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January 24, 1996

Certified Mail - Return Receipt Requested # Z 688 018 838

Mr. Larry Gandy  
Vice President  
Triassic Park Disposal Facility  
1109 East Broadway  
Tatum, New Mexico 88267

Subject: Waiver Justification Document  
Triassic Park Waste Disposal Facility  
Chaves County, New Mexico

Dear Mr. Gandy:

The Environment Department has completed review of the subject document received September 29, 1995 and has determined the proposed alternate liner does not provide equivalent protection to the RCRA specified liner. In addition, the modeling parameters were not fully justified. The focus of the review was the configuration which was modeled and depicted on Figure 2-9 "Conceptual Landfill Liner Details" of the application. The waiver justification document contains numerous inconsistencies in the liner design versus what was modeled.

The HELP modelling summary submitted with the document shows leakage through the slope to be four to five orders of magnitude greater for your proposed alternative than for the RCRA specified liner. The summary further shows leakage through the bottom liner to be an order of magnitude greater through the proposed alternative liner than through the RCRA specified liner. In addition, the Department does not believe a 2 foot clay liner can be adequately constructed as detailed in Figure 2-9.

Review of the HELP Model printouts raises questions regarding input values. For instance, initial moisture contents of the lateral drainage layers appear high, in one case being double the value of the porosity. Enclosed is a HELP modelling procedure developed by the Department for demonstrating equivalency of an alternate liner to the RCRA specified liner. The Department requires this procedure be followed and the parameter justification sheets be completed for all alternate liner submittals. The justification document submitted must include the complete HELP modelling documentation.

TPE 1996 Red file

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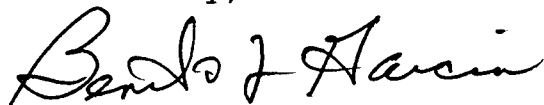
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In consideration of all the aforementioned comments, the Department suggests the following approach be modeled and compared to the RCRA specified liner. In reference to Figure 2-9 of the application, delete the 2 foot clay layer beneath the upper FML. Under the lower drainage layer place an FML with geosynthetic clay liner (GCL). This configuration along with the upper FML should be extended to the top of the slopes and terminated in a suitable anchorage (a sketch is attached for clarification). The composite liner design (FML & GCL) has been shown to be equivalent in costs to 2 feet of constructed clay liner. Therefore, the level of protection should increase without a substantial increase in cost. This configuration is presented only as a suggestion for your review and analysis and is not intended to preclude other configurations or indicate it is an approvable design.

Regarding the placement of any geosynthetic liner material, the Department requires it be placed, at a minimum, on six inches of prepared subgrade compacted to 90% Standard Proctor Density, the surface of which is free of stones greater than 1/2-inch in any dimension, organic matter, local irregularities, protrusions, loose soil, and any abrupt changes in grade that could damage the geosynthetic. The alternate liner analysis could then consider the bottom six inches as a component of the liner provided its construction meets the design criteria.

In order to proceed with further review of an alternate design, a revised waiver justification document will need to be submitted with full justification of parameters used and modeling results. Please provide a written response within 10 days of receipt of this letter indicating your intent and schedule for submittal of this information. If you have any questions regarding this design approach or implementation of the HELP modelling procedure, please contact Richard Stafford of the Department's Solid Waste Bureau at 505-827-2866.

Yours truly,



Benito J. Garcia  
Bureau Chief  
Hazardous and Radioactive Materials

xc: James A. Bonner, The S.M. Stoller Corporation  
Alan J. Krause, TerraMatrix  
Ed Kelley, Director, Water and Waste Management Division  
Mark Weidler, Secretary

**HELP MODELING PROCEDURE**  
**for**  
**LANDFILL ALTERNATIVE LINER**

1. Regulations require the design of the alternative liner must provide equivalent protection as the RCRA specified liner. Two computer modeling analyses must be performed - (1) an analysis of the RCRA specified liner and (2) an analysis of the proposed alternative liner. Equivalent protection must be demonstrated through a comparison of the performance of the alternative liner with the performance of the RCRA specified liner.
2. Provide justification for all input parameters in the model utilizing the attached forms. Demonstrate the relationship of the characteristics of on-site or other sources of soil proposed for the construction and operation of the landfill and the parameter values used in the model. Justify the values used to characterize the waste. Show justification for the soil and waste moisture content parameters, synthetic material properties, climatic and evapotranspiration parameters, storm water run-off fraction, etc.
3. Simulate actual design conditions and operational development of the landfill by doing a succession of model simulations. This succession must attempt to simulate moisture conditions in the landfill as closely as possible. To aid in accomplishing this, each successive computer simulation must use the previous simulation's moisture content output as the input for the following simulation. Describe the design approach modelled.
  - 3.1 Initial simulation of the open landfill at start-up when landfill has little to no waste. The time period should extend for the anticipated duration of this condition, a minimum of one year and a probable maximum of five years.
  - 3.2 A succeeding simulation to model conditions of the partially full landfill for some anticipated time period, most probably five years. This would incorporate daily cover and intermediate cover.
  - 3.3 Perform subsequent computer simulations to model the landfill in the closed condition for the duration of the entire post-closure care period.
    - 3.3.1 Model bare ground for the time period expected until vegetation becomes established.
    - 3.3.2 Model the vegetated condition for the remainder of the post-closure care period.
4. Compliance with the regulatory requirements regarding leachate must be demonstrated. Consequently, the area modeled must incorporate, at a minimum, one leachate collection "watershed" in order to simulate the leachate drainage distance. It is anticipated that the entire area of the landfill will be modelled.

INPUT PARAMETER	VALUE	JUSTIFICATION
<b>CLIMATOLOGICAL DATA</b>		
city		
precipitation & source of data (default or synthetic)		
temperature & source of data		
latitude		
maximum leaf area index		
evaporative zone depth		
growing season start and end day		
<b>LANDFILL COVER DATA</b>		
type of vegetative cover		
SCS runoff curve number		
active (uncovered)?		
% of surface runoff that drains from landfill		
surface area		
<b>SOIL AND DESIGN DATA</b>		
source of soil characteristics		
number of layers		

NOTES:

PROJECT \_\_\_\_\_

DATE: \_\_\_\_\_

INPUT PARAMETER	VALUE	JUSTIFICATION
LAYER NUMBER:		
layer type		
thickness		
soil texture		
porosity		
field capacity		
wilting point		
moisture content		
saturated hydraulic conductivity		
Is layer compacted?		
slope ( if lateral drainage layer)		
maximum horizontal drainage distance (if lateral drainage layer)		
geomembrane pinhole density		
geomembrane installation defects		
liner installation quality (if geomembrane)		
geotextile transmissivity		

(make additional copies for each layer as required)

# SUGGESTED LANDFILL LINER DESIGN TRIASSIC PARK WASTE DISPOSAL FACILITY

