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July 15, 1992

Mr. Jim Richards
27 CSG-DEV
Cannon Air Force Base
Cannon Air Force Base, New Mexico 88103

Dear Mr. Richards:

It has come to our attention that a miscommunication may have occurred at the June 26 meeting with reference to the Hazardous and Radioactive Materials Bureau's (HRMB) position regarding design requirements for the cover of Cell 3, Landfill 5. Attached are HRMB's requirements for the cap design based on our technical review, which is also our recollection of the principal points covered at the meeting. Recall that HRMB agreed in principle with the geocomposite design, which is reflected in only a portion of the meeting record.

RCRA guidance documents are written to assist facilities in demonstrating compliance with design and operating or closure and post-closure requirements. It is HRMB's position that EPA guidance must be followed. However, a departure from guidance may be accepted if the facility can establish and adequately document that any change will provide at a minimum an equivalent level of performance/protection as can be obtained by the guidance design.

Once satisfied that the cap design meets the fundamental technical requirements per EPA guidance, HRMB is prepared to issue a letter to CAFB stating such. This letter will not, however, constitute final approval of the cap design. Final approval is subject to public comment as an amendment to the approved closure plan per 40 CFR 265.112 (d)(4).

We look forward to meeting with you on July 21. In addition to our discussions, please have any justifications for changes to the cap design in writing for our review. With respect to the post closure care permit application, HRMB hopes at that time to clarify the regulatory procedures that need to be followed and any further requirements that need to be met prior to its approval.

If you have any questions regarding this matter, please call Stephanie Stoddard at (505)827-4308 or 827-4313.

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Sincerely,



Edward L. Horst
RCRA Program Manager

xc: Mark Wittrock, P.E.
Army Corps of Engineers

Thomas Manning, AICP
Air Force Center For Environmental Excellence

June 26, 1992

CAFB Cap Design Landfill 5, Cell 3

Design Requirements per HRMB Technical Review

Because both design options are somewhat less rigorous than those required by EPA in the Technical Enforcement Guidance Document "Final Covers on Hazardous Waste Landfills and Surface Impoundments", HRMB recommended, but did not require, that CAFB consider combining both options (1 and 2) into a single composite cover system.

Requirements Concerning Both Options

1. The 2:1 (H:V) side slopes are too steep. HRMB views the cap as a stand-alone RCRA unit and required that the side slopes be reduced to no greater than 4:1.
2. A top slope of 1% is insufficient to prevent ponding on and to ensure adequate drainage off the top of the landfill. HRMB required that CAFB increase the top slope to meet EPA guidance requirements (3-5%).
3. The Contractor Quality Control Plan must be approved by HRMB prior to construction of the landfill cap.
4. All quality control data must be to HRMB for its review and acceptance following construction of the cap.
5. As-built drawings must be provided to HRMB prior to certification of closure.
6. CAFB must provide HRMB with calculations/documentation to support the assertion that drainage ditches or berms to divert surface flow are not necessary.
7. In consideration of potential pathways for landfill gas migration, HRMB was informed at the that no underground utilities were located close to the landfill. HRMB recommends that CAFB test for landfill gas prior to finalizing either design option.

Soil Cap Option 1, Impervious Layer

8. The hydraulic conductivity for the impervious layer cannot exceed 1×10^{-7} .
9. HRMB recommended the following material specifications be incorporated for the impervious layer:

Fines (passing the #200 screen) > 30%
Coarse (retained on the #4 screen) < 10%
Liquid Limit >35%
Plasticity Index >15%

10. The construction quality assurance plan must be revised to reflect any changes necessary to achieve acceptable hydraulic conductivity. Detailed information concerning construction methodology should be provided in the plan. All quality control data resulting from tests conducted on the test pad must be provided to HRMB for review and approval prior to commencing construction of the actual soil cap.
11. The method by which sampling points are selected must be stated in the specifications.
12. If a test result indicates a failure, the method by which the extent of the deficient area is delineated must be clarified.
13. Additional quality control testing must be done at the borrow source for the impervious layer. HRMB recommends that at a minimum the following additional tests be performed (see below). CAFB may adopt these changes to the specifications or propose an alternative.

Grain Size	at least 1 test per 1000 CY
Moisture Content	at least 1 test per 1000 CY
PI and LL	at least 1 test per 5000 CY

At least one test per day of excavation and at least one test per visual or suspected changes in fill material should be performed for each of these test parameters.

14. Additional quality control sampling must be performed on the constructed soil cap (impervious layer). HRMB recommends that the following additional tests be performed. CAFB may adopt these changes to the specifications or propose an alternative.

Undisturbed Hydraulic Conductivity:	at least 1 test per 1500 CY
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Moisture Density Curve:	at least 1 test per 5000 CY
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At least one test per day for density and moisture content, and at least one test per visual or suspected change in fill material should be performed on each day of soil cap construction.

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15. All voids or holes in the soil cap resulting from testing efforts or survey stakes must be carefully filled with suitable compacted material.

Geocomposite Membrane Option #2

1. The construction specifications should state that the geocomposite membrane cannot be placed during periods of significant rainfall.
2. CAFB may wish to add a biobarrier layer to the design.