

## POLICY ISSUE INFORMATION

July 8, 2005

SECY-05-0123

FOR: The Commissioners

FROM: Luis A. Reyes  
Executive Director for Operations

SUBJECT: STATUS OF THE DEVELOPMENT OF MEMORANDA OF UNDERSTANDING WITH NEBRASKA AND WYOMING, REGARDING THE REGULATION OF GROUNDWATER PROTECTION AT THEIR *IN SITU* LEACH URANIUM RECOVERY FACILITIES

PURPOSE:

To inform the Commission about the status of the U.S. Nuclear Regulatory Commission (NRC) staff's actions to develop Memoranda of Understanding (MOUs) that would allow the States of Nebraska and Wyoming to take lead responsibility for implementing regulation of groundwater protection at *in situ* leach (ISL) uranium recovery facilities located in these States.

BACKGROUND:

For several years, the staff has been pursuing an initiative to eliminate or reduce the overlapping regulation of groundwater protection provided by the NRC and the non-Agreement States at operating ISL facilities. In this regard, the inefficiencies associated with overlapping regulation are expected to increase, with the market price for "yellowcake" (uranium oxide, U<sub>3</sub>O<sub>8</sub>) trending upwards in recent years. With this trend, uranium recovery licensees in both Nebraska and Wyoming have indicated interest in submitting license amendment applications for new satellite ISL facilities, within the next year.

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In SECY-03-0186, the staff presented several options for reducing or eliminating the overlapping regulation of groundwater protection at affected ISL facilities in non-Agreement States. In that paper, the staff recommended allowing the non-Agreement States to take lead responsibility for active regulation of groundwater protection through the development of MOUs. In a Staff Requirements Memorandum dated November 19, 2003, the Commission approved the staff's recommendation and directed the staff to develop a Regulatory Issue Summary (RIS) to inform the public about the proposal and proceed with the development of an MOU with each State.

RIS 2004-02 solicited public comment on the proposal to allow the non-Agreement States to take lead responsibility for active regulation of groundwater protection at affected ISL facilities. Comments on the proposal were received from the States of New Mexico, Texas, and Wyoming; the Wyoming Mining Association; the National Mining Association (NMA); the Nuclear Energy Institute; Crow Butte Resources, Inc.; and Power Resources, Inc. All comments were favorable and supported the NRC's proposal through the development of MOUs with the affected States. On June 7, 2004, the staff issued RIS 2004-09, to discuss the comments received in response to RIS 2004-02 and to inform the public of the NRC's continuing plans to allow the non-Agreement States to take lead responsibility for active regulation of groundwater protection in the affected States. RIS 2004-09 is provided as an Attachment to this paper.

In June 2004, the staff conducted a detailed evaluation of Nebraska's U.S. Environmental Protection Agency (EPA)-authorized Underground Injection Control (UIC) Program, using the NRC's groundwater protection program, as provided in NUREG-1569, "Standard Review Plan for *In Situ* Leach Uranium Extraction License Applications" (June 2003). In this regard, the NRC's groundwater protection program for ISL facilities is founded in the statutory requirements set forth in the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). The staff conducted a similar comparability review of Wyoming's EPA-authorized UIC Program in August 2004. The purpose of these reviews was to compare the States' groundwater protection programs with the NRC's groundwater protection program, to determine if the States' programs were at least equivalent to the NRC's program. The staff planned to use a finding of equivalency between the NRC and State groundwater protection programs as the basis for allowing these States to take lead responsibility for active regulation in this area through the development of MOUs. As more fully discussed below, the Nebraska and Wyoming groundwater protection programs were found to be not equivalent to the NRC's groundwater protection program.

#### DISCUSSION:

The processes involved in ISL mining of uranium from an underground ore zone chemically alter the groundwater quality relative to the conditions that existed before the onset of operations. After the completion of uranium recovery in a particular mining area, licensees are required to restore the affected groundwater to established standards to assure the protection of public health, safety, and the environment. Because the most significant impact of ISL mining is the chemical alteration of the groundwater in the ore zone of interest, the groundwater restoration elements of the NRC's groundwater protection program are the most important aspects of the NRC's program for ISL facilities.

As noted above, the NRC's groundwater protection program is grounded in the requirements of UMTRCA. UMTRCA directed the EPA Administrator to promulgate generally applicable standards for the protection of public health, safety, and the environment from radiological and nonradiological hazards associated with the production, handling, and disposition of byproduct material resulting from uranium recovery operations. UMTRCA further specified that such generally applicable standards for nonradiological hazards "shall be consistent" with the standards issued by the EPA under the Solid Waste Disposal Act (SWDA) for hazardous wastes. EPA standards issued pursuant to the SWDA were provided in 40 CFR Part 264 ("Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities"). UMTRCA mandated that implementation and enforcement of the applicable EPA standards for both radiological and nonradiological hazards associated with byproduct material would be the NRC's responsibility.

Pursuant to the requirements of UMTRCA, the EPA promulgated its health, safety, and environmental standards for byproduct material in 40 CFR Part 192 ("Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings"). Subpart D of Part 192 establishes the standards for uranium byproduct materials, including groundwater protection requirements in 40 CFR 192.32(a)(2), which specify that uranium byproduct materials shall be managed in conformance with the groundwater protection standard in 40 CFR 264.92.

The requirements in 40 CFR 264.92 specify that hazardous constituents detected in groundwater at a regulated unit (e.g., NRC-licensed uranium recovery facilities) must not exceed the concentration limits provided in 40 CFR 264.94. The concentration limits in 40 CFR 264.94 are tiered, reflecting the underlying intent of the standards to prevent groundwater degradation from hazardous constituents, but recognizing that some degree of constituent contamination in the groundwater may be acceptable if those constituents do not pose a substantial present nor potential hazard to human health or the environment. The primary standard in the tiered set of standards in 40 CFR 264.94 limits the concentration of hazardous constituents in the groundwater to background levels. In the application of this standard to the NRC's licensed ISL facilities, the licensees must first make significant efforts to restore degraded groundwater from uranium recovery operations to background levels before consideration of alternative levels (e.g., specified maximum concentration limits, alternative concentration limits, or class-of-use concentration limits), based on technical, economic, health, or environmental reasons.

Although the underground mining zone is not byproduct material, it is part of the uranium extraction process which the NRC regulates. The Commission has approved the guidance in NUREG-1569 which is applied on a case-by-case basis to implement NRC regulation of groundwater protection at ISL facilities. The NRC's groundwater protection program for ISL facilities is primarily embodied in NUREG-1569 which, per Commission direction, the staff developed in lieu of a new 10 CFR Part 41 ("Domestic Licensing of Uranium and Thorium Recovery Facilities"). The proposed Part 41 would have implemented EPA groundwater protection standards for ISL facilities. Although those standards have not yet been embodied in NRC regulations, NUREG-1569 is grounded in the statutory mandate discussed above.

As described in NUREG-1569, the NRC's groundwater protection program includes both primary and secondary restoration standards. The primary goal of groundwater restoration is to return the water quality within the exploited uranium production zone, and any affected aquifers, to pre-operational (baseline) water quality conditions. Licensees must make significant efforts to reach the primary restoration standards and must continue these efforts so long as restoration continues to result in significant improvements in groundwater quality. However, Section 84 of the Atomic Energy Act of 1954, as amended by UMTRCA, contemplates that the primary standards may not be attainable because of site-specific conditions or economic costs and secondary restoration standards are established at the time of licensing. The secondary standards recognize that ISL operations may result in permanent changes to water quality (i.e., relative to baseline water quality) in the uranium production zone which leaves some constituent concentrations higher than pre-operational baseline levels. Under these circumstances, secondary restoration goals are intended to return the water quality to its pre-operational class of use. The NRC standards for groundwater protection, in NUREG-1569, appropriately mirror the standards set forth in the SWDA. To illustrate the difference between the primary and secondary restoration standards, the Crow Butte Resources, Inc., ISL has a primary restoration standard of 0.092 mg/l for uranium compared to a secondary restoration standard of 5 mg/l.

The staff's June 2004 evaluation of Nebraska's groundwater protection program identified a major variance with respect to the groundwater restoration standards specified in Nebraska's Environmental Protection Act and regulations for its UIC Program, as provided in the Nebraska Administrative Code, Title 122, "Rules and Regulations for Underground Injections and Mineral Production Wells." In both the statute and the regulations, the Nebraska groundwater restoration standard is specified to "*....return each resource to a quality of use consistent with the uses for which the resource was suitable prior to the activity.*" In essence, the Nebraska restoration standard is equivalent to the secondary restoration standards in the NRC's groundwater protection program. Thus, the most important element of Nebraska's groundwater protection program is not equivalent to the corresponding element in the NRC's program.

The staff's August 2004 evaluation of Wyoming's groundwater protection program identified the same variance in Wyoming's Environmental Quality Act and Industrial Development and Information Siting Act, and the rules that the Wyoming Department of Environmental Quality (WDEQ) has proposed for implementation of its UIC Program. In the Wyoming statute, groundwater restoration is defined as "*....the condition achieved when the quality of all groundwater affected by the injection of recovery fluids is returned to a quality of use equal to or better than, and consistent with the uses for which the water was suitable prior to the operation by employing the best practicable technology.*" This restoration standard, like the Nebraska standard, is essentially equivalent to the secondary restoration standards in the NRC's groundwater restoration program. Until fairly recently, the WDEQ implemented a restoration standard for its UIC Program that was consistent with the NRC's primary restoration standards. However, as a result of a challenge to the more stringent restoration standards in WDEQ's regulations, from the Wyoming Mining Association, in July 2003, the WDEQ proposed new rules and regulations, in March 2004, to make the restoration standards consistent with the

standards established in the underlying statute. The staff understands that these new rules and regulations were promulgated in May 2005. Thus, the staff's findings of a major variance in the Wyoming groundwater restoration standards were similar to the findings in the Nebraska review.

The variance in Nebraska and Wyoming restoration standards would impact the NRC's ability to allow these States to take lead responsibility for active regulation of groundwater protection through a transparent MOU process. The following areas of the NRC's groundwater protection program would be impacted by the variance: (1) ISL site characterization; (2) pre-operational or baseline water quality monitoring; (3) production or operational monitoring; and (4) the groundwater restoration program, including proposed restoration methods, restoration monitoring, and post-restoration stability monitoring. The staff's comparability evaluation of the Nebraska and Wyoming groundwater protection programs also identified additional, but relatively minor, issues, in relation to well mechanical-integrity testing. However, the staff believes that these issues could be easily resolved with minor changes or enhancements to the States' groundwater protection programs. In that vein, the following areas of the NRC's groundwater protection program could be deferred to the States through the MOU process: (1) ISL process methodology and equipment design, including ISL process instrumentation and control; (2) well design; (3) well mechanical-integrity testing; and (4) well inspection.

In a letter to Chairman Diaz dated May 9, 2005, the NMA requested information about the status of the MOU development effort for Nebraska and Wyoming ISL facilities, suspecting that this effort may have "hit a roadblock." The NMA expressed interest in having its views heard prior to any final decisions on the MOU development effort and provided its understanding of the statutory requirements, and the guidance in NUREG-1569, for restoration of groundwater at ISL facilities operating under EPA-authorized UIC Programs. In the June 2, 2005, response to NMA, the staff stated their intent to meet with the NMA to discuss their concerns about the MOU development effort. In a subsequent letter to Chairman Diaz dated June 13, 2005, the WDEQ requested clarification of the NRC's groundwater restoration standards in NUREG-1569. The planned meeting with the NMA will also include representatives from the Nebraska and Wyoming UIC Programs, and other stakeholders, to discuss the issues raised by both the NMA and WDEQ, the significant variances identified in the Nebraska and Wyoming UIC Programs, the related impediments they pose to the MOU development effort, and the corresponding deferral of active regulation of groundwater protection to the States. After evaluating stakeholder feedback from this meeting, the staff will develop and present options with a recommendation for Commission consideration regarding the future direction of the MOU development effort.

#### COMMITMENTS:

Listed below are the actions or activities committed to by the staff in this paper:

1. Meet with stakeholders to discuss results of the staff's comparability reviews of the States' UIC Programs and related impacts on MOU development (July 2005).
2. Prepare options and a recommendation for Commission consideration regarding the MOU development effort (October 2005).

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. This paper does not contain sensitive information. The staff requests that this paper be made publicly available at the Commission's earliest convenience.

*/RA Martin J. Virgilio for/*

Luis A. Reyes  
Executive Director  
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Attachment: RIS 2004-09

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. This paper does not contain sensitive information. The staff requests that this paper be made publicly available at the Commission's earliest convenience.

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Attachment: RIS 2004-09

WITS: 200300277

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\*See previous concurrence

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ATTACHMENT

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