

R.M.D. Operations, LLC

September 27, 2005

United States Nuclear Regulatory Commission
Attn: Mr. Robert Nelson
Chief, Uranium Processing Section
Fuel Cycle Facilities Branch
Mail Stop T8-A33
Washington, DC 20555

**RE: R.M.D. Operations, LLC License Application for Performance-Based,
Multi-Site License for Uranium Water Treatment Program**

Dear Mr. Nelson:

By this letter, R.M.D. Operations, LLC (RMD)¹ hereby submits this application for a United States Nuclear Regulatory Commission (NRC) source material license for its uranium water treatment program facilities. RMD's license application proposes that NRC issue a performance-based, multi-site license for RMD's uranium water treatment program as implemented by RMD in *non-Agreement States* wherein *licensable* concentrations of source material exceeding the 10 CFR § 40.13 for unimportant quantities and the 10 CFR § 40.22 limits on annual and total amounts of source material will be created. Under the Atomic Energy Act of 1954 (AEA), as amended, such *licensable* uranium source material is subject to NRC regulatory control and oversight. As the proposed licensee, RMD will have ownership and/or control of its Uranium Removal System, the System's operation, and all licensed materials contained therein, including treatment media and *licensable* uranium source material removed from the treated water.

As will be discussed below, assuming approval of its license application and acceptance of the performance-based, multi-site format, RMD will create a Safety and Environmental Review Panel (SERP) responsible for compiling all relevant information for each proposed water treatment system installation and for ensuring that such installations are within the purview of NRC's environmental analyses and resulting imposed license conditions and licensee commitments. This license application is presented in three (3) parts: (1) a license application letter describing the proposed format of the requested license and a request for a categorical exclusion pursuant to 10 CFR § 51.22; (2) an Environmental Report (ER) which presents RMD's description of its proposed water treatment program and environmental analyses of its potential occupational and public health and safety impacts and those of relevant alternatives; and (3) a draft Safety Evaluation Report (SER) presenting the generic overview of RMD's

¹ RMD, headquartered at 5460 Ward Road, Suite 100, Arvada, CO 80002, is a member of the group of Water Remediation Technology International companies.

water treatment operations under its proposed license. Each of these items will be discussed in detail below.

RMD's proposed licensing action is designed to address an issue (i.e., compliance with drinking water standards) that implicates *national*, as well as *local* concerns. As a result, given that many community water systems (CWSs) requiring uranium water treatment are expected to be located in Agreement States, RMD believes that it is crucial that appropriate Agreement State authorities are included in the licensing process. Therefore, RMD requests that NRC Staff facilitate the involvement of Agreement States in the licensing process so that the potential for issuance of similarly formatted Agreement State licenses may be streamlined.²

RMD currently operates a uranium water treatment program at the Fox Run Water Company. This particular system provides water to a small rural subdivision several miles west of Petersburg, Virginia, in Dinwiddie County. The Chesdin Manor Subdivision has approximately 70 connections, and one of Fox Run's water wells that serve the subdivision exceeds the uranium MCL, at approximately 80 ug/L. The single well produces only approximately 80 to 100 gallons per minute, and would be classified as a small RMD Uranium Removal System, at the lower end of the range of Systems presented in the Environmental Report (ER). Layout drawings and photos of this System at Fox Run (see ER Figures 2-1 and 2-2, respectively) are used to depict the typical small RMD system in the ER. While the uranium concentrated in its Uranium Removal System has not yet reached *licensable* levels or exceeded general license limits, RMD anticipates that this program will be the first *non-Agreement State* uranium water treatment program to be "registered" with NRC after issuance of the proposed performance-based, multi-site license.

I. PERFORMANCE-BASED, MULTI-SITE LICENSE STRUCTURE

RMD's uranium water treatment program will be implemented to facilitate compliance by CWSs with the United States Environmental Protection Agency's (EPA's) new maximum contaminant level (MCL) of 30 micrograms/liter (30 ug/l) or 30 parts per billion (30 ppb) for uranium in drinking water. Given that removal and concentration of uranium from drinking water sources is a *national*, as well as a *local*, issue and that RMD's uranium water treatment program may be implemented and operated in multiple *non-Agreement States* (as well as multiple Agreement States), RMD's license application requests that NRC issue a source material license for its uranium water treatment program using a performance-based, multi-site licensing format. As proposed, this license will allow RMD to implement CWS-specific uranium water treatment systems, including the installation and operation of Uranium Removal Systems, based on the performance criteria for each flow-rate-specific Uranium Removal System, for any CWS in a *non-Agreement State* without seeking a license amendment to add each additional program. RMD proposes to "register" each new CWS-specific uranium water treatment

² RMD also encourages the active involvement of *non-Agreement State* radiation protection authorities since similarly formatted licenses/permits for water treatment-generated *non-AEA* radioactive materials regulated by such States could also be streamlined.

system, including a description of all relevant information (e.g., uranium concentrations, flow-rates, financial assurance, etc.) with NRC to formally bring such systems under RMD's license and to demonstrate that such systems fall within NRC-evaluated and approved environmental analyses and license conditions. Pursuant to standard performance-based licensing concepts, RMD will maintain and make all relevant information available to NRC for its ongoing regulatory oversight.

Performance-Based Licensing

Performance-based licensing was a major component of former NRC Chairman Shirley Jackson's 1995 Strategic Assessment and Rebaselining Initiative (SARI) which was designed to promote a more risk-informed regulatory approach to NRC licensing and oversight. 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. *This regulatory approach is not new to the NRC.*"

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

As stated above, performance-based licensing has been endorsed by the Commission and NRC Staff and is consistent with NRC's statutory mission of cost-effectively regulating peaceful uses of AEA materials in a manner that provides adequate protection for public health and safety and the environment.

RMD's uranium water treatment program is ideal for the use of performance-based licensing concepts. RMD's Uranium Removal System is categorized on the basis of the flow-rate of a given CWS. For example, RMD utilizes the same basic technology, technical specifications, construction, and installation criteria for each flow-rate-specific category. Based on this, the "performance criteria" for each flow-rate-specific category are identical regardless of where the system is installed and operated. This factor is described in RMD's ER in form of a range of flow-rate-specific Uranium Removal

Systems using a lower bound of less than 100 gallons per minute (gpm) and an upper bound of 3,000 gpm and their associated contained uranium. This range of Uranium Removal Systems provides NRC Staff with the data necessary to determine what performance criteria are necessary for each flow-rate-specific category and to define the range of Systems that may be "registered" with NRC and incorporated into RMD's performance-based, multi-site license without seeking a license amendment.

Performance-based licensing is also ideal for RMD's uranium water treatment program, because the program requires standardization of procedures and protocols. At each CWS, RMD's uranium water treatment program will utilize the same radiological safeguards, training and procedures, the same media exchange protocols, and the same spill or accident response procedures. Standardization of these procedures and protocols embodies the fundamental principles of performance-based licensing.

Further, while the framework of RMD's uranium water treatment program is generic, a SERP will be utilized to determine whether performance criteria will or will not be met at each proposed new CWS-specific uranium water treatment system and whether NRC Staff review is necessary. As stated above, since the performance criteria for each flow-rate-specific category will be identical, only new Uranium Removal Systems posing performance criteria not evaluated by NRC in granting RMD's license application (e.g., a system which exceeds the upper bound system of 3,000 gpm) will require NRC Staff review and approval.

Finally, RMD's proposed uranium water treatment program embodies a low-risk (e.g., lack of potential acute safety concerns) type of licensed activity that provides federally-mandated public benefits and, thereby, comfortably fits within performance-based licensing concepts. As such, it provides NRC with an ideal "blueprint" for issuance of a performance-based, multi-site license.

Multi-Site License

In conjunction with a performance-based license, RMD proposes that its NRC license be a multi-site license. As stated in NUREG-1556, Volume 20 entitled *Consolidated Guidance, Guidance About Administrative Licensing Procedures*:

"A multi-site license is one that authorizes two or more locations of use that are specifically identified on the license. Such authorized locations will typically include either: (1) stand-alone facilities that would otherwise be licensed individually; or (2) satellite facilities that are not located within the principal job site and for which NRC-licensed activities are ongoing, with the exception of temporary job sites, broad scope licensees, or mobile nuclear medicine services. A multi-site facility may also include those groups of licensees for which the addresses of use are geographically separated. These facilities may each be under the direction of a single corporate RSO, or they may have site RSOs who report to a corporate RSO. The corporate RSO is usually the RSO of record on the license."

See United States Nuclear Regulatory Commission, NUREG-1556, *Consolidated Guidance, Guidance About Administrative Licensing Procedures*, Volume 20 (December 2000).

EPA's new MCL for uranium in drinking water will force an estimated 1,250 or more CWSs within *non*-Agreement and Agreement States to comply with its provisions by December, 2007. Given the potential for there to be multiple RMD uranium water treatment systems in place in these States, an NRC multi-site license will benefit both RMD and NRC Staff. First, RMD will be able to minimize the potential for delay and the licensing fees that will otherwise be incurred to have license applications processed for each CWS-specific uranium water treatment program. Second, in concert with the proposed performance-based format, RMD will be able to quickly and efficiently negotiate water treatment contracts with CWSs to facilitate their compliance with EPA's MCL so that public health requirements can be satisfied and costly fines or other civil penalties can be avoided. Finally, NRC Staff (and Agreement States) will be able to reserve its already limited time and resources for higher risk activities, yet maintain effective regulatory oversight of activities generating *licensed* AEA source material.

Financial Assurance

RMD recognizes that, for any such multi-site license, financial assurance is an important issue. RMD proposes to satisfy NRC financial assurance requirements in two (2) ways: (1) for publicly-owned CWSs, RMD proposes a statement of intent or guarantee from a municipality to provide financial assurance for decommissioning and decontamination (D&D) in an amount set forth in an NRC-approved schedule, which is based on the size of the Uranium Removal System and fees for the final disposition of spent treatment media and (2) for privately-owned CWSs, RMD proposes to have the owner provide acceptable financial assurance mechanisms as enumerated in applicable NRC regulations and guidance.

RMD's proposed statement of intent or guarantee from a municipality should be acceptable to NRC for the following reasons. 10 CFR § 40.36(e) permits the use of multiple types of financial assurance mechanisms to allow for licensee flexibility. Where local (e.g., municipal) governments are concerned, Part 40.36(e)(4) expressly provides that:

“In the case of...*local government licensees*, a statement of intent containing a cost estimate for decommissioning or an amount based on paragraph (b) of this section, and indicating that funds for decommissioning will be obtained when necessary.”

10 CFR § 40.36(e)(4) (emphasis added).

Thus, *statements of intent* or *guarantees*, which have been deemed acceptable forms of financial assurance for local government (municipal) licensees under 10 CFR Part 40 also

should be deemed sufficient for the licensed "cradle-to-grave" contractor "standing in the shoes of the municipality" for the specific purpose of expert management of *licensable* AEA source material created to satisfy compliance with the SDWA-mandated MCL for uranium.

As a general proposition, municipalities and local governments do not possess the expertise to address radiation safety issues associated with AEA materials (i.e., source material). RMD's inquiries suggest that, generally, such municipalities and local governments do not want the responsibility of fulfilling the conditions of an NRC or Agreement State license. Similarly, it would appear that neither NRC nor Agreement States want to expend limited resources regulating hundreds of individual municipalities as licensees.

Finally, an equally, if not more compelling, reason for NRC to exercise flexibility in interpreting and applying its financial assurance regulations and policies is the fact that municipalities *must* satisfy the uranium MCL to protect the health and safety of their citizens and to satisfy a mandatory federal requirement enforced by EPA or delegated States under the SDWA. As a practical matter, this suggests that either multiple municipalities will have to become AEA licensees to satisfy this federal mandate despite their limited involvement with and expertise in the handling of radioactive materials, or they will have to turn responsibility over to an expert contractor/licensee that "stands in the shoes of the municipality." Given these circumstances, since 10 CFR § 40.36(e)(4) recognizes that local (municipal) governments are appropriate guarantors as licensees, it is reasonable to conclude that local (municipal) governments can be guarantors for a contractor/licensee (i.e., RMD) performing specific AEA-licensed activities on their behalf. To satisfy NRC regulations, RMD intends to obtain written statements of intent from municipalities prior to commencing licensed activities that guarantee the availability of sufficient funds for D&D per the above-mentioned NRC-approved schedule.

In the alternative, if NRC does not permit RMD, as a contractor/licensee, to utilize statements of intent or guarantees from municipalities and local governments under 10 CFR § 40.36(e)(4), RMD hereby requests a specific exemption pursuant to 10 CFR § 40.14(a) permitting municipalities or local governments that decide not to become licensees to provide RMD, as their contractor/licensee, with statements of intent or guarantees to satisfy Part 40 financial assurance requirements. 10 CFR § 40.14(a) states, in pertinent part:

"[t]he Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulation in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest."

RMD's license application presents the necessary analyses (i.e., ER and draft SER) to demonstrate that its proposed licensing action does not endanger life or property or the common defense and security. Further, RMD's uranium water treatment program will

provide tangible benefits to public and private CWSs, including a complete expert "cradle-to-grave" compliance solution for compliance with the SDWA's uranium MCL. Thus, RMD's proposed uranium water treatment program qualifies for a specific exemption if NRC determines that 10 CFR § 40.36(e)(4) can only be interpreted to apply to municipalities as licensees and not to a licensee "standing in the shoes of a municipality."

In the event that NRC determines that RMD's proposed financial assurance mechanism under 10 CFR § 40.36(e)(4) is not appropriate and/or that a specific exemption is not warranted, RMD's uranium water treatment program for public CWSs likely will not go forward. Given the potential that in excess of 1,250 CWSs, with an average of three (3) well sites per CWS, will require uranium water treatment and that, conceivably, as many as 1,000 or more of these well sites could be subjects of RMD's proposed AEA license program in both Agreement and *non*-Agreement States, it is not economically feasible for RMD to post surety bonds or other financial assurance mechanisms from its corporate financial assets. Moreover, failure to exercise flexibility in interpreting its regulations and policies will force NRC and Agreement State authorities to expend substantial resources regulating hundreds, if not thousands, of public CWSs in the coming years with only the same municipal statements of intent or guarantees for financial assurance that RMD seeks to utilize.

RMD's proposed financial assurance mechanisms for privately-owned CWSs also should be acceptable to NRC as such mechanisms are explicitly enumerated in 10 CFR § 40.36(e). RMD intends to obtain appropriate financial assurance arrangements (e.g., surety bond, letter of credit, certificate of deposit, etc.) from privately-owned CWSs prior to the commencement of licensed activities.

RMD is also proposing a "line-item" schedule for calculating financial assurance. A possible range of decommissioning cost estimates is developed in the ER by using three (3) sample flow-rate-specific Uranium Removal Systems, including the final disposition of spent treatment media at a properly licensed/permitted facility. Given the performance-based nature of its proposed license, RMD requests that NRC approve the proposed financial assurance schedule as part of its license. RMD will prepare detailed decommissioning cost estimates for each Uranium Removal System to be registered based on such schedule. RMD also will include final disposition fee quotations for spent treatment media in each decommissioning cost estimate based on contracts executed with properly licensed/permitted facilities. Finally, RMD will obtain properly executed financial assurance mechanisms with CWSs for each decommissioning cost estimate.

II. ENVIRONMENTAL REPORT

The first appendix to RMD's license application is the Environmental Report (ER). RMD's ER is intended to provide NRC Staff with a comprehensive analysis of all aspects of the proposed action and relevant alternatives in accordance with NUREG-1748

entitled *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*.³

As a general proposition, RMD's ER is presented within the context of the above-described performance-based, multi-site license. Given that RMD's uranium water treatment systems are constructed and operated based on the flow rates of publicly or privately-owned water treatment facilities, the ER presents analyses of potential impacts from such water treatment operations based on the required flow rate of a given system. More specifically, the ER addresses the potential impacts from five (5) different flow-rate specific water treatment systems. Under the proposed performance-based, multi-site license, RMD intends that NRC Staff's approval of the analyses for each of the flow-rate-specific water treatment systems will serve as NRC's *de facto* approval for installation of the range of such systems at multiple water treatment facilities in *non-Agreement States*. RMD's SERP will be responsible for determining that installation of each new system is in compliance with all analyses in the ER and resulting license conditions and/or licensee commitments in the SER. Should installation of any of these flow rate-specific water treatment systems require additional assessment, RMD will provide NRC with additional environmental analyses and a license amendment application to ensure that public health and safety are adequately protected.

From a substantive perspective, RMD's ER presents the proposed action and relevant alternatives in the context of the affected environment for water treatment systems under EPA's federally-mandated standards for uranium in drinking water. After describing the affected environment, the ER also presents an analysis of the potential environmental impacts of the proposed action and relevant alternatives associated with issues such as land use, transportation of uranium water treatment residuals, water resources, and waste management practices. Further, the ER presents a comprehensive assessment of potential radiological impacts to workers and members of the public from uranium water treatment operations, media exchanges, and transportation of uranium residuals to licensed or permitted alternate feed processing or direct disposal sites.

More specifically, RMD's ER is divided into the following Sections. The Preface and Section 1 present an introductory discussion of the proposed action and the format of the ER. Specifically, Section 1 presents a discussion of RMD's "cradle-to-grave" uranium water treatment programs, the types of technologies used in such programs, and the potential benefits of the proposed action, as well as a description of applicable regulatory requirements.

Section 2 presents a listing of the proposed action and potential alternatives. The proposed action is described in detail, including the presentation of various schematic drawings and pictures of existing water treatment systems. The ER presents a summary of the expected range of treatment vessels for uranium water treatment systems in *non-Agreement States* (also applicable to Agreement States) and an overview of the general system operation. Section 2 also presents information regarding water treatment system

³ United States Nuclear Regulatory Commission, NUREG-1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs*, Final Report (August 2003).

personnel, standard waste management requirements, and a listing of alternatives considered and rejected.

Section 3 presents a general description of the affected environment in which RMD's uranium water treatment systems will be installed. This general description includes a discussion of the physical characteristics of water treatment buildings and their surrounding environment and the size of RMD's water treatment systems relative to the water treatment buildings. As will be discussed in the ER, environmental conditions at water treatment facilities are site-specific and vary depending on the geographic location and the water resources at the facility. Given the highly site-specific nature of a water treatment facility's environmental conditions, RMD proposes to include a discussion and, as necessary, analyses of all site-specific environmental conditions in reports for each site to be maintained by RMD's SERP at its corporate headquarters. Fundamental data will also be provided to NRC when RMD "registers" each new facility with the agency. Section 3 also presents a discussion of the radionuclides handled in RMD's water treatment program, expected maximum loading capacity, and a brief analysis of issues such as land use, transportation, water resources, and endangered species and ecological studies. RMD's proposed radiation protection program and waste management practices also are included.

Section 4 presents a comprehensive comparative analysis of the potential impacts from the proposed action and other assessed alternatives. Some issues which generally are not applicable to RMD's water treatment program are discussed briefly while others, such as transportation and potential radiological impacts are presented in detail.

Section 5 presents potential mitigation measures for each analyzed alternative. Given that RMD's proposed action is designed to minimize, if not eliminate, potential impacts to public health and safety, no mitigation measures will be necessary.

Section 6 presents a qualitative cost-benefit analysis of the proposed action. RMD has determined that the benefits offered by its uranium water treatment program (e.g., compliance with MCL for uranium in drinking water and "cradle-to-grave" treatment service versus uncontrolled release of uranium residuals removed to the environment), which is subject to ongoing regulatory oversight necessary to assure adequate protection of public health and safety from AEA materials, substantially outweigh any potential costs (e.g., water rate increases) to CWSs or local drinking water consumers.

III. SAFETY EVALUATION REPORT

The second appendix to RMD's license application is a draft safety evaluation report (SER). The draft SER provides NRC with a proposed technical review of RMD's license application. As described in the SER's table of contents, RMD has provided a draft technical review for the following subject areas: (1) description of the proposed action, (2) authorized activities, (3) corporate management organization and administrative procedures, (4) radiation safety controls and monitoring, (5) security

procedures and measures, (6) emergency procedures and preventative measures, (7) waste management, and (8) decommissioning procedures. The draft SER also includes proposed license conditions that will implement specific procedures and requirements for RMD's licensed uranium water treatment program.

IV. NRC's ENVIRONMENTAL REVIEW OF RMD'S LICENSE APPLICATION: CATEGORICAL EXCLUSIONS

After preparation of its ER and a review of NRC's guidance in NUREG-1748 regarding categorical exclusions from preparation of environmental impact statements (EISs) or environmental assessments (EAs) pursuant to the National Environmental Policy Act of 1969 (NEPA), RMD believes that the ER for its proposed NRC performance-based, multi-site license for removal of uranium from drinking water sources demonstrates that this licensing action qualifies for a categorical exclusion under 10 CFR § 51.22(c)(14)(xvi).⁴

NRC's regulations at 10 CFR Part 51 were promulgated to describe each of NRC's procedures under the NEPA, as well as procedures for environmental reviews of proposed licensed activities under other federal statutes (e.g., National Historic Preservation Act of 1966, as amended). In accordance with NEPA, NRC determined, after appropriate analysis, that certain potential licensing actions will not require extensive environmental reviews such as an EIS or even an EA. These potential licensing actions, termed "categorical exclusions," were identified by NRC as being excluded from the NEPA process since they do not constitute "major federal actions." As stated in NUREG-1748:

"[t]he purpose of CATXs (categorical exclusions) is to focus extensive NEPA analysis onto major Federal actions that *may significantly affect the quality of the human environment*. The use of CATXs is a means of *streamlining the NEPA process, saving time, effort, and resources*."

NUREG-1748 at 2-1 (emphasis added).

In 10 CFR § 51.22(c), NRC developed a series of categories of potential licensing actions that qualify for categorical exclusions. More specifically, as discussed in NUREG-1748, when a proposed licensing action is received, NRC Staff first addresses whether such proposed licensing action qualifies for a categorical exclusion. *See*

⁴ Despite its request for a categorical exclusion, RMD does not desire to foreclose any opportunities for Agreement or *non*-Agreement States to comment on the health and safety and environmental analyses offered in support of this license application. Indeed, RMD believes that inclusion of States in the licensing process is essential to creating and maintaining a comprehensive, national program for compliance with the SDWA's uranium MCL. However, if NRC agrees that a categorical exclusion is warranted after consideration of all relevant factors, RMD believes that this could further assist in streamlining both the NRC and Agreement State licensing processes.

NUREG-1748 at 1-3. To provide applicants/licensees with an organized framework for applying for categorical exclusions, NUREG-1748, Appendix B provides a simplified process for determining whether a proposed licensing action qualifies for a categorical exclusion. This process will be described below along with a discussion of how RMD's proposed licensing action is consistent with NRC's categorical exclusion requirements.

Comparison of RMD's Proposed Licensing Action to Other Categorical Exclusions

While RMD's proposed licensing action does not fall within NRC's existing specific categorical exclusion categories, NRC offers a "catch-all" category for other such exclusions. As stated in 10 CFR § 51.22(c)(14)(xvi), a proposed licensing action qualifies for a categorical exclusion if it involves:

"Any use of source, byproduct, or special nuclear material not listed above which involves quantities and forms of source, byproduct, or special nuclear material similar to those listed in paragraphs (c)(14)(i) through (xv) of this section...."

NUREG-1748 at 2-16.

Further, as stated in NUREG-1748:

"By categorically excluding actions of this type, the Commission will avoid the unnecessary expenditure of scarce resources in preparing environmental assessments for those few *environmentally insignificant cases* not separately identified as the subject of a specific categorical exclusion."

Id. (emphasis added).

Even though RMD's proposed action (i.e., a performance-based, multi-site license for its uranium water treatment program) does not fall within NRC's enumerated specific categorical exclusions, RMD believes, however, that its proposed license qualifies for a categorical exclusion under 10 CFR § 51.22(c)(14)(xvi) based on the type and amount of licensed (source) material involved in and the minimal potential adverse impacts to public health and safety and the environment from its uranium water treatment program.

As a general proposition, the potential risks associated with RMD's proposed action fall within the scope of those associated with other licensed operations NRC has analyzed and determined qualify for categorical exclusions. In NUREG-1748, NRC lists examples of licensing activities that qualify for categorical exclusions and, thus, do not require a detailed EA, much less an EIS. These examples qualify for categorical exclusions, because they do not result in releases of radiological effluents and/or because any releases result in potential radiological doses to workers or members of the public that are significantly less than NRC's 10 CFR Part 20 dose limits. Table 1 below provides a comparison of the aforementioned categorically excluded examples and their

justification with RMD's proposed action. As will be shown below, there are substantial similarities between the categorically excluded examples and RMD's proposed action.

TABLE 1

CATEGORICAL EXCLUSION	NRC STAFF EXPLANATION	RMD PROPOSED ACTION COMPARED TO CATEGORICAL EXCLUSION
10 CFR § 51.22(c)(14)(i): Distribution of radioactive material and devices or products containing radioactive material to general licensees and to persons exempt from licensing.	"These licenses for distribution do not authorize processing or use of radioactive materials. There are no effluent releases or personnel exposures ⁵ associated with the licensed activities."	<ul style="list-style-type: none"> • No "process" or "use" of licensed radioactive materials; • No effluent releases; • As a practical matter, "no" personnel exposures.⁶
10 CFR § 51.22(c)(14)(ii): Distribution of radiopharmaceuticals, generators, reagent kits and/or sealed sources to persons licensed pursuant to 10 CFR § 35.18.	"There are no effluent releases or personnel exposures associated with the licensed activities."	<ul style="list-style-type: none"> • No effluent releases; • "No" personnel exposures.
10 CFR § 51.22(c)(14)(iii): Nuclear pharmacies.	"Releases in effluents may be estimated at 5% of maximum permissible values....exposure to personnel may be conservatively estimated at 25% of the maximum permissible dose."	<ul style="list-style-type: none"> • No effluent releases; • "No" personnel exposures.
10 CFR § 51.22(c)(14)(iv): Medical and veterinary.	"The environmental impacts would be: occupational exposures estimated at less than 10% of the applicable limits...releases to air and water or to sanitary sewerage...are of small quantity....Effluent releases...are estimated at less than 10% of the applicable limits."	<ul style="list-style-type: none"> • "No" personnel exposures; • No releases to air, water or sanitary sewers; • No effluent releases.

⁵ It is assumed that any handling of radioactive material results in some, albeit minimal, dose to workers (personnel).

⁶ "No" exposure is conservatively defined as: (1) less than 1 mrem/year for Utility Operators, (2) less than ten (10) percent of the public exposure limit (i.e., 100mrem/year) for RMD System Specialists, and (3) effectively zero for members of the public.

<p>10 CFR § 51.22(c)(14)(v): Use of radioactive materials for research and development and for educational purposes.</p>	<p>"A typical facility is designed to minimize release of effluents to the environment....A day-to-day radiation safety program provides for monitoring of personnel exposures, contamination levels, radiation levels, and effluent releases. Personnel exposure and effluent releases are estimated at less than 10 per cent of the limits of 10 CFR Part 20."</p>	<ul style="list-style-type: none"> • No "use" of licensed radioactive materials • Uranium Removal System designed to eliminate effluent releases; • Day-to-day radiation safety program is used; • "No" personnel exposures; • No effluent releases.
<p>10 CFR § 51.22(c)(14)(vi): Industrial radiography.</p>	<p>"Therefore, during ordinary use it is not expected to that there will be releases of radioactive material to the environment. The radiation exposure during routine uses of sources in industrial radiography is well within NRC limits for occupational exposure. The average exposure per individual radiographer is less than 0.4 rem per year, which is less than 10% of the permissible exposure."</p>	<ul style="list-style-type: none"> • No releases of licensed radioactive material during licensed operations; • "No" personnel exposures;
<p>10 CFR § 51.22(c)(14)(vii): Irradiators.</p>	<p>"Irradiators usually contain <i>from a few hundred curies to megacuries</i> of radioactive material....Product irradiation occurs within areas to which access is controlled and which are shielded to protect both operating personnel and the environment. Personnel exposures during use of these devices are less than 5% of the limits in 10 CFR Part 20. There are no</p>	<ul style="list-style-type: none"> • <i>Orders of magnitude less</i> radioactive material (i.e., Largest Uranium Removal Systems contain less than three (3) curies of natural uranium (source material)); • Licensed material is as "insoluble and non-dispersible as practicable;"⁷

⁷ This factor is consistent with NRC's finding in the 10 CFR Part 36 rulemaking that irradiators should use licensed material that is as "insoluble and non-dispersible as practicable." See generally 58 Fed. Reg. 7715 (February 9, 1993).

	effluent releases resulting from operation of irradiators.”	<ul style="list-style-type: none"> • Removed uranium confined in self-contained treatment vessel which provides shielding; • Controlled access to treatment area; • “No” personnel exposures; • No effluent releases.
10 CFR § 51.22(c)(14)(viii): Use of sealed sources and use of gauging devices, analytical instruments and other devices containing sealed sources.	“Personnel exposures from use of these devices is less than 5% of the limits in 10 CFR Part 20.”	<ul style="list-style-type: none"> • “No” personnel exposures.
10 CFR § 51.22(c)(14)(ix): Use of uranium as shielding material in containers or devices.	“the corresponding low radiation levels emitted make it very unlikely that any individual will receive a radiation dose in excess of 5% of maximum permissible dose specified in Part 20. In addition, because of its physical and chemical properties, there should be no release of radioactive material to the environment during normal use of depleted uranium as shielding and very limited release during abnormal conditions.”	<ul style="list-style-type: none"> • “No” personnel or public exposures; • Treatment media’s physical and chemical properties minimizes or eliminates potential release of licensed radioactive material to the environment
10 CFR § 51.22(c)(14)(x): Possession of radioactive material incident to performing services such as installation, maintenance, leak tests and calibration.	“These licenses only authorize the possession of radioactive material incident to performing services either at the customer’s facility or at the licensee’s facility....Since service licenses involved very little actual possession and use of radioactive material, personnel exposure from performing the services should be less than 5% of the limits in 10 CFR Part	<ul style="list-style-type: none"> • Licensed material “possessed” but not “used” incident to performing services for CWSs; • “No” personnel exposures; • No effluent releases.

	20 and there should be no effluent releases.”	
10 CFR § 51.22(c)(14)(xi): Use of sealed sources and/or radioactive tracers in well-logging procedures.	“The radioactive material is in the form of a very low solubility compound. The sources are enclosed in a logging tool made of steel which provides additional protection.”	<ul style="list-style-type: none"> • Treatment media containing licensed material is insoluble; • Licensed material confined in treatment vessel.
10 CFR § 51.22(c)(14)(xii): Acceptance of packaged radioactive wastes from others for transfer to licensed land burial facilities provided the interim storage period for any package does not exceed 180 days and the total possession limit for all packages held in interim storage at the same time does not exceed 50 curies.	“By limiting the total radioactivity in storage at any one time to a maximum of 50 curies...the chances of significant releases of radioactivity or excess exposure of personnel in the event of accident conditions, such as fire, are minimal.”	<ul style="list-style-type: none"> • Largest Systems contain less than three (3) curies of natural uranium (source material); • Uranium Removal System minimizes or eliminates potential releases or exposures during “accident” conditions.
10 CFR § 51.22(c)(14)(xiii): Manufacturing or processing of source, byproduct, or special nuclear materials for distribution to other licensees, except processing of source material for extraction of rare earth and other metals.	“licensees in this category has an average dose of 0.45 rem for persons with measurable exposure and an average dose of 0.21 rem for all persons monitored....The potential impact, therefore, is very small, less than one calculated health effect. Ninety eight percent of the facilities had releases in air of less than one percent of the maximum permissible concentrations in 10 CFR Part 20. The largest release reported was approximately 12 percent of the maximum permissible concentrations. Releases of liquid effluents were well within the limits in NRC regulations.”	<ul style="list-style-type: none"> • No “manufacturing” or “processing” of licensed (source) material; • “No” personnel or public exposures; • No effluent releases.

<p>10 CFR § 51.22(c)(14)(xv): Possession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions.</p>	<p>“Because the munitions are transported and stored in sealed containers as solid metal in nondispersible form, there is negligible environmental impact associated with such transportation and storage.”</p>	<ul style="list-style-type: none">• Transportation of licensed material in super sacks or sealed tanker trucks;• Treatment media containing licensed material is in non-dispersible form.
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As shown in Table 1, NRC permits categorical exclusions for licensed activities that analyses have demonstrated do not pose a significant threat to public health and safety through potential dose exposure pathways such as effluent releases or direct worker exposure to licensed materials. Such categorical exclusions are also permitted when transportation of licensed materials does not pose a significant threat to public health and safety. Similar to these above-cited examples, RMD's proposed uranium water treatment program is designed to remove uranium from drinking water sources, store such uranium in a self-contained Uranium Removal System, and transport such uranium in DOT-approved vehicles and packages for final disposition without releasing radiological effluents to the environment and allowing for minimal, if any, direct worker exposure to licensed materials. RMD's uranium water treatment program will yield annual occupational and public exposures, which are a miniscule fraction of NRC's Part 20 dose limits (i.e., an estimated seven (7) mrem/year compared with the 5,000 mrem/year or 5 rem/year TEDE limit for workers) and no discernable dose to members of the public.⁸ Even in the event of highly unlikely but credible release scenarios, there is no significant potential acute safety concern. Thus, as a general proposition, the potential risks associated with RMD's uranium water treatment program are similar to, if not substantially less than, that of other categorically excluded licensed activities.

Categorical Exclusion Issue Checklist : NUREG-1748, Appendix B Requirements

Issue #1: *Is the action consistent with the Statements of Consideration for the categorical exclusion chosen?*

RMD's uranium water treatment program is consistent with the Statement of Considerations for a categorical exclusion pursuant to 10 CFR § 51.22(c)(14)(xvi). As described in the Statement of Considerations, categorical exclusions should encompass proposed licensing actions that do not, individually or cumulatively, have a significant adverse effect on the human environment. RMD's uranium water treatment program removes uranium from drinking water sources and not only does not re-introduce such uranium in an uncontrolled manner into the environment but also assures its long-term disposition and control in properly licensed/permitted facilities. The type and form of licensed material (uranium-laden synthetic treatment resins) is similar in some respects to the 10 CFR Part 36 material recommendations for irradiation facilities (e.g., as insoluble and non-dispersible as practicable) while being stored in a self-contained Uranium Removal System treatment vessel until removed for final disposition, although containing multiple orders of magnitude less curies (e.g., Uranium Removal System with approximately three (3) curies versus an irradiator with between several hundred curies and megacuries). Transportation impacts from RMD's program are negligible as media exchanges may occur as infrequently as every five to ten years. Further, the transportation of such materials has been assessed by NRC repeatedly in the context of ISL uranium recovery operations and has been found to pose no significant impacts to public health and safety or the environment. See United States Nuclear Regulatory Commission, *Standard Review Plan for In Situ Leach Uranium Extraction License Applications*, NUREG-1569, Final Report (June 2003). Given the minimal potential impacts associated with RMD's uranium water treatment program, the program is consistent with the Statement of Considerations for categorical exclusions because it allows NRC to streamline the NEPA process and save time, effort, and licensing resources.

⁸ See 10 CFR Part 20, Subparts C & D.

Issue #2: *Is the action likely to significantly affect any aspect of the natural environment?*

RMD's uranium water treatment program will not produce any significant effects on the natural environment as it currently exists. The Uranium Removal System is designed to seamlessly integrate into existing water treatment infrastructures and, as described in the ER, RMD's "cradle-to-grave" program provides a disposition pathway for uranium residuals that does not result in uncontrolled re-introduction of removed uranium into the environment. Even in the highly unlikely but credible event that an accidental release of uranium residuals occurs, the treatment media is designed to prevent the migration of uranium constituents and, as a result, the migration of uranium residuals as airborne particulates or by leaching to groundwater is remote. Further, during licensed operations, doses to workers and members of the public will be a miniscule fraction of Part 20 dose limits. Thus, RMD's uranium water treatment program is not likely to significantly affect any aspect of the natural environment. For further discussion on this issue, please see RMD's ER at Sections 3.13-3.14 & 4.

Issue #3: *Is the action likely to significantly affect any aspect of the cultural environment including those that might be related to environmental justice?*

RMD's proposed licensing action does not significantly affect historic or cultural resources or properties or implicate environmental justice considerations. RMD's Uranium Removal System is designed to be a self-contained system which can be installed within the confines of existing water treatment facilities. Even if new treatment buildings or structures are constructed based on municipal demand for drinking water, the Uranium Removal System will be installed within the newly constructed facility. Thus, RMD's uranium water treatment program, including the installation of the Uranium Removal System, does not cause any significant physical, visual or other effects on historic or cultural resources or properties. For further discussion on this issue, please see RMD's ER at Sections 4.7.3, 4.8.3, 4.9.3, & 4.10.3.

With respect to environmental justice issues, RMD's uranium water treatment program is designed to comply with a federal mandate (i.e., SDWA) and to provide *all consumers* within a given municipality with safe drinking water. In addition, based on the self-contained nature of the Uranium Removal System, the fact that there will not be uncontrolled re-introduction of removed uranium into the environment, and the low level of risk associated with licensed operations, RMD's uranium water treatment program will provide significant potential benefits for public health and safety by satisfying the SDWA uranium MCL. Although water prices may increase slightly *for all consumers*, there will be no potential disproportionate impacts on minority or low income groups arising from RMD's uranium water treatment program. For further discussion on this issue, please see RMD's ER at Sections 4.11.3.

Issue #4: *Is the action likely to generate a great deal of public interest about any environmental issue?*

RMD's uranium water treatment program is designed to provide public and private drinking water providers with assistance in complying with the SDWA's new uranium in drinking water standard without posing any significant potential adverse impacts to occupational or public health and safety. This program is also designed to seamlessly integrate into existing

water treatment operations, including direct installation of the Uranium Removal System into existing water treatment infrastructures. Given the mandate of the new uranium MCL, RMD's program will not only minimize, if not eliminate, potential interest in environmental issues associated with water treatment, but also will significantly mitigate public interest in environmental issues created by the new uranium MCL. Thus, RMD's uranium water treatment program is unlikely to generate a great deal of public interest about environmental issues associated with water treatment and will serve as a significant mitigation measure for municipalities seeking to comply with the SDWA. Therefore, there will be no objection to the federal mandate for water treatment and there will be no objection to the manner in which such water is treated.

Issue #5: *Is there a high level of uncertainty about the action's environmental effects?*

Rather than uncertainty, there is a high level of certainty regarding the lack of potential adverse impacts to public health and safety and an equally high level of certainty regarding the benefits of RMD's uranium water treatment program. RMD's Uranium Removal System has been piloted in several locations. Pilot test results support RMD's conclusion that the potential adverse impacts and benefits from Uranium Removal Systems, regardless of flow-rate, are known and have been adequately assessed.

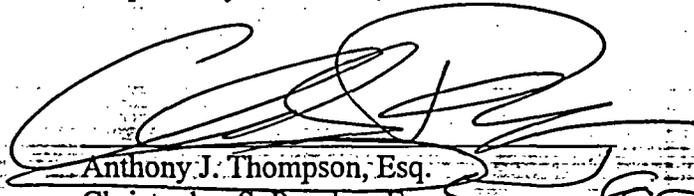
V. CONCLUSION

Based on the discussion above, RMD believes that a performance-based, multi-site license is the most effective and efficient NRC licensing format available given the emerging scope of the regulatory universe (e.g., the potential for a substantial number of municipalities with neither the expertise nor the desire to become AEA licensees to satisfy the mandate of the SDWA uranium MCL). Given that both performance-based and multi-site license formats are not new to NRC and have been granted in the past, RMD proposes that it be issued a performance-based, multi-site license for all of its uranium water treatment programs in *non-Agreement States*. RMD also proposes that NRC exercise flexibility to allow municipalities to provide required financial assurance through statements of intent or guarantees consistent with 10 CFR § 40.36(e)(4). Further, based on Section IV above and the time constraints generated by the SDWA uranium MCL compliance date, RMD also proposes that this licensing action be categorically excluded from preparation of an EA or EIS as posing no significant adverse impacts to public health and safety or the environment.

RMD also believes that NRC approval of its proposed licensing format will provide a template for individual Agreement States to further streamline their license review process and to issue performance-based, multi-site licenses for uranium water treatment or to recognize and endorse NRC's license template through reciprocity agreements. As such, RMD believes that Agreement State authorities, either individually or through the Organization of Agreement States (OAS), and *non-Agreement States*, either individually or through the Council of Radiation

Control Program Directors (CRCPD) should be involved in the review process, including commenting on RMD's proposed licensing action and associated environmental analyses.

Respectfully Submitted,



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Enclosures