

R.M.D. Operations, LLC

URANIUM WATER TREATMENT PROGRAM

SEPTEMBER, 2005

SAFETY EVALUATION REPORT

**LICENSE APPLICATION FOR
PERFORMANCE-BASED, MULTI-SITE LICENSE**

UNITED STATES OF AMERICA

Submitted to:

**UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND
SAFEGUARDS
DIVISION OF FUEL CYCLE SAFETY AND SAFEGUARDS
URANIUM PROCESSING SECTION**

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FIGURES

FIGURE 1

Water Remediation Technology International, LLC Companies (Corporate Structure)

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SAFETY EVALUATION REPORT

1.0 INTRODUCTION

On September 27, 2005, R.M.D. Operations, LLC, (RMD) submitted an application to the United States Nuclear Regulatory Commission (NRC) proposing to provide an innovative water treatment program to Community Water Systems (CWSs) for compliance with the new uranium in drinking water standard promulgated by the United States Environmental Protection Agency (EPA) under the Safe Drinking Water Act (SDWA). RMD's proposed uranium water treatment program involves the installation of a new Uranium Removal System that utilizes proven technologies at CWS water treatment facilities and the removal of natural uranium from drinking water sources using treatment media. When the treatment media is fully-loaded with uranium, RMD will remove such treatment media from the Uranium Removal System and transfer such media via United States Department of Transportation (DOT)-approved transport vehicles and containers to a properly licensed or permitted facility for final disposition. Final disposition of such treatment media includes direct disposal as a waste or processing as an alternate feed to recover the uranium content for introduction into the commercial nuclear fuel cycle. This Safety Evaluation Report (SER) documents NRC Staff's safety review of RMD's NRC license application, including its Environmental Report (ER) and performance-based, multi-site license request.

As stated in its license application letter dated September 27, 2005, RMD currently operates a Uranium Removal System at the Fox Run facility located near Petersburg, Virginia. Even though the uranium concentrated in the System does not exceed NRC *licensable* levels or general license limits, RMD intends for the Fox Run facility to be the first facility "registered" under its proposed performance-based, multi-site license after issuance. RMD has attached a short description of the relevant information regarding the Fox Run facility to its license application letter.

1.1 DESCRIPTION OF THE PROPOSED ACTION

This SER, the attached ER, and any environmental analysis prepared by NRC Staff provide the basis for NRC's decision to issue a performance-based, multi-site license to RMD within 30 days of the issuance of the SER. The requested materials license will authorize RMD to implement its uranium water treatment system, including installation of its Uranium Removal System, at multiple CWSs across the United States for the removal of natural uranium from drinking water sources. This performance-based, multi-site license will allow RMD to add new water treatment facilities to its license based on the conservative "upper-bound" health and safety and environmental analyses provided in the ER and the review of site-specific relevant health and safety and environmental data and other information by RMD's Safety and Environmental Review Panel (SERP). In preparing the draft SER, NRC Staff reviewed RMD's license application and ER against 10 CFR Part 40 and other applicable regulations. The SER

supports NRC Staff's finding that issuing the requested performance-based, multi site materials license to RMD will be in accordance with these regulations, with all applicable safety requirements of the Atomic Energy Act of 1954 (AEA), as amended.

1.2 REVIEW SCOPE

This SER details NRC Staff's safety review of RMD's radiation protection program and other relevant issues associated with the operation of uranium water treatment systems at multiple geographic locations across the United States. While much of the SER text repeats what is discussed in RMD's ER, any RMD commitments made in the ER are enforceable whether or not such commitments are stated in the SER.

Evaluation of health and safety and environmental impacts and measures to mitigate those impacts are contained in RMD's ER and any environmental analysis prepared by NRC Staff. The SER safety review focuses on those aspects of radiation protection discussed in the ER and is limited to those aspects of the license application that fall within the NRC's regulatory jurisdiction.

RMD shall conduct operations in accordance with all commitments, representations, and statements made in its license application submitted by cover letter dated September 27, 2005 and the Environmental Report dated September 27, 2005, except where superseded by licensed conditions contained in this license. Whenever the words "will" or "shall" are used in the aforementioned licensee documents, it denotes an enforceable license requirement.

2.0 AUTHORIZED ACTIVITIES

The performance-based, multi-site materials license to be issued to RMD will authorize the commercial operation of its uranium water treatment program, including the installation of Uranium Removal Systems, at multiple geographic locations across the United States. Uranium will be extracted from CWS drinking water sources using treatment media in self-contained treatment vessels similar to that used by *in situ leach* (ISL) uranium recovery licensees and concentrated and stored on the treatment media. When fully loaded, the treatment media will be removed from the Uranium Removal System and transferred to DOT-approved vehicles and containers for transport to properly licensed facilities for final disposition. This treatment media will be either processed as an alternate feed material at a licensed uranium recovery facility or directly disposed of as a waste at a properly licensed or permitted disposal facility.

Descriptions of the Uranium Removal System, its components, uranium removal processes, transport vehicles and containers, and other relevant requirements are described in the ER. In order to ensure that RMD's uranium water treatment program remains within the bounds of its performance criteria, NRC will require by license condition that:

RMD's uranium water treatment program, including operation of its Uranium Removal System, media exchanges, and final disposition pathways, shall not exceed the performance criteria outlined in the Environmental Report without NRC approval.

3.0 MANAGEMENT ORGANIZATION AND ADMINISTRATIVE PROCEDURES

3.1 ORGANIZATION

Figure 1 is an organizational chart of RMD's corporate position within, and relationship with, the group of Water Remediation Technology International companies. The position and duties of RMD personnel are described below, in descending order of authority. Qualifications and experience requirements are noted, where applicable. The organizational arrangement allows radiation safety matters to be considered at appropriate management levels. To ensure clear lines of communication for radiological safety matters, NRC will require by license condition that:

Any corporate organizational changes affecting the assignments or reporting responsibilities described in the ER or in any other RMD licensing documents shall be documented by RMD's SERP and made available to NRC.

3.1.1 PRESIDENT OF R.M.D. OPERATIONS, LLC

The President of RMD will have the ultimate responsibility for RMD water treatment program operations, including any and all CWS uranium water treatment systems.

3.1.2 CHIEF OPERATING OFFICER OF R.M.D. OPERATIONS, LLC

The Chief Operating Officer (COO) of RMD reports to the President of RMD and has management and financial responsibilities for all aspects of RMD's day-to-day operations, including engineering, construction, and installation of the uranium water treatment systems (including the Uranium Removal Systems); developing and employing RMD's service network; operations and maintenance of the Uranium Removal Systems including exchanging and disposing of the spent treatment media; environmental and government affairs; and accounting/finance. The COO will have signatory authority for RMD licenses and permits and the authority to enter into water treatment agreements with CWSs and uranium recovery/disposal agreements for spent treatment media on behalf of RMD.

3.1.3 CORPORATE RADIATION SAFETY OFFICER OF R.M.D. OPERATIONS, LLC

The Corporate Radiation Safety Officer (CRSO) reports directly to the COO of RMD and is responsible for the development, administration, and enforcement of all environmental programs for RMD's uranium water treatment program and the activities of the SERP, including management of the radiation safety program. The CRSO will also interface with other corporate officers to ensure that all system operations are conducted consistent with license conditions and applicable regulations and requirements. The CRSO is responsible for supervising and monitoring of the environmental protection and radiation safety programs for all uranium water treatment facilities and for advising the RMD System Specialists and the site-specific local Utility Managers and local Utility Operators on environmental and radiation safety issues. Responsibilities will include developing and implementing all radiation safety and environmental

programs, ensuring that all records will be correctly maintained, and assisting in ensuring compliance with NRC regulations and license conditions. The CRSO will conduct routine training programs for corporate and site employees with regard to the proper application of radiation protection, emergency response, and environmental control programs. The CRSO, when necessary, will inspect uranium water treatment facilities to verify compliance with all applicable radiological health and safety requirements and any quality assurance/quality control (QA/QC) requirements. Additionally, the CRSO will annually review all corporate operating procedures to ensure that site radiation safety procedures will be properly implemented and that radiation exposures will be maintained as low as reasonably achievable (ALARA).

The CRSO will be responsible for routinely auditing all operational and monitoring procedures, QA/QC and ALARA programs, and will be a member of the ALARA audit team, and a member of the SERP. The CRSO is authorized to terminate immediately any activity that may be a threat to employees, public health and safety or the environment, as indicated in reports from any site-specific local Utility Manager. The CRSO will serve as the primary point-of-contact for purposes of addressing site-specific public health and safety or environmental issues.

RMD will require that the CRSO has, at a minimum, a Bachelor of Science degree in biological or physical sciences, engineering or related discipline from an accredited college or equivalent practical experience/training. The CRSO also will attend the following training courses: (1) initial 40-hour RSO training course, (2) initial 16-hour Naturally Occurring Radioactive Materials (NORM) training course, and (3) refresher RSO and/or NORM courses or related follow-on training as necessary.

To ensure that RMD's CRSO possesses these qualifications and fulfills these training requirements, NRC will require by license condition that:

RMD's CRSO shall possess the professional qualifications and shall satisfy the professional training requirements outlined in the Environmental Report prior to engaging in any CRSO activities.

3.1.4 RMD SYSTEM SPECIALISTS

In addition to the CRSO, RMD will employ System Specialists that will be responsible for monitoring the installation of and maintaining and decommissioning Uranium Removal Systems. RMD System Specialists will perform the following tasks related to treatment media: (1) assure that all Uranium Removal System equipment has been installed and operates pursuant to license requirements at each water treatment facility, (2) perform maintenance, repair, and/or replacement operations on components of the Uranium Removal System containing licensed material, (3) monitor performance of local Utility Operators and Uranium Removal System operating data; (4) monitor performance and useful life of treatment media, (5) install fresh treatment media in the Uranium Removal System, (6) perform media exchanges to remove licensed material attached to spent treatment media, (7) arrange for the packaging and transportation of spent treatment media, (8) arrange for the final disposition of licensed material either at an NRC/Agreement State-licensed uranium recovery facility for processing as an alternate feed or at a properly licensed disposal facility for direct disposal. It is

also anticipated that RMD System Specialists will provide a portion of the "on-the-job" training for local Utility Managers and Operators.

RMD System Specialists will be instructed in all the topics covered in the radiation safety training for Utility Operators. In addition, they will attend an initial NORM Training Course, eight (8) to sixteen (16) hours in length. A course outline for a typical course, this one presented by American Radiation Services, Port Allen, LA, is presented in RMD's ER. As appropriate, this course will be customized to the Uranium Removal System and associated equipment to emphasize the areas related to sampling/handling the treatment media, personal protective equipment (PPE) requirements, minimizing surface contamination, and shipping/manifesting requirements. This training will include an end-of-course test for which a passing score must be attained.

In order to ensure that RMD System Specialists possess these qualifications and fulfill these training requirements, NRC will require by license condition that:

RMD's System Specialists shall possess the professional qualifications and shall satisfy the professional training requirements outlined in the Environmental Report prior to engaging in any licensed activities.

3.1.5 SITE-SPECIFIC LOCAL UTILITY MANAGERS (NON-RMD PERSONNEL)

Site-specific local Utility Managers will serve as the primary point-of-contact for the CRSO and RMD System Specialists when performing licensed activities. Local Utility Managers will be responsible for supervising local Utility Operators. Training requirements for local Utility Managers are described in Section 3.13.2.3 of the ER.

3.1.6 SITE-SPECIFIC LOCAL UTILITY OPERATORS (NON-RMD PERSONNEL)

Although they will not directly handle the spent treatment media, local Utility Operators who will monitor the Uranium Removal System on a daily basis may incidentally be exposed to radiation as a result of proximity to the System. Local Utility Operators report directly to the local Utility Manager, who serves as the primary point-of-contact for the CRSO. Tasks to be performed by local Utility Operators are described in Section 3.13.1.3 of the ER. Training requirements for local Utility Operators are described in Section 3.13.2.3 of the ER.

In order to ensure that local Utility Managers and Operators fulfill appropriate basic training requirements, NRC will require by license condition that:

RMD will ensure that local Utility Managers and Operators shall satisfy appropriate basic training requirements outlined in the Environmental Report prior to initiating licensed activities.

3.1.7 CONCLUSIONS

RMD has described its management and organization to show that its personnel and their relationship with the local Utility Manager is sufficient and that the CRSO and RMD System Specialists will be responsible for implementing the daily environmental protection and radiation safety programs for its uranium water treatment program. Their responsibilities are to ensure that RMD's radiation safety programs are complied with by all RMD employees and local Utility Managers and Operators and that potential radiation exposures are maintained in accordance with ALARA principles. The local Utility Operators report directly to the local Utility Manager, who serves as the primary point-of-contact for the CRSO. RMD has an acceptable corporate organization that defines management responsibilities and authority at each level. RMD's definition of the responsibilities with respect to development, review, approval, implementation, and adherence to operating procedures, radiation safety programs (including recordkeeping and reporting), environmental monitoring, QA/QC, routine/non-routine maintenance activities, and changes to any of these is acceptable. The qualifications required for personnel conducting the radiation safety program are acceptable and are consistent with NRC requirements.

3.2 MANAGEMENT CONTROL PROGRAM

3.2.1 PERFORMANCE-BASED LICENSE

The following license condition describes the process under which RMD, in conjunction with its SERP, will have the latitude to register new uranium water treatment systems, initiate changes to existing systems, and conduct tests without obtaining prior NRC review and approval. All changes made by RMD personnel at CWSs are subject to NRC inspection and enforcement actions. The inclusion of the following license condition does not alter or affect NRC's inspection function, nor does it allow RMD to alter license conditions without first obtaining NRC review and approval. Requesting changes to license conditions or performance requirements would require filing a license amendment application pursuant to 10 CFR Part 40.

In order to ensure that RMD and its SERP engage in licensed activities within the boundaries of its performance criteria and request NRC approval for license amendments when necessary, NRC will require by license condition that:

RMD will be permitted to register and implement new uranium water treatment systems at Community Water Systems that will operate within the scope of the performance requirements delineated in the Environmental Report. RMD's SERP will review Community Water System requirements and document the conclusion that such requirements are within the performance requirements set forth in the Environmental Report. Such documentation shall be subject to NRC inspection.

RMD may, without NRC approval: (a) make changes to standard operating procedures and (b) conduct tests or experiments, if RMD ensures that the following conditions are met:

- (1) the change, test or experiment does not conflict with any requirement specifically stated in RMD's license or impair RMD's ability to meet all applicable NRC regulations;
- (2) there is no degradation in the safety or environmental commitments made in the Environmental Report or other licensing documents;
- (3) the change, test or experiment is consistent with NRC's findings in its environmental and technical review and this SER.

If any of these conditions are not met, if any alterations to license conditions or to the performance requirements in the Environmental Report or if implementation of uranium water treatment programs are outside the scope of such performance requirements, NRC approval through a license amendment will be required. RMD's SERP will ensure that all such determinations are documented and that all records are kept until final license termination. All such determinations shall be reported to NRC annually.

3.2.2 SAFETY AND ENVIRONMENTAL REVIEW PANEL

The SERP shall operate as required by the following license condition:

The SERP shall consist of a minimum of three (3) individuals employed or appointed by RMD and an RMD employee shall be designated the SERP Chairperson. One member of the SERP shall have expertise in management and be responsible for managerial and financial approval changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and one member shall be the Corporate Radiation Safety Officer with the responsibility of ensuring that changes conform to radiological safety and environmental requirements. RMD may include additional members on the SERP as necessary to address health physics or other technical disciplines and legal/regulatory issues. Temporary members or permanent members other than the three (3) identified above may be consultants.

3.2.3 RECORDKEEPING

The recordkeeping program utilized by RMD will be fully compliant with NRC regulations and requirements. The program addresses two aspects of uranium water treatment facility system operation. The first aspect is a commitment to keep records of any actions taken or authorized by the SERP until license termination. The records will include written safety and environmental evaluations made by the SERP as part of its analysis for determining if applicable changes were made consistent with the license. The second is a commitment to maintain active records of employee exposure data and to provide employees with access to personal annual dose data in compliance with NRC requirements.

Although RMD has not specified in its license application the length of time records will be maintained, 10 CFR § 40.61(b) specifies requirements for recordkeeping and retention. Adequate recordkeeping is necessary to allow NRC to inspect and review the performance of a

licensee. In addition to the applicable requirements of 10 CFR § 40.61(b) the NRC will require by license condition that:

RMD's SERP shall document and maintain all decisions and determinations and make such documentation available for NRC inspection. RMD shall provide NRC with annual reports of all such decisions and determinations.

3.2.4 STANDARD OPERATING PROCEDURES

All principle work assignments for RMD employees and local Utility Managers and Operators will be conducted in accordance with written standard operating procedures (SOPs). Prior to implementation, all new or revised SOPs affecting radiation safety will be reviewed by the SERP. The CRSO will annually audit all operational and monitoring procedures to assure they are still appropriate and are not in conflict with newly established radiation safety policies or regulatory requirements. Additionally, the CRSO will annually review all operating procedures to ensure that radiation exposures will be maintained ALARA. The NRC views the scope of SOPs to be critical to safe operations. Therefore, NRC will require by license condition that:

Written SOPs have been established and presented in the Environmental Report. All SOPs shall be followed for all licensed activities, including the handling of licensed materials. A copy of the current SOPs shall be kept in the area(s) of the Uranium Removal System where they are utilized. All SOPs for licensed activities shall be reviewed and approved by the SERP prior to implementation.

3.2.5 CONCLUSIONS

RMD has an acceptable management control program that assures that all activities can be conducted according to written operating procedures. RMD has acceptably identified radiation protection, maintenance activities (especially in radiation areas), development of uranium treatment technology, and SERP reviews as areas where SOPs are acceptable. RMD has demonstrated that non-routine work or maintenance activities will comply with radiation safety requirements.

RMD will establish a SERP with at least three individuals representing expertise in management/financial, operations/construction, and radiation safety matters. RMD has committed that specific technical issues will be dealt with by the SERP with support from other qualified staff members or consultants, as appropriate. Annually, RMD will furnish a written report to the NRC that provides the bases for any changes in the approved programs.

Based on the information provided in the license application and the detailed review conducted of the management control program from RMD's performance-based, multi-site license, NRC Staff has concluded that the management control program, modified by the stated license conditions noted above, is acceptable. The use of a SERP to approve changes to the facility commensurate with licensed activities is in accordance with NRC regulations and

requirements. The SOPs described above are procedures to maintain radiation doses ALARA, in accordance with applicable requirements.

3.3 AUDITS AND INSPECTIONS

3.3.1 INSPECTIONS

The CRSO is primarily responsible for the conduct of inspections and the maintenance of inspection records, as required. The CRSO will conduct site-specific inspections under appropriate circumstances such as Uranium Removal System malfunction, release of treatment media, transportation accident or upon request of the local Utility Manager.

3.3.2 ALARA AUDIT

Members of the RMD ALARA audit team, which will be a subcommittee of the SERP, will conduct annual audits of the CWS uranium water treatment systems, the technology used to remove uranium using treatment media, and the radiation protection and ALARA program under the direction of the CRSO. The audit will address the state of technology, containment and radiation safety procedures, and any ALARA-based corrective actions recommended in audit findings. These findings and proposed actions will be reviewed and approved by the SERP.

3.3.3 QA/QC AUDIT

An annual audit of the radiation monitoring protocol and accident response procedures, as well as all other QA/QC programs, will be conducted in conjunction with the annual ALARA audit by the CRSO. The CRSO may designate individuals qualified in chemistry and monitoring techniques who will not have direct responsibilities in areas being audited to assist in the audit. Audit results will be reviewed by the President and COO of RMD and any corrective actions to be taken based on audit results will be documented and maintained at RMD corporate headquarters.

3.3.4 CONCLUSIONS

Based on the information provided in the license application and the detailed review conducted of the management audit and inspection programs, modified as above by the stated license condition, for RMD's uranium water treatment program, NRC Staff has concluded that the proposed programs are acceptable and ensure compliance with relevant NRC regulations for periodic reviews of radiation protection programs.

RMD has acceptable management audit and inspection programs that provide frequencies, types, and scopes of audits and inspections sufficient to implement the proposed action. RMD will fully document and maintain records of audits and inspection results, including any corrective actions to be taken based on such results.

3.4 RADIATION SAFETY TRAINING

RMD has presented a comprehensive radiation safety program in Section 3.13 of its ER. In addition, the specific radiation safety training required for the CRSO, RMD System Specialists, and local Utility Managers and Operators is presented in Section 3.13.2 of the ER.

To ensure that all radiation safety requirements are satisfied, NRC will require by license condition that:

RMD will implement its radiation safety program as described in Section 3.13 of its Environmental Report. All training sessions and materials shall conform to the requirements of the Environmental Report and RMD's performance requirements. Any alterations to the radiation safety program outside the scope of RMD's performance requirements or that fail to meet a condition for SERP action shall require NRC approval through a license amendment.

3.4.1 CONCLUSIONS

The radiation protection training program for personnel at water treatment facilities using RMD's uranium water treatment program adheres to NRC guidance and requirements contained in 10 CFR Part 40 and other applicable regulations. The content of the training material, testing, on-the-job training, and the extent and frequency of retraining are acceptable.

Based on the information provided in the license application and the detailed review conducted of the radiological protection training program, modified above by the stated license conditions, for RMD's uranium water treatment systems, NRC Staff has concluded that the radiological training program is acceptable and, in accordance with relevant NRC requirements. Additionally, NRC Staff finds that the training program will help ensure acceptable implementation of the radiation protection program.

4.0 RADIATION SAFETY CONTROLS AND MONITORING

4.1 DESIGN FEATURES FOR RADIOACTIVE EFFLUENT CONTROL

At CWSs utilizing RMD's uranium water treatment system, there are two potential radioactive effluents: uranium residuals on treatment media from water treatment operations and radiological emissions from such treatment media. Section 2.3.1 of the ER accompanying RMD's license application describes proposed engineering designs of the water treatment system used to contain the treatment media. In order to ensure that such residuals are safely contained, NRC will require by license condition:

RMD will ensure that all Uranium Removal System equipment is installed properly prior to the commencement of license activities. After the commencement of licensed activities, RMD will ensure that no alterations are made to components of the Uranium Removal System that do or potentially may contain licensed material unless approved by the SERP or NRC as required.

RMD will ensure that all equipment used for media exchanges are functional and operate within the specifications described in the Environmental Report. RMD System Specialists will ensure that all media exchange activities are conducted in accordance with the Environmental Report and in a manner which minimizes potential releases of spent treatment media.

Based on the information provided in the license application and the detailed review conducted of the radiation design features for control of releases of spent treatment media, modified above by the stated license conditions, for RMD's uranium water treatment system, NRC Staff has concluded that the radiation design features are acceptable and, in accordance with relevant NRC requirements. Additionally, NRC Staff finds that the design features will help ensure acceptable implementation of the radiation protection program.

RMD has acceptable radiation design features for the control of radioactive releases at CWSs using RMD's uranium water treatment system and has demonstrated that releases of spent treatment media are controlled and monitored. RMD will use acceptable containment design features to minimize the potential risk of releases.

4.2 RADIATION MONITORING PROGRAMS

RMD has committed to performing monitoring of radiation levels using appropriate SOPs for monitoring of radiation in the restricted area and to all local Utility Managers and Operators or members of the public. The radiation monitoring program is described in Section 3.13.4 of the ER.

To ensure adequate radiation monitoring at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall, at a minimum, utilize a radiation monitoring program in accordance with the Environmental Report.

4.3 CONCLUSIONS

RMD has acceptable treatment area radiation exposure monitoring programs at CWSs using its uranium water treatment system. RMD has provided an acceptable set of information setting forth the location and number of radiation monitors. The radiation monitors are acceptably placed.

RMD has established appropriate criteria to determine which employees should receive external radiation monitoring, and RMD has committed to using radiation monitors with the appropriate range and sensitivity that will support protection of the health and safety of employees during the full range of licensed activities. All planned radiation surveys are acceptable and planned documentation of such surveys and exposures are acceptable.

Based on the information provided in the license application and the detailed review conducted of the treatment area monitoring program at water treatment facilities using RMD's uranium water treatment program, as modified above by the stated license condition, NRC Staff has concluded that the treatment area monitoring programs are acceptable and ensure compliance with applicable NRC regulations.

4.4 ENVIRONMENTAL MONITORING AND RESPONSE PROGRAM

RMD has committed to monitoring all potential releases of licensed material and to responding to such releases in a manner which is adequately protective of public health and safety and the environment. In an effort to control releases, RMD has presented detailed information regarding emergency response procedures for releases of spent treatment media during water treatment operations, media exchanges, and transportation of such treatment media in Section 3.13-3.14 of the ER. Additionally, RMD has presented a description of its recommended but optional secondary containment measures for potential releases of treatment media in Section 2.3.2 of the ER.

To ensure adequate environmental monitoring and response at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall, at a minimum, utilize an environmental monitoring program and emergency response procedures in accordance with the Environmental Report.

4.5 CONTAMINATION CONTROL

RMD has committed to requiring that all RMD System Specialists and local Utility Managers and Operators adhere to SOPs and/or emergency procedures regarding contamination control, including surface contamination of the Uranium Removal System and contamination of personnel (e.g., clothing, shoes, etc.). These SOPs and requirements are described in Section 3.13.5, 3.13.6 & 3.14 of the ER.

To ensure adequate contamination control at CWSs using RMD's uranium water treatment program, NRC will require by license condition that:

RMD shall, at a minimum, utilize a contamination control program in accordance with the Environmental Report.

4.5.1 CONCLUSIONS

RMD has described an acceptable contamination control program for CWSs using its uranium water treatment system. The program is consistent with applicable NRC regulations, and acceptable controls will be in place to prevent contaminated employees from entering clean areas or leaving the site. The SOPs will include provisions for contamination control such as maintaining changing areas.

In general, as a result of the CWS' importance as a community water supply, the water supply site typically will be secured, regardless of the need for treatment for removal of radionuclides. At a minimum, well houses at these sites will be locked. Many sites, although not all, will also be secured with locked fences. In the more atypical situation of the Uranium Removal System being located in the open, outside of a building, it is anticipated that those particular treatment sites will be fenced and locked. In addition to site security, the licensed material always will be contained in a sealed treatment vessel.

5.0 SECURITY PROCEDURES AND MEASURES

The security procedures and measures for CWSs using RMD's uranium water treatment system are acceptable active and passive restraints on ingress to licensed and restricted areas. RMD has identified acceptable reasonable passive controls including the sealed treatment vessel. RMD also understands that NRC may, at its discretion, issue Compensatory Measures or other security requirements for its uranium water treatment systems. To ensure adequate security at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall, at a minimum, utilize security procedures and measures in accordance with the Environmental Report. RMD also shall comply with and implement in conjunction with appropriate site-specific personnel any NRC Compensatory Measures or other security requirements issued by the Commission, as well as CWS security requirements.

5.1 CONCLUSIONS

Based on the information provided in the license application and the detailed review conducted of the security procedures and measures for water treatment facilities using RMD's uranium water treatment system, modified by the stated license conditions above, NRC Staff has concluded that the security procedures and measures are acceptable and will ensure compliance with applicable NRC requirements.

6.0 EMERGENCY PROCEDURES AND PREVENTATIVE MEASURES

6.1 MEDIA EXCHANGES

RMD has committed to implementing SOPs for media exchanges to ensure that all spent treatment media is transferred from the Uranium Removal System to DOT-approved containers and is transported in DOT-approved vehicles to properly licensed facilities for final disposition in a manner which minimizes potential releases of spent treatment media and which is adequately protective of public health and occupational safety. The SOPs and other requirements for media exchanges are described in Section 3.14.3-3.14.4 of the ER.

To ensure adequate protection of workers during media exchanges at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall, at a minimum, utilize media exchange SOPs and other procedures in accordance with the Environmental Report.

6.2 TRANSPORTATION ACCIDENT RESPONSE

RMD has analyzed highly unlikely but credible potential accident scenarios and doses to members of the public from accidental releases of spent treatment media during transportation. RMD has committed to utilizing appropriately-licensed or permitted transportation contractors to transfer spent treatment media from CWSs to properly licensed facilities for final disposition. Transport containers will be approved under appropriate DOT regulations for transport of Class 7 radioactive material.

In the event of a transportation accident, the primary level of response will be with the transportation contractor's established response team and procedures. RMD will coordinate transportation accident response procedures with the transportation contractor, including post-remediation accident site surveys, and will conduct additional accident site surveys as necessary.

To ensure adequate transportation accident response at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall, at a minimum, utilize transportation accident response SOPs and procedures in accordance with the DOT-approved transportation contractor's response procedures. RMD also will conduct follow-up accident site surveys, as necessary.

6.3 CONCLUSIONS

RMD has successfully described the anticipated significant effects of highly unlikely but credible accident scenarios from the transfer of spent treatment media to properly licensed facilities for final disposition. The planned response programs are acceptable and include appropriate mitigation and remediation measures. The response program will comply with the notification requirements in 10 CFR § 40.60.

7.0 WASTE MANAGEMENT

Waste management alternatives are discussed in Section 3.14 of the ER. RMD's waste management philosophy is that, once it is removed from a given drinking water source, uranium should not be re-introduced into the local environment. RMD has committed to ensuring that all spent treatment media from CWSs utilizing its uranium water treatment program is transferred to properly licensed or permitted facilities for final disposition. RMD's preferred alternative for waste management is the final disposition of spent treatment media at an NRC or Agreement State-licensed uranium recovery facility for processing as an alternate feed. In the event that no such facility is available, RMD will transfer spent treatment media to a properly licensed or permitted facility for direct disposal. RMD will obtain properly executed contracts with uranium recovery or disposal facilities prior to initiating licensed activities and will designate a final disposition location for spent treatment media at each CWS uranium water treatment facility.

To ensure adequate waste management at CWSs using RMD's uranium water treatment program, NRC will require by license condition that:

RMD shall transfer spent treatment media only to properly licensed or permitted facilities for final disposition. RMD will obtain properly executed contracts with these facilities prior to initiating licensed activities and will designate a set of final disposition locations for spent treatment media at each CWS uranium water treatment program. RMD will select a final disposition location from the designated set of locations prior to transferring each set of spent treatment media.

7.1 CONCLUSIONS

RMD has acceptably described the potential final disposition alternatives for spent treatment media from its uranium water treatment system. RMD's potential final disposition alternatives are acceptable and will result in adequate protection of public health and safety. Based on the information provided in the license application, RMD's waste management program is acceptable.

8.0 DECOMMISSIONING ACTIVITIES

RMD has committed to providing decommissioning of Uranium Removal Systems when necessary. Decommissioning tasks and other requirements for Uranium Removal Systems are described in Section 3.14.5 of the ER.

RMD is committed to decommissioning Uranium Removal Systems and all areas within the water treatment facility associated with the System to unrestricted use criteria. Given the self-contained nature of the System and the limited amount of licensed material contained therein prior to media exchanges, RMD has determined that decommissioning will be relatively simple.

To ensure the decommissioning of Uranium Removal Systems at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall conform its decommissioning activities to the methodology and requirements delineated in the Environmental Report.

9.0 FINANCIAL ASSURANCE

RMD has committed to providing adequate financial assurance for decommissioning activities at CWSs utilizing the uranium water treatment system. RMD's financial assurance alternatives are described in greater detail in RMD's license application letter. Pursuant to 10 CFR § 40.36(e)(4) or a specific exemption from municipality licensee requirements therein, RMD will obtain properly executed statements of intent or guarantees from municipalities for the decommissioning costs estimate prepared pursuant to ER requirements prior to initiating licensed activities. RMD will obtain other acceptable financial assurance mechanisms from private entities operating CWSs prior to initiating licensed activities.

RMD also has committed to a financial assurance methodology to calculate decommissioning cost estimates for its Uranium Recovery Systems. This methodology will allow RMD to calculate decommissioning cost estimates for each of its Uranium Removal Systems on a site-specific basis and document such estimate in its statement of intent, guarantee or other financial assurance mechanism. This methodology is presented in Section 3.14.5 of the ER.

To ensure completion of decommissioning activities at CWSs using RMD's uranium water treatment system, NRC will require by license condition that:

RMD shall obtain appropriate financial assurance mechanisms for site-specific uranium water treatment programs prior to initiating licensed activities. For public CWSs, RMD may obtain statements of intent or guarantees pursuant to 10 CFR § 40.36(e)(4). For private CWSs, RMD will obtain acceptable financial assurance mechanisms pursuant to 10 CFR § 40.36 prior to initiating licensed activities.

RMD will prepare site-specific decommissioning costs estimates pursuant to the methodology delineated in the ER prior to initiating licensed activities. RMD shall document such decommissioning cost estimates in its financial assurance mechanism for each CWS.

RMD will adjust decommissioning cost estimates pursuant to applicable NRC requirements such as changes in engineering or design and economic conditions such as inflation on an annual basis.

10.0 CONCLUSIONS AND OTHER SAFETY CONDITIONS

Upon completion of the safety review of RMD's license application for a performance-based, multi-site license, NRC Staff concludes that the requirements of 10 CFR Part 40 and other applicable requirements have been satisfied and that issuance of a performance-based, multi-site license to RMD containing the license conditions listed above and pursuant to the statements contained in the ER will not be inimical to the common defense or security or to public health and safety. NRC Staff also concludes that there are adequate assurances that applicable NRC requirements will be satisfied.

Additional license conditions may be implemented by NRC based on its review of RMD's licensed application. Such conditions shall be incorporated into this SER by reference.