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To: Mr. Cornelius Amindyas
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2044 Galisteo
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Date: June 13, 1997

Reference: Job #602

Via: Fed X

Subject: RCRA Part B Permit Application Deficiency Comments

Per your request I have enclosed a hard copy of the RCRA Part B Permit Application Deficiency Comments and also a disk copy which is in Word Perfect 5.2 for Windows. Due to the fact that we had to convert the original file from Microsoft Word 7.0 to Word Perfect 5.2 for Windows, there may be some inconsistencies in formatting.

Please feel free to call me at (970) 879-6260 ext. 3303 if you have any questions.

Sincerely,

Patrick G. Corser
Vice President

RECEIVED
JUN 16 1997

cc: Larry and Dale Gandy
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TRIASSIC PARK

COMMENTS FROM ATK

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TRIASSIC PARK WASTE DISPOSAL FACILITY
Gandy Marley, Inc.
Tatum, New Mexico

RCRA PART B PERMIT APPLICATION DEFICIENCY COMMENTS
February 1997

Comment headings correspond to applicable items in the accompanying checklist, and 20 NMAC 4.1 Revised November 1, 1995 Section Numbers.

A. PART A APPLICATION: 20 NMAC 4.1 Subpart IX- ++"- 270.10(d), 270.11(a) and (d), 270.13

Comment 1.

The Part A application must be signed in accordance with 20 NMAC 4.1 Subpart IX at ' 270.11(a).

Response: *The original Part A Application was signed on November 17, 1994.*

Comment 1a.

(The facility must obtain an EPA ID number and includeinlcude it in the Part A)

Response: *The EPA ID number for the facility is NM0001002484.*

Comment 2.

A comment in section XIX of the Part A states that the impoundment is shown as "storage" in section XII. However, the storage designations in section XII appear to include only the container storage areas (not including the stabilized waste rolloff containers), while the 3.5 million gallon capacity is identified as T02 (treatment surface impoundment). Since the impoundment is to be used for treatment, the Part A must be revised to correct section XIX.

Response: *The Part A was revised to correct section XIX on February 14, 1995.*

Comment 3.

As explained in comment D-1, the Part A must be revised to include the stabilized waste rolloff storage area.

Response: *The Roll-off Storage Area will operate as a 90-day storage area, and does not need to be included in the Part A.* ***(Comment Response 25):*** *We disagree with the*

comment that the facility cannot operate the roll-off storage area as a 90-day storage area. The waste stored in this area will be resulting from treatment at the facility's stabilization treatment unit, and thus the facility is the generator. The definition of generator in 40 CFR 260.10 says, "Generator means any person, by site, whose act or process produces hazardous waste ..." The post-treatment hazardous waste produced by the stabilization treatment process at the facility will be different in physical and chemical form from the pre-treatment waste as received by the facility See the response to comment 25.

Comment 4.

As explained in comment D-2, the Part A must be revised to include the proposed landfill leachate storage tanks.

Response: *The landfill leachate storage tank will operate as a 90-day storage tank, and does not need to be included in the Part A. See the response to comment 32..* ***(Comment Response 32):*** *Leachate storage tanks illustrated on Figure G-12 of Attachment G (NMED April, 1996) will be chemically resistant double lined plastic tanks anchored to a concrete pad. An individual tank will be installed for each landfill phase. To prevent over filling, the tanks will be equipped with high level control switches which will automatically shut down the leachate collection or leak detection sump pumps. Pumps will be hard piped to the leachate storage tanks and flow meters will be installed to monitor leachate pumping into the landfill. All piping will be located within the concrete tank pad. The pad will be graded to drain back into the landfill so should a catastrophic tank or pipe failure occur, fluids will not drain to unlined areas. The pump control panel will be located outside the tank pad with electrical wiring enclosed in waterproof conduits.*

Figure G-12 will be revised to show dimensions of the leachate storage tanks, piping, and flow meter details, and concrete tank pad arrangement. The detailed design drawings, specifications and engineering report for the landfill will include the leachate storage tanks.

Comment 5.

The Part A indicates "U" as the unit of measure for the T01 units in section XII. This unit is not defined, and is not acceptable for use in the Part A. Revise the Part A to provide the correct unit.

Response: *The unit of "U" means gallons per day, and is listed in the Part A instructions for section XII as an appropriate unit of measure for T01 and T02 units.*

B. FACILITY DESCRIPTION

Comment 6.

B-2 Topographic Map

B-2a General Requirements: 20 NMAC 4.1 Subpart IX ' 270.14(b)(19)

The application does not provide appropriate scale maps to show the details and features of the facility and the surrounding area. The topographic maps presented in the application (Figures 1-2, 3-2, Plate 30-7) are at a scale of 1" = 1000' and 1" = 2000'. The application must include a topographic map that shows the facility as designed and a distance of 1,000 feet around it at a scale of 1 inch equal to not more than 200 feet. The map must include contours sufficient to show surface water flow in the vicinity of and from each operational unit (e.g., contours of 5 feet if relief is greater than 20 feet; contours of 2 feet if the relief is less than 20 feet). The map must include map date, 100-year floodplain area, surface waters, surrounding land uses, a wind rose, map orientation, and legal boundaries of facility site. The map must also indicate the location of access control, injection and withdrawal wells, buildings, structures, sewers (storm, sanitary and process), loading and unloading areas, fire control facilities, flood control or drainage barriers, runoff control systems, and (proposed) new and existing hazardous waste management units and solid waste management units. Note: Multiple maps may be submitted, but those which provide the above required information **must be at a scale of 1 inch equal to not more than 200 feet**.

Response: *In October 1996, a 1"=200' scale topographic map, with the information requested in this comment, was delivered to the NMED. This map was enlarged from the U.S.G.S. quadrangle map of 1"=2000'.*

Prior to starting final landfill design, the area will be flown in order to develop topopgraphic maps with 2-foot contour intervals. At that time, update 1"=200' maps will be generated

Comment 7.

B-2b Additional Requirements for Land Disposal Facilities: 20 NMAC 4.1 Subpart IX ' 270.14(c)(3) and (4)(I), ' 264.95, 264.97

The topographic map also must indicate the waste management area boundaries, the property boundaries, the proposed point of compliance, the proposed groundwater monitoring well locations, the locations of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility (including groundwater flow direction and rate). Note: Multiple maps may be submitted, but those which provide the above required information must be at a scale of 1 inch equal to not more than 200 feet. Also see groundwater comments in section E for recommendations on defining the uppermost aquifer.

Response: *There are currently no plans to conduct groundwater monitoring activities on the Gandy-Marley site. At the request of NMED, because the sediments to host the landfill are unsaturated within the site boundary, a vadose zone monitoring system will be developed for this project.*

Comment 8.

B-4 Traffic Information: 20 NMAC 4.1 Subpart IX ' 269,14(b)(10)

The application (section 1.5) does not address the information required by 20 NMAC 4.1

Subpart IX at ' 270.14(b)(10). Provide the following traffic related information:

a. Traffic patterns on site;

Response: *Figure G-2 NMED, April 1996) illustrates the Triassic Park Facility Layout. Two traffic corridors are shown which represent approximate locations of site traffic routes: the general facility access corridor and the waste processing corridor. The general facility access corridor, which is located around the perimeter of the facility, will serve as a clean access road for site vehicles and incoming waste haulers. The waste processing corridor, which is located to the south of the waste processing facilities, will serve traffic between the process facilities and the landfill. Traffic may pass from the general facility corridor to the waste processing corridor at various locations, however, all traffic will exit the waste processing corridor to the general facility access corridor through the truck wash facility. One exception to this will be construction vehicle traffic which will not come in contract with waste materials. For example, during construction, construction vehicles will need to access soil material stockpiles, material lay down areas, and construction equipment staging areas. Construction equipment traffic will be restricted from areas where waste processing and handling is taking place and will therefore not need to pass through the truck wash area to exit the site.*

Additional details regarding traffic patterns, traffic control, and on-site transportation of waste are discussed in the Draft Permit Attachment G, pages 6 and 7 of 46 (NMED, April 1996).

Figure G-2 will be modified to indicate traffic flow patterns between the general facility access corridor and the waste processing corridor, traffic control signage and additional truck staging areas near the truck wash facility. In addition, this information will be included in the design drawings for the facilities to be constructed at the site..

b. Estimated volumes, including number and types of vehicles;

Response: *The number of vehicles entering the site will vary depending on waste disposal volumes, the time of day, and site construction activities. Daily peak waste hauler traffic wil likely occur between the hours of 10:00 am and 4:00 pm daily. Site personnel vehicles will generally arrive before and leave after these peak business hours. Construction traffic will coincide with contractor work hours. Typically, contractor work schedules are offset from site personnel work hours to avoid traffic congestion at shift changes. Total incoming traffic volume may be as high as 300 vehicles per day.*

The types of vehicles entering the site will be those cars or trucks approved by the Department of Transportation to travel on State roadways. During facility construction, oversized vehicles transporting heavy earth moving equipment or facility equipment components may also enter the site.

c. Access roadway surfaces and load bearing capacity.

Response: *Site access roads will consist of an appropriate compacted subgrade material and will be surfaced with compacted gravel. The bearing capacity of the roadways will be*

commensurate with the average expected traffic volumes and vehicle loads such that roadways are safe, drain properly, and minimize deterioration and repairs and provide year round services.

C. WASTE CHARACTERISTICS

Comment 9.

C-1 Chemical and Physical Analyses: 20 NMAC 4.1 Subpart IX ' 270.14(b)(2), and Subpart V ' 264.13(a)

The waste analysis plan (section 4.3) does not provide comments to obtain and maintain adequate waste records at the facility. For each hazardous waste stream to be stored, treated or disposed at the facility, the information to be maintained in the facility operating record must describe the waste, the hazard characteristics, the basis for hazard designation, and provide a laboratory report detailing the chemical and physical analyses of representative samples. At a minimum, the records must include all theinformation that must be known to treat, store, or dispose of the waste in accordance with 20 NMAC 4.1 Subpart V at ' 264 and Subpart VIII at ' 268 requirements. Revise the application to identify the waste analyses, and other records specifically related to each waste stream, which will be maintained on-site.

The unit of "U" means gallons per day, and is listed in the Part A instructionsfor section XII as an appropriate unit of measure for T01 and T02 units.

Response: *The waste analysis records which will be maintained on site are listed in the Part B Application in Section 5.3, Waste Tracking System.*

Comment 10.

C-1a Containerized Waste: 20 NMAC 4.1 Subpart V ' 264.175, and Subpart IX ' 270.15(b)(1)

The container storage discussion (section 2.2) does not provide for testing of wastes in the rolloff storage area for free liquids. Section 2.2.2.1 states that "unstabilized" wastes which may contain free liquids will be stored in the west (incoming) side of the rolloff area. Section 6.4.7 indicates that only visual inspections willbe used to determine if free liquids are present in wastes proposed to be landfilled (e.g., in roll-offs). If containers of wastes are to be stored without a secondary containment system (as proposed for the stabilized waste rolloff storage area), the application must provide test procedures and results or other documentation or information to show that the wastes do not contain free liquids. The test results or other documentation must be recorded in the facility operating record. A suggested test for free liquids is the Paint Filter Liquids Test, Method 9095 in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods,: EPA Publication No. SW-846.

Response: *In the description of the stabilization unit in Section 2.4 of the Part B Application it states that "When the waste is sufficiently mixed, it will be tested for free liquids and sampled for TCLP tests, if necessary. It will then be transferred to a roll-off box and transferred to the roll-off box storage area to cure." Also, in the Waste Analysis Plan in Section 5.2.3 of the Application it states, "After wastes have been treated at the stabilization*

unit, they must be retested to determine if they meet LDR requirements prior to placement in the landfill. All solidified wastes will be tested for the presence of free liquids using thepaint filter test, and will be analyzed for other parameters based on the characterization of the waste before solidification."

Section 6.4.7 appears to be inconsistent. Therefore, section 6.4.7 will be revised to indicate that solidified waste will be tested for the presence of free liquid using the paint filter test.

Comment 11.

C-1b <u>Waste in Tank Systems</u>: 20 NMAC 4.1 Subpart V ' 264.190(a), ' 264.19(b)(2), and ' 264.192(a)(2)

The application (section 2.3 and 2.4) does not address compatibility of wastes and tank construction materials. From the information provided, it must be assumed that both the enclosed storage tanks and the stabilization "bins" will be constructed of bare steel. However, many of the wastes proposed for acceptance at the facility, such as strong acids, bases, and other reactive materials, may rapidly corrode or violently react with the tank shell Provide the hazardous characteristics of wastes to be handled in the tank systems, and demonstrate that the tank construction materials are compatible with the wastes to be stored in the tanks.

Response: *Handling of reactive materials, tank corrosion, tank assessments, tank inspection and tightness testing, and repair and certification of tank systems for the steel liquid waste storage tanks and stabilization bins is discussed in Draft Permit Attachment G pages 23 of 46 through 32 of 46 (NMED April 1996). The engineering report identified in Comment Response 38 will include a discussion of wastes to be excluded from storage or treatment in steel tanks due to the waste's excessive corrosive effects.*

Comment 12.

C-3a(1) <u>Spent Solvent and Dioxin Wastes</u>: 20 NMAC 4.1 Subpart V ' 264.13(a)(1), Subpart VIII ' '268.2(f)(1), 268.7, 268.30, and 268.31

Section 45.1.2 notes that dioxin wastes will not be accepted, but methods for complying with solvent waste treatment standards are not addressed. Describe procedures that will be used to determine whether F001-F005 spent solvent wastes meet the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology.

Response: *F001-F005 spent solvent wastes will not be disposed in the landfill unless treatment standards in 40 CFR 268 Subpart D are met. Procedures to determine whether solvent wastes meet the applicable standards will be the same as for other LDR wastes, as described in section 5.2.1.2 of the Part B Application.*

Comment 13.

C-3a(2) <u>California List Wastes</u>: 20 NMAC 4.1 Subpart V ' 264.13(a)(1), Subpart VIII ' ' 268.7, 268.32, 268.42(a), and RCRA section 3004(d)

a. The waste analysis plan does not address California wastes. Describe procedures

that will be used to determine whether a waste is a California list waste prohibited from land disposal and whether the waste is subject to treatment standards outlined in Subpart VIII at ' 268.42(a). Process knowledge can also be used to make this determination.

b. Although California list restrictions have largely become obsolete as treatment standards have been issued for specific hazardous wastes, California list restrictions still apply in the following instances:

c. Liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm.

d. Liquid characteristic wastes containing over 134 mg/l nickel and/or 130 mg/l thallium;

e. Characteristic wastes containing halogenated Organic Compounds (HOCs) at concentrations greater than or equal to 1000 mg/l (liquids) or mg/kg (solids), where the HOCs are not derived from listed hazardous wastes (i.e., F-, K-, P- or U-listed wastes); and

f. During any nation-wide extension to the effective date for either a characteristic or listed waste;

g. Newly listed or newly identified wastes are not subject to the California list prohibitions.

Response: *For incoming wastes, generator-supplied information, verified by waste analysis will tell the facility whether waste falls into categories subject to California list restrictions as described in section 5.2.1.2, which applies to all categories of LDR waste (including California list waste).*

Comment 14.

C-3a(7) **Lab Packs:** 20 NMAC 4.1 Subpart VIII ' ' 268.7(a)(7), 268.7(a)(8), 268.42(c), Subpart VIII Appendix IV, and Appendix V

a. The application (section 5) does not address requirements for acceptance of lab packs. Prior to being land disposed, the wastes, contained in a lab pack must meet all applicable treatment standards for each waste type. Describe procedures that will be used to determine whether lab-pack wastes meet the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. process knowledge can be used to make this determination. Discuss procedures to ensure lab pack wastes will meet land disposal requirements.

b. Alternatively, a generator can establish two general lab pack categories: (1) organometallic lab packs and (2) organic lab packs. Permissible waste code components of these two lab pack categories are listed in Appendix IV and Appendix V of Subpart VIII at ' 268. Treatment or organic lab packs requires incineration.

Treatment of organometallic lab packs requires incineration followed by treatment of the residue to meet D004, D005, D006, D007, D008, D010, and D011 characteristic waste treatment standards. Lab packs containing California list PCBs or dioxins must be treated according to special incineration requirements detailed in Subpart VIII at ' 268.4(a). Discuss procedures to ensue that lab pack wastes will meet land disposal requirements.

c. If lab pack hazardous waste is combined with non-lab pack hazardous waste prior to or during treatment, indicate that the entire mixture will be treated to metthe most stringent treatment standard for each waste constituent before being land disposed.

Response: *Lab packs are addressed in the Part B Application in section 2.5.3.7*

Comment 15.

C-3a(8) <u>Contaminated Debris</u>: 20 NMAC 4.1 Subpart VIII ' ' 268.2(g), 268.7, 268.9, 268.36, 268.45, and Subpart IX ' 270.13(n)

The application (Section 5) does not discuss acceptance or management of hazardous debris. Debris wastes are likely to be proposed for disposal during the active life of the facility, and on-site disposal of debris from demolition of storage and treatment units at the facility is planned (e.g., section 9.2.3.2). Identify how hazardous debris will be managed. Prior to land disposal the hazardous debris must be treated according to standards provided in Subpart VIII at ' 268.45 (except that debris contaminated with wastes having a specified treatment technology listed in ' 268.42 must be treated as required in ' 268.42). Alternatively, the hazardous debris may be treated to meet the existing treatment standards for each waste constituent specified in ' ' 268.41, 268.42, and 268.43. Note that hazardous debris that exhibits the characteristics of ignitability, corrosivity, or reactivity must be treated using one of the extraction, destruction, or immobilization technologies identified in Table 1 of ' 268.45.

Response: *The landfill will only accept debris which remains hazardous waste after treatment, in accordance with 40CFR 268.45(3)(c) which states that "Hazardous debris that has been treated using one of the specified extraction or destruction technologies in Table 1 of this section 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 on site will be treated to meet one of the standards listed in 268.45 Table 1 or treated to meet the applicable treatment standard for each hazardous constituent, or the debris will be sent off site if the necessary treatment capabilities are not available on site. Hazardous debris generated off site may be accepted at the facility if the necessary treatment capability exists.*

Comment 16.

C-3a(9) <u>Waste Mixtures and Wastes with Overlapping Requirements</u>: 20 NMAC 4.1 Subpart V ' 264.13(a)(1), Subpart VIII ' ' 268.7, 268.9, 268.41(b), 268.43(b), and 268.45(a)

a. The application (Section 5) does not address waste mixtures or wastes with overlapping requirements. Revise the application to provide procedures that will be

used to demonstrate that waste mixtures and wastes carrying multiple waste codes are properly characterized and meet treatment standards prior to land disposal. Wastes that carry more than one characteristic or listed waste code must be treated to the most stringent treatment requirement for each hazardous waste constituent of concern prior to land disposal.

b. Also revise the application to indicate that when wastes with differing treatment standards are combined solely for purposes of treatment, the most stringent treatment standard specified will be met for each constituent of concern in the combined waste prior to land disposal.

Response: *The application will be amended to add the following:*

Wastes that carry more than one characteristic or listed waste code must be treated to the most stringent treatment requirement for each hazardous waste constituent of concern prior to land disposal. When wastes with differing treatment standards are combined solely for the purposes of treatment, the most stringent treatment standard specified will be met for each constituent of concern in the combined waste prior to land disposal.

Comment 17.

C-3a(10) <u>Dilution and Aggregation of Wastes</u>: 20 NMAC 4.1 Subpart VIII ' 268.3

The application (sections 2.4 and 5) does not address the restrictions on dilution as treatment If the facility is to perform dilution or aggregation of hazardous wastes, the application must demonstrate that these activities will not be in violation of land disposal regulations. Listed wastes, if destined for land disposal, may never be diluted. Characteristic wastes that are not toxic (i.e., D001 through D003) may be diluted. Characteristic wastes that are toxic (i.e., D004 through D043) may be diluted only if: (1) the waste is to be injected underground and the characteristic is to removed prior to injection, 92) the waste has a concentration-based and not a technology-based treatment standard, is not a D003 reactive waste, and is being treated in a system pursuant to the Clean Water Act, or (3) the waste is not destined for land disposal. Provide specific discussion addressing this issue.

A facility cannot dilute or partially treat a listed waste to switch treatability categories (e.g., switch from non-wastewater to wastewater), in order to comply with different treatment standards. Note that dewatering technologies (i.e., filtration, centrifugation, etc.) that produce a wastewater fraction and a nonwastewater fraction are not considered to be impermissible category switching. Aggregation of wastes for treatment is not considered impermissible dilution, if wastes are all amenable to the same treatment.

Response: *The application will be amended to add the following:*

Dilution of restricted waste will not be used as a substitute for adequate treatment. Only treatment that destroys, removes or immobilizes prohibited wastes will be employed. Since the surface impoundment will only receive waste that is not prohibited from land disposal. The application will be amended to add the following:

Dilution of restricted waste will not be used as a substitute for adequate treatment. For non-

toxic hazardous characteristic waste, dilution is an acceptable form of treatment. For toxic chararacteristic wastes and listed wastes, if wastes are amenable to the same type of treatment, and aggregation is a part of treatment, then the aggregation step does not constitute impermissible dilution.

Comment 18.

C-3b <u>Notification, Certification, and Recordkeeping Requirements</u>: 20 NMAC 4.1 Subpart V ' 264.73, and Subpart VIII ' ' 268.7, and 268.9(d)

a. The waste analysis plan (5) does not provide adequate procedures for preparing and/or maintaining;

b. Applicable notifications and certifications to comply with land disposal restrictions; and,

c. Applicable notifications and certifications for treatment residues.

d. Revise the application to address the following requirements:

Response: *The waste analysis plan will be revised to indicate that waste generated on-site, as well as waste received from off-site will be managed in accordance with waste analysis and recordkeeping requirements in 268.7 as outlined in Section 5.*

Comment 19.

C-3b(7) <u>Recordkeeping</u>: 20 NMAC 4.1 Subpart V ' 264.73, Subpart VIII ' ' 268.7(a)(5), 268.7(a)(6), 268.7(a)(7), and 268.7(d)

a. Provide specific commitment and/or statements to demonstrate that the following requirements will be met:

b. Treatment, storage, and/or disposal facilities that manage wastes generated on-site must (1) determine if the waste is restricted from land disposal and keep documentation of that determination, and (2) maintain documentation to indicate where restricted wastes were treated, stored, and/or disposed.

c. Facilities managing wastes generated on-site that use only process knowledge to determine compliance with land disposal restrictions, must retain all data used to make this determination. If the owner/operator tests a representative sample of the waste to determine compliance with land disposal restrictions,all waste analysis data must be retained on-site in the facility's files.

d. The owner/operator of a treatment, storage and/or disposal facility managing any waste subject to land disposal restrictions must demonstrate that all notifcations and certifications submitted by waste generators or other treatment, storage and/or disposal facilities will be reviewed and will be maintained as part of the operating record until closure of the facility, in accordance with recordkeeping requirements of 20 NMAC 4.1 Subpart V at ' 264.73.

e. Land disposal facilities are required to keep records of the quantities and date of placement of each shipment of waste placed in a land disposal unit under an extension to the effective date of any land disposal restriction pursuant to Subpart VIII at ' 268.5, or a no-migration petition pursuant to ' 268.6.

Response: *The waste analysis plan will be revised to indicate that waste generated on-site, as well as waste received from off-site will be managed in accordance with waste analysis and recordkeeping requirements in 268.7 as outlined in Section 5..*

Comment 20.

C-3c <u>Requirements Pertaining to the Storage of Restricted Wastes</u>: 20 NMAC 4.1 Subpart VIII ' 268.50

The application does not address the prohibition on impermissible storage. An owner/operator of a treatment, storage and/or disposal facility storing hazardous wastes that are restricted from land disposal must demonstrate the (91) they are storing such wastes in tanks, containers, or containment buildings on-site and (2) such storage is solely for the purpose of accumulating sufficient quantities of waste to facilitate proper treatment, recovery, or disposal. If prohibited wastes are stored beyond one year, the owner/operator has the burden of proving, in the event of an enforcement action, that storage is for allowable reasons. Storage restrictions do not apply to wastes that:

1. Meet the applicable treatment standards; or
2. Have received a nationwide variance; or
3. Have received an exemption under Subpart VIII at ' 268.6; or
4. Have received a case-by-case extension under ' 268.5.
5. Revise the application to acknowledge the limitations on storage of restricted wastes.

Response: *The application will be revised to acknowledge the limitations on storage of restricted wastes. As outlined in Section 5, pProcedures will be in place at the facility so that waste will only be accepted that either (1) meets LDR treatment standards, or (2) is amenable to treatment using existing and available treatment capabilities at the facility. In accordance with (2), prohibited wastes will only be stored for the purposes of facilitating proper treatment, recovery, or disposal.*

Comment 21.

C-3c(1) <u>Restricted Wastes Stored in Containers</u>: 20 NMAC 4.1 Subpart VIII ' 268.50(a)(2)(I)

The application (sections 2.2 and 5.2.1.2) does not address the requirement to label containers received at the facility. Revise the application to provide for marking each container to identify its contents and the date each period of accumulation begins (i.e., the date of receipt).

Response: *Container labeling is addressed in section 2.2.9 of the application: "All containers of hazardous waste in storage will be labeled with a hazardous waste label identifying the contents of the container. The label will not be obstructed from view during storage." This section of the permit application will be revised to further indicate that the date of accumulation (i.e., the date of receipt) must also be clearly marked on the container.*

Comment 22.

C-3c(2) Restricted Wastes Stored in Tanks: 20 NMAC 4.2 Subpart VIII ' 268.50(a)(2)(ii)

The application does not address the requirement that restricted waste storage tanks must be clearly marked with descriptions of contents, the quantity of each hazardous waste received, and the date each period of accumulation begins, or such information must be recorded and maintained in the operating record at the facility for each restricted waste storage tank. Rrevise the application to explain how the facility will comply with this requirement.

Response: *Section 2.3 of the permit application will be revised to indicate that wastestorage tanks will be clearly marked with description of contents, the quantity of hazardous waste receivedrecieved, and the date each period of accumulation begins. Alternatively, the facility may choose to document this information in the facility operating record.*

Comment 23.

C-3c(3) Storage of Liquid PCB Wastes: 20 NMAC 4.1 Subpart VIII at ' 268.50(f)

The application is not clear in explaining whether high concentration PCB wastes will be accepted. Section 5.1.2 appears to exclude PCB liquids with concentrations above 50 ppm, but the number was originally 500. No further discussion is provided on the limitations on PCB acceptance. If liquid wastes containing concentrations of PCBs greater that or equal to 50 ppm will be stored at the facility, demonstrate that the facility will meet the requirements of 40 CFR 761.65(b). The owner/operator must describe procedures for removal of these wastes from storage within one year and treatment or disposal of the wastes in compliance with land disposal restrictions.

Response: *The facility will not accept PCB liquids with concentrations greater than orequal to 50 ppm. Therefore, 268 .50(f)40 CFR 761.65(b) does not apply.*

Comment 24.

D. PROCESS INFORMATION

The drawings and design information included in the application are not final, as noted in many locations. The application must be revised to provide final designs and specifications which demonstrate compliance with the requirements in 20 NMAC 4.1 Subpart V at ' 264. As explained in 20 NMAC 4.1 Subpart IX at ' 270.14(a), the design drawings, specifications and engineering reports justifying the designs must be certified by a registered professional engineer.

Response: *Final construction drawings and specifications for waste processing facilities will be submitted for NMED approval prior to construction. Detailed plans andengineering report which describe how the waste processing facilities will be located, designed, constructed, operated, maintained, monitored, inspected, and closed will be submitted for NMED approval prior to revision of the NMED Draft Permit. TheAll detailed plans and*

engineering report will be certified by a Professional Engineer registered in the State of New Mexico. Final construction drawings and specifications for waste processing facilities will be submitted for NMED approval prior to construction.

Comment 25.

D-1 Containers: 20 NMAC 4.1 Subpart IX ' 270.15, Subpart V ' ' 264.170 through 264.178

a. The roll-off storage area described in Section 2.2.2 of the application (page 2-4) is proposed to consist of two pieces. 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, 20 NMAC 4.1 Subpart III at ' 262.34, applies only to generators of hazardous waste. The term "generator" is defined in ' 260.10, and the applicability of the exemption from permitting requirements is explained in Notes 1 and 2 to 20 NMAC 4.1 Subpart III at ' 262.10. The Gandy Marley facility will not be the generator of wastes placed in this storage area, and the wastes will be disposed on-site. Therefore, the stabilized waste rolloff area cannot be operated as a less than 90-day storage area. The stabilized waste portion of the rolloff storage area must be included in, designed and operated as part of the permitted rolloff container storage unit. Both the Part A and

b. both the Part A and Part B applications must be revised to include the stabilized waste rolloff storage area.

c. The checklist provided with the application does not include any references to the proposed container storage areas. Although references are not required, the checklist is incomplete, and it is difficult to determine where information intended to demonstrate compliance with the container storage requirements is located.

Response: *We disagree with the comment that the facility cannot operate the roll-off storage area as a 90-day storage area. The waste stored in this area will be resulting from treatment at the facility's stabilization treatment unit, and thus the facility is the generator. The definition of generator in 40 CFR 260.10 says, "Generator means any person, by site, whose act or process produces hazardous waste ..." The post-treatment hazardous waste produced by the stabilization treatment process at the facility will be different in physical and chemical form from the pre-treatment waste as received by the facility*

Comment 26.

D-1a Containers with Free Liquids

The container storage discussion (section 2.2.2) does not provide any commitment to ensure that roll-offs containing free liquids will not be placed in the rolloff storage area. Therefore, the rolloff area (both portions) must be designed to manage wastes which may contain free liquids (see following comments).

Response: *The incoming roll-off containers will be stored in the half of the roll-off storage area that has secondary containment, as described in section 2.2.2.1 of the Application. The*

other half of the storage area will store only post-treatment wastes that do not contain free liquids. All stabilized wastes will be tested for free liquids using the paint filter test prior to leaving the stabilization building, as described in the response to comment 10.

Comment 27.

D-1a(2) Container Management Practices: 20 NMAC 4.1 Subpart V ' 264.173

The application (section 2.2) does not address compliance with ' 264.173. Describe the container management practices that will be used to ensure that 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. Include a discussion of procedures and equipment for transporting containers across the facility.

Response: *Section 2.2.10 of the Part B Application describes keeping containers closed except when adding or removing waste. The section will be expanded to include not storing in a manner that may cause containers to rupture or leak. Procedures for transporting containers across the facility are not required under 264.173.*

Comment 28.

D-1a(3) Secondary Containment System Design and Operation: 20 NMAC 4.1 Subpart IX ' 270.15(a)(1), Subpart V ' ' 264.175(a), 264.175(d)

The conceptual design drawing for the Drum Handling Facility (Figure 2-2) 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. Provide final dimensioned drawings, final design discussion, and material and construction specifications for the secondary containment systems. Indicate the areas in which incompatible wastes will be stored.

Response: *Final construction drawings and specifications for the Drum Handing Facility will be submitted for NMED approval prior to construction. Detailed plans andengineering report which describes how the Drum Handling Facility will be located, designed, constructed, operated, maintained, monitored, inspected, and closed will be submitted to NMED approval prior to revision of the NMED Draft Permit. The detailed plans and engineering report will be certified by a Professional Engineer registered in the State of New Mexico.*

The detailed plans will include dimensions for the drum floor layout and sumps. The engineering report will include engineering calculations which identify minimum requirements for the foundation soil and concrete floor coatings. It is expected that final details for the concrete floor will include a sand foundatin layer on top of the secondary containment geomembrane. The sand layer would provide protection for the geomembrane and would allow liquids that migrate below the concrete floor to flow to the sump areas. The sumps will be filled with a free draining gravel that will provide structure support for the

sump trench, if required.

b. If roll-off storage of stabilized waste is not restricted to wastes which do not contain free liquids, the stabilized waste storage area design must be revised to include a containment system as required to comply with 20 NMAC 4.1 Subpart V at ' 264.175(b).

Response: *The unlined roll-off storage area is intended as a staging area for roll-off bins containing stabilized waste awaiting TCLP test results and landfill disposal approval. This area will be restricted to wastes which do not contain free liquids. Stabilized waste loads will be tested for free liquids using the paint filter test prior to exiting the stabilization facility. Stabilized waste loads not meeting the paint filters test will be reprocessed using a modified treatment recipe before being allowed to exit the stabilization facility. Roll-off bins containing stabilized wastes which pass the paint filter test will be covered before exiting the stabilization facility and will remain covered while they are staged in the roll-off area.*

Comment 29.

D-1a(3)(a) <u>Requirement for the Base or Liner to Contain Liquids</u>: 20 NMAC 4.1 Subpart V ' 264.175(b)(1)

The application does not include final design drawings, descriptions, or material and construction specifications for either the container storage building (sections 22.1 and 2.2.4) or the roll-off area (section 2.2.2). However, the roll-off area is proposed to have a soil surface. The application must be revised to provide a sufficiently impervious base, because there is no commitment to ensure that free liquids will not be present in either the incoming or stabilized waste roll-off containers.

Response: *Permit Attachment G page 20 of 46 discusses free liquids in roll-off containers. If free liquids are detected in roll-off boxes during inspection of the roll-off box when it enters the facility, the generator will be contacted and efforts will be made to convince the generator to prioritize handling of the load to eliminate the free liquids. If the generator finds this unacceptable, the loads will not be admitted to the facility. Otherwise, the free liquids will be removed from the load using a vacuum truck. Following removal of free liquids from the roll-off box, if the waste is to be stabilized, it will be staged at the incoming roll-off storage area and processed at the earliest practicable time. If the waste is to be directly landfilled, it will be allowed into the landfill for disposal only after all the free liquids have been removed and the waste load passes a paint filter test.*

b. The container storage building discussion (section 2.2.1.1) does not address the requirement in ' 264.175(b)(1) for the storage area base to be sufficiently impervious to contain releases. However, section 9.2.1.3 notes that the concrete floor in the drum handling facility will be "uncoated". Uncoated concrete is not adequately impervious, and will absorb liquids even where typical cracking, surface erosion, and construction joints do not exist. Revise the application to provide for surface coating of the drum handling building floor.

Response: *A chemically resistant epoxy coating (or equal) will be applied to the concrete floor in the Drum Handling Facility. Minimum requirements for the chemically resistant*

costing will be identified in the detailed design drawings, specifications, and engineering report as stated in Comment Response 28a.that will be submitted to NMED for approval.

c. For both the storage building and the roll-off area, provide information to demonstrate the capability of the base to contain liquids, including:

1. Statement that base will be free of cracks or gaps;

Drum Handling Facility

Response: *- The concrete floor in the Drum Handling Facility will be constructed free of cracks or designed and cnstructed free of joints, cracks, or gaps. THowever, we realize that concrete slabs will crack. Therefore, the floor will be inspected regularly during the operational life of the facility to determine if any cracks or gaps have developed. Should cracks or gaps develop in the concrete, repairs will be made immediately. The nature of the repair will depend on the extent of the cracking and could range from application of chemically resistant epoxy fillers or coatings to replacement of the concrete floor.*

Roll-Off Storage Area

Response: *The roll-off storage area will consist of two cells: a lined incoming waste caell and an unlined stabilized waste cell as described in the Draft Permit on pages 19 through 22 of 46 and illustrated on Figure G-6 (NMED April, 1996). A concrete slab is not included in the roll-off storage area.*

2. Demonstration of imperviousness of base to wastes and precipitation;

Drum Handling Facility

Response: *The Drum Handling Facility will be enclosed in a building and will therefore not be exposed to precipitation. The roof of the building will extend over the unloading dock area to ensure precipitation does not enter the building. In addition, the base includes a concrete floor slab underdrain by a geomembrane liner. Minimum requirements for the chemically resistant coating placed on the floor of the Drum Handling Facility will be identified in the detailed design drawings, specifications and engineering engineering report as stated in Comment Response 28a.*
that will be submitted to NNED.

Roll-Off Storage Area

Response: *The cell used to stage stabilized waste roll-off bins will have a geomembrane liner, geocomposite drainage layer, and sump to collect and remove precipitation. The geomembrane liner will be installed according to construction specifications and quality control and quality assurance guidelines to assure its imperviousness.*

The cell used to stage stabilized waste roll-off bins will not have a liner system and will therefore not be impervious, however, precipitation will be controlled within the cell.

3.. Base design and materials of construction (including "impervious" coating);

Drum Handling Facility
Response: *The base of the Drum Handling Facility will consist of a prepared subgrade consisting of appropriate non-swelling soils placed at moisture and density ranges which will possess bearing capacities capable of supporting expected loads due to the building's structural components, stored waste, and mobile equipment traffic inside the building. The subgrade will be overlain by a 60-mil, 80-mil, or 100-mil geomembrane liner upon which the steel reinforced concrete floor will be constructed. As mentioned previously in Comment Response 28a, a chemically resistant epoxy coating (or equal) will be placed on the surface of the concrete floor.*

Roll-Off Storage Area

Response: *The base of the lined cell will consist of (from bottom up): a prepared subgrade, a 60-mil or 80-=mil geomembrane liner, a geocomposite drainage layer, and a select fill roadbase surface. A drain and sump will be incorporated into the drainage layer. The unlined cell will consist of a select fill graded to drain as shown on Figure G-6 (NMED April, 1996).*

4. . Engineering evaluation of structural integrity of base; and

Drum Handling Facility

Response: *As stated in Comment Response 28a, the engineering report will include engineering calculations which identify minimum requirements for the foundation soil and concrete floor coatings.*

Roll-Off Storage Area

Response: *As stated in Comment Response 28a, the engineering report will include engineering calculations which identify minimum requirements for the foundation soil.*

5.. Discussion of compatibility of base with wastes.

Drum Handling Facility

Response: *The engineering report will present a discussion of concrete floor coatings compatibility with wastes.*

Roll-Off Storage Area

Response: *The engineering report will present a discussion of liner component material compatibility with wastes.*

Comment 30.
D-1a(3)(c) <u>Containment System Capacity</u>: 20 NMAC 4.1 Subpart IX ' 270.15(a)(3), and Subpart V at ' 264.175(b)(3)

The application states (sections 2.2.1.1 and 2.2.4) that the drum storage cells will include a sump and trench with capacity of at least ten percent of the containers in the cell, but does nct provide dimensioned design drawings or calculations to demonstrate compliance with the requirement. Containment capacity of the rolloff area is described similarly(section 2.2.2.1). Provide calculations that demonstrate that the containment systems will have sufficient capacity to contain at least 10% of the volume of the containers in each cell (or roloff area). 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 (e.g., ramps) in the containment system. For the exposed rolloff storage area, the containment capacity calculation must also include precipitation from at leastthe 25 year, 24 hour storm.

Drum Handling Facility

Response: *Dimensions of the Drum Handling Facility cells and drum storage capacities are discussed on page 19 of 46 of the Draft Permit (NMED April, 1996)./ Each containment cell will hold approximately 160 drums. Assuming an average drum volume of 55 gallons, 10 percent of the volume of these containers is 880 gallons (118 cubic feet). The drain and sump for each drum cell will be dimensioned such that the storage capacity will be a minimum of 118 cubic feet. Figure G-5 will be modified to include requested sump and drain dimensions and the engineering report will present sump and drain volumetric computations.*

Roll-Off Area

Response: *The 25-year, 24-hour storm event at the Triassic Park Facility is approximately 4.8 inches. The berms surrounding the roll-off storage area will be 4-feet high as described in Attachment G page 20 of 46 of the Draft Permit (NMED April, 1996). FigureG-6 will be modified to include dimensions for the cells, sumps, and drain and the engineering report will present sump and drain volumetric computations including total volume of the containers, containment structure capacity, and volume displaced by the containers and other structures. The containment capacity will include precipitationfrom at least the 25-year, 24-hour storm event.*

Comment 31.

D-1a(3)(e) <u>Removal of Liquids from Containment System</u>: 20 NMAC 4.1 Subpart IX ' 270.15(a)(5), and Subpart V ' 264.175(b)(5)

The application does not address removal of liquids from the container storage building sumps. Removal of "rainfall" from the roll-off area is mentioned (section 2.2.2.1), but the method of removal and management of removed liquids is not discussed. Spilled or leaked waste and accumulated precipitation must be removed from the sumps or collection areas in a timely manner to prevent overflow of the containment system. Describe theprocedures and equipment to be used during liquids removal. Provide dimensioned sump and piping drawings, if applicable. Specify the methods for determining whether the removed material is a hazardous waste and for handling it as such.

Removal of Liquids from Drum Handling Facility Sumps

Response: *LCRS and LDS sumps in the Drum Handling Facility will be checked regularly for the presence of liquid. If liquids are present, samples will be obtained and chemically analyzed to determine the nature and concentration of any waste constituents and select an appropriate treatment or disposal method. Pumpable quantities of liquid will be removed from the LCRS or LDS sumps using a vacuum truck. Liquids collected will then be handled according to the predetermined treatment or disposal method. Because the Drum Handling Facility in enclosed in a building, accumulation of precipitation in the sumps is not considered. likely to occur.*

Figure G-5 will be modified to include requested sump and drain dimensions and the engineering report will present sump and drain volumetric computations.

Removal of Liquids from Roll-Off Area Sumps

Response: *Removal of precipitation and containment and detection of releases in the Roll-Off Area is discussed in Permit Attachment B page 19 through 21 of 46 (NMED April, 1996). Precipitation in the Roll-Off Areas will be collected from the sumps using pumps or vacuum trucks. Samples of sump liquids will be chemically analyzed to determine the presence and concentration of any waste constituent and an appropriate treatment or disposal method will be selected.*

Comment 32.

D-2 <u>Tank Systems</u>: 20 NMAC 4.1 Subpart IX ' 270.16; Subpart V ' ' 264.19 through 264.194; and Subpart III ' 262.10

a. The application does not describe the tanks proposed for storing leachate adjacent to the landfill leachate collection sump access pipes. Section 2.5.1.3 mentions the plan to place leachate in temporary storage tanks, and a tank is shown on Figure 2-10, Detail A. Revise the application to include descriptions and design details for the leachate storage tank systems.

Response: *Leachate storage tanks illustrated on Figure G-12 of Attachment G (NMED April, 1996) will be chemically resistant double lined plastic tanks anchored to a concrete pad. AOn individual tank will be installed for each landfill phase. To prevent over filling, the tanks will be equipped with high level control switches which will automatically shut down the leachate collection or leak detection sump pumps. Pumps will be hard piped to the leachate storage tanks and flow meters will be installed to monitor leachate pumping into the landfill should a catastrophic tank or pipe failure occur. All piping will be located within the concrete tank pad. The pump control panel will be located outside the tank pad with electrical wiring enclosed in waterproof conduits.*

Figure G-12 will be revised to show dimensions of the leachate storage tanks, piping, and flow meter details, and concrete tank pad arrangement. The detailed design drawings, specifications and engineering report for the landfill willinclude the leachate storage tanks.

b. Although not discussed in the text, these tanks may be intended to be used as less than 90-day storage units. As noted regarding the proposed less than 90-day roll-off container storage area (comment D-1), the generator regulations in 20 NMAC 4.1

Subpart III ' 262 do not apply to wastes received for storage, treatment or disposal at a commercial facility from off-site generators. Landfill leachate treatment or disposal is proposed (section 2.6.4.1) to occur in the evaporation impoundment, or in the stabilization bins, before placement in the landfill (as proposed for leakage removed from the impoundment sump, in section 2.6.1.2). Therefore, the exemption from permitting in ' 262.34 does not apply to these tanks. This determination is explained in detail in Notes 1 and 2 to ' 262.10. Both the Part A and Part B applications must be revised to include the leachate storage tanks.

c. The application does not describe the proposed methods for collecting and storing wastewater and sludge from the truck wash (shown on Figure 2-1). If the wastewater is derived from hazardous wastes (as expected), the collection sump(s) and storage tank(s) may be classified as tanks.

Response: *The tanks used for storing landfill leachate are intended to be used as 90-day storage units, and therefore they are not included in the Part A or Part B permit applications. The facility disagrees with the commenter that generator regulations in 40 CFR 262 do not apply; clearly they apply in the case of landfill leachate, which can only be generated at a landfill.*

The wastewater and sludge generated at the truck wash will also be managed in 90-day storage units. Because these wastes will be newly generated at the facility, the 40 CFR 262 regulations would apply.

Comment 33.

D-2a <u>Tank Systems Description</u>: 20 NMAC 4.1 Subpart IX ' 270.14(b)(1), and Subpart V ' 264.194(a)

The tank discussion in section 2.4 includes only the four enclosed liquid waste storage tanks. The four stabilization "bins" are also apparently intended to be permitted as tanks (see discussion in section 2.4.1). The tank descriptions in both sections are incomplete. Provide descriptions of the type (i.e. aboveground and vaulted), materials of construction, and actual volume of each tank (including stabilization bins and leachate storage tanks, and truck wash tanks, if applicable) in the tank section.

Liquid Waste Receiving and Storage Facility Tanks

Response: *The Liquid Waste Receiving and Storage Facility is discussed in Permit Attachment G pages 23 through 28 of 46 and is illustrated on Figure G-7 (NMED April, 1996)./ Included in the discussion is a description of the tanks, the concrete tank containment vault, concrete coatings, containment, leak detection, and spill and overfill prevention features. Also included is a description of management of incompatible wastes, management of ignitable or reactive wastes, inspections, tank assessments, corrosion protection, installation and tightness testing, and repair and certification of the tanks systems. Nominal dimensions of the bins are given as 25 feet long by 12 feet wide by 12 feet deep resulting in an approximate volume of 130 cubic yards each. The ends of the bins will be shaped to conform to the reach profile of the backhoe mixing equipment selected for use in the stabilization facility. The width of the bins will also narrow towards the ends to permit the*

backhoe to mix the bin contents without moving from a single working point. These adjustments to the dbin dimensions will marginally reduce the approximate volume as determined from the nominal dimensions. Both inner and outer bins will be constructed of steel. Steel thickness and ribbing will be determined during final structural design of the bins. The final bin design will be performed by and certified by a Professional Structural Engineer registered in the State of New Mexico.

Truck Wash Tanks

Response: *Tanks for the Truck Wash Facility are not discussed in Permit Attachment G. The design of this facility has not yet been developed, however, it is envisioned that this facility will consist of two gross decontamination bays and a drive through wheel and undercarriage wash bay. The gross decontamination bays will be used to wash out residual material from truck beds or decontaminate landfill equipment prior to maintenance. The drive through wheel wash will be used to remove soils from the wheels, wheel wells, or undercarriages of commercial waste haul trucks prior to exiting the facility. Both wash areas will be constructed using epoxy coated (or equal) reinforced concrete underlain by a geomembrane liner. Both areas will also have sump arrangements to collect wash water and separate and collect residues. Clean wash water tank(s) and rinsate water tank(s) and ancillary piping and pumps will be located near the wash bays within the extent of the truck wash's lined area. Truck wash rinse water collected in the sumps will be pumped to the rinsate storage tanks. After sufficient volume has accumulated in the tanks, fluid samples taken form the tank will be chemically analyzed and an appropriate treatment or disposal method will be selected. The rinsate tanks will be chemically resistant double lined plastic tanks located above ground. To prevent overfilling, the tanks will be equipped with high level shut off switches which will shut down feed pumps before liquid levels reach the top of the tanks.*

Comment 34.

D-2a(1) <u>Dimensions and Capacity of Each Tank</u>: 20 NMAC 4.1 Subpart IX ' 270.16(b)

The application provides only "approximate" capacity for the liquid tanks (section 2.3) and "normal" dimensions for the stabilization bins (section 2.4), while the landfill leachate storage tanks are not mentioned. Provide the dimensions and capacity of each tank. Provide details of the actual shape of the stabilization bins (e.g., are the ends spheroid or cylindrical?).

Response: (Comment Response 33) *See Comment Response 33 regarding Stabilization Bins and Liquid Waste The Liquid Waste Receiving and Storage Facility is discussed in Permit Attachment G pages 23 through 28 of 46 and is illustrated on Figure G-7 (NMED April, 1996) Included in the discussion is a description of the tanks, the concrete tank containment vault, concrete coatings, containment, leak detection, and spill and overfill prevention features. Also included is a description of management of incompatible wastes, management of ignitable or reactive wastes, inspections, tank assessments, corrosion protection, installation and tightness testing, and repair and certification of the tanks systems. Nominal dimensions of the bins are given as 25 feet long by 12 feet wide by 12 feet deep resulting in an approximate volume of 130 cubic yards each. The ends of the bins will be shaped to conform to the reach profile of the backhoe mixing equipment selected for use in the stabilization facility. The width of the bins will also narrow towards the ends to permit the backhoe to mix the bin contents without moving from a single working point. These*

adjustments to the bin dimensions will marginally reduce the approximate volume as determined from the nominal dimensions. Both inner and outer bins will be constructed of steel. Steel thickness and ribbing will be determined during final structural design of the bins. The final bin design will be performed by and certified by a Professional Structural Engineer registered in the State of New Mexico.

***(Comment Response 32a)**: Storage Facility Tanks.*
Leachate storage tanks illustrated on Figure G-12 of Attachment G (NMED April, 1996) wil be chemically resistant double lined plastic tanks anchored to a concrete pad. An individual tank will be installed for each landfill phase. To prevent over filling, the tanks will be equipped with high level control switches which will automatically shut down the leachate collection or leak detection sump pumps. Pumps will be hard piped to the leachate storage tanks and flow meters will be installed to monitor leachate pumping into the landfill should a catastrophic tank or pipe failure occur. All piping will be located within the concrete tank pad. The pump control panel will be located outside the tank pad with electrical wiring enclosed in waterproof conduits.

Figure G-12 will be revised to show dimensions of the leachate storage tanks, piping, and flow meter details, and concrete tank pad arrangement. The detailed design drawings, specifications and engineering report for the landfill willinclude the leachate storage tanks.

See Comment Response 32a regarding landfill Leachate Storage Tanks.

Comment 35.

D-2a(2) <u>Description of Feed Systems, Safety Cutoff, Bypass systems and Pressure Controls</u>: 20 NMAC 4.1 Subpart IX ' 270.16(c), and Subpart V ' 264.194(b)

The application does not include any details of the piping and other ancillary equipment which will be part of the tank systems. Provide descriptions and drawings of the feed systems, spill prevention controls, safety cutoff, bypass systems, and pressure controls (e.g., vents).

***Response: See(Comment Response 36)** Piping and instrumentation diagrams (P&ID) and process flow diagrams (PFD) will be prepared for reach tank system. The engineering report will include descriptions of the feed systems, spill prevention controls, safety cutoffs, bypass systems, and pressure controls.*

Comment 36.

D-2a(3) <u>Diagram of Piping, Instrumentation and Process Flow</u>: 20 NMAC 4.1 Subpart IX ' 270.16(d)

The application does not address the information requirements of ' 270.16(d). Provide a diagram of piping, instrumentation and process flow for each tank system.

***Response:** Piping and instrumentation diagrams (P&ID) and process flow diagrams (PFD) will be prepared for reach tank system. The engineering report will include descriptions of the feed systems, spill prevention controls, safety cutoffs, bypass systems, and pressure controls.*

Comment 37.

D-2a(4) Ignitable, Reactive, and Incompatible Wastes: 20 NMAC 4.1 Subpart IX ' 270.16(j), Subpart V ' ' 264.17(b), 264.198, 264.199

a. The application indicates that ignitable and reactive wastes may be managed in both the large storage tanks and the stabilization bins. However, only general paraphrases of the regulation are provided in sections 2.3.5 and 2.4.5. The application must be revised with specific and definite commitments to ensure that ignition or unintended reactions will not occur. The application must provide details of how the tanks will be designed and operated to ensure compliance with ' 264.198.

b. The application must demonstrate that when ignitable or reactive wastes are to be managed in stabilization tanks, the wastes will be treated, rendered or mixed before or immediately after placement in the tank system so that they are no longer ignitable or reactive, and that ' 264.17(b) is compiled with (see checklist item F-5b). This means that the application must provide detailed procedures prescribing the actions that will be performed to treat ignitable or reactive wastes. Simply repeating the regulation is not adequate.

c. The application must demonstrate that when wastes are stored in the liquid storage tanks, the wastes will be protected against ignition or reaction by specific design and/or operating provisions.

d. The application must be revised to demonstrate that incompatible wastes will not be placed in the same tank system unless ' 264.17(b) is complied with (see checklist item F-5b). Provide procedures assuring that hazardous waste will not be placed in a tank that previously held an incompatible waste or material unless it has been decontaminated or unless precautions have been taken per ' 264.17(b) to prevent reactions (see checklist item F-5).

Response: *Prior to treating wastes in the stabilization unit, wastes will be tested to determine the appropriate reagent formula, as discussed in sections 2.4 and 5.2.3. Alternatively, the facility may use the same treatment procedures and reagents that were used on the same or similar wastes previously treated. 40 CFR 264.17(c) allows the operator to demonstrate compliance with requirements for ignitable, reactive, or incompatible wastes using data from trial tests, waste analyses, or the results of the treatment of similar wastes by similar treatment processes.*

Section 2.3.5 of the application lists specific procedures to be used for the liquid storage tanks: "Ignitable or reactive wastes will not be placed into any tank system unless the tank system is protected from sources of ignition by the use of signs prohibiting smoking, open flames or welding, an inert atmosphere blanket, or enclosed vents isolated from sources of ignition."

Precautions to be used for incompatible wastes are discussed in sections 2.3.2 and 2.4.2 for the storage tanks and stabilization tanks, respectively. The facility response to NOD comment #20 provides additional details on cleaning the stabilization bins and backhoe bucket between loads of incompatible waste.

Comment 38.

D-4 Surface Impoundments

a. The general description of the proposed surface impoundment design (section 2.6.1) is adequate.

However, many design and operation details are not adequately specified. Similar concerns are explained in comments on the landfill (section D-6 of this review). Most of the remainder of section 2.6 consists of paraphrases of the regulations, without the specific design information and/or commitments which are necessary to demonstrate that the impoundment will be constructed and operated in compliance with those regulations.

b. If the landfill comments are adequately addressed in a revised application, much of that new information will also be applicable to the impoundment, e.g., shallow soil characterization, and material and construction specifications for the liner system, leak detection system, foundation, and run-on/runoff control. Therefore, these types of comments are not repeated in the following impoundment comments. The main difference in the impoundment and landfill liner designs is the "standard" compacted clay liner proposed for the impoundment. the impoundment liner comments are therefore focused on the clay liner. However, a revised application should address the applicable runoff control and other (landfill) comments in the revised impoundment design/operating plans.

Response: *Detailed design drawings, specifications, engineeringreport, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, stormwater control features, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit..*

Comment 39.

D-4a List of Wastes: 20 NMAC 4.1 Subpart IX ' 270.17(a)

The application (section 2.6.3) references a list of wastes (in section 2.5.1.1) which will not be placed in the impoundment. Provide or reference a list of hazardous wastes which will or may be placed in the impoundment.

Response: *The application will be revised to state that :"Hazardous wastes which may be placed in the surface impoundment include all wastes listed in the Part A application, provided that LDR treatment standards are met prior to placing the wastes in the impoundment."*

Comment 40.

D-4b Liner System Exemption Requests

D-4b(2) Exemption Based on Alternative Design and Location: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' 264.221(d)

a. The post-closure plan (section 9.3.4.2) states that treated landfill leachate will be used to irrigate cap vegetation or released to the stormwater retention basin,

which is an unlined impoundment. The plan does not explain how this proposed activity could be defined as a discharge to the waters of the United States, or how it would result in removal of the F039 leachate hazardous waste code. The proposed disposal of treated leachate by both of these means would apparently constitute uncontrolled releases of hazardous wastes. This approach to leachate disposal is not acceptable unless the applicant can provide a reasonable explanation of the NPDES discharge rule which provides for a permit for this (no discharge) activity, and thereby exempts such (point source only) discharges, through ' 261.4(a)(2). In the absence of such explanation, the liner exemption request implied in the post-closure plan must be denied.

b. Reasonable options appear to exist for the disposal of leachate during the post-closure period, as explained in comment I-2c.

Response: *Please see the facility response to NOD comment 136.*
Please see the facility response to NOD comment 136. ***(Comment Response 136):*** *Section 2.2.12 and 6.5.3 of the Part B Application address separation of incompatible wastes.*

Comment 41.

D-4c <u>Liner System, General Items</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1)
D-4c(5) <u>Liner System Exposure Prevention</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' 264.221(a)(1)

a. The application does not address potential degradation and damage to the exposed primary impoundment liner. The application must demonstrate that if long term exposure of the liner occurs as proposed (i.e., for 30 years or more), that such exposure will not result in unacceptable degradation of or damage to the liner. Provide the manufacturers written recommendations for acceptable exposure limitations for hazardous waste containment.

Response: *The design and operation of the evaporation pond is discussed din Permit Attachment G pages 11 through 18 of 46 and illustrated on Figure G-3. As indicated in Permit Attachment G, a 60-mil HDPE geomembrane material will be used for the primary liner component. At various time during the life of the evaporation pond, the primary liner will be exposed to the effects of weather, direct sunlight, and chemical constituents of the pond fluids. Due to the relative newness of HDPE geomenbranes in applications of this type there is not a great deal of historical long term performance information available in the range of 30 years. HDPE liners have been shown to be chemically resistant to landfill leachates based on operational performance and on EPA 9090 compatibility. Tests conducted on actual landfill leachates and systematically generated leachates. Manufacturer's written recommendations for acceptable exposure limitations and lifetime for the 60-mil HDPE geomembrance will be presented in the engineering report* ***(see Comment Response 38)****.: Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

In addition, a long term exposure test will be conducted on the HDPE geomembrane. A test strip of 60-mil HDPE geomembrane material used in the construction of the evaporation pond will be placed on top of the primary liner. The test strip will extendfrom the anchor trench to the bottom of the evaporation pond and will be secured by weights over its length. The test strip will have seams similar to those used in the construction of the evaporation pond liner. After 10, 15, 20, 25, and 30 years of operation, samples from the test strip will be obtained and tested using the same manufacturer and installation rests required in the specifications. If the geomembrane material exhibits significant degradation in its physical properties or seam strengths, action will be taken to remove or repair the exposed liner.

b. Since the liner system will be exposed to direct sunlight and severe alternative (hot/cold) temperature extremes, the application must also provide calculations defining the stresses on the liner system due to thermal expansion and contraction.

Response: *Calculations which define the stresses on the evaporation liner system due to thermal expansion and contraction will be provided in the engineering report* ***(see Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit..*

Comment 42.

D-4d **<u>Liner System, Foundation</u>**

See landfill comments under D-6d. (Comment 71 page 24)

Response: *Near surface Quaternary soils were characterized from bulk samples obtained from the basal portion of backhoe pits excavated to a depth of approximately 12 ft. The backhoe pits were located within 10 ft of the borehole locations indicated on the table in the Triassic Park Hazardous Waste Facility Part B Application, Appendix E entitled "Tabulation of Test Results Bulk Samples" (GMI 12/94). The evaporation pond liner system will be located on top of the excavated subgrade which will be located approximately 12 to 25 ft below the existing ground surface. At this depth the basal portions of the landfill will lie in either the Quaternary sand or Upper Dockum units. Bearing capacity evaluations to be presented in the engineering report will demonstrate that either of these units will adequately serve as a foundation for the evaporation pond. Near surface evaporation pond slope areas will be located on top of Quaternary soil materials. The engineering report will also present bearing capacity evaluations for the evaporation pond subgrade within the Quaternary soil materials and stability evaluation of any load bearing embankments. Detailed design drawings for the evaporation pond will be submitted as indicated in Comment Response 38. The drawings will show geologic contact elevations, landfill subgrade elevations, and any load bearing embankments.*

Comment 43.

D-4e **<u>Liner system, Liners</u>**

D-4e(1) **<u>Synthetic Liners</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V '**

264.221(a) and (c)

Material and construction specifications must be included in the application (see landfill line comments).

Response: *Detailed material property specifications and construction installation specifications will be included in the detailed design drawings, specifications, CQA plan and engineering report for the pond liner.* ***See (Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submittedto NMED prior to revision of the existing Draft Permit.*

Comment 44.

D-4e(2) <u>Soil Liners</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' ' 264.221(a), 264.221(c)(1)

The application includes some soil analyses and hydraulic conductivity test results in Appendices E and F. However, the application does not discuss whether the material tested will be used to construct the impoundment soil liner. The application must identify clay borrow material proposed for the soil liner, provide 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, and indicate if the soil will be amended or conditioned in any way other than moisture adjustment. Detailed final soil liner material specifications must be provided.

Response: *Material for the evaporation pond compacted soil liner will be claystone siltstone or mudstone obtained during landfill excavation within the Upper Dockum. During landfill excavation, appropriate claystone siltstone and mudstone materials will be stockpiled and if necessary, conditioned such that compacted soil liner specifications are met. See Comment Response 38 regarding soil liner material specifications. The test results presented in Appendices E and F indicate that the unprocessed material has an intact permeability close to $1x10^{-7}$ cm/sec. Therefore, with processing we believe that the material can be processed, placed and compacted to meet the permeability specification of $1x10^{-}$ cm/sec or less. Additional laboratory tests will be conducted on processed siltstone and mudstone samples to confirm their permeability characteristics.*

Comment 45.

D-4e(2)(a) <u>Material Testing Data</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), subpart V ' 264,221(c)

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, or not. 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 Appendices E and F can be provided, additional testing needs may be minimal. (However, the shallow Quaternary soils have not been

adequately samples 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 liquid through the soil liner layer.

Response: *Near surface Quaternary soils were characterized from bulk samples obtained from the basal portion of backhoe pits excavated to a depth of approximately 12 ft. The backhoe pits were located within 10 ft of the borehole locations indicated on the table in the Triassic Park Hazardous Waste Facility Part B Application, Appendix E entitled "Tabulation of Test Results Bulk Samples" (GMI 12/94). This table will be revised to indicate standard test methods used in the analyses and the depth of the sample location. Dispersion and piping of the soil will be discussed in the engineering report for the landfill.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 46.

D-4e(2)(b) <u>Soil Liner Compatibility Data</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' 264.221(a)(1)

The application does not address soil liner compatibility with liquids whichmay 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 liquids 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 test 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 similarliquids, 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: *Evaporation pond soil liner compatibility testing will be discussed in the engineering report. Changes in soil liner hydraulic conductivity will be evaluated by conducting permeability testing using leachate as a permeating fluid. However, since no actual site leachate is available either a synthetic leachate will be used for the compatability tests or existing published results will be submitted until some actual leachate is provided. Test procedures, test methods, leachate sources, and complete test results will be included in the engineering report.* ***(see Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe*

existing Draft Permit.

Comment 47.

D-4F(1) Systems Operation and Design: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' ' 264.221(c)(2), 264.221(c)(4)

The application provides only a general conceptual overview of the proposed leak detection system (section 2.6.1.2), quoting from the regulatory requirements. The application must be revised to describe the final design features of the leak detection system and how the system will function to detect any leakage through the primary liner in a timely manner.

Response: *Evaporation pond liquid which leaks through the primary geomembrane will flow down slope in the geocomposite drainage layer to the LCRS/LDS sump. Fluid buildup will be detected through weekly monitoring of the sump.* ***See (Comment Response 38)*** *regarding evaporation pond detailed desi: Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.gn.*

Comment 48.

D-4f(7) Liquid Removal: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' ' 264.221(c)(2)(v), 264.221(c)(3)

Section 2.6.1.2 states that liquid will be removed from the impoundment sump as required by ' 264.221(c)(3). Such a "promise to comply" is not an adequate demonstration that the unit will be constructed and operated in a manner which will comply with the requirement. The application must be revised to provide final design details for the sump and the liquid removal method, which will collect and remove liquids from the sump and prevent liquids from backing up into the drainage layer. The application must describe the methods and equipment that will be used for measuring and recording the volume of liquids present in the sump, and of liquids removed.

Response: *Methods and equipment to be used to measure and record liquid handling volumes during evaporation pond operation will include survey monuments and elevation rods, flow meters, and fluid level transducers. Elevation rods will be placed in the evaporation pond following pond construction. The rod will be fixed to a ballasted base which will rest on the primary geomembrane liner. The rods will have graduated markings from which pond liquid elevations and critical freeboard levels can be observed and pond volumes can be determined. Rod elevations will be checked periodically by survey. Flow meters will be used to record volumes of liquid dishcarged into the pond and removed from the LDS drainage system sump. Fluid level transducers will be used to determine the fluid levels in the LDS system sump. The transducers will be able to provide a reading for the liquid levels in the sump at any time during operations.*

See (Comment Response 38) : regarding design details.*Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond,*

and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit.

Comment 49.

D-4g <u>Liner System, Construction and Maintenance</u>

D-4g(1) <u>Material Specifications</u>

D-g(1)(b) <u>Soil Liners</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' 264.221(a)

Section 2.6.2.4 states that 3 feet of clay will be installed as the bottom liner, but does not indicate where the clay will come from or what characteristics will be used to determine its acceptability for use in the liner. The application must be revised to provide final specifications, including specific barrow area locations and depths. The soil liner material specifications should indicate the maximum particle size and require the removal of roots and other unsuitable material.

Response: *(**See Comment Response 38):** Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draf Permit. **(Comment Response 44):** and 44 regarding evaporation pond soil liner.*

Material for the evaporation pond compacted soil liner will be siltstone or mudstone obtained during landfill excavation within the Upper Dockum. During landfill excavation, appropriate siltstone and mudstone materials will be stockpiled and if necessary, conditioned such that compacted soil liner specifications are met. The test results presented in Appendices E and F indicate that the unprocessed material has an intact permeability close to $1x10^{7}$ cm/sec. Therefore, with processing we believe that the material can be processed, placed and compacted to meet the permeability specification of $1x10^{7}$ cm/sec or less. Additional laboratory tests will be conducted on processed siltstone and mudstone samples to confirm their permeability characteristics

Comment 50.

D-4g(1)(c) <u>Leak Detection System</u>: 20 NMAC 4.1 Subpart ' 270.7(b)(1), Subpart V ' 264.221(a)

The application must provide detailed final material specifications for:

a. Drainage layer material;
b. Piping; and
c. Sump drainage material.

Response: *(**Comment See Comment Response 38):** Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit*

Comment 51.

D-4g(2) Construction Specifications

The text of the application (section 2.6) does not describe soil liner construction methods. Section 2.6.2.5 references section 2.5.2.3, which mentions the Construction Quality Assurance Plan in Appendix A. However, the CQA Plan also does not provide construction specifications. The application must be revised to include final construction specifications for all impoundment components.

Response: *The detailed construction specifications for the soil liner will be included with the design drawings, specifications and CQA Plan for the landfill. The specification will indicate the performance criteria for the soil liner and limited construction methods. The overall methods for construction of the soil liner will be developed by the contractor. The CQA Plan will identify the observations and tests required to determine that the performance criteria for the liner are being met.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit* See Comment Response 38

Comment 52.

D-4g(2)(b) Soil Liner: 20 NMAC 4.1 Subpart IX ' 270.17(b)(1), Subpart V ' ' 264.221(a), 264.226(a)(2)

The application must be revised to describe procedures for constructing the soil liner. Include:

a. Method of compaction;
b. Degree of compaction and moisture content that must be achieved;
c. Lift thickness;
d. Methods to be used to alter the water content of the soil;
e. Scarification requirement between lifts; and
f. If applicable, method of amending the soil.

Response: *The details for processing, placement, compaction and trimming of the soil liner will be detailed in the specifications for the landfill. See Comment Response 38****(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 53.

D-4g(3) Construction Quality Assurance Program: 20 NMAC 4.1 Subpart IX ' ' 270.17(b)(1), 270.17(b)(4), 270.30(k)(2), Subpart V ' ' 264.19, 264.229(a)

Response: *The CQA plan presented in Perrnit Attachment G: Appendix G (NMED April 1996) will be revised to include a discussion regarding CQA of geosynthetic clay liners, as*

well as, the following:

a. The CQA Plan (Appendix A) provides incomplete details of the Construction Quality Assurance (CQA) Program to be used during construction of the liner system. In addition to the necessary revisions noted in comment D-6g(3), the CQA Plan must be revised to address the following deficiencies specifically related to the impoundment soil liner.

b. Section 6 of the CQA Plan attempts to cover all types of earthwork in 9 pages. Clay liner inspections and testing receive as much attention as "general earthfill" and liner protective cover soil. Several omissions, discrepancies and mistakes indicate that the clay liner should be addressed separately and more carefully. The application must be revised to address the following deficiencies:

Response: *The CQA Plan will be revised to provide a separate section for the clay liner material.*

c. Section 6.2.2 does not include hydraulic conductivity testing to evaluate material for use as clay liner.

Response: *Hydraulic Conductivity will be included to evaluate material for use as clay liner.*

d. Section 6.2.3.2 states that natural soil used for clay liner may have to be processed to remove particles greater than 4 inches in the smallest dimension (should be largest).

Response: *Section 6.2.3.2 will be revised to indicate processing of clay particles with a nominal particle size of 4 inches.*

e. Section 6.2.3.2 contains a subsection on Soil/Bentonite Admix Material. This material is not mentioned in the application text (section 2.6), although it is apparently needed, as the permeability test results in Appendix E indicate that none of the tested shallow on-site soils provide the required low permeability. However, the CQA Plan provides no test methods or documentation requirements to confirm the quality of commercial bentonite procured for the Triassic Park project. A laboratory testing program is recommended to determine the design mix, but no information on the program is included. The CQA Plan does not suggest any means to confirm that the field production is adequately close to the design mix (i.e., percent bentonite). Special mixing equipment and mix control methods are necessary to produce a relatively uniform mixture, but these concerns are not mentioned. The test methods in section 6.5 and Tables 1, 2 and 3 do not include any tests for bentonite content.

Response: *As indicated in Comment Response 44, the material to be used for the clay liner component in the evaporation pond will be Upper Dockum siltstone or mudstone borrowed from excavation of the landfill. It is not envisioned that this material will require additional soil admixing with bentonite to meet hydraulic conductivity requirements. The section referring to soil admixing will therefore be deleted from the CQA plan.*

f. The Test Fill description in section 5.2.3.2 is very sketchy (2 paragraphs). The description states that the equipment and procedures to be used will be the same as those to be utilized during project construction, but the need to use the same soil (Soil/Bentonite Admix) is not mentioned. Although the Test Fill will be very small compared to the impoundment liner, the CQA Plan does not provide for more frequent testing of compaction or permeability. The plan does not suggest the most accurate means of determining permeability of the test fill- the sealed double ring infiltrometer. Several laboratory tests of "undisturbed" samples from the test fill should be compared to the infiltrometer test results to calibrate interpretation of lab permeabilities from the impoundment liner.

Response: *The CQA Plan will be modified to include a complete test fill plan for compacted soil liner material. Test fill construction, sampling procedures, test methods, and test result reporting and analyses will be specified.*

g. Section 6.4 indicates that hydraulic conductivity test samples will be taken from the "test fill and/or clay liner." This indefinite suggestion is unacceptable. A minimum number of samples must be taken from the test fill. If the long-term infiltrometer test is used, a fairly small number of lab tests will be needed (e.g., 6). If the infiltrometer is not used, the number of lab tests should be doubled, at least. A larger number of tests may be necessary if the bentonite mixing system is not very well controlled. The method of obtaining samples from the test fill and impoundment liner is not mentioned, and must be specified.

Response: *The CQA Plan will be modified to include a complete test fill plan for compacted soil liner material. Test fill construction, sampling procedures, test methods, and test result reporting and analyses will be specified.*

h. Section 6.7 indicates that Test Pits may be dug in the clay liner during construction. There is no suggestion of why test pits might be necessary, or what purpose they would serve.

Response: CQA monitors will have the authority to direct contractors to excavate test pits in the compacted soil liner material to expose areas for testing as required. This may include visual observations for lift bonding, removal of shelby tube samples, or removal of unsuitable material.

I. The CQA Plan requirements for earthwork appear to incorporate all construction inspection and testing into tasks to be performed by CQA personnel. There are no provisions for contractor construction quality control (CQC), with observations, inspections and audits by the CQA staff, as found in typical clay liner construction projects. The geomembrane seam testing discussion in section 7.6 of the CQA Plan is an example of the typical approach. The application should explain why Gandy Marley is taking this approach to the liner quality control, since it is explicitly discouraged in the EPA **Technical Guidance Document: Quality Control and Quality Assurance for Waste containment Facilities** (page 3, first full paragraph).

Response: *We acknowledge that a perfect earthworks CQC program would require that the*

construction contractor perform the earthworks quality control testing for particle size, moisture content, plasticity, insitu density and permeability. However, a more recent guidance document entitled Waste Containment Facilities, Guidance for Construction Quality Assurance and Quality Control of Liner and Cover Systems, by David E. Daniel and Robert M. Koerner, dated 1995, indicates under a definition of CQC that "... Construction Quality Control (CQC) refers to measures taken by the installer or contractor to determine compliance with the requirements for materials and workmanship as stated in the plans and specifications for the project. Although there has been a long history of CQC in the geosynthetics industry, earthwork contractors have historically relied heavily upon information provided by the CQA process to control their operations and have traditionally not had strong, internal CQC programs." However, the CQA plan will be revised to distinguish CQC and CQA responsibilities including evaluation of earthwork and geosynthetic Installer CQC plans.

j. Tables 1, 2 and 3 contain several clay liner testing frequencies which are less frequent than recommended in the EPA **Technical Guidance Document**. The soil apparently proposed to be used in the Triassic Park impoundment liner is primarily silt (Appendix E: 11 of 14 samples from less than 140 deep, tested for permeability). Since bentonite amendment will apparently be necessary (although this is not admitted in the application), the testing frequencies should be increased above the typical EPA frequencies. This is especially necessary because the proposed tests are intended to serve as both CQC and CQA tests. The test frequency discrepancies noted in the initial review are listed below. All of the frequencies in the three tables should be compared with EPA recommendations and revised or justified if different.

EPA	Gandy Marley	
Table 1 Particle size (1 test per)	800 cy	7,500 cy
Permeability	4,000	15,000
Table 2 Particle Size	800	1,000
Atterberg Limits	800	1,000
Compaction	4,000	5,000
Permeability	860*	5,000
Table 3 Moisture/Density	172**	10,000 ft^2 or 6 per lift***

*1 test/acre/lift
**5 tests/acre/lift
***These numbers do not make sense

	EPA	Gandy Marley
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Compaction	4,000	5,000
Permeability	860*	5,000
Table 3 Moisture/Density	172**	10,000 ft^2 or 6 per lift***

*1 test/acre/lift

**5 tests/acre/lift
***These numbers do not make sense

Response: *The testing frequencies for both pre-construction and post-construction will be reviewed. Recommendations outlined in "same ref. as previous comments..." will be used as basis for testing frequencies.*

k. Provide a statement that waste shall not be received in the unit until Gandy Marley has certified that the CQA program has been successfully completed, and that the unit meets construction requirements.

Response: *Section 3.4 of the CQA Program in Appendix A indicates that at the completion of the work, the CQA certifying engineer shall submit to the Gandy Marley Inc. project manager a final certification report that indicates that the work has been performed in compliance with the plans and specifications. An additional statements will be added that no waste shall be accepted at the site until NMED has reviewed the certification report.*

Comment 54.

D-4h <u>Action Leakage Rate</u>: 270.17(b)(5), 264.222
D-4h(1) <u>Determination of Action Leakage Rate</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(5), Subpart V ' 264.222(a)

The application specifies the action leakage rate for the surface impoundment (section 2.6.4.7), but the actual flow capacity of the leak detection system (geonet) is not provided (because the impoundment design has not been prepared). The action leakage rate is defined in ' 264.222(a) as the maximum design flow rate that the leak detection system can remove without the fluid head on the bottom liner exceeding 1 foot. Section 2.6.1.1 states that the geonet drainage layer will "eliminate any head from developing" on the liner, without any supporting calculations or discussion of the design. This unsupported assertion does not demonstrate that the proposed ALR, combined with the final liner and leak detection system design, will comply with the requirement to limit the maximum head to 1 foot. The application must be revised to include final design details for the liner and leak detection system, and calculation of the actual maximum flow rate to the sump with head not exceeding 1 foot at any point on the bottom liner.

Response: *The engineering report will include a section dedicated to the evaporation pond LDS action leakage rate. LDS drainage layer flow capacity, LDS sump capacity, fluid head calculations and flow rate conversions will be included, as well as, response actions for ALR exceedance.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 55.

D-4h(2) <u>Monitoring of Leakage</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(5), Subpart V ' 264.222(b)

Section 2.6.4.7 states that the average daily flow rate will be calculated to determine if the action leakage rate (ALR) has been exceeded. However, the application does not explain how the person responsible for this calculation will convert the leakage rate monitoring data (determined by measuring the volume of liquid removed from the sump) to an average daily flow rate (gallons per acre per day). The application must be revised to provide the standard equation for performing the conversion. The ALR may be converted to a volumetric flow rate (gallons per day) to simplify future calculations.

Respone: (Comment Response 54): *The engineering report will include a section dedicated to the evaporation pond LDS action leakage rate. LDS drainage layer flow capacity, LDS sump capacity, fluid head calculations and flow rate conversions will be included, as well as response actions for ALR exceedance.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit*

Comment 56.

D-4i <u>Leakage Response Action Plan</u>: 20 NMAC 4.1 Subpart V ' 264.223
D-4i(1) <u>Response Action</u>: 20 NMAC 4.1 Subpart V ' 264.223(a)

Section 2.6.4.8 refers to the landfill (section 2.5.3.9) Response Action Plan. this approach to specifying the required responses to exceedance of the impoundment ALR is confused and likely to result in future noncompliance. Most of the response actions in section 2.5.3.9 do not apply to the impoundment. In addition, the impoundment can be completely emptied to allow repairs anywhere on the liner. This would be an entirely reasonable and necessary response to a significant leak in the impoundment liner. This response is included as a last resort in response to "sudden drops", in section 2.6.4.3, but it is not included in the landfill Response Action Plan in section 2.5.3.9. Revise the application to provide a separate Response Action Plan for the impoundment. Include in that plan the complete emptying of the impoundment if necessary to locate and repair a leak above the ALR.

Response: (Comment Response 54): *The engineering report will include a section dedicated to the evaporation pond LDS action leakage rate. LDS drainage layer flow capacity, LDS sump capacity, fluid head calculations and flow rate conversions will be included, as well as response actions for ALR exceedance.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit*

Comment 57.

D-4j <u>Prevention of Overtopping</u>: 20 NMAC 4.1 Subpart IX ' 270.17(b)(2), 264.221(g)
Section 2.6.4.3 states that the freeboard level will be inspected, and that "operation of overtopping control systems" will also be inspected. However, the application does not indicate what overtopping control systems will exist at the impoundment. Revise the

application to fully describe the design and/or operating procedures that will provide protection against impoundment overtopping/overflow. Describe the function of the berm.

Response: *Pond over topping will be controlled operationally by maintaining evaporation pond fluid levels below the freeboard elevation and by ensuring that any storm water runoff from surrounding areas is diverted around the evaporation pond. The berm surrounding the evaporation pond illustrated on Figures G-3 and G-4 of Permit Attachment G (NMED April, 1996) the will serve to divert storm water from flowing into the pond and will also function to anchor the pond liner geosynthetics. Grading of the areas surrounding the evaporation pond and any necessary surface water diversion features will be included in the surface water management design.*

Comment 58.

D-4j(3) Overtopping Prevention: 20 NMAC 4.1 Subpart IX ' 270.17(b)(2), 264.221(g)

Unless foolproof controls are employed to prevent overtopping, provide the results of calculations showing that adequate freeboard will be available following a 100-year, 24-hour storm. Appropriate calculations include flood routing and show that the peak discharge is greater than the peak inflow, or that there is sufficient storage volume to store the entire design storm and any excess inflow.

Response: *The 100 year - 24 hour storm event is 6.0 inches for the Triassic Park Facility.. The evaporation pond will have sufficient volume and freeboard capacityto contain the entire design storm. Storm water inflow will be directed to flow around the facility. The details of the pond capacity and freeboard calculations will be presented in the pond detailed design drawings.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 59.

D-4k Dike Stability

D-4k(1) Engineer's Certification: 20 NMAC 4.1 Subpart IX ' 270.17(d), Subpart V ' 264.226(c)

Section 2.6.1.3 states that the surface impoundment berm will not function as structural support for containing waste. That section also states that the entire impoundment will be "excavated", but design and existing natural elevations at the impoundment are not included in the application. These statements appear to be the justification for not addressing dike certification as required by ' 264.226(c). However, the definition of "dike" in 20 NMAC 4.1 Subpart I ' 260.10 and Subpart V ' 264.226(c) includes the "berm" and constructed foundation sideslopes of the impoundment. The application must be revised to provide a statement by a qualified engineer that he (or she) will provide written certification attesting to the structural integrity of the impoundment berm and constructed sideslopes, upon completion of construction. In addition, the application must provide for certification to be repeated in the future, after any extended period (six moths or more) when the impoundment

was out of service).

Response: The structural integrity of the evaporation pond subgrade and any structural fill components will be addressed in the engineering report identified inComment Response 38. The detailed design drawings will show existing and regraded topography and the engineering report will include a written certification attesting to the structural integrity of the evaporation pond's subgrade and structural fill. In addition, provisions will be stipulated for future re-certifications if subgrade or structural fillconditions change or if the evaporation pond is out of service for longer than six months. 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.

In addition, as part of the CQA Program the CQA engineer will certify that the pond was constructed in accordance with the design drawing and specifications.

Comment 60.

D-4k() Dike Design Description: 20 NMAc 4.1 Subpart IX ' 270.17(b)(3), Subpart V ' 264.221(h)

Section 2.6.2.3 (Berm Construction) does not specify "berm" construction materials. The function of the berm is not explained. Section 2.6 does not mention foundation materials at the impoundment location. As noted in landfill comments, the near-surface soils contain sand, gravel and caliche, which may not be acceptable as foundation (dike or berm) materials Depending on the proposed functions and final design details, additional requirements may be applicable to the berm(s). The application must be revised to provide data and drawings specifying final design layout and elevations of the dike (berm) and its components, including materials of construction. Demonstrate the capability of the dike (berm) to withstand failure from expected static and dynamic loads and the effects of erosion.

Response: (Comment Response 59): *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. The detailed design drawings will show existing and regraded topography and the engineering report will include a written certification attesting to the structural integrity of the evaporation pond's subgrade and structural fill. 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. 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.*

In addition, as part of the CQA Program the CQA engineer will certify that the pond was constructed in accordance with the design drawing and specifications.

Comment 61.

D-6 Landfills: 20 NMAC 4.1 Subpart IX ' ' 270.14(a), 270.21, Subpart V ' ' 264.300 through 264.317

The landfill design provided in the application (section 2.5) is largely conceptual. Many of the design and construction details required in a Part B permit application are not included.

Simply restating the requirements of the regulations (throughout section 2.5) and stating that the unit will meet them does not demonstrate that the facility will be designed, constructed and operated in compliance with these requirements. Some additional information on landfil construction is provided in the plan for a Construction quality Assurance (CQA) Plan in Appendix a, but that document is also incomplete and contains numerous deficiencies as noted in comment D-6g(3). The application must include final landfill design details, calculations, material and construction specifications, and operating and inspection procedures, which show how the requirements will be met. The design report an drawings must be stamped by a professional engineer.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 62.

D-6a <u>List of Wastes</u>: 20 NMAC 4.1 Subpart IX ' 270.21(a)

Section 2.5.1.1 of the application lists the general types of wastes to be excluded from the landfill. All other RCRA wastes are proposed to be accepted. The Part a identifies the waste codes proposed to be accepted. However, the regulation requires the Part B application to include a list of the hazardous wastes to be placed in the landfill.

Response: *The Part B application will be revised to include or reference the list of wastes to be placed in the landfill that is included in the Part A application.*

Comment 63.

D-6b(2) <u>Exemption Based on Alalternative Design and Location</u>: 20 NMAC 4.1 Subpart IX ' 270.21(b)(1), Subpart V ' 264.301(d)

Section 2.5.1 of the application states that a "Waiver from double Liner Requirements: is being applied for. As explained in section 4, it is apparent that the landfill is intended to have a double liner system. Revise section 2.5.2 to correctly describe the proposed liner system as an alternative double liner design.

Response: *Section 2.5.2 of the permit application will be revised to correctly describe the proposed liner system as an alternative double liner design.*

Comment 64.

D-6b(5) <u>Groundwater Monitoring Exemption</u>: 20 NMAC 4.1 Subpart IX § 270.21(c), Subpart V § 264.90(b)(2)

An exemption from the Subpart F groundwater monitoring requirements is being sought, although the application does not explicitly state this fact. Section 3 asserts that no shallow saturated zones exist beneath the facility, and that thick low permeability clay strata exist between the proposed landfill and the saturated zone (aquifer) at the base of the Lower Dockum Unit. The application does not address the requirements for obtaining the

exemption, as indicated in § 264.90(b)(2). If the application is revised as suggested in the accompanying comments (especially E-3), most of the information required may be provided However, the application must explicitly request the exemption, and reference the locations in the application where the required information is provided. In addition, the application must demonstrate that the following requirements will be met, or explainwhy the exemption should allow variances from the requirements.

Response: *At the suggestion of the NMED, groundwater monitoring was proposed to be changed to vadose zone monitoring in the facility's comments to the draft permit. Refer to comment 129 for further information.*

Comment 65.
D-6b(5)(c) <u>Exclusion of Liquids</u>: 20 NMAC 4.1 Subpart V § 264.90(b)(2)(iii)

Statements that runoff control design will comply with the regulatory criteria (e.g., sections 2.5.1.2 and 4.2.1) are not adequate to demonstrate that the facility will be constructed and operated in compliance with those criteria. In addition,the application does not mention the requirement in § 264.90(b)(2)(iii) to exclude precipitation from the unit. Only a very general description of diversion of runoff inside the unit is included (4.2.1). Water is proposed to be used to control dust inside the landfill. Since precipitation will not be excluded, and additional water will be introduced into the landfill, a waiver from this requirement must be explicitly requested and justified in adequate detail. Provide design details and actual operating plans demonstrating how liquids, precipitation and other run-on and runoff will be excluded from the unit, or otherwise managed to justify exemption from groundwater monitoring requirements.

Response: *As described in Draft Permit Attachment G page 36 of 46, precipitation run off from areas surrounding the landfill will be prevented from entering the landfill by perimeter diversion ditches. Precipitation falling within the footprint of thelandfill on slope areas will be diverted from active waste areas via side slope diversion ditches and will be collected for use as dust control within the landfill. Precipitation falling on active waste areas will be collected using vacuum trucks or will drain to the leachate collection system.*

The landfill's storm water control features will be included in the detailed landfill design. ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 66.
D-6b(5)(g) <u>No Migration</u>: 20 NMAC 4.1 Subpart V § 264.90(b)(2)(vii)

The application does not address the requirement to demonstrate "no migration". Although the computer modeling performed for the alternative liner design may provide the necessary information, the application must specifically request the groundwater monitoring exemption and justify it. Demonstrate that the unit will not allow hazardous constituents to migrate beyond the outer layer of the containment system prior to the end of the post-closure care

period.

Response: *The Gandy-Marley facility is not seeking a "no migration" petition. Because the site is unsaturated, it is planning to implement a vadose zone monitoring system. This planned implementation of a vadose zone monitoring system was at the request of the NMED.*

Comment 67.

D-6c(2) <u>Liner system Location Relative to High Water Table</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(i)

Provide data showing the depth to the closest water below the landfill unit and the location of the water in relation to the base of the liner system (i.e., piezometric surface, confining strata, saturated strata, and liner foundation elevations should be shown on geological cross sections).

Response: *As described in the Groundwater Protection Section of this application, the depth to the closest water below the landfill unit is 600-650 feet.*

Comment 68.

D-6c(3) <u>Loads on Liner System</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(i)

a. The application liner design discussion (section 2.5) does not provide calculations or results to demonstrate that the liner system can be constructed as proposed. For example, protective cover soil on the long (200 to 300 feet), steep sideslopes may become unstable during placement or after rainstorms, particularly if a 2 to 1 slope is used (Figures 2-9 and 2-10). Temperature extremes and severe downdrag forces may necessitate benching of sideslopes. Provide calculations defining the maximum loads or stresses that will be placed on the liner system considering:

b. Both static and dynamic loads, including seismic loads (friction forces must be defined, requiring specification of the geomembrane type- smooth or textured- and the wet shear strength of the cover soil);

1. Stresses due to installation or construction operations;
2. Stresses resulting rom operating equipment;
3. Stresses due to the maximum quantity of waste, cover, and proposed post-closure land use;
4. Stresses resulting from settlement, subsidence, or uplift; and Internal and external pressure gradients.

Response: *Interface shear testing will be conducted using materials similar to those proposed for actual landfill liner construction. Using these test results, stability analyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and final landfill cover arrangements. The analyses will indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction, and for worst case waste filling scenarios.*

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill. ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 69.
D-6c(4) Liner System Coverage: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(iii)

The application discussion and drawings (Figures 2-8, 2-9 and 2-10) do not demonstrate that the liner system will be installed to cover all surrounding earth likely to be in contact with the waste or leachate. Provide construction or detailed design drawings showing the full extent of liner coverage, including all built-up or cut-down areas (final constructed grade) at the edges of the unit.

Response: *Landfill waste placement will terminate inboard of the landfill crest as shown in Permit Attachment G Figures G- I I and G- 12. The landfill cover will extend beyond the limits of the liner anchor trench. Detailed design drawings for the landfill will illustrate the location of the landfill crest and final cover around the perimeter of the landfill.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 70.
D-6c(5) Liner System Exposure Prevention: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(i)

The application states (section 2.5.1.2) that the liner system will be covered by 2 feet of cover soil. However, the geomembranes will be exposed during construction, until the geonet(s) and cover soil are placed. Due to the very large size of the proposed landfill, the geomembranes could be exposed for several months or years before the liner system is fully completed. Provide the proposed construction scheduling sequence or phasing plans to demonstrate that the geomembranes and other liner system components will not be exposed to potentially damaging wind or sunlight for time periods beyond the manufacturers recommended limits.

Response: *Installation of geosynthetic liner components will occur within manufacturer's recommended exposure limits. Floor areas will be covered with protective soil soon after*

geosynthetic installation acceptance and certification. Slope areas will be covered with protective soil or a sacrificial geosynthetic layer will be deployed to protect underlying geosynthetic components from exposure to sunlight or damaging wind.

Comment 71.

D-6d Liner System Foundation

D-6d(1) Foundation Description: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(A)(1)(ii)

The application (section 2.5) does not adequately address foundation conditions. Although the bulk (apparently composite) samples from backhoe pits appear to be uniform and suitable for constructing strong earthworks, the shallow soils are poorly characterized. (Appendices D, D, E and F) The lithology logs (Appendix C) and the stratigraphy discussion (3.5.3.1) indicate that the upper soils contain significant amounts of sand and gravel, petrified wood, and caliche. Construction of smooth, stable, steep sideslopes in these materials may require extensive over excavation and rebuilding with material removed from greater depths. The existing topography in the landfill area (Figure 2-7) and design cross-section A-A (Figure 2-8) also suggest that portions of the western side of the landfill perimeter may be built up (5 to 10 feet or more) to compensate for the natural surface irregularities. Describe the foundation for the liner system, including the foundation materials, and indicate bearing elevations on geological and construction drawings. Indicate any load bearing embankments placed to support the liner system.

Response: *Near surface Quaternary soils were characterized from bulk samples obtained from the basal portion of backhoe pits excavated to a depth of approximately 12 ft. The backhoe pits were located within 10 ft of the borehole locations indicated on the table in the Triassic Park Hazardous Waste Facility Part B Application, Appendix E entitled "Tabulation of Test Results Bulk Samples" (GMI 12/94). The landfill liner system will be located on top of the excavated subgrade. Subgrade depths of 90 to 100 ft below the existing ground surface are shown in the Draft Permit on Figures G-9 and G-10 of Appendix G. At this depth the basal portions of the landfill will lie in either the Upper Dockum or Lower Dockum units. Bearing capacity evaluations to be presented in the engineering report will demonstrate that either of these units will adequately serve as a foundation for the landfill. Near surface landfill slope areas will be located on top of Quaternary soil materials. The engineering report will also present bearing capacity evaluations for the landfill subgrade within the Quaternary soil materials and stability evaluation of any load bearing embankments. Detailed design drawings for the landfill will be submitted as indicated in Comment Response 38. The drawings will show geologic contact elevations, landfill subgrade elevations, and any load bearing embankments.*

Comment 72.

D-6d(2) Subsurface Exploration Data: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

The application does not address engineering characteristics of the liner system foundation materials. Although limited soil test results are provided in Appendices E and F, the data are not evaluated or described in the application test. Most of the sample boreholes are well outside of the actual landfill perimeter. The 15 proctor tests were performed on "bulk" mixed

samples from unspecified depths, which may be problematic for construction. The application must be revised to evaluate subsurface conditions specifically in the landfill area, and proposed sideslope construction using native soils. Specific sample depth and location information should be provided with the data summary. Additional samples and testing of shallow soils around the landfill perimeter may be necessary to adequately determine and demonstrate the suitability of these soils for constructing the liner system foundation.

Response: *Near surface Quaternary soils were characterized from bulk samples obtained from the basal portion of backhoe pits excavated to a depth of approximately 12 ft. The backhoe pits were located within 10 ft of the borehole locations indicated on the table in the Triassic Park Hazardous Waste Facility Part B Application, Appendix E entitled "Tabulation of Test Results Bulk Samples" (GMI 12/94). This table will be revised to indicate standard test methods used in the analyses and the depth of the sample location.*

Comment 73.
D-6d(3) Laboratory Testing Data: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

As noted in comments D-6d(1) and (2), shallow soils in the immediate vicinity of the landfill are not adequately characterized in the data provided in Appendices E and F. The sample identification information does not indicate the depths ofmost of the test samples. The only samples identified by discrete and relatively shallow depth intervals (none above 14 feet deep) are the "Undisturbed Samples" on the second page of Appendix E. Those samples were taken from boreholes PB-10, 15 and 30. Boring PB-15 is more than 600 feet outside the landfill boundary (estimated from Figure 3-11). None of the Proctor test results identify sample depth intervals, and the sampling methods are not mentioned in the application text or the appendices. Therefore, the assumed suitability of the native soils (especially shadow sand, gravel and caliche) for foundation and embankment construction is questionable. The application must provide data from testing adequate to classify the shallow soils (0 to 15 feet deep), and demonstrate their suitability for the proposed construction. All existing and any new data should be summarized and evaluated in the text of the application.

Response: *See responses to comments 42, 45, 71, and 72.*

Comment 74.
D-6d(4) Engineering Analyses: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

The application (section 2.5) does not provide engineering analyses to demonstrate how the landfill will be constructed, and that the sideslopes and liner system will be stable. Engineering analyses should be provided that are based on the data gathered through subsurface exploration and laboratory testing program.s With the analyses should be a discussion of the methods used, assumptions, copies of calculations, and appropriate references. Include, as appropriate, discussion of:

a. Settlement potential;
b. Bearing capacity;
c. Stability of the landfill (cut and constructed) slopes;

d. Potential of excess hydrostatic or gas pressure;
e. Seismic conditions;
f. Subsidence potential; and
g. Sinkhole potential.

Response: *The engineering report for the landfill will discuss subsurface exploration and laboratory testing programs, as well as, calculations related to the following:*

Settlement potential
Bearing Capacity
Stability of the landfill (cut and constructed) slopes
Potential for excess hydrostatic or gas pressure
Seismic conditions
Subsidence potential
Sinkhole potential

(Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 75.
D-6d(4)(a) <u>Settlement Potential</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

Provide estimates of the total and differential settlement of the liner system foundation, including immediate settlement, primary consolidation and secondary consolidation. The analyses must consider the stresses imposed by the liner system and the applicable stresses computed in item D-6c(3).

Response: *Estimates of total and differential settlement and primary and secondary consolidation will be provided in the engineering report for the landfill.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.* ***(Comment Response 68):*** *Interface shear testing will be conducted using materials similar to those proposed for actud landfill liner construction. Using these test results, stabilityanalyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and final landfill cover arrangements. The analyses wll indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction, and for worst case waste filling scenarios.*

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent

geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill.

Comment 76.
D-6d(4)(b) Bearing Capacity: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

Provide an analysis of the bearing capacity of the liner system foundation. Compare the allowable bearing capacity to the loads imposed by the liner system and the applicable loads in item D-6c(3).

Response: (Comment Response 68): *Interface shear testing will be conducted using materials similar to those proposed for actual landfill liner construction. Using these test results, stability analyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and final landfill cover arrangements. The analyses will indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction, and for worst case waste filling scenarios.*

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill.

Comment 77.
D-6d(4)(c) Stability of Landfill Slopes: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

Provide analyses of the stability of:

a. Excavated slopes for portions of the unit constructed below grade;
b. Embankment slopes constructed with earthen dikes or berms (above natural grade) to support the liner system;
c. Landfill slopes consisting of the liner system (including protective cover soil); and
d. Waste slopes with the daily soil cover placed on the waste.
e. Include both static and dynamic cases in the analyses.

Response: (Comment Response 68): *Interface shear testing will be conducted using materials similar to those proposed for actual landfill liner construction. Using these test results, stability analyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and final landfill*

cover arrangements. The analyses will indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction, and for worst case waste filling scenarios.

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill. ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 78.
D-6e <u>Liner System, Liners</u>
D-6e(1) <u>Synthetic Liners</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(1)(ii), 264.301(c)

a. The application (section 2.5.1.2) provides only minimal information on the liner system materials to be used in the landfill. For each synthetic liner in the system provide the following information:

1. Thickness;
2. Type (e.g., textured);
3. Material; and
4. Brand name and manufacturer.

b. Provide data for all synthetic lines under consideration. Detailed synthetic liner material specifications must also be provided as explained in comment D-6g(1)(a).

Response: *Geosynthetic liner specifications will be provided in the landfill specifications.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 79.
D-6e(1)(a) <u>Synthetic Liner Compatibility Data</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(i)

a. The application (section 2.5) does not address liner compatibility. Provide the results of liner/waste compatibility testing demonstrating that liner strengthand performance are still adequate after exposure to waste leachates and to the waste. Manufacturers

testing results may be acceptable, if the leachate used was similar to that which may be generated in the Triassic Park landfill.

b. Provide a detailed description of the testing procedure used, or if appropriate reference the EPA standard test method, along with complete test results. Describe how the waste and waste leachate samples were prepared or obtained and demonstrate that they were representative of what the liner will be exposed to within the landfill. provide a summary and discussion of the test results and conclusions as to the suitability of the synthetic liner.

Response: *Since leachate from the landfill will not be available until after construction, compatibility tests cannot be conducted with actual leachate. Therefore, published data on EPA 9090 test results may be submitted to demonstrate compatibility until samples of actual leachate are available. Alternatively, a synthetic leachate could be developed and used for testing. However, these will generally simulate previously conducted tests presented in the literature.*

Comment 80.
D-6e(1)(b) <u>Synthetic Liner Strength</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(i)

Provide data showing that the synthetic liners have sufficient strength after exposure to the waste and waste leachate to support he loads/stresses identified in comment D-6c(3) (i.e., consider tensile stresses resulting from settlement, temperature effects and downdrag). Also demonstrate that the liner seams will have sufficient strength.

Response: *The testing program outlined in response to comment 79 will include strength testing of the geomembranes. The results of these tests can be used to assess stresses resulting from settlement, temperature effects and down drag. Results of the strength testing will be presented on the engineering report identified in Comment Response 38.*

Comment 81.
D-6e(1)(c) <u>Synthetic Liner Bedding</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)(ii)

The application states that a smooth stable surface will be constructed for geosynthetic placement (section 2.5.2.2), and 2 feet of protective cover soil will be placed over the liner system (section 2.5.1.2). However, the native soil materials are not necessarily suitable for foundation or protective cover. The shallow soils contain numerous petrified wood fragments, sand and gravel, conglomerate cobbles, and extensive caliche. The application must explain whether these materials are proposed for use as foundation and/or cover materials. Material and construction specifications must be provided as noted in comments in section D-6g.

Response: *Liner prepared subgrade materials will be free of particles larger than 1 inch in diameter or sharp objects which may puncture the liner. Prepared subgrade material specifications will identify particle size limits, compaction, moisture content, and other physical and placement requirements.* ***(Comment Response 38):*** *Detailed design drawings,*

specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit.

Comment 82.
D-6e(2) Soil Liners: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a) and (c)

The application states (sections 2.5.1.2 and 4.2.6) that a geosynthetic clay liner (GCL) is proposed to replace the soil portion of the composite liner. However, no further description is provided. The application must provide a description of the proposed GCL, including its strength, composition (e.g., type of bentonite), swelling characteristics, and thickness. Detailed GCL material specifications must also be provided as noted in comment D-6g(1)(b).

Response: *Specification for the GCL will be provided in the landfill specifications.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 83.
D-6e(2)(a) Material Testing Data: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(c)

The application does not provide GCL test data. Provide test results from index tests, laboratory hydraulic conductivity (permeability) tests, strengthtests, consolidation tests, and shrink-swell properties of the GCL material. Provide copies of the test procedures, or if appropriate, reference standard test methods, along with complete test results. Discuss the potential for dispersion and piping of the clay due to flow of leachate through the GCL.

Response: *GCL specification will identify minimum acceptable values for GCL index tests such as hydraulic conductivity, strength, consolidation, shrink-swell properties, and others as appropriate. These will be provided in the landfill specifications.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 84.
D-6e(2)(6\b) Soil Liner Compatibility Data: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(1)(i), 264.301(c)(3)(iii)

The application does not address GCL and leachate compatibility. Provide the results of permeability testing of the GCL material using leachate representative of the leachate that the

landfill could generate. Discuss the effects, if any, of the leachate on the GCL permeability. Provide a copy of the test procedures, or reference appropriate standard test methods, along with a description of how the leachate samples were prepared or obtained, a demonstration that the leachate sample is representative, and the complete test results.

Response: (Comment Response 79): *Since leachate from the landfill will not be available until after construction, compatibility tests cannot be conducted with actual leachate. Therefore, published data on EPA 9090 test results may be submitted to demonstrate compatibility until samples of actual leachate are available. Alternatively, a synthetic leachate could be developed and used for testing. However, these will generally simulate previously conducted tests presented in the literature.*

Comment 85.
D-6e(2)(c) Soil Liner Strength: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(1)(i), 264.301(c)(3)(iii)

The application does not address the strength properties of the proposed GCL. Demonstrate that the GCL has sufficient strength to support the loads/stresses computed in item D-6c(3).

Response: (Comment Response 68): *Interface shear testing will be conducted using materials similar to those proposed for actual landfill liner construction. Using these test results, stability analyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and final landfill cover arrangements. The analyses will indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction, and for worst case waste filling scenarios.*

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill. ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit*

Comment 86.
D-6 Liner System, Leachate Collection and Leak Detection Systems: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)

The application includes only a vague description of the leachate collection and leak detection systems (section 2.5.1.3 and Figure 2-10). Figure 2-10 states (Notes 4 and 5) that the size, location, type and orientation of leachate collection and removal system pipes, sumps and tanks will be determined during final design. The permit application must provide the

following final design information about the leachate collection and leak detection systems. Provide detailed material specifications as noted in comment D-6g(1)(c).

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 87.
D-6F(1) <u>System Operation and Design</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264,301(a)(2), 264.301(c)(2), 264.301(c)(3)

Describe the (final) design of the leachate collection and removal system and how the system will function to remove collected leachate in a timely manner. Describe the design details of the leak detection system and how the system will function to detect leakage through the primary liner. Describe how liquid will be detected and removed from both systems. Describe how volumes of liquid removed from each sump will be measured.

Response: *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters. ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 88.
D-6f(2) <u>Drainage Material</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2), 264.301(c)(3)(ii)

The application does not adequately describe the leachate collection or leak detection system drainage materials. Section 2.5.1.3 does not indicate the minimum transmissivity for the upper geonet. The filter fabric (geotextile) is proposed to be selected sometime after drainage materials accessible to the site are evaluated and selected. Section 2.5.1.4 incorrectly states a proposed leak detection system geonet "hydraulic conductivity". Geonet materials are not typically assigned or specified with hydraulic conductivity. As required in § 264.301(c)(3)(ii), the leak detection system must be constructed of grandular drainage materials with a hydraulic conductivity of 1 x 10^{-2} cm/sec or more and a thickness of 12 inches or more; or synthetic or geonet drainage materials with a transmissivity of 3 x 10^{-5} m^2/sec or more. Revise the application to provide complete drainage material descriptions. Include all types of geonet, sand, gravel and geotextile which will be used in the final landfll design. Detailed final technical specifications must also be provided as noted in comment D-6g(1)(c).

Response: *Detailed design drawings and specifications for the leachate collection system (LCS) and leak detection system (LDS) will be provided in the landfill design drawings and specifications. These documents will present the current approved liner design presented in Draft Permit Attachment G pages 33 or 46 through 35 of 46 (NMED April 1996).* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 89.

D-6f(3) <u>Grading and Drainage</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2), 264.301(c)(2), 264.301(c)(3)

a. The application (section 2.5.1.3) indicates that the design of the leachate collection/leak detection systems will be prepared at some later date. Section 2.5.1.4 states that the preliminary leak detection system pipe size (8 inches) may change in the final design. The permit application must provide a final contour plan for the systems along with a plan showing the layout, spacing and dimensions of the piping system. For leachate collection and removal systems with slopes of less than 2%, the final design must demonstrate that the proposed systems will drain as well as one with a minimum of 2% slopes (i.e., through the use of an alternative design). Demonstrate that the leak detection system (located above the lower-most liner) will be constructed with a bottom slope of 1% or more. Demonstrate that the leachate collection and removal system and the leak detection system are appropriately graded to assure that leachate at any point in the liner system is detected in a timely manner.

b. The application must provide final design details of the piping system along with any sumps, pumps, etc., and demonstrate that the pipes and pipe perforations are sized sufficiently to handle the expected flow(s) of leachate.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas.*

These documents will be certified by a Professional Engineer registered in the State of New ***(Comment Response 87):*** *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters. ***(Comment Response 88):*** *Detailed design drawings and specifications for the leachate collection system (LCS) and leak detection system (LDS) will be provided in the landfill design drawings and specifications. These documents will present the current approved liner design presented in Draft Permit Attachment G pages 33 or 46 through 35 of 46 (NMED April 1996).*

Comment 90.
D-6f(4) Maximum Leachate Head: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2), 264.301(c)(2)

The application (section 2.5.1.3) does not demonstrate that the leachate collection system design and operation will prevent leachate depth over the primary liner from exceeding one foot (at any point on the liner). Provide calculations to demonstrate that this requirement will be met, along with justification of assumed parameters and of the numerical technique used.

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 91.
D-6f(5) Systems Compatibility: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2)(i)(A), 264.301(c)(3)(iii)

The application must demonstrate that all components of the leachate collection/detection systems are chemically resistant to the waste managed in the landfill and the leachate expected to be generated. Duplicate information is not required for components constructed

with the same material as the proposed geomembranes (HDPE).

Response: (Comment Response 79): *Since leachate from the landfill will not be available until after construction, compatibility tests cannot be conducted with actual leachate. Therefore, published data on EPA 9090 test results may be submitted to demonstrate compatibility until samples of actual leachate are available. Alternatively, a synthetic leachate could be developed and used for testing. However, these will generally simulate previously conducted tests presented in the literature.*

Comment 92.
D-6f(6) Systems Strength: 20 NMAC 4.1 subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2)(i)(B), 264.301(c)(3)(iii)
D-6f(6)(a) Stability of Drainage Layers: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264,301(a)(2)(i)(B), 264.301(c)(3)(iii)

The application must demonstrate that the drainage layers of the leachate collection and leak detection systems have sufficient strength to support the loads and stresses computed in item D-6c(3) (e.g., sufficient soil bearing capacity to support loads and adequate friction to maintain stability under all reasonable future conditions). Demonstrate (by providing calculations) that the drainage layers to be placed on steep sideslopes will be stable during construction and operation.

Response: (Comment Response 68): *Interface shear testing will be conducted using materials similar to those proposed for actual landfill liner construction. Using these test results, stability analyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and final landfill cover arrangements. The analyses will indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction, and for worst case waste filling scenarios.*

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill. ***(Comment Response 75):*** *Estimates of total and differential settlement and primary and secondary consolidation will be provided in the engineering report for the landfill.*

Comment 93.
D-6f(6)(b) Strength of Piping: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2)(i)(B), 264.301(c)(3)(iii)

The application must demonstrate that the pipe used in the piping systems has sufficient strength (to resist crushing or deflection) to support the loads computed in item D-6c(3). Provide pipe strength data and compare them with the predicted loads.

Response: *Specified drainage piping will be evaluated for resistance to crushing or deflection. Calculations will be presented in the engineering report for the landfill.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 94.
D-6f(7) Prevention of Clogging: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(2)(ii), 264.301(c)(3)(iv)

The application (section 2.5.1.3) acknowledges the requirement, but does not demonstrate that the leachate collection and leak detection systems are designed and will be operated to prevent clogging (due to piping, soil infiltration or other phenomena) of the drainage layer material or the pipes throughout the active life of the landfill. The application must be revised to include cover soil analyses, geotextile or other filter material specifications and design calculations necessary to show that the systems will not be clogged by construction materials. Consideration must also be given to other physical, chemical and/or biological clogging. Describe how clogging will be detected and what cleanout procedures will be used to restore the capacity of the systems. Include calculations demonstrating the effectiveness of the proposed filter material (geotextile) in contact with the protective cover soil.

Response: *Clogging of geosynthetic filter layers will be addressed in the evaluation of the leachate collection system (LCS) and leak detection capacities identified in Comment Response 87. Appropriate factors of safety for flow capacity will be established to account for the effects of clogging.* ***(Comment Response 87):*** *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 95.
D-6f(8) Liquid Removal: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(c)(3)(v), 264.301(c)(4)

a. The application (section 2.5.1.3) promises to comply with leachate removal requirements, but does not provide any actual design information. The application must describe the final design details of landfill sumps and liquid removal methods (e.g., pumps). Leakage collection and removal equipment must be able to prevent

liquids from accumulating to more than 12 inches deep on the primary liner. Each sump and removal system must provide a method for detecting liquids present in the sump and recording the volume of liquids removed.

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS)will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

b. Indicate the proposed management of collected leachate, which will be F039 hazardous waste. (Other waste codes may also apply to leachate. See tank comments regarding proposed leachate storage tanks.)

Response: *The facility's comments to the draft permit (comment on Module VI, Section C.2., Page 3 of 7) addressed management of collected leachate as follows:*

"Collected leachate will be sampled and analyzed, and if it meets LDR treatment standards for F039 waste it will be placed in the surface impoundment. If the leachate does not meet treatment standards, it will either be stabilized and disposed in the landfill or shipped offsite to a permitted hazardous waste management facility."

Comment 96.
D-6g <u>Liner System Construction and Maintenance</u>
D-6g(1) <u>Material Specifications</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)

The application (section 2.5.1.2) does not provide adequate material specifications for any of the components of the liner system. Incomplete descriptions for some materials are provided in the CQA Plan in Appendix A, but acceptance criteria are not included. although the probable geomembrane thickness (60 mil) and resin type (HDPE) are mentioned in the CQA Plan and elsewhere, the application also notes repeatedly that the final design has not been prepared. The application must provide final proposed design details and material specifications as proposed for final design, including acceptance criteria. The CQA Plan may have to be revised to be consistent with the design report specifications. The specifications should not be provided only in the CQA Plan, since the primary users of the specifications will be the construction contractor personnel who will build the units, and construction quality control inspectors.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 97.
D-6g(1)(a) Synthetic Liners: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)

Section 2.5.1.2 identifies the geomembrane material as HDPE, but the thickness is only noted as 60 mil (minimum) on Figures 2-9 and 2-10. Texture, carbon black content, and other details necessary to determine the liner material are not mentioned. the application must provide detailed final material specifications for the specific synthetic liner or liners to be used. The incomplete material specifications now presented in the CQA Plan must be included in a design report which will be used by the construction organization.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*
(Comment Response 96):

Comment 98.
D-6g(1)(b) Soil Liners: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)(1)

As noted in comments D-6d(1) through (4), the shallow soil in the landfill area has not been adequately characterized, and may not be suitable for foundation or protective cover material. Section 2.5.1.2 barely mentions the proposed geosynthetic clay liner, and it is not described. The GCL is not included in the CQA Plan. The application must provide foundation and cover soil gradation specifications, criteria for approval of the foundation material before placement of the GCL, and material specifications for the GCL.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 99.
D-6g(1)(c) Leachate Collection/Detection Systems: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a) and (c)

Section 2.5.1.3 admits that the leachate collection system has not been designed. The application must provide final material specifications for drainage layer materials, filter fabric (geotextile) attached to the geonet, and other drainage or filter materials, piping and pumps.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 100.
D-6g(2) Construction Specifications: 20 NMAC 4.1 Subpart IX §§ 270.14(a), 270.21(b)(1), Subpart V §§ 264.301(a)(1), 264.301(a)

The CQA Plan contains incomplete and inappropriate construction specifications, as explained in comment D-6g(3). The remainder of the application does not provide construction specifications, although various statements are included (e.g., section 2.5.1.2) regarding careful construction practices. The application must provide construction specifications for the final design, separate from the CQA Plan, and adequate to guide personnel in constructing the liner system in full compliance with the approved design. Minimum acceptance criteria and acceptable Construction Quality Control (CQC) methods or performance measures must be included. These specifications must be part of the final design report prepared and stamped by a registered professional engineer.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 101.
D-6g(2)(a) Liner System Foundation: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(1), 264.303(a)

Section 2.5.1.2 indicates that construction specifications will be prepared sometime in the future. The application must provide construction specifications for the liner system foundation. Provide detailed descriptions and acceptance criteria for native soil materials, scarification, gradation limitations, compaction and moisture content.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 102.
D-6g(2)(b) Soil Liner: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(1), 264.303(a)(2)

The application is silent regarding construction or installation of the GCL. The application must provide final, detailed specifications for installing the GCL.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 103.
D-6g(2)(c) Synthetic Liners: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V §§ 264.301(a)(1), 264.303(a)(1)

The CQA Plan in Appendix a provides a general summary of specifications needed for geomembrane installation and quality assurance, in section 7. However, actual construction specifications are not provided. The application must provide final construction specifications for placement of the synthetic liners (geomembranes) which include:

a. Inspection of the synthetic liner bedding surface for material which could puncture the liner (and removal of that material);
b. Placement procedures;
c. Techniques to bond the liner seams; and
d. Procedures for protection of the liner before and during placement of material on top of the liner.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 104.
D-6g(2)(d) Leachate Collection and Leak Detection Systems: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a) and (c)

a. The application must provide construction specifications for placement of all components of the leachate collection and leak detection systems, including:
1. Drainage layers;
2. Piping;
3. Sump structures, pumps, instruments, etc.;
4. Filter layers; and
5. Any protective layer placed to protect the system during construction or operations.

b. The proposed method of connecting the "upslope" liners and drainage layers at the intermediate benches on the landfill sideslopes is of particular concern. The only mention of the proposed bench design, in section 2.5.1.2, references Figure 2-10 for illustration of the benching "technique". However, the only drawing related to benching is detail B on Figure 2-10. This detail does not show the liner system that is proposed to cover the upper sideslopes for the "vertical expansion" discussed in section 2.5.1.2. The proposed anchor trench appears to exclude the possibility of connecting the downslope liners and drainage layers to the liner system which will

extend to the top of the slope. The application must be revised to provide final details for connecting the liner system at the horizontal benches.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 105.
D-6g(3) <u>Construction Quality Assurance Program</u>: 20 NMAC 4.1 Subpart IX §§ 270.21(b)(1), 270.30(k)(2), Subpart V §§ 264.19, 264.303(a)

a. The Construction Quality Assurance (CQA) Plan, provided as Appendix A of the application, is both incomplete and includes extraneous requirements. Section 6.1 of the CQA Plan indicates that the landfill, surface impoundment and other "specified earthwork" (unspecified) are subject to this plan. However, several components of the landfill and surface impoundment are not included in the CQA Plan. Geosynthetic clay liner, piping, sumps, pumps and instrumentation are not included in the plan. At the same time, the plan includes soil-bentonite mixtures (section 6.2.3.2) which are not mentioned in the text of the application or on the drawings. The CQA Plan appears to have been drafted in accordance with different conceptual designs. The CQA Plan must be revised to be consistent with final unit designs. It is strongly suggested that separate sections be provided to address each different hazardous waste unit. The CQA Plan should not include "other" structures which are not permitted hazardous waste units, or they should be addressed separately.

Response: *The CQA Plan will be revised to be consistent with each unit in the detailed design.*

b. Several related concerns were noted during review of the CQA Plan. The plan does not reference or incorporate the recommendations in the most pertinent and useful guidance: Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities. EPA/600/R-93/182. This document should be carefully consulted for revision and clarification of the proposed CQA Plan. The revised plan must acknowledge the separate function of contractor construction quality control (CQC) for earthwork, and avoid the approach (in this plan) of having CQC functions performed by CQA staff.

Response: *The CQA Plan will be revised to incorporate the latest EPA Guidance Document recommendations for CQA procedures.*

c. The CQA Plan is not the appropriate vehicle for providing material and construction specifications (sections 6 through 10). Specifications must be provided in the design report, and be certified by a professional engineer. The CQA Plan will almost certainly have to be heavily revised to be consistent with the final design report, especially if the design is prepared by a separate firm. The CQA Plan must provide

methods in addition to CQC activities, to determine whether the facility has been constructed in accordance with those specifications. CQA tests may number only a fraction of the CQC testing, but additional or different CQA tests and oversight inspections may be necessary to determine if CQC is adequate, representative and accurate, etc. CQA tests may involve testing of the CQC test equipment itself, i.e., calibration, or duplicate tests with a similar instrument. CQA must include review of all CQC data and procedures, and inspections to observe CQC activities.

Response: *The CQA Plan will be revised to incorporate the latest EPA Guidance Document recommendations for CQA procedures.* ***(Comment Response 38):*** *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision ofthe existing Draft Permit.*

d. Section 2.1 of the CQA Plan (Organization) does not include construction contractors, quality control (QC) laboratories, or the NMED as part of the QA Organization. The CQA program will not be able to function in a coherent and comprehensive manner without direct and essentially continuous contact between the CQA Consultant and the Gandy Marley Project Manager, and the contractors, QC personnel, and the NMED. The design engineer or team must be available to prepare or assist in preparation of as-built drawings, in addition to resolving design problems or approving modifications, as provided in section 2.3. As explained in Chapter 1 of the EPA CQA Technical Guidance Document, all of these personnel (and perhaps others) are necessary parts of the CQA Organization. The plan should provide for routine oversight and inspections by NMED, including provision of copies of all CQC and CQA documentation as requested, in addition to the final certification report. section 2.1 and Figure 1 should be revised to include the personnel and organizations who will be involved in CQA.

Response: *The CQA Plan and the Project Organization Chart will be revised to incorporate the roles of all project team members including NMED.*

e. Section 3.3 of the CQA Plan indicates that changes in the design of the facility must be approved by Gandy Marley and the design engineer. This approach to modification of the facility design must be revised to account for the restrictions on such changes and the requirements for modification of the facility permit before significant changes can be constructed, as specified in 20 NMAC 4.1 Subpart IX §§ 270.41 and 270.42.

Response: *The CQA plan will be revised to include provisions for Agency notification of any design changes which might require permit modification.*

f. Section 3.4 of the CQA Plan provides for only a single final certification report to be submitted to Gandy Marley. This approach does not account for the necessary phased construction schedules for the landfill liner and cover systems, and separate requirements for the surface impoundment. The plan does not mention NMED

review and approval of the certified CQA report(s) and as-built plans before the facility (or phased expansion of the landfill) can receive wastes. Construction of the bottom liner systems is expected to be accomplished in at least three separate timeframes, and the cover liner in another set of at least three timeframes, with several years between each phase of construction. Revise the CQA Plan to provide for submittal of certification, for at least each phase of construction of the landfill liner system, to the NMED.

Response: *The CQA plan will be revised to include submittal of construction certification reports to NMED following construction of all waste management units. Construction certification reports will be approved by the NMED prior to acceptance of waste in the waste management unit. For phased facilities such as the landfill, separate construction certification reports will be submitted for each constructed phase.*

g. The CQA Plan does not mention personnel qualifications. The CQA program must be developed and implemented under the direction of a CQA officer who is a registered professional engineer. The CQA Plan should also identify minimum personnel qualifications as recommended in the EPA CQA Technical Guidance Document (section 1.3).

Response: *The CQA plan will be revised to include personnel qualifications per EPA guidance.*

h. Section 6.2.3.4 of the CQA Plan does not mention the need to confirm that the gradation of protective cover soil placed on the geocomposite drainage layer in the landfill fits the filter criteria (determined by the geotextile or filter fabric). The text of section 6.2.3.4 actually indicates that the protective soil is expected to be placed directly against a geomembrane, or perhaps with a geotextile between the soil and the geomembrane. There is no mention o the very important concern to prevent clogging or plugging of the drainage net. In addition, the frequency of gradation testing of "cover over geomembrane" in Table 2 is only 1 per 10,00 cubic yards. This frequency would require only one test for every three acres of liner surface, which is inadequate considering the reported wide variations in shallow soil types (Appendices C and F). The frequency must be adjusted or justified, based on the filter criteria and the variability of the soil proposed for use as protective cover.

Response: *Protective cover particle size requirements will be identified for each application in the construction specifications.* ***(Comment Response 94):*** *Clogging of geosynthetic filter layers will be addressed in the evaluation of the leachate collection system (LCS) and leak detection capacities identified in Comment Response 87. Appropriate factors of safety for flow capacity will be established to account for the effects of clogging.*

I. Additional comments on clay liner CQA are provided in comment section D-4g(3).

Comment 106.
D-6g(4) <u>Maintenance Procedures for Leachate Collection/Detection Systems</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a) and (c)

The application (sections 2.5.1.3 and 2.5.1.4) does not address maintenance of the leachate collection and leak detection systems. Section 2.5.3.2 indicates that a maintenance plan will be included in a final operations plan. The application must describe the anticipated maintenance activities that will be used to assure proper operation of the leachate collection and leak detection systems throughout the landfill's expected life.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 107.
D-6g(5) <u>Liner Repairs During Operations</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.301(a)
The application (section 2.5.1.2) does not address liner repairs after completion of initial construction. Describe the methods that will be used to repair any damage to the liner that occurs while the landfill is in operation during placement of the waste (such as a dozer ripping the liner).

Response: *Repairs to the landfill liner will be made in accordance with the original construction specifications and construction quality assurance plan.*

Comment 108.
D-6h <u>Action Leakage Rate</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1)(v), Subpart V § 264.302
D-6h(1) <u>Determination of Action Leakage Rate</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1)(v), Subpart V § 264.302(a)

The action leakage rate is defined as the maximum design flow rate that the leak detection system (i.e., the leachate collection and removal system) can remove without the fluid head on the bottom liner exceeding 1 foot. Although the application notes (section 2.5.3.8) that the proposed rate is the lowest recommended by EPA, the leak detection system has not been designed yet, and the rate "may have to be revised upward". Revise the application to provide a definite Action Leakage Rate, with supporting calculations based on the finalliner, drainage system and sump design.

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 109.
D-6h(2) Monitoring of Leakage: 20 NMAC 4.1 Subpart IX § 270.21(b)(1)(v), Subpart V § 264.302(b)

The application does not discuss how the facility inspector will determine if the action leakage rate has been exceeded, or how the leakage rate will be determined. revise the application to provide the standard procedure to determine the leakage rate. The application should convert the Action Leakage Rate (gallons per acre per day) to a maximum flow rate for each leak detection sump (e.g., gallons per week). This average daily flow rate (or an alternative calculation, if adequately justified) must be calculated weekly (if any leachate was removed from the leak detection sump in that week) during the active life of the facility and closure period, and monthly during the post-closure care period.

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 110.
D-6i Leakage Response Action Plan: 20 NMAC 4.1 Subpart IX § 270.21(b)(1)(v), Subpart V § 264.304
D-6i(1) Response Actions: 20 NMAC 4.1 Subpart IX § 270.21(b)(1)(v), Subpart V § 264.304(a)

Section 2.5.3.9 provides a response action plan, but does not explain why leachate cannot be monitored and removed from the sumps more frequently than weekly. A typical automated and instrumented pump system should be able to remove leachate much more frequently, and not require intervention unless it malfunctions. Revise the application to provide monitoring and leachate removal on a more frequent basis, to actually minimize leachate pressure on the liner.

Response: *At a minimum, monitoring of sump fluid elevations will be conducted weekly or on a more frequent basis, if necessary, to ensure removal of sump fluids such that fluid elevations do not exceed 1 ft of head on the liner.*

Comment 111.

D-6i(2) Leak and/or Remedial Determinations: 20 NMAC 4.1 Subpart IX § 270.21(b)(1)(v), Subpart V § 264.304(b), 264.304(c)

a. The minimum response action plan requirements are explicitly detailed in§ 264.304. When the ALR has been exceeded, the response action plan must provide procedures to determine, to the extent practicable, (1) the location, size, and cause of any leak; (2) whether waste receipt should cease or be curtailed; (3) whether waste should be removed from the unit for inspection, repairs, or controls; (4) whether the unit should be closed; and (5) other short-term or longer-term actions to be taken to mitigate or stop leaks. However, the Gandy Marley plan (section 2.5.3.9) simply ignores portions of § 264.304(b). The proposed plan does not mention the required analyses in § 264.304(b)(4) {#2, 3 and 4 above}, and the requirement to include the results of those analyses in the report which is to be submitted to the NMED within 30 days after the ALR is exceeded, as specified in § 264.304(b)(6). The application must be revised to include all of the requirements of § 264.304(b).

b. To make leak remediation and unit closure determinations, the owner/operator must (1) assess the source of the liquids and amounts of liquids by source, (2) conduct a fingerprint, hazardous constituent, or other analyses of the liquids to identify the source and possible location of any leaks and the hazard and mobility of the liquid, and (3) assess the seriousness of any leaks in terms of potential for escaping into the environment; or document why such assessments are not needed. The plan proposed in section 2.5.3.9 (page 2-31, first sentence) mentions "review of the analysis of the leachate collected from the leachate collection system" as one way to help locate leaks. However, there is no indication of what analyses leachate might be subjected to , and the leak detection system would be the appropriate source of leachate to sample for analysis. Revise the application to provide the rationale for analyses to be performed on samples from the leak detection system to assess the leakage, as required in 264.304(c).

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured with fluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 112.

D-6j <u>Run-on and Run-off Control Systems</u>

D-6j(1) <u>Run-on Control System</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(2), Subpart V § 264.301(g)

The application promises (section 2.5.1.5) to comply with the minimum requirement in § 264.301(g), but only a very general description of the proposed drainage system is provided. The application must describe the detailed, final design for the system that will prevent run-on onto the landfill.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 113.

D-6j(1)(a) <u>Design and Performance</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(2), Subpart V § 264.301(g)

Figure 2-1 indicates the location of drainage ditches. No drainage area, slope, erosion protection or other typical design information is provided. The application must describe the run-on control system design and how that design prevents run-on from reaching the achieve portions of the site. Provide a plan view showing the locations of the run-on control system components, along with detailed drawings, cross sections, and the calculations used to size the ditches and other components.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 114.

D-6j(1)(b) <u>Calculation of Peak Flow</u>: 20 NMAC 4.1 Subpart IX § 270.21(b)(1), Subpart V § 264.310(g)

Section 2.5.1.5 notes the requirement to control flow from a 25-year storm, but provides no information on the size of that storm or expected runoff flow. The application must specify the surface water flows in the run-on control ditches that are expected to result from a 25-year (minimum) design storm. Describe the contributing runoff area, data sources and methods used to make the peak flow calculations. Provide copies of the calculations and precipitation data, and appropriate references.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New*

Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.

Comment 115.
D-6j(2) Runoff Control System: 20 NMAC 4.1 Subpart IX § 270.21(b)(3), Subpart V § 264.301(h)

a. Section 2.5.1.5 provides a very brief (two paragraph) description of the runoff control system proposed to collect and control runoff from active portions of the landfill. The description is not adequate to demonstrate that the facility will comply with the requirements in § 264.301(h). The application must provide the final operating plan for the landfill, which must include specific and complete details for constructing and maintaining runoff control structures within the landfill, up to and including final cover liner and topsoil placement. The plan must also specify the analyses to be performed on runoff collected in the landfill, and management of that runoff before it is placed in either the stormwater pond or the evaporation impoundment (e.g., while awaiting results of sample analyses). The application must include the specific criteria (concentration limits) for determining that runoff is "uncontaminated".

b. Section 2.5.1.5 mentions a proposed "lined containment basin", apparently intended to be constructed on the floor of the landfill, for collection of runoff from "side slopes above the liner system". However, the proposed basin and sideslope drainage channels are not shown on any of the drawings, and no further description is provided. The application must be revised to include details of the proposed containment and sideslope channels, including calculations demonstrating the capacities of these structures.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 116.
D-6j(2)(a) Design and Performance: 20 NMAC 4.1 Subpart IX § 270.21(b)(3), Subpart V § 264.301(h)

The application does not adequately describe the runoff collection and control system design, or provide calculations demonstrating that the system has sufficient capacity to collect and control the total runoff volume. Provide a plan view showing typical locations of runoff control system components (ditches, basins, sumps, pumps, tank trucks, etc.) inside and around the landfill boundary, along with detailed discussion and cross sections adequate to guide construction and operation of the system.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New*

Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.

Comment 117.

D-6j(2)(b) Calculation of Peak Flow: 20 NMAC 4.1 Subpart IX § 270.21(b)(3), Subpart V §§ 264.301(c), 264.301(h)

Section 2.5.1.5 states that collected precipitation will be pumped out ofthe landfill within 24 hours of a storm event. The application does not address the requirement to prevent development of more than one foot of head on the primary liner, in 264.301(c). The application must demonstrate that the interior runoff control system can manage the total runoff volume and the peak flow expected to result from at least a 24-hour, 250year storm, while limiting the head on the primary liner to no more than one foot. Describe data sources, assumptions and methods used to calculate the peak flow. Provide copies of thecalculations and data, including appropriate references.

Response: (Comment Response 87): *Detailed design of the leachate collection system (LCS) and leak detection system (LDS) will be provided in the detailed design drawings, specifications, CQA Plan and Engineering Report for the landfill. Calculations will be provided in the engineering report which estimate the leakage quantities and drainage capacities of the LCS and LDS drainage layers, pipe systems, and sumps. Methods suggested in EPA guidelines and HELP modeling results will be used to estimate leakage rates. Action leakage rates and response actions will also be developed from the LCS and LDS drainage calculations. Response actions will be in accordance with EPA guidance and federal and state regulations.*

Liquid elevations in the LCS and LDS sumps will be measured withfluid level transducers or equivalent devices. Volumes of liquid removed from the sumps will be measured using flow meters.

Comment 118.

D-6j(3) Management of Collection and Holding Units: 20 NMAC 4.1 Subpart IX § 270.21(b)(4), Subpart V § 264.301(i)

Section 2.5.1.5 does not describe how collection and holding facilities associated with runoff control systems will be emptied or otherwise managed expeditiously after storms to maintain system design capacity. Describe the fate of liquids discharged from these systems.

Response: *All water collected at the site will be classified as either contaminated or uncontaminated. Contaminated water will consist of water that has contacted the waste (liquids from the leachate collection or leak detection systems or surface water within the active landfill). All contaminated water will be treated in the stabilization process or the evaporation pond. Uncontaminated water will consist of surface water runoff from portions of the site not used for waste management activities. Followingstorm events, run off collected in the stormwater retention basin will be sampled and chemically analyzed for waste contaminants. Should analyses indicate contaminant concentrations above permissible levels, the water in the pond will be removed and handled as a liquid waste. Collected, uncontaminated surface water runoff will be allowed to evaporate or will be removed from retention ponds and used for dust control around the site. The detailed designs for the*

landfill, evaporation pond, roll-off pad and processing facilities will include a complete surface water management plan.

Comment 119.
D-6j(4) Construction: 20 NMAC 4.1 Subpart IX § 270.21(b)(2), and (3), Subpart V §§ 264.301(g) and (h)

Provide final construction and material specifications for the run-on and runoff control systems. Include descriptions of the construction quality control program that will be used to assure construction is in accordance with design requirements.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 120.
D-6j(5) Maintenance: 20 NMAC 4.1 Subpart IX § 270.21(b)(2) and (3), Subpart V § 264.301(g) and (h)

Describe the maintenance activities required to assure continued proper operations and the run-on and runoff control systems throughout the active life of the unit.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 121.
D-6k Control of Wind Dispersal: 20 NMAC 4.1 Subpart IX § 270.21(b)(5), Subpart V § 264.301(j)

Section 2.5.1.6 states that daily sand and dirt cover will be the only method used to prevent dispersion of waste particles by wind. According to section 2.5.1.6, water spray is intended to be applied only to roads and the cover soil, to prevent dispersion of dust. This approach may be adequate while the waste surface is well below the top of the landfill sideslopes, since wind dispersal will be limited. However, as the waste fill is built up to and above the surrounding ground, wind dispersal will become an increasing concern. Revise the application to provide additional measures to prevent wind dispersal of wastes, such as prohibiting disposal of bulk wastes, and placement of additional cover soil on exposed wastes, when wind speed exceeds a reasonable limit (e.g., 25 mph) on the fill surface.

Response: *Regardless of wind velocities, waste placement operations will be suspended in the event that wind blown debris can not be contained within the landfill. An additional measure to control wind dispersal of debris includes the use of temporary wind screens and fences near the waste placement area to capture blowing debris.*

Comment 122.
D-6l Liquids in Landfills: 20 NMAC 4.1 Subpart IX § 270.21(h), Subpart V § 264.314

Sections 2.5.3.6 and 2.5.3.7 paraphrase the requirements in §§ 264.312 through 264.316, but do not provide any details to demonstrate how those requirements will be met. Section 2.5.3.2 notes that a final site operations plan has not yet been prepared, although it is not clear if any waste disposal operation plans are intended to be included. The application must be revised to include the specific procedures that will typically be used to comply with these requirements. Provide the final site operations plan or other documentation of the necessary procedures.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 123.

E. GROUNDWATER MONITORING
E-1 Exemption from Groundwater Protection Requirements: 20 NMAC 4.1 Subpart IX § 270.14(c)

Exemption from the Subpart F groundwater monitoring requirements is being requested, although the application does explicitly not state the request. In order to quality for exemption from these requirements, the application must demonstrate that one of the following conditions applies to the landfill, and that the No Migration condition (E-1c) applies to the impoundment.

Response: *The Gandy-Marley facility is not seeking a "no migration" petition. Because the site is unsaturated, it is planning to implement a vadose zone monitoring system. This planned implementation of a vadose zone monitoring system was at the request of the NMED.*

Comment 124.
E-1b Landfill: 20 NMAC 4.1 Subpart V § 264.90(b)(2)

Demonstrate that the landfill is designed and operated to meet the conditions specified in D-6b(5).

Response: *A waiver from ground water monitoring has not been requested.*

Comment 125.
E-1c No Migration: 20 NMAC 4.1 Subpart V § 264.90(b)(4)

Demonstrate that there is no potential for migration of liquid from a regulated unit (landfill or impoundment) to the uppermost aquifer during the active life of the regulated unit (including the closure period) and the post-closure care period. (Predictions must be based on assumptions that maximize the rate of liquid migration.) This demonstration must be

certified by a qualified geologist or geotechnical engineer.

Response: *The Gandy-Marley facility is not seeking a "no migration" petition. Because the site is unsaturated, it is planning to implement a vadose zone monitoring system. This planned implementation of a vadose zone monitoring system was at the request of the NMED.*

Comment 126.
E-3 General Hydrogeologic Information: 20 NMAC 4.1 Subpart IX § 270.14(c)(2)

a. The application (section 3) provides general information on the hydrogeology of the area. However, the site specific information provided is inadequate and sometimes does not support the conclusions in the permit application. The inadequacy of the permit application with regard to characterization of the hydrogeology of the site is mainly attributed to the following:

Response: *No response required.*

b. The permit application concludes (section 3.5) that the Triassic sediments "produce virtually no groundwater." However, drilling operations near the proposed site indicated the presence of groundwater in several holes (i.e., PB-1, PB-14, PB-14o, PB-26, PB-27 and WW-1) within what is described as the uppermost aquifer (Upper Dockum). Since the permit application does not provide a map or cross sections showing the locations of all the drill holes with respect to the site boundaries, it is not possible to determine that the only groundwater present near the site is the perched groundwater discussed in the application. The application must be revised to provide a map showing the locations of all boreholes referenced, and cross sections indicating the formation or unit boundaries, water table and piezometric elevations, and apparent saturated zones and confining zones. This information is necessary regardless of whether the groundwater monitoring exemption is granted.

Response: *A new Figure 3-14 has been prepared, which clearly shows all drill holes with respect to the site boundary. All drill holes within the site boundary encountered unsaturated Upper Dockum sediments. The cross-section in Plate 3-1 illustrates the relationship between the saturation in the Ogallala Formation, the Upper Dockum sediments east of the site boundary, and the Upper Dockum underlying the site.*

c. Section 3.7.2.2 clearly indicates that the Upper Dockum is not the true upper aquifer, because it "certainly does not yield a significant amount of groundwater". However, the application presents no information on the amounts or rates of water produced from the shallow holes. This information should be readily obtainable, and must be provided to adequately describe the shallow hydrogeology, and to support the conclusion that this unit does not yield significant amounts of groundwater.

Response: *As illustrated in Plate 3-1, the Upper Dockum sediments become saturated east of the site boundary near the unconformable contact with between the Ogallala Formation and the Upper Dockum. It is extremely significant that this saturation does not extend beneath the Gandy-Marley site. All 31 drill holes within the site boundary, as shown on Figure 3-14, were unsaturated. For this reason, there were no groundwater production tests*

conducted.

d. The permit application concludes (section 3.7) that the sediments of the Upper Dockum underlying the site are unsaturated and that detailed drilling within the site boundary has encountered no groundwater. However, the drilling programs implemented in 1993 and 1994 were confined to shallow depths (100 feet below ground surface) in the vicinity of the proposed facility. The lithologic information and the cores collected for geotechnical information were limited to this depth. Boring PB-36, described in section 3.7.2.2 and plotted on Place 3-8 (but not labeled on any map), is apparently the only drill hole deeper than 100 feet and less than 1,000 feet from the facility boundary. Only two more holes, PB-37 and PB-38, are both deeper than 100 feet and less than 2,500 feet from the facility boundary. These facts indicate that the data submitted with the application do not adequately support a conclusion that the Upper Dockum is unsaturated, or that the Lower Dockum is unsaturated above the confined basal sand unit, throughout the area beneath the facility. Section 3.5.3.1 states that drilling at the site has delineated two distinct units of the Dockum sediments with a total thickness of 1,175 feet, the Upper Dockum (475 feet thick) and the Lower dockum (700 feet thick). Section 3.8 states that the projected depth to the Upper Dockum/Lower dockum contact is between 100 and 500 feet. Thus, the scouring and pinching-out of fluvial sediments on top of the Lower Dockum may not have been adequately characterized beneath the proposed landfill, even though section 3.5.3.1 states unequivocally that the Upper Dockum is not more than 100 feet thick within the proposed facility boundary. The permit application should provide confirmatory investigative data, e.g., cores across the Upper/Lower dockum boundary and from below 100 feet, or additional detailed interpretation of the geophysical logs. This additional information is necessary to demonstrate that the Lower Dockum/Upper Dockum contact is less than 100 feet deep, and that both units are unsaturated above the basal sandstone.

Response: *All drill hole locations and depths for the Part B application process were submitted to the NMED for review and approval prior to field operations. The 100 foot depth was sufficient to penetrate the base of the Upper Dockum (with the exception of the easternmost portion of the site). Because of the easterly regional dip of the sediments, it was necessary to drill hole PB-37 and PB-38 deeper than 100 feet to delineate the Upper Dockum sediments. However, as stated in the application, the thickness of the Upper Dockum within the site boundary is less than 100 feet in thickness.*

Two deeper drill holes (WW-1 and WW-2) were drilled north and south of the site to characterize the nature of the Lower Dockum. From these holes it was observed that there was 600-650 feet of mudstones separating the Upper Dockum from the water-bearing sands at the base of the Lower Dockum. Because of the consistent, continuous depositional environment within the lacustrine sediments at the Lower Dockum, it was decided (and approved by the NMED) that it was unnecessary to penetrate the entire Lower Dockum sediments within the site boundary. This would have certainly violated the integrity of the formation in the area of a planned hazardous waste landfill and, in all likelihood, not provided additional geologic information.

e. The boreholes shown on Figure 3-13 include three more locations than shown on Figure 3-11. The three additional locations on Figure 3-13 are not labeled on any plan view of the facility, although they are apparently borings PB-36, 37 and 38. There are two more boreholes bout 500 feet east from PB-38, according to 3.8.1 (page 3-28). These two wet boreholes, PB-26 and 27, are not shown on Figure 3-13 or the other plan views of the site (e.g. Plate 3-7). Revise all three figures toprovide accurate borehole locations.

Response: *The purpose of Figure 3-13 is to illustrate the aerial extent of the saturated sediments east of the site and their relationship to the Gandy-Marley site. Ithas been revised to show the interface between the unsaturated area (and PB-38) and the saturated area (PB-1, PB-26 and WW-1). The purpose of Figure 3-14 is to show all Part B application drill hole locations and the site boundary.*

f. Section 3.5 of the permit application merely states that the lithologic information from unsaturated drill holes and the measurements of the geotechnical parameters from core samples are provided in the appendices of the application. However, summaries of these studies, including interpretation of the data, andany conclusions related to the design of the requirements, are not provided or discussed within the text. The permit application should provide summaries of all data generated from these studies, and at least attempt to explain the anomalies which contradict the stated assumptions. For example, the application states (section 3.7.2.2) that air drilling ensures that saturated sediments would have been easily detected. To the contrary, at least 6 borings penetrated saturated zones without this fact being detected by the drilling crew or the geologist logging the cuttings, and without loss of circulation. This fact is apparent by comparing the lithology logs for PB-1, 14, 14o, 26, 27, and W-1 (Appendix C) with the neutron logs in Appendix D. Although "damp" cuttings were noticed in PB-1 and WW-1, no dampness was noted in the other 4 cuttings, and no loss of circulation occurred in any of these holes. Yet all 6 holes show indisputable evidence of extensive saturation by maintaining stable water surface elevations, even after repeated evacuations. A summary discussion of the geotechnical and geohydrological data and their bearing on the proposed exemption pursuant to 40 CFR 264.90(b)(2) or 264.90(b)(4) must be presented.

Response: *Results of geotechnical testing of cores collected on the Gandy-Marley site were used to determine average permeabilities of the Upper Dockum sediments as discussed in Section 3.5.3.1. The average value for the sandy siltstones was 1.22×10^{-5} cm^3/s and the average value for the Upper Dockum mudstones was 2.45×10^{-7} cm^3/s. The average permeability of Lower Dockum sediments, as discussed in Section 3.7.2.2. is 5.7×10^{-8}.*

Drilling with air provides cleaner drill cuttings than drilling with water, and usually a good indication of water saturation. However, in the case ofthe Upper Dockum sediments on the Gandy-Marley site, this drilling technique was not always successful in identifying water saturation. This was a result of the low to very low permeabilities of the silty sands and the low amount of water saturation. The pressure of the air from the drilling process prevented water from immediately entering the holes. If groundwater was present, it was not detected until the hole had stabilized and a geophysical log was taken. Geophysical logs on all 31 drill holes within the site boundary encountered no saturated Upper Dockum sediments.

g. Section 3.5 concludes that the Santa Rosa Sandstone, the lowermost Triassic depositional unit and a major aquifer, is not present at the proposed site. However, no data to demonstrate this contention is provided in the application. Figure 3-6, which is presented to support the statement, does not show that the Santa Rosa Sandstone is not present at the site, it only indicates that there is relatively less sand at the proposed site when compared to surrounding areas. The conclusion that the Santa Rosa is not present appears to be a weakly supported assumption.

Response: *The Santa Rosa Sandstone is a blanket, fluvial deposit that forms the base of the Dockum Group in northeastern New Mexico. In measured sections in this area, it reaches thicknesses as great as 350 feet. The relationship of these thick sands to the overall Dockum depositional system and the Gandy-Marley site is illustrated in Figure 3-6.*

This figure was taken from a report prepared by J.H. McGowen and others from the Texas Bureau of Economic entitled Depositional Framework of the Lower Dockum Group. Over 1500 well logs were used in the preparation of this report. It illustrates that the great accumulation of Santa Rosa Sands fill the northern portion of the Triassic paleobasin and pinch out before reaching the Gandy-Marley site.

During the Lower Dockum time, the Gandy-Marley site was part of a low-relief area with little fluvial deposition. The McGowen report specifies sand percentages of the Lower Dockum group in the Gandy-Marley site area to be in the 10-20% range. This is consistent with data gathered from the two deeper drill holes completed north and south of the site boundary. There is a basal sand unit in the Lower Dockum below the site, but it appears to not be depositionally related to the Santa Rosa Sandstone.

h. The application contains conflicting information regarding the aquifer at the base of the Lower dockum. Section 3.5.3.1 (page 3-14, paragraph 3) states that "two deep boreholes (WW-1 and WW-2) were drilled to the base of the Dockum Group in November 1993" but did not retrieve any cuttings from the basal sandstone. Plate 3-1 does not distinctly show that the basal unit was reached by the boreholes. However, the text of the permit application (section 3.7) indicates that the basal sandstone of the Lower dockum Unit was penetrated by the two deep boreholes (WW-1 and WW-2) and that the lower aquifer was reached. The single oil well log in Appendix B is apparently from a well about 2 miles south from the facility boundary, and it is not discussed or interpreted in the text. Plate 3-7 shows 4 other oil wells closer to the facility, but hose logs are not provided. Using data more specific to the site, the application must provide adequate support for the conclusions reached in this section. The additional information should include detailed interpretation of physical and geophysical data (e.g., logs from the five oil wells nearest the site, if possible) to demonstrate that the Santa Rosa Sandstone is not present below the facility.

Response: *The permit application states that there is an aquifer at the base of the Lower Dockum underlying the Gandy-Marley. As described in the previous response, based on a regional stratigraphic analysis performed by J.H. McGowen and others, using over 1500 well logs, this unit does not stratigraphically relate to the Santa Rosa Sandstone.*

I. The intent and basis of the weekly shallow borehole monitoring program described in section 3.7.2.2 (page 3-21) is unclear. The 10 holes included in this program were all drilled 100 feet deep. However, none of the perforated intervals extend below a depth of 80 feet, and two of the casings are not perforated below 40 feet. This approach seems to provide a good way to avoid detection of saturated strata which may exist below the perforated zones. Revise the application to explain why the casings were installed in this manner, and provide construction details. Indicate how long the weekly monitoring was continued, and the results.

Response: *The intent of installing casing in these 10 holes was certainly not to "avoid detection of saturated strata," but to allow any groundwater in the vicinity of these drill holes to collect for detection purposes. The depths of these cased intervals varied, due to the fact there is approximately a 1 ° regional dip to the east. All cased intervals extend down to the bottom of the Upper Dockum sand.*

Hole No.	*Perforated Zone*	*Base of Upper Dockum*
PB-14	*30-80*	*42'*
PB-14o	*20-40*	*36'*
PB-33	*20-55*	*52'*
PB-18	*60-80*	*78'*
PB-16	*60-80*	*79'*
PB-15	*30-65*	*62'*
PB-13	*30-50*	*48'*
PB-9	*40-80*	*72'*
PB-7	*20-40*	*38'*
PB-17	*60-85*	*80'*

Slits were cut in the PVC casing every foot throughout the perforated zones. Monitoring of these cased wells continued for a six week period. No groundwater infiltration was observed.

j. Plate 3-1 indicates a groundwater divide east of the proposed site, with downward infiltration from the Ogallala formation generating a "minor" groundwater flow toward the site. However, the permit application does not discuss this groundwater and does not provide pertinent hydraulic data (e.g., water elevations in existing wells east, north and south of the boreholes 2,500 feet east from the landfill boundary) for this assumed regional groundwater flow (as indicated on Figure 3-13). In addition, Plate 3-1 and Figure 3-13 show the presence of groundwater in water table conditions (unconfined) within the Upper Dockum in the vicinity of the site, which is not discussed in the text of the application. Revise the text, Plate 3-1 and Figure 3-13 as appropriate to provide accurate and consistent representations of the actual groundwater conditions below and adjacent to the landfill and impoundment.

Response: *Immediately east of the Gandy-Marley site, along the 200-foot high Caprock escarpment, several springs are present where the Ogallala Formation crops out. These springs are present where the Ogallala sands unconformably overlie impermeable Dockum mudstones and claystones and the groundwater moves laterally to the surface.*

Where these water-bearing Ogallala sands are in contact with more permeable units of the Upper Dockum, saturation of these underlying sediments occurs. The result, as illustrated in Plate 3-1 and Figure 3-13, is a steep hydraulic gradient, within the Upper Dockum, which slopes away from the unconformable contact. This gradient does not extend beneath the Gandy-Marley site. As shown in Figure 3-13, this gradient must lie immediately east of PB-38, which is still unsaturated, whereas holes WW-1, PB-1, and PB-26 are saturated.

k. Section 3.6 of the permit application indicates that there is a stock water pond (the "Red Tank") within the proposed facility boundary and several additional tanks on adjacent lands. The permit application does not discuss the effect, if any, of the proposed facility on these tanks, and particularly on the tank located within the facility boundary. Data pertaining to these tank systems must be provided in the application including the size of the pipes, depth below ground surface, and locations of these pipes relative to the proposed landfill. There is also a strong possibility that the shallow soil in the vicinity of the Red Tank is saturated as a result of infiltration from the pond, although the application states that it is clay lined. The application must accurately characterize the shallow subsurface conditions immediately below and adjacent to the Red Tank, which is immediately adjacent to the proposed landfill. The application must also resolve an inconsistency regarding the source of water in the Red Tank. Section 3.6.1 implies that it is fed from three wells on the Marley Ranch. However, section 3.7.2.1 states that it is filled from springs in the Upper Dockum. Revise the application to specifically identify the source(s) and locations of the sources of water which feed the Red Tank. The volumes of water placed in this pond (monthly, if possible) should also be indicated.

Response: *Water from these wells, located on the Marley Ranch on top of the Caprock, is pumped through a pipeline and supplies water for Red Tank. In the past, water from the springs along the Caprock escarpment was used in this pipeline, but now water is pumped from the Ogallala Formation. The pipeline is personally owned and maintained by the Marley Ranch to provide water to cattle operations below the Caprock.*

Once the site is designated as a disposal area, cattle operations on this property will cease and the Marley Ranch will simply stop using Red Tank. They will also re-route their personal pipeline, as appropriate, to avoid landfill operations and continue to supply water to their cattle operations below the Caprock.

l. The groundwater recharge for PB-14 is not consistent with the groundwater recharge estimates discussed in section 3.6.2 (although only annual recharge estimates were provided). Section 3.7.2 indicates that this well recovered to a static water level of 42 feet bs, after each pumping event. The application merely states that "this isolated 'pooling' is most likely a result of surface run- entering the subsurface from the nearby outcrop and being in a small 'stratigraphic trap'." The nature of this recharge and its implications on the landfill design are not adequately discussed in the permit application. It is not clear whether this surface runoff is a result of precipitation or the springs described in section 3.7.2. these springs and their locations with respect to the site must be described.

Response: *Springs at the unconformable contact between the Ogallala Formation and the Upper Dockum are located along the Caprock escarpment, at least one mile east of the site boundary. PB-14 is located west of the site boundary, near the outcrop of the Upper Dockum.*

The isolated nature of the perched water encountered in PB-14 is supported by the fact that all holes downdip from this drill hole were unsaturated. Nine of these holes were cased and monitored and no water was observed in these monitored holes. Again, all 31 drill holes completed within the site boundary were unsaturated.

m. Section 3.7.1 of the application discusses water wells within a 4-mile radius of the proposed facility. Provide the locations of these wells on an appropriate scale map that clearly identifies the boundaries of the site, and include all pertinent information (e.g., well construction data, screened interval, aquifers penetrated, water level data, production rates, date abandoned, etc.).

Response: *The only water wells within a 4-mile radius are located on top of the Caprock and produce from the Ogallala Formation. All the wells are located on Plate 3-7 of the application.*

n. Section 3.9 of the permit application states that conservative transport modeling using "worst case" assumptions indicates that it would take more than 1,000 years for contaminants to migrate through the Lower dockum mudstones and reach a Lower Dockum aquifer. However, the permit application does not discuss or present this modeling and the data on which the modeling was based. The application goes on to say that the use of more realistic values increases this calculated travel time to one million years. However, the permit does not explain or present what these "realistic" values are an dhow the one million years value was obtained. The application must include a summary of all data (including information on the source of data) used to reach this conclusion including assumptions and limitationsof the modeling.

Response: *Since the Upper Dockum was designated as the "uppermost aquifer" for the purpose of this application, all transport modeling was directed toward evaluating the risk of contaminating this unit. Paragraph nine of Section 3.9, referring totransport times to the Lower Dockum should be removed.*

o. The location of <u>all</u> drill holes used in characterizing the site hydrogeology must be provided on an appropriate scale map (i.e., 1" = 200') or group of maps that also shows the facility boundary. Multiple maps may be used and presented by function, if possible. For example, the ten drill holes monitored to study the occurrence of groundwater downdip of the proposed site may be provide don one map.

Response: *Figure 3-14 now shows all drill holes and their relationship to the Gandy-Marley site boundary.*

Comment 127.

The following information needs to be clarified and/or corrected in the permit application:

The location of the cross-section from Plate 3-8 is not provided on the cross-section index of Figure 3-11. Provide the location for this Plate.

Response: *Figure 3-11 has been revised to show the location of Plate 3-8.*

b. The calculation provided in section 3.7.2.4 (Transport Modeling) appears to be in error. The stated results of the modeling indicate that at an interstitial velocity of 3.05×10^{-5} cm/s a solute would require 8,065 years to reach the uppermost aquifer. Using the interstitial velocity of 3.05×10^{-5} cm/s should give 79 years for the duration it would take the solute to reach a point that is 2,500 feet away (assuming a linear path). However, the interstitial velocity based on the hydraulic gradient of 0.012 and Darcy flux of 1.46×10^{-7} cm/s, should be 3.05×10^{-7} cm/s and not 3.05×10^{-5} cm/s. With this velocity it would take 7,920 years for a solute to reach the destination.

Response: *The 3.05 X 10-5 was a typographical error and we will change it to 3.05 X 10-7. The purpose of Transport Modeling is to provide a calculated estimate of the time it wll take contaminants to reach a specified target. In this case, that target is the saturated portion of the Upper Dockum. We will accept the reviewers calculations that provided an estimated travel time of 7,920 years, compared to the 8,065 years cited in the application. Since these calculations used the following conservative assumptions:*

straight line migration path - (not reasonable)
migration path entirely through the most permeable siltstone unit - (not true)
migration under saturated conditions - (not true)
contaminants are non reactive - (not reasonable)

a 7,920 year travel time certainly supports the application's contention that the Gandy-Marley site is well suited for the long-term isolation of hazardous wastes from the environment.

c. In addition, the last paragraph of this section indicates that for the hydraulic gradient of 0.0135 (calculated between drill holes PB-36 and PB-38) and applying the same modeling parameters, it was estimated that the time required for contaminants to migrate 2,500 feet from the leak point would be 14,706 years. It is not clear how this value was reached. For the same modeling parameters and a hydraulic gradient of 0.0135, the estimate should be 7,042 years. Provide step by step calculations t show how the values provided in the permit application were obtained and correct any numerical errors where appropriate.

Response: *If there is confusion about including a second set of calculations to support the conclusions presented above, we would be willing to remove this second example from the application. However, the reviewer's estimate of a 7,042 year travel time, using the above cited conservative assumptions, certainly supports the conclusion that this is a sound geologic setting for a hazardous waste disposal facility.*

Comment 128.

E-4 Topographic Map Requirements: 20 NMAC 4.1 Subpart IX § 270.14(c)(2),(3),(4)(I)

a. Unless exempt from groundwater monitoring requirements, the application must include the following information on the topographic map:

Groundwater flow direction and rate (isometric graph);
Point of compliance;
Groundwater monitoring wells;
Hazardous waste management area; and
Property boundary.

b. The following required information may be incorporated into the topographic map if possible, or at least should be discussed in the text:

c. Boundaries of uppermost aquifer; and Underlying interconnection between uppermost aquifer and lower aquifer.

(Although many of these items can be shown on a single map, it is allowable to use additional maps to display some of the information. Presentation of all of this information on a single map may sacrifice clarity.)

Response: *There are currently no plans to conduct groundwater monitoring activities on the Gandy-Marley site. At the request of NMED, because the sediments to host the landfill are unsaturated within the site boundary, a vadose zone monitoring system will be developed for this project.*

Comment 129.

E-7b Groundwater Monitoring System: 20 NMAC 4.1 Subpart IX § 270.14(c)(6)(ii); Subpart V §§ 264.97(a)(2), (b), (c); 264.98(b)

a. The permit application (section 3.8) does not provide adequate discussion of the groundwater monitoring system, including the following:

1. Proposed groundwater monitoring wells
2. Background groundwater concentration values for proposed parameters
3. Proposed sampling and analysis procedures
4. Procedures for notification of statistically significant increase in any constituent or parameter identified at any compliance point monitoringwell.

b. The permit application instead proposes vadose zone monitoring immediately downgradient of the landfill, which "would be implemented only after fluids have been identified in the leak detection system within the landfill liner system" and "would be implemented as a contingency plan." However, the permit application merely promises that "prior to implementing this contingency plan, detailed installation, operation and sampling procedures will be submitted to the Director, NMED for review and approval." while this monitoring system may be appropriate, it does not provide the necessary justification for exempting the facility from

groundwater monitoring requirements. In addition, the details of the proposed contingency plan for vadose zone monitoring must be submitted as part ofthe permit application.

c. It is suggested that two types of monitoring be conducted at the facility:

1. Shallow wells completed in the Upper Dockum at various depths and monitored quarterly. If water is found, samples must be analyzed for volatiles and other mobile indicator parameters.

2. Deep wells completed in the Lower dockum (uppermost saturated zone) and sampled annually, with analyses for indicator parameters. Comprehensive background analyses should be performed before any wastes are received at the facility.

d. If Gandy Marley agree with this approach, all pertinent information regarding this monitoring system should be provided as part of the revised application. In addition, a compliance schedule for construction and implementation of the system must be provided within the permit application.

Response: *There are currently no plans to conduct groundwater monitoring activities on the Gandy-Marley site. At the request of NMED, because the sediments to host the landfill are unsaturated within the site boundary, a vadose zone monitoring system will be developed for this project.*

Comment 130.

F. PROCEDURES TO PREVENT HAZARDS

F-2b(4)(a)(1) <u>Overtopping Control System</u>: 20 NMAC 4.1 Subpart V § 264.226(b)(1)

The scheduled inspection (section 6.2.3) must specifically include assessment of deterioration, malfunctions, or improper operation of the overtopping control system. If there is no control system other than visual checking, the application must state that this is the case

Response: *There is no overtopping control system other than visual inspections. Adequate freeboard will be maintained to prevent overtopping by wind or wave action, as described in section 2.6.4.3 of the Part B Application. There will be no unmonitored filling of the impoundment, so visual inspections are adequate for overtopping control.*

Comment 131.

F-2b(4)(b) <u>Structural Integrity</u>: 20 NMAC 4.1 Subpart V § 264.226(c)

Neither section 6.2.3 nor 2.5.2.3 address the requirement to provide certification of the structural integrity of the surface impoundment. Prior to issuance of the permit, and after any extended period of time during which the impoundment was not in service, the owner or operator must obtain a certification from a qualified engineer. The certification must establish that the dikes will withstand the stress exerted by the types and amount of wastes to be placed in the impoundment and will not fail due to scouring or piping without dependence on any liner system included in the surface impoundment construction.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.* ***(Comment Response 59):*** *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. The detailed design drawings will show existing and regraded topography and the engineering report will include a written certification attesting to the structural integrity of the evaporation pond's subgrade and structural fill. In addition, provisions will be stipulated for future re-certifications if subgrade or structural fill condtions change or if the evaporation pond is out of service for longer than six months. 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.*

In addition, as part of the CQA Program the CQA engineer will certify that the pond was constructed in accordance with the design drawing and specifications.

Comment 132.

F-2b(6) <u>Landfill Inspection</u>: 20 NMAC 4.1 Subpart V § 264.303(b)

Section 6.2.2 of the permit application states that the landfill and associated equipment will be inspected weekly and after storms. However, the checklist provided in Appendix 6A specifies the schedule as "daily/weekly as noted." Revise the application to reconcile these differences.

Response: *The check list will be revised to recognize the differences.*

Comment 133.

F-4c <u>Water Supplies</u>: 20 NMAC 4.1 Subpart IX § 270.14(b)(8)(iii)

Section 6.4.4., page 6-11, states that "... no non-hazardous liquid waste will be placed in the landfill." Please clarify this statement.

Response: *The third paragraph in section 6.4.4 was designed to show that no sources of waste liquids, either hazardous or non-hazardous, would be introduced into the landfill to ensure water supply protection.*

Comment 134.

F-5b <u>General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste</u>: Subpart IX § 270.14(b)(9), Subpart V § 264.17(b)

The application (section 6.5) does not describe the precautions to be taken to prevent reactions that: (1) generate extreme heat or pressure, fire or explosions, or violent reactions; (2) produce uncontrolled flammable fumes, dusts, or gases in sufficient quantities to threaten human health or the environment; (3) produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions; (54) damage the structural integrity of the containment device or facility; (5) by similar means threaten human health or the

environment. although the application repeatedly promises to comply with these requirements, no information is provided to demonstrate that the facility will actually be operated such that these requirements are met. Provide details to demonstrate compliance with the required criteria in the regulations.

Response: *The Gandy Marley facility will employ a three-pronged approach to ensuring proper handling of ignitable and reactive waste and to prevent mixing of incompatible waste (1) ensure that wastes are properly identified, (2) general facility requirements for management of ignitable, reactive, and incompatible wastes and (3) units-specific requirements for management of ignitable, reactive, and incompatible wastes.*

Procedures for properly identifying and verifying waste are described in section 5.2 of the permit application. Proper implementation of the procedures can be used to identify waste that is ignitable, reactive, or incompatible with other wastes.

Once ignitable, reactive, or incompatible wastes have been identified, they will be managed in accordance with approriate regulations as specified in the permit application. General facility requirements for manageing ignitable, reactive and incompatible wastes are described in section 6.5.1 of the permit application. Unit-specific requirements are described in sections 6.5.2, 6.5.3, as well as the response to NOD comment number 122.

Comment 135.

F-5c <u>Management of Ignitable or Reactive Wastes in Containers</u>: 20 NMAC 4.1 Subpart IX § 270.15(c), Subpart V § 264.176

Provide sketches, drawings, or data demonstrating that containers of ignitable or reactive waste will be located at least 15 meters (50 feet) from the facility's property line.

Response: *Please refer to figure 2-1 in the Part B Application, which shows that all container storage areas at the facility will be located well over the required 50 feet from the facility's property line.*

Comment 136.

F-5d <u>Management of Incompatible Wastes in Containers</u>: 20 NMAC 4.1 Subpart IX 270.15(d), 264.177

If a storage container holds a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments, document that the wastes will separated from other materials or protected from them bya dike, berm, wall or other device.

Response: *Section 2.2.12 and 6.5.3 of the Part B Application address separation of incompatible wastes.*

Comment 137.

F-5e <u>Management of Ignitable or Reactive Wastes in Tank Systems</u>: 20 NMAC 4.1 Subpart IX § 270.16(j), Subpart V § 264.198

The application (section 6.5) does not provide specific details on how ignitable or reactive wastes will be managed as required to comply with § 264.198. Simply repeating the regulation is not acceptable to demonstrate that the facility will comply with the requirements Describe the operational procedures used for storing such wastes in tank systems that includes specific information on: (11) how the waste is treated, rendered, or mixed before or immediately after the placement in the tank so that it is no longer considered ignitable or reactive and complies with § 264.17(b); or the waste is stored or treated in such a way that it is protected from any material or conditions that may cause the waste to react or ignite; or the tank is used solely for emergencies; (2) how the facility will maintain protective distances between the tank(s) and any public ways, streets, alleys, or adjoining property lines that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's "Flammable and Combustible Liquids Code."

Response: *Sections 2.3.5 and 6.5.1 in the Part B Application describe specific details about management of ignitable and reactive wastes in tanks. Figure 2-1 in the Part B Application shows that all waste tanks at the facility will be located well over the required 50 feet from the facility's property line. In addition, the permit application will be revised toprovide more detail on how the facility will comply with 264.198(a).*

Comment 138.
F-5f <u>Management of Incompatible Wastes in Tank Systems</u>: 20 NMAC 4.1 Subpart IX § 270.16(j), Subpart V § 264.199

Sections 2.3 and 2.4 do not demonstrate how the facility will ensure and document that incompatible wastes and materials will not be stored in the same tank or in an unwashed tank that previously held an incompatible waste or material unless § 264.17(b) is compiled with. Provide specific information for the eight proposed tanks,

Response: *For the four stabilization tanks, management of incompatible wastes is addressed in section 2.4.2 in the Part B Application.*

For the four waste storage tanks, management of incompatible wastes is addressedin section 2.3.2 in the Part B Application. Compatibility between batches of wastes to be stored will be determined by testing or review of waste documentation, and the results will be documented in the operating record. If wastes are determined to be incompatible, the tank(s) will be cleaned or flushed using water or a neutral waste type, and the rinsate will be transferred to the stabilization process for treatment. ***(Comment Response 20):*** *The application will be revised to acknowledge the limitations on storage ofrestricted wastes. As outlined in Section 5, procedures will be in place at the facility so that waste will only be accepted that either (1) meets LDR treatment standards, or (2) is amenable to treatment using existing and available treatment capabilities at the facility. In accordance with (2), prohibited wastes will only be stored for the purposes of facilitating proper treatment, recovery, or disposal.*

Comment 139.
F-5i <u>Management of Ignitable or Reactive Wastes Placed in Surface Impoundments</u>: 20 NMAC 4.1 Subpart IX § 270.17(h), Subpart V § 264.229

If ignitable or reactive wastes are to be placed in the surface impoundment, as implied in

section 2.6.4.4, provide a description of how the wastes will be mixed, treated, or otherwise rendered non-ignitable and/or reactive. alternatively, describe the procedures for managing the waste in such a way that it is protected from any material or conditions that may cause it to ignite or react.

Response: *In accordance with 40 CFR Part 268 Subpart D, ignitable and reactive wastewaters will be deactivated to remove the characteristic of ignitability or reactivity as well as treated to meet Part 268.48 standards for underlying hazardous constituents prior to disposal in the surface impoundment.*

Comment 140.
F-5j <u>Management of Incompatible Wastes Placed in Surface Impoundments</u>:
20 NMAC 4.1 Subpart IX § 270.17(h), Subpart V § 264,230

If incompatible wastes, or incompatible wastes and materials are to be placed in the surface impoundment, provide a demonstration that such activities will not:

a. Generate extreme heat or pressure, fire, explosions, or violent reactions:
b. Produce uncontrolled toxic or flammable emissions in significant quantities;
c. Damage the unit's structural integrity; or
d. Otherwise threaten human health or the environment.

This demonstration must be thoroughly documented.

Response: *All wastes will be treated to meet LDR treatment standards prior to disposal in the surface impoundment, so concentrations of hazardous constituents will be relatively low. Wastes which are incompatible will not be placed in the surface impoundment at the same time. Each load of wastewater introduced into the surface impoundment will be allowed to mix with the impoundment contents sufficiently prior to introducing an incompatible waste load. Compatibility with the impoundment contents will be determined through waste analysis or batch-scale testing.*

Comment 141.
G. CONTINGENCY PLAN: 20 NMAC 4.1 Subpart IX § 270.14(b)(7), Subpart V § 264.50 through 264.56, 264.52(b)
G-2 <u>Emergency Coordinators</u>: 20 NMAC 4.1 Subpart V §§ 264.52(d), 264.55

Section 7.2 of the application merely promises to provide a list of Emergency Coordinators to the NMED prior to receipt of waste. This information must be included in the application before a permit can be issued. Provide the emergency coordinator list.

Response: *40 CFR Part 264.52(d) states, "For new facilities, this information must be supplied to the Regional Administrator at the time of certification, rather than at the time of permit application." Because the facility is not yet constructed and has no employees, it would obviously not be possible at this time to provide a list of names, addresses, and phone numbers of emergency coordinators.*

Comment 142.

G-4g Incompatible Waste: Subpart V § 264.56(h)(1)

Section 7.4.5 does not describe provisions for preventing or prohibiting incompatible waste from being treated, stored, or located in the areas where spills have occurred, until cleanup procedures are completed. Provide plans or provisions to be implemented where spills occur, as required by § 264.56(h).

Response: *Provisions for complying with 40 CFR 264.56(h) are addressed in section 7.4.7 in the Part B Application.*

Comment 143.

G-4k Surface Impoundment Spills and Leakage: 20 NMAC 4.1 Subpart V § 264.227
G-4k(l) Emergency Repairs: 20 NMAC 4.1 Subpart V § 264.227

The permit application states that a written procedure for complying with the "impoundment failure control" objectives (section 7.4.5.3) will be prepared prior to acceptance of waste at the facility. This procedure must be provided as part of the application. Provide the procedure to be used for removing the surface impoundment from service when the level of the liquid in the impoundment suddenly drops and the drop is not known to be caused by changes in the flow into or out of the impoundment or when the dike leaks. Address the following:

a. G-4k(l)(a) Stopping Waste Addition: 264.227(b)(1) Procedures for stopping waste additions to the impoundment.

b. G-4k(l)(b) Containing Leaks: 264.227(b)(2) Procedures for containing any leakage.

c. G-4k(l)(c) Stopping Leaks: 264-227(b)(3) Procedures for stopping the leak.

d. G-4k(l)(d) Preventing Catastrophic Failure: 264-227(b)(4) Procedures to stop or prevent catastrophic failure.

e. G-4k(l)(e) Emptying the Impoundment: 264.227(b)(5) Procedures for emptying the impoundment, if necessary.

f. G-4k(2) Certification: 264.227(d)(l), 264.226(c)

g. Neither section 7.4.5.3 nor 7.5.2 mentions the requirement for inspection and recertification of repaired impoundment dikes. Specify the procedure that will be followed for recertifying the dike's structural integrity, in the event the impoundment is removed from service as a result of actual or imminent dike failure.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

(Comment Response 59): *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. The detailed design drawings will show existing and regraded topography and the engineering report will include a written certification attesting to the structural integrity of the evaporation pond's subgrade and structural fill. In addition, provisions will be stipulated for future re-certifications if subgrade or structural fill condtions change or if the evaporation pond is out of service for longer than six months. 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.*

In addition, as part of the CQA Program the CQA engineer will certify that the pond was constructed in accordance with the design drawing and specifications

Comment 144.
G-4k(3) Repairs as a Result of Sudden Drop: 20 NMAC 4.1 Subpart V § 264.227(d)(2)

Section 7.4.5.3 states that a procedure to be followed in the event the impoundment is removed from service as the result of a sudden drop in the liquid level "will be prepared prior to the acceptance of wastes at the facility". The procedure must be included in the permit application. Also provide the required commitment to obtain certification of repairs by a qualified engineer.

Response: *All repairs will be made in accordance with the approved designs, specifications and CQA Plan for the impoundment. All repair work will be conducted under the supervision of a registered professional engineer.*

Comment 145.
G-6 Coordination Agreements: 20 NMAC 4.1 Subpart V §§ 264.52(c), 264.37

Section 7.6 of the permit application merely states that these documents will be submitted to the NMED within 30 days of the effective date of this permit. The agreements must be provided as part of the application. Describe the coordination agreements with local police and fire departments, hospitals, contractors, and state and local emergency response teams to familiarize them with the facility and actions needed in case of emergency. Document refusal to enter into a coordination agreement.

Response: *At this time, formalizing coordination agreements with local fire departments, hospitals, and others would be premature until the facility has an indication of when NMED will proceed with issuance of a permit. The permit application was first submitted over 21/2 years ago. The facility requests that submittal of the required agreements be allowed within 30 days of the effective date of the permit, as requested in the application. 40 CFR Part 270.14(a) allows that "if owners and operators of HWM facilities can demonstrate that the information prescribed in part B can not be provided to the extent required, the Director may make allowance for submission of such information on a case-by-case basis."*

Comment 146.

G-7 Evacuation Plan: 20 NMAC 4.1 Subpart V § 264.52(f)

Section 7.6 of the application merely states that criteria for determining when site evacuations are necessary will be submitted to the NMED within 30 days of the effective date of this permit. Appendix 7C, although tiled "Evacuation Plans", includes only a promise to prepare evacuation plans. The evacuation plan for the facility must be provided in the application, as part of the contingency plan. Describe signal(s) to be used to begin evacuation routes, and planned and alternate evacuation routes.

Response: *Appendix 7C provides most of the overall information needed for the evacuation plan as required in 264.52(f). The details of building-specific evacuations will not be known until final design of the buildings, and detailed emergency procedures for waste storage and treatment units will not be available until final design is complete. The facility requests that submittal of the criteria for determining when site evacuations are necessary be allowed within 30 days of the effective date of the permit, as requested in the application, and that detailed evacuation plans and procedures be submitted following completion of final facility design. 40 CFR Part 270.14(a) allows that "if owners and operators of HWM facilities can demonstrate that the information prescribed in part B can not be provided to the extent required, the Director may make allowance for submission of such information on a case-by-case basis."*

Comment 147.

I. CLOSURE PLANS, POST-CLOSURE PLANS, AND FINANCIAL REQUIREMENTS: 20 NMAC 4.1 Subpart IX §§ 270.14(b)(13) and (15) through (18), Subpart V §§ 264.110 through 264.151, 264.178, 264.197, 264.228, 264.258, 264.280, 264.310, and 264.351 I-1 Closure Plans: 20 NMAC 4.1 Subpart IX § 270.14(b)(13), Subpart V § 264.112(a)(1) and (2) I-1a Closure Performance Standard: 20 NMAC 4.1 Subpart V § 264.111

a. Section 9.4 discusses how the "clean" closure plans for container storage, tanks and the impoundment are proposed to comply with the closure performance standard. However, this section also states that the closure performance standard does not apply to the landfill. This approach fails to meet the requirements of the closure performance standard in two major ways. First the performance standard definitely does not apply to the landfill, as specified in § 264.110(a). The specific landfill performance requirements in 264.310 are referenced as a subset of the general performance standard, in § 264.111(c).

Response: *The closure performance standard described in section 9.4 in the Part B Application is a facility-specific closure standard for the units to be clean closed. This is why it states that it does not apply to the landfill. It was not meant to imply that the general closure performance standard of Part 264.111 does not apply to landfills. The application language will be clarified in this section.*

b. The proposed concentration-based clean closures fail t meet the performance standard by not providing criteria based on protection of human health and the environment. Instead, the proposed concentration limits for determining if closures

are complete would be set arbitrarily (three standard deviations above "background"), without any consideration of the known toxic dosages of any hazardous constituent, potential exposure pathways, and the existence of receptors such as human residents or wildlife. In addition to this overall conceptual failure, the proposed analyses would not be comprehensive- only a few unidentified indicator parameters would be determined. The proposed background samples (undetermined number and parameters) would be taken "outside the facility fence line". However, this indefinite suggestion could result in background samples which are measurably contaminated as a result of routine operation of the facility for 30 years or more, even if the facility is operated carefully and in full compliance with the hazardous waste regulations. Therefore, background levels cannot be the only criteria for determining the adequacy of hazardous constituent removal at closure. This result would be a clear violation of the performance standard in § 264.111.

Response: *We believe setting the closure performance standard to background concentrations is protective of human health and the environment. The three standard deviations requested is to ensure that any values found to be above background are statistically significant. While it is possible to have relatively high concentrations of contaminants, such as metals, in background soil, requiring cleanup to levels below what is naturally occurring in the area would be overly restrictive. Clean background soils should be available at the time of closure, because the site is in an entirely undeveloped area surrounded by hundreds of acres of rangeland, and is unlikely to be heavily developed in the future. Alternatively, background samples could be collected before construction begins, if the NMED feels it is necessary.*

c. The application must be revised to describe how closure:

1. Minimizes the need for further maintenance;
2. Controls, minimizes, or eliminates the post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and
3. Complies with the closure requirements of Subpart G and unit-specific closure requirements.

Response: *The application included these items in section 9.*

d. In general, if clean closure is proposed, the criteria should include concentrations no higher than the actual range of regional background concentrations, in samples taken before facility operations begin, or taken far enough away to ensure no effect due to facility operations. If any other criteria are proposed (such as any concentrations above background), a comprehensive risk assessment will be necessary to ensure adequate protection of human health and the environment.

Response: *Agreed. This is what we proposed.*

Comment 148.

I-1d Schedule for Closure: 20 NMAC 4.1 Subpart V § 264.112(b)(6)

The proposed schedule in section 9.5 and Figure 9-1 appears to provide for placement of the entire cover on the landfill (100 acres) during the final year of that schedule. This approach to closure indicates that the entire waste fill will be exposed to precipitation, erosion and infiltration for the entire 30 year operating period. This schedule would result in significant volumes of leachate production during the years between filling of a section of the landfill to final grade and placement of the cover. Provide discussion of the reason that the cover cannot be placed in segments, thereby minimizing leachate production.

Response: *In accordance with 264.112(b)(6), the Triassic Park Facility closure schedule is discussed in Perinit Attachment H pages 12 of 16 though 14 of 16 (NMED April 1996). The owner may opt to maintain an interim soil cover, install various types of enhanced interim covers, or install the final cover in segments as suggested.*

Comment 149.

I-1d(1) Time Allowed for Closure: 20 NMAC 4.1 Subpart V §§ 264.112(b)(2), 264.113(a) and (b)
I-1d(1)(a) Extension for Closure Time: 20 NMAc 4.1 Subpart V § 264.113(a) and (b)

As noted in comment I-1d, the extended closure time for placement of the landfillcover is not adequately explained or justified. Provide an explanation of why the cover construction cannot begin until all closure wastes from other units have been placed in the landfill.

Response: (Comment Response 148): *In accordance with 264.112(b)(6), the Triassic Park Facility closure schedule is discussed in Permit Attachment H pages 12 of 16 though 14 of 16 (NMED April 1996). The owner may opt to maintain an interim soil cover, install various types of enhanced interim covers, or install the final cover in segments as suggested.*

Comment 150.

I-1e Closure Procedures: 20 NMAC 4.1 Subpart V §§ 264.112, 264.114
I-1e(1) Inventory Removal: 20 NMAC 4.1 Subpart V § 264.112(b)(3)

Discuss methods for removing, transporting, treating, storing, or disposing of all hazardous wastes and identify the type(s) of off-site hazardous waste management units to be used.

Response: *The closure plan proposes to treat and dispose of the remaining waste inventory on site. This is discussed in sections 9.2.1.1, 9.2.2.1, 9.2.2.2, 9.2.2.3, 9.2.3.1, and 9.2.4.1 of the Part B Application.*

Comment 151.

I-1e(2) Disposal or Decontamination of Equipment, Structures, and Soils: 20 NMAC 4.1 Subpart V §§ 264.112(b)(4), 264.114

a. Associated with the closure of each hazardous waste management unit, provide a detailed description of the steps needed to decontaminate or dispose of all facility equipment and structures. The following must be included:

1. Decontamination procedures;
2. Criteria for determining decontamination;
3. List of equipment, structures, and soils;
4. Disposal of contaminated soil and residues;
5. Decontamination of clean-up materials and equipment; and
6. Demonstrate decontamination has been effective.

b. The application must provide a commitment that any hazardous constituents(i.e., 40 CFR 261 Appendix VIII) left at the 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.)

Response: *This information is provided in sections 9.2.1.2, 9.2.1.3, 9.2.1.4, 9.2.2.4, 9.2.3.2, 9.2.3.3, 9.2.4.2, 9.2.4.3, and 9.2.4.4 of the Part B Application.*

Comment 152,

I-1e(3) Closure of Disposal Units/Contingent Closures: 20 NMAC 4.1 Subpart IX §§ 270.14(b)(13), 270.17(f), 270.18(h), 270.21(e), 264.310(a)
I-1e(3)(b) Cover Design: 20 NMAC 4.1 Subpart V §§ 264.228(a)(2)(iii), 264.310(a)

a. The application does not provide the final cover design. The final cover design and installation procedures must be thoroughly described. This submission must include:

1. Final design drawings showing cover layers, thicknesses, slopes and overall dimensions;
2. The common name, species and variety of the proposed cover crop;
3. Descriptions of synthetic liners to be used, including chemical properties, strength, thickness and manufacturers specifications;
4. Description of rationale for cover selection;
5. Descriptions of and specifications for protective materials placed above and below synthetic liner;
6. Geosynthetic clay liner (GCL) characteristics, including thickness and permeability; and
7. Clay liner construction plan.

b. Provide engineering calculations showing the proposed cover will provide long-term minimization of liquid migration through the cover.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 153.

I-1e(3)(e) Drainage and Erosion: 20 NMAC 4.1 Subpart V §§ 264.227(a)(2)(iii)(C), 264.310(a)(3)

a. The application does not describe procedures to promote drainage and minimize erosion or abrasion of the final cover. The following information should be provided:

b. Data demonstrating that the proposed final slope swill not cause significant cover erosion;

c. Description of drainage materials and their permeabilities;

d. Engineering calculations demonstrating free drainage of precipitation off of and out of the cover; and

e. Estimation of potential for drainage-layer clogging.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 154.

I-1e(3)(f) Settlement and Subsidence: 20 NMAC 4.1 Subpart V § 264.228(a)(2)(iii)(D), 264.310(a)(4)

The application does not describe potential cover settlement and subsidence, considering immediate settlement, primary consolidation, secondary consolidation, and creep and liquefaction. Revise the application to include the following information:

a. Potential foundation compression;

b. Potential soil liner compression; and

c. Potential waste consolidation and compression resulting from waste dewatering, biological oxidation and chemical conversion of solids to liquids.

d. Describe the effects of potential subsidence/settlement on the ability of the final cover to minimize infiltration.

Response: (Comment Response 68): *Interface shear testing will be conducted using materials similar to those proposed for actual landfill liner construction. Using these test results, stability analyses assuming likely failure modes will be performed for various static and dynamic loading conditions imposed on the landfill liner, the waste fill, and fnal landfill cover arrangements. The analyses will indicate acceptable factors of safety given the specified liner components, liner and cover design geometry during and after construction,*

and for worst case waste filling scenarios.

In addition, liner component strain limitations will be analyzed relative to theoretical deformations due to settlement, subsidence, or uplift. Geosynthetics specifications will identify maximum equipment loads and minimum overburden soil thicknesses to prevent geosynthetic damage during construction.

The results of the landfill stability analyses, which will include equilibrium stress states, resulting factors of safety, and displacements, will be presented in the engineering report for the landfill.

Comment 155.

I-1e(3)(g) Cover Permeability: 20 NMAC 4.1 Subpart V §§ 264.228(a)(2)(iii)(E), 264.310(a)(5)

The application does not address the requirement to demonstrate the final cover system will have a permeability less than or equal to that of the bottom liner system or natural subsoils present. This may be difficult or impossible, because the GCL and synthetic liners on the floor of the landfill will be under heavy compression loads, while the cover liner willbe only lightly compressed, and subject to damage from subsidence and erosion. The application must be reviewed to discuss the measures to be taken to eliminate leakage due to these problems.

Response: *The post-closure care plan presented in Permit Attachment I pages 1 of 12 and 2 of 12 (NMED April 1996) describes cover maintenance and repair measures.*

Comment 156.

I-1e(3)(h) Freeze/Thaw Effects: 20 NMAC 4.1 Subpart V §§ 264.228(a)(2)(iii), 264.310(a)

The application must be revised to identify the average depth of frost penetration and describe the effects of freeze/thaw cycles on the cover.

Response: *The cover's HDPE and geosynthetic clay cover barrier layers will not be significantly adversely affected by freeze/thaw cycles. (Hewitt, R.D., Daniel, D.E. 1996. Hydraulic Conductivity of Geosynthetic Clay Liners Subjected to Freeze-Thaw. Journal of Geotechnical Engineering. To be published.)*

(Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporation pond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 157.

I-1e(9) Closure of Landfills: 20 NMAC 4.1 Subpart IX § 270.21(e), Subpart V § 264.310(a)

The application does not provide detailed plans and an engineering report that describes the final cover components in detail. Cover installation and construction quality assurance procedures must be thoroughly described. Revise the application to include detailed plans and an engineering report, which must describe how the final cover will:

a. Provide long-term minimization of migration of liquids through closed landfill;

b. Function with minimum maintenance.

c. Promote drainage and minimize erosion/abrasion;

d. Settle/subside without losing integrity;

e. Be less permeable than bottom liners or subsoils; and

f. Withstand freeze/thaw cycles.

Response: (Comment Response 38): *Detailed design drawings, specifications, engineering report, construction quality assurance plan, and maintenance and operations plan will be prepared for the Triassic Park Facility landfill, evaporationpond, and roll-off staging areas. These documents will be certified by a Professional Engineer registered in the State of New Mexico and will be submitted to NMED prior to revision of the existing Draft Permit.*

Comment 158.

I-2 Post Closure Plan/Contingent Post-Closure: 20 NMAC 4.1 Subpart IX §§ 270.14(b)(13), 270.17(f), 270.18(h), 270.20(f), 270.21(e), 270.23(a)(3), Subpart V §§ 264.118, 264.197(b), 264.197(c)(2), 264.228(b), 264.228(c)(1)(ii), 264.258(b), 264.258(c)(1)(ii), 264.280(c), 264.310(b), 264.603
I-2a Inspection Plan: 20 NMAC 4.1 Subpart V §§ 264.118(a), 264.197(b), 264.197(c)(2), 264.226(d)(2), 264.228(b), 264.228(c)(1)(ii), 264.258(b), 264.258(c)(1)(ii), 264.303(c), 264.310(b)

The post-closure plan includes inspection and sampling of groundwater monitoring wells, which have apparently been deleted from the application. Revise the application as necessary to reflect the actual plan for groundwater and/or vadose zone monitoring.

Response: *Changes in the closure plan to reflect the change from groundwater monitoring to vadose zone monitoring were proposed in the facility's comments on the draft permit. Please refer to the facility comments on Attachment I of the draft permit.*

Comment 159.

I-2c Maintenance Plan: 20 NMAC 4.1 Subpart V §§ 264.118(b)(2), 264.197(b), 264.197(c)(2), 264.228(b), 264.228(c)(1)(ii), 264.258(b), 264.258(c)(1)(ii), 264.310(b)

a. The application describes corrective maintenance procedures, but does not provide detailed criteria for determining when corrective measures are necessary. Include additional details for the following items in the maintenance plan:

1. Leachate treatment unit operation, storage and discharge control;
2. Erosion damage repair;
3. Correction of settlement, subsidence and displacement;
4. Mowing, fertilization and other vegetative cover maintenance;
5. Repair of run-on and run-off control structures;
6. Leachate collection/detection system maintenance;
7. Well repair/replacement; and
8. Maintain surveyed benchmarks.

b. The proposal for discharge of treated leachate creates the concern that hazardous constituents may be released in the vicinity of the landfill, although the treatment to be provided is unknown. If the landfill is properly covered, very little leachate should be produced after closure. Off-site treatment and/or disposal of small quantities of leachate would appear to be a more efficient approach. Provide an explanation of the need for on-site treatment and discharge.

Response: *A revised Post-Closure Plan was submitted to NMED with the response to the Notice of Deficiency. This plan includes the items listed in the comment. Additional details will be available on the leachate collection/detection system maintenance when the final design is completed and an equipment manufacturer is selected. The plan for discharge of treated leachate is addressed in the response to comment 40.*

Comment 160.

I-3 Notices Required for Disposal Facilities

I-3d Post-Closure Notices: 20 NMAC 4.1 Subpart IX § 270.14(b)(14), Subpart V § 264.119

a. Section 9.2.6 states that no later than the submission of the certification of closure of the landfill, the facility will submit a survey plat with thelandfill dimensions, and a general notation will be recorded on the deed to the property. This submittal and deed notation will comply with § 264.116, but they are not the notices required to be submitted pursuant to § 264.119. The application must be revised to include statements that the following post-closure notices will be appropriately filed and submitted:

b. A record of the type, location, and quantity of hazardous wastes disposed of within each cell or other disposal unit will be submitted to the local zoning authority (or the authority with jurisdiction over local land use at that time, which will probably be the county government) and to the NMED no later than 60 days after certification of closure of each disposal unit.

c. A notation in the deed to the facility property will, in perpetuity, notify any potential purchasers of the property that (1) the land has been used to manage hazardous waste; (2) use of the land is restricted to activities that will not disturb integrity of the final cover system, or monitoring system during post-closure care period; and (3) the survey plat and record of waste disposal (noted above) have been submitted to the local zoning authority and to the NMED.

Response: *This language will be added to section 9.2.6 as suggested.*

Comment 161.

I-4 Closure Cost Estimate: 20 NMAC 4.1 Subpart IX § 270.14(b)(15), Subpart V § 264.142

a. The cost estimates in section 9.8 are based on the assumption that third party contractor personnel will perform the necessary tasks, according to section 9.8.1. However, no calculations or unit costs are provided, so it is difficult to understand how most of the costs were developed. For example, disposal of 1120 drums of wastes is estimated to cost $7,600, or about $6.79 each. This is an extraordinarily low cost for disposal of drummed (especially liquid) hazardous waste, especially when contracted out. The closure plan must provide more detailed information to justify this and the other costs in Table 9-1.

Response: *The closure plan proposes to use third party contractors to provide the labor, but the wastes are proposed to be treated and disposed on site, avoiding the cost of off-site disposal. Cost estimates were derived using EPA's "Guidance Manual: Cost Estimates for Closure and Post-Closure Plans, Volumes I-IV (November 1986)." All costs were calculated using the worksheets in these guidance manuals. The calculated costs were then adjusted to 1994 dollars for the final closure cost estimate.*

b. The costs in Table 9-1 do not include amounts for closure of the stabilized waste rolloff storage area or the "temporary" leachate storage tanks around the perimeter of the landfill. Since these units should be included in the revised application as permitted units, the closure plan must be revised to include costs for their closure.

Response: *The stabilized waste rolloff storage area and the leachate storage tanks do not require permits and do not need to be included in the closure cost estimate. See the response to comments 25 and 32.*

Comment 162.

I-5 Financial Assurance Mechanism for Closure: 20 NMAC 4.1 Subpart IX § 270.14(b)(15), Subpart V §§ 264.143, 264.151

Section 9.9 promises to submit the required financial assurance at least 60 days before receiving wastes at the facility. The assurance is required to be submitted in the permit application. However, it is acceptable to provide the detailed information describing the type of assurance that will be provided, identifying the bonding, insurance or other surety agency, and a providing a definite commitment from the agency or agencies to provide the financial instruments within that time frame. Provide the established financial assurance mechanism

for facility closure, or the detailed information and commitment as noted above.

Response: *The New Mexico Hazardous Waste Management regulations Title 20, Chapter 4, Part 1, Subpart IX, The Hazardous Waste Permit Program states, "Except as otherwise provided, the regulations of the EPA set forth in 40 CFR Part 270 through July 1, 1994 are hereby incorporated as Subpart IX of this Part." The exceptions noted in this citation do not affect the section of 40 CFR 270 referenced in the comment. In addition, the references to 40 CFR 264 are similarly incorporated into the New Mexico regulations. Of these two references only 40 CFR 270.14(b)(15) refers to the inclusion of financial assurance information in the application. 40 CFR 264.143 and 264.151 establish the requirement for financial assurance and the wording of the acceptable instruments, respectively.*

40 CFR 270.14(b)(15) states, "For a new facility, a copy of the required documentation may be submitted 60 days prior to the initial receipt of hazardous wastes, if that is later than the submission of the Part B." In addition, the requirements of 40 CFR 264.143 state, "An owner or operator of a new facility must submit...[type of instrument]...to the Regional Administrator at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal." 40 CFR 264.151 provides the owner or operator with the wording required for each of the financial instruments acceptable and does not set any deadlines for the submittal of the information.

No changes are necessary to the Part B Application as a result of this comment.

Comment 163.

I-6 <u>Post-Closure Cost Estimate</u>: 20 NMAC 4.1 Subpart IX § 270.14(b)(16), Subpart V § 264.144

a. The cost estimate in Table 9-2 includes costs for groundwater monitoring for 30 years, as described in the post closure plan. However, section 3 of the application proposes deletion of all groundwater monitoring, both during and after operation of the facility. Accompanying comments recommend reconsideration of the proposal. Groundwater monitoring may be the best method for detecting releases from the landfill, even though monitoring conditions are hardly ideal. The revised application must include a post closure plan and cost estimate which are consistent with the preceding application.

Response: *The facility's comments on the draft permit request replacing the proposed groundwater monitoring system with a vadose zone monitoring system. Detailed post-closure cost estimates for the vadose zone monitoring system cannot be developed until the system is designed to the satisfaction of NMED. The current post-closure cost estimates in the Part B Application for groundwater monitoring are believed to be more than adequate to cover the costs of a vadose zone monitoring system.*

b. The application does not mention the required annual inflation adjustment. The application must be revised to provide a commitment to adjust the cost estimate annually for inflation pursuant to 40 CFR 264.144(b).

Response: *Agreed. The required annual inflation adjustment should be added to section 9.8.2 of the application.*

Comment 164.

I-7 Financial Assurance Mechanism for Post-Closure Care: 20 NMAC 4.1 Subpart IX § 270.14(b)(16), Subpart V § 264.145, 264.151

See comment I-5.

Response: *40 CFR 270.14(b)(16) and 40 CFR 264.145 establish the same deadlines ("...at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal.") for the submittal of financial assurance information as 40 CFR 270.14(b)(15) and 40 CFR 264.143 respectively. See response to comment I-5.*

No changes are necessary to the Part B Application as a result of this comment.

Comment 165.

I-8 Liability Requirements: 20 NMAC 4.1 Subpart IX § 270.14(b)(17), Subpart V § 264.147

See comment I-5.

Response: *40 CFR 270.14(a) states, "If owners and operators of HWM facilities can demonstrate that the information prescribed in Part B can not be provided to the extent required, the Director may make allowances for submission of such information on a case-by-case basis." Acquiring liability insurance or even a reasonable quote for liability insurance cannot be done until the final permit has been issued. Rates are establishedbased upon the risk and extent of any occurrence and the final permit and permit conditions will affect the actuarial calculation of insurance rates.*

In addition, 40 CFR 264.147 states, "An owner or operator of a new facility must submit...at least 60 days before the date on which hazardous waste is first received for treatment, storage, or disposal."

No changes are necessary to the Part B Application as a result of this comment.

Comment 166.

J. CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

J-1 Solid Waste Management Units: 20 NMAC 4.1 Subpart IX § 270.14(d)(1), Subpart V § 264.101

The application states (section 11) that there are no solid waste management units on the property. However, 5 oil wells have been drilled within 2 miles from the facility, as shown on Plate 3-7. One well is less than one half mile northwest of the facility boundary. The application should state whether any indication of disposal of oil well drilling or production waste (e.g., mud pits, discarded pipe, empty drums, etc.) has been observed within or near the facility boundary.

Response: *There is no indication of disposal of oil well drilling or production waste within or near the facility boundary, based upon visual observation of the site. The permit application will be revised to indicate this.*

Comment 167.

J-1b <u>No Solid Waste Management Units</u>

Although no SWMUs have been identified, the application does not describe the methodology used to determine that no existing or former solid waste management units exist at the facility. Revise the application to explain how it was determined that no SWMUs are present (e.g., walking the entire site, record review, interview with historical owner/operator).

Response: *No SWMU's have been identifed within the facility boundary based upon a combination of walkdown of the site and interviews with the current landowners. The permit application will be revised to inlcude a discussion of the methodology*

Comment 168.

K. OTHER FEDERAL LAWS: 20 NMAC 4.1 Subpart IX §§ 270.14(b)(20), 270.3

The application does not address other federal laws. The application must demonstrate compliance with the requirements of applicable Federal laws such as the Wild and Scenic Rivers Act, National historic Preservation Act of 1966, Endangered Species Act, Coastal Zone Management Act, and Fish and Wildlife Coordination Act, or other laws which may be applicable. If these and other laws have been determined to be inapplicable to the Gandy Marley facility, the application should so state.

Response: *The permit application will be revised to include a discussion of other federal laws that apply to the Gandy Marley facility.*

Comment 169.

L. PART B CERTIFICATION: 20 NMAC 4.1 Subpart IX § 270.11

The application is not certified. The application must be accompanied by a certification letter as specified in § 270.11(d).

Response: *The certification letter was included in the very front of the Part B Application, right behind the title page.*