

DATED: SEPT 2, 1992

Mr. Kenneth Alkema, Executive Director  
Department of Environmental Quality  
288 North 1460 West  
Salt Lake City, UT 84114-4850

Dear Mr. Alkema:

This confirms the discussion Carlton Kammerer, Director, Office of State Programs, and Robert J. Doda, Region IV State Agreements Officer, held with Mr. Larry Anderson, Director, Division of Radiation Control on April 17, 1992, following our routine review of the Utah radiation control program. The following NRC staff members, Joseph Kane, Fred Ross, and Robert Hogg, of NRC's Office of Nuclear Material Safety and Safeguards, also participated in the review during April 13-17, 1992.

As a result of our review of the State's program and the routine exchange of information between the NRC and the State of Utah, the staff is prepared to offer a finding that overall the Utah program for regulation of agreement materials is adequate to protect the public health and safety, and compatible with the Commission's program contingent upon a satisfactory resolution of significant Category I comments relating to the technical quality of licensing actions for the Envirocare low-level radioactive waste (LLRW) disposal license (Enclosure 2, item 2).

A significant portion of this review was devoted to an examination of the State's action with respect to Envirocare's application for authority for land disposal of LLRW under the amended Agreement with NRC. The State's licensing action on the application is the first in the United States under regulations developed specifically for land disposal of LLRW (i.e., Utah's regulations equivalent to 10 CFR Part 61). The State's rationale for its exemption of Envirocare from the site ownership requirement and of the adequacy of the technical bases for the license amendment authorizing land disposal of LLRW under the amended Agreement have been the subject of previous reviews and discussions. As of this late date these issues are not yet fully resolved. In its request to the NRC for an amended Agreement, the State committed to implement a regulatory program for land disposal of LLRW that would be compatible with that of the NRC. Our staff will be in contact with your Office in the near future to bring these issues to a satisfactory closure.

With respect to our review of other parts of the State's Agreement program, we were pleased to find that you have adopted all of the necessary compatibility regulations within the suggested time frame. Uniformity among State regulatory agencies is an important part of the Agreement State program, and we appreciate your efforts in this regard. Two QA/QC manuals for the Envirocare facility, which were developed by the Department, were found to be particularly useful, and the NRC requested copies for reference in other regulatory programs for the disposal of LLRW.

Enclosure 1 contains an explanation of our policies and practices for reviewing Agreement State programs. Please note that on May 28, 1992, the Commission approved amendments to the Commission Policy Statement for review of Agreement State programs and added guidelines and indicators specific to State regulatory programs for land disposal of LLRW. These will be used in future reviews of the Utah program.

Enclosure 2 is a summary of the review findings which were discussed with Mr. Anderson on April 17, 1990. We request specific responses from the State on the comments in Enclosure 2.

In accordance with NRC practice, I am also enclosing a second copy of this letter for placement in the State's Public Document Room or otherwise to be made available for public review.

I appreciate the courtesy and cooperation extended to the NRC staff during the review. I am looking forward to your comments regarding our findings and your staff responses to the Enclosure 2 recommendations.

Sincerely,

Carlton Kammerer, Director  
Office of State Programs

Enclosures:  
As stated

cc w/encls:  
James M. Taylor, Executive Director  
for Operations  
Robert D. Martin, Regional Administrator  
Region IV  
Larry Anderson, Director, Division of  
Radiation Control  
State Liaison Officer  
NRC Public Document Room  
State Public Document Room

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\*See previous concurrence.

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Application of "Guidelines for NRC Review  
of Agreement State Radiation Control Programs"

The "Guidelines for NRC Review of Agreement State Radiation Control Programs," were published in the Federal Register on June 4, 1987, as an NRC Policy Statement. The Guidelines provide 29 indicators for evaluating Agreement State program areas. Guidance as to their relative importance to an Agreement State program is provided by categorizing the indicators into 2 categories.

Category I indicators address program functions which directly relate to the State's ability to protect the public health and safety. If significant problems exist in several Category I indicator areas, then the need for improvements may be critical.

Category II indicators address program functions which provide essential technical and administrative support for the primary program functions. Good performance in meeting the guidelines for these indicators is essential in order to avoid the development of problems in one or more of the principal program areas, i.e., those that fall under Category I indicators. Category II indicators frequently can be used to identify underlying problems that are causing, or contributing to, difficulties in Category I indicators.

It is the NRC's intention to use these categories in the following manner. In reporting findings to State management, the NRC will indicate the category of each comment made. If no significant Category I comments are provided, this will indicate that the program is adequate to protect the public health and safety and is compatible with the NRC's program. If one or more significant Category I comments are provided, the State will be notified that the program deficiencies may seriously affect the State's ability to protect the public health and safety and that the need of improvement in particular program areas is critical. If, following receipt and evaluation, the State's response appears satisfactory in addressing the significant Category I comments, the staff may offer findings of adequacy and compatibility as appropriate or defer such offering until the State's actions are examined and their effectiveness confirmed in a subsequent review. If additional information is needed to evaluate the State's actions, the staff may request the information through follow-up correspondence or perform a follow-up or special, limited review. NRC staff may hold a special meeting with appropriate State representatives. No significant items will be left unresolved over a prolonged period. The Commission will be informed of the results of the reviews of the individual Agreement State programs and copies of the review correspondence to the States will be placed in the NRC Public Document Room. If the State program does not improve or if additional significant Category I deficiencies have developed, a staff finding that the program is not adequate will be considered and the NRC may institute proceedings to suspend or revoke all or part of the Agreement in accordance with Section 274j of the Act, as amended.

Enclosure 1

SUMMARY OF ASSESSMENTS AND COMMENTS  
FOR THE UTAH RADIATION CONTROL PROGRAM  
FEBRUARY 9, 1990 TO APRIL 17, 1992

SCOPE OF REVIEW

This program review was conducted in accordance with the Commission's Policy Statement for reviewing Agreement State Programs published in the Federal Register on June 4, 1987, and the internal procedures established by the NRC's State Agreements Program. The State's program was reviewed against the 29 program indicators provided in the Guidelines. The review included inspector accompaniments, discussions with program management and staff, technical evaluation of selected license and compliance files, and the evaluation of the State's responses to an NRC questionnaire that was sent to the State in preparation for the review.

The fifth review meeting with Utah representatives was held during the period of April 13-17, 1992, in Salt Lake City, Utah. The State was represented by Mr. Larry Anderson, Mr. Dane Finerfrock, and Mr. Craig Jones, all from the Utah Division of Radiation Control (DRC). The NRC was represented by Mr. Robert J. Doda, Region IV State Agreements Officer, and Messrs. Joseph Kane, Fred Ross, and Robert Hogg, Division of Low-Level Waste Management and Decommissioning, Office of Nuclear Material Safety and Safeguards. Mr. Carlton Kammerer, Director of NRC's Office of State Programs, participated in upper level management discussions at the conclusion of the review.

A review of selected backup information in the DRC's license file for the Envirocare facility was conducted during April 13-15, 1992. A review of legislation and regulations, organization, management and administration, and personnel was conducted on April 14-15, 1992. A summary meeting regarding the results of the regulatory program review was held with Mr. Larry Anderson, Director, Division of Radiation Control, Department of Environmental Quality, on April 17, 1992, in Salt Lake City, Utah.

CONCLUSIONS

As a result of our review of the State's program and the routine exchange of information between the NRC and the State of Utah, the staff determined that overall the Utah program for regulation of agreement materials is adequate to protect public health and safety, and compatible with the Commission's program. However, this finding is contingent upon a satisfactory resolution of one significant Category I comment relating to a land ownership exemption (see comment number 2.A. below). The rest of the comments and recommendations developed during the review included only comments of minor significance concerning Category I indicators.

### Status of Program Related to Previous NRC Findings

The previous NRC program review was concluded on February 9, 1990, and comments and recommendations were sent to the State in a letter dated April 11, 1990. At that time, the program was found to be adequate to protect the public health and safety and compatible with the NRC's program for the regulation of similar materials. Subsequent to the review, on May 9, 1990, the Agreement with Utah was amended to include authority for the State to regulate the disposal of low-level radioactive waste (LLRW). Also, a special review of Utah's LLRW disposal program was conducted during February 19-22, 1991, and a comment letter was sent to the State on April 23, 1991. The comments and recommendations have been satisfactorily closed out, except for several comments relating to the licensing action concluded on March 20, 1992, authorizing full operational status for the Envirocare LLRW disposal site near Clive, Utah.

### Current Review Comments

The Utah radiation control program satisfies the Guidelines in 27 of the 29 indicators. The State did not meet the Guidelines in two Category I indicators, Status and Compatibility of Regulations, and Technical Quality of Licensing Actions.

Our comments and recommendations on licensing relate to the State review of the license application, the Safety Evaluation Report (SER), and the operational license amendment issued on March 20, 1992, for the Envirocare disposal site for LLRW near Clive, Utah. The State of Utah concluded, on May 8, 1990, an amended Agreement with the NRC to cover the authority for LLRW disposal. Envirocare had been storing certain LLRW on site (e.g., uranium and thorium wastes from a rare earth facility). Utah has now authorized the disposal of these materials, with the license review process completed and an amendment to the Envirocare license becoming operational on March 20, 1992.

The comment and recommendation on regulations involves the adoption of a regulatory amendment on decommissioning, and in accordance with current NRC policy wherein the amendment is scheduled for early adoption, this comment is of minor significance.

#### 1. Status and Compatibility of Regulations (Category I Indicator)

##### Comment

The review of the State's radiation control regulations disclosed that one regulatory amendment, which is a matter of compatibility, had not been adopted by the State within a three-year period after adoption by the NRC. This amendment involved a decommissioning rule. In accordance with current NRC practice, if the State has initiated rulemaking on the decommissioning rule, and the rulemaking is on track at the time of the review, then the finding is of minor significance.

Recommendation

We recommend this amendment, and any others approaching the three-year period allowed after NRC adoption, be promulgated as effective State radiation control regulations.

2. Technical Quality of Licensing Actions (Category I Indicator)

- A. Comment - Land Ownership Exemption: This is a repeat comment from previous reviews and discussions.

Previously, we discussed the State's exemption of Envirocare from the requirements in R447-25-9 with regard to site ownership. This is an extension of an exemption originally granted to Envirocare which allowed development of a Naturally Occurring Radioactive Material (NORM) disposal site on privately owned property. We recommended that the rationale for extension of the exemption for the disposal of byproduct, source and special nuclear material be documented and include how the performance objectives relating to long-term control, surveillance and maintenance would be met. This should include an analysis of the adequacy of the surety funds to cover such long-term control and discussion of the difference between 30 versus 100 years post-closure requirements. During this review, we obtained a draft of the State's rationale for land ownership exemption, and we recommended that this document be finalized and transmitted as soon as possible to the NRC for assessment.

We received the State's completed rationale for the land ownership exemption on May 28, 1992. The completed rationale is currently being reviewed in this Office; the Office of Nuclear Material Safety and Safeguards, Division of Low-Level Waste Management and Decommissioning; and the Office of General Counsel. Our assessment will be provided to you after we have completed our review.

- B. Comment - Completion of Safety Evaluation Report

The State of Utah had required Envirocare to submit additional hydrogeologic site characterization information and conduct additional ground water flow modeling to resolve the deficiencies in the license application related to ground water protection and site performance. The deficiencies were described in a Safety Evaluation Report (SER) prepared by the DRC. An examination was performed of the licensee's submittal on hydrogeologic characterization and ground water flow modeling, and the subsequent DRC staff evaluations of this material. Interviews were conducted with the staff of the Ground Water Protection Section of the Division of Water Quality. All of the issues



raised by the NRC regarding the quality of Envirocare's site hydrogeologic characterization, and the ensuing DRC staff evaluations are satisfactorily addressed. However, the Statement of Basis for the Ground Water Discharge Permit does not show how the site hydrogeologic characterization, ground water flow modeling, and ground water protection program leads to a conclusion that the State equivalent to the 10 CFR Part 61 performance objective covering off-site release of radioactivity is met.

We understand the State concluded that a dose assessment for the groundwater pathway was not necessary considering the effectiveness of the ground water protection program including: (1) the emplacement of low-permeability clay liners and covers; (2) the extensive amount of required ground water monitoring; (3) the exclusion of most of the more mobile radionuclides from disposal; (4) the long ground water travel times for the remaining most mobile radionuclides in the site inventory (e.g., K-40); (5) the very poor water quality at the site; and (6) the lack of credible off-site dose scenarios for ground water and related pathways.

#### Recommendation

We recommend that the State provide documentation in their SER, Ground Water Discharge Permit Statement of Basis or other such document, how the site meets regulatory standards for the off-site release of radioactivity.

#### C. Comment - Operating Procedures

The current Envirocare operating procedures, detailing specific directives to the licensee's employees and contractors, are not in the possession of the State at either the site office or the headquarters office. It would be beneficial to the State, as information to aid inspections, to possess current operating procedures at one of the State locations.

#### Recommendation

NRC recommends that an updated and controlled copy of the disposal operating procedures, including administrative, QA, radiation protection, and laboratory procedures, be provided by the licensee, and maintained at one of the State locations.

#### D. Comment - Averaging of Waste Concentration

Discussions with the State indicate the State may be required to make policy decisions relative to sampling and concentration averaging on radioactive materials received for demonstration of

compliance with Utah's regulations and license conditions. NRC recognizes the difficulty involved in the determination of concentrations for bulk shipments, and associated sampling procedures and protocols. The State policy on such determinations does not appear to be fully defined.

#### Recommendation

We recommend that the State formalize their policy on concentration averaging and coordinate this policy with NRC draft guidance which has been coordinated with the Conference of Radiation Control Program Directors, Inc. The State should verify that the licensee's procedure for determining the concentrations of radionuclides in bulk shipments is consistent with State policy. The procedures should cover methods for establishing a conservative assumed density for incoming shipments of unknown density, for waste classification purposes.

#### E. Comment - Placement of Waste

The construction of the waste embankment in the LLRW cell is proceeding with the placement of waste at several different levels within the cell. The reason for the irregular mounding within the embankment is stated by Envirocare to be directed at isolating wastes from a specific generator. This may be the intended purpose, but any real benefits from this mounding practice is questionable.

The mounding practice now underway results in non-horizontal embankment levels that have irregularly positioned, rising slopes within the embankment that causes compaction of the waste in the slope areas to be more difficult. This condition introduces the potential for future differential settlements that could cause cracking of the cover and the introduction of small amounts of infiltration down to the waste.

During the review, we encouraged the licensee and the DRC to check available references for good embankment construction methods, where the insertion of internal, irregular slopes within an embankment would be shown to be a practice that should be avoided. In those cases where internal slopes cannot be avoided because of site specific conditions, certain measures (e.g., the notching of the existing slopes to permit full compaction of the embankment materials) may need to be taken.

#### Recommendation

We recommend that DRC request the licensee to make an assessment of good construction practices, and make the necessary changes in the QA/QC Plan and field operations.

F. Comment - Definition of "Lift"

The licensee has not defined the term "lift." Defining this term is considered necessary because of the mounding practice being followed in embankment construction and because of questions that will arise in determining the number of field control tests (e.g., see page 64 of QA/QC Plan) to be completed.

Recommendation

We recommend that DRC request the licensee to define the term "lift" in the QA/QC Plan in terms of surface area of placed embankment material.

G. Comment - Leachate Collection System

The reviewers assessed the merits of a limited and separate leachate collection system, which was installed by the licensee in the NORM portion of LLRW cell. The DRC had not reviewed or approved this system prior to installation. Because of its design and limited extent, it is questionable whether any useful information could be obtained from monitoring of the limited system. In addition, there is a concern for surface water to collect and flow along the perimeter of the monitoring pipe towards the waste, where the pipe penetrates the radon barrier. Also, the licensee should be made aware that all modifications to the design of the cell must be approved by the State, before installation.

Recommendation

We recommend that the State evaluate the installed limited leachate collection system with a view toward requiring the licensee to seal the pipe with bentonite/cement and cutting the pipe off to avoid penetration of the radon barrier layer.

H. Comment - Engineering Inspection During Construction

The review of Mixed Waste Disposal Cell was conducted primarily by the Division of Solid and Hazardous Waste with input from the Division of Radiation Control. Utah now has a Memorandum of Understanding (MOU) between the two Divisions (as suggested by NRC during a September 1991 meeting) that primarily addresses the reconciliation of differences between hazardous/LLRW regulations.

During early inspections related to the mixed waste cell (ground water sampling events and initial cell construction) deviations were found related to design plans. This situation resulted in the Division of Solid and Hazardous Waste requiring Envirocare to

provide funds that permitted the Division to retain a consultant to perform full time inspection activities at the site over a period of several months (to inspect placement and construction of a multiple liner/leachate collection system). In addition, the Division of Solid and Hazardous Waste required Envirocare to retain the assistance of Law Engineering to oversee the installation of geomembranes. The experience gained by the Division of Solid and Hazardous Waste indicates the need for full time inspection during the significant construction activities of the LLRW waste cell. We understand the DRC is actively recruiting for a staff engineer at the present time to provide this oversight at the construction of the LRW cells.

#### Recommendation

We recommend this staff position be filled at the earliest practical time.

#### I. Comment - Hydraulic Conductivity of Clay Liner

To demonstrate that the clay materials proposed for placement in the cell liner attain the field permeability of  $1.0 \times E-7$  cm/sec that is required by Utah's license conditions, the Division of Solid and Hazardous Waste required the running of double-ring infiltrometer tests. The licensee, prior to performing the infiltrometer tests, treated the proposed clay-materials with a deflocculent with the purpose of decreasing the permeability of the clay soil. The NRC reviewers were unable to establish in their discussions with both Envirocare and DRC, what testing and assessment of the long-term stability of the treated clays had been performed.

#### Recommendation

We recommend that DRC request the licensee to perform an assessment of the long-term stability of the treated clay soils under anticipated waste disposal environmental conditions (e.g., leachate from placed waste), to demonstrate the long-term performance and engineering properties of the clay liner material.

### 3. Observations and Commitments

- A. The NRC reviewers noted during the review that the Envirocare ground water permit covers the LLRW cell and the uranium mill tailings cell, which is being licensed by the NRC. The reviewers will convey the need for NRC's uranium mill tailings licensing group to coordinate their license review process with the State agencies responsible for the ground water discharge permit.

- B. Two important documents were developed by the State during this licensing action: (1) QA/QC Manual for the LLRW cell, and (2) QA/QC Manual for the mixed waste cell. The NRC believes these two QA/QC Manuals provide valuable information on the development and construction of waste cells containing radioactive materials, which may be of use by the NRC or other Agreement States. The State has agreed to provide NRC with a copy of each manual.
- C. The NRC reviewers agreed to furnish the DRC with a copy of NRC's latest guidance on the averaging of LLRW for disposal.
- D. The DRC agreed to keep the NRC informed of the schedule for formally documenting its safety evaluation of the design and construction of the mixed waste disposal cell.

#### Summary Discussions with State Representatives

A summary meeting to present the results of the regulatory program review was held with Mr. Larry Anderson, Director, Division of Radiation Control, Department of Environmental Quality, on April 17, 1992. The scope and findings of the review were discussed with Mr. Anderson and other Department staff members. Mr. Anderson was informed of the significance of the one Category I finding regarding the exemption for land ownership. Mr. Anderson said the State would probably proceed directly with some means of finalizing the rationale for the land ownership exemption.

Mr. Anderson also expressed the State's appreciation for past NRC assistance and training for the Utah staff. He said the Department will continue to support the radiation control program, any NRC-sponsored training courses, and cooperative efforts with the NRC and other Agreement State Programs.

A closeout discussion with the RCP technical staff was conducted on April 16, 1992. The State was represented by Mr. Craig Jones, Mr. Dane Finerfrock, and other Division staff. Several general and specific questions were raised by the State representatives. The review findings regarding the Envirocare license and the SER were discussed at some length. A briefing was conducted by NRC representatives on NRC's new formats for the reporting of State incidents and State statistical information to the NRC.