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Hand Delivered 3/11/99 SK

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

March 11, 1999

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

Re: Request for Supplemental Information

Dear Mr. Gandy:

The Hazardous and Radioactive Materials Bureau (HRMB) of the New Mexico Environment Department (NMED) and its contractor, TechLaw, Inc. (TLI) have reviewed the technical adequacy of the December 1997 (Volumes I and III revised in November 1998) permit application for the Triassic Park Waste Disposal Facility. Unfortunately, our review determined that the permit application is still technically inadequate, based on numerous deficiencies in the permit application that are significant enough to preclude the HRMB from issuing a draft permit at this time.

The enclosed Request for Supplemental Information (RSI) addresses in detail the deficiencies remaining in the permit application, as well as suggested approaches to be taken to remedy those deficiencies. The review and evaluation of the facility's engineering design was performed by TLI; TLI's review report is also enclosed for your consideration.

Triassic Park must submit the additional requested information within 60 days of receipt of this RSI, unless an extension is granted by the HRMB. Triassic Park may, at its discretion., petition for a deadline extension by submitting to the HRMB justification for the extension as well as an expected date for submission of the requested information.

Due to the extensive nature of the RSI, the HRMB strongly recommends that you and your consultant(s) arrange to meet with HRMB staff at your earliest convenience. Although the comments are numerous, many of them are very straightforward and can be corrected relatively easily. We would be pleased to go through the RSI item-by-item with you and discuss how best to meet the regulatory requirements of the New Mexico Hazardous Waste Act (NMSA74-4-1 *et seq.*) as quickly as is practicable.

In the interim, please do not hesitate to contact me at 827-1561 ext.1039 should you have any questions or if you would like additional information.

Sincerely,

Benito Garcia

Robert S. (Stu) Dinwiddie, Manager
RCRA Permits Management Program

Enclosures (2)

cc: Greg Lewis, Director, NMED/WWMD
Benito Garcia, Chief, NMED/HRMB
Stephanie Kruse NMED/HRMB
Steve Pullen, NMED/HRMB
Cornelius Amindyas, NMED/HRMB
Nick Persampieri, NMED/OGC
David Neleigh, EPA, Region 6
June Dreith, TechLaw, Inc.
Pat Corser, Montgomery Watson Group
File Red 99
Track: Triassic Park, 3/11/99, TPDF, HRMB/sk, RSI

Hand - Delivered on 3/11/99

REQUEST FOR SUPPLEMENTAL INFORMATION
TRIASSIC PARK PERMIT APPLICATION

RCRA Permits Management Program, Hazardous and Radioactive Materials Bureau (RPMP/HRMB) staff of the New Mexico Environment Department (NMED) have reviewed the Triassic Park Hazardous Waste Management Disposal Facility (the Facility) Permit application submitted in December 1997 (Vols. I and III revised in November 1998) and find that the application, while improved, is still incomplete in several significant areas.

The following comments address primarily information which should be added or revised, but also include some requests for clarification, and some informational material. The comments are organized into General Comments, Specific Comments, and Editorial Comments. Comments are numbered sequentially throughout. Language in **bold print** is taken directly from the text of the Facility Permit application.

GENERAL COMMENTS

1. The stabilized waste portion of the Roll-Off Container Storage Area must be addressed in the Permit application as a regulated unit under the proposed RCRA Permit.

2. The Truck Wash Area must be addressed in the Permit application as a regulated unit under the proposed RCRA Permit.

3. The Permit application, Vol. I, Section 3.7, *Groundwater Protection Requirements*, p. 3-25, regarding groundwater protection requirements is currently incomplete. The application suggests a separate submittal would follow requesting the substitution of vadose zone monitoring for groundwater monitoring. A draft letter from Gandy Marley's contractor dated November 9, 1998 proposes a groundwater monitoring equivalency demonstration (GMED) to justify vadose zone monitoring.

   The November 9, 1998 letter correctly states that the NMED Secretary can waive groundwater monitoring requirements if there is concurrence that there is no potential for migration of liquid from the regulated unit to the uppermost aquifer. NMED must withhold making this concurrence decision until a complete application, with all questions answered (see Comments No. 23 through No. 33 and Comments No. 75 and No. 76), is provided. Furthermore, NMED reserves the authority to require both groundwater and vadose zone monitoring systems and believes that it is appropriate that the GMED be incorporated into the Permit application.

SPECIFIC COMMENTS

VOLUME 1

PART A

4. Page 4

a. **D80 10,000.00 Y 001**

The 10,000 cubic yards for the Landfill listed in Part A does not agree with the 1 million cubic yards specified in the Permit Application, Vol. I, Section 2.5.1.1, *Nature and Quantity of Waste*, p. 2-14. Please make the necessary correction.

b. **T02 4,600,000.00 G 001**

- Part A identifies one Surface Impoundment (001). The revised November 1998 Vol. III, Section 4.1.2, *Evaporation Pond Layout and Phasing*, discusses two pond units, Pond 1A and 1B and future Pond 2A and 2B. It is not clear if both of these units are to be permitted now or if Pond 2A and 2B will be permitted when needed under a Class III Permit modification. If both are to be permitted now, the number of Surface Impoundment units listed on Part A, page 4 should be revised accordingly.

- The 4.6 million gallons for the Surface Impoundment does not agree with either the 6.52 million gallons (1.63 million gallons x 4 for both Pond 1A and 1B and Pond 2A and 2B) or 3.26 million gallons (1.63 x 2 for only Pond 1A and 1B) specified in Vol. III, Section 4.1.2. Please correct the discrepancy.

132 ft wide x 285 ft long x (12-2) ft deep = 276,200 ft3

276,200 ft^3 x 4 SI halves = 1,504,800 ft^3

1,504,800 x 7.48* = 11,256,686 gallons

* 7.48 = conversion factor

c. **S01 61,600.00 G 002**

According to Part B, 61,600 gallons is the storage capacity of the Drum Handling Unit (160 55-gallon drums per cell x 7 cells). Please include storage capacity for the Roll-Off Container Unit.

PART B

SECTION 1.0, GENERAL FACILITY STANDARDS

5. Section 1.1.3, *Land Disposal, p. 1-2.* **...Other areas that may be designated as SWMUs include the untarping, sampling, and weigh scales area, the truck staging area, and the stormwater retention basin....**

   These units are not regulated units under the proposed Permit. They are, however, regulated under RCRA and will be inspected under HRMB's Compliance and Inspection Program.

   If a release or spill requiring Corrective Action occurs at one of these areas or at any other location at the Facility, the area or location will be incorporated into the RCRA Permit through a Permit modification.

6. Section 1.3, *Location Information*, p. 1-5, 4th paragraph. **...Land use plans and/or zoning maps have not been developed for Chaves County. All areas within the county, except those within municipal boundaries, are designated as Zone A (agricultural)....**

   Please indicate whether any County approval is needed for construction and operation of a waste treatment, storage, and disposal facility in a zone designated as agricultural.

SECTION 2.0, TREATMENT, STORAGE, AND DISPOSAL

7. Section 2.1.3, *Waste Staging/Storage*, p.2-2, 3rd paragraph. **Restricted waste at the Facility will be stored solely for the purpose of accumulating sufficient quantities to facilitate proper treatment, recovery, or disposal....**

   Please describe what "recovery" efforts will be included in Facility operations.

8. Section 2.2.1.1, *Containment and Detection of Releases*, p. 2-4.

   a. 1st paragraph. **Wastes stored in the drum handling unit will be placed in individual storage cells segregated by waste type and compatibility.**

      Neither Section 2.0 nor Section 5.0, *Procedures to Prevent Hazards*, specifies that there is a designated or dedicated cell for reactive waste in the Drum Handling Unit. Please provide this information in Vol. I and identify the cells for ignitable and for reactive waste in Vol. III, Drawing No. 37, *Drum Handling Unit General Arrangement*. Are there physical barriers segregating the cells for ignitable and reactive wastes?

b. 2nd paragraph. **...Because the building is enclosed....**

Section 2.2.1, *Drum Handling Unit*, and Vol. III, Section 7.1.2, *Drum Handling Layout*, both indicate that the drum-storage building is open-walled. Please make the necessary corrections.

9. Section 2.2.1.3, *Storage Limits*, p. 2-4. **Two of the cells will be designed to accommodate TSCA PCB wastes.**

a. Please make clear whether these cells are designed or dedicated to accommodate PCB wastes, i.e., whether other wastes will be stored in the cells designed to accommodate PCB wastes.

b. The Permit application refers only to PCB-contaminated waste in drums. Please specify whether all PCB-contaminated waste to be received will be only in drums (e.g., the Facility does not anticipate acceptance of PCB-contaminated soil in roll-off containers, etc.)

c. This section states that there are two cells designated for PCB-contaminated waste. However, Vol. III, Drawing 37, shows only one cell for TSCA waste. Please explain this discrepancy.

10. Section 2.2.2, *Roll-Off Storage Area*, p. 2-4.

a. 1st paragraph. **...The other half of the pad, which will be operated as a RCRA 90-day storage area,...**

- See Comment No. 1.

- Is this the area referred to in another section as the Derived Waste Storage Area?

b. Last paragraph. **...Otherwise, free liquids will be removed with a vacuum truck, characterized, and managed in accordance with stabilization procedures described in Section 2.4....**

These free liquids are only discussed in connection with the stabilization process. Please make clear whether any of these free liquids in roll-off containers will be managed in the Liquid Storage Tanks or Surface Impoundments. Please be more specific about what kinds of waste will be sent to the Liquid Storage Tanks and Surface Impoundments.

c. Last paragraph. **...Following the removal of free liquids, the waste [in the roll-off container] will either be managed through the stabilization process or landfilled, whichever is appropriate....**

Please discuss the kinds of waste which are appropriate for landfilling after removal of water from roll-off containers at the Roll-Off Storage Area.

11. Section 2.3.9, *Ancillary Equipment*; p. 2-10, Section 2.4.9, *Ancillary Equipment*, p. 2-13. **All ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction.**

Please provide a discussion and finalized detailed drawings of all ancillary equipment for the tanks.

12. Section 2.3.12, *Transfer of Liquids from Liquid Waste Storage to the Stabilization Unit and to the Evaporation Pond*, p. 2-11, 1st paragraph. **Transfer of liquids from the liquid waste storage tanks to the stabilization unit will be accomplished either by direct piping to the tank or by tanker trucks approved for liquid waste transfer...Similarly, if direct piping to the stabilization unit is used to transfer liquids, the pipelines will be cleaned prior to using the pipes for any subsequent incompatible waste transfer.**

a. Such piping is considered ancillary equipment and must be permitted as such under the proposed Permit.

b. Please provide a discussion of the piping in Vols. I and III, and drawings showing accurate locations and finalized detailed design drawings in Vol. III.

c. For tank system ancillary equipment, a leak test or other integrity assessment as approved by the NMED Secretary must be conducted at least annually, in compliance with 20 NMAC 4.1.500 incorporating 40 CFR 264.193(i)(3). Please include this annual leak test in Table 5-1, *Triassic Park Waste Disposal Facility Inspection Schedule.*

d. Also, please discuss how the pipes will be cleaned and sampled.

13. Section 2.4, *Stabilization*, page 2-11, 3rd paragraph. **The bins will be covered while dry reagents are being added to control air particulate emissions. The cover will be removed and a backhoe positioned adjacent to the bin will mix the waste and reagents. When the waste is sufficiently mixed, it will be tested....**

    a. Please provide more detail on the stabilization process. What is the consistency of the waste when the stabilization process is completed? How long does mixing take place? How is complete mixture by the backhoe ensured? What is the ratio of reagent to waste? How much is a load in gallons? How many loads per day? What part do time and temperature play (see Volume I, Section 2.4.1, 1st paragraph)?

    b. Please provide in an appendix the "specific treatment guideline" referred to in Volume III, Section 6.1.1, *General*, page 6-1, 1st paragraph.

14. Section 2.4.1, *Contaminant and Detection Releases*, p. 2-12, 1st paragraph. **The bin will be of steel construction. Waste which is incompatible with the steel used in construction will not be stabilized in the bins. An assessment of the compatibilities of the bin materials and waste, along with the influence of the process (materials, time, temperature, etc.) is contained in the design specifications and the associated engineering report (Volumes III and IV).**

    This assessment was not found in Vols. III or IV. Please provide the assessment.

15. Section 2.5.1, *Design of Landfill*, p. 2-14.

    Please revise Vol. I regarding the design of the Landfill to agree with the revised phased landfill design in Vol. III.

16. Section 2.5.1.1, *Nature and Quantity of Waste*, p. 2-14.

    a. Fifth bullet. · **explosive waste;**

    The fifth bullet identifies explosive waste as excluded from acceptance at the Facility. Some explosives are listed in Part A as hazardous wastes which will be accepted. Also, Section 4.2, *Description of Wastes Generated and Received at the Facility*, states that "Class A explosives" will not be accepted, implying that other explosives will be accepted. Please make the appropriate corrections.

b. Seventh bullet • **liquid waste containing PCBs greater than 50 parts per million.**

The seventh bullet identified liquid waste containing PCBs greater than 50 parts per million as excluded from acceptance at the Facility. Will nonliquid waste containing PCBs be accepted? If so, in total HOC concentrations greater than 1,000 mg/kg?

c. 2nd paragraph. **The wastes which will be accepted for placement in the landfill include all wastes listed in Part A of this application....**

This section does not really address the nature and quantity of waste to be received from off-site generators. Part A does not provide a lot of information, since it seems to have been prepared to cover all eventualities regarding the possible quantity for each hazardous waste constituent. RPMP realizes that the nature and quantity of waste accepted from off-site generators cannot be precisely specified, but would appreciate available estimates and information Gandy Marley may have on the probable kinds and quantities of hazardous waste to be received.

d. **The landfill will have...a capacity of approximately 10 million cubic yards of waste.**

See Comment 4.a.

17. Section 2.5.1.7, *Wind Dispersal Control Procedures*, p. 2-17. **Wind dispersal control will consist of a daily soil cover obtained from excavation. Typically, the daily cover will consist of soil spread on top of the waste placement area to a depth of 0.2-foot to 0.5-foot.**

The daily cover should be 6 inches at a minimum. The daily cover must cover all disposed waste.

18. Section 2.5.1.8, *Gas Generation Management*, p. 2-18.

a. 2nd paragraph. **...periodic checks will be made within the landfill to detect the presence of hazardous gases and volatile organics. Surveys of the active landfill surface area and the riser pipes with an organic vapor meter (OVM) or comparable device will be performed quarterly to detect the presence of organic compounds. PPE levels and respiratory protection levels will be modified accordingly, if necessary. This testing will be conducted in addition to the fingerprint testing on incoming waste. The data from both tests will be evaluated to determine what steps are necessary to reduce the generation and/or release of these gases to levels which meet prescribed regulatory air quality standards.**

Please provide precise information regarding sampling and analysis methods for these quarterly checks. Please include the quarterly checks in Table 5-1, *Triassic Park Waste Disposal Facility Inspection Schedule.*

b. 3rd paragraph. **Prior to closure of the landfill, an assessment will be made of the landfill waste gas generating potential...if it is concluded that gas generation may result in gas build-ups beneath the barrier layer of the cover or releases following closure exceeding regulatory air quality standards, then provisions will be made to collect and monitor gas generation and release during the post-closure period. If this occurs, the latest technology available will be implemented into the construction of the cover system.**

- This assessment should also be included in the discussion of Landfill closure in Section 8.0, *Closure and Post-Closure of Permitted Units*. If it is concluded that gas generation may result in gas build-ups beneath the barrier layer of the cover or that releases following closure may exceed regulatory air quality standards, the NMED Secretary must be informed and approve a monitoring plan and any changes in the construction of the cover system.

- Please reference the applicable air quality standards.

19. Section 2.5.3.7, *Procedures for Protecting Wastes*, p. 2-21.

a. 1st paragraph. **...At a minimum, incompatible wastes will be spaced a sufficient distance apart in the landfill to prevent commingling.**

What is a "sufficient distance" to prevent commingling in the Landfill? Are there Fire Code standards or other standards which address this issue? Please identify the standards used to establish this distance.

b. 3rd paragraph. **...Procedures will be developed to ensure that precautions are taken to prevent reactions....**

Does this sentence refer to additional procedures besides those addressed in this section? If so, please provide the procedures. If not, please delete the sentence.

20. Section 2.6.1.3, *Separator Berm System*, p. 2-27. **...the two pond sections, Pond 1A and Pond 1B....**

There are four Surface Impoundments sections in the revised Vol. III. Please revise Section 2.6, *Treatment in Evaporation Pond*, to make this clear.

21. Section 2.6.4, *Operation of the Evaporation Pond*, p. 2-28.

Please describe the operation of the ponds, e.g., provide a discussion detailing how long it will take for evaporation of one section of the ponds to take place, how wet (percent) the sludge will be when removed to the Stabilization Bins, how the sludge will be removed, how and where the sludge-removing equipment will be cleaned, how removal of the sludge affects the pond liners, inspection requirements for the pond liners, how many tanker loads per day will be added to a pond, the volume of liquid flowing through the impoundment or series of impoundments annually, the capacity of a tanker, whether only one section of each pond will be in operation at a time, etc.

SECTION 3.0, GROUNDWATER PROTECTION

22. Section 3.4.1.2, *Regional Structure*, p. 3-12, 1st paragraph. **...The Sacramento and Sangre de Cristo uplifts in northeastern New Mexico....**

This sentence should read, "The Sacramento mountains in southeastern New Mexico and the Sangre de Cristo uplift in northeastern New Mexico...."

23. Section 3.4.3.2, *1994 Site Characterization Activities.*

a. P. 3-11, 1st paragraph. **In June 1994, a drilling plan for site characterization activities at the proposed site was prepared and submitted to the Hazardous and Radioactive Materials Bureau of the New Mexico Environment Department...The plan was approved as submitted.**

Please reference the date of the approval correspondence.

b. P. 3-12, carry-over paragraph. **...These electrical surveys consisted of thermal neutron and gamma logs....**

- These logs appear to be the primary evidence used to both delineate ground water and to pick the boundary between the Upper and Lower Dockum Formations. Please explain in substantial detail the significance of these two geophysical logging techniques, particularly the chemical and physical properties they measure, how they distinguish between the Upper and Lower Dockum lithologies and how they determine the presence of ground water. Please provide information regarding the influence of well casing and a fluid-filled hole on these logs.

- Provide also an explanation for the abrupt decrease in thermal/neutron count at the bottom of boreholes PB-36 and PB-37.

c. The timing relationship between the drilling of a hole and the logging of that hole may be critical in determining the presence of ground water (i.e., the time needed for ground water to stabilize in the borehole). Please provide this timing information.

24. Section 3.6.2.2, *Upper Dockum - "Uppermost Aquifer"*, p. 3-15.

Considerable hydraulic information presented in this section as fact must either be supported with data or characterized as "inferred". This is particularly true of the hydraulic conditions directly east of the proposed boundary that are based on boreholes approximately one mile north and south of the site. Please adjust the language in the Permit application as appropriate.

25. RPMP is concerned about subsurface fluid and possible contaminant migration through improperly plugged boreholes. Please provide a status report on all boreholes referenced in the initial application with a detailed description of how any holes were plugged. Include the composition of the plugging material and other assurances of successful preclusion of subsurface fluid migration. A plan for the ultimate disposition of the holes must also be provided.

26. Please provide all groundwater monitoring data. If any of the temporary wells referenced in the application still exist and have not been evaluated since construction, they must be remeasured for depth to ground water and the results presented in the application.

27. RPMP requires the establishment of pre-existing groundwater chemical concentrations for the various ground waters adjacent to and below the proposed Facility, particularly the shallow waters. The chemical analysis should be performed in light of the following considerations:

    a. to determine if ground waters have pre-existing contamination;

    b. to establish a baseline for future comparisons; and

    c. to allow distinction between perched and regional ground water and to further evaluate those holes where mixing has occurred. The analysis must include: total dissolved solids (TDS), and the major ions Na, Mg, Cl, and SO4.

28. Please provide lithologic logs for WW-1 and WW-2.

29. Please provide a table of surface elevations for all boreholes.

30. Please provide a subsurface contour map of the contact of the Upper/Lower Dockum within the proposed Facility boundary.

31. Section 3.7, *Groundwater Protection Requirements, p. 3-25.*

    See Comment No. 3. RPMP recommends that the Groundwater Monitoring Equivalency Demonstration (GMED) be augmented with the following information and proposals:

    a. in addition to monitoring the two sumps that underlie the Landfill and Surface Impoundments, it would be significantly more protective if a series of vadose zone monitoring wells (VZMWs) existed immediately down gradient of both units. These wells would presumably measure any fluid accumulation in hydrogeologic traps that might exist at the boundary of the Upper and Lower Dockum. These wells have been the subject of numerous conversations between HRMB and Gandy Marley and must be considered;

    b. any plan to construct the above-mentioned VZMWs must include a method to positively identify the lowest hydrogeologic trap within the Upper Dockum and any pre-existing ground water;

    c. the requirements contained in 20 NMAC 4.1.500 incorporating 40 CFR 264.91(a) for a monitoring and response program must be referenced and addressed;

    d. the GMED certification required under 20 NMAC 4.1.500 incorporating 40 CFR 264.90(b)(4) and referenced in the Gandy Marley November 1998 draft letter to NMED must be provided on the enclosed certification form;

e. the GMED proposed in the November 1998 letter is partially based on a water balance evaluation that does not consider possible leakage of the free liquids from the Surface Impoundments. Further, the proposal does not consider the special circumstance of precipitation accumulation within the Landfill that is constructed to concentrate liquids at its lowermost point. These issues must be addressed;

f. the GMED must consider other fluid sources that might interfere with the VZMWs, such as the storm water catchment basin; and

g. the post-closure care procedures for long term monitoring outlined in the Permit application, Vol. I, Section 8.2.5, *Vadose Zone Monitoring System*, must reflect the monitoring procedures proposed for the operating portion of the proposed Permit.

32. Figure 3-2, *Topography of Site Vicinity.*

This figure identifies three "drill holes" northwest of the proposed site boundary. Please provide any information related to these holes available and a detailed description of efforts made to obtain that information.

33. Figure 3-14, *Drill Hole Locations.*

WW-1 and PB-1 are referenced in the text but not found on the figure. It is suspected that WW-4 and PB-4 are misnamed. Please explain this discrepancy and provide a revised figure.

SECTION 4.0, WASTE ANALYSIS PLAN

34. Section 4.1, *Regulatory Requirements.*

a. The Waste Analysis Plan (WAP) must meet the requirements of 20 NMAC 4.1.500 incorporating 40 NMAC 264.13 and 20 NMAC 4.1.800 incorporating 40 CFR 268.7(b), (c), and (d).

b. Please present the WAP in a more logical format which provides for ready reference (see Comment No. 3). For instance, Section 4.6, *Analytical Methods*, p. 4-8, states only that "Analytical methods used for waste characterization will follow Test Methods for Evaluating Solid Waste Physical and Chemical Methods (SW-846, EPA)." Please summarize this and other information in tabular form. This would aid in review and in use of the Permit by the Facility and by HRMB Permit managers and HRMB inspectors during the operating, closure and post-closure periods (planned to be 60 years). For instance, an HRMB inspector should be able to go from a (complete) Table 5-1, *Triassic Park Waste Disposal Facility Inspection Schedule*, to tables in Section 4.0 which provide sampling and analysis methods for each inspection.

The tables the WAP should provide includes, but is not necessarily limited to:

- A table that identifies the parameters to be tested by waste management unit type and media type, e.g., Surface Impoundment sludges (see US Environmental Protection Agency OSWER Directive Number 9938.4-03, *Waste Analysis at Facilities That Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual (WAP Guidance Manual)*, April 1994, p. 2-13);

- A table that identifies sampling methods for parameters to be tested by media type; and

- A table that identifies the testing/analytical methods for the parameters to be tested by media types.

c. Similar tables for sampling and analysis methods should be provided for all special tests which must be conducted at the Facility, e.g., determination of ignitable, reactive, and incompatible waste; compliance with the Land Disposal Restriction requirements of 20 NMAC 4.1.800 incorporating 40 CFR Part 268; procedures to determine whether a biodegradable sorbent has been added to a waste; procedures to determine if equipment contains or contacts organic wastes with 10 percent or greater total organic content; procedures for determining whether the average concentration of the waste at the point of waste origin is less than 500 parts per million by weight; procedures for the annual leak test required for ancillary equipment; and procedures for piping. Sampling and analysis methods for specific media, such as Surface Impoundment sludges, should be provided.

d. Similar tables should be provided for monitoring related to both the regular inspection routine and sampling of spills and releases; after rain events, both for regulated units and the diversion ditches and storm water basin, etc.

e. A discussion and similar tables should be provided for all field sampling proposed in the Permit application. The discussion should identify and justify all field methods used, calibration requirements, etc.

f. Discussion of the various monitoring regimes should, where needed (such as sampling of the diversion ditch and storm water basin), contain maps showing the location of sampling points and a justification for the number and location of samples proposed.

35. Section 4.2, *Description of Wastes Generated and Received at the Facility*, p. 4-1. **The Facility is expected to generate the following types of wastes:**

....

The following should also be included on this list:

Surface Impoundment sludges;

Decontamination rinse water.

The storm water retention basin also has the potential to receive water containing hazardous constituents and should be included on this list.

36. Section 4.3.1.1, *Pre-shipment Procedures*, p. 4-2.

a. 2nd paragraph. **...Each waste with reactive properties will also be tested for compatibility with the landfill liner.**

Reactive wastes should also be tested for compatibility with containers and tanks.

b. 3rd paragraph. **Generators with waste types that have been previously accepted at the Facility will be required to supply a new waste profile or representative sample....**

This sentence should read, "...a new waste profile form and representative sample....."

37. Section 4.3.1.2, *Procedures to Ensure Compliance with LDR Standards*, p. 4-3, last paragraph. **The Facility will accept contaminated debris only in cases where that debris will remain hazardous after it has been treated in accordance with 40 CFR 268.45(b) or (c). This regulatory requirement stipulates that "Hazardous debris that has been treated using one of the specified extraction or destruction technologies in Table 1 of this section (CFR 268.45) and that does not exhibit a characteristic of hazardous waste identified under Subpart C, Part 261, of this chapter after treatment is not a hazardous waste and need not be managed in a subtitle C facility." Hazardous debris generated off site that can be rendered non-hazardous through treatment may be accepted only if necessary treatment capability exists at the Facility.**

The import of this paragraph is unclear to the reviewer. Are the first two sentences saying that the Facility will not accept debris unless, after treatment, it must be disposed of in a hazardous waste landfill, i.e., the waste is still hazardous? The third sentence is unclear because neither of the treatments proposed for the Facility - stabilization and evaporation - is included in Subpart 268, Table 1, and therefore no contaminated waste could be accepted. Also, the third sentence addresses accepting "hazardous waste...that can be rendered non-hazardous through treatment....", which appears to contradict the first sentence.

RPMP notes in passing that the Facility intends to treat the Surface Impoundment liners and leachate system, and concrete, as hazardous debris using a technology contained in Subpart 268, Table 1, and dispose of these materials in the Landfill during closure (see Section 8.0, *Closure and Post-Closure of Permitted Units*).

38. Section 4.3.2.1, *Incoming Waste Shipment Procedures*, p. 4-5, 3rd paragraph. **Fingerprint tests will assure that the generator description of the waste is correct....**

Fingerprint analysis as described in this section is the commonly used procedure at facilities accepting waste from off-site generators. Nevertheless, RPMP wishes to point out that, "Fingerprint analysis is never a substitute for conducting a complete waste analysis and, therefore, may not be defensible if a waste is misidentified by the generator and passes the fingerprint test. Though the generator is responsible for properly identifying and classifying the waste, the Facility will be held liable by enforcement authorities if it violates its permit conditions and any other applicable regulations...." (*WAP Guidance Manual.)*

Information received from off-site generators (e.g., waste profile form, sample and analysis results) will make up the bulk of Gandy Marley's "acceptable knowledge" for waste acceptance. Gandy Marley should consider conducting random, representative, or confirmatory sampling for waste accepted from off-site generators.

Once Gandy Marley feels assured that the waste from a single off-site generator is as represented, RPMP believes that it may be appropriate to reduce the frequency of fingerprint analysis of such waste. RPMP staff will be glad to discuss this matter with you further.

39. Section 4.3.2.2, *Ongoing Complete Waste Analysis*, p. 4-6, 3rd paragraph. **If all waste shipments in any given calendar year from a single generator match the fingerprint analyses, full sample analyses of each waste stream from that generator will be performed biennially.**

    Full sample analyses should be performed annually.

40. Section 4.5, *Sampling Methods*, p. 4-7, 3rd paragraph. **Composite sampling is the process of taking several samples and combining them into one sample, which is then analyzed for constituents of concern. It is a valid method for homogeneous samples.**

    Please provide in detail how and under what circumstances composite sampling will be used.

41. Section 4.7, *Laboratory Quality Assurance/Quality Control (QA/QC), 1st paragraph*, p. 4-8. **...The onsite laboratory manager will be responsible for developing and implementing a written QA/QC program for the laboratory....**

    a. A complete QA/QC Program should be included in the Permit application.

    b. The Permit application addresses only laboratory QA/QC. Please also include QC for field blanks, field duplicates, and trip blanks.

SECTION 5.0, PROCEDURES TO PREVENT HAZARDS

42. Section 5.1.1, *Barriers and Means to Control Entrance*, p. 5-1, 1st paragraph.

    The perimeter of the Landfill should be fenced with a 6 ft chain link fence. The entire Facility should be fenced with at least 4-strand barbed wire.

43. Section 5.2.1.1, *Inspection Checklist*, p. 5-2, 1st paragraph. **Inspection checklists and an inspection schedule will be developed....**

    This sentence should refer to the inspection checklists contained in Vol. II, Appendix I, *Sample Checklists*, and Table 5-1, *Triassic Park Waste Disposal Facility Inspection Schedule*. Please ensure that all inspection checklists for all inspections identified in the text are included in Vol. II.

44. Section 5.3.4, *Water for Fire Control*, p. 5-6. ...**Permanent buildings at the Facility will be equipped with automatic sprinkler systems and fire extinguishers...Water to fight fires will be available in water truck(s). The truck(s) generally will be used for landfill emergencies.**

Please provide a fuller discussion of provisions for fire control. Is one truckload of water enough to control any emergency at the Landfill until the Fire Department arrives? How much water is in one truckload? Is water the only fire control material (besides soil) to be maintained at the Facility? (Water is not appropriate for use on some hazardous wastes.)

45. Section 5.4.2, *Run-Off and Run-On*, p. 5-7, 1st paragraph. **Run-off and run-on for the major units are described in the following sections.**

Before any operation regulated under a State RCRA Permit can commence at the Facility, a Storm Water Discharge Permit, or notification that such a permit is not required, must be obtained from the NMED Surface Water Quality Bureau.

46. Section 5.4.4, *Water Supply Protection*, p. 5-8, 1st paragraph. **The Facility will coordinate intended water use with the State Engineer's Office, Water Rights Division, and other appropriate agencies. The domestic water supply (via underground water line from a spring in the Ogallala formation located approximately one mile east of the Facility)....**

a. Please specify how much water will be needed for domestic water use and how much will be used in Facility operations (process operations, dust control, etc.) and fire control (sprinklers, etc).

b. Water rights must be obtained from the State Engineer Office for a production well and presumably for the water to be drawn from a spring. Before any operation regulated under a State RCRA Permit can commence at the Facility, proof must be submitted to NMED that sufficient water rights to operate the Facility in a safe manner which is protective of human health and the environment have been obtained.

c. What are the "other appropriate agencies" involved?

47. Section 5.4.8, *Special Requirements to Limit Releases to the Atmosphere*, p. 5-10. **...Regulations applicable to sources of air emissions from the Facility may be found in the New Mexico Air Quality Control regulations.**

Before any operation regulated under a State RCRA Permit can commence at the Facility, a New Source Emissions Permit, or notification that such a permit is not required, must be obtained from the NMED Air Quality Bureau.

48. Section 5.5.3, *Incompatible Waste Handling*, p. 5-11, 3rd paragraph. **...The drum handling unit and storage area design incorporate the requirements for the separation of incompatible wastes. The physical barriers incorporated into the design,..will insure that incompatible waste will remain segregated....**

a. Please discuss these "physical barriers" in the Drum Handling Unit and [Roll-Off] Storage Area. They are not mentioned elsewhere.

b. 20 NMAC 4.1.500 incorporating 40 CFR 264.177(c) reads, "A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device." Please discuss how the walkway will provide sufficient separation from other wastes. Are there any applicable OSHA, Fire Code, or other standards?

49. Table 5-1, *Triassic Part Waste Disposal Facility Inspection Schedule*, p. 5-12.

a. This table should include inspection of the Surface Impoundments daily (not weekly) when in operation for sudden drops in water level, as specified in Section 5.2.3, *Evaporation Pond Inspection Procedures*, p. 5-3, 2nd paragraph. This paragraph also states that the Surface Impoundments will be inspected daily to "...measure and remove any liquid that has accumulated in the leachate collection system and leak detection sumps...." Please add this to the table.

b. The Surface Impoundment liners should be inspected weekly, as specified in Section 5.2.3, 3rd paragraph, which reads, "...Weekly visual inspections will also be conducted to verify the integrity of the liners and associated systems...." Please add this to the table.

c. Under "Inspection Time", the condition of the Stabilization Units when in operation reads, "Daily when storing". This should read, "Daily".

d. In general, because Table 5-1 will more likely be used for a reference than the text in Section 5.2, *Inspection Procedures*, and elsewhere throughout the Permit application, all the inspections discussed in this section and elsewhere should be included in the table, and the table should agree with the text in Vols. I and III (e.g., the annual inspection of equipment and piping, equipment leak detection, and the winter inspection of drums in the open-walled Drum Handling Unit).

SECTION 8.0, CLOSURE AND POST-CLOSURE OF PERMITTED UNITS

50. Section 8.0, *Closure and Post-Closure of Permitted Units*, p. 8-1. **This closure plan describes specific activities required for closure of the drum handling unit,..evaporation pond....**

For ease of review by the public, please state in this first paragraph that all units except the Landfill will be clean closed, with the proviso contained in Section 8.2.8, *Amendment of Plan*, regarding a modification to the post-closure care plan for units which cannot meet the clean closure standards.

51. Section 8.1.1.2, *Decontamination of Equipment and Dismantling of Building Structure*, p. 8-2, 2nd paragraph.

a. **The building structure (roof and walls)...will be cleaned and rinsed prior to, or during, dismantling.**

Other sections of the Permit application indicate that the Drum Storage Building does not have walls. Please explain this discrepancy.

b. **...The dismantled building structure will either be reused elsewhere or recycled as scrap metal.**

Confirmatory sampling after washing to verify the presence or absence of hazardous waste is required before clean closure can be approved by NMED. RPMP recommends that swipe samples be taken from the floor and the divider panels to a height of 5 feet above floor surfaces. The wash water should be contained and tested. The wash cycles and sampling and analysis should continue until the building is decontaminated.

c. A Sampling and Analysis Plan (SAP), along with Quality Assurance/Quality Control procedures, should be developed for closure of the Drum Storage Building.

d. The SAP should also address soil sampling as well as waste generated during closure, such as the wash water, plastic sheeting, and sampling equipment, etc.

e. The SAP should contain sections on Data Quality Objectives, the decontamination procedure, the sampling strategy for both the building and the soil underneath the building, a diagram and map showing sampling locations, sampling methods, sampling documentation and custody, and laboratory methods and operations.

52. Section 8.1.2, *Evaporation Pond*, p. 8-3.

No mention is made of filling in the Surface Impoundments and revegetating the area. Please discuss any plans to remediate the area in this regard.

53. Section 8.1.2.3, *Removal and Disposal of Liner and Leachate Collection System*, p. 8-3. **The pond liner and leachate collection system will be dismantled and removed as hazardous debris. Upon certification of compliance with the LDR requirements, the waste will be disposed in the landfill....**

a. The certification referred to regarding compliance with the Land Disposal Restrictions for the pond liner and leachate collection system is presumably that contained in 20 NMAC 4.1.800 incorporating 40 CFR 268.8(d). Is this correct?

b. The definition of debris in 20 NMAC 4.1.800 incorporating 40 CFR 268.2 states, "...the following material are not debris:..; Process residuals such as smelter slag and residues from the treatment of waste, wastewater, sludges,..." Please discuss how the pond liners will be treated to remove sludge residues as required by 20 NMAC 4.1.800 incorporating 40 CFR 268.45(a).

c. Please provide a confirmatory SAP for the pond liner and leachate system and treatment residues after treatment to ensure compliance with 20 NMAC 4.1.800 incorporating 40 CFR 268.45(b), (c), and (d). See appropriate sections of Comment No. 51.

54. Section 8.1.2.4, *Soil Sampling*, p. 8-3, 1st paragraph. **...Ten samples will be collected. Two will be from locations that correspond to the leachate collection sump and the tanker pad fill line, and eight at random locations....**

An SAP should be provided for sampling of the soil underneath and around the Surface Impoundments. See appropriate sections of Comment No. 51.

55. Section 8.1.3.2, *Dismantling of Tanks, Equipment, and Concrete Secondary Containment Area*, p. 8-4. **...the concrete containment will be broken up and removed as hazardous debris. Upon certification of compliance with the LDR requirements by a New Mexico registered professional engineer, the concrete will be disposed in the landfill....**

a. See Comment No. 53.a.

b. Is this certification a legitimate function of a registered professional engineer? Or does the "certification by a New Mexico registered professional engineer" more appropriately refer to the certification required under 20 NMAC 4.1.500 incorporating 40 CFR 264.115 of the completion of final closure for surface impoundments and landfills? Please clarify this paragraph.

56. Section 8.1.3.3, *Soil Sampling*, p. 8-4. **...Four samples will be collected from locations that correspond to the containment sumps....**

An SAP should be provided for the Liquid Waste Receiving and Storage Unit. See appropriate sections of Comment No. 51.

57. Section 8.1.4.2, *Decontamination of Equipment and Dismantling of Building*, p. 8-5, 1st and 2nd paragraphs. **...The building structure (roof and walls) is not expected to be contaminated with hazardous waste; however, this will be cleaned and rinsed prior to dismantling. The building structure will be dismantled after cleaning and will either be reused or recycled as scrap metal....**

A high-pressure detergent wash and water rinse will be used to clean off all visible residue....

An SAP should be provided for the Stabilization Building. See appropriate sections of Comment No. 51.

58. Section 8.1.4.3, *Dismantling of Tanks and Secondary Containment Area*, p. 8-5. **The tanks, concrete, and secondary containment system will be dismantled and removed as hazardous debris. Upon certification of compliance with the LDR requirements, the waste will be disposed in the landfill....**

See Comment No. 53.a.

59. Section 8.1.4.4, *Soil Sampling*, p. 8-5. **...Two samples will be collected from locations that correspond to the vault and floor drain sumps....**

a. The piping should be removed and disposed appropriately. Please address this issue.

b. An SAP should be provided for sampling of soil underneath the Stabilization Building (and piping), ancillary equipment (including the piping), sampling equipment, and other equipment used in the closure operation. See appropriate sections of Comment No. 51.

60. Section 8.1.5, *Roll-Off Storage Area*, p. 8-5. **...The major steps of inventory removal, equipment decontamination, primary and secondary containment removal, and soil sampling will be identical to those described in Section 8.1 [for the Drum Storage Unit]...One sample will be collected from a location corresponding to the containment sump.**

An SAP should be provided for soil sampling and equipment sampling at the Roll-Off Storage Area. See appropriate sections of Comment No. 51.

61. Section 8.1.6, *Landfill.*

a. 2nd full paragraph. **A treatment system will be designed and built onsite to treat the leachate generated during closure and post-closure. The treated leachate will be used to irrigate the cap vegetation and any excess will be released to the stormwater retention basin. The leachate treatment system to be operated after closure of the evaporation pond will qualify as a wastewater treatment unit as defined in 40 CFR 260.10 and will be subject to regulation under the Clean Water Act. The treatment unit will thus be exempt from RCRA permitting requirements under 40 CFR 270.1(c)(2)(v), and the treated effluent will be exempt from RCRA (not a solid waste) under 40 CFR 261.4(a)(2). The effluent from the leachate treatment system will be treated to meet the standards listed in the final NPDES permit prior to discharge for irrigation or to the stormwater retention basin.**

- RPMP reminds Gandy Marley that, to be regulated nder an NPDES permit, effluent must be discharged to waters of the United States. In addition, the leachate treatment system does not qualify as a wastewater treatment unit as defined in 20 NMAC 4.1.Subpart 1 incorporating 40 CFR 260.10. To qualify as a wastewater treatment unit, a device must meet all three of the requirements listed in the definition, not just one. Leachate is a listed hazardous waste, identified in 20 NMAC 4.1.200 incorporating 40 CFR 261.30 as EPA Hazardous Waste No. F039, and must be managed during the closure and post-closure care periods so as to meet the treatment standards contained in 20 NMAC 4.1.800 incorporating 40 CFR 268.40.

- An SAP, including the timing of sampling events during closure and post-closure, should be provided for the leachate. See appropriate sections of Comment No. 51.

- A full discussion and finalized detailed design drawings should be provided for the proposed leachate treatment system.

- Please include a discussion of plans to ensure that the stormwater retention basin is clean at closure. Will the basin be filled in and revegetated?

b. P. 8-6, 3rd full paragraph. **After the landfill cap is completed, 10 soil samples will be collected from outside the perimeter of the landfill cap to determine if any soil contamination is present. The sampling locations will primarily correspond to the transportation corridor used by waste hauling trucks during the active life of the landfill.**

An SAP should be provided. See appropriate sections of Comment No. 51.

c. 4th and 5th full paragraphs. **No later than the submission of the certification of the landfill, the Facility will submit to the local zoning authority and to the NMED, a survey plat indicating the location and dimensions of the landfill with respect to permanently surveyed benchmarks...The survey plat will contain a prominent note that asserts the Facility's obligation to restrict disturbance of the hazardous waste disposal unit. The Facility will also record a notation on the deed to the Facility property to notify any potential purchasers of the property that (1) the land has been used to manage hazardous wastes; (2) use of the land is restricted to activities that will not disturb integrity of the final cover system or monitoring system during the post-closure period; and (3) the survey plat and record of waste disposal have been submitted to the local zoning authority and to the NMED.**

A record of the type, location, and quantity of hazardous wastes disposed of within the disposal unit will be submitted to the local zoning authority and to the NMED no later than 60 days after certification of closure of the landfill.

NMED would like to discuss institutional controls with Gandy Marley shortly before the Permit application is ready for approval.

62. Section 8.1.6.1, *Landfill Cover*, p. 8-7, 1st and 2nd paragraphs. **Due to the phased construction and operation of the landfill a number of assumptions were made in estimating the cost of the final cover...**

Based on these assumptions, the cost of the final cover construction was estimated for an area at 36 acres, approximately 1/3 of the total landfill footprint.

The entire landfill must be closed, during either partial closure or final closure. The cost estimate for the final cover should be based on the entire area of the Landfill.

63. Section 8.2, *Post-Closure Activities*, p. 8-7, 2nd paragraph.

a. **The post-closure care period for the landfill will begin after completion of closure activities and continue for 30 years....**

The NMED Secretary may shorten or extend the post-closure care period under certain conditions, in accordance with 20 NMAC 4.1.500 incorporating 40 CFR 264.117(a)(2).

b. **...Inspection, maintenance, and repair activities to be conducted during post-closure are described in the following section.**

Please provide an Inspection Schedule similar to Table 5-1 for the post-closure care period.

64. Section 8.2.2, *Landfill Final Cover*, p. 8-7, last paragraph. **General maintenance will include the following activities:**

- **fertilizing the vegetation periodically;**
- **sprinkling or irrigating as needed;**

....

While irrigation may be necessary in the semi-arid Southwest, care should be taken in the selection of native seed (grasses, forbs, and bushes) to choose those which need as little irrigation as possible. Initial seeding should be planned to coincide with or immediately precede the monsoon season. Irrigating only in the spring has proven successful for mine waste piles in Nevada. Forbs may be more easily established than grasses. Plants with short root systems should be chosen.

65. Section 8.2.4.2, *Onsite Treatment of Leachate*, p. 8-9, 1st paragraph. **During the post-closure care period, an onsite leachate treatment unit will be operated...An NPDES permit will be obtained prior to discharge of any treated leachate.**

See Comment No. 61.a.

66. Section 8.2.5, *Vadose Zone Monitoring System*, p. 8-9. **The vadose zone monitoring system will be maintained and monitored throughout the post closure care period....**

Regarding the proposed vadose zone monitoring system, please see Comments No. 3 and No. 31. RPMP will be glad to discuss this matter with you further.

67. Section 8.3, *Closure Performance Standard*, p. 8-11, 2nd full paragraph. **Indicator parameters will be selected for each unit at closure. These parameters will be representative of the wastes stored and/or treated in that unit during its operating life. The waste information used to make these selections will be based upon the Facility operating record. For soil, analytical results that show that these selected constituents are within three standard deviations of the mean constituent concentration in clean background soil will constitute demonstration of clean closure. Clean background soil samples will be collected from the surrounding area outside the Facility fence.**

a. Parameters selected to confirm clean closure must be approved by NMED at the time closure commences.

b. For clean closure, analytical results for soil should show that concentrations in background soil are met.

c. Please provide a plan for determining background concentrations in soil. Provide a discussion, with justifications, of how many samples will be collected, appropriate parameters, an accurate map showing sample locations, sampling and analytical methods, data management, etc.

d. Since the Facility is not yet constructed, please explain why the samples can not be collected on-site.

68. Table 8-1, *Closure Cost Estimates and Closure-Generated Waste Volumes*, p. 8-15.

a. Please include the details of how the various components of the closure cost estimates required under 20 NMAC 4.1.500 incorporating 40 C FR 264.142, *Cost estimate for closure*, were derived. The cost estimates should be revised where appropriate to include sampling and analysis costs.

b. The cost estimate for clean closing the Surface Impoundments must include the cost of complying with the contingent closure plan and the contingent post-closure plan (i.e., post-closure care Permit application as specified in Section 8.2.8, *Amendment of Plan*), in compliance with 20 NMAC 4.1.500 incorporating 240 CFR 264.228(c)(2).

69. Table 8-2, *Landfill Post-Closure Cost Estimate*, p. 8-17.

Please include the details of how the various components of the post-closure care cost-estimate required under 20 NMAC 4.1.500 incorporating 40 CFR 264.144, *Cost estimate for post-closure care*, were derived. Revision of the cost estimate should be delayed until details of a Groundwater Monitoring Plan and/or Vadose Zone Monitoring Plan have been established.

SECTION 10.0, CORRECTIVE ACTION

70. P. 10-1, 4th paragraph. **...The RFA report identified several potential future SWMUs, including:**

the drum handling unit;
roll-off storage area;
the liquid waste receiving and storage unit;
the stabilization unit;
the evaporation pond;
the landfill;
the truck wash unit;
the maintenance shop;
the chemical laboratory;

the stormwater retention pond;
the untarping, sampling, and weigh scales area;
the truck staging area;
the future debris encapsulation unit;
the future waste processing area;
all roads, including those leading to the Facility;
the clay processing area; and
the dust control/clay processing water basin.

a. The first five units listed will be units regulated under the proposed Permit. Spills and releases at these sites will be cleaned up or remediated as specified in the proposed Permit.

b. See Comment No. 5.

c. Please identify where the dust control/clay processing water basin is discussed in the text.

SECTION 11.0, 40 CFR 264 SUBPART AA AND BB REGULATIONS

71. Section 11.2.2, *Equipment Controls*, p. 11-1, 1st and 2nd paragraphs. **During final design of the Facility, consideration will be given to applying the following equipment controls for fugitive emissions sources:**

- **leakless technology for valves and pumps;**
- **plugs, caps, blinds, etc., for open-ended lines;**
- **...**

If the above equipment is utilized, no inspection or monitoring is required.

A final decision must be made and the appropriate discussion and finalized detailed drawings included in the Permit application so that RPMP knows whether or not a review for compliance with 20 NMAC 4.1.500 incorporating 40 CFR 264, Subpart BB is necessary.

72. Section 11.3, *30 CFR Subpart CC*, p. 11-3, 2nd paragraph. **Fifty-five gallon drums and roll-off containers may hold hazardous waste that contains greater than 500 ppmw volatile organic compounds. All 55-gallon drums and roll-off containers stored at the Facility will have covers and meet DOT requirements or packaging of hazardous waste for transport under 49 CFR 178. Therefore, no additional controls will be required for 55-gallon drums or roll-off containers.**

    20 NMAC 4.1.500 incorporating 40 CFR 264.1087 includes standards for covered containers which contain hazardous waste with a concentration of volatile organic compounds greater than 500 ppmw. Please include a discussion on how containers will comply with this Subpart CC regulation.

73. Section 11.3.4, *Applicability to Tanks*, p. 11-4. **The waste storage tanks will be subject to the Subpart CC requirements for inspection, monitoring and emission controls. Several options are being examined to meet the emission control requirements:..The final design documentation will be included as part of the operating record for the Facility.**

    a. Section 11.3, *40 CFR Subpart CC*, p. 11-3, states, "The Facility will not be subject to the Subpart CC requirements for tanks and evaporation ponds because these units will not be used to manage wastes containing volatile organic concentrations greater than 500 parts per million by weight (PPMW)." Please decide whether tanks will or will not be subject to Subpart CC so that RPMP can proceed with an appropriate review of this section.

    b. If the Liquid Waste Storage Tanks are subject to Subpart CC requirements, please include a discussion and appropriate finalized detailed specifications for the chosen design option for emission controls for the Liquid Waste Storage Tanks in the Permit application for review.

74. Section 11.3.5, *Applicability to the Stabilization Process*, p. 11-4. **...The first option is to operate the stabilization unit as a continuous "transfer" operation; as such it would not be subject to Subpart CC requirements. In this case waste will be brought into the unit as soon as it is received on plant site, placed in a HDPE container, mixed with appropriate reagents, and covered and sealed immediately. It is not expected that air emissions will be produced under this scenario.**

A second option is to limit the concentration of volatile organics in the waste to be stabilized to less than 500 ppmw. Final design documentation will be included as part of the operating record for the Facility.

a. Operation of the Stabilization Unit as a "continuous 'transfer' facility" is not a viable option. A transfer facility as defined in 20 NMAC 4.1 Part 1 incorporating 40 CFR 260.10 means any transportation related facility including loading docks, parking areas, storage areas and other similar areas where shipments of hazardous waste are held during the normal course of transportation. The definition does not include treatment units.

b. See Comment No. 73.a.

VOLUME II

75. Plates 1 through 6.

Plates 1 through 5 are missing, while the plate following Cross-Section No. 5 is titled, "Plate 6". Please provide the missing plates with the correct titles.

76. Appendix D.

The geophysical log for PB-1 is apparently incomplete. RPMP learned in a conversation with Mr. Jim Bonner on December 29, 1998 that a more complete log exists with relevant groundwater information on the portion not provided. Please provide the complete log.

77. Appendix I.

Please provide inspection checklists for all inspections.

VOLUME III

SECTION 3.0, LANDFILL

78. Section 3.1.2, *Landfill Layout and Phasing*, p. 3-1, 1st paragraph. **...The landfill footprint is divided into three phases...with each phase having a separate leachate collection, leak detection, and vadose detection system. These phases will be further divided based on development sequencing and landfill waste receipt rates...The limits of Phase A1, the first area to be developed,...**

    a. For ease of public review, please revise all discussions of the landfill in Vol. I to conform to this new (November 1998) revised discussion. Vol. I should include all significant details, e.g., the phased approach, the interim cover, run-off from the slope areas diverted to a water collection basin on the floor of the landfill, etc.

    b. Please provide detailed information on the number of cells that will be constructed in each phase. The dimensions of each cell should be included, as well as detailed information on the construction of each cell, control of gas generation, etc. Finalized detailed drawings of a cell and of the cell layout within the Landfill should be included.

    c. Please discuss the development of and provide drawings for Phases II and III as well as Phase I. Discussion of Phase A1 implies a Phase A2. If so, it should be discussed also.

79. Section 3.1.5, *Interim and Final Covers*, p. 3-7, 1st bullet. **...Specification Section 02227, discusses vegetative cover material requirements including particle size and moisture content, placement and compaction requirements, and survey and field quality control requirements. Specification Section 02900, identified seed mixtures, site preparation, and planting requirements for cover vegetation.**

    The reviewer is not familiar with these Specifications. Please provide them to RPMP for review.

SECTION 4.0, EVAPORATION POND

80. Section 4.1.1, *General*, p. 4-1, 1st paragraph. **The purpose of the evaporation pond is to store and evaporate liquid wastes which meet land ban restrictions....**

    This is the first indication that the Surface Impoundments will be used for storage purposes. Please explain.

81. Section 4.1.3, *Subgrade Excavation, Liner System, LDRS Sump Design and Vadose Monitoring Sump Design*, p. 4-3, 1st full paragraph. **Since portions of this liner component will be permanently exposed to sunlight and UV radiation, it may be necessary to replace it prior to the end of the facility life. The lifetime of exposed geomembrane liners varies, however, it is generally limited to the warranty period which may be as long as 20 years...The staged approach to pond development will help alleviate this concern, as will maintaining fluids near capacity in the primary use pond unit. Periodically alternating pond units for primary uses will also reduce exposure time.**

a. Replacement of a surface impoundment liner must be carried out in compliance with 20 NMAC 4.1.500 incorporating 40 CFR 264.227, *Emergency repairs; contingency plans.*

b. What is the timing of the development of the ponds?

SECTION 6.0,STABILIZATION UNIT

82. Section 6.1.1, *General*, p. 6-1, 2nd paragraph. **...It should be noted that certain components of the stabilization building, process control and delivery systems, ventilation systems and steel bins will be completed under future design/build contracts.**

NMED cannot approve the stabilization treatment process until this material has been provided for review. Please provide a discussion and finalized detailed drawings.

83. Section 6.1.4, *Stabilization Process Design*, p. 6-3, 2nd paragraph. **Reagent usage will vary with the waste type and the prescribed stabilization guideline,...**

a. Please provide a table in Vol. I showing reagent usage by waste type.

b. If feasible, please provide a copy of the prescribed stabilization guideline. If not, please identify it.

84. Section 6.2.4, *Stabilization Process Analyses*, p. 6-6, 1st paragraph. **Reagent delivery piping sizes shown on Drawing No. 34 (Volume III) are preliminary and will be finalized when selection of the pumps and dry reagent pneumatic system are determined, however, these piping sizes are capable of meeting the daily reagent requirement.**

A discussion and finalized detailed drawings of the reagent delivery piping sizes, pumps, and dry reagent pneumatic system should be provided in the Permit application for HRMB review.

SECTION 7.0, DRUM HANDLING UNIT

85. Section 7.1.2, *Drum Handling Layout*, p. 7-1, 4th paragraph. **...Two of the cells are designated as TSCA cells and as such are required to be isolated from other drum storage cells. The 0.5 ft high by 3.5 ft wide walkway which surrounds the TSCA cell provides the necessary isolation....**

    Are the other cells separated by walkways of the same dimensions? If not, please provide the dimensions for these walkways as well.

86. Drawing No. 37, *Drum Handling Unit General Arrangement.*

    a. Only two cells are shown on this drawing. Please provide a drawing to show (to scale) the seven cells in the Drum Handling Unit.

    b. Please indicate which of the cells will receive ignitable waste, reactive waste, and TSCA waste.

EDITORIAL COMMENTS

87. Please correct Tables of Contents to agree with revisions.

VOLUME 1

88. Section 2.4.1, p. 2-12.

    a. Title. **Contaminant and Detection Releases**

    This title should read, "Containment and Detection of Releases".

    b. Last paragraph. **All ancillary equipment will be provided with secondary containment unless is it aboveground piping....**

    This sentence should read, "All ancillary equipment will be provided with secondary containment unless it is aboveground piping....".

89. Section 2.6, *Treatment in Evaporation Pond*

    The reference in this section should be revised to pond throughout, following the revisions made in Vol. III, Section 4.0, *Evaporation Pond.*

90. Section 8.0, *Closure and Post-Closure of Permitted Units*, p. 8-1.

The reference to a "pond" should be revised to "ponds" throughout Section 8.0, following the revisions made in Vol. III, Section 4.0, *Evaporation Pond.*

91. Section 8.1.6, *Landfill*, p. 8-5, last paragraph. **...The final cover will consist of a three-layer cap design consisting of a vegetative cover, a middle drainage layer, and a lower layer, as described in Section 5.0 of Volume III....**

Please change the reference to read, "Section 3.0 of Volume III".

92. Section 10.0, *Corrective Action*, p. 10-2, last paragraph. **...At this point, the Gacility will....**

This sentence should read, "At this point, the Facility will...."

VOLUME III

93. Section 4.0, *Evaporation Pond.*

This title should now read, "Evaporation Ponds", in keeping with Gandy Marley's previous revisions to the scope of this treatment process. Please make similar corrections as needed throughout the section.

Certification of suspension request demonstration:

I hereby certify that, to the best of my professional judgement, the information provided in this request for suspension of groundwater monitoring requirements for _____ landfill is accurate and complete and the request includes a demonstration that there is no potential for migration of hazardous constituents from the landfill to the uppermost aquifer during the active life of the landfill and the post-closure care period and the demonstration is based upon:

1. site-specific field measurements, sampling, and analysis of physical, chemical, and biological processes affecting contaminant fate and transport; and,

2. contaminant fate and transport predictions that maximize contaminant migration and consider impacts on public health, welfare and environment.

_____
Date

_____
Signature of qualified* groundwater scientist

_____
Printed name

*Attach résumé which demonstrates conformity with §105.AG

REQUEST FOR SUPPLEMENTARY INFORMATION:
ENGINEERING DESIGN ISSUES
TRIASSIC PARK WASTE DISPOSAL FACILITY
TATUM, NEW MEXICO

This request for supplemental information (RSI) addresses responses to comments on the first Notice of Deficiency (NOD) dated February 1997, which were partially adequate or inadequate, and provides new comments which were generated from a review of technical information in the November 1998 application provided by Gandy Marley, Inc. The comments are listed in the order of subjects in the RCRA Part B Checklist, primarily Section D, Process Information and Section I. Closure Plans, Post Closure Plans and Financial Requirements.

General Comment

The application organization/format does not lend itself to convenient grouping of unit-specific design, construction and operating plans into stand alone segments, as will be required for inclusion into a facility permit. The entire review and permit drafting process would be facilitated if the application were to be conceptually reworked to allow for typical RCRA permit segmentation. This is not a requirement, simply a suggestion that may help all parties work more efficiently.

D. PROCESS INFORMATION

As noted in the following comments, the hazardous waste unit design and operation information in the application is still incomplete in many respects as discussed in more detail in the following paragraphs. In addition, notes on the design drawings and specifications state that the plans provided are "not for construction." Other statements indicate that details or modifications to the plans will be submitted to the NMED before construction begins. Many responses to the previous NOD state that detailed design drawings and other information "will be submitted," but much of the promised information is not provided in the application. The application does not provide an explanation of the degree of finality of the current design drawings, so the impression conveyed is that the applicants may expand and/or modify the plans extensively, both before and after a final permit is issued. A final operations plan is expected to provide many of the necessary details of operation and maintenance of the facility, but that plan has apparently not been written (see Section 2.5.3.2 of the application), and the application does not indicate when that plan may be prepared and submitted for review.

This approach is not in accord with the hazardous waste regulations, which require that complete design and operating plans must be provided in the permit application. Only after the plans have been determined to be complete and adequate by the Secretary may a draft permit be issued. Proposed modifications to the facility plans received after the draft permit is issued, which would require public notice and comment periods pursuant to 20 NMAC 4.1.900 (incorporating 40 CFR 270.42, e.g., Class 2 and 3 modifications in Appendix I), will not be included in the final permit.

Such modifications would be required to go through the procedures specified in 40 CFR 270.42, after the final permit is issued. Less substantive (Class 1) modifications proposed after a draft permit is issued may or may not be included in a final permit, at the discretion of the Secretary. Class 1 modifications included in the final permit are subject to the public notice requirements and potential denial provisions of 40 CFR 270.42(a). Accordingly, in order to be in conformance with governing statutes, the application must be revised to provide complete design and operating plans as specified in the following comments.

D-1 <u>Containers</u>: 270.15, 264.170 through 264.178

The roll-off storage area described in Section 2.2.2 of the application (Page 2-4) is proposed to consist of two portions. The stabilized waste storage portion of the area is proposed to be operated as a (less than) 90-day storage area. However, the regulation which governs less than 90-day storage areas, 40 CFR §262.34, applies only to generators of hazardous waste. The term "generator" is defined in 40 CFR §260.10, and the applicability of the exemption from permitting requirements is explained in Notes 1 and 2 to 40 CFR §262.10. As such, ". . . any person whose act first causes a hazardous waste to become subject to regulation," would be considered the generator of the waste. The Gandy Marley facility will not be the generator of wastes placed in this storage area, and the wastes will be disposed on-site. In order for the stabilization process to be considered a generator, the waste would have to change treatability groups (e.g.., a wastewater would become a non-wastewater.) Additionally, mixing two or more wastes does not generate a new waste [EPA RCRA Permitting Policy Compendium, Document 9453.1989(01)]. Therefore, the stabilized waste roll-off area must be included in, and designed and operated as part of the permitted roll-off container storage unit. Consequently, both the Part A and Part B applications must be revised to include the stabilized waste roll-off storage area.

D-1a(3) <u>Secondary Containment System Design and Operation</u>: 270.15(a)(1), 264.175(a), 264.175(d)

Drawing No. 39, Sheet 2 of 2, shows the conceptual design drawing for the Drum Handling Facility. This drawing indicates that the concrete floor will be underlain by a single geomembrane, with no drainage geonet. The floor drain trench is designed with a secondary liner and geonet, but there is no supporting structure (e.g., concrete) under the drainage trench and sump. This design may be unstable and lead to significant movement of the foundation soil, resulting in damage to the geomembrane(s), collapse of the trench walls, and/or cracking of the floors. Releases of liquid wastes to the uncoated floor could accumulate within and below the concrete. The design must be revised to provide a stable, sufficiently impervious base for storage of containers.

Response No. 28 indicates that the Engineering Report will include engineering calculations which will identify the minimum requirements for the foundation soils and concrete floor coatings. There are no calculations provided for the container storage area that document the foundation stability. Please revise the Engineering Report to include the promised information and to also address the concerns regarding differential settlement or swelling/upheaval.

Response No. 28 also states that the final design will include a sand layer that will allow the liquids to migrate below the floor to the sump areas. It is assumed that the select subgrade material included on Drawing No. 39 is sand(?), but the specifications do not include a "select subgrade." Please revise the application to explain what the select subgrade material is intended to be, and if it is intended to function as a drainage layer. Please also provide material and construction specifications for this material.

Please revise Section 2.2.1 to explain how incompatible waste will be managed or provide design drawings for the roll-off container storage area that indicate where and how incompatible wastes will be stored.

Appendix E-32, the Truck Roll-Off LCRS Pumping Capacity calculations, provides a sketch of the sump on page 1 of 4. The phreatic surface line is shown as daylighting roughly three feet from the top of the pipe, between the pipe centerline and the gravel surface. The information provided is insufficient to be able to reproduce this estimated distance. Please revise Appendix E-32 to include a description of the approach used to approximate this distance. Additionally, the length of the perforated pipe is stated as being seven feet in the sketch. Drawing No. 43 shows this dimension as five feet. Either revise the calculations or provide the reasoning for not using the design length in the calculations.

The Truck Roll-Off LCRS Pumping Capacity calculations on page 2 of 4 state that the area of the liner is 59,858 square feet, while referring the reader to page 4 of 4 of the calculations. The figure on page 4 of 4 does not have dimensions and is not to scale. Please revise the calculations to either provide the dimensions of the liner area, or refer to a scalable drawing (e.g.., Drawing No. 41).

D-1a(3)(a) <u>Requirement for the Base or Liner to Contain Liquids</u>: 264.175(b)(1)

Demonstrate the capability of the base of the roll-off container storage area to contain liquids, including:

- Demonstrate or verify that the lower portion of the composite base (geomembrane) will remain free of cracks or gaps (breaches) during use;
- Demonstrate the imperviousness and compatibility of the lower portion of the composite base (geomembrane) with regard to the wastes and precipitation;
- Demonstrate the compatibility of the upper portion of the composite base with wastes (i.e., provide a discussion on the compatibility of the surface soil material with the wastes to be stored at the roll-off container storage area; and
- Demonstrate the theoretical structural integrity of the lower portion of the composite base (geomembrane) under anticipated routine and extreme loading conditions. Ensure that calculations are provided documenting that the soils will be capable of carrying the maximum anticipated load under saturated conditions, without compromising the integrity of the geomembrane.

The application should also include a discussion on how the surface will be maintained to the original design specifications (including placement, compaction, and compaction verification testing) during routine operation and maintenance.

Provide a discussion of how the surface of the roll-off storage area will be maintained to prevent cross-contamination or releases of waste via wheel tracking or wind dispersion. The discussion should demonstrate that the road base surface proposed for the roll-off container storage area will provide a working surface equivalent to the epoxy coated concrete surface proposed for the container storage area.

There are no engineering calculations in Section 5 to demonstrate that the geomembrane will not deform under the maximum anticipated loading, or that the soils (road base material) will not shear or deform under saturated conditions and subsequently over stress the underlying geomembrane. The application does not demonstrate the long-term durability of the soils (road base material) as a working surface. Please revise the discussion of the composite base/liner system to address the durability of each of the composite base components individually and as a whole. The base design selected should be equivalent to the recommended concrete secondary containment system discussed in the preamble to the container storage regulations.

D-1a(3)(c) <u>Containment System Capacity and Control of Run-on</u>: 270.15(a)(3) and (4), 264.175(b)(3) and (4)

Please provide calculations in or referenced in Section 2.2.2.1 to demonstrate that the roll-off storage area containment system will have sufficient capacity to contain 10% of the volume of the containers or the volume of the largest container, whichever is greater. This demonstration must discuss the volume of the largest container, total volume of containers, containment structure capacity, and volume displaced by containers and other structures in the containment system.

As run-on into the containment system is not prevented, the collection system must have sufficient excess capacity, in addition to that required to contain potential waste releases, to contain any run-on that might enter the system. Calculations for only the run-on volume have been provided so far. Please revise the application to provide calculations demonstrating that the containment system has sufficient capacity to contain run-on in addition to the volume required above.

D-1a(3)(e) <u>Removal of Liquids from Containment System</u>: 270.15(a)(5), 264.175(b)(5)

There is no discussion provided in Section 5 on how frequently the fluid level will be visually observed in the sump system. Please revise this section to include a discussion on inspection frequency and the time frame for removal of any liquids detected.

There is no discussion provided in Section 7 on how frequently the fluid level will be visually observed in the leachate collection and removal sump or the leak detection and removal sump. Please revise this section to include a discussion on inspection frequency and the time frame for removal of any liquids detected.

D-1b <u>Containers Without Free Liquids:</u> 270.15(b)

As previously stated, the Part A must be revised to include the stabilized waste roll-off storage area.

D-1b(1) <u>Test for Free Liquids</u>: 270.15(b)(1)

Provide a discussion of the test procedures or other documentation/information that will be used to determine that the stabilized wastes to be stored in the stabilized roll-off container storage area will not contain free liquids.

D-1b(2) <u>Description of Containers</u>: 264.171, 264.172

Please provide the following information about the roll-offs used to treat/store hazardous waste:

- approximate number of each type of container,
- dimensions and usable volumes,
- DOT specifications or other manufacturer specifications,
- liner specifications (if applicable),
- container condition (new, used, reconditioned),
- markings and labels.

D-1b(3) <u>Container Management Practices</u>: 264.173

Please describe the management practices to be used to ensure that the roll-offs/hazardous waste containers are always kept closed during storage, except when adding or removing waste, and are not opened, handled, or stored in a manner that may cause them to rupture or to leak.

D-1b(4) <u>Container Storage Area Drainage</u>: 270.15(b)(2), 264.175(c)

Please describe how the storage area is designed or operated to drain and remove liquids unless containers are otherwise kept from contact with standing liquids.

The response to the original comment states that the stabilized waste roll-off bin portion of the Roll-Off Storage Area will control precipitation within the unit. No design discussion on this portion of the unit or on how it will be operated so as to prevent a release is provided in the application or the engineering report. Please revise both the Part B Permit Application and the Engineering Report to address drainage in both portions of the Roll-Off Container Storage Area.

D-2 <u>Tank Systems:</u> 270.16, 264.19 through 264.194, 262.10

Section 3.01 in Appendix C (page 13205-3) states that "Polyethylene tanks shall be installed as indicated on the Construction Drawing." However, no Construction drawings are submitted with the permit application. Drawing No. 40, the only sketch provided for the tank system, does not provide the details of the construction of the polyethylene tanks and the drawing is labeled "not for construction." Please revise the application to provide construction drawings that show the details of the construction, specific to each tank system, including the base that will be supporting these tanks. Construction drawings must be certified by a professional engineer.

Response No. 32 a & c state that the leachate generated at the landfill, and the wastewater and sludge that will be generated at the truck wash, are considered to be generated on site and therefore will be managed in non-permitted, less-than-90-day storage units. NMED has determined that the landfill leachate can be considered to be a newly generated waste, and is therefore eligible for the exemption from permitting requirements. The truck wash is in a different category. The response refers to the definition provided in 40 CFR 260.10: "Generator means any person, by site, whose act or process produces hazardous waste identified or listed in part 261 of this chapter or whose act first causes a hazardous to become subject to regulation." However, the response does not address the full definition and the notes to 262.10, which were referenced in the original NOD, or the definition of "empty" containers in 261.7. The truck wash sump and tank will contain rinsate or wash water from truck beds, tires, undercarriages and heavy equipment tracks, etc. which will be traceable to or derived from any or all types of wastes to be received at the facility. These wastes will include many listed and acutely hazardous waste codes, as specified in the facility Part A. Wastes from containers which were not empty before washing, all P-listed waste residues (including those from "empty" containers), and all types of listed wastes contained in environmental media, such as soil washed from truck tires and dozer tracks, are still hazardous wastes. None of these wastes will be "generated" at the truck wash, although they may be mixed together there. The original waste codes for each detectable listed hazardous constituent will apply to the mixed wastewater and sludge collected at the truck wash. Note 1 to 40 CFR 262.10 states that "The provisions of §262.34 are applicable to the on-site accumulation of hazardous wastes by generators. Therefore, the provisions of §262.34 only apply to owners or operators who are shipping hazardous waste which they generated at the facility." The facility cannot use the less-than-90-day storage area exemption for the accumulation of the wastewater and sludge from the truck wash unit. The truck wash will be storing these wastes on site, but not "generating" any new hazardous wastes, and thus these storage units must be permitted. Therefore, please revise the application to include the truck wash tank and sump.

D-2a **<u>Tank Systems Description:</u>** **270.14(b)(1), 264.194(a)**

Section 6.1.2 (Stabilization Unit Layout) states that "the control room is positioned centrally along the west wall of the stabilization building. ... Reagent storage tanks and silos are also located on the west side of the building which permits operations personnel to view reagent delivery activities." Assuming the convention that north = up, Drawing 33 indicates that the control room, reagent tanks and silos are all located on the east side of the building. Please revise the application to reconcile this discrepancy between the text and the drawing, and provide a direction arrow for the layout portion of the drawing.

D-2a(1) **Dimensions and Capacity of Each Tank: 270.16 (b)**

The application does not discuss the dimensions and capacities of the tank(s) that will be used for wash water storage and settling at the truck wash. Please revise the application to provide detailed construction drawings, including tank locations, dimensions and capacities.

No discussion of the process design capacity for stabilization bins is provided in the text of the application, except in Part A permit application, where it is indicated that the process design capacity (total) will be 150,000 gallons/day. Revise the application to discuss the capacities of each tank to be permitted.

Nominal dimensions and volumetric capacities of the stabilization bins are discussed in the response No. 34. However, this information is not included in the text of the revised application. Revise the application to include this information and show the final design dimensions on construction drawings certified by an independent professional engineer registered in the State of New Mexico.

D-2a(2) **Description of Feed Systems, Safety Cutoff, Bypass Systems and Pressure Controls: 270.16(c), 264.194(b)**

Section 2.3.3 (Volume I) of the permit application discusses spill and overfill prevention in general terms without committing to any specific measures that will be used for the tank system. For example, it is stated that "spill prevention is primarily maintained by hard-plumbed piping. When transfer lines are not hard plumbed or when open-ended lines are used, one or more of the following spill prevention controls or an equivalent device will be used." The application goes on to list several types overfill prevention, including automatic feed cutoff, high-level alarm and bypass, none of which are discussed or indicated on the design Drawing No. 40 in the engineering report. Drawing No. 40 shows low- and high-level cutoff switches which are not discussed in detail in the text of the application. Revise the application to provide descriptions and drawings of the specific feed systems, spill prevention controls, safety cutoff, bypass systems, and pressure controls that will be used with each tank. The discussion provided in the text of Section 8.1.3 (Volume III) of the application is not adequate, and no construction drawings are provided to show, for example, the location of the vent systems and their construction.

Section 2.3.4 (Volume I) of the permit application states that pump transfer or gravity drain will be used as feed mechanisms for tank systems, or an equivalent transfer mechanism will be used. It is further stated that "liquids will be pumped into or out of the tank through permanent or temporary transfer lines; or liquids will be allowed to drain by gravity through permanent or temporary transfer lines." Revise the application to discuss and show (on drawings) where these different mechanisms will be utilized in the system. Discuss the procedures that will be used to switch from one system to the other. The application must be specific in the description of the design features of the system. Simply stating this or that or equivalent mechanism will be used is not sufficient for permit application approval. Two or more designs for the same function may be included, but each design must be complete.

Section 2.4.3 (Spill and Overfill Prevention) of the permit application states that "additionally, the delivery system will be computerized and will be designed to ensure that the mixture used for stabilization prevents overfilling." However, Section 2.4.4 (Feed Mechanism, Pressure Controls, and Temperature Controls) states that the "reagents will either be pumped from reagent tanks or manually fed." The engineering report in Volume III describes a computerized system for injecting reagents into the system, however, it does not mention any manual feeding of the reagents. In addition, Drawing No. 34 does not show any manual feeding mechanism. Revise the application to address these discrepancies and to discuss the feed systems in detail.

D-2a(3) **Diagram of Piping, Instrumentation and Process Flow: 270.16(d)**

The application does not provide details of piping, instrumentation and process flow for the tank system and ancillary equipment. Only one drawing, Drawing No. 40, which is labeled "not for construction," is provided as a design drawing for the tank system. This drawing does not contain adequately detailed information on piping, instrumentation and process flow for the tank system and ancillary equipment. Section 2.3 (Volume I) of the permit application states that "waste will be transferred from the tanks to the stabilization unit either by pumping into transfer tankers or by direct piping." However, these two transfer systems are not discussed in detail or shown on P&ID or process flow diagrams (PFDs). For example, Section 8.1.2 (Volume III) of the permit application states that "discharge pipes to the stabilization building will be elevated double walled pipes." However, no drawings indicating these pipes and their process flow are provided in the application. Revise the application to discuss these transfer processes in detail and provide P&ID and PFDs for the tank systems and all the ancillary equipment associated with the process.

D-2a(4) **Ignitable, Reactive and Incompatible Wastes: 270.16(j), 264.17(b), 264.198, 264.199**

Section 2.4 (Stabilization) states that "when the waste is sufficiently mixed, it will be tested in accordance with the Waste Analysis Plan (see Section 4.0). It will then be placed in a roll-off container and transferred to the roll-off storage area to cure." Also see Section 6.1.4, Volume III, first paragraph on page 6-3 which states that "the truck will either proceed to the landfill for disposal or will stage the roll-off container in the truck roll-off area (if TCLP test results are required)." Drawing No. 34 also indicates that after the waste is stabilized it would either go to the roll-off area or the landfill. Discuss in what situations the waste will be directly transferred to the landfill without interim storage at the roll-off storage area. Discuss the procedures and criteria that will be used to determine whether a TCLP analysis will be required on a stabilized waste.

Section 2.4.8 (Tank Assessment) states that "The engineering report presented with the preliminary tank design drawing in Volume III includes a discussion of wastes to be excluded from storage or treatment in [stabilization units] due to their excessive corrosive effects." However, the engineering report does not present or discuss this information. Revise the application to provide this information or provide a reference in Section 2.4.8 indicating where this information is located.

D-2c(1) **Assessment of New Tank System's Integrity: 270.16, 264.192**

Section 2.3 of the application (Volume I) states that "the tanks will be double-walled and constructed of high density polyethylene materials that are compatible with the wastes to be placed in the tanks." However, except for stating that "these compatibilities are assessed in the design specification and engineering report (Volume III)," no tests or evaluation of these compatibilities were conducted and no results substantiating the statements in the application are provided.

The Part A permit application indicates that all of the wastes listed in Section XIV will be stored in the polyethylene tanks. Some of the wastes listed in Section XIV of Part A may be corrosive and incompatible with the tank construction material (e.g., carbon tetrachloride, benzenes, carbon disulfide, hydrogen peroxide) when present at high concentrations. In addition, as a general guidance, strong nitric (50% or higher) and sulfuric (25% or higher) acids should not be stored in the tanks (Reference: Table 23-2 of Perry's Chemical Engineer's Handbook, 6th Edition, Perry & Green, 1984).

Please revise the application to either provide results of compatibility tests conducted or literatures (e.g., manufacturer's compatibility tables) indicating and certifying that the hazardous wastes and/or hazardous waste constituents listed in Part A do not have a detrimental effect on the structural integrity of the polyethylene tanks. In addition, provide literature data (including manufacturer's) or calculations to show that the secondary containment is of sufficient strength to withstand all of the forces acting on it, especially in the event of failure of the primary containment.

Section 8.2.1 states that "the tank manufacturer will provide recommended tank tie down details for review and approval by a registered New Mexico professional engineer prior to tank installation." Revise the application to provide this information.

The application does not provide calculations and/or data to show that the concrete base for the polyethylene tank system is capable of supporting the system, providing resistance to pressure gradients below the system, and preventing failure due to settlement, compression, or uplift. The application merely states that the tank system is designed as such, and does not provide supporting design calculations and engineering drawings in the engineering report (Volume III). Revise the application to provide a detailed demonstration of the structural integrity of the base for the tank system.

The discussion, designs and supporting calculations presented in Volume I and Volume III of the permit application for the Stabilization Unit are preliminary and lack the details required in final design of a unit. Following are some of the deficiencies noted:

- The drawings are either labeled "not for construction" or do not show a seal of a professional engineer. The text does not include an explanation of the meaning of the "not for construction" designation, so they drawings are assumed to be preliminary, not final design information.

- The design section references Calculation No. E-33, Appendix E, Volume VI and states that it describes the steel plate, reinforcing members, and energy absorbing devices intended for the stabilization bin system. However, the assessment and supporting calculations presented in Calculation E-33 regarding the tanks' structural integrity are inconclusive, and neither the calculations nor the results are fully legible. For example, the inner liner with a thickness (1") would fail by the impact of total and instantaneous hydraulic failure from a height of 15 feet. However, no other iterations are presented to provide the thickness that would withstand such an impact, except stating that "it does not appear cost effective to design the inner liner for this possibility."

- Except for stating that "all ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction," the application does not discuss or show how this will be accomplished, or identify which ancillary equipment requires such support and protection.

The application states (in Section 2.4.8) that "a written assessment attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste will be provided by an independent, qualified, New Mexico registered professional engineer based on the final tank design drawings and prior to tank construction." In addition, 6.1.1 states that "it should be noted that certain components of the stabilization building, process control and delivery systems, ventilation systems and steel bins will be completed under future design/build contracts." The applicants must note that components of hazardous waste management units which are to be designed in the future are subject to the permit modification requirements of the hazardous waste regulations. For the units which are proposed to be constructed under the original permit, the application must include the final design and operating plans.

Revise the application to provide final design drawings which are certified by a professional engineer. In addition, provide calculations supporting the design in a final format and discuss the final designs of the process control, delivery and ventilation systems, and the final designs of the steel bins.

D-2d(1) **<u>Plans and Description of the Design, Construction, and Operation of the Secondary Containment System:</u>**

The application does not provide any calculation and/or data to show that the outer tank of the double walled polyethylene tank system will provide secondary containment of sufficient strength and thickness to prevent failure due to pressure gradients, physical contact with waste, climatic conditions, or the stress of daily operations. The application, except for stating that the containment system is designed as such, does not provide supporting design calculations or engineering drawings in the engineering report (Volume III). Revise the application to provide a detailed discussion of the secondary containment for the tank system.

The application states that the concrete pad for the tank system is not considered a secondary containment and therefore does not have to meet secondary containment standards. However, the containment is provided as an additional measure to prevent the spread of fluid should leaks or spills occur at discharge piping connections and pumps located within the pad. This containment requirement should be discussed further. In addition, Section 2.3.1 (Volume I) of the permit application states that "each tank will be surrounded by a concrete area which will be sloped to provide drainage to a sump." However, these elements of the pad are not discussed in the engineering report (Volume III). For example, no discussion or drawing shows the percent slope that will be used; no discussion or drawing shows the design of the sump. Revise the application to provide a detailed discussion and engineering drawings of the pad, sump and berms for the tank system.

Section 2.3.1 (Volume I) of the permit application states that "all ancillary equipment will be provided with secondary containment except above ground piping (exclusive of flanges, joints, valves, and other connections), welded flanges, welded joints, and welded connections that are visually inspected for leaks each operating day." Furthermore, it is stated in Section 2.3.12 (Volume I) of the permit application that "impervious concrete coatings will be applied to the liquid waste storage tank containment area and the evaporation pond discharge station. Hose and pipe connections will be inside the concrete containment area boundaries." Revise the permit to identify and discuss the ancillary equipment that will require secondary containment and provide the details on the designs of these containment areas. Engineering drawings identifying the equipment and the appropriate containments must accompany the discussion.

A distinction should be made between the "primary and secondary steel liners" and the "double walls" of the stabilization bins. If they are one and the same, the application should state so in the text of the application and reconcile the information with the design drawings provided. For example, the cross-section A-A' on Drawing No. 34 should be discussed further in the text, since it indicates a Leak Detection and Leachate Collection and Removal System (LD/LCRS) within the vault while it also indicates that there is a "primary LD/LCRS" within the liners or the double walls. If there is a LD/LCRS in the vault as indicated in this figure, this implies that the vault serves as a secondary or tertiary containment. What is depicted in this figure is contrary to the statement that "the vault will not be used as secondary containment; therefore, it does not have to be lined or meet other requirements for secondary containment."

However, Drawing No. 34 supports the statement in Section 6.1.2 of Volume III that "the bin and vault arrangement provides three levels of waste containment with the inner bin liner serving as primary containment, the outer bin as secondary containment, and the vault as final or tertiary containment." See also, paragraph 2 of Section 6.1.3 (Volume III), page 6-2. This paragraph explicitly proposes the vault as a containment and indicates that there will be a concrete epoxy coating requirement. Although preliminary structural assessment indicates that impact from loads and the bucket will be mostly absorbed by the wire rope isolators situated between the liners, it is not shown how the vault will be designed to withstand any residual forces or vibrations, and none of the drawings show how the bins will be tied down to the floor of the vault.

Revise the application to address these discrepancies and provide detailed design drawings for the construction of the vaults. Discuss how releases into the vault will be pumped out of the LCRS (i.e., by stationary pumps or portable pumps).

D-4 Surface Impoundments

Since most of the design elements of the surface impoundments are similar to that of the landfill, only comments specific to the surface impoundments are addressed under this section. If the landfill comments are adequately addressed in a revised application, much of the revised information will also be applicable to the impoundment. For example, shallow soil characterization, and material and construction specifications for the liner system, leak detection system, foundation, and run-on/run-off control designs are similar.

Comments relating to the truck wash sump are placed under this section, because most of the design components of the truck wash sump are also similar to those of a surface impoundment. The permit application assumes that the truck wash is not subject to permitting requirements, but NMED has determined that the truck wash is not eligible for the generator exemption as explained previously in Comment D-2.

The application does not provide adequate information on the run-on/run-off control system for the Evaporation Pond. Section 2.6.1.4 (Run-On/Run-Off Control) states: "Section 2.5.1.5 contains information on run-on/run-off control for the landfill, which is also pertinent to the evaporation pond." The correct section is 2.5.1.6 (not 2.5.1.5), which mentions that a lined collection basin located at the toe of the inter phase cut slope, as shown of Drawings 10 and 13 in Volume III, will be used to collect runoff from the landfill side slopes. However, it is not clear whether this basin will also receive runoff from the Evaporation Pond Areas. In addition, since the basin is lined, it is unclear how the water accumulated in the basin will be managed to prevent overflow. No details of this basin (e.g., capacity, material of construction) are presented in the application. If the purpose of the basin is for only the initial phase of the landfill operation, describe how runoff from the landfill/evaporation pond and run on to the landfill/evaporation pond will be managed after the construction phases are completed.

The last paragraph of Section 2.5.1.6 also states that "run-off from the Facility, but not from the active portion of the landfill (including run-on/run-off from the landfill perimeter drainage ditch), will be directed to the stormwater retention basin." It is not clear from the design drawings whether this information is true for the evaporation pond as well. Section 2.6.2.1 (Site Preparation) states that "existing site drainage will be modified to route any run-on away from the evaporation pond area. Access roads and a truck discharge station will be constructed. These engineering controls and components are shown on Drawings 4, 5, and 31 in Volume III."

Unfortunately, these drawings do not show the level of details needed for these engineering controls as they pertain to the Evaporation Pond. In fact, the initial site grading plan shown in Figure 5 does not take into account that a pond exists or will be built on the northwest corner of the landfill. Thus, reference to Figure 5 is irrelevant and does not depict the engineering controls as they pertain to the Evaporation Pond.

In addition, the last paragraph in Section 4.1.4 (Evaporation Pond Discharge Pad Arrangement) states that "Drawing No. 4 (Volume III) depicts the surface grades around the perimeter of the evaporation pond area. Surface water run off from these areas will flow to the roadway ditch system and ultimately to the stormwater detention basin." The referenced Figure No. 4 neither shows surface grades around the perimeter of the ponds nor how the run-on to the ponds will be diverted to the stormwater detention basin. Revise the application to provide detailed discussion and drawings showing the run-on and run-off control system for the evaporation pond.

Section 2.6.2.3 (Structural Fill Areas) states that "areas of the evaporation pond requiring structural fill will be constructed according to the specifications presented in Volume IV." Revise the application to indicate the specific location for this information within the text of Volume IV.

Section 4.1.2 (Evaporation Pond Layout and Phasing) states that "Pond units 1A, 1B, 2A, and 2B are 132-ft wide by 285-ft long by 12 feet deep and each will provide approximately 1.63 million gallons *[total of 6.52 million gallons for all four ponds]* of useable storage capacity (excluding 2-foot freeboard volumes)." Section 4.2.9 of Volume III also states that "the resulting pond volume available for liquid storage and evaporation (not including 2 ft freeboard) is approximately 6.5 million gallons." However, Section 2.6.1 (Volume I) and the Part A form indicate that the capacity of the surface impoundment (total volumetric capacity of all four ponds) is to be 4.6 million gallons (it is not indicated whether or not the 2-ft freeboard is accounted for in this volume).

The application does not show how these volumes were determined. Using the geometric information provided in Section 4.1.2, we could not duplicate any of the volumes provided. Similarly, calculations utilizing the scales provided on Figure 4 also did not yield results that matched the text. According to Figure 4 (based on the scale provided on the figure) the longest side of each pond is approximately 300 feet. Our calculations were based on a trapezoidal cross section and a side slope of the longest side of 2H:1V.

In other calculations, for example, Calculation E-15: Anchor Trench Pullout Capacity, evaporation pond slope length is given as 60 ft, which, using the 12 ft depth, would translate to a slope of 5H:1V. This slope does not correspond with the slopes shown on the drawings and discussed in the text of the application.

Revise the application to address the above discrepancies and present a sample calculation of how the useable capacity of the ponds was determined, including the geometric shapes used as a basis for the calculations.

D-4e(2) **<u>Soil Liners:</u> 270.17(b)(1), 264.221(a), and 264.221(c)(1)**

Section 3.02.A of Specification Section 02221 (Clay Liner) states that "the clay liner shall be constructed to the elevations, grades, and thicknesses shown the Construction Drawings." However, no construction drawings were submitted with the permit application to show the elevations, grades and thicknesses to which the clay liner will be constructed. This deficiency applies to most of the construction specifications where reference is made to construction

drawings that do not exist. Revise the application to provide final design drawings for units where such drawings are required.

The previous NOD noted that the Upper Dockum material does not appear to provide the low permeability required by 40 CFR 264.221(c)(1)(i)(b). Response No. 44 states that "additional laboratory tests will be conducted on processed siltstone and mudstone samples to confirm their permeability characteristics." However, no further laboratory tests or results are presented in the revised application. The application must be revised to provide permeability test data representative of the proposed clay liner material which demonstrates that it can be used to construct impoundment liners with the necessary low permeability.

The preferred method for obtaining this information, in addition to laboratory testing of enough samples to demonstrate that the data adequately represents the proposed liner material, is to construct a test fill and perform a large-scale field permeability test on the test fill. Large-scale hydraulic conductivity testing on "test pads" is strongly recommended by EPA and by Koerner and Daniel in **Waste Containment Facilities: Guidance for Construction, Quality Assurance and Quality Control of Liner and Cover Systems** (ASCE, 1995) (see Comment D-4g(3)). The application must also identify the location of the borrow material proposed for the soil liner including a plan drawing showing the location of the borrow area, or a cross section showing the depth that the liner material will be taken from.

D-4e(2)(a) **<u>Material Testing Data:</u> 270.17(b)(1), and 264.221(c)**

The previous NOD comment stated: "Some limited soil test data is included in Appendices E and F, but the application does not indicate whether these data are representative of the proposed soil liner materials. Many of the test data in Appendices E and F are not accompanied by sample depth information, which makes the usefulness of the data questionable. Provide data from index tests, laboratory and/or in situ hydraulic conductivity (permeability) tests, strength tests, consolidation tests, and shrink-swell testing of the soil liner material. If detailed sample locations and depths for all of the data in Appendix E and F can be provided, additional testing needs may be minimal. (However, the shallow Quaternary soils have not been adequately sampled or characterized - see landfill comments). Provide copies of the test procedures, or reference standard test methods used to produce the data. Include complete soil test results and sample identification information, including depths as well as horizontal reference points. Discuss the potential for dispersion and piping of the soil due to flow of wastes into or through the soil liner layer."

Response No. 45 indicates that a table previously submitted will be revised to indicate standard test methods used in the analyses for the soil liner material and the depth of sample location. The response also states that "dispersion and piping of the soil will be discussed in the engineering report for the landfill." However, none of this information was presented in the revised application. In addition, the response does not address the concern as to whether the data presented in Appendices E and F of the original application are representative of the proposed soil liner materials. Revise the application to provide the information requested in the previous comment.

D-4e(2)(b) **Soil Liner Compatibility Data: 270.17(b)(1), 264.221(a)(1)**

The previous NOD comment requested information as follows: "The application does not address soil liner compatibility with liquids which may be placed in the impoundment. Section 2.6.1.1 simply restates the requirement in 264.221(a)(1). The application should provide the results of hydraulic conductivity tests of the soil liner material using wastes or surrogate solutions representative of the liquid that may be placed in the surface impoundment. Discuss the effects or predicted effects, if any, of the wastes on the soil hydraulic conductivity. Provide a copy of the test procedures, or reference appropriate standard methods, along with a description of how the liquid samples were prepared or obtained, a demonstration that the liquid sample is representative of wastes which may be placed in the impoundment, and the complete test results. Alternatively, provide research reporting compatibility testing of similar soils and similar liquids, or provide typical liquid waste analyses and site specific soil chemical and mineral characteristics, and use this information to predict the results (changes in hydraulic conductivity) of interaction of the soil with wastes from the impoundment."

Response No. 45 states that the evaporation pond soil liner compatibility testing will be discussed in the engineering report, and promises to provide most of the information requested. However, none of this information is presented in the engineering report. Revise the application to provide the information requested in the previous comment.

D-4f(1) **System Operation and Design: 270.17(b)(1), 264.221(c)(2) and (3)**

The previous NOD requested the final design and operation details for the leak detection system, as required by 264.221(c)(2) and (3). The revised application does not provide this information, although response No. 47 promised to provide the final design and operations plan. Section 4 of the Engineering Report (Evaporation Pond) and the specifications do not mention pump controls, leakage volume measurement devices, or the proposed management of liquids removed from the leak detection and vadose zone sumps if the leakage rate is less than the Action Leakage Rate, or if the (3) adjacent ponds cannot accept the additional liquids. Section 4.1.2 of the Engineering Report refers to the ALR discussion in Appendix G (Volume VI), but the ALR discussion (actually, the Response Actions in Section 7.0 of Appendix G) only provides for pumping the entire contents of a pond into an adjacent pond, after the ALR has been exceeded- it does not mention pumping from a leak detection sump into another pond. The application must be revised to provide complete details of the leak detection system design, including the proposed methods for controlling the pumps, measuring and recording the liquids present in the sump and removed, and plans for handling the removed liquids.

D-4g **Liner System, Construction and Maintenance**

D-4g(1)(c) **Leak Detection System: 270.7(b)(1), and 264.221(a)**

The application must provide detailed final material specifications of piping to be used in the leachate detection systems.

No distinction is made between the truck wash liquid collection sump and the LDRS sump in the text of the application. The discussion in the text of the application and details provided on Drawing 44 do not clearly present the details of the main sump. It appears most of what is presented in Drawing 44 pertains to the LDRS system. Also, it is not clear where the physical locations of these sumps are in relation to each other. Drawing 44 shows only one liner running underneath the whole floor area of the truck wash bays, but does not indicate the presence of a secondary liner that is associated with the Leak Detection System. No discussion of the capacity of the main sump and no cross-section of the main sump is provided in the drawing. No calculations of the pump or sump capacity are presented.

Section 9.1.3 states that "because this sump is close to the surface and any fluids in the sump can be observed by looking down the LDRS riser pipe, fluid level instrumentation is not required." The cross-section of the truck wash leak detection sump depicted on Drawing No. 44 indicates that the bottom of this sump is six feet below the pad surface (i.e., distance from the pad surface, excluding the height of the riser above the pad). Liquid released into the sump may not be visible to the naked eye until the level rises above the sump trough, which would defeat the proposed purpose of this sump as a "leak detection" device. It appears that the sump is a leachate collection system rather than a leak detection system. Revise the application to provide detailed descriptions and design drawings of the sumps.

D-4g(3) **<u>Construction Quality Assurance Program</u>: 270.17(b)(1), 270.17(b)(4), 270.30(k)(2), 264.19, and 264.229 (a)**

The application does not provide evidence demonstrating that the clay material available on-site will provide the low permeability required for a soil liner. In fact, the laboratory hydraulic conductivity test data for Upper Dockum material (Appendix E in the original application) which showed test results consistently higher than the maximum acceptable value, and the original plans for use of a bentonite-soil mixture for the pond liner, have been removed from the revised application.

Although the previous NOD specifically pointed out the inadequacy of the available data, and the necessity for careful control of the construction of the soil liner, the revised application largely ignores these concerns, without explanation or justification. For example, although the previous NOD comment specifically recommended the use of a large-scale infiltrometer test to determine the permeability of the test fill, in agreement with both the EPA **Technical Guidance Document** and the Koerner and Daniel guidance cited in response No. 53 (**Waste Containment Facilities: Guidance for Construction, Quality Assurance and Quality Control of Liner and Cover Systems**, page 55), the revised application and CQA Plan (Appendix A, Test Fill Plan) includes only laboratory permeability testing.

As noted in the Koerner and Daniel guidance (page 55), "...laboratory hydraulic conductivity tests can under predict the large-scale hydraulic conductivity by a factor of up to 100,000." The suggested approach of using on-site material for the soil liner and inadequate testing to demonstrate adequate performance is thus highly questionable. The application must be revised to provide representative hydraulic conductivity test data for the materials proposed for use in

constructing the soil liner. The Test Fill Plan must be revised in accordance with standard industry practice as recommended by EPA, and Koerner and Daniel, to include a large-scale infiltrometer test to determine the large-scale hydraulic conductivity of the test fill.

Response No. 53i states that "the CQA plan will be revised to distinguish CQC and CQA responsibilities including evaluation of earthwork and geosynthetic installer CQC plans." However, in the CQA plan presented in Appendix B of the revised permit application, no distinction is made between CQA and CQC when discussing the activities the CQA engineer conducts on a daily basis, including activities that would fall under CQC of earth materials as well geosynthetics and other non-soil components of the evaporation pond and the truck wash unit. In addition, Section 2.2 (Use of the Terms in This Plan) of Appendix B, states that "in the case of geosynthetic and other non-soil components, CQC is provided by the Manufacturers and installers of the various geosynthetics." This statement directly contradicts response No. 53i. Revise the CQA Plan and related sections of the application to present CQA and CQC activities in a distinct manner, as suggested in the EPA **Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities**, EPA/600/R-93/182, and in **Waste Containment Facilities: Guidance for Construction, Quality Assurance and Quality Control of Liner and Cover Systems**, page 22, and identify who will be conducting the activities.

Response 53j states that "The testing frequencies for both pre-construction and post-construction will be reviewed. Recommendations in "same ref. as previous comments..." will be used as basis for testing frequencies." This statement is false. Table II-3 of the CQA Plan and the testing frequency recommendations in Daniel and Koerner, **Waste Containment Facilities** (WCF), Tables 3.8 and 3.10, are compared side by side below.

	TP CQA Table II-3	WCF
Compaction curve	Not mentioned	4,000 m^3 (5,263 yd^3)
Sieve analysis	3,000 yd^3	800 m^3 (1,053 yd^3)
Atterberg limits	3,000 yd^3	800 m^3 (1,053 yd^3)
In-situ moisture	300 ccy	5/ac/lift (161 ccy)
In-situ density	300 ccy	5/ac/lift (161 ccy)
Calibration density	1 per day	1 per 20 nuclear densities
Moisture by oven	1 per day	1 per 10 nuclear moistures
Shelby tube permeability	1,000 yd^3	1/ac/lift (538 yd^3)

As shown above, the proposed soil liner testing frequencies are only one-third to one-half of the frequencies recommended by Koerner and Daniel. The application CQA Plan must be revised to provide for soil testing at least as frequently as recommended by Koerner and Daniel. In addition, the application must be revised to include moisture-density curves every 5,000 yd^3 (at minimum) and at every visible change in soil type (color or texture).

Response 53k promises that a statement that "no waste shall be accepted at the site until NMED has reviewed the certification report." The revised application does not contain such a statement,

or the actual (different) requirement for submittal of the certification report, in 264.19(d). Revise the application to include (in the CQA Plan) a statement that no waste will be received in a unit until a signed CQA certification report for that unit has been submitted to the NMED Secretary.

D-4i Leakage Response Action Plan: 270.17(b)(5), 264.223(b) and (c)

The application Response Action Plan in Appendix G includes all of the requirements of 40 CFR 264.223 and 264.304 (for both the evaporation pond and the landfill) on the first page of Section 7.0. Then a separate section is provided for the evaporation pond, beginning at the bottom of the page. This second section includes all of the preceding responses, except for the requirement to "determine whether waste receipt should cease or be curtailed..." etc., in 264.223(b)(4). The separate plan for the impoundment also includes an additional commitment (not found in the regulations) to "immediately remove the surface impoundment from service and remove any fluids contained in the surface impoundment to an adjacent approved pond or other approved facility..." There appears to be no need for the separate (and incomplete) set of responses for the evaporation pond. Revise the application to clarify the applicability of the responses on the first page of Section 7.0 to both the landfill and the impoundment (add a reference to 264.223), and remove the following separate section concerning the impoundment only.

D-4j(3) Prevention of Overtopping: 270.17 (b)(2), and 264.221(g)

According to Section 4.1.2 (Evaporation Pond Layout and Phasing) of Volume III, "Pond overtopping will be controlled manually through the use of liquid elevation indicators placed in the pond." If this is the only overtopping control and this requires Facility personnel checking the fluid level in the pond to prevent overtopping, then the proposed weekly inspection is not sufficient. What does inspection of "improper operation of overtopping control systems" mean in this context? Revise the application to fully describe the design and/or operating procedures that will provide adequate protection against impoundment overtopping/overflow.

In response No. 58, a brief discussion of the availability of sufficient volume for a 100-year, 24-hour storm is provided. However, no such discussion is provided in the text of the application. The details of the pond capacity and freeboard calculations are not provided in the application, although the response states that this information "will be presented in the pond detailed design drawings." In addition, the overtopping prevention measure proposed does not address the concerns specified in the previous NOD comment. Revise the application to provide the information source references and calculations supporting the statement that the impoundment has at least the capacity to accept run-off from the 100-year storm.

D-6 Landfills: 270.14(a), 270.21 and 264.300 through 264.317

As noted in the following comments, the landfill design and operation portion of the application is still incomplete in many respects. The application must be revised to provide complete design and operating plans.

D-6c(3) **Loads on Liner System: 270.21(b)(1), 264.301(a)(1)(I)**

The laboratory test report and stability calculations in Appendix E-2 include assumptions that are not carried through to the engineering report and construction specifications. The calculations assume that the largest equipment on a slope will be a D6 dozer (maximum ground pressure 9.8 psi), and that the protective cover soil will never be saturated; resulting in a factor of safety of 1.8. The specifications (Appendix C, page 02232-3) allow equipment with up to 20 psi ground pressure on 24-inches of soil (the cover soil thickness). The consequences of saturation or near-saturation of the cover soil are not addressed under static or dynamic conditions, although soil saturation was specifically requested to be considered in the previous NOD comment.

The laboratory testing (Appendix D) used only slightly moistened, well-compacted cover soil (only the GCL was saturated). The specifications (page 02232-4) only limit cover soil placement during precipitation, leaving open the possibility that a dozer much larger than a D6 may be operated on wet, nearly-saturated cover soil layers during the hours and days after rain storms. Although these conditions may not result in catastrophic slope failures, the application does not demonstrate that such circumstances have factors of safety greater than 1.

In addition to these concerns, the application does not provide calculations of the predicted stresses in the synthetic liner system materials or anchor trenches due to down-drag loading on the slopes. Loading due to wet protective cover soil on the 300 feet slopes may exceed anchor trench capacity, and therefore require that cover soil placement be limited to only a portion of the slope above the toe. If sacrificial geomembranes are proposed (see Comment D-6c(5)), consideration of an additional loading scenario may be necessary. The application must be revised to demonstrate that the landfill liner system will be constructed to prevent failure due to climatic conditions, the stress of installation, and the stress of daily operation.

D-6c(4) **Liner System Coverage: 270.21(b)(1), 264.301(a)(1)(iii)**

Two significant deficiencies were identified in the revised liner coverage information. 1) The landfill liner is intended to eventually cover the floor and sidewalls of the entire (Phase I, II and III) landfill, but none of the drawings actually shows the full extent of the planned liner. For example, Drawing 8 shows the anchor trench for the Phase 1 liner, but no drawings are provided to show the anchor trenches and/or liner coverage for Phase II and Phase III. Similarly, the text of the application only suggests (Volume III, Section 3.1.4, page 3-7) that the plans for Phase II and Phase III liner installation, access ramps and waste fill sequencing "...will be determined in the future." 2) The liner anchor trench is located in the center of each of the two Phase IA access ramps (Drawings 8, 13 and 14). This leaves the outer half of each access ramp outside the limits of the liner system. The entire surface of the access ramps will be routinely contaminated with wastes tracked from the active fill face by waste hauling and water trucks, and waste placement and compaction equipment, contrary to the statement in Section 2.5.1.2 (page 2-14) in the application. (Both ramps apparently may be used for both entry to, and exit from, the landfill.) The application must be revised to demonstrate that the liner system will be installed to cover all surrounding earth likely to be in contact with waste or leachate during Phases I, II and III.

D-6c(5) **Liner System Exposure Prevention: 270.21(b)(1), 264.301(a)(1)**

The application does not explain whether the entire installed liner system will be immediately covered with soil, or why "...a sacrificial geosynthetic will [or may] be deployed..." instead (as stated in the response to the previous NOD). The revised application (text Section 2.5), engineering report and specifications do not mention possible use of sacrificial geosynthetics. (See comment 68.) The application must be revised to demonstrate that the liner system will be constructed to prevent failure due to climatic conditions, the stress of installation, and the stress of daily operation.

D-6d **Liner System Foundation: 270.21(b)(1), 264.301(a)(1)(ii)**

The response promises to provide bearing capacity and stability evaluations for load bearing embankments, but the revised application text (Section 2.5) and engineering report (Volume II, Section 3) do not include such evaluations, or even mention the load bearing embankments that are shown on the west and south sides of the landfill on Drawing 6 (Volume III, Appendix A). The outward slopes of these embankments appear to be about 3:1, but the slope is not specified. The embankments will apparently be built directly on top of the existing, highly variable Quaternary sediments, as indicated on Drawing 7 (Cross-Section A-A'). The embankment on the west side of the Phase III sub-cell is more than 20 feet above natural grade, about twice as high as proposed in the original application. Slope failure or severe settlement of the constructed embankments could result in damage to the liner and cover systems, increased erosion, and release of wastes to the environment. The application must be revised to demonstrate that the liner system will be placed on a foundation capable of providing support to the liner system adequate to prevent failure due to settlement, compression or uplift.

The interim Phase II cut slope to the south of the initial Phase I fill is proposed to be left at 2:1 grade until Phase II excavation begins. The stability of this slope was not evaluated in the application. A failure of this slope may disrupt operations, fill in the proposed "clean" runoff collection basin, and possibly damage the completed liner on the floor of Phase I, where contaminated landfill runoff is proposed to be collected. The stability analysis in Appendix E-1 suggests that 3:1 slopes will have only minimal factors of safety (1.4 for static and 1.2 under seismic loading), assuming unsaturated conditions and Upper Dockum strength properties for the Quaternary sediments. The top forty feet or so of the slope actually will have less strength, and the exposed slope will be repeatedly wetted and eroded by precipitation. The bare slope may be left exposed with no maintenance for perhaps 10 years or more, if the landfill business is slow. Finally, the slope stability evaluation for the 3:1 slopes does not include static or dynamic loading due to construction equipment. Therefore the proposed 2:1 cut slope is apparently likely to fail. A sudden slope failure could threaten the lives of workers.

The bare 3:1 cut slopes above the access ramps on the east and west sides of the proposed Phase I fill will be exposed to precipitation infiltration and erosion from the time of excavation until the decision is made to complete the liner system on these slopes. The application provides no indication of how long this time period might be. The slope stability calculations in Appendix E-

I assume that "due to the temporary nature of the cut slope, a [factor of] safety less than [the typical minimum of] 1.5 was accepted." (Page 2) The parameters in the calculation are claimed to be "very conservative," but in fact the climatic exposure conditions (infiltration of precipitation over an extended time period) and routine heavy loading due to construction on the slopes (e.g., 40-ton truck and 80-ton scraper traffic) have not been accounted for. The exposure of these bare slopes will be extended, for at least several years, cannot be considered "temporary." Although a calculation concerning Ramp Stability is provided in Appendix E-6, this addresses only scraper loads on the "subbase and road base," not the stability of the slopes on which the access ramps are located. The slope stability evaluation must be revised to fully account for actual slopes in the landfill (both 2:1 and 3:1); actual soil strengths; exposure effects due to weathering, precipitation infiltration and erosion; and construction stresses on the slopes due to dynamic loads from trucks, dozers and scrapers.

D-6d(4)(b) <u>Bearing Capacity</u>: 270.21(b)(1), 264.301(a)(1)(ii)

The response discusses interface shear testing and slope stability analyses, but the comment requested a foundation bearing capacity analysis. Bearing capacity is particularly important in the areas around the boundary of the landfill where embankments (structural fills above natural grade) are proposed to be constructed on top of relatively weak sandy sediments. Revise the application to provide an analysis of the bearing capacity of the liner system foundation, with emphasis on the structural fills on the west and south sides of the landfill.

D-6e(1)(a) <u>Synthetic Liner Compatibility Data</u>: 270.21(b)(1), 264.301(a)(1)

The application (Section 3.2.3.5) does not provide information necessary to demonstrate that the liner system materials will be compatible with the wastes and leachate that will be in contact with those materials, as required by 264.301(a)(1)(i). Liner compatibility data from testing with synthetic and real leachates is available from liner manufacturers and other sources. Revise the application to include summary information and references to the data relevant to the proposed geomembrane and other liner system components.

D-6e(1)(c) <u>Synthetic Liner Bedding</u>: 270.21(b)(1), 264.301(a)(1)(ii)

The proposed specifications (02119) and CQA requirements (Section II.3) for prepared subgrade materials allow any type of soil found on site to be used, and do not correspond with previously approved criteria. The CQA Plan provides no method for enforcing the limited subgrade criteria mentioned in the response (Response No. 81 states that prepared subgrade "...materials will be free of particles larger than 1 inch in diameter or sharp objects which may puncture the liner"). The proposed specifications and CQA Plan do not include any prohibition or mention of sharp objects. No grain size analyses are required for prepared subgrade, and no gradation range is specified for this material. This means that any of the soils excavated anywhere on site (sand, gravel, caliche, silt or clay) can be used for prepared subgrade, so long as cobbles, large roots and branches are not visible. Proctors are required only once every 6 acres (CQA Plan, Table II-2), equal to 4,629 cubic yards of material, i.e., one test for about 231 dump truck loads of material (at

20 yards each). This approach is not consistent with the Alternative Liner System HELP Analysis, in Appendix E-28 of the application. This document provided the basis for the preliminary 1996 NMED approval of the proposed alternative (non-MTR) design for the Triassic Park landfill liner and cover systems. For example, the Prepared Subgrade description in Section 4.2.8 of this document states:

> "The prepared subgrade material considered is essentially the same material considered for the clay barrier material described above. ... this material is the same material proposed for the clay barrier... For the prepared subgrade layer, the same soil texture number and defaults were input as the clay layer described above including the conductivity."

Since the characteristics of this component of the alternative liner design are proposed to be modified in a non-conservative manner in the current application, the applicability and adequacy of the 1996 HELP analysis is called into question. Revise the application to specify clay liner material for Prepared Subgrade, or revise and expand the Alternative Liner System HELP Analysis report to demonstrate that the proposed open or empty specification (any type of soil) as a substitute for the clay material will provide equivalent physical support, and equivalent hydraulic performance, of the liner system.

D-6e(2)(b) **<u>Soil Liner Compatibility Data</u>: 270.21(b)(1), 264.301(a)(1)(i), 264.301(c)(1)(ii)**

Limited GCL testing to determine saturated shear strength was performed (Appendix D), but no waste nor leachate compatibility data are provided. The application must be revised to provide an evaluation of the chemical compatibility of the bentonite and synthetic materials with leachate which may be generated in the landfill. Manufacturer's test data, scientific or engineering literature, or testing with synthetic leachate may be acceptable if the character of the leachate is demonstrated to be similar to leachate which may be generated in the landfill.

D-6f(1) **<u>System Operation and Design</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)**

The application presents only a partial design and incomplete specifications for the leachate collection and leak detection systems. Phase II and III plans "will be determined in the future" (Section 3.1.4, page 3-7), and the design details and specifications for flow meters and fluid level transducers or equivalent devices, and data recorders, are not provided in the application. The design will apparently include a trench across the center of the floor of each of the three separate sections or phases of the landfill, to accommodate the 8-inch diameter pipes in the leak detection and leachate collection systems. However, the application provides no description nor drawing to demonstrate how the trenches will be designed or how the pipes will be installed. Another example is the absence of plans for connecting the future (Phase IB, II and III) portions of the liner system to the previously constructed liners and drainage nets. Apparently the anchor trenches may be excavated, or the old liners will be cut at the top of the anchor trenches so that the new liners and drainage nets can be attached.

Plans for operation of the leachate collection and leak detection systems do not include pump operating levels, or procedures and equipment for draining leachate collection tanks. Management of the leachate collection tanks is important because at leachate and leak flow rates well below the proposed Action Leakage Rate (900 gpad), the small leachate collection tanks must be emptied several times per day (i.e., through the night, weekends, and holidays). The prompt emptying of leachate collection tanks (required to minimize the buildup of head on the liners) must be included as part of the landfill leachate collection and leak detection system operation plans. The application must be revised to provide complete leachate and leak detection system design and operation plans.

D-6f(2) Drainage Material: 270.21(b)(1), 264.301(a)(2), 264.301(c)(3)(ii)

The design calculations for the Action Leakage Rated (Appendix G-2) recommends (sheet 3 of 40) that the proposed geocomposite drainage material be tested to confirm that the assumed factors of safety are adequate. The discussion of leak detection system design parameters in Section 5.2.2 of Appendix G states that transmissivity test results, under conditions similar to those anticipated in the field, "are required in the specifications and CQA Plan." However, the CQA Plan (Appendix B, Section VII-1.4, Conformance Testing) indicates only that testing shall be done according to the specification. The specification (Appendix C, Section 02710-2.01) refers to Table 02710-1, which explains the required transmissivity test setup in Note 5 at the bottom of the table. Note 5 requires that "the geocomposite shall be sandwiched between a layer of protective soil... and a 60-mil thick HDPE geomembrane."

This test setup is appropriate for the geocomposite above the primary liner (the LCRS), but it is not similar to the conditions that the leak detection geocomposite will be exposed to. In addition, the compressive stress of 10,000 psf specified for the test (also in Note 5) may be substantially less than the actual load on the floor of the landfill at most locations, when filling is complete. The maximum depth of waste fill and cover appears to be approximately 140 to 150 feet, which would result in loading of 14,000 to 15,000 psf, assuming average waste density of only 100 pounds per cubic foot (which may be an underestimate). Revise the application to require testing of the geocomposite under conditions similar to those which will exist in the landfill, e.g., compacted soil, GCL and textured 60-mil HDPE membrane below the geocomposite, with textured 60-mil HDPE membrane and lightly compacted above the geocomposite, under compressive stress representative of the actual loading on the floor of the landfill. (Note: Testing with only soil above the geocomposite is also necessary to demonstrate that the LCRS will function as designed.)

D-6f(3) Grading and Drainage: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)

In addition to the absence of plans for the Phase II and Phase III systems, discrepancies exist between the text of the Engineering Report (Volume III of the application) and the Specifications in Volume IV, Appendix C. The pumps indicated in the LCRS and LDRS descriptions (Section 3.1.3, page 3-5, Table 2 and Section 3.2.8, page 3-17) appear to be identical. However, the pump

specifications in Section 11210 of Appendix C state that the Vadose Sump and Secondary Leachate Collection System pumps will be identical, but the LCRS pump will have a much larger capacity. Grundfos pump performance curves for the "25S19-9" pumps specified in Appendix C suggest a flow rate of about 35 gpm at 100 to 110 feet of head, not 20 gpm as indicated in Table 2. The application must be revised to correct these discrepancies.

Grundfos performance curves (not included in the application) for the two pumps specified in Appendix C indicate (in notes at the bottom of the charts) that the minimum submergence (liquid above the pump) is 2 feet for the smaller pump and 5 feet for the larger. Revise the application to provide additional details of the actual pumps to be installed and the operating parameters (submergence, on/off operating limits, and resulting depth of leachate on the liners) that are proposed to be included in the facility permit. Plans and procedures must be provided to minimize the head on the liners, and to maintain less than one foot of leachate head on the liners outside the limits of the sumps.

The application does not provide a means for measuring or recording volumes of leachate removed from the LCRS or the LDRS. Although flow meters apparently may be installed on pipelines from the landfill sumps ("FM" items on Drawing 19, Sheet 1), flow meters are not discussed in the Engineering Report or included in the Specifications. In addition, the application provides no methods to measure the volume of leachate in the LDRS sumps, although a small 3-inch pipe ("pressure transducer conduit") is included next to each Riser Pipe in Drawing 19. Revise the application to provide the method(s) to measure and record the volumes of leachate removed from each LCRS and LDRS, and the volume of leachate present in each LDRS sump.

D-6f(4) Maximum Leachate Head: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2)

Although the application provides calculations of the drainage capacities of the Phase I geocomposite (leachate collection and leak detection layers) and LCRS sump in Appendixes E-31 and G-1, Phase II and Phase III are not included. Results from testing the geocomposite under the [illegible] soil cover at clay-sized particles, especially when large volumes of infiltrating runoff are expected to pass through the protective soil cover, over a period of several years. The proposed geocomposite testing (Appendix G-1, sheet 8 of 40), although intended to simulate LDRS design conditions, should include testing of the actual LCRS conditions as well (including infiltration of large volumes of water through typical sand and other surficial soils from the site. Revise the application to evaluate the potential for clogging of the leachate collection system by infiltrating soil particles, and redesign the runoff collection pond if necessary to prevent clogging.

D-6g Liner System Construction and Maintenance: 270.21(b)(1), 264.301(a)(1)

The application does not provide complete (e.g., Phase II and Phase III) material specifications for the liner system, or test fill results for the clay liner in the Phase I sump. The application must be revised to include the entire landfill and all components of the liner system, including clay liner compaction and placement requirements based on or confirmed by test fill results.

D-6g(1)(b) **Soil Liners: 270.21(b)(1), 264.301(a)(1)**

The application includes clay liner material specifications (Section 02221), but no information to demonstrate that this material can or will be compacted as necessary to achieve the required low permeability. No data is provided to demonstrate that the clay material available on site will meet the permeability specification, or that the clay will be chemically resistant to the wastes and leachate to be managed in the landfill. Obtaining these data will probably require performance of the EPA 9090 test procedure and construction of a test fill. Revise the application to provide compaction, permeability and waste compatibility test results.

The application does not provide plans for Phases II and III of the landfill. The design report does not clearly indicate whether the leachate collection and leak design systems are expected to be identical to Phase I. The sump designs for Phases II and III are not provided, although they will clearly have different dimensions and floor slopes than the Phase I sump. Revise the application to provide complete design information for the entire landfill (see Comments D-6f(1) and D-6f(3)).

D-6g(2) **Construction Specifications: 270.14(a), 270.21(b)(1), 264.301(a)(1)**

The construction specifications (Appendix C) are not certified, stamped or signed by a New Mexico professional engineer. Revise the application to provide the necessary certification.

D-6g(2)(b) **Soil Liner: 270.21(b)(1), 264.301(a)(1), 264.303(c)(2)**

The application does not include design details for Phase II and Phase III of the landfill. Revise the application to include design details for the entire landfill.

D-6g(2)(d) **Leachate Collection and Leak Detection Systems: 270.21(b)(1), 264.301(a) and (c)**

The application does not include specifications for several components of the leachate collection and leak detection and removal systems. The proposed method of connecting new segments of the liner, leachate collection and leak detection systems is also not addressed, as noted in the previous NOD. Revise the application to include design details, specifications and CQA requirements for leachate level sensors, pump control systems and flow meters; and the proposed methods for connecting new sections of the liner system during expansion beyond the Phase IA limits.

D-6g(3) **Construction Quality Assurance Program: 270.21(b)(1), 270.30(k)(2), 264.19, 264.303(a)**

The Construction Quality Assurance (CQA) Plan has the name of a professional engineer printed on the cover page, but a seal, signature or certification is not included. Revise the application to include certification.

The CQA Plan does not address pumps, controls and instrumentation, although these are integral components of the leachate collection and leak detection systems. Revise the application to include CQA requirements for pumps and controls, liquid level sensors, flow meters and data recorders.

The response to the previous NOD (response No. 105b) stated that the CQA Plan would be revised to incorporate the most recent EPA guidance (**Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities**, EPA/600/R-93/182). The revised CQA Plan conflicts with several basic recommendations in the EPA guidance. For example, the definitions of Construction Quality Assurance and Construction Quality Control (CQC) in the CQA Plan are radically different from the definitions in the EPA guidance. The proposed Triassic Park definition of Construction Quality Control includes "Manufacturers, Suppliers, Contractors or Owners..." in the group of those who may perform CQC functions, and carries this approach through the entire CQA Plan. In contrast, the EPA guidance states (page 2) that CQC "...is normally performed by the geosynthetics installer, or for natural soil materials by the earthwork contractor... (CQC) refers to measures taken by the installer or contractor to determine compliance with the requirements..." The application CQA Plan does not include any Manufacturing Quality Assurance or Control (MQA/MQC) as recommended by the EPA guidance (page 2). The proposed CQA approach for the Triassic Park facility (with no CQC) is confusing, and is not in agreement with EPA guidance or typical industry practice. Assignment of CQC functions to Manufacturers, Suppliers or Owners (Section 2.2) is inappropriate, and will not improve the quality or assist in documentation of the quality of the constructed units. Manufacturers, Suppliers and the Owner are not expected to construct any of the permitted units. The application provides no justification or explanation for the proposed changes in the approach recommended by EPA. Revise the application CQA Plan to provide definitions and assigned functions for MQA, MQC, CQA and CQC in accordance with the EPA Technical Guidance Document.

The proposed CQA Plan does not include the NMED as a party to CQA, as requested in the previous NOD comment. This is another example of the failure of the CQA Plan to incorporate the recommendations of the EPA Technical Guidance Document into the Triassic Park plan, and another contradiction between the response (No. 105d, which promised to incorporate the NMED into the CQA Plan and Project Organization Chart) and the actual revised application. Compare Figure I-1 of the proposed CQA Plan with Figure 1.1 of the EPA guidance. The proposed plan and project organization do not illustrate nor account for the flow of work from design through manufacturing, construction, inspection, certification, approval by NMED, and, finally, actual operation of the facility. The application CQA Plan must be revised to include the NMED as a party in the Project Organization, and the structure of the MQA/CQA organization must be revised to account for the flow of work on the facility from start to finish. If the proposed organization does not mirror the recommended structure in the EPA guidance (EPA/600/R-93/182, page 4), the revised application must provide a full explanation of why the EPA guidance is not being followed.

The previous NOD requested acknowledgment of the permit modification requirements of 40 CFR 270.41 and 42, and the response (No. 105e) promised to include "... Agency notification of any design changes which might require permit modification." However, the revised CQA Plan only suggests (Section 1.4, page XVIII-5) that when design or specification changes are required, the owner will notify NMED. The plan does not indicate whether the NMED will be notified before or after such changes are constructed, and does not mention the permit modification requirements of 20 NMAC 4.1.9, incorporating 40 CFR 270.41 and 42. Revise the CQA Plan to specifically acknowledge the permit modification criteria in 40 CFR 270.41 and 42.

The previous NOD requested that the CQA Plan be clarified to provide for separate certification of each phase of landfill liner system construction, including the final cover. The response (No. 105f) promised to provide for submittal of certification reports for each constructed phase. However, the revised CQA Plan does not mention the phased construction plans or the requirement for multiple certification reports. Revise the CQA Plan to provide for submittal of certification reports for each phase of liner system construction.

Section 2.5.2 of the application text is inconsistent with the EPA CQA guidance. For example, the final bullet on page 2-20 discusses a need for unidentified subcontractors and consultants to have an acceptable CQA program. There should be no need for any additional CQA program outside the one to be included in the facility permit. There should never be any need for a consultant to have an independent CQA program even if they are also a construction contractor. Revise the text of the application to conform to the definitions and practices outlined in the EPA guidance.

D-6g(4) **<u>Maintenance Procedures for Leachate Collection & Leak Detection Systems</u>: 270.21(b)(1), 264.301(a) and (c)**

Response No. 106 to the previous NOD promised to provide maintenance plans. However, the revised application still does not include maintenance plans. Section 2.5.3.2 of the application states that "The landfill structure will be maintained through a routine preventive maintenance program which will be fully defined in the final site operations plan." As noted in previous comments, the application must include final design and operation plans. Revise the application to include maintenance plans for the landfill leachate collection and leak detection systems.

D-6g(5) **<u>Liner Repairs During Operation</u>: 270.21(b)(1), 264.301(a)**

Response 107 states that repairs to the landfill liner will be made in accordance with the original specifications and CQA Plan. However, the text of the application does not mention liner repairs. The most appropriate document for such a commitment to be located would apparently be the final site operations plan, which has not been submitted. Revise the application to include the final site operations plan, and ensure that the operations plan contains a clear and explicit commitment to repair the landfill liner.

D-6h **<u>Action Leakage Rate</u>: 270.21(b)(1)(v), 264.302**

The proposed Action Leakage Rate (ALR) of 900 gallons per acre per day (gpad) is a large rate of flow. The initial Phase IA liner as proposed on Drawing 9 will cover a surface area of about 16.5 acres. Therefore an average flow of 14,850 gallons per day (gpd) or less into the Phase IA LDRS sump would not trigger implementation of the Response Action Plan. The largest ALR will be for the Phase II sump, which will drain about 37 acres. The Phase II ALR would therefore be 33,300 gpd. This rate of flow would require nearly constant operation of the 25 gallons per minute (gpm) secondary leachate collection system pump specified in Appendix C, Section 11210, page 2. In addition, the 9,000 gallon leachate collection tank would have to be emptied four times per day to keep pace with the leachate pump. The application does not provide plans to continue operation of the leachate pumps and transfer of collected leachate around the clock, as will be required to minimize the head on the liner system, if the leakage rate approaches the ALR. Revise the application to provide for continuing operation of the leachate and/or leak detection system sump pumps, and emptying of the leachate collection tanks if necessary to allow continued operation of the sump pumps, throughout the times when the facility is otherwise non-operational, i.e., overnight, weekends, and holidays.

The proposed ALR is nine times the EPA recommended minimum. The explanation given for the nine-fold increase is the high transmissivity of the geocomposite. However, the transmissivity cited in Section 3.2.9 of the Engineering Report is 2.2×10^{-4} m^2/sec, which is only 7.33 times greater than the minimum of 3×10^{-5} m^2/sec required in 40 CFR 264.301(c)(3)(ii). In addition, the value specified in Section 02710 of the construction specifications (page 02710-9) is 2.0×10^{-4} m^2/sec, only 6.7 times greater than the minimum required value. Revise the application to include an Action Leakage Rate of no larger than 670 gpad, or provide additional information to justify a larger value.

D-6h(2) Monitoring of Leakage: 270.21(b)(1)(v), 264.302(b)

Response 109 to the previous NOD does not address the request to provide the method the facility will use to determine whether the Action Leakage Rate has been exceeded for each sump. The revised application likewise provides no method or calculations of the weekly volume of leachate removed from the leak detection sump which would constitute such exceedance. The Phase I liner system (and presumably the Phase II liner) will have two different areas, during the initial Phase IA operating period and the next (Phase IB?, IIA/IIB?) period. Therefore, the Phase I sump should have two different weekly total volumes calculated to compare with the actual leachate pumped. These calculations and resulting volumes are necessary to demonstrate how the leak detection system will be operated, and when the Response Action Plan will be implemented. Revise the application to include calculations of the total weekly volume for each sump, for each different development or operating period, that will trigger implementation of the Response Action Plan.

D-6i(1) Response Actions: 270.21(b)(1)(v), 264.304

The Response Action Plan for the landfill provides for monitoring the landfill sumps weekly and after significant precipitation. The term "significant" is not defined. The proposal to check sumps

only weekly, after the ALR has been exceeded, does not meet the requirements in 20 NMAC 4.1.500 (incorporating 40 CFR 264.301(c)(3)(v) and (4)), i.e., to prevent liquids from backing up into the drainage layer and to minimize the head on the bottom liner. If the sump in the Phase II sector was to be checked and pumped by manual control only weekly (due to failure of the fluid level sensor in the sump, or any other reason) and the leak rate remained at or near the ALR, about 233,000 gallons would have accumulated and would be waiting to be removed from the sump, each week. This approach could result in accumulation of large amounts of leachate in the leak detection system drainage layer, and expose the bottom liners to high pressures and extreme variations in pressure. The RAP must be revised to provide methods (e.g., daily or more frequent inspections) and/or equipment (automated leachate detection, alarm and pump operating systems) as necessary to prevent backup of leachate into the LDRS drainage layer, and to minimize head on the bottom liner.

D-6j <u>Run-on and Run-off Control Systems</u>: 270.21(b)(2), 264.301(g)

The application provides only partial run-on and run-off control system design calculations and drawings. No calculations or designs for managing run-on or run-off beyond the initial Phase IA development are included. Revise the application to include plans for managing run-on and run-off for each and every phase of future development of the landfill.

Section 2.1.3, Facility Traffic Plan, Unimproved Access Roads and Temporary Construction Haul Roads, states that although the construction haul roads are not shown on the drawings, provisions for surface water drainage such as culverts and ditches, as well as erosion control features, will be included. Many of the construction haul roads will be in the landfill excavation or immediately adjacent to it. The run-on and run-off control measures associated with the haul roads may directly impact the waste fill or waste emplacement operations, must be included in the application. Revise the application to include sufficient detail on these features to allow for full review.

Section 2.2, General Facility Design Analyses, Erosion Control, states that a freeboard height of 3.5 inches (0.3 feet) was selected. Provide the rationale for the selection of this value for the channel design.

Section 2.1.3, Facility Traffic Plan, Unimproved Access Roads and Temporary Construction Haul Roads, states that the truck staging area will only be constructed with a gravel surface. Provide information on how any releases from trucks waiting to deposit their contents will be managed. Additionally, this area is to drain to the surface water detention basin. Provide information on whether or not the discharge from this area will be under valve control. In the event that a release does occur, having this area under valve control could prevent the release from impacting the surface water in the detention basin and any areas downstream of the detention basin.

Section 2.0, Hydrogeology, Section 2.3, Return Period/Precipitation, states that three return periods were used to design and evaluate the stormwater control system. This is an oversimplification, as each channel was not evaluated for each of the return periods, and the ramp ditches, site perimeter ditches, and roadside ditches were only evaluated for a 2 year return period. This section needs to be expanded such that the complexity of the design is fully discussed.

Section 2.4, Hydrograph Response Shape, states that a medium hydrograph response was selected for disturbed as well as undisturbed areas. During construction of the landfill, none of the areas will be vegetated, and if vegetation does exist, it will not be very hardy. The worst case conditions will occur during this poor-vegetation state, which would be representative of a fast or high response rate. Either provide the justification for using the medium response rate to predict the runoff response, or revise the response hydrograph used such that it is representative of a non-vegetated/unprotected area.

This Section 3.0, Channel Design, states that channels with peak flow velocities greater than 5 feet per second from an average storm will be lined with gravel or rip rap if required. No information is provided on how a determination will be made as to whether gravel or rip rap will be placed. Revise this section to include this information.

Section 5.0, Ponds, of the Storm Water Control System Design, does not discuss the design approach shown on Drawing No. 27, Section 24. Surface water will be allowed to pond and percolate into the landfill cover and the soils that will serve as the road subgrade. This could potentially create an unstable condition on top of the liner. Provide a design discussion and calculations that clearly demonstrate that the soil will remain stable, and the cap surface will not be negatively impacted by this proposed water management approach.

Table A-1, Curve Numbers, does not provide a value for the curve number used for the waste area type. Revise this table to include this value.

The Channel Design information presented for Ditch 5, in Attachment 2, Channel Designs and Drawing No. 25, Sheet 2 of 2, states that the side slope used for design of this ditch was 2H:1V. The supporting computer run for Ditch 5 in Attachment 1 shows that this was used only for the 2-year, 24-hour rain event. A value of 3H:1V was used for the 25 year, 24 hour rain event. Either revise the Channel Design Table and Drawing No. 25 such that the correct side slope is referenced, or recalculate the flow for the 25 year, 24 hour rain event using a side slope of 2H:1V, as indicated.

The maximum total depth for Ditch 3, at a slope of 1.1 percent to 2.0 percent, should be 2.4 feet, not 2.3 as indicated on Drawing No. 25 and the Channel Design Table in Attachment 2. Revise both accordingly.

The spillway 25-year, 24-hour flow value presented in the Channel Design Table is actually the 100 year, 24-hour flow value. Revise the table to include a footnote to this effect.

In Appendix F-2, the velocity of the flow in the Channel Design Table for Ditch 1, during the 2 year, 24 hour rain event should be 4.1 feet per second (fps), not 4.3 fps as indicated by the table. Revise the table accordingly. Additionally, revise the table to include a reference for why the velocity calculations were not required for the 2-year storm analysis given the following conditions: the 25-year, 24-hour rain event flow velocity was less than 5 fps, so the 2-year, 24-hour rain event flow velocity would also be less than 5 fps, or because erosion protection had already been specified, so verification that it was needed is unnecessary.

Flow calculations were provided for a Landfill Phase I Run-off Data set, but the results are not discussed in the Surface Water Control System Design. Revise the channel design discussion to explain the data generated by this analysis, and how it is being used.

In Attachment 3, Apron Design, provide a reference for the equation that was used to determine the apron width.

Drawing No. 25, Sheet 1 of 2, does not include any flow directions or elevations. Revise this drawing to include the flow direction of each water conveyance channel and to include surface contours such that the surrounding surface water flow directions can be determined in relationship to the surface water control system features.

There is no material definition for the perpendicular cross hatching underneath each of the cross-sections in Drawing No. 39. Define the material the perpendicular cross hatching represents.

Detail F, on the right hand side of Drawing No. 39, calls out the prepared subgrade. The direction arrow is pointing to the wrong material. The prepared subgrade is represented by the vertical cross-hatching, not the perpendicular cross hatching. Revise the drawing accordingly.

Detail 2, on Drawing No. 43, Sheet 1 of 2, refers to a clay liner material. No discussion in the engineering report refers to a clay liner material used in the roll-off area. Revise the engineering report to discuss the clay liner material shown in Detail 2.

Drawing No. 43, Sheet 2 of 2, does not provide a slope for the HDPE pipe. Revise the drawing to include the installation slope for the HDPE pipe along the sump wall.

Section S-105, Drawing No. 45, Sheet 5 of 5, does not provide an overlap dimension for the steel reinforcement. Revise Section S-105 such that all steel reinforcement overlaps are specified.

None of the arrow heads are visible in Section S-563 of Drawing No. 45, Sheet 5 of 5. Revise this section such that all dimensions and call outs are clearly discernable.

Section 2.5.1.6, Run-on/Run-off Control, of the Part A Application states that the run-off from the landfill side slopes above the liner system will be channeled away from the waste and managed as clean water. Facility run-on will be diverted via a diversion channel to a natural drainage discharge point, and facility run-off will be managed in detention basins according to Section 2.1.4, Facility Stormwater Control, of the Engineering Report. There is no discussion provided on

how clean water will be managed, except that it will be collected in the detention basins, and allowed to evaporate. As the design capacity of the detention basins is for only a 24-hour, 25-year storm event, provided a discussion on how facility run-off will be managed if the detention basins are not dry at the beginning of a 24-hour, 25-year rain event.

The information presented on Drawing 10 is inconsistent with Drawing 13. Drawing 13 shows a surface water diversion berm and associated culvert, but these two features are not shown on Drawing 10. Revise one or both of these two drawings such that these inconsistencies are resolved. Additionally, these features are not discussed in the stormwater management design portion of the permit application. Any surface water management features that control or manage runoff must be discussed in the Engineering Design portion of the application under the surface water management section and all supporting design calculations must be provided. Revise the storm water Engineering Design portion of the application to discuss all storm water management features.

D-6j(3) Management of Collection and Holding Units: 270.21(b)(4), 264.301(I)

Although the text of the application (Section 2.5.1.3, page 16) appropriately proposes that the three leachate collection tanks will be managed as less-than-90-day storage units, the basis for the permitting exemption and the generator requirements of 20 NMAC 4.1.300 (incorporating 40 CFR 262.34(a)(1)(ii)) are not mentioned. The tanks are not required to be permitted (in part) because the waste they will store (F039 leachate) will be produced on-site and is listed in 40 CFR 261. Generator requirements include the tank management standards in 40 CFR 265 Subpart J, except 265.197(c) and 265.200. For example, 265.192 requires that the new tanks must be assessed and certified by an independent professional engineer, and 265.193 specifies adequate containment requirements. The generator requirements that must be met if the tanks are to be exempted from permitting requirements should be acknowledged in the application. In addition, the details of plans for emptying the tanks and managing leachate must be included in the application.

D-6j(5) Maintenance: 270.21(b)(2) and (3), 264.301(g) and (h)

The drainage control section of the application (2.5.1.6) and response No. 120 to the previous NOD do not mention the requirements for maintenance of the drainage system. Section 2.5.3.2 of the application indicates that an operations and maintenance plan will be prepared at some future date. Revise the application to include maintenance requirements for the run-on/run-off control system.

D-6k Control of Wind Dispersion: 270.21(b)(5), 264.301(j)

The application (Section 2.5.1.7) does not address the previous NOD comment, although response No. 120 suggested suspending waste placement operations and/or employing wind screens and fencing as necessary to control or prevent escape of wind-blown wastes. The revised application focuses solely on spraying water to limit dust escape. Since many wastes may not be dust or soil-

like, and may consist of materials which could be more easily dispersed by wind, such as paper, cloth or building debris, additional control measures such as those mentioned in response No. 120 should be included in the landfill operating plans. In addition, the plans should account for tracking of wastes out of the active fill face area and the potential for subsequent dispersal. Cleanup of vehicle tires or treads may be advisable before allowing them to exit from the active face. Revise the application to provide effective means to control or prevent dispersal of wastes by wind. Provide a maximum wind speed, above which waste dumping and spreading operations will be halted; and differentiate between disposal operations below the perimeter road and operations above that elevation, where exposure to wind will be greatly increased.

I. CLOSURE PLANS

I-1a Closure Performance Standard: 270.14(b)(13), 264.111

The closure plan in the revised application proposes the same definition of the closure performance standard identified as unacceptable in the previous NOD. Closures of all units are to be followed by sampling of soil to determine if contamination exists. The single criterion to be used in these determinations is that no indicator parameter concentration should be more than three standard deviations above background. Response No. 147b and the revised application do not address the objections raised in the previous NOD, but simply restate the preference for this simple way of demonstrating compliance with clean closure requirements. Background samples are not proposed to be taken before operations begin, indicator parameters are not proposed, and the number and locations of background samples are not suggested. The probable absence of organic hazardous constituents in quantifiable concentrations is not addressed. The need to account for environmental and human health toxicity in the potential contaminants is not mentioned. The closure plan must be revised to address each of the above factors in developing specific and detailed procedures for demonstrating clean closure and adequate decontamination around the landfill. The number, locations and analytical parameters for background samples must be provided, etc.

Response 147d states that it is agreed that any concentrations found in closure confirmation sample analyses that are above the range of regional background values must be addressed in a comprehensive risk assessment. This statement contradicts the explicit language of both the original and the revised closure plans, as well as response NO. 147b. Three standard deviations above the mean of background values will almost always be far above the highest value in a normal population (i.e., a group of representative samples). Since a large difference of opinion clearly exists, it is even more important that the specific details of how the background and closure sampling will be performed. The application must be revised to provide a detailed sampling and analysis plan for determining background concentrations in the soils at and near the facility, prior to the start of operations (unless another means of demonstrating clean closure is provided).

I-1e(2) Disposal or Decontamination of Equipment, Structures and Soils: 264.112(b)(4), 264.114

Response 151 states that the information requested in the NOD comment was provided. However, review of the closure plan in the revised application failed to locate any mention of a commitment that any hazardous constituents left at a unit will not impact any environmental media in excess of Agency-established exposure levels and that direct contact will not pose a threat to human health or the environment (see Preamble 51 FR 16444, May 2, 1986). Revise the closure plan to include the above commitment.

I-1e(3)(b) <u>Cover Design</u>: 264.310(a)

The proposed cover design described in the closure plan (Section 8.1.6, Volume I) states the vegetative cover thickness as 2 feet, but the Engineering Report (Section 3.1.5 states that this layer is 2.5 feet thick. Revise the application to resolve this discrepancy.

I-1e(3)(e) <u>Grading and Drainage</u>: 264.310(a)(3)

The cover design does not provide any kind of outlet drainage for the geocomposite, at the toe of the cover. Revise the application to address the predicted effects of drainage of infiltrating precipitation off the cover. If increased erosion, root penetration at the outer limit of the cover, or other adverse effects are likely to occur, provide additional design features (e.g., perimeter drain piping) to minimize these effects.

Triassic Park Hazardous Waste Landfill
Engineered Design Review Submittal

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In response to:

Work Assignment No. Y513

March 1, 1999

TECHLAW, INC.

REQUEST FOR SUPPLEMENTARY INFORMATION: ENGINEERING DESIGN ISSUES TRIASSIC PARK WASTE DISPOSAL FACILITY TATUM, NEW MEXICO

REQUEST FOR SUPPLEMENTARY INFORMATION:
ENGINEERING DESIGN ISSUES
TRIASSIC PARK WASTE DISPOSAL FACILITY
TATUM, NEW MEXICO

This request for supplemental information (RSI) addresses responses to comments on the first Notice of Deficiency (NOD) dated February 1997, which were partially adequate or inadequate, and provides new comments which were generated from a review of technical information in the November 1998 application provided by Gandy Marley, Inc. The comments are listed in the order of subjects in the RCRA Part B Checklist, primarily Section D, Process Information and Section I, Closure Plans, Post Closure Plans and Financial Requirements.

General Comment

The application organization/format does not lend itself to convenient grouping of unit-specific design, construction and operating plans into stand alone segments, as will be required for inclusion into a facility permit. The entire review and permit drafting process would be facilitated if the application were to be conceptually reworked to allow for typical RCRA permit segmentation. This is not a requirement, simply a suggestion that may help all parties work more efficiently.

D. PROCESS INFORMATION

As noted in the following comments, the hazardous waste unit design and operation information in the application is still incomplete in many respects as discussed in more detail in the following paragraphs. In addition, notes on the design drawings and specifications state that the plans provided are "not for construction." Other statements indicate that details or modifications to the plans will be submitted to the NMED before construction begins. Many responses to the previous NOD state that detailed design drawings and other information "will be submitted," but much of the promised information is not provided in the application. The application does not provide an explanation of the degree of finality of the current design drawings, so the impression conveyed is that the applicants may expand and/or modify the plans extensively, both before and after a final permit is issued. A final operations plan is expected to provide many of the necessary details of operation and maintenance of the facility, but that plan has apparently not been written (see Section 2.5.3.2 of the application), and the application does not indicate when that plan may be prepared and submitted for review.

This approach is not in accord with the hazardous waste regulations, which require that complete design and operating plans must be provided in the permit application. Only after the plans have been determined to be complete and adequate by the Secretary may a draft permit be issued. Proposed modifications to the facility plans received after the draft permit is issued, which would require public notice and comment periods pursuant to 20 NMAC 4.1.900 (incorporating 40 CFR 270.42, e.g., Class 2 and 3 modifications in Appendix I), will not be included in the final permit.

Such modifications would be required to go through the procedures specified in 40 CFR 270.42, after the final permit is issued. Less substantive (Class 1) modifications proposed after a draft permit is issued may or may not be included in a final permit, at the discretion of the Secretary. Class 1 modifications included in the final permit are subject to the public notice requirements and potential denial provisions of 40 CFR 270.42(a). Accordingly, in order to be in conformance with governing statutes, the application must be revised to provide complete design and operating plans as specified in the following comments.

D-1 Containers: 270.15, 264.170 through 264.178

The roll-off storage area described in Section 2.2.2 of the application (Page 2-4) is proposed to consist of two portions. The stabilized waste storage portion of the area is proposed to be operated as a (less than) 90-day storage area. However, the regulation which governs less than 90-day storage areas, 40 CFR §262.34, applies only to generators of hazardous waste. The term "generator" is defined in 40 CFR §260.10, and the applicability of the exemption from permitting requirements is explained in Notes 1 and 2 to 40 CFR §262.10. As such, ". . . any person whose act first causes a hazardous waste to become subject to regulation," would be considered the generator of the waste. The Gandy Marley facility will not be the generator of wastes placed in this storage area, and the wastes will be disposed on-site. In order for the stabilization process to be considered a generator, the waste would have to change treatability groups (e.g.., a wastewater would become a non-wastewater.) Additionally, mixing two or more wastes does not generate a new waste [EPA RCRA Permitting Policy Compendium, Document 9453.1989(01)]. Therefore, the stabilized waste roll-off area must be included in, and designed and operated as part of the permitted roll-off container storage unit. Consequently, both the Part A and Part B applications must be revised to include the stabilized waste roll-off storage area.

D-1a(3) Secondary Containment System Design and Operation: 270.15(a)(1), 264.175(a), 264.175(d)

Drawing No. 39, Sheet 2 of 2, shows the conceptual design drawing for the Drum Handling Facility. This drawing indicates that the concrete floor will be underlain by a single geomembrane, with no drainage geonet. The floor drain trench is designed with a secondary liner and geonet, but there is no supporting structure (e.g., concrete) under the drainage trench and sump. This design may be unstable and lead to significant movement of the foundation soil, resulting in damage to the geomembrane(s), collapse of the trench walls, and/or cracking of the floors. Releases of liquid wastes to the uncoated floor could accumulate within and below the concrete. The design must be revised to provide a stable, sufficiently impervious base for storage of containers.

Response No. 28 indicates that the Engineering Report will include engineering calculations which will identify the minimum requirements for the foundation soils and concrete floor coatings. There are no calculations provided for the container storage area that document the foundation stability. Please revise the Engineering Report to include the promised information and to also address the concerns regarding differential settlement or swelling/upheaval.

Response No. 28 also states that the final design will include a sand layer that will allow the liquids to migrate below the floor to the sump areas. It is assumed that the select subgrade material included on Drawing No. 39 is sand(?), but the specifications do not include a "select subgrade." Please revise the application to explain what the select subgrade material is intended to be, and if it is intended to function as a drainage layer. Please also provide material and construction specifications for this material.

Please revise Section 2.2.1 to explain how incompatible waste will be managed or provide design drawings for the roll-off container storage area that indicate where and how incompatible wastes will be stored.

Appendix E-32, the Truck Roll-Off LCRS Pumping Capacity calculations, provides a sketch of the sump on page 1 of 4. The phreatic surface line is shown as daylighting roughly three feet from the top of the pipe, between the pipe centerline and the gravel surface. The information provided is insufficient to be able to reproduce this estimated distance. Please revise Appendix E-32 to include a description of the approach used to approximate this distance. Additionally, the length of the perforated pipe is stated as being seven feet in the sketch. Drawing No. 43 shows this dimension as five feet. Either revise the calculations or provide the reasoning for not using the design length in the calculations.

The Truck Roll-Off LCRS Pumping Capacity calculations on page 2 of 4 state that the area of the liner is 59,858 square feet, while referring the reader to page 4 of 4 of the calculations. The figure on page 4 of 4 does not have dimensions and is not to scale. Please revise the calculations to either provide the dimensions of the liner area, or refer to a scalable drawing (e.g.., Drawing No. 41).

D-1a(3)(a) <u>Requirement for the Base or Liner to Contain Liquids</u>: 264.175(b)(1)

Demonstrate the capability of the base of the roll-off container storage area to contain liquids, including:

- Demonstrate or verify that the lower portion of the composite base (geomembrane) will remain free of cracks or gaps (breaches) during use;
- Demonstrate the imperviousness and compatibility of the lower portion of the composite base (geomembrane) with regard to the wastes and precipitation;
- Demonstrate the compatibility of the upper portion of the composite base with wastes (i.e., provide a discussion on the compatibility of the surface soil material with the wastes to be stored at the roll-off container storage area; and
- Demonstrate the theoretical structural integrity of the lower portion of the composite base (geomembrane) under anticipated routine and extreme loading conditions. Ensure that calculations are provided documenting that the soils will be capable of carrying the maximum anticipated load under saturated conditions, without compromising the integrity of the geomembrane.

The application should also include a discussion on how the surface will be maintained to the original design specifications (including placement, compaction, and compaction verification testing) during routine operation and maintenance.

Provide a discussion of how the surface of the roll-off storage area will be maintained to prevent cross-contamination or releases of waste via wheel tracking or wind dispersion. The discussion should demonstrate that the road base surface proposed for the roll-off container storage area will provide a working surface equivalent to the epoxy coated concrete surface proposed for the container storage area.

There are no engineering calculations in Section 5 to demonstrate that the geomembrane will not deform under the maximum anticipated loading, or that the soils (road base material) will not shear or deform under saturated conditions and subsequently over stress the underlying geomembrane. The application does not demonstrate the long-term durability of the soils (road base material) as a working surface. Please revise the discussion of the composite base/liner system to address the durability of each of the composite base components individually and as a whole. The base design selected should be equivalent to the recommended concrete secondary containment system discussed in the preamble to the container storage regulations.

D-1a(3)(c) **<u>Containment System Capacity and Control of Run-on</u>: 270.15(a)(3) and (4), 264.175(b)(3) and (4)**

Please provide calculations in or referenced in Section 2.2.2.1 to demonstrate that the roll-off storage area containment system will have sufficient capacity to contain 10% of the volume of the containers or the volume of the largest container, whichever is greater. This demonstration must discuss the volume of the largest container, total volume of containers, containment structure capacity, and volume displaced by containers and other structures in the containment system.

As run-on into the containment system is not prevented, the collection system must have sufficient excess capacity, in addition to that required to contain potential waste releases, to contain any run-on that might enter the system. Calculations for only the run-on volume have been provided so far. Please revise the application to provide calculations demonstrating that the containment system has sufficient capacity to contain run-on in addition to the volume required above.

D-1a(3)(e) **<u>Removal of Liquids from Containment System</u>: 270.15(a)(5), 264.175(b)(5)**

There is no discussion provided in Section 5 on how frequently the fluid level will be visually observed in the sump system. Please revise this section to include a discussion on inspection frequency and the time frame for removal of any liquids detected.

There is no discussion provided in Section 7 on how frequently the fluid level will be visually observed in the leachate collection and removal sump or the leak detection and removal sump. Please revise this section to include a discussion on inspection frequency and the time frame for removal of any liquids detected.

D-1b <u>Containers Without Free Liquids:</u> 270.15(b)

As previously stated, the Part A must be revised to include the stabilized waste roll-off storage area.

D-1b(1) <u>Test for Free Liquids</u>: 270.15(b)(1)

Provide a discussion of the test procedures or other documentation/information that will be used to determine that the stabilized wastes to be stored in the stabilized roll-off container storage area will not contain free liquids.

D-1b(2) <u>Description of Containers</u>: 264.171, 264.172

Please provide the following information about the roll-offs used to treat/store hazardous waste:

- approximate number of each type of container,
- dimensions and usable volumes,
- DOT specifications or other manufacturer specifications,
- liner specifications (if applicable),
- container condition (new, used, reconditioned),
- markings and labels.

D-1b(3) <u>Container Management Practices</u>: 264.173

Please describe the management practices to be used to ensure that the roll-offs/hazardous waste containers are always kept closed during storage, except when adding or removing waste, and are not opened, handled, or stored in a manner that may cause them to rupture or to leak.

D-1b(4) <u>Container Storage Area Drainage</u>: 270.15(b)(2), 264.175(c)

Please describe how the storage area is designed or operated to drain and remove liquids unless containers are otherwise kept from contact with standing liquids.

The response to the original comment states that the stabilized waste roll-off bin portion of the Roll-Off Storage Area will control precipitation within the unit. No design discussion on this portion of the unit or on how it will be operated so as to prevent a release is provided in the application or the engineering report. Please revise both the Part B Permit Application and the Engineering Report to address drainage in both portions of the Roll-Off Container Storage Area.

D-2 Tank Systems: 270.16, 264.19 through 264.194, 262.10

Section 3.01 in Appendix C (page 13205-3) states that "Polyethylene tanks shall be installed as indicated on the Construction Drawing." However, no Construction drawings are submitted with the permit application. Drawing No. 40, the only sketch provided for the tank system, does not provide the details of the construction of the polyethylene tanks and the drawing is labeled "not for construction." Please revise the application to provide construction drawings that show the details of the construction, specific to each tank system, including the base that will be supporting these tanks. Construction drawings must be certified by a professional engineer.

Response No. 32 a & c state that the leachate generated at the landfill, and the wastewater and sludge that will be generated at the truck wash, are considered to be generated on site and therefore will be managed in non-permitted, less-than-90-day storage units. NMED has determined that the landfill leachate can be considered to be a newly generated waste, and is therefore eligible for the exemption from permitting requirements. The truck wash is in a different category. The response refers to the definition provided in 40 CFR 260.10: "Generator means any person, by site, whose act or process produces hazardous waste identified or listed in part 261 of this chapter or whose act first causes a hazardous to become subject to regulation." However, the response does not address the full definition and the notes to 262.10, which were referenced in the original NOD, or the definition of "empty" containers in 261.7. The truck wash sump and tank will contain rinsate or wash water from truck beds, tires, undercarriages and heavy equipment tracks, etc. which will be traceable to or derived from any or all types of wastes to be received at the facility. These wastes will include many listed and acutely hazardous waste codes, as specified in the facility Part A. Wastes from containers which were not empty before washing, all P-listed waste residues (including those from "empty" containers), and all types of listed wastes contained in environmental media, such as soil washed from truck tires and dozer tracks, are still hazardous wastes. None of these wastes will be "generated" at the truck wash, although they may be mixed together there. The original waste codes for each detectable listed hazardous constituent will apply to the mixed wastewater and sludge collected at the truck wash. Note 1 to 40 CFR 262.10 states that "The provisions of §262.34 are applicable to the on-site accumulation of hazardous wastes by generators. Therefore, the provisions of §262.34 only apply to owners or operators who are shipping hazardous waste which they generated at the facility." The facility cannot use the less-than-90-day storage area exemption for the accumulation of the wastewater and sludge from the truck wash unit. The truck wash will be storing these wastes on site, but not "generating" any new hazardous wastes, and thus these storage units must be permitted. Therefore, please revise the application to include the truck wash tank and sump.

D-2a Tank Systems Description: 270.14(b)(1), 264.194(a)

Section 6.1.2 (Stabilization Unit Layout) states that "the control room is positioned centrally along the west wall of the stabilization building. ... Reagent storage tanks and silos are also located on the west side of the building which permits operations personnel to view reagent delivery activities." Assuming the convention that north = up, Drawing 33 indicates that the control room, reagent tanks and silos are all located on the east side of the building. Please revise the

application to reconcile this discrepancy between the text and the drawing, and provide a direction arrow for the layout portion of the drawing.

D-2a(1) **Dimensions and Capacity of Each Tank: 270.16 (b)**

The application does not discuss the dimensions and capacities of the tank(s) that will be used for wash water storage and settling at the truck wash. Please revise the application to provide detailed construction drawings, including tank locations, dimensions and capacities.

No discussion of the process design capacity for stabilization bins is provided in the text of the application, except in Part A permit application, where it is indicated that the process design capacity (total) will be 150,000 gallons/day. Revise the application to discuss the capacities of each tank to be permitted.

Nominal dimensions and volumetric capacities of the stabilization bins are discussed in the response No. 34. However, this information is not included in the text of the revised application. Revise the application to include this information and show the final design dimensions on construction drawings certified by an independent professional engineer registered in the State of New Mexico.

D-2a(2) **Description of Feed Systems, Safety Cutoff, Bypass Systems and Pressure Controls: 270.16(c), 264.194(b)**

Section 2.3.3 (Volume I) of the permit application discusses spill and overfill prevention in general terms without committing to any specific measures that will be used for the tank system. For example, it is stated that "spill prevention is primarily maintained by hard-plumbed piping. When transfer lines are not hard plumbed or when open-ended lines are used, one or more of the following spill prevention controls or an equivalent device will be used." The application goes on to list several types overfill prevention, including automatic feed cutoff, high-level alarm and bypass, none of which are discussed or indicated on the design Drawing No. 40 in the engineering report. Drawing No. 40 shows low- and high-level cutoff switches which are not discussed in detail in the text of the application. Revise the application to provide descriptions and drawings of the specific feed systems, spill prevention controls, safety cutoff, bypass systems, and pressure controls that will be used with each tank. The discussion provided in the text of Section 8.1.3 (Volume III) of the application is not adequate, and no construction drawings are provided to show, for example, the location of the vent systems and their construction.

Section 2.3.4 (Volume I) of the permit application states that pump transfer or gravity drain will be used as feed mechanisms for tank systems, or an equivalent transfer mechanism will be used. It is further stated that "liquids will be pumped into or out of the tank through permanent or temporary transfer lines; or liquids will be allowed to drain by gravity through permanent or temporary transfer lines." Revise the application to discuss and show (on drawings) where these different mechanisms will be utilized in the system. Discuss the procedures that will be used to switch from one system to the other. The application must be specific in the description of the design features of the system. Simply stating this or that or equivalent mechanism will be used is

not sufficient for permit application approval. Two or more designs for the same function may be included, but each design must be complete.

Section 2.4.3 (Spill and Overfill Prevention) of the permit application states that "additionally, the delivery system will be computerized and will be designed to ensure that the mixture used for stabilization prevents overfilling." However, Section 2.4.4 (Feed Mechanism, Pressure Controls, and Temperature Controls) states that the "reagents will either be pumped from reagent tanks or manually fed." The engineering report in Volume III describes a computerized system for injecting reagents into the system, however, it does not mention any manual feeding of the reagents. In addition, Drawing No. 34 does not show any manual feeding mechanism. Revise the application to address these discrepancies and to discuss the feed systems in detail.

D-2a(3) **<u>Diagram of Piping, Instrumentation and Process Flow:</u> 270.16(d)**

The application does not provide details of piping, instrumentation and process flow for the tank system and ancillary equipment. Only one drawing, Drawing No. 40, which is labeled "not for construction," is provided as a design drawing for the tank system. This drawing does not contain adequately detailed information on piping, instrumentation and process flow for the tank system and ancillary equipment. Section 2.3 (Volume I) of the permit application states that "waste will be transferred from the tanks to the stabilization unit either by pumping into transfer tankers or by direct piping." However, these two transfer systems are not discussed in detail or shown on P&ID or process flow diagrams (PFDs). For example, Section 8.1.2 (Volume III) of the permit application states that "discharge pipes to the stabilization building will be elevated double walled pipes." However, no drawings indicating these pipes and their process flow are provided in the application. Revise the application to discuss these transfer processes in detail and provide P&ID and PFDs for the tank systems and all the ancillary equipment associated with the process.

D-2a(4) **<u>Ignitable, Reactive and Incompatible Wastes:</u> 270.16(j), 264.17(b), 264.198, 264.199**

Section 2.4 (Stabilization) states that "when the waste is sufficiently mixed, it will be tested in accordance with the Waste Analysis Plan (see Section 4.0). It will then be placed in a roll-off container and transferred to the roll-off storage area to cure." Also see Section 6.1.4, Volume III, first paragraph on page 6-3 which states that "the truck will either proceed to the landfill for disposal or will stage the roll-off container in the truck roll-off area (if TCLP test results are required)." Drawing No. 34 also indicates that after the waste is stabilized it would either go to the roll-off area or the landfill. Discuss in what situations the waste will be directly transferred to the landfill without interim storage at the roll-off storage area. Discuss the procedures and criteria that will be used to determine whether a TCLP analysis will be required on a stabilized waste.

Section 2.4.8 (Tank Assessment) states that "The engineering report presented with the preliminary tank design drawing in Volume III includes a discussion of wastes to be excluded from storage or treatment in [stabilization units] due to their excessive corrosive effects." However, the engineering report does not present or discuss this information. Revise the

application to provide this information or provide a reference in Section 2.4.8 indicating where this information is located.

D-2c(1) **<u>Assessment of New Tank System's Integrity:</u> 270.16, 264.192**

Section 2.3 of the application (Volume I) states that "the tanks will be double-walled and constructed of high density polyethylene materials that are compatible with the wastes to be placed in the tanks." However, except for stating that "these compatibilities are assessed in the design specification and engineering report (Volume III)," no tests or evaluation of these compatibilities were conducted and no results substantiating the statements in the application are provided.

The Part A permit application indicates that all of the wastes listed in Section XIV will be stored in the polyethylene tanks. Some of the wastes listed in Section XIV of Part A may be corrosive and incompatible with the tank construction material (e.g., carbon tetrachloride, benzenes, carbon disulfide, hydrogen peroxide) when present at high concentrations. In addition, as a general guidance, strong nitric (50% or higher) and sulfuric (25% or higher) acids should not be stored in the tanks (Reference: Table 23-2 of Perry's Chemical Engineer's Handbook, 6th Edition, Perry & Green, 1984).

Please revise the application to either provide results of compatibility tests conducted or literatures (e.g., manufacturer's compatibility tables) indicating and certifying that the hazardous wastes and/or hazardous waste constituents listed in Part A do not have a detrimental effect on the structural integrity of the polyethylene tanks. In addition, provide literature data (including manufacturer's) or calculations to show that the secondary containment is of sufficient strength to withstand all of the forces acting on it, especially in the event of failure of the primary containment.

Section 8.2.1 states that "the tank manufacturer will provide recommended tank tie down details for review and approval by a registered New Mexico professional engineer prior to tank installation." Revise the application to provide this information.

The application does not provide calculations and/or data to show that the concrete base for the polyethylene tank system is capable of supporting the system, providing resistance to pressure gradients below the system, and preventing failure due to settlement, compression, or uplift. The application merely states that the tank system is designed as such, and does not provide supporting design calculations and engineering drawings in the engineering report (Volume III). Revise the application to provide a detailed demonstration of the structural integrity of the base for the tank system.

The discussion, designs and supporting calculations presented in Volume I and Volume III of the permit application for the Stabilization Unit are preliminary and lack the details required in final design of a unit. Following are some of the deficiencies noted:

- The drawings are either labeled "not for construction" or do not show a seal of a professional engineer. The text does not include an explanation of the meaning of the "not for construction" designation, so they drawings are assumed to be preliminary, not final design information.

- The design section references Calculation No. E-33, Appendix E, Volume VI and states that it describes the steel plate, reinforcing members, and energy absorbing devices intended for the stabilization bin system. However, the assessment and supporting calculations presented in Calculation E-33 regarding the tanks' structural integrity are inconclusive, and neither the calculations nor the results are fully legible. For example, the inner liner with a thickness (1") would fail by the impact of total and instantaneous hydraulic failure from a height of 15 feet. However, no other iterations are presented to provide the thickness that would withstand such an impact, except stating that "it does not appear cost effective to design the inner liner for this possibility."

- Except for stating that "all ancillary equipment will be supported and protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction," the application does not discuss or show how this will be accomplished, or identify which ancillary equipment requires such support and protection.

The application states (in Section 2.4.8) that "a written assessment attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste will be provided by an independent, qualified, New Mexico registered professional engineer based on the final tank design drawings and prior to tank construction." In addition, 6.1.1 states that "it should be noted that certain components of the stabilization building, process control and delivery systems, ventilation systems and steel bins will be completed under future design/build contracts." The applicants must note that components of hazardous waste management units which are to be designed in the future are subject to the permit modification requirements of the hazardous waste regulations. For the units which are proposed to be constructed under the original permit, the application must include the final design and operating plans.

Revise the application to provide final design drawings which are certified by a professional engineer. In addition, provide calculations supporting the design in a final format and discuss the final designs of the process control, delivery and ventilation systems, and the final designs of the steel bins.

D-2d(1) **<u>Plans and Description of the Design, Construction, and Operation of the Secondary Containment System:</u>**

The application does not provide any calculation and/or data to show that the outer tank of the double walled polyethylene tank system will provide secondary containment of sufficient strength and thickness to prevent failure due to pressure gradients, physical contact with waste, climatic conditions, or the stress of daily operations. The application, except for stating that the

containment system is designed as such, does not provide supporting design calculations or engineering drawings in the engineering report (Volume III). Revise the application to provide a detailed discussion of the secondary containment for the tank system.

The application states that the concrete pad for the tank system is not considered a secondary containment and therefore does not have to meet secondary containment standards. However, the containment is provided as an additional measure to prevent the spread of fluid should leaks or spills occur at discharge piping connections and pumps located within the pad. This containment requirement should be discussed further. In addition, Section 2.3.1 (Volume I) of the permit application states that "each tank will be surrounded by a concrete area which will be sloped to provide drainage to a sump." However, these elements of the pad are not discussed in the engineering report (Volume III). For example, no discussion or drawing shows the percent slope that will be used; no discussion or drawing shows the design of the sump. Revise the application to provide a detailed discussion and engineering drawings of the pad, sump and berms for the tank system.

Section 2.3.1 (Volume I) of the permit application states that "all ancillary equipment will be provided with secondary containment except above ground piping (exclusive of flanges, joints, valves, and other connections), welded flanges, welded joints, and welded connections that are visually inspected for leaks each operating day." Furthermore, it is stated in Section 2.3.12 (Volume I) of the permit application that "impervious concrete coatings will be applied to the liquid waste storage tank containment area and the evaporation pond discharge station. Hose and pipe connections will be inside the concrete containment area boundaries." Revise the permit to identify and discuss the ancillary equipment that will require secondary containment and provide the details on the designs of these containment areas. Engineering drawings identifying the equipment and the appropriate containments must accompany the discussion.

A distinction should be made between the "primary and secondary steel liners" and the "double walls" of the stabilization bins. If they are one and the same, the application should state so in the text of the application and reconcile the information with the design drawings provided. For example, the cross-section A-A' on Drawing No. 34 should be discussed further in the text, since it indicates a Leak Detection and Leachate Collection and Removal System (LD/LCRS) within the vault while it also indicates that there is a "primary LD/LCRS" within the liners or the double walls. If there is a LD/LCRS in the vault as indicated in this figure, this implies that the vault serves as a secondary or tertiary containment. What is depicted in this figure is contrary to the statement that "the vault will not be used as secondary containment; therefore, it does not have to be lined or meet other requirements for secondary containment."

However, Drawing No. 34 supports the statement in Section 6.1.2 of Volume III that "the bin and vault arrangement provides three levels of waste containment with the inner bin liner serving as primary containment, the outer bin as secondary containment, and the vault as final or tertiary containment." See also, paragraph 2 of Section 6.1.3 (Volume III), page 6-2. This paragraph explicitly proposes the vault as a containment and indicates that there will be a concrete epoxy coating requirement. Although preliminary structural assessment indicates that impact from loads and the bucket will be mostly absorbed by the wire rope isolators situated between the liners, it is

not shown how the vault will be designed to withstand any residual forces or vibrations, and none of the drawings show how the bins will be tied down to the floor of the vault.

Revise the application to address these discrepancies and provide detailed design drawings for the construction of the vaults. Discuss how releases into the vault will be pumped out of the LCRS (i.e., by stationary pumps or portable pumps).

D-4 Surface Impoundments

Since most of the design elements of the surface impoundments are similar to that of the landfill, only comments specific to the surface impoundments are addressed under this section. If the landfill comments are adequately addressed in a revised application, much of the revised information will also be applicable to the impoundment. For example, shallow soil characterization, and material and construction specifications for the liner system, leak detection system, foundation, and run-on/run-off control designs are similar.

Comments relating to the truck wash sump are placed under this section, because most of the design components of the truck wash sump are also similar to those of a surface impoundment. The permit application assumes that the truck wash is not subject to permitting requirements, but NMED has determined that the truck wash is not eligible for the generator exemption as explained previously in Comment D-2.

The application does not provide adequate information on the run-on/run-off control system for the Evaporation Pond. Section 2.6.1.4 (Run-On/Run-Off Control) states: "Section 2.5.1.5 contains information on run-on/run-off control for the landfill, which is also pertinent to the evaporation pond." The correct section is 2.5.1.6 (not 2.5.1.5), which mentions that a lined collection basin located at the toe of the inter phase cut slope, as shown of Drawings 10 and 13 in Volume III, will be used to collect runoff from the landfill side slopes. However, it is not clear whether this basin will also receive runoff from the Evaporation Pond Areas. In addition, since the basin is lined, it is unclear how the water accumulated in the basin will be managed to prevent overflow. No details of this basin (e.g., capacity, material of construction) are presented in the application. If the purpose of the basin is for only the initial phase of the landfill operation, describe how runoff from the landfill/evaporation pond and run on to the landfill/evaporation pond will be managed after the construction phases are completed.

The last paragraph of Section 2.5.1.6 also states that "run-off from the Facility, but not from the active portion of the landfill (including run-on/run-off from the landfill perimeter drainage ditch), will be directed to the stormwater retention basin." It is not clear from the design drawings whether this information is true for the evaporation pond as well. Section 2.6.2.1 (Site Preparation) states that "existing site drainage will be modified to route any run-on away from the evaporation pond area. Access roads and a truck discharge station will be constructed. These engineering controls and components are shown on Drawings 4, 5, and 31 in Volume III."

Unfortunately, these drawings do not show the level of details needed for these engineering controls as they pertain to the Evaporation Pond. In fact, the initial site grading plan shown in

Figure 5 does not take into account that a pond exists or will be built on the northwest corner of the landfill. Thus, reference to Figure 5 is irrelevant and does not depict the engineering controls as they pertain to the Evaporation Pond.

In addition, the last paragraph in Section 4.1.4 (Evaporation Pond Discharge Pad Arrangement) states that "Drawing No. 4 (Volume III) depicts the surface grades around the perimeter of the evaporation pond area. Surface water run off from these areas will flow to the roadway ditch system and ultimately to the stormwater detention basin." The referenced Figure No. 4 neither shows surface grades around the perimeter of the ponds nor how the run-on to the ponds will be diverted to the stormwater detention basin. Revise the application to provide detailed discussion and drawings showing the run-on and run-off control system for the evaporation pond.

Section 2.6.2.3 (Structural Fill Areas) states that "areas of the evaporation pond requiring structural fill will be constructed according to the specifications presented in Volume IV." Revise the application to indicate the specific location for this information within the text of Volume IV.

Section 4.1.2 (Evaporation Pond Layout and Phasing) states that "Pond units 1A, 1B, 2A, and 2B are 132-ft wide by 285-ft long by 12 feet deep and each will provide approximately 1.63 million gallons *[total of 6.52 million gallons for all four ponds]* of useable storage capacity (excluding 2-foot freeboard volumes)." Section 4.2.9 of Volume III also states that "the resulting pond volume available for liquid storage and evaporation (not including 2 ft freeboard) is approximately 6.5 million gallons." However, Section 2.6.1 (Volume I) and the Part A form indicate that the capacity of the surface impoundment (total volumetric capacity of all four ponds) is to be 4.6 million gallons (it is not indicated whether or not the 2-ft freeboard is accounted for in this volume).

The application does not show how these volumes were determined. Using the geometric information provided in Section 4.1.2, we could not duplicate any of the volumes provided. Similarly, calculations utilizing the scales provided on Figure 4 also did not yield results that matched the text. According to Figure 4 (based on the scale provided on the figure) the longest side of each pond is approximately 300 feet. Our calculations were based on a trapezoidal cross section and a side slope of the longest side of 2H:1V.

In other calculations, for example, Calculation E-15: Anchor Trench Pullout Capacity, evaporation pond slope length is given as 60 ft, which, using the 12 ft depth, would translate to a slope of 5H:1V. This slope does not correspond with the slopes shown on the drawings and discussed in the text of the application.

Revise the application to address the above discrepancies and present a sample calculation of how the useable capacity of the ponds was determined, including the geometric shapes used as a basis for the calculations.

D-4e(2) **<u>Soil Liners:</u> 270.17(b)(1), 264.221(a), and 264.221(c)(1)**

Section 3.02.A of Specification Section 02221 (Clay Liner) states that "the clay liner shall be constructed to the elevations, grades, and thicknesses shown the Construction Drawings." However, no construction drawings were submitted with the permit application to show the elevations, grades and thicknesses to which the clay liner will be constructed. This deficiency applies to most of the construction specifications where reference is made to construction drawings that do not exist. Revise the application to provide final design drawings for units where such drawings are required.

The previous NOD noted that the Upper Dockum material does not appear to provide the low permeability required by 40 CFR 264.221(c)(1)(i)(b). Response No. 44 states that "additional laboratory tests will be conducted on processed siltstone and mudstone samples to confirm their permeability characteristics." However, no further laboratory tests or results are presented in the revised application. The application must be revised to provide permeability test data representative of the proposed clay liner material which demonstrates that it can be used to construct impoundment liners with the necessary low permeability.

The preferred method for obtaining this information, in addition to laboratory testing of enough samples to demonstrate that the data adequately represents the proposed liner material, is to construct a test fill and perform a large-scale field permeability test on the test fill. Large-scale hydraulic conductivity testing on "test pads" is strongly recommended by EPA and by Koerner and Daniel in **Waste Containment Facilities: Guidance for Construction, Quality Assurance and Quality Control of Liner and Cover Systems** (ASCE, 1995) (see Comment D-4g(3)). The application must also identify the location of the borrow material proposed for the soil liner including a plan drawing showing the location of the borrow area, or a cross section showing the depth that the liner material will be taken from.

D-4e(2)(a) **<u>Material Testing Data:</u> 270.17(b)(1), and 264.221(c)**

The previous NOD comment stated: "Some limited soil test data is included in Appendices E and F, but the application does not indicate whether these data are representative of the proposed soil liner materials. Many of the test data in Appendices E and F are not accompanied by sample depth information, which makes the usefulness of the data questionable. Provide data from index tests, laboratory and/or in situ hydraulic conductivity (permeability) tests, strength tests, consolidation tests, and shrink-swell testing of the soil liner material. If detailed sample locations and depths for all of the data in Appendix E and F can be provided, additional testing needs may be minimal. (However, the shallow Quaternary soils have not been adequately sampled or characterized - see landfill comments). Provide copies of the test procedures, or reference standard test methods used to produce the data. Include complete soil test results and sample identification information, including depths as well as horizontal reference points. Discuss the potential for dispersion and piping of the soil due to flow of wastes into or through the soil liner layer."

Response No. 45 indicates that a table previously submitted will be revised to indicate standard test methods used in the analyses for the soil liner material and the depth of sample location. The response also states that "dispersion and piping of the soil will be discussed in the engineering report for the landfill." However, none of this information was presented in the revised application. In addition, the response does not address the concern as to whether the data presented in Appendices E and F of the original application are representative of the proposed soil liner materials. Revise the application to provide the information requested in the previous comment.

D-4e(2)(b) **Soil Liner Compatibility Data: 270.17(b)(1), 264.221(a)(1)**

The previous NOD comment requested information as follows: "The application does not address soil liner compatibility with liquids which may be placed in the impoundment. Section 2.6.1.1 simply restates the requirement in 264.221(a)(1). The application should provide the results of hydraulic conductivity tests of the soil liner material using wastes or surrogate solutions representative of the liquid that may be placed in the surface impoundment. Discuss the effects or predicted effects, if any, of the wastes on the soil hydraulic conductivity. Provide a copy of the test procedures, or reference appropriate standard methods, along with a description of how the liquid samples were prepared or obtained, a demonstration that the liquid sample is representative of wastes which may be placed in the impoundment, and the complete test results. Alternatively, provide research reporting compatibility testing of similar soils and similar liquids, or provide typical liquid waste analyses and site specific soil chemical and mineral characteristics, and use this information to predict the results (changes in hydraulic conductivity) of interaction of the soil with wastes from the impoundment."

Response No. 45 states that the evaporation pond soil liner compatibility testing will be discussed in the engineering report, and promises to provide most of the information requested. However, none of this information is presented in the engineering report. Revise the application to provide the information requested in the previous comment.

D-4f(1) **System Operation and Design: 270.17(b)(1), 264.221(c)(2) and (3)**

The previous NOD requested the final design and operation details for the leak detection system, as required by 264.221(c)(2) and (3). The revised application does not provide this information, although response No. 47 promised to provide the final design and operations plan. Section 4 of the Engineering Report (Evaporation Pond) and the specifications do not mention pump controls, leakage volume measurement devices, or the proposed management of liquids removed from the leak detection and vadose zone sumps if the leakage rate is less than the Action Leakage Rate, or if the (3) adjacent ponds cannot accept the additional liquids. Section 4.1.2 of the Engineering Report refers to the ALR discussion in Appendix G (Volume VI), but the ALR discussion (actually, the Response Actions in Section 7.0 of Appendix G) only provides for pumping the entire contents of a pond into an adjacent pond, after the ALR has been exceeded- it does not mention pumping from a leak detection sump into another pond. The application must be revised to provide complete details of the leak detection system design, including the proposed methods

for controlling the pumps, measuring and recording the liquids present in the sump and removed, and plans for handling the removed liquids.

D-4g **Liner System, Construction and Maintenance**

D-4g(1)(c) **Leak Detection System: 270.7(b)(1), and 264.221(a)**

The application must provide detailed final material specifications of piping to be used in the leachate detection systems.

No distinction is made between the truck wash liquid collection sump and the LDRS sump in the text of the application. The discussion in the text of the application and details provided on Drawing 44 do not clearly present the details of the main sump. It appears most of what is presented in Drawing 44 pertains to the LDRS system. Also, it is not clear where the physical locations of these sumps are in relation to each other. Drawing 44 shows only one liner running underneath the whole floor area of the truck wash bays, but does not indicate the presence of a secondary liner that is associated with the Leak Detection System. No discussion of the capacity of the main sump and no cross-section of the main sump is provided in the drawing. No calculations of the pump or sump capacity are presented.

Section 9.1.3 states that "because this sump is close to the surface and any fluids in the sump can be observed by looking down the LDRS riser pipe, fluid level instrumentation is not required." The cross-section of the truck wash leak detection sump depicted on Drawing No. 44 indicates that the bottom of this sump is six feet below the pad surface (i.e., distance from the pad surface, excluding the height of the riser above the pad). Liquid released into the sump may not be visible to the naked eye until the level rises above the sump trough, which would defeat the proposed purpose of this sump as a "leak detection" device. It appears that the sump is a leachate collection system rather than a leak detection system. Revise the application to provide detailed descriptions and design drawings of the sumps.

D-4g(3) **Construction Quality Assurance Program: 270.17(b)(1), 270.17(b)(4), 270.30(k)(2), 264.19, and 264.229 (a)**

The application does not provide evidence demonstrating that the clay material available on-site will provide the low permeability required for a soil liner. In fact, the laboratory hydraulic conductivity test data for Upper Dockum material (Appendix E in the original application) which showed test results consistently higher than the maximum acceptable value, and the original plans for use of a bentonite-soil mixture for the pond liner, have been removed from the revised application.

Although the previous NOD specifically pointed out the inadequacy of the available data, and the necessity for careful control of the construction of the soil liner, the revised application largely ignores these concerns, without explanation or justification. For example, although the previous NOD comment specifically recommended the use of a large-scale infiltrometer test to determine the permeability of the test fill, in agreement with both the EPA **Technical Guidance Document**

and the Koerner and Daniel guidance cited in response No. 53 (**Waste Containment Facilities: Guidance for Construction, Quality Assurance and Quality Control of Liner and Cover Systems**, page 55), the revised application and CQA Plan (Appendix A, Test Fill Plan) includes only laboratory permeability testing.

As noted in the Koerner and Daniel guidance (page 55), "...laboratory hydraulic conductivity tests can under predict the large-scale hydraulic conductivity by a factor of up to 100,000." The suggested approach of using on-site material for the soil liner and inadequate testing to demonstrate adequate performance is thus highly questionable. The application must be revised to provide representative hydraulic conductivity test data for the materials proposed for use in constructing the soil liner. The Test Fill Plan must be revised in accordance with standard industry practice as recommended by EPA, and Koerner and Daniel, to include a large-scale infiltrometer test to determine the large-scale hydraulic conductivity of the test fill.

Response No. 53i states that "the CQA plan will be revised to distinguish CQC and CQA responsibilities including evaluation of earthwork and geosynthetic installer CQC plans." However, in the CQA plan presented in Appendix B of the revised permit application, no distinction is made between CQA and CQC when discussing the activities the CQA engineer conducts on a daily basis, including activities that would fall under CQC of earth materials as well geosynthetics and other non-soil components of the evaporation pond and the truck wash unit. In addition, Section 2.2 (Use of the Terms in This Plan) of Appendix B, states that "in the case of geosynthetic and other non-soil components, CQC is provided by the Manufacturers and installers of the various geosynthetics." This statement directly contradicts response No. 53i. Revise the CQA Plan and related sections of the application to present CQA and CQC activities in a distinct manner, as suggested in the EPA **Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities**, EPA/600/R-93/182, and in **Waste Containment Facilities: Guidance for Construction, Quality Assurance and Quality Control of Liner and Cover Systems**, page 22, and identify who will be conducting the activities.

Response 53j states that "The testing frequencies for both pre-construction and post-construction will be reviewed. Recommendations in "same ref. as previous comments..." will be used as basis for testing frequencies." This statement is false. Table II-3 of the CQA Plan and the testing frequency recommendations in Daniel and Koerner, **Waste Containment Facilities** (WCF), Tables 3.8 and 3.10, are compared side by side below.

	TP CQA Table II-3	WCF
Compaction curve	Not mentioned	4,000 m^3 (5,263 yd^3)
Sieve analysis	3,000 yd^3	800 m^3 (1,053 yd^3)
Atterberg limits	3,000 yd^3	800 m^3 (1,053 yd^3)
In-situ moisture	300 ccy	5/ac/lift (161 ccy)
In-situ density	300 ccy	5/ac/lift (161 ccy)
Calibration density	1 per day	1 per 20 nuclear densities
Moisture by oven	1 per day	1 per 10 nuclear moistures
Shelby tube permeability	1,000 yd^3	1/ac/lift (538 yd^3)

As shown above, the proposed soil liner testing frequencies are only one-third to one-half of the frequencies recommended by Koerner and Daniel. The application CQA Plan must be revised to provide for soil testing at least as frequently as recommended by Koerner and Daniel. In addition, the application must be revised to include moisture-density curves every 5,000 yd^3 (at minimum) and at every visible change in soil type (color or texture).

Response 53k promises that a statement that "no waste shall be accepted at the site until NMED has reviewed the certification report." The revised application does not contain such a statement, or the actual (different) requirement for submittal of the certification report, in 264.19(d). Revise the application to include (in the CQA Plan) a statement that no waste will be received in a unit until a signed CQA certification report for that unit has been submitted to the NMED Secretary.

D-4i **Leakage Response Action Plan: 270.17(b)(5), 264.223(b) and (c)**

The application Response Action Plan in Appendix G includes all of the requirements of 40 CFR 264.223 and 264.304 (for both the evaporation pond and the landfill) on the first page of Section 7.0. Then a separate section is provided for the evaporation pond, beginning at the bottom of the page. This second section includes all of the preceding responses, except for the requirement to "determine whether waste receipt should cease or be curtailed..." etc., in 264.223(b)(4). The separate plan for the impoundment also includes an additional commitment (not found in the regulations) to "immediately remove the surface impoundment from service and remove any fluids contained in the surface impoundment to an adjacent approved pond or other approved facility..." There appears to be no need for the separate (and incomplete) set of responses for the evaporation pond. Revise the application to clarify the applicability of the responses on the first page of Section 7.0 to both the landfill and the impoundment (add a reference to 264.223), and remove the following separate section concerning the impoundment only.

D-4j(3) **Prevention of Overtopping: 270.17 (b)(2), and 264.221(g)**

According to Section 4.1.2 (Evaporation Pond Layout and Phasing) of Volume III, "Pond overtopping will be controlled manually through the use of liquid elevation indicators placed in the pond." If this is the only overtopping control and this requires Facility personnel checking the fluid level in the pond to prevent overtopping, then the proposed weekly inspection is not

sufficient. What does inspection of "improper operation of overtopping control systems" mean in this context? Revise the application to fully describe the design and/or operating procedures that will provide adequate protection against impoundment overtopping/overflow.

In response No. 58, a brief discussion of the availability of sufficient volume for a 100-year, 24-hour storm is provided. However, no such discussion is provided in the text of the application. The details of the pond capacity and freeboard calculations are not provided in the application, although the response states that this information "will be presented in the pond detailed design drawings." In addition, the overtopping prevention measure proposed does not address the concerns specified in the previous NOD comment. Revise the application to provide the information source references and calculations supporting the statement that the impoundment has at least the capacity to accept run-off from the 100-year storm.

D-6 Landfills: 270.14(a), 270.21 and 264.300 through 264.317

As noted in the following comments, the landfill design and operation portion of the application is still incomplete in many respects. The application must be revised to provide complete design and operating plans.

D-6c(3) Loads on Liner System: 270.21(b)(1), 264.301(a)(1)(I)

The laboratory test report and stability calculations in Appendix E-2 include assumptions that are not carried through to the engineering report and construction specifications. The calculations assume that the largest equipment on a slope will be a D6 dozer (maximum ground pressure 9.8 psi), and that the protective cover soil will never be saturated; resulting in a factor of safety of 1.8. The specifications (Appendix C, page 02232-3) allow equipment with up to 20 psi ground pressure on 24-inches of soil (the cover soil thickness). The consequences of saturation or near-saturation of the cover soil are not addressed under static or dynamic conditions, although soil saturation was specifically requested to be considered in the previous NOD comment.

The laboratory testing (Appendix D) used only slightly moistened, well-compacted cover soil (only the GCL was saturated). The specifications (page 02232-4) only limit cover soil placement during precipitation, leaving open the possibility that a dozer much larger than a D6 may be operated on wet, nearly-saturated cover soil layers during the hours and days after rain storms. Although these conditions may not result in catastrophic slope failures, the application does not demonstrate that such circumstances have factors of safety greater than 1.

In addition to these concerns, the application does not provide calculations of the predicted stresses in the synthetic liner system materials or anchor trenches due to down-drag loading on the slopes. Loading due to wet protective cover soil on the 300 feet slopes may exceed anchor trench capacity, and therefore require that cover soil placement be limited to only a portion of the slope above the toe. If sacrificial geomembranes are proposed (see Comment D-6c(5)), consideration of an additional loading scenario may be necessary. The application must be revised to demonstrate

that the landfill liner system will be constructed to prevent failure due to climatic conditions, the stress of installation, and the stress of daily operation.

D-6c(4) Liner System Coverage: 270.21(b)(1), 264.301(a)(1)(iii)

Two significant deficiencies were identified in the revised liner coverage information. 1) The landfill liner is intended to eventually cover the floor and sidewalls of the entire (Phase I, II and III) landfill, but none of the drawings actually shows the full extent of the planned liner. For example, Drawing 8 shows the anchor trench for the Phase 1 liner, but no drawings are provided to show the anchor trenches and/or liner coverage for Phase II and Phase III. Similarly, the text of the application only suggests (Volume III, Section 3.1.4, page 3-7) that the plans for Phase II and Phase III liner installation, access ramps and waste fill sequencing "...will be determined in the future." 2) The liner anchor trench is located in the center of each of the two Phase IA access ramps (Drawings 8, 13 and 14). This leaves the outer half of each access ramp outside the limits of the liner system. The entire surface of the access ramps will be routinely contaminated with wastes tracked from the active fill face by waste hauling and water trucks, and waste placement and compaction equipment, contrary to the statement in Section 2.5.1.2 (page 2-14) in the application. (Both ramps apparently may be used for both entry to, and exit from, the landfill.) The application must be revised to demonstrate that the liner system will be installed to cover all surrounding earth likely to be in contact with waste or leachate during Phases I, II and III.

D-6c(5) Liner System Exposure Prevention: 270.21(b)(1), 264.301(a)(1)

The application does not explain whether the entire installed liner system will be immediately covered with soil, or why "...a sacrificial geosynthetic will [or may] be deployed..." instead (as stated in the response to the previous NOD). The revised application (text Section 2.5), engineering report and specifications do not mention possible use of sacrificial geosynthetics. (See comment 68.) The application must be revised to demonstrate that the liner system will be constructed to prevent failure due to climatic conditions, the stress of installation, and the stress of daily operation.

D-6d Liner System Foundation: 270.21(b)(1), 264.301(a)(1)(ii)

The response promises to provide bearing capacity and stability evaluations for load bearing embankments, but the revised application text (Section 2.5) and engineering report (Volume II, Section 3) do not include such evaluations, or even mention the load bearing embankments that are shown on the west and south sides of the landfill on Drawing 6 (Volume III, Appendix A). The outward slopes of these embankments appear to be about 3:1, but the slope is not specified. The embankments will apparently be built directly on top of the existing, highly variable Quaternary sediments, as indicated on Drawing 7 (Cross-Section A-A'). The embankment on the west side of the Phase III sub-cell is more than 20 feet above natural grade, about twice as high as proposed in the original application. Slope failure or severe settlement of the constructed embankments could result in damage to the liner and cover systems, increased erosion, and release of wastes to the environment. The application must be revised to demonstrate that the

liner system will be placed on a foundation capable of providing support to the liner system adequate to prevent failure due to settlement, compression or uplift.

The interim Phase II cut slope to the south of the initial Phase I fill is proposed to be left at 2:1 grade until Phase II excavation begins. The stability of this slope was not evaluated in the application. A failure of this slope may disrupt operations, fill in the proposed "clean" runoff collection basin, and possibly damage the completed liner on the floor of Phase I, where contaminated landfill runoff is proposed to be collected. The stability analysis in Appendix E-1 suggests that 3:1 slopes will have only minimal factors of safety (1.4 for static and 1.2 under seismic loading), assuming unsaturated conditions and Upper Dockum strength properties for the Quaternary sediments. The top forty feet or so of the slope actually will have less strength, and the exposed slope will be repeatedly wetted and eroded by precipitation. The bare slope may be left exposed with no maintenance for perhaps 10 years or more, if the landfill business is slow. Finally, the slope stability evaluation for the 3:1 slopes does not include static or dynamic loading due to construction equipment. Therefore the proposed 2:1 cut slope is apparently likely to fail. A sudden slope failure could threaten the lives of workers.

The bare 3:1 cut slopes above the access ramps on the east and west sides of the proposed Phase I fill will be exposed to precipitation infiltration and erosion from the time of excavation until the decision is made to complete the liner system on these slopes. The application provides no indication of how long this time period might be. The slope stability calculations in Appendix E-1 assume that "due to the temporary nature of the cut slope, a [factor of] safety less than [the typical minimum of] 1.5 was accepted." (Page 2) The parameters in the calculation are claimed to be "very conservative," but in fact the climatic exposure conditions (infiltration of precipitation over an extended time period) and routine heavy loading due to construction on the slopes (e.g., 40-ton truck and 80-ton scraper traffic) have not been accounted for. The exposure of these bare slopes will be extended, for at least several years, cannot be considered "temporary." Although a calculation concerning Ramp Stability is provided in Appendix E-6, this addresses only scraper loads on the "subbase and road base," not the stability of the slopes on which the access ramps are located. The slope stability evaluation must be revised to fully account for actual slopes in the landfill (both 2:1 and 3:1); actual soil strengths; exposure effects due to weathering, precipitation infiltration and erosion; and construction stresses on the slopes due to dynamic loads from trucks, dozers and scrapers.

D-6d(4)(b) <u>Bearing Capacity</u>: 270.21(b)(1), 264.301(a)(1)(ii)

The response discusses interface shear testing and slope stability analyses, but the comment requested a foundation bearing capacity analysis. Bearing capacity is particularly important in the areas around the boundary of the landfill where embankments (structural fills above natural grade) are proposed to be constructed on top of relatively weak sandy sediments. Revise the application to provide an analysis of the bearing capacity of the liner system foundation, with emphasis on the structural fills on the west and south sides of the landfill.

D-6e(1)(a) **Synthetic Liner Compatibility Data: 270.21(b)(1), 264.301(a)(1)**

The application (Section 3.2.3.5) does not provide information necessary to demonstrate that the liner system materials will be compatible with the wastes and leachate that will be in contact with those materials, as required by 264.301(a)(1)(i). Liner compatibility data from testing with synthetic and real leachates is available from liner manufacturers and other sources. Revise the application to include summary information and references to the data relevant to the proposed geomembrane and other liner system components.

D-6e(1)(c) **Synthetic Liner Bedding: 270.21(b)(1), 264.301(a)(1)(ii)**

The proposed specifications (02119) and CQA requirements (Section II.3) for prepared subgrade materials allow any type of soil found on site to be used, and do not correspond with previously approved criteria. The CQA Plan provides no method for enforcing the limited subgrade criteria mentioned in the response (Response No. 81 states that prepared subgrade "...materials will be free of particles larger than 1 inch in diameter or sharp objects which may puncture the liner"). The proposed specifications and CQA Plan do not include any prohibition or mention of sharp objects. No grain size analyses are required for prepared subgrade, and no gradation range is specified for this material. This means that any of the soils excavated anywhere on site (sand, gravel, caliche, silt or clay) can be used for prepared subgrade, so long as cobbles, large roots and branches are not visible. Proctors are required only once every 6 acres (CQA Plan, Table II-2), equal to 4,629 cubic yards of material, i.e., one test for about 231 dump truck loads of material (at 20 yards each). This approach is not consistent with the Alternative Liner System HELP Analysis, in Appendix E-28 of the application. This document provided the basis for the preliminary 1996 NMED approval of the proposed alternative (non-MTR) design for the Triassic Park landfill liner and cover systems. For example, the Prepared Subgrade description in Section 4.2.8 of this document states:

> "The prepared subgrade material considered is essentially the same material considered for the clay barrier material described above. ... this material is the same material proposed for the clay barrier... For the prepared subgrade layer, the same soil texture number and defaults were input as the clay layer described above including the conductivity."

Since the characteristics of this component of the alternative liner design are proposed to be modified in a non-conservative manner in the current application, the applicability and adequacy of the 1996 HELP analysis is called into question. Revise the application to specify clay liner material for Prepared Subgrade, or revise and expand the Alternative Liner System HELP Analysis report to demonstrate that the proposed open or empty specification (any type of soil) as a substitute for the clay material will provide equivalent physical support, and equivalent hydraulic performance, of the liner system.

D-6e(2)(b) **<u>Soil Liner Compatibility Data</u>: 270.21(b)(1), 264.301(a)(1)(i), 264.301(c)(1)(ii)**

Limited GCL testing to determine saturated shear strength was performed (Appendix D), but no waste nor leachate compatibility data are provided. The application must be revised to provide an evaluation of the chemical compatibility of the bentonite and synthetic materials with leachate which may be generated in the landfill. Manufacturer's test data, scientific or engineering literature, or testing with synthetic leachate may be acceptable if the character of the leachate is demonstrated to be similar to leachate which may be generated in the landfill.

D-6f(1) **<u>System Operation and Design</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)**

The application presents only a partial design and incomplete specifications for the leachate collection and leak detection systems. Phase II and III plans "will be determined in the future" (Section 3.1.4, page 3-7), and the design details and specifications for flow meters and fluid level transducers or equivalent devices, and data recorders, are not provided in the application. The design will apparently include a trench across the center of the floor of each of the three separate sections or phases of the landfill, to accommodate the 8-inch diameter pipes in the leak detection and leachate collection systems. However, the application provides no description nor drawing to demonstrate how the trenches will be designed or how the pipes will be installed. Another example is the absence of plans for connecting the future (Phase IB, II and III) portions of the liner system to the previously constructed liners and drainage nets. Apparently the anchor trenches may be excavated, or the old liners will be cut at the top of the anchor trenches so that the new liners and drainage nets can be attached.

Plans for operation of the leachate collection and leak detection systems do not include pump operating levels, or procedures and equipment for draining leachate collection tanks. Management of the leachate collection tanks is important because at leachate and leak flow rates well below the proposed Action Leakage Rate (900 gpad), the small leachate collection tanks must be emptied several times per day (i.e., through the night, weekends, and holidays). The prompt emptying of leachate collection tanks (required to minimize the buildup of head on the liners) must be included as part of the landfill leachate collection and leak detection system operation plans. The application must be revised to provide complete leachate and leak detection system design and operation plans.

D-6f(2) **<u>Drainage Material</u>: 270.21(b)(1), 264.301(a)(2), 264.301(c)(3)(ii)**

The design calculations for the Action Leakage Rated (Appendix G-2) recommends (sheet 3 of 40) that the proposed geocomposite drainage material be tested to confirm that the assumed factors of safety are adequate. The discussion of leak detection system design parameters in Section 5.2.2 of Appendix G states that transmissivity test results, under conditions similar to those anticipated in the field, "are required in the specifications and CQA Plan." However, the CQA Plan (Appendix B, Section VII-1.4, Conformance Testing) indicates only that testing shall be done according to the specification. The specification (Appendix C, Section 02710-2.01)

refers to Table 02710-1, which explains the required transmissivity test setup in Note 5 at the bottom of the table. Note 5 requires that "the geocomposite shall be sandwiched between a layer of protective soil... and a 60-mil thick HDPE geomembrane."

This test setup is appropriate for the geocomposite above the primary liner (the LCRS), but it is not similar to the conditions that the leak detection geocomposite will be exposed to. In addition, the compressive stress of 10,000 psf specified for the test (also in Note 5) may be substantially less than the actual load on the floor of the landfill at most locations, when filling is complete. The maximum depth of waste fill and cover appears to be approximately 140 to 150 feet, which would result in loading of 14,000 to 15,000 psf, assuming average waste density of only 100 pounds per cubic foot (which may be an underestimate). Revise the application to require testing of the geocomposite under conditions similar to those which will exist in the landfill, e.g., compacted soil, GCL and textured 60-mil HDPE membrane below the geocomposite, with textured 60-mil HDPE membrane and lightly compacted above the geocomposite, under compressive stress representative of the actual loading on the floor of the landfill. (Note: Testing with only soil above the geocomposite is also necessary to demonstrate that the LCRS will function as designed.)

D-6f(3) **Grading and Drainage: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)**

In addition to the absence of plans for the Phase II and Phase III systems, discrepancies exist between the text of the Engineering Report (Volume III of the application) and the Specifications in Volume IV, Appendix C. The pumps indicated in the LCRS and LDRS descriptions (Section 3.1.3, page 3-5, Table 2 and Section 3.2.8, page 3-17) appear to be identical. However, the pump specifications in Section 11210 of Appendix C state that the Vadose Sump and Secondary Leachate Collection System pumps will be identical, but the LCRS pump will have a much larger capacity. Grundfos pump performance curves for the "25S19-9" pumps specified in Appendix C suggest a flow rate of about 35 gpm at 100 to 110 feet of head, not 20 gpm as indicated in Table 2. The application must be revised to correct these discrepancies.

Grundfos performance curves (not included in the application) for the two pumps specified in Appendix C indicate (in notes at the bottom of the charts) that the minimum submergence (liquid above the pump) is 2 feet for the smaller pump and 5 feet for the larger. Revise the application to provide additional details of the actual pumps to be installed and the operating parameters (submergence, on/off operating limits, and resulting depth of leachate on the liners) that are proposed to be included in the facility permit. Plans and procedures must be provided to minimize the head on the liners, and to maintain less than one foot of leachate head on the liners outside the limits of the sumps.

The application does not provide a means for measuring or recording volumes of leachate removed from the LCRS or the LDRS. Although flow meters apparently may be installed on pipelines from the landfill sumps ("FM" items on Drawing 19, Sheet 1), flow meters are not discussed in the Engineering Report or included in the Specifications. In addition, the application

provides no methods to measure the volume of leachate in the LDRS sumps, although a small 3-inch pipe ("pressure transducer conduit") is included next to each Riser Pipe in Drawing 19. Revise the application to provide the method(s) to measure and record the volumes of leachate removed from each LCRS and LDRS, and the volume of leachate present in each LDRS sump.

D-6f(4) **Maximum Leachate Head: 270.21(b)(1), 264.301(a)(2), 264.301(c)(2)**

Although the application provides calculations of the drainage capacities of the Phase I geocomposite (leachate collection and leak detection layers) and LCRS sump in Appendixes E-31 and G-1, Phase II and Phase III are not included. Results from testing the geocomposite under design conditions are not available, but are to be provided at some later date. The application does not address the details necessary to demonstrate that the leachate collection and removal system will be operated in such a manner as to prevent the buildup of more than one foot of head on the top liner. For example, the pump operating control systems, fluid pressure transducers or other monitoring devices, flow meters and data recording devices are not included in the application text, the Engineering Report, drawings or specifications.

In addition, the application does not provide plans for performing maintenance and monitoring, as necessary to demonstrate that high leachate flow rates will be managed to prevent buildup of more than one foot of head on the top liner (outside the sump area). The proposed collection of contaminated runoff inside the active waste disposal area (in a "pond" at the toe of the waste fill, as shown on Drawing 10) will allow collected water to drain into the leachate collection system at a rapid rate. (The protective soil cover above the drainage geocomposite may consist of lightly compacted sand, gravel or any other type of soil found on site.) High rates of inflow to the LCRS sump will result in the requirement to frequently empty the small leachate collection tank.

Additionally, rainstorms may produce very large volumes of leachate. For example, 3.3 inches of rainfall on the Phase IA area of about 16.5 acres may produce as much as 1,500,000 gallons of leachate which must be pumped out of the leachate collection sump. In this case, the 9,000 gallon tank may have to be drained as fast as it is filled by the continuously operating 50 gpm leachate pump, i.e., every 3 hours for 21 days, including nights, weekends and holidays. This design may not prevent the accumulation of more than 1 foot of head on the liners, even with the sump pump operating continuously.

The application must be revised to provide complete design plans for the landfill (Phases I, II and III) leachate collection and leak detection and removal systems (including pump controls, flow meters, pressure transducers, data recorders, etc.) and plans for operating and maintaining these systems. The plans must demonstrate that the leachate head on the primary liner will not exceed 1 foot during the active life and post-closure care period of the landfill using the 25-year, 24-hour storm as the minimum design basis.

D-6f(5) **Systems Compatibility: 270.21(b)(1), 264.301(a)(2)(I)(A), 264.301(c)(3)(iii)**

The application does not provide waste and leachate compatibility information for the liner system construction materials. The application must be revised to demonstrate that all components of the leachate collection and leak detection systems are chemically resistant to the wastes to be managed in the landfill and the leachate that will be generated from them.

D-6f(7) **Prevention of Clogging: 270.21(b)(1), 264.301(a)(2)(ii), 264.301(c)(3)(iv)**

The application provides a design specification for the geotextile to be used to filter soil particles out of the leachate drainage layer (Appendix E-21), but does not suggest any other measures to prevent or respond to clogging of the leachate collection and leak detection systems. One potential cause of clogging of the leachate collection geonet and/or sump is excessive runoff infiltration, which may result from the proposed ponding of runoff on the protective soil cover at the toe of the waste fill. The filtration geotextile should not be expected to completely exclude clay-sized particles, especially when large volumes of infiltrating runoff are expected to pass through the protective soil cover, over a period of several years. The proposed geocomposite testing (Appendix G-1, sheet 8 of 40), although intended to simulate LDRS design conditions, should include testing of the actual LCRS conditions as well (including infiltration of large volumes of water through typical sand and other surficial soils from the site. Revise the application to evaluate the potential for clogging of the leachate collection system by infiltrating soil particles, and redesign the runoff collection pond if necessary to prevent clogging.

D-6g **Liner System Construction and Maintenance: 270.21(b)(1), 264.301(a)(1)**

The application does not provide complete (e.g., Phase II and Phase III) material specifications for the liner system, or test fill results for the clay liner in the Phase I sump. The application must be revised to include the entire landfill and all components of the liner system, including clay liner compaction and placement requirements based on or confirmed by test fill results.

D-6g(1)(b) **Soil Liners: 270.21(b)(1), 264.301(a)(1)**

The application includes clay liner material specifications (Section 02221), but no information to demonstrate that this material can or will be compacted as necessary to achieve the required low permeability. No data is provided to demonstrate that the clay material available on site will meet the permeability specification, or that the clay will be chemically resistant to the wastes and leachate to be managed in the landfill. Obtaining these data will probably require performance of the EPA 9090 test procedure and construction of a test fill. Revise the application to provide compaction, permeability and waste compatibility test results.

The application does not provide plans for Phases II and III of the landfill. The design report does not clearly indicate whether the leachate collection and leak design systems are expected to be identical to Phase I. The sump designs for Phases II and III are not provided, although they will clearly have different dimensions and floor slopes than the Phase I sump. Revise the application

to provide complete design information for the entire landfill (see Comments D-6f(1) and D-6f(3)).

D-6g(2) **Construction Specifications: 270.14(a), 270.21(b)(1), 264.301(a)(1)**

The construction specifications (Appendix C) are not certified, stamped or signed by a New Mexico professional engineer. Revise the application to provide the necessary certification.

D-6g(2)(b) **Soil Liner: 270.21(b)(1), 264.301(a)(1), 264.303(c)(2)**

The application does not include design details for Phase II and Phase III of the landfill. Revise the application to include design details for the entire landfill.

D-6g(2)(d) **Leachate Collection and Leak Detection Systems: 270.21(b)(1), 264.301(a) and (c)**

The application does not include specifications for several components of the leachate collection and leak detection and removal systems. The proposed method of connecting new segments of the liner, leachate collection and leak detection systems is also not addressed, as noted in the previous NOD. Revise the application to include design details, specifications and CQA requirements for leachate level sensors, pump control systems and flow meters; and the proposed methods for connecting new sections of the liner system during expansion beyond the Phase IA limits.

D-6g(3) **Construction Quality Assurance Program: 270.21(b)(1), 270.30(k)(2), 264.19, 264.303(a)**

The Construction Quality Assurance (CQA) Plan has the name of a professional engineer printed on the cover page, but a seal, signature or certification is not included. Revise the application to include certification.

The CQA Plan does not address pumps, controls and instrumentation, although these are integral components of the leachate collection and leak detection systems. Revise the application to include CQA requirements for pumps and controls, liquid level sensors, flow meters and data recorders.

The response to the previous NOD (response No. 105b) stated that the CQA Plan would be revised to incorporate the most recent EPA guidance (**Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities**, EPA/600/R-93/182). The revised CQA Plan conflicts with several basic recommendations in the EPA guidance. For example, the definitions of Construction Quality Assurance and Construction Quality Control (CQC) in the CQA Plan are radically different from the definitions in the EPA guidance. The proposed Triassic Park definition of Construction Quality Control includes "Manufacturers, Suppliers, Contractors or Owners..." in the group of those who may perform CQC functions, and

carries this approach through the entire CQA Plan. In contrast, the EPA guidance states (page 2) that CQC "...is normally performed by the geosynthetics installer, or for natural soil materials by the earthwork contractor... (CQC) refers to measures taken by the installer or contractor to determine compliance with the requirements..." The application CQA Plan does not include any Manufacturing Quality Assurance or Control (MQA/MQC) as recommended by the EPA guidance (page 2). The proposed CQA approach for the Triassic Park facility (with no CQC) is confusing, and is not in agreement with EPA guidance or typical industry practice. Assignment of CQC functions to Manufacturers, Suppliers or Owners (Section 2.2) is inappropriate, and will not improve the quality or assist in documentation of the quality of the constructed units. Manufacturers, Suppliers and the Owner are not expected to construct any of the permitted units. The application provides no justification or explanation for the proposed changes in the approach recommended by EPA. Revise the application CQA Plan to provide definitions and assigned functions for MQA, MQC, CQA and CQC in accordance with the EPA Technical Guidance Document.

The proposed CQA Plan does not include the NMED as a party to CQA, as requested in the previous NOD comment. This is another example of the failure of the CQA Plan to incorporate the recommendations of the EPA Technical Guidance Document into the Triassic Park plan, and another contradiction between the response (No. 105d, which promised to incorporate the NMED into the CQA Plan and Project Organization Chart) and the actual revised application. Compare Figure I-1 of the proposed CQA Plan with Figure 1.1 of the EPA guidance. The proposed plan and project organization do not illustrate nor account for the flow of work from design through manufacturing, construction, inspection, certification, approval by NMED, and, finally, actual operation of the facility. The application CQA Plan must be revised to include the NMED as a party in the Project Organization, and the structure of the MQA/CQA organization must be revised to account for the flow of work on the facility from start to finish. If the proposed organization does not mirror the recommended structure in the EPA guidance (EPA/600/R-93/182, page 4), the revised application must provide a full explanation of why the EPA guidance is not being followed.

The previous NOD requested acknowledgment of the permit modification requirements of 40 CFR 270.41 and 42, and the response (No. 105e) promised to include "... Agency notification of any design changes which might require permit modification." However, the revised CQA Plan only suggests (Section 1.4, page XVIII-5) that when design or specification changes are required, the owner will notify NMED. The plan does not indicate whether the NMED will be notified before or after such changes are constructed, and does not mention the permit modification requirements of 20 NMAC 4.1.9, incorporating 40 CFR 270.41 and 42. Revise the CQA Plan to specifically acknowledge the permit modification criteria in 40 CFR 270.41 and 42.

The previous NOD requested that the CQA Plan be clarified to provide for separate certification of each phase of landfill liner system construction, including the final cover. The response (No. 105f) promised to provide for submittal of certification reports for each constructed phase. However, the revised CQA Plan does not mention the phased construction plans or the

requirement for multiple certification reports. Revise the CQA Plan to provide for submittal of certification reports for each phase of liner system construction.

Section 2.5.2 of the application text is inconsistent with the EPA CQA guidance. For example, the final bullet on page 2-20 discusses a need for unidentified subcontractors and consultants to have an acceptable CQA program. There should be no need for any additional CQA program outside the one to be included in the facility permit. There should never be any need for a consultant to have an independent CQA program even if they are also a construction contractor. Revise the text of the application to conform to the definitions and practices outlined in the EPA guidance.

D-6g(4) Maintenance Procedures for Leachate Collection & Leak Detection Systems: 270.21(b)(1), 264.301(a) and (c)

Response No. 106 to the previous NOD promised to provide maintenance plans. However, the revised application still does not include maintenance plans. Section 2.5.3.2 of the application states that "The landfill structure will be maintained through a routine preventive maintenance program which will be fully defined in the final site operations plan." As noted in previous comments, the application must include final design and operation plans. Revise the application to include maintenance plans for the landfill leachate collection and leak detection systems.

D-6g(5) Liner Repairs During Operation: 270.21(b)(1), 264.301(a)

Response 107 states that repairs to the landfill liner will be made in accordance with the original specifications and CQA Plan. However, the text of the application does not mention liner repairs. The most appropriate document for such a commitment to be located would apparently be the final site operations plan, which has not been submitted. Revise the application to include the final site operations plan, and ensure that the operations plan contains a clear and explicit commitment to repair the landfill liner.

D-6h Action Leakage Rate: 270.21(b)(1)(v), 264.302

The proposed Action Leakage Rate (ALR) of 900 gallons per acre per day (gpad) is a large rate of flow. The initial Phase IA liner as proposed on Drawing 9 will cover a surface area of about 16.5 acres. Therefore an average flow of 14,850 gallons per day (gpd) or less into the Phase IA LDRS sump would not trigger implementation of the Response Action Plan. The largest ALR will be for the Phase II sump, which will drain about 37 acres. The Phase II ALR would therefore be 33,300 gpd. This rate of flow would require nearly constant operation of the 25 gallons per minute (gpm) secondary leachate collection system pump specified in Appendix C, Section 11210, page 2. In addition, the 9,000 gallon leachate collection tank would have to be emptied four times per day to keep pace with the leachate pump. The application does not provide plans to continue operation of the leachate pumps and transfer of collected leachate around the clock, as will be required to minimize the head on the liner system, if the leakage rate approaches the ALR. Revise the application to provide for continuing operation of the leachate and/or leak detection

system sump pumps, and emptying of the leachate collection tanks if necessary to allow continued operation of the sump pumps, throughout the times when the facility is otherwise non-operational, i.e., overnight, weekends, and holidays.

The proposed ALR is nine times the EPA recommended minimum. The explanation given for the nine-fold increase is the high transmissivity of the geocomposite. However, the transmissivity cited in Section 3.2.9 of the Engineering Report is 2.2 x 10^{-4} m^2/sec, which is only 7.33 times greater than the minimum of 3 x 10^{-5} m^2/sec required in 40 CFR 264.301(c)(3)(ii). In addition, the value specified in Section 02710 of the construction specifications (page 02710-9) is 2.0 x 10^{-4} m^2/sec, only 6.7 times greater than the minimum required value. Revise the application to include an Action Leakage Rate of no larger than 670 gpad, or provide additional information to justify a larger value.

D-6h(2) **<u>Monitoring of Leakage</u>: 270.21(b)(1)(v), 264.302(b)**

Response 109 to the previous NOD does not address the request to provide the method the facility will use to determine whether the Action Leakage Rate has been exceeded for each sump. The revised application likewise provides no method or calculations of the weekly volume of leachate removed from the leak detection sump which would constitute such exceedance. The Phase I liner system (and presumably the Phase II liner) will have two different areas, during the initial Phase IA operating period and the next (Phase IB?, IIA/IIB?) period. Therefore, the Phase I sump should have two different weekly total volumes calculated to compare with the actual leachate pumped. These calculations and resulting volumes are necessary to demonstrate how the leak detection system will be operated, and when the Response Action Plan will be implemented. Revise the application to include calculations of the total weekly volume for each sump, for each different development or operating period, that will trigger implementation of the Response Action Plan.

D-6i(1) **<u>Response Actions</u>: 270.21(b)(1)(v), 264.304**

The Response Action Plan for the landfill provides for monitoring the landfill sumps weekly and after significant precipitation. The term "significant" is not defined. The proposal to check sumps only weekly, after the ALR has been exceeded, does not meet the requirements in 20 NMAC 4.1.500 (incorporating 40 CFR 264.301(c)(3)(v) and (4)), i.e., to prevent liquids from backing up into the drainage layer and to minimize the head on the bottom liner. If the sump in the Phase II sector was to be checked and pumped by manual control only weekly (due to failure of the fluid level sensor in the sump, or any other reason) and the leak rate remained at or near the ALR, about 233,000 gallons would have accumulated and would be waiting to be removed from the sump, each week. This approach could result in accumulation of large amounts of leachate in the leak detection system drainage layer, and expose the bottom liners to high pressures and extreme variations in pressure. The RAP must be revised to provide methods (e.g., daily or more frequent inspections) and/or equipment (automated leachate detection, alarm and pump operating systems) as necessary to prevent backup of leachate into the LDRS drainage layer, and to minimize head on the bottom liner.

D-6j **<u>Run-on and Run-off Control Systems</u>: 270.21(b)(2), 264.301(g)**

The application provides only partial run-on and run-off control system design calculations and drawings. No calculations or designs for managing run-on or run-off beyond the initial Phase IA development are included. Revise the application to include plans for managing run-on and run-off for each and every phase of future development of the landfill.

Section 2.1.3, Facility Traffic Plan, Unimproved Access Roads and Temporary Construction Haul Roads, states that although the construction haul roads are not shown on the drawings, provisions for surface water drainage such as culverts and ditches, as well as erosion control features, will be included. Many of the construction haul roads will be in the landfill excavation or immediately adjacent to it. The run-on and run-off control measures associated with the haul roads may directly impact the waste fill or waste emplacement operations, must be included in the application. Revise the application to include sufficient detail on these features to allow for full review.

Section 2.2, General Facility Design Analyses, Erosion Control, states that a freeboard height of 3.5 inches (0.3 feet) was selected. Provide the rationale for the selection of this value for the channel design.

Section 2.1.3, Facility Traffic Plan, Unimproved Access Roads and Temporary Construction Haul Roads, states that the truck staging area will only be constructed with a gravel surface. Provide information on how any releases from trucks waiting to deposit their contents will be managed. Additionally, this area is to drain to the surface water detention basin. Provide information on whether or not the discharge from this area will be under valve control. In the event that a release does occur, having this area under valve control could prevent the release from impacting the surface water in the detention basin and any areas downstream of the detention basin.

Section 2.0, Hydrogeology, Section 2.3, Return Period/Precipitation, states that three return periods were used to design and evaluate the stormwater control system. This is an oversimplification, as each channel was not evaluated for each of the return periods, and the ramp ditches, site perimeter ditches, and roadside ditches were only evaluated for a 2 year return period. This section needs to be expanded such that the complexity of the design is fully discussed.

Section 2.4, Hydrograph Response Shape, states that a medium hydrograph response was selected for disturbed as well as undisturbed areas. During construction of the landfill, none of the areas will be vegetated, and if vegetation does exist, it will not be very hardy. The worst case conditions will occur during this poor-vegetation state, which would be representative of a fast or high response rate. Either provide the justification for using the medium response rate to predict the runoff response, or revise the response hydrograph used such that it is representative of a non-vegetated/unprotected area.

This Section 3.0, Channel Design, states that channels with peak flow velocities greater than 5 feet per second from an average storm will be lined with gravel or rip rap if required. No

information is provided on how a determination will be made as to whether gravel or rip rap will be placed. Revise this section to include this information.

Section 5.0, Ponds, of the Storm Water Control System Design, does not discuss the design approach shown on Drawing No. 27, Section 24. Surface water will be allowed to pond and percolate into the landfill cover and the soils that will serve as the road subgrade. This could potentially create an unstable condition on top of the liner. Provide a design discussion and calculations that clearly demonstrate that the soil will remain stable, and the cap surface will not be negatively impacted by this proposed water management approach.

Table A-1, Curve Numbers, does not provide a value for the curve number used for the waste area type. Revise this table to include this value.

The Channel Design information presented for Ditch 5, in Attachment 2, Channel Designs and Drawing No. 25, Sheet 2 of 2, states that the side slope used for design of this ditch was 2H:1V. The supporting computer run for Ditch 5 in Attachment 1 shows that this was used only for the 2-year, 24-hour rain event. A value of 3H:1V was used for the 25 year, 24 hour rain event. Either revise the Channel Design Table and Drawing No. 25 such that the correct side slope is referenced, or recalculate the flow for the 25 year, 24 hour rain event using a side slope of 2H:1V, as indicated.

The maximum total depth for Ditch 3, at a slope of 1.1 percent to 2.0 percent, should be 2.4 feet, not 2.3 as indicated on Drawing No. 25 and the Channel Design Table in Attachment 2. Revise both accordingly.

The spillway 25-year, 24-hour flow value presented in the Channel Design Table is actually the 100 year, 24-hour flow value. Revise the table to include a footnote to this effect.

In Appendix F-2, the velocity of the flow in the Channel Design Table for Ditch 1, during the 2 year, 24 hour rain event should be 4.1 feet per second (fps), not 4.3 fps as indicated by the table. Revise the table accordingly. Additionally, revise the table to include a reference for why the velocity calculations were not required for the 2-year storm analysis given the following conditions: the 25-year, 24-hour rain event flow velocity was less than 5 fps, so the 2-year, 24-hour rain event flow velocity would also be less than 5 fps, or because erosion protection had already been specified, so verification that it was needed is unnecessary.

Flow calculations were provided for a Landfill Phase I Run-off Data set, but the results are not discussed in the Surface Water Control System Design. Revise the channel design discussion to explain the data generated by this analysis, and how it is being used.

In Attachment 3, Apron Design, provide a reference for the equation that was used to determine the apron width.

Drawing No. 25, Sheet 1 of 2, does not include any flow directions or elevations. Revise this drawing to include the flow direction of each water conveyance channel and to include surface

contours such that the surrounding surface water flow directions can be determined in relationship to the surface water control system features.

There is no material definition for the perpendicular cross hatching underneath each of the cross-sections in Drawing No. 39. Define the material the perpendicular cross hatching represents.

Detail F, on the right hand side of Drawing No. 39, calls out the prepared subgrade. The direction arrow is pointing to the wrong material. The prepared subgrade is represented by the vertical cross-hatching, not the perpendicular cross hatching. Revise the drawing accordingly.

Detail 2, on Drawing No. 43, Sheet 1 of 2, refers to a clay liner material. No discussion in the engineering report refers to a clay liner material used in the roll-off area. Revise the engineering report to discuss the clay liner material shown in Detail 2.

Drawing No. 43, Sheet 2 of 2, does not provide a slope for the HDPE pipe. Revise the drawing to include the installation slope for the HDPE pipe along the sump wall.

Section S-105, Drawing No. 45, Sheet 5 of 5, does not provide an overlap dimension for the steel reinforcement. Revise Section S-105 such that all steel reinforcement overlaps are specified.

None of the arrow heads are visible in Section S-563 of Drawing No. 45, Sheet 5 of 5. Revise this section such that all dimensions and call outs are clearly discernable.

Section 2.5.1.6, Run-on/Run-off Control, of the Part A Application states that the run-off from the landfill side slopes above the liner system will be channeled away from the waste and managed as clean water. Facility run-on will be diverted via a diversion channel to a natural drainage discharge point, and facility run-off will be managed in detention basins according to Section 2.1.4, Facility Stormwater Control, of the Engineering Report. There is no discussion provided on how clean water will be managed, except that it will be collected in the detention basins, and allowed to evaporate. As the design capacity of the detention basins is for only a 24-hour, 25-year storm event, provided a discussion on how facility run-off will be managed if the detention basins are not dry at the beginning of a 24-hour, 25-year rain event.

The information presented on Drawing 10 is inconsistent with Drawing 13. Drawing 13 shows a surface water diversion berm and associated culvert, but these two features are not shown on Drawing 10. Revise one or both of these two drawings such that these inconsistencies are resolved. Additionally, these features are not discussed in the stormwater management design portion of the permit application. Any surface water management features that control or manage runoff must be discussed in the Engineering Design portion of the application under the surface water management section and all supporting design calculations must be provided. Revise the storm water Engineering Design portion of the application to discuss all storm water management features.

D-6j(3) **Management of Collection and Holding Units: 270.21(b)(4), 264.301(l)**

Although the text of the application (Section 2.5.1.3, page 16) appropriately proposes that the three leachate collection tanks will be managed as less-than-90-day storage units, the basis for the permitting exemption and the generator requirements of 20 NMAC 4.1.300 (incorporating 40 CFR 262.34(a)(1)(ii)) are not mentioned. The tanks are not required to be permitted (in part) because the waste they will store (F039 leachate) will be produced on-site and is listed in 40 CFR 261. Generator requirements include the tank management standards in 40 CFR 265 Subpart J, except 265.197(c) and 265.200. For example, 265.192 requires that the new tanks must be assessed and certified by an independent professional engineer, and 265.193 specifies adequate containment requirements. The generator requirements that must be met if the tanks are to be exempted from permitting requirements should be acknowledged in the application. In addition, the details of plans for emptying the tanks and managing leachate must be included in the application.

D-6j(5) **Maintenance: 270.21(b)(2) and (3), 264.301(g) and (h)**

The drainage control section of the application (2.5.1.6) and response No. 120 to the previous NOD do not mention the requirements for maintenance of the drainage system. Section 2.5.3.2 of the application indicates that an operations and maintenance plan will be prepared at some future date. Revise the application to include maintenance requirements for the run-on/run-off control system.

D-6k **Control of Wind Dispersion: 270.21(b)(5), 264.301(j)**

The application (Section 2.5.1.7) does not address the previous NOD comment, although response No. 120 suggested suspending waste placement operations and/or employing wind screens and fencing as necessary to control or prevent escape of wind-blown wastes. The revised application focuses solely on spraying water to limit dust escape. Since many wastes may not be dust or soil-like, and may consist of materials which could be more easily dispersed by wind, such as paper, cloth or building debris, additional control measures such as those mentioned in response No. 120 should be included in the landfill operating plans. In addition, the plans should account for tracking of wastes out of the active fill face area and the potential for subsequent dispersal. Cleanup of vehicle tires or treads may be advisable before allowing them to exit from the active face. Revise the application to provide effective means to control or prevent dispersal of wastes by wind. Provide a maximum wind speed, above which waste dumping and spreading operations will be halted; and differentiate between disposal operations below the perimeter road and operations above that elevation, where exposure to wind will be greatly increased.

I. CLOSURE PLANS

I-1a Closure Performance Standard: 270.14(b)(13), 264.111

The closure plan in the revised application proposes the same definition of the closure performance standard identified as unacceptable in the previous NOD. Closures of all units are to be followed by sampling of soil to determine if contamination exists. The single criterion to be used in these determinations is that no indicator parameter concentration should be more than three standard deviations above background. Response No. 147b and the revised application do not address the objections raised in the previous NOD, but simply restate the preference for this simple way of demonstrating compliance with clean closure requirements. Background samples are not proposed to be taken before operations begin, indicator parameters are not proposed, and the number and locations of background samples are not suggested. The probable absence of organic hazardous constituents in quantifiable concentrations is not addressed. The need to account for environmental and human health toxicity in the potential contaminants is not mentioned. The closure plan must be revised to address each of the above factors in developing specific and detailed procedures for demonstrating clean closure and adequate decontamination around the landfill. The number, locations and analytical parameters for background samples must be provided, etc.

Response 147d states that it is agreed that any concentrations found in closure confirmation sample analyses that are above the range of regional background values must be addressed in a comprehensive risk assessment. This statement contradicts the explicit language of both the original and the revised closure plans, as well as response NO. 147b. Three standard deviations above the mean of background values will almost always be far above the highest value in a normal population (i.e., a group of representative samples). Since a large difference of opinion clearly exists, it is even more important that the specific details of how the background and closure sampling will be performed. The application must be revised to provide a detailed sampling and analysis plan for determining background concentrations in the soils at and near the facility, prior to the start of operations (unless another means of demonstrating clean closure is provided).

I-1e(2) Disposal or Decontamination of Equipment, Structures and Soils: 264.112(b)(4), 264.114

Response 151 states that the information requested in the NOD comment was provided. However, review of the closure plan in the revised application failed to locate any mention of a commitment that any hazardous constituents left at a unit will not impact any environmental media in excess of Agency-established exposure levels and that direct contact will not pose a threat to human health or the environment (see Preamble 51 FR 16444, May 2, 1986). Revise the closure plan to include the above commitment.

I-1e(3)(b) **Cover Design: 264.310(a)**

The proposed cover design described in the closure plan (Section 8.1.6, Volume I) states the vegetative cover thickness as 2 feet, but the Engineering Report (Section 3.1.5 states that this layer is 2.5 feet thick. Revise the application to resolve this discrepancy.

I-1e(3)(e) **Grading and Drainage: 264.310(a)(3)**

The cover design does not provide any kind of outlet drainage for the geocomposite, at the toe of the cover. Revise the application to address the predicted effects of drainage of infiltrating precipitation off the cover. If increased erosion, root penetration at the outer limit of the cover, or other adverse effects are likely to occur, provide additional design features (e.g., perimeter drain piping) to minimize these effects.

TECHLAW, INC.

SUMMARY REVIEW OF TRIASSIC PARK RESPONSES TO FEBRUARY, 1997 NMED NOTICE OF DEFICIENCY DATED JUNE, 1997

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The following summary notes on the responses to the NOD comments considered both the initial responses in the June, 1997 document, and the actual modifications in the revised Part B application dated November, 1998. In many cases, the response appeared to be adequate, but the promised modifications to the application were not made, resulting in classification of the response as inadequate.

Comments 1-23

Not in TLI scope of work.

Comment 24

The response to this comment is inadequate. See new NOD Comment D-1.

Comment 25

The response to this comment is inadequate. See new NOD Comment D-1.

Comment 26

The response to this comment is adequate.

Comment 27

The response to this comment is adequate.

Comment 28

The response to this comment is inadequate. See new NOD Comment D-1a(3).

Comment 29

The response to this comment is adequate.

Comment 30

The response to this comment is adequate.

Comment 31

The response to this comment is adequate.

Comment 32

The response to part a of this comment is adequate. The descriptions of the tanks are provided in Section 2.3.

The responses to parts b and c of this comment is inadequate. See new NOD Comment D-2.

Comment 33

Stabilization Bins: The response to this comment is inadequate. See new NOD Comment D-2a(1).

Truck Wash Tank: The response to this comment is inadequate. See new NOD Comment D-2.

Comment 34

The response to this comment is inadequate. See new NOD Comment D-2.

Comment 35

The response to this comment is inadequate. See new NOD Comment D-2a(2).

Comment 36

The response to this comment is inadequate. See new NOD Comment D-2a(3).

Comment 37

The response to this comment is adequate.

Comment 38

The response to this comment is inadequate. See new NOD Comments D-2 through D-4.

Comment 39

The response to this comment is adequate. Section 2.6.3 of the application has been revised to state that "Hazardous wastes which may be placed in the

evaporation pond include all wastes listed in the Part A application (Volume I), provided that LDR treatment standards are met prior to placing the wastes."

Comment 40

The response to this comment is inadequate. This response references response 136. However, response 136 does not respond to the issues raised in this comment. Response 40b hinted at options of the leachate disposal which are contained in Comment 159 (I-2c). Response 159 states that the plan for discharge of treated leachate is addressed in response 40. However, response 40 does not address this issue. No new NOD comment was generated regarding this issue, since Post-Closure Plan review was not in the TLI scope of work.

Comment 41

The response to part a of this comment is inadequate. A long term exposure test is proposed to be conducted in the response, but is not addressed in the text of the application.

The response to part b of this comment is inadequate. Calculations which define the stresses on the evaporation liner system due to thermal expansion and contraction are provided in Section 4.2.3 of the revised permit application. See new NOD Comment D-4c.

Comment 42

The response to this comment is adequate. Bearing capacity evaluations and related information are provided in the Engineering Report and appendices.

Comment 43

The response to this comment is partially adequate. Detailed material specifications and construction installation specifications are included in Appendix C of the Engineering Report in the revised permit application. Design drawings labeled "not for construction" have also been provided, and a revised CQA plan is included. New NOD comments are provided in the relevant sections of the NOD pertaining to each unit.

Comment 44

The response to this comment is inadequate. The response states that "additional laboratory tests will be conducted on processed siltstone and mudstone samples to confirm their permeability characteristics." However, no results from these laboratory tests were presented in the revised application. See new NOD Comment D-4e(2).

Comment 45

The response to this comment is inadequate. The response indicates that a table previously submitted will be revised to indicate standard test methods used in the analyses for the soil liner material and the depth of sample location. The response also states that "dispersion and piping of the soil will be discussed in the engineering report for the landfill." However, none of this information was presented in the revised application. In addition, the response does not address whether the data presented in Appendices E and F of the original application are representative of the proposed soil liner materials. See new NOD Comment D-4e(2)(a).

Comment 46

The response to this comment is inadequate. The response states that the evaporation pond soil liner compatibility testing will be discussed in the engineering report, and promises to provide most of the information requested. However, none of this information is presented in the engineering report. See new NOD Comment D-4e(2)(b).

Comment 47

The response to this comment is partially adequate. The leak detection system is discussed in Section 4.2.6 of the revised application. See new NOD Comment D-4f(1).

Comment 48

The response to this comment is partially adequate. A conceptual discussion of the methods and equipment that will be used for measuring and recording the volume of liquids present in the sump is presented in Section 6.1.2 of the revised permit application. See new NOD Comment D-4f(7).

Comment 49

The response to this comment is partially adequate. With regard to the clay liner source for the evaporation pond, the application states that material for the evaporation pond compacted soil liner will be siltstone or mudstone obtained during landfill excavation. The response discusses the material's permeability, but states that additional laboratory tests will be conducted on processed siltstone and mudstone samples to confirm their permeability characteristics. See new NOD Comment D-4e(2).

Comment 50

The response to this comment is partially adequate. Discussion of the drainage layer and sump materials for the evaporation pond is presented in Section 2.6.1.2 of the revised application. However, no discussion of the piping material is presented. See new NOD Comment D-4g(1)(c).

Comment 51

The response to this comment is adequate. The information requested is in Appendix C - Construction Specifications.

Comment 52

The response to this comment is adequate. The information requested is now presented in Appendix C of the revised permit application in Specification 02221.

Comment 53

The responses to parts a and b of this comment are adequate. Separate sections are now provided for the clay liner in Appendices B and C

The response to part c of this comment is inadequate. No hydraulic conductivity test or results are provided in the revised permit application. See new NOD Comment D-4e(2).

The response to part d this comment is inadequate. No discussion on particle size of the clay liner is presented in the text of the application. However, Specification 02221, Item 2.01.B.3 states that the clay liner shall have "particles no larger than 2 inches (in largest dimension) after processing but prior to placement and no larger than 1 inch (in largest dimension) after placement and compaction." (This specification is different than indicated in the response.)

The response to part e of this comment is inadequate. References to soil admixing have been deleted from the application, because natural barrow material is believed to meet the permeability requirement. However, the application and Engineering Report do not address the concern in the original comment- that the permeability test results in Appendix E indicate that none of the tested shallow on-site soils provide the required low permeability. The text of the application and response No. 44 argue that the results presented in Appendix E and F "indicate that the unprocessed material has an intact permeability close to 1×10^{-7} cm/sec or less," and promise to conduct additional laboratory tests on processed siltstone and mudstone samples to confirm their permeability characteristics. However, no data from additional laboratory tests are presented with the revised application. See new NOD Comment D-4g(3).

The responses to parts f and g of this comment are partially adequate. A test fill plan is presented in Appendix A. However, the absence of adequate permeability data from laboratory testing strongly suggests that there may be problems in constructing clay liners that actually meet the required low permeability in the field. See new NOD Comment D-4g(3).

The response to part h of this comment is partially adequate. Although the response lists reasons for digging Test Pits in the clay liner during construction, the permit application and the relevant sections of the text, specifications, and CQA plan do not contain this information.

The response to part I of this comment is inadequate. See new NOD Comment D-4g(3).

The response to part j of this comment is partially adequate. In Table II-3 in Section II of the CQA Plan, some testing is proposed to occur less frequently than indicated in this comment. See new NOD Comment D-4g(3).

The response to part k of this comment is inadequate. The suggested statement (in the response) that "no waste shall be accepted at the site until NMED has reviewed the certification report" is not included in the application. See new NOD Comment D-4g(3).

Comment 54

The response to this comment is adequate. Discussions of the Action Leak Rate and Response Action Plan are presented in Section 4.2.7 (Volume I), the RAP is in Appendix G, Section 7.0, and the supporting calculations are presented in Appendix G-2, Volume IV. The proposed ALR is the minimum recommended by EPA.

Comment 55

The response to this comment is adequate. See Comment 54 above.

Comment 56

The response to this comment is partially adequate. See new NOD comment D-4(and Comment 54 above.

Comment 57

The response to this comment is inadequate. The statement that "operation of overtopping control systems" will be inspected is still in the text of the application. However, a description of the control systems is not provided. See

new NOD Comment D-4j.

Comment 58

The response to this comment is inadequate. A brief discussion of the availability of sufficient volume for 100 year - 24 hour storm is provided as a response. However, no such discussion is provided in the text of the application. The pond capacity and freeboard calculations are not provided. See new NOD Comment D-4j(3).

Comment 59

The response to this comment is adequate. The response states that "the structural integrity of the evaporation pond subgrade and any structural fill components will be addressed in the engineering report identified in Comment Response 38... In addition, provisions will be stipulated for future re-certifications if subgrade or structural fill conditions change or if the evaporation pond is out of service for longer than six months." As to the berm issue, the application states that "The purpose of the perimeter berm is to provide an anchor for geosynthetics and to provide surface water diversion and is not a structural component of the evaporation pond."

Comment 60

See Comment 59 above.

Comment 61

The response is partially adequate. The revised application provides more details of the proposed design, construction and operation of the landfill than were provided in the original application. See new NOD Comment D-6.

Comment 62

The response is adequate. The list of wastes in the Part A is referenced in Section 2.5.1.1 of the Part B application.

Comment 63

The response is adequate. The revised application (Section 2.5.1) does not include a proposed waiver from double liner requirements.

Comment 64

The response is adequate. (NMED determination.)

Comment 65

The response is adequate. (Not applicable; NMED determination.)

Comment 66

The response is adequate. (NMED determination.)

Comment 67

The response is adequate. (NMED determination.)

Comment 68

The response is partially adequate. Stability analyses for the protective soil cover on the constructed liner are provided in Appendix E-2. See new NOD Comment D-6c(3).

Comment 69

The response is partially adequate. Partial liners system design information is provided in Section 3.1 of the Engineering Report. See new NOD Comment D-6c(4).

Comment 70

The response is partially adequate. The revised application (Appendix C, Geocomposite specification 02710, pages 2 and 5) provides that the geocomposite to be supplied must be capable of withstanding outdoor exposure with no measurable degradation for at least 30 days, and must not be exposed for more than 30 days or the manufacturer's exposure limit (if that is longer). See new NOD Comment D-6c(5).

Comment 71

The response is inadequate. See new NOD Comment D-6d.

Comment 72

The response is adequate. Additional soil sample data is provided in Appendix D.

Comment 73

The response is adequate. Additional soil sample data is provided in Appendix D.

Comment 74

The response is not adequate. See new NOD Comment D-6d.

Comment 75

The response is not adequate. See new NOD Comment D-6d.

Comment 76

The response is not adequate. See new NOD Comment D-6d(4)(b).

Comment 77

The response is not adequate. See new NOD Comment D-6d.

Comment 78

The response is adequate. New material specifications for the liners are included in Appendix C, although the specific manufacturer has not been identified.

Comment 79

The response is not adequate. See new NOD Comment D-6e(1)(a).

Comment 80

The response is not adequate. See new NOD Comments D-6c(3) and D-6e(1)(a).

Comment 81

The response is not adequate. See new NOD Comment D-6e(1)(c).

Comment 82

The response is adequate. GCL specifications are included in Volume IV, Appendix C, Section 02780.

Comment 83

The response is partially adequate. Specifications are provided for the proposed GCL. See new NOD Comment D-6e(2)(b).

Comment 84

The response is inadequate. See new NOD Comment D-6e(2)(b).

Comment 85

The response is adequate. Shear testing of the GCL is reported in Volume V, Appendix D and slope stability calculations are in Appendix E-2.

Comment 86

The response is partially adequate. Partial design details are provided in Section 3.1.3, but only the Phase IA portion of the landfill is included. See new NOD Comment D-6e(2)(c).

Comment 87

The response is not adequate. See new NOD Comment D-6f(1).

Comment 88

The response is partially adequate. Geocomposite transmissivity is described in Section 3.1.3 of the Engineering Report in Volume III, and specifications are included in Appendix C, Section 02710. See new NOD Comment D-6f(2).

Comment 89

The response is partially adequate. Section 3.2.8 and Appendixes G-1 and G-2 provide information and calculations supporting the proposed design. See new NOD Comment D-6f(3).

Comment 90

The response is inadequate. See new NOD Comment D-6f(4).

Comment 91

The response is inadequate. See new NOD Comment D-6f(5).

Comment 92

The response is inadequate. See new NOD Comment D-6c(3).

Comment 93

The response is adequate. Pipe strength is addressed in Appendix E-26.

Comment 94

The response is inadequate. See new NOD Comment D-6f(7).

Comment 95

The response is inadequate. See new NOD Comments D-6f(1) and D-6f(3). (Note: Review of proposed leachate sampling, analysis and subsequent management plans were not included in the TLI scope of work.)

Comment 96

The response is inadequate. See new NOD Comment D-6g.

Comment 97

The response is adequate. Synthetic liner specifications are provided in Appendix C Section 02775.

Comment 98

The response is inadequate. See new NOD Comment D-6g(1)(b).

Comment 99

The response is inadequate. See new NOD Comment D-6g(1)(b).

Comment 100

The response is partially adequate. Uncertified construction specifications are provided as Appendix C of the Engineering Report. See new NOD Comment D-6g(2).

Comment 101

The response is inadequate. See new NOD Comment D-6e(1)(c).

Comment 102

The response is partially adequate. GCL and clay material and construction specifications are provided in Appendix C. See new NOD Comment D-6g(2)(b).

Comment 103

The response is adequate. Geomembrane specifications are included in Appendixes B and C.

Comment 104

The response is inadequate. See new NOD Comment D-6g(2)(d).

Comment 105

The response is partially adequate. The CQA Plan (Appendix B to the Engineering Report) does not include extraneous units or materials which are not proposed for use at the facility. See new NOD Comment D-6g(3).

Comment 106

The response is inadequate. See new NOD Comment D-6g(4).

Comment 107

The response is inadequate. See new NOD Comment D-6g(5).

Comment 108

The response is partially adequate. Action Leakage Rate calculations are provided in Appendix G-1. See new NOD Comment D-6h.

Comment 109

The response is inadequate. See new NOD Comment D-6h(2).

Comment 110

The response is inadequate. See new NOD Comment D-6i(1).

Comment 111

The response is partially adequate. A revised Response Action Plan is provided

(Appendix G-2). See new NOD Comment D-6i(2).

Comment 112

The response is partially adequate. Drainage system design is provided for Phase IA. See new NOD Comment D-6j.

Comment 113

The response is inadequate. See new NOD Comment D-6j.

Comment 114

The response is inadequate. See new NOD Comment D-6j.

Comment 115

The response is inadequate. See new NOD Comment D-6j.

Comment 116

The response is inadequate. See new NOD Comment D-6j.

Comment 117

The response is inadequate. See new NOD Comment D-6j.

Comment 118

The response is inadequate. See new NOD Comment D-6j(3).

Comment 119

The response is partially adequate. Construction and material specifications for soil and geomembrane liner materials are provided, but no plans beyond Phase IA are included. See new NOD Comment D-6j.

Comment 120

The response is inadequate. See new NOD Comment D-6j(5).

Comment 121

The response is inadequate. See new NOD Comment D-6k.

Comment 122

The response is inadequate. See new NOD Comment D-61.

Comments 123 - 146

Not in TLI scope of work.

Comment 147

The response to part a of this comment is adequate. The confusing statement is still in the application but is explained.

The response to part b of this comment is inadequate. See new NOD Comment I-1(a).

The response to part c of this comment is adequate.

The response to part d of this comment is inadequate. See new NOD Comment I-1(a).

Comment 148

The response to this comment is adequate. The revised closure plan indicates that a maximum of one-third of the total area of the top of the waste fill will require installation of the final cover at the time of facility (final) closure.

Comment 149

The response to this comment is adequate (see 148). Although the closure plan does not request an extension of the maximum time allowed for closure (180 days) for the evap ponds and landfill, the explanation of closure activities appears reasonable.

Comment 150

The response to this comment is adequate. Expanded descriptions of closure work are provided.

Comment 151

The response to this comment is inadequate. See new NOD Comment I-1e(2).

Comment 152

The response to this comment is inadequate. See new NOD Comment I-1e(3)(b).

Comment 153

The response to this comment is inadequate. See new NOD Comment I-1e(3)(e).

Comment 154

The response to this comment is adequate. Settlement is briefly discussed.

Comment 155

The response to this comment is adequate. Post-closure maintenance is briefly discussed (see 157).

Comment 156

The response to this comment is adequate. Frost penetration is addressed in the Engineering Report.

Comment 157

The response to this comment is generally adequate. A cover design is provided, although the question of relative permeability is not addressed (it is probably not possible to prove that the cover liner permeability will be less than or equal to that of the bottom liners). The question of drainage from the geocomposite is addressed in new NOD Comment I-1e(3)(e).

Comments 158 - 169

Not in TLI scope of work.