADEQUATE STAFF EXPERTISE**	**1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S)**	
TOTAL COST			**STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)**

TABLE 14: AGREEMENT STATE PROGRAM COST BREAKDOWN (YEARS 1-6)[211]

AGREEMENT STATE PROCESS YEAR	DESCRIPTION[212]	PERSONNEL	APPROXIMATE/ESTIMATED COST[213]
INTERIM STUDY YEAR	ITEMS IDENTIFIED IN TABLE 13	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)
YEAR 1 (NOT DATE-SPECIFIC AT THIS TIME)	(1): DRAFT AND SEND GOVERNORS LETTER TO PROCEED (2): DRAFT AND ENACT LEGISLATION AUTHORIZING GOVERNOR'S LETTER TO PROCEED (3): BEGIN DRAFTING: (A) LEGISLATION AUTHORIZING AGREEMENT STATE PROGRAM;	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)

[211] The years identified in this Table are not targeted at a specific date as no decision has been made by the State to proceed with development of an Agreement State program. Thus, for purposes of this Table, it should be assumed that the process will involve the following: (1) up to one (1) year for interim study items; (2) up to five (5) years for completion of Category 1 through transition; and (3) the final year (Year 6) being the first year of the program's operation post-transition.

[212] Please note that the "Description" inserted in this Table for each item is not exhaustive of all required actions.

[213] Please note that cost items such as equipment purchases, travel reimbursement, and other expenses are not included and will be fleshed out in the staffing plan described in Table 13 above.

	(B): AGREEMENT STATE PROGRAM REGULATIONS; (C): COMPLETED PUBLIC PARTICIPATION POLICY; (D): COMPLETED GUIDANCE ADOPTION POLICY; (E): INITIAL MEETINGS WITH INTERESTED STAKEHOLDERS IDENTIFIED BY NRC STAFF		
YEAR 2	(1): COMMENCEMENT OF PUBLIC MEETINGS ON PROGRAM; (2): COMMENCMENT OF RULEMAKING PROCESS FOR PROGRAM REGULATIONS; (3): ONGOING NRC STAFF CONSULTATION	1 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $300,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)
YEAR 3	(1): REVIEW OF AND PROCESSING PUBLIC AND NRC STAFF COMMENTS ON PROGRAM REGULATIONS; (2): ONGOING NRC STAFF CONSULTATIONS; (3): UPDATE TO WDEQ STAFFING PLAN; (4): DEVELOP TRANSITION POLICY;	2 STATE (WDEQ) FTE: (DEQ PROGRAM DIRECTOR & HEALTH PHYSICS STAFFER) 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $430,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)

	(5): TRAINING OF HEALTH PHYSICS STAFF		
YEAR 4	(1): FINALIZATION OF RESPONSE TO PUBLIC AND NRC STAFF COMMENTS ON DRAFT PROGRAM REGULATIONS; (2): ONGOING NRC STAFF CONSULTATION; (3): FINALIZE STAFFING PLAN AND PREPARE FOR EQUIPMENT PURCHASES (RFP); (4): HIRING AND TRAINING OF ADDITIONAL PERSONNEL	4 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $690,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)
YEAR 5	(1): FULL ACTIVE PERSONNEL AND COMMENCEMENT AND/OR COMPLETION OF AGREEMENT STATE PROGRAM TRAINING (2): COMPLETION OF EQUIPMENT PURCHASES	8 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANT CONSULTANT(S) (TIME AND MATERIALS BASIS)	STATE FTE COST: $1,230,000 CONSULTANT(S): $215-$325 PER HOUR (TIME AND MATERIALS)
YEAR 6 (EFFECTIVE UPON TRANSITION)	FULL PROGRAM OPERATION 11 LICENSEES ACTIVE OR STANDBY 1 LICENSEE AWAITING	8 STATE (WDEQ) FTE 1 STATE ATTORNEY GENERAL FTE 1 ADMINISTRATIVE ASSISTANTS	STATE FTE COST: $1,230,000 CONTRACTOR COSTS AT STATE DISCRETION

	SITE CLOSURE AND LICENSE TERMINATION		