

Mr. Charles A. Judd  
 Executive Vice President  
 Envirocare of Utah, Inc.  
 American Towers Commercial  
 46 W. Broadway, Suite 240  
 Salt Lake City, Utah 84101

MAR 22 1994

Dear Mr. Judd:

On January 21, 1994, Envirocare of Utah, Inc., (Envirocare) submitted, for U.S. Nuclear Regulatory Commission review and approval, the following document in response to a condition 9.7(c) in byproduct material license No. SMC-1559:

"Construction Quality Assurance/Quality Control (QA/QC) Plan for 11e.(2) Facility," revised January 21, 1994, in accordance with License Condition 9.7 (c)."

The NRC staff has completed its review of this document and approves the licensee's construction QA/QC plan. Envirocare, therefore, has fulfilled the requirements of license condition 9.7(c). The basis for NRC's approval is documented in the enclosed safety evaluation.

Should you have any questions, please contact the NRC Project Manager, Sandra L. Wastler at (301) 504-2587.

Sincerely,

ORIGINAL SIGNED BY

Joseph J. Holonich, Acting Chief  
 Uranium Recovery Branch  
 Division of Low-Level Waste Management  
 and Decommissioning  
 Office of Nuclear Material Safety  
 and Safeguards

Enclosure: As stated

cc: D. Hiller

W. Sinclair, Utah

Docket Number: 40-8989

License Number: SMC-1559

Distribution: See attached list

SUBJECT ABSTRACT: NRC'S APPROVAL OF ENVIROCARE'S CONSTRUCTION QA/QC

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NAME	SWastler		MFJ/egel		JHolonich		
DATE	03/22/94		03/21/94	H	03/27/94		

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SAFETY EVALUATION  
OF THE  
"CONSTRUCTION QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)  
PLAN FOR 11e.(2) FACILITY"  
DATED JANUARY 21, 1994  
by  
ENVIROCARE OF UTAH, INC

BACKGROUND

License Condition 9.7(c) of License No. SMC-1559 states:

"Prior to the initial disposal of 11e.(2) byproduct material, the licensee shall:

(c) develop and obtain the U.S. Nuclear Regulatory Commission approval of the detailed construction specifications for the disposal site. Construction specifications must be available for the "as built" inspection.

In the area of erosion protection, the licensee shall provide construction specifications which address the extent of testing, testing frequency, and number of tests in the areas of riprap durability, gradation, and placement.

In the areas of geotechnical engineering/construction, the licensee shall provide construction specifications which address the extent of testing, testing frequency, and number of tests for the following:

1. In-place density
2. Moisture-density relations
3. Soil gradation
4. Atterburg limits
5. Specific gravity
6. Moisture content
7. Microwave oven moisture comparisons (if applicable)
8. Verification of lift thickness
9. Bentonite content of amended soils
10. Permeability
11. Shrinkage/dispersive characteristics
12. Resistance to freeze-thaw
13. Chemical compatibility
14. Settlement monitoring

In addition, the licensee shall provide alternate specifications for situations in which the material is untestable due to excessive percentage of coarse material. Both laboratory and field control procedures shall be covered in the specifications.

The licensee shall conduct a comprehensive laboratory control program to assure that equipment and operations are in accordance with applicable guidelines. Furthermore, the licensee shall maintain adequate records such that test records and locations can be confirmed, and so that

re-test of failing areas can be confirmed.

The licensee shall include in the specifications procedures to insure that the cover is constructed with a lower hydraulic conductivity than the bottom liner, which may require the addition of blended bentonite to the cover, or other methodology approved by the NRC."

On November 24, 1993, Envirocare of Utah, Inc., (Envirocare) originally submitted its construction specifications, and QA and QC procedures for NRC review and approval. NRC staff reviewed the document and requested additional information in a letter dated February 1, 1994, but an informal request had been forwarded earlier. On January 21, 1994, Envirocare submitted a revised document for review and approval. The specifications and QA/QC program were reviewed for compliance with applicable regulations and standards. The NRC staff review of the construction specifications and QA/QC documents are addressed separately in the following sections.

### NRC STAFF REVIEW

#### Erosion Protection

Envirocare proposed a program for testing and placement of riprap and filter materials during construction of the facility. The program consists of a series of gradation and durability tests for the rock and a program of inspection and verification of placed materials.

Envirocare indicates that durability and gradation tests will be performed for every 10,000 cubic yards of material placed. The durability and gradation tests proposed include those discussed in Section 3.3.5 the staff's Safety Evaluation Report (SER), and, as discussed in that report, are acceptable. Staff experience with placement of riprap materials indicates that the frequency of testing is acceptable, based on the large quantities of the same material that will be placed. Changes in the size and durability of the material will be relatively easy to visually identify, and the testing program will serve to numerically verify the acceptability of the rock.

Envirocare indicates that the material will be placed in a manner that will assure that no segregation of finer materials will occur. Inspections will be conducted on a regular basis to identify any poor areas of placement. Additionally, the thickness of the rock will be measured on a grid to assure that a tolerance of plus or minus two inches is achieved for the riprap layer. For rock of this size, such a tolerance is considered by the staff to be acceptable. The testing and inspection program meets the general and specific criteria suggested in "Staff Technical Position on Testing and Inspection Plans During Construction of DOE's Remedial Action at Inactive Uranium Mill Tailings Sites." Based on general conformance of Envirocare's testing and inspection program with the criteria in this staff position, the staff concludes that the program is acceptable.

#### Geotechnical Engineering

Envirocare has proposed a program for foundation preparation and the placement and testing of the clay liner, contaminated materials, radon barrier, and imported borrow soils. Laboratory and field testing methods are included in

the specifications. The program identified 14 items concerning soil testing/geotechnical monitoring. The program also addressed alternate testing methods for materials otherwise untestable due to coarse gradation.

The proposed soil testing procedures include those discussed in Section 4.1 of the staff's SER and, as discussed in that report, are acceptable. Staff experience with the type of materials to be used and construction techniques proposed indicates that testing intervals will be satisfactory. Since contaminated materials will presumably be received from multiple sources, changes in material makeup should be relatively easy to identify visually. The physical testing proposed will confirm that materials are selected and placed properly.

Soil classification, moisture-density (Proctor), in-place density, and permeability test frequencies will vary depending on the function of the layer type placed; however, test frequencies will be in accordance with accepted standards. Visual inspection test frequencies, including lift thickness verification, will also meet accepted minimum values.

Envirocare indicates that the material will be placed in a manner that will assure that minimum required degrees of compaction are achieved. Inspections will be conducted on a regular basis to confirm material classifications and placement densities. Envirocare has proposed reporting procedures that will confirm that project specifications are being met.

The testing and inspection program meets the general and specific criteria suggested in "Staff Technical Position on Testing and Inspection Plans During Construction of DOE's Remedial Action at Inactive Uranium Mill Tailings Sites." Based on general conformance of Envirocare's testing and inspection program with the criteria in this staff position, the staff concludes that the program is acceptable.

Specifications require that a laboratory control program will be implemented to assure that equipment and operations are in accordance with applicable guidelines. Adequate test records are specified to assure that test locations can be confirmed, and that areas of failing tests can be re-tested to assure compliance with requirements.

The specifications also provide assurance that the cover will be constructed with a lower hydraulic conductivity than that of the bottom liner. The testing and inspection program meets the general and specific criteria suggested in "Staff Technical Position on Testing and Inspection Plans During Construction of DOE's Remedial Action at Inactive Uranium Mill Tailings Sites." Based on general conformance of Envirocare's testing and inspection program with the criteria in this staff position, the staff concludes that the program is acceptable.

#### Quality Assurance/Quality Control

The NRC staff evaluated Envirocare's quality assurance/quality control portions of the construction QA/QC plan against the QA/QC elements provided in NUREG-1293, "Quality Assurance Guidance for a Low-Level Waste Disposal Facility"; NUREG-1200, "Standard Review Plans for the Review of a Low-Level Radioactive Waste Disposal Facility"; and 10 CFR 61.12(j), as applicable.

Table 1, "QA/QC Activities" has identified the major construction activities and the supporting QA/ QC functions. The staff also reviewed the QA/QC functions associated with the construction activities and found they were adequate. As a result of this evaluation, the staff concluded that Envirocare has adequately addressed all of the QA/QC elements and, therefore, approved the proposed QA/QC plan.

In addition to the QA/QC functions, Envirocare has stated that a third party, Construction Quality Assurance Auditor, will be retained by the licensee to conduct independent audits. This will allow verification of the implementation of the Envirocare QA/QC program.

#### CONCLUSION

As a result of the above evaluation, NRC staff has concluded that the specifications and QA/QC program as described in Envirocare of Utah, Inc's "Construction QA/QC Plan for 11e.(2) Facility" comply with applicable regulations and standards. Therefore, the licensee's plan is approved and the requirements of license condition 9.7(c) have been met.