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

RESPONSE TO

REQUEST FOR SUPPLEMENTAL INFORMATION (RSI)
TRIASSIC PARK PERMIT APPLICATION

July 1999

DRAFT-FINAL

(REDLINES – STRIKEOUT VERSION)

Prepared for:

STATE OF NEW MEXICO
ENVIRONMENTAL DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU

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~~May~~ July 1999

RCRA Permits Management Program, Hazardous and Radioactive Materials Bureau (RPMP/HRMB) staff of the New Mexico Environment Department have reviewed the Triassic Park Hazardous Waste Management Disposal Facility (the Facility) Permit application submitted in December 1997 (Vols. I and III revised in November 1998). In a letter dated March 11, 1999, the RPMP/HRMB provided a Request for Supplemental Information (RSI) in a series of questions prepared by RPMP/HRMBN and their subcontractor TechLaw.

In May 1999 a draft response to HRMB's RSI was prepared and submitted to HRMB. Since that time, various meetings and work sessions have taken place between HRMB and the Gandy Marley design team. This has resulted in HRMB's June 10, 1999 letter with comments on draft responses to the RSI. In addition, HRMB's contractor to assist with the review, TechLaw, provided additional comments in a letter dated June 23, 1999.

In both the June 10 and June 23, 1999 letters, the response to RSI comments prepared by Gandy-Marley Design Team were deemed to be either acceptable, unacceptable or required additional discussion for clarification. Various meetings and /or teleconferences were conducted to address unacceptable responses or clarify responses. This final responses to RSI comments incorporates the results of these discussions and meetings with the intent of providing acceptable responses to all HRMB RSI comments.

This document provides a response to each comment. The format includes a presentation of the original comment as submitted by RPMP/HRMB. Text presented **"in bold"** is taken directly from the text of the Facility Permit Application. The response follows each question and is presented in *italics*.

GENERAL COMMENTS

Comment 1.

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

Response: *The stabilized waste portion of the Roll-Off Container Storage area will be added to the permit as a permitted unit. The necessary changes will be made to incorporate the area into the permit application.*

Comment 2.

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

Response: *The Truck Wash Area will generate derived waste and therefore, is not subject to the RCRA permitting requirements. All potential waste generated in this area will be tested and subject to the 90 day storage limitation. The area is shown in the Waste Analysis Plan as a potential generator site for site generated waste (NMED concurrence 5/4/99).*

Comment 3.

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

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

Response: ~~*Incorporate groundwater monitoring waiver letter in the permit.*~~ *Based on recent meetings, Gandy Marley is planning to conduct additional field investigations to further characterize the hydrogeologic conditions at the site. Based on the results of these investigations, an appropriate groundwater monitoring system for the site will be proposed in the revised permit application.*

SPECIFIC COMMENTS

VOLUME 1 - PART A

Comment 4. Page 4

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

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

Response: *All of the volumes listed in the Part A (and other sections of the application) will be checked against the latest engineering drawings and the appropriate corrections made.*

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

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

- The 4.6 million gallons for the Surface Impoundment does not agree with either the 6.52 million gallons (1.63 million gallons x 4 for both Pond 1A and 1B and Pond 2A and 2B) or 3.26 million gallons (1.63 x 2 for only Pond

1A and 1B) specified in Vol. III, Section 4.1.2. Please correct the discrepancy.

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

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

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

* 7.48 = conversion factor

Response: *Pond 2 will not be permitted as part of this application.*

Recommended changes: *The second pond will be removed from drawings.*

c. S01 61,600.00 G 002

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

Response: *The potential storage volume for Roll-Off Container Unit will be added to Part A.*

PART B

Section 1.0, General Facility Standards

Comment 5.

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

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

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

Response: *Comment noted*

Comment 6.

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

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

Response: *As GMI has indicated in previous correspondence with the NMED a zoning change will be required prior to the construction of the facility. However, GMI has chosen not to finalize the change in*

zoning for the area until the issuance of a final permit. A change in zoning from agricultural to industrial will result in a substantial change in the tax base for the area and it would not be in GMI's best interest to change the designation until a final permit is issued.

Section 2.0, Treatment, Storage and Disposal

Comment 7.

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

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

Response: *Delete the word "recovery".*

Comment 8.

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

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

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

Response: *Individual storage cell are defined as groupings of drums as shown on Drawing 37. The specific areas to be used for storage will depend on the volume and type of waste being processed at the site. Labels will be added to each section of the drum storage unit to identify the type of waste to be stored. The labels may change depending on the volume and type of waste being received. Concrete curbs will separate different storage areas (see Drawing 37 and Detail 4/37/38). See Section 2.2.12 which describes separation.*

Recommended changes: *Add note to Drawing 37 describing labels for different storage areas. Add new text to Section 2.2.1.1 about labeling of storage areas.*

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

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

Response: *Clarify that building is only covered with a roof.*

Recommended changes: *Add text to Section 2.2.1.1 that changes "enclosed" to "covered".*

Comment 9.

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

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

Response: Only PCB wastes will be stored in designated cells.

Recommended Changes: Add above text to Section 2.2.1.3.

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

Responses: Trey to clarify - PCB wastes could be included in contaminated soils.

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

Responses: Two TSCA cells are shown on Drawing 37.

Recommended changes: Add additional leader line to second TSCA cell as shown on Drawing 37.

Comment 10.

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

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

- See Comment No. 1.

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

Responses: See comment 1 above. Trey to clarify - Check on "Derived Waste Storage Area".

Recommended Changes: Revise text to state that Roll-Off Storage Area (Stabilized) will not be a 90-day storage area but will comply with 40 CFR 264.170.

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

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

Responses: Free liquids associated with roll-off bins are expected to be very small quantities and therefore would be handled in the stabilization process and would not be sent to the liquid storage tanks or the evaporation ponds.

It is difficult to provide additional details on the kinds of wastes that will be sent to the liquid storage tanks and surface impoundment until a permit is issued and the facility can determine a potential waste stream.

***Recommended Changes:** Add text to section 2.2.2 indicating that free liquids in roll-off containers will be small and will be managed in the stabilization unit.*

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

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

Responses: See above - As discussed in the Waste Analysis Plan, waste in the roll-off containers that meet the requirements for free liquids (or lack thereof) will be placed in the landfill. Other wastes in roll-off containers that does not pass the appropriate acceptance testing (i.e. paint filter test) will be transferred to the stabilization area for treatment. Upon completion of the stabilization process the waste will once again be tested to ensure that it meets the landfill criteria.

Comment 11.

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

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

Responses: See response to Comment D. Also, 40 CFR 264.192 allows reference to API Publication 1615 (November 1979) or ANSI Standard B31.2 and ANSI Standard B31.4 may be used, where applicable, as guidelines for proper installation of piping systems.

***Recommended Changes:** Add note to drawings with above reference and to text in Section 2.3.9.*

Comment 12.

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

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

Response: See response to Comment D.

Recommended Changes: *None.*

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

Response: *See response to Comment D. Discussion will consist of indicating that piping system will comply with API Publication 1615 (November 1979) or ANSI Standard B31.2 and ANSI Standard B31.4. Drawings currently show piping system from tanks and where tanker trucks would connect to transfer liquids to Stabilization area.* ~~*If piping was installed it would be placed in as direct a line as possible to the stabilization area.*~~

Recommended Changes: *Add new text to sections 2.3.12 and to Volume III. Add note to existing drawings indicating that piping would meet with API Publication 1615 (November 1979) or ANSI Standard B31.2 and ANSI Standard B31.4 standards and that piping location would be determined in the field.*

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

Response: *Add new inspection item for annual leak tests to Table 5-1.*

Recommended Changes: *See above.*

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

Response: ~~*Prior to using the piping system to transfer any incompatible waste the pipes will be flushed with water for cleaning. The rinsate will be sampled, and if necessary, be managed as a hazardous waste. If the rinsate shows to be contaminated above acceptable levels the pipes will be flushed again. This process will continue until sampling shows that there is no further need for flushing the pipes.*~~

Text will be modified in the appropriate sections to reflect this approach. At this time only a limited piping system for hazardous waste transfer is planned. This includes direct discharged piping from the liquid waste storage tanks to a transfer truck connection point. Due to the limited extent of piping this will be considered part of the tanks and will be cleaned and dismantled as part of the tank closure.

Recommended Changes: *Text will be modified in the appropriate seciton to reflect the* ~~*process*~~ *approach.*

Comment 13.

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

a. Please provide more detail on the stabilization process. What is the consistency of the waste when the stabilization process is completed? How long does mixing take

place? How is complete mixture by the backhoe ensured? What is the ratio of reagent to waste? How much is a load in gallons? How many loads per day? What part do time and temperature play (see Vol. I, Section 2.4.1, 1st paragraph)?

Response: *It is difficult to provide all that detail that is requested due to the unknown condition of the waste to be treated. When the stabilization process is completed, the waste will pass the paint filter test. The duration of mixing will depend on the input waste and the stabilization products that are added. Complete mixing is determined by visual observation and confirmed by paint filter test. The ratio of waste to reagent is variable depending on the type of waste being treated. The number of loads per day will depend on the market conditions.*

Recommended Changes: *None. See the revised Waste Analysis Plan for additional detail.*

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

Response: *A typical treatment recipe can be provided but it should only be considered as typical. This was removed from drawings based on comments by NMED.*

Recommended Changes: *Note to drawings regarding typical recipe for stabilization.*

Comment 14.

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

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

Response: *Volume III presents the structural design analysis of the mixing bins which indicates the steel vault must be constructed of 7/8-inch to 1-inch steel. Therefore the bin structural analysis will dictate the materials used for the mixing bins. Volume III, Section 6 indicates that corrosion protection for the bins will be provided by installing grounded cathodes to the inner and outer bins. We recognize the some of the wastes that will be stabilized in the bins may be reactive with the steel bins; however, the wastes will only be in the bins for a limited amount of time and therefore the corrosion would be limited. Furthermore, the bins can be visually observed for signs of corrosion and prepared or replaced if necessary.*

Recommended Changes: *None.*

Comment 15.

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

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

Response: *The text will be revised to only indicate permitting of Phase IA.*

Recommended Changes: *See above.*

Comment 16.

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

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

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

Response: *Explosive as referred to in the fifth bullet is waste which falls under the definition of an explosive as defined in 29 CFR 1919.109(a)(3).* "Explosive. Explosive-any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation; see 49 CFR Chapter I. The term "explosives" shall include all material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation, and includes, but is not limited to dynamite, black powder, pellet powders, initiating explosives, blasting caps, electric blasting caps, safety fuse, fuse lighters, fuse igniters, squibs, cordeau detonant fuse, instantaneous fuse, igniter cord, igniters, small arms ammunition, small arms ammunition primers, smokeless propellant, cartridges for propellant-actuated power devices, and cartridges for industrial guns. Commercial explosives are those explosives which are intended to be used in commercial or industrial operations."

Recommended Changes: *Both bullets will be revised to read "explosives". By definition the Part A does not list any explosives.*

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

The seventh bullet identified liquid waste containing PCBs greater than 50 parts per million as excluded from acceptance at the Facility. Will nonliquid waste containing PCBs be accepted? If so, in total HOC concentrations greater than 1,000 mg/kg?
Response: *The bullet is correct, the facility will not accept liquid wastes containing >50ppm PCBs. The reviewer is referred to 40 CFR 268.42(a)(1) which states,* "Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm but less than 500 ppm must be incinerated in accordance with the technical requirements of 40 CFR 761.70 or burned in high efficiency boilers in accordance with the technical requirements of 40 CFR 761.60." *Other PCB media contaminated at concentrations above 50 ppm will be accepted at the facility. These media include non-liquid waste (i.e., rags, debris, etc) and sludges which meet the facility requirements for free liquids and defined in 40 CFR 761.60(a)(5) and PCB contaminated articles as defined in 40 CFR 761.60(b) as being acceptable for a permitted landfill.*

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

This section does not really address the nature and quantity of waste to be received from off-site generators. Part A does not provide a lot of information, since it seems

to have been prepared to cover all eventualities regarding the possible quantity for each hazardous waste constituent. RPMP realizes that the nature and quantity of waste accepted from off-site generators cannot be precisely specified, but would appreciate available estimates and information Gandy Marley may have on the probable kinds and quantities of hazardous waste to be received.

Response: The initial estimates of waste inflow to size the first phase was based on approximately 15,000 cy per month. This turns out to be 180,000 cy per year. Phase IA of the landfill has a waste capacity of 553,232 (Table 3, Page 3-20, Volume III). Therefore, the first phase would have capacity for approximately 3-yrs of waste placement.

Recommended Changes: None.

d. **The landfill will have...a capacity of approximately 10 million cubic yards of waste.**
Response: See Comment 4a.

Comment 17.

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

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

Response: There is no regulatory requirement for minimum daily cover thickness. However, GMI will modify the minimum cover thickness to 0.5 feet.

Recommended Changes: Minimum cover thickness will be 0.5 feet.

Comment 18.

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

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

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

Response: This level of detail for the monitoring was developed based on input from NMED.

Recommended Changes: Table 5-1 will be modified to include this inspection.

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

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

Response: The requested language can be added to Section 8.0.

Recommended Changes: Add language to Section 8.0.

Comment 19.

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

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

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

Response: The landfill placement operation will be based on an set of grids along the north end of the landfill and along both the east and west sides of the landfill. Incompatible waste will be placed with a minimum of one grid in between the loads. Grid are normally spaced at approximately 50 to 100 foot intervals. Therefore, the minimum spacing would be 50 feet.

Recommended Changes: Add above language to Section 2.5.3.7.

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

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

Recommended Changes: The sentence will be deleted.

Comment 20.

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

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

Response: *There are only 2 ponds – Pond 1 and future Pond 2. Each pond has two sides A and B to facilitate the operation of the Ponds. The separation berm between the two sections is described in Section 2.6.1.3, Page 2-27. GMI has indicated it will remove the second pond from the permit.*

Recommended Changes: *See above.*

Comment 21.

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

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

Response: *The overall pond operation is described in Volume III, Section 4. The sludge will be removed by vacuum truck and transported to the stabilization bins. The general procedure for pond operation is described in Volume III, Section 4. The volume of liquids in the ponds will be dependent on the waste market. Net evaporation (total evaporation minus rainfall) for the site is in the range of 80 inches per year.*

Section 3.0, Groundwater Protection

Comment 22.

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

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

Response: *These word changes were made.*

Comment 23.

Section 3.4.3.2, *1994 Site Characterization Activities.*

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

Please reference the date of the approval correspondence.

Response: *We have been unable to locate a copy of the approval. The text will be changed to reference* ***Verbal Communication, Robert Sweeny - NMED, July 1994.***

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

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

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

Response: *The paragraph at the top of page 3-12 will be changed to read:*

A suite of three geophysical logs were run; 1) caliper, 2) gamma ray, and 3) dry thermal neutron. These logging techniques measure various chemical and physical characteristics of the subsurface stratigraphy. Used in conjunction with the logs of drill cuttings, these electric logs provide a valuable method of interpretation for the lithologic and saturation conditions of the proposed host sediments. Copies of all geophysical logs can be found in Volume II, Appendix D.

The following summaries briefly describe the interpretive value associated with each of the three log types used. For a more detailed explanation of these techniques, the U.S. Geological Survey has published Borehole Geophysics Applied to Groundwater Investigations by W. Scott Keys - Publication No. TWRI 2-E2 (1990).

1) Caliper logs - This is a physical measurement of the diameter of the borehole. A 4¾ inch bit was used to drill these boreholes and, for the most part, the caliper log reflects an approximate 5-inch diameter hole. As a general rule, the borehole diameter will increase in unconsolidated sands and gravels. This is due to a "caving in" effect. Likewise, there will be a slight decrease in the overall hole width in well-cemented sands and tightly compacted clays.

2) Gamma Ray logs - This is a measurement of natural radiation in the borehole. The radioisotopes of Thorium, Potassium and Bismuth account for most of the naturally occurring gamma radiation. From a lithologic perspective, finer grained sediments (clays) will have a stronger gamma response due to their higher concentration of potassium minerals. Sands, which are primarily composed of silica, will have a much lower gamma response.

As a matter of geologic interest, there appears to be evidence of epigenetic (introduced) uranium mineralization within the sandy siltstone of the Upper Dockum. Several boreholes on the proposed site exhibit characteristic gamma "kicks" within the fluvial sediments that are consistent with "roll front" uranium deposits. These gamma anomalies occur where uranium precipitated in low-energy environments along the flanks of fluvial channels. Although they are of no economic significance, these gamma anomalies are found only in the basal fluvial unit of the Upper Dockum and assist in the correlation of this unit throughout the proposed site.

3) Dry Thermal Neutron logs - This logging technique is considered to be a indicator of the presence of moisture. It utilizes a neutron-emitting source (1-3 curies of radioisotopes of Americium and Beryllium) and measures the time it takes for an emitted neutron to enter a formation and "bounce" back to a counter. These neutrons have an affinity for protons which will result in a relative rapid return rate. Should the neutron encounter large hydrogen ions (associated with water - H_2O), its return to the counter is significantly slowed. This results in a reduced count rate. Therefore, high

count rates indicate dry conditions and these rates are reduced proportionally to the amount of moisture encountered. Neutron logging can be performed through steel casing without an appreciable decrease in count rates. Logging through plastic casing, however, will cause approximately a 30% decrease in count rate, due to the hydrogen in the plastic.

For the purpose of interpreting lithologies, unsaturated sands will have the least amount of moisture and the highest count rate. Tightly compacted clays will contain some trapped moisture and will have a lower count rate. The presence of water will result in an order-of-magnitude reduction in the count rate.

The abrupt decrease in the dry neutron log response for boreholes PB-36 and PB-37 was due to a change in hole diameter. The bottom portion of these two boreholes were cored. The 4¾-inch drill bit was replaced by an NX (1⅞-inch) core barrel. This abrupt change in hole diameter can be seen in the caliper log. It causes a reduction in neutron counts due to a phenomenon called neutron flux. During the neutron emission process, neutrons are broadcast in a circular, "cloudlike" pattern (neutron flux). In a larger diameter hole, a certain amount of this neutron flux is present in the void between the source and the edge of the hole. The counter will detect some of this neutron flux. In a tight hole, when there is very little void space between the source and the edge, almost all of the neutrons are dispersed into the formation. In these situations, because there is no contribution from the neutron flux, the overall count rate is decreased

On page 3-9, in addition to the headings Upper Dockum and Lower Dockum which are used to define Triassic sediments, a new heading Contact between the Upper and Lower Dockum will be added.

Contact between the Upper and Lower Dockum - This contact is a stratigraphic boundary and is not necessarily represented by a diagnostic geophysical log signature. The Upper Dockum consists of interbedded sequences of fine-grained fluvial sandstones/siltstones and mudstones. The lowermost occurrence of these fluvial sediments is recognized as the base of the Upper Dockum.

Where fluvial sediments are present, the contact between the Upper and Lower Dockum is easily recognizable. However, due to the low-energy depositional environment and abrupt facies changes within these fluvial sediments, there are areas where this contact must be inferred. Where Upper Dockum fluvial sediments have facied into mudstones, the contact is entirely within mudstone sequences. For this reason, the process of establishing this contact, whether mapped or inferred, is based on extensive subsurface correlation. This is accomplished with some degree of confidence since the maximum spacing between all 31 boreholes completed within the proposed project boundary is 1000 feet.

The basal fluvial unit (sandstones/siltstones) within the Upper Dockum has a maximum thickness of approximately 100 feet. Although the clastic (sandstone/siltstone) percentage of this 100-foot interval changes abruptly, through careful hole-by-hole correlation, the interval can be traced beneath the site. The gamma anomalies associated with the suspect uranium precipitation, actually act as marker beds to aid the correlation effort. WW-I is an excellent example of how these anomalies help to identify the lower portion of the basal Upper Dockum. The log from this hole also illustrates the spatial relationship of this basal unit to the thick sequence of underlying Lower Dockum mudstones.

The importance of recognizing the Upper and Lower Dockum boundary is to ensure that the base of the proposed landfill will be placed on the top of the Lower Dockum. The thick sequences of mudstones within this unit provide an excellent geologic barrier (another level of protection) to any

potential downward migration. In those areas where there is an inferred contact, the lithologies are mudstones. Despite the inferred contact, the important consideration of establishing a permeability barrier has been accomplished.

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

Response: *The fluvial (or potential water-bearing) sediments within the Upper Dockum are fine-grained sandy siltstones with a relatively low permeability. As previously stated, the measured permeability of these sediments average 1.22 X 10 $^{-5}$ cm/s. Because of the low permeability of these sediments, when groundwater is encountered, it requires some time for this water to enter the borehole.*

As an example, PB-1 (located approximately 1½ miles north of the proposed landfill) encountered damp sands at the base of the Upper Dockum at a depth of 158 feet. The hole was completed at a depth of 200 feet. Geophysical logs were run on PB-1 approximately two hours after the base of the Upper Dockum was penetrated. The log showed twenty feet of water (to a depth of 180 feet) in the bottom of the borehole. The lithology of this portion of the borehole (from both drill hole cuttings and geophysical profiles) corresponded to mudstones of the Lower Dockum unit. Apparently, water had been falling down the hole from the saturated sand at 158 feet. Two hours had not been enough time for the groundwater in the hole to equilibrate (reach the level of entry). Had more time elapsed between the drilling and the logging of the borehole, over forty feet of water would have been encountered.

Field procedures were to log a borehole within 1-2 hours after it had been completed. If the boreholes were not logged immediately, there was a risk that it may cave-in and no log would be obtained. The question has arisen that, due to the low permeability of the fluvial sediments and small quantities of groundwater, perhaps geophysical logging took place too soon after drilling to detect the presence of groundwater. There are three types of supporting evidence to suggest that the groundwater characterization was accurate.

1) In the southwestern portion of the proposed site, ten boreholes were temporarily cased with plastic tubing in order to see if groundwater would accumulate in the holes after drilling (see page 3-17). On a weekly basis for a six-week period of time, these holes were monitored and no groundwater entered the holes.

2) Core samples were taken from five separate boreholes. This procedure involved a change of drilling operations, from rapid rotary bit drilling to a slow core barrel operation. Instead of requiring a few hours to complete, these holes would be open for 10-12 hours. During this time, no groundwater entered the holes. Coring was conducted using air and any water entering the hole would have interfered with the operations.

3) Even in the above cited example of PB-1, the rapid logging of the borehole did encounter the groundwater. It underestimated the amount, but the groundwater did not go undiscovered.

Comment 24.

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

Considerable hydraulic information presented in this section as fact must either be supported with data or characterized as "inferred". This is particularly true of the hydraulic conditions

directly east of the proposed boundary that are based on boreholes approximately one mile north and south of the site. Please adjust the language in the Permit application as appropriate.

Response *These word changes were made.*

Comment 25.

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

Response: *Of the 37 shallow boreholes (PB-1 through PB-36) and two deep boreholes (WW-1 and WW-2), all but two have been plugged. The only remaining open boreholes are PB-14 and WW-1. These have been kept open by inserting 3" plastic tubing into the open hole.*

All boreholes were manually plugged using the original drill cuttings and/or bentonite. A cement cap was placed at the top of each hole to prevent surface waters from entering the borehole. In the time since the holes were plugged, the eolian sands of the surface Quaternary sediments have been redistributed to the point where the original borehole locations are no longer visible.

PB-14 and WW-1 have been kept open for the purpose of possibly obtaining additional geological, geophysical or hydrological information. Once it has been determined that there is no more value to these boreholes, they will also be plugged. A cement plug will be placed in WW-1 between the Upper and Lower Dockum units to ensure that there is no mixing of formational fluids. PB-14 will be plugged using bentonite and a surface cement cap.

Comment 26.

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

Response: *There is no existing groundwater monitoring data for the proposed site. All boreholes completed within the site boundary were unsaturated. Water levels were taken in 1994 from three boreholes outside of the proposed boundary. These boreholes were PB-14 (500 feet west), WW-1 (3000 feet northeast) and WW-2 (5000 feet south). The results of these water level measurements are contained in Sections 3.6.2.2 and 3.6.2.3.*

At the request of RPMP, water levels were again taken in April 1999. WW-2 had been plugged, but a static water level (using an electronic water detector) of 202 feet was recorded for WW-1 and a static water level of 37 feet was recorded for PB-14.

WW-1 - The recent water level of 202 feet for WW-1 compared to a static water level of 155 feet in 1994. We believe this decrease of 47 feet is not an indication of changing groundwater conditions, but a reflection of the manner in which this borehole was cased.

The insertion of plastic tubing into the borehole shortly after it was drilled was never an attempt to complete it as a well. Instead, this temporary casing was placed for the purpose of keeping the borehole accessible, so that

additional geological, geophysical or hydrological information might be obtained. The only perorations are at the bottom of the temporary casing.

It appears that over the past five years, the mudstones between the Upper and Lower Dockum have "caved in" around the outside of the tubing. This has apparently sealed off any communication between these two aquifers. There is no way for Upper Dockum water to enter the tubing. Consequently, the water level inside the tubing is dropping. At the present time, this water level is 20 feet below the bottom of the Upper Dockum.

It is reasonable to infer that there is still saturation within the lower portion of the Upper Dockum in WW-1. This water could still be present in the borehole outside of the tubing and not contribute to the existing static water level. This conservative assumption would be consistent with the groundwater conditions as presented in Sections 3.6.2.2 and 3.6.2.3 and the inferred interface between saturated and unsaturated conditions (as indicated in Figure 3-12) would still exist east of the facility boundary.

PB-14 - The recent static water level measured in PB-14 was 37 feet. This compares quite well to the 1994 measured water levels of 42 feet.

Comment 27.

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

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

b. to establish a baseline for future comparisons; and,

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

Response: ~~*Gandy Marley anticipates using vadose monitoring for the proposed facility. To support this, a Groundwater Monitoring Equivalency Demonstration (GMED) has previously been submitted to RPMP. This GMED will be added to the Application. As additional support for this GMED, a copy of a Groundwater Monitoring Suspension Report prepared for a solid waste landfill in Lea County, New Mexico is attached. This report addresses unsaturated Chile Formation sediments in southeastern New Mexico and was approved by NMED's Solid Waste Bureau.*~~

~~*With this in mind, is it necessary to undergo the cost of acquiring and analyzing "various ground waters adjacent to and below the proposed Facility?"*~~

All 26 boreholes completed to date on the site have encountered no saturated conditions within Upper Dockum sediments. Based on this data, there is no shallow groundwater within the site boundary to characterize. There is, however, an inferred saturation interface within Upper Dockum sediments east (downgradient) of the site. This interface is inferred to be approximately 2500 feet east of the proposed landfill (or 1200 feet east of the site boundary).

Gandy Marley is prepared to drill up to two boreholes east of the proposed site and downgradient of the proposed Phase I landfill in order to locate the inferred saturation interface. [redacted] ~~2000 feet east of PB-38. If groundwater is not encountered, this borehole, a second will be bored an additional 1000 feet east.~~

Should groundwater be encountered, its hydrologic characteristics will be evaluated. This will consist of:

- an appropriate aquifer test (slug test)
- groundwater chemistry will be analyzed, to include total dissolved solids (TDS) and the major ions Na, Mg, Cl and SO4.
- the elevation of the groundwater will be measured
- the hole may be considered as a future groundwater monitoring well

A detailed workplan for this exploratory drilling will be prepared and submitted to NMED for their approval prior to field work. This plan will address drilling rational, drilling procedures, appropriate test and sampling procedures should groundwater be encountered, monitor well completion plans and hole plugging procedures.

Comment 28.

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

Response: *Lithologic logs for WW-1 and WW-2 ~~are attached.~~ were submitted to HRMB.*

Comment 29.

Please provide a table of surface elevations for all boreholes.

Response: *Elevations for all shallow boreholes were surveyed by a licensed professional land surveyor. These elevations are written on the lithologic logs for each borehole in Volume II of the Application. The following is listing of these elevations.*

Borehole No.	*Elevation*	*Borehole No.*	*Elevation*
PB-1	*4152*	*PB-21*	*4148*
PB-2	*4150*	*PB-22*	*4143*
PB-3	*4135*	*PB-23*	*4151*
PB-4	*4139*	*PB-24*	*4154*
PB-5	*4142*	*PB-25*	*4144*
PB-6	*4120*	*PB-26*	*4183*
PB-7	*4118*	*PB-27*	*4144*
PB-8	*4117*	*PB-28*	*4159*
PB-9	*4138*	*PB-29*	*4129*
PB-10	*4131*	*PB-30*	*4152*
PB-11	*4119*	*PB-31*	*4115*
PB-12	*4132*	*PB-32*	*4108*
PB-13	*4119*	*PB-33*	*4134*
PB-14	*4116*	*PB-34*	*4100*
PB-14o	*4118*	*PB-35*	*4124*
PB-15	*4129*	*PB-36*	*4146*

PB-16	*4161*	*PB-37*	*4160*
PB-17	*4141*	*PB-38*	*4182*
PB-18	*4142*		
PB-19	*4152*	*WW-1*	*estimated elevation is 4154*
PB-20	*4157*	*WW-2*	*estimated elevation is 4110*

Comment 30.

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

Response: *A subsurface contour map of the contact of the Upper/Lower Dockum within the proposed facility boundary is enclosed.*

Comment 31.

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

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

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

Response: *Gandy-Marley is prepared to install six vadose zone monitoring wells (VZMWs) at the proposed facility. While the primary vadose monitors would still be located beneath the sumps in the Landfill and the Evaporation Pond, these VZDWs would provide a more visible secondary method of vadose zone monitoring. These wells (as shown on Exhibit No. 1) would be located along the eastern boundary of the proposed facility at the Point of Compliance and provide valuable confirmation of the unsaturated conditions underlying the facility.*

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

Response: ~~*Exhibit No. 2 is a structure contour map of the Upper/Lower Dockum contact as requested in Comment No. 30. The proposed VZDWs are shown along the eastern boundary of the facility. The lowest identified elevation of this contact is 4039 feet and is located in a hydrologic trap west of the site boundary (PB-14). The lowest identified elevation of this contact east of the site is 4046 feet (PB-38). It is proposed that all VZMWs be completed to an elevation of a least 4020, which would ensure the contact between the Upper and Lower Dockum had been penetrated. Exhibit No. 2 also shows the depths of these proposed wells.*~~

Nine additional boreholes have been proposed in the northern portion of the proposed site to characterize the Upper Dockum sediments and the Upper/Lower Dockum contact underlying proposed operational units. These boreholes will be located on a continuation of the original grid pattern and will conform to the same borehole density as the existing boreholes. They will also have the same suite of

geophysical logs. All boreholes will be completed a minimum of 30 feet into the Lower Dockum mudstones.

The purpose of this drilling will be to provide stratigraphic information on the Upper Dockum sediments and to investigate for groundwater within these sediments. Information gathered in this drilling program will be used to help located possible vadose zone monitoring wells.

A detailed workplan for this exploratory drilling will be prepared and submitted to NMED for their approval prior to field work. This plan will address drilling rational, drilling procedures and hole plugging procedures. Nine additional boreholes have been proposed in the northern portion of the proposed site to characterize the Upper Dockum sediments and the Upper/Lower Dockum contact underlying proposed operational units. These boreholes will be located on a continuation of the original grid pattern and will conform to the same borehole density as the existing boreholes. They will also have the same suite of geophysical logs. All boreholes will be completed a minimum of 30 feet into the Lower Dockum mudstones.

The purpose of this drilling will be to provide stratigraphic information on the Upper Dockum sediments and to investigate for groundwater within these sediments. Information gathered in this drilling program will be used to help located possible vadose zone monitoring wells.

A detailed workplan for this exploratory drilling will be prepared and submitted to NMED for their approval prior to field work. This plan will address drilling rational, drilling procedures and hole plugging procedures.

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

Response: *These will be incorporated in the revised permit.*

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

Response: *These will be incorporated in the revised permit.*

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

Response: *The leak detection systems in both the landfill and evaporation pond liner systems will limit the head on the secondary liner and therefore leakage into the subsurface. Expected subsurface infiltration from the storm water retention basin will be evaluated and presented in the revised permit application. This will include an assessment of the amount and duration of runoff water being stored in the storm water retention basin.* ~~*This will eliminate any influence from rainfall or leakage.*~~

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

Response: These will be incorporated in the revised permit.

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

Response: These will be incorporated in the revised permit.

Comment 32.

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

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

Response: Any available information will be supplied.

Comment 33.

Figure 3-14, *Drill Hole Locations.*

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

Response: These will be incorporated in the revised permit.

SECTION 4.0, WASTE ANALYSIS PLAN

Comment 34.

Section 4.1, *Regulatory Requirements.*

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

Response: The Waste Analysis Plan has been revised to ensure that it contains the appropriate language to ensure that the requirements cited in this comment are met.

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

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

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

Response: *The WAP has been revised to provide a more logical presentation of the waste acceptance criteria for the facility. The tables requested were included in the previous WAP, however, where appropriate they have been expanded and some additional information has been included in tabular form.*

Sampling methods will be included in Section 5 of the application, however, analytical methods for the leachates, or other potential wastes will be the same methods used for waste generated off-site. The WAP has been revised to help clarify this.

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

Response: *GMI will develop facility specific procedures for the waste acceptance process after construction of the facility is complete and prior to the acceptance of waste. Procedures developed prior to facility construction would be in a constant state of revision until initial waste receipt due to possible changes in logistics and operational requirements. Also, leak tests for ancillary equipment and piping would not be included in the WAP as this type of testing and inspection has no bearing on the acceptability of any waste which might be identified during a test or inspection.*

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

Response: *The WAP includes requirements for identifying and treating spills, releases and storm water as potential waste streams and as such they will be subject to the waste analysis and acceptance procedures, however, the WAP would not be the appropriate place to include tables for monitoring and inspection of the areas where these wastes may potentially be generated.*

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

Response: I had a response to this, however, upon review I need to get some clarification from NMED on what they are including in the category of "field sampling".

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

Response: Facility design documents will be referenced where appropriate.

Comment 35.

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

The following should also be included on this list:

- Surface Impoundment sludges; and,
- Decontamination rinse water.

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

Response: Runoff in the retention basin will be clean water and is therefore, not expected to be contaminated.
Recommended Changes: Items indicated in the comment will be added to the list.

Comment 36.

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

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

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

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

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

Response: Compatibility tests will be conducted on typical leachate (manufactured from expected water stream) and liner and leachate collection and removal materials. The tanks will be specified based on characteristics of the expected leachate and manufactures recommendations for compatibility.

Comment 37.

Section 4.3.1.2, *Procedures to Ensure Compliance with LDR Standards*, p. 4-3, last paragraph. **The Facility will accept contaminated debris only in cases where that debris will remain hazardous after it has been treated in accordance with 40 CFR 268.45(b) or (c). This regulatory requirement stipulates that "Hazardous debris that has been treated using one of the specified extraction or destruction technologies in Table 1 of this section**

(CFR 268.45) and that does not exhibit a characteristic of hazardous waste identified under Subpart C, Part 261, of this chapter after treatment is not a hazardous waste and need not be managed in a subtitle C facility." Hazardous debris generated off site that can be rendered non-hazardous through treatment may be accepted only if necessary treatment capability exists at the Facility.

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

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

Response: *See revised WAP.*

Comment 38.

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

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

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

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

Response: *The comment is noted. The WAP has been revised with regard to fingerprint requirements and GMI realizes that the requirements in the comment are still correct. See revised WAP.*

Comment 39.

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

Full sample analyses should be performed annually.

Response: Change made. The requirement for full sample analyses to be performed annually will be incorporated into text Section 4.3.2.2.

Comment 40.

Section 4.5, *Sampling Methods*, p. 4-7, 3rd paragraph. **Composite sampling is the process of taking several samples and combining them into one sample, which is then analyzed for constituents of concern. It is a valid method for homogeneous samples.** Please provide in detail how and under what circumstances composite sampling will be used.

Response: See revised WAP.

Comment 41.

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

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

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

Response: See revised WAP.

Section 5.0, Procedures To Prevent Hazards

Comment 42.

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

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

Response: There is not a regulatory requirement for this type of fence to be used at the site. It is generally up to the operational staff to select a fence type that will function as required to control entrance to the site.

Comment 43.

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

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

Response: The inspection check lists will be presented in Volume II and the sentence will be corrected.

Comment 44.

Section 5.3.4, *Water for Fire Control*, p. 5-6. **...Permanent buildings at the Facility will be equipped with automatic sprinkler systems and fire extinguishers...Water to fight fires**

will be available in water truck(s). The truck(s) generally will be used for landfill emergencies.

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

Response: ~~I am still looking for the specific requirements for fire control.~~ A more detailed description of the provisions for fire control will be provided in the revised permit. The methods and details proposed will be presented and discussed with HRMB prior to submittal of the revised permit.

Comment 45.

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

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

Response: Agreed.

Comment 46.

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

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

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

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

Response (a-c): The specific volumes of water required are expected to be extremely variable depending on the stage of construction and the volume and type of waste being processed and disposed of. Therefore, an accurate assessment of the volume of water cannot be made at this time. The measures required to obtain water rights for the site are beyond the requirements of the Part B permit application. GM fully realizes that all permits to obtain water for the site will be required prior to the start of operations. These permit can be supplied to NMED after they are obtained. However, in our opinion they will not be required prior to receiving the Part B permit.

Comment 47.

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

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

Response: Agreed.

Comment 48.

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

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

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

Response (a-b): The barriers are shown on the drawings in Volume III, Drawings 37 and 39. Additional text can be added to describe these features. In our opinion, these berm in combination with the sloping floors (to the sumps) will be sufficient to separate the incompatible wastes

Comment 49.

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

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

Response: Table 5-1 will be updated.

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

Response: Table 5-1 will be updated.

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

Response: Table 5-1 will be updated.

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

Response: Table 5-1 will be updated.

Section 8.0, Closure And Post-Closure Of Permitted Units

Comment 50.

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

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

Response: Paragraph suggested by NMED will be added to text.

Comment 51.

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

a. **The building structure (roof and walls)...will be cleaned and rinsed prior to, or during, dismantling.**
Other sections of the Permit application indicate that the Drum Storage Building does not have walls. Please explain this discrepancy.

Response: Section will be revised to be consistent with design

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

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

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

Response: *Prior to closure, GMI will develop a closure sampling and analysis plan for submittal to the NMED. A more complete description of the components of this plan will be added to Chapter 8.*

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

Response: ~~*Tracy to respond.*~~ *The details of the SAP for closure are being addressed as part on on-going meetings with HRMB.*

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

Response: *The details of the SAP for closure are being addressed as part of on-going meetings with HRMB.*
~~*Tracy to respond.*~~

Comment 52.

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

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

Response: *The ponds will be backfilled to surrounding grade and revegetated.*

Comment 53.

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

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

Response: *Yes.*

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

Response: *A discussion will be added.*

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

Response: See response to Comment 51.

Comment 54.

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

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

Response: See Comment 51.

Comment 55.

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

a. See Comment No. 53.a.

Response: See response to Comment 53.

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

Response: Paragraph will be revised.

Comment 56.

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

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

Response: See response to comment 51.

Comment 57.

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

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

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

Response: See response to comment 51.

Comment 58.

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

See Comment No. 53.a.

Response: See response to Comment 53a.

Comment 59.

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

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

Response: Section 8.1.4.1 refers to soil sampling, discussion on the removal of piping will be added to section 8.1.4.3.

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

Response: See response to Comment 51.

Comment 60.

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

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

Response: See response to Comment 51.

Comment 61.

Section 8.1.6, *Landfill.*

a. 2nd full paragraph. **A treatment system will be designed and built onsite to treat the leachate generated during closure and post-closure. The treated leachate will be used to irrigate the cap vegetation and any excess will be released to the stormwater retention basin. The leachate treatment system to be operated after closure of the evaporation pond will qualify as a wastewater treatment unit as defined in 40 CFR 260.10 and will be subject to regulation under the Clean Water Act. The treatment unit will thus be exempt from RCRA permitting requirements under 40 CFR 270.1(c)(2)(v), and the treated**

effluent will be exempt from RCRA (not a solid waste) under 40 CFR 261.4(a)(2). The effluent from the leachate treatment system will be treated to meet the standards listed in the final NPDES permit prior to discharge for irrigation or to the stormwater retention basin.

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

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

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

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

Response: *A more complete discussion of the sampling and analysis activities for leachate will be provided. See response to Comment 51. At closure, the storm water retention basin will be removed from service. The area will be contoured and revegetated as necessary.*

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

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

Response: *See response to Comment 51.*

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

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

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

Response: Noted.

Comment 62.

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

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

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

Response: Closure estimates will be revised to reflect closure of the permitted units of the facility.

Comment 63.

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

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

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

Response: Comment noted.

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

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

Response: A table will be added.

Comment 64.

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

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

While irrigation may be necessary in the semi-arid Southwest, care should be taken in the selection of native seed (grasses, forbs, and bushes) to choose those which need as little

irrigation as possible. Initial seeding should be planned to coincide with or immediately precede the monsoon season. Irrigating only in the spring has proven successful for mine waste piles in Nevada. Forbs may be more easily established than grasses. Plants with short root systems should be chosen.

Response: Comment noted.

Comment 65.

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

See Comment No. 61.a.

Response: Section will be revised as necessary.

Comment 66.

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

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

Response: ~~*Comment noted.*~~ Any discussion on vadose zone monitoring wells must be delayed until the results of the next phase of drilling.

Comment 67.

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

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

Response: Parameters will be included in the SAP submitted prior to closure for NMED approval. See Comment 51.

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

Response: This criteria is noted in the final paragraph of Section 8.3.

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

Response: Additional discussion of background samples will be added to Section 8.3.

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

Response: See previous response.

Comment 68.

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

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

Response: See response to Comment 62.

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

Response: See response to Comment 62.

Comment 69.

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

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

Response: See response to Comment 62.

Section 10.0, Corrective Action

Comment 70.

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

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

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

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

Response: Comment noted.

b. See Comment No. 5.

Response: Comment noted.

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

Response: References will be added.

Section 11.0, 40 cfr 264 Subpart Aa and Bb Regulations

Comment 71.

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

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

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

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

Response: See response to Comment D and Section 11 of permit application. Organic wastes with concentrations greater than 10% by weight will not be accepted at the facility. Therefore, Subpart BB regulations will not apply.

Comment 72.

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

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

Response: Discussion of Subpart cc regulators will be expanded to clarify the container compliance status.

Comment 73.

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

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

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

Response: The section will be revised to be consistent.

Comment 74.

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

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

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

Response: Comment noted.

b. See Comment No. 73.a.

Response: Comment noted.

VOLUME II

Comment 75.

Plates 1 through 6.

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

Response: All "Plate" designations were removed and replaced with "cross-section." Plate 3-6 will be changed to cross-section 3-6.

Comment 76.

Appendix D.

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

Response: There is only one geophysical log for PB-1. To fully explain the water in this borehole, it is necessary to examine both the geophysical log and the lithology log. This borehole was drilled to a depth of 200 feet. To ensure that NMED has a complete log of this borehole, another copy of the log will be provided.

Comment 77.

Appendix I.

Please provide inspection checklists for all inspections.

Response: Checklists will be provided.

VOLUME III
Section 3.0, Landfill

Comment 78.

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

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

Response: Only Phase IA of the landfill will be permitted at this time.

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

Finalized detailed drawings of a cell and of the cell layout within the Landfill should be included.

Response: See above.

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

Response: Although only Phase IA will be permitted at this time, we will be showing the entire landfill footprint to indicate how future cells (approved with a permit modification) may be developed.

Proposed Changes: Revise permit application to only indicate that Phase IA will be permitted at this time.

Comment 79.

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

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

Response: First Paragraph: These sections are included in Volume IV of the permit application.

Proposed Changes: None.

Section 4.0, Evaporation Pond

Comment 80.

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

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

Response: The definitions of treatment and storage units will be reviewed to determine the appropriate description and regulatory requirements.

Proposed Changes: Make all reference consistent with above determination on description of facilities.

Comment 81.

Section 4.1.3, *Subgrade Excavation, Liner System, LDRS Sump Design and Vadose Monitoring Sump Design*, p. 4-3, 1st full paragraph. **Since portions of this liner component will be permanently exposed to sunlight and UV radiation, it may be necessary to replace it prior to the end of the facility life. The lifetime of exposed geomembrane liners varies, however, it is generally limited to the warranty period which may be as long as 20 years...The staged approach to pond development will help alleviate this concern,**

as will maintaining fluids near capacity in the primary use pond unit. Periodically alternating pond units for primary uses will also reduce exposure time.

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

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

Response (a - b): *Depending on the service life of the Ponds, the liners may have to be replaced. However, it is not considered an "Emergency Repair". The timing for the development of the Ponds is not known.*

Proposed Changes: *Describe requirements for maintenance repairs in Operations and Maintenance plan.*

Section 6.0, Stabilization Unit

Comment 82.

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

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

Response: *See response to Comment D. The operational features of the facility design will be provided in the drawings provided for construction.*

Proposed Changes: *None.*

Comment 83.

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

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

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

Response: *The actual reagent use will be very dependent on the waste type and characteristic. Therefore, providing any type of receipt could be misleading. A listing of the types of reagents that will be used is presented in the application.*

Proposed Changes: *None.*

Comment 84.

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

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

Response: See response to comment D and 82.

Proposed Changes: None.

Section 7.0, Drum Handling Unit

Comment 85.

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

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

Response: There are typical walkway berm details shown on Drawings 37 and 38. These are intended to provide separation between the cells.

Proposed Changes: None.

Comment 86.

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

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

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

Response: Drawing 37 indicates the location of the sumps and the concrete walkways between cells. Depending on operations, the various cells will be labeled as to the type of waste being stored.

Proposed Changes: A note will be added to the drawings that will indicate that each cell shall be labeled as to the type of waste being stored.

EDITORIAL COMMENTS

Comment 87.

Please correct Tables of Contents to agree with revisions.

Response: The Table of Contents will be updated.

Proposed Changes: See above.

VOLUME 1

Comment 88.

Section 2.4.1, p. 2-12.

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

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

Response: The typographical errors that were noted will be corrected in the revised application.

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

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

Response: The typographical errors that were noted will be corrected in the revised application.

Comment 89.

Section 2.6, *Treatment in Evaporation Pond*

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

Response: The typographical errors that were noted will be corrected in the revised application.

Comment 90.

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

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

Response: The typographical errors that were noted will be corrected in the revised application.

Comment 91.

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

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

Response: The typographical errors that were noted will be corrected in the revised application.

Comment 92.

Section 10.0, *Corrective Action*, p. 10-2, last paragraph. **...At this point, the Facility will...** This sentence should read, "At this point, the Facility will..."

Response: The typographical errors that were noted will be corrected in the revised application.

VOLUME III

Comment 93.

Section 4.0, *Evaporation Pond.*

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

Response: *The typographical errors that were noted will be corrected in the revised application.*

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

RESPONSE TO

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

July 1999

DRAFT-FINAL

(REDLINES – STRIKEOUT VERSION)

Prepared for:

STATE OF NEW MEXICO
ENVIRONMENTAL DEPARTMENT
HAZARDOUS AND RADIOACTIVE MATERIALS BUREAU

Prepared by:

Montgomery Watson – Steamboat Springs, Colorado
Infimedia Inc. Albuquerque, New Mexico
Delhart – Carlsbad, New Mexico

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

D. PROCESS INFORMATION

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

This approach is not in accord with the hazardous waste regulations, which require that complete design and operating plans must be provided in the permit application. Only after the plans have been determined to be complete and adequate by the Secretary may a draft permit be issued. Proposed modifications to the facility plans received after the draft permit is issued, which would require public notice and comment periods pursuant to 20 NMAC 4.1.900 (incorporating 40 CFR 270.42, e.g., Class 2 and 3 modifications in Appendix I), will not be included in the final permit. Such modifications would be required to go through the procedures specified in 40 CFR 270.42, after the final permit is issued. Less substantive (Class 1) modifications proposed after a draft permit is issued may or may not be included in a final permit, at the discretion of the Secretary. Class 1 modifications included in the final permit are subject to the public notice requirements and potential denial provisions of 40 CFR 270.42(a). Accordingly, in order to be in conformance with governing statutes, the application must be revised to provide complete design and operating plans as specified in the following comments.

Response: *A clarification of the meaning of "Not for Construction" is referenced on the cover sheet of the drawings and is presented in the notes on sheet 2. This note indicates that the drawings are being used for the Part B permit application and are not to be used for construction. Additional work to be completed to issue the drawings for construction include the following:*

- *Receipt of Part B permit*
- *Survey grid points for construction staking*
- *Review and approval of contractor submittals etc.*

The process for preparing and submitting design drawings for the Part B permit and bidding and construction drawings was outlined to NMED on a meeting on April 14, 1999 which is summarized below:

Conceptual/Preliminary Designs (Internal Project Team Review)

- *Identify major facilities to be included in development plan*
- *General layout on site plan*
- *Identify process flow diagrams*
- *General capacities of facilities*

Permit Level Designs

- *Detailed design drawings*
- *Demonstrate compliance with all regulatory requirements*
- *Sufficient detail to demonstrate constructability*
- *Submit for regulatory agency review and permit approval*

Bidding and Construction Drawings

- *Same as above with the following:*
- *Details or specifications for any regulatory permit conditions*
- *Survey control points and layout grid*
- *Shop drawings*
  - *Plumbing*
  - *Electrical*
  - *Building structures*
  - *Operational features*
- *Agency approval prior to start of construction*

As-built Drawings

- *Documentation of all regulatory criteria*
- *Liner system CQA documentation and details*
- *LCRS system CQA documentation and details*
- *Design Changes and Clarifications*
- Agency approval prior to start of operation

This general process was agreed to by NMED. It was agreed that text would be added to the permit application that further defined the drawings:

"These drawings present final designs for the RCRA permitted facilities. Details on the non-RCRA components of the facilities may be supplemented during the bidding and construction phase. Gandy-Marley will supply the additional details on the non-RCRA components of the design to NMED for review and approval prior to the start of construction."

TL has requested that a general Operations and Maintenance Plan be included in the permit application an outline for the plan is presented below. In addition, a "cross-walk" will be prepared that will cross-reference all information on each unit in the permit application.

OPERATIONS AND MAINTENANCE PLAN

1.0 General

2.0 Units to be Addressed

- *2.1 Landfill*
- *2.2 Evaporations Plan*
- *2.3 Liquid Waste Storage*

D-1 Containers: 270.15, 264.170 through 264.178

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

Response: *The Permit application will be modified to include the stabilized roll-off storage area as a permitted unit. The roll-off containers will be lined with a HDPE bed liner inside the bed of the roll off containers. This system (HDPE and steel container) is considered to be a primary liner for the waste. To provide secondary containment a liner will be placed below the operation layer over the entire non-stabilized and stabilized portion of the Roll-Off Area.*

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

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

Response: *The permit text (Volume III, Engineering Report, Section 2.2) indicates that the native soils have an allowable bearing pressure of approximately 2,000 psf. The expected loading from the concrete floor of the drum storage area is expected to be less than 500 psf (concrete slab and stacked drums). Therefore, the foundation soils should be adequate to support the drum storage unit. The trench in the sump area will be limited to 2 to 2.5 feet deep and will be spanned by a metal grate. The grate will be supported on either side of the trench by thickened sections of the concrete floor slab.*

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

Response: *As stated above, The permit text (Volume III, Engineering Report, Section 2.2) indicates that the native soils have an allowable bearing pressure of approximately 2,000 psf. The expected loading from the concrete floor of the drum storage area and staked drums is expected to be less than 500 psf. Therefore, the foundation soils should be adequate to support the drum storage unit. A HDPE geomembrane underlies the entire footprint of the DSU which will prevent liquid migration into the subsurface soils. The perimeter of the drum storage unit will be graded to drain away from the facility foundation. Therefore, swelling of the foundation soil should not be a concern. The technical specifications for the foundation soils, the surface preparation for deployment of the liner, and the material gradations and placement and compaction specifications for the DSU select sub-base are presented in the Volume IV, Specifications.*

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

Response: *The specifications for the Select Sub-base are presented in Volume IV, Section 02229. These specifications indicate that the material shall have 0 to 2 percent passing the Number 200 sieve. Based on this requirement the material is expected to be very free draining and will transport any leaking liquids to the sump.*

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

Response: *Waste will be characterized and screened as part of the waste acceptance procedures. This is expected to prevent incompatible waste from being stored in the same roll-off containers that are delivered to the site. After the materials have been stabilized, material from a single stabilization batch will not be mixed with material from a different batch, therefore, eliminating the potential for incompatible waste to be stored in the same roll-off bin. Individual bins will be physically separated from each other in the storage area by a minimum of 1 foot and will be stored inside the covered steel roll-off bins and the HDPE bed liners.*

Appendix E-32, the Truck Roll-Off LCRS Pumping Capacity calculations, provides a sketch of the sump on page 1 of 4. The phreatic surface line is shown as daylighting roughly three feet from the top of the pipe, between the pipe centerline and the gravel surface. The information provided is insufficient to be able to reproduce this estimated distance. Please revise Appendix E-32 to include a description of the approach used to approximate this distance. Additionally, the length of the perforated pipe is stated as being seven feet in the sketch. Drawing No. 43 shows this dimension as

five feet. Either revise the calculations or provide the reasoning for not using the design length in the calculations.

Response: *The cross-section shown on page 1 of 4 of the calculations is intended to represent the conditions in the sump as shown on Drawing 43, Sheet 2 of 2, Detail 3. This specifics the sump gravel thickness as 3-feet. The length of the perforated pipe in the calculation and the sump detail will be modified to be consistent.*

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

Response: *The drawing on page 4 of 4 of the calculation in Appendix E-32 shown a graphic scale. In addition, the drawing indicates northing and easting for the location of the pond which provides an additional scale.*

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

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

- Demonstrate or verify that the lower portion of the composite base (geomembrane) will remain free of cracks or gaps (breaches) during use;

  Response: *The liner system for the Roll-Off storage unit consists of a HDPE geomembrane placed on prepared subgrade and covered with a double-sided geocomposite. It is further covered with a sub-base and road base materials that total 2-feet. These materials are compacted to 95% of Maximum Modified Proctor (MMP) at +/- 3% of Optimum Moisture Content (OMC). This design should accommodate the limited truck traffic that will be required to load and unload the roll-off boxes and not result in any damage to the geosynthetic components.*

- Demonstrate the imperviousness and compatibility of the lower portion of the composite base (geomembrane) with regard to the wastes and precipitation;

  Response: *The geomembrane (HDPE) is considered to be a low permeability liner (permeabilities are reported to be less than 1E-10 cm/sec). In addition, these materials are commonly recommended for use in hazardous waste containment applications. Site specific compatibility tests will be conducted on a synthetic leachate and the proposed liner material prior to operation of the facility.*

- Demonstrate the compatibility of the upper portion of the composite base with wastes (i.e., provide a discussion on the compatibility of the surface soil material with the wastes to be stored at the roll-off container storage area; and,

  Response: *The wastes are not expected to be contact with the surface soils in the roll-off storage area The waste materials will be stored in bed-liners and the steel roll-off containers. In the unlikely event that leakage does occur it is expected to be of very limited volume and it not expected to react with the road-base aggregate.*

- Demonstrate the theoretical structural integrity of the lower portion of the composite base (geomembrane) under anticipated routine and extreme loading conditions. Ensure that calculations are provided documenting that the soils will be capable of carrying the maximum anticipated load under saturated conditions, without compromising the integrity of the geomembrane.

Response: The road base and the sub-base materials will be compacted to a minimum of 95 percent of MMP. Based on extensive experience with placement and compaction of these types of materials to these densities they are expected to perform adequately under the very limited traffic that the roll-off area will experience. In addition, the road base and sub-base materials are underlain by the double-sided geocomposite layer. This is will prevent any saturation of the overlying materials except for very short periods of time during peak rainfall events. If perhaps there is any disturbance of the road base surface as a result of loading and unloading the roll-off trailers, it will be observed during the weekly inspections of the unit and repaired by placement of new material or re-grading of the existing material. In the case of severe rutting (greater than 6-inches) the area will be excavated and the geosynthetic materials will be inspected for damage. Repairs will be made if required.

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

Response: See above response.

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

Response: The roll-off units will be placed and removed on the roll-off pad by highway trucks or site trucks. Landfill operational staff will visually observe trucks leaving the landfill for excessive accumulation of waste on the tires and/or truck body. If excessive accumulation is noted, the truck will be routed to the truck wash for cleaning. Therefore, tracking of waste should not be a problem. We do not believe that the surface of the roll-off storage area is required to be equivalent to a concrete surface that is being used in the DSU building. The concrete floor in the DSU building is primarily being used to facilitate use of a forklift to handle the drums.

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

Response: See response to above comments.

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

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

Response: The roll-off containment area is surrounded by a berm with a minimum height of 2.0 feet (see Drawing 41, sheet 1 of 1). This berm will divert run-on surface water around the perimeter of the truck roll-off area. Culverts are proposed under each of the access ramps to allow surface water flow to the west towards the run-off detention basin. The interior depth of the berms on the truck roll-off area is also a minimum of 2.0 feet. The 25-year, 24-hour storm for the site is 4.3-inches. This is expected to result in ponding inside the roll-off area to a depth of approximately 2 feet in the sump area and in the range of 1-foot or less in the central area of the roll-off unit. The containment area for the roll-off area does not need to account for the 10 percent of the volume of the containers, since incoming waste roll-off containers are not expected to contain free liquids. The criteria for no free liquids is contained in the waste acceptance criteria. Any free liquids that are identified in in-coming waste will be removed prior to placing the roll-off container on the non-stabilized side of the truck roll-off.

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

Response: As discussed above and shown on Drawing 41, Sheet 1 of 1, the truck roll-off area does not allow surface water run-on to the facility other than direct precipitation . ~~Therefore, containment is not required.~~ The ponding of direct precipitation will limit the area available for storage of roll-off of units. As indicated in Responses to Comment D-1b(4). The limits for placement will be specified on the drawings.

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

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

Response: The inspection frequency for sump in the various facilities is presented and discussed in Volume I, Section 5.

Proposed Changes: ~~None.~~ The application will be revised to include a commitment to demonstrate compliance with 264.175(b)(5).

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

Response: See above. Personnel will be trained to perform inspections in accordance with the inspection schedule in Section 5.

D-1b Containers Without Free Liquids: 270.15(b)

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

Response: The Part A will be revised to include the stabilized waste roll-off storage area.

D-1b(1) Test for Free Liquids: 270.15(b)(1)

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

Response: See Volume I, Section 2.2.2. This indicates that the material will be sampled and tested using a paint filter test.

D-1b(2) Description of Containers: 264.171, 264.172

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

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

Response: See Volume I, Sections 2.2.8 through 2.2.10. These sections describe the approximate number and type of containers that will be used, the dimensions and useable volumes, container condition and markings and labels.

D-1b(3) Container Management Practices: 264.173

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

Response: See Volume I, Section 2.2.10. This section addresses the specific components of the question. However, additional text will be provided that will discuss the general components of the operating procedure.

The roll-off units to be placed in the roll-off area will be covered with a tarp. The covers will not removed until the material is placed in the stabilization unit. Roll-off units used to storage stabilized material will also be placed on the roll-off unit with covers. It is not expected that the tarps will be removed while being stored except of re-sampling of the material, if required.

Proposed Changes: Include above information in Operations and Maintenance Plan.

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

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

Response: When the roll-off units are unloaded in the roll-off storage area they are expected to be minimum of 1 foot off the ground. In addition, roll-off units will not be placed within 60 feet of the southern toe of the roll-off area to avoid water ponding within 1-foot of the containers for the 25-year, 24-hour storm. Ponded water will be pumped and removed from the sump after sampling and analysis to determine how the water can be disposed.

Proposed Changes: The design drawing will be modified to indicate the restricted area for placement of roll-off containers.

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

Response: As discussed in a previous response, the roll-off storage area will be able to contain the 25-year, 24-hour rainfall and will preclude run-on to the facility from the surrounding area. The sumps will be pumped to remove any accumulated water after any rainfall event.

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

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

Response: Text will be added to the Permit application that indicates that these are final designs which demonstrate RCRA compliance. In addition, the following text will also be added:
"These drawings present final designs for the RCRA permitted facilities. Details on the non-RCRA components of the facilities may be supplemented during the bidding and construction phase. Gandy-Marley will supply the additional details on the non-RCRA components of the design to NMED for review and approval prior to the start of construction."

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

"generating" any new hazardous wastes, and thus these storage units must be permitted. Therefore, please revise the application to include the truck wash tank and sump.

Response: Discussions are ongoing with NMED on whether the truck wash will require permitting.

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

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

Response: The comment is correct the control room is located on the east side of the building.

Proposed Changes: The text will be modified to indicate the east side of the building and a north arrow will be added to the drawing.

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

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

Response: Drawing 44, sheet 1 of 2 indicates that the wash water storage tank will be a 12-foot diameter (9,000 gallon) double-walled poly tank. The supply water will be a single wall 6-foot diameter tank. A series of bins are shown as sediment traps. These will be further dimensioned and detailed to indicate 6-inch thick concrete walls and will have weep holes to prevent water from ponding in the bins. The sump and the sediment bins will be inspected weekly for the accumulation of sediment and liquids in the sump and will be removed to the wash water storage tank. The sediments will be stabilized in the stabilization unit, prior to being landfilled.

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

Response: As stated in Volume I, Section 2.4 the tanks will have a nominal volume of 2,500 cubic feet (18,700 gallons). However, it is not expected that bins will be completely filled during the mixing operation and space must be maintained for the addition of stabilization materials. Therefore, the volume of the waste to be treated in each batch will be variable but will be less than 2,500 cubic feet. The overall process volume is based on four bins. However, the actual process design will be dependent on the characteristics of the incoming waste (time to mix each batch) and the volume of stabilization materials required (volume of raw waste to be treated in each batch).

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

Response: Volume I, Section 2.4 Stabilization provides dimensions of the tanks as nominally 25 feet by 10 feet wide and 10 feet deep, resulting in an approximate volume of 2,500 cubic feet. In addition, Volume III, Section 6.1.2 presents the same information regarding the bins sizes and also presents size and volume information on the concrete vault that will house the steel bins. Drawings 33 to 35 also presents dimensions in plan and cross-section.

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

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

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

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

Response: A stand alone Operations and Maintenance Plan for the facility will be developed that will incorporate the information currently in the Permit Application and will expand on general operations procedures. The Plan will also discuss general requirements for operational features of the facilities such as pumps, flow meters, and other controls. As indicated in response to comment D construction designs and specifications will not be provided in the application but will be provided prior to the start of construction. Also see D-2A(3)

Proposed Changes: *See above.*

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

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

Response: *The application will be revised to indicate that all liquids in the tanks will be transferred by tanker trucks. Therefore, the process flow diagrams on Drawing 40 are considered to be sufficient to meeting the requirements of 270.16(d). Notes will be added to the drawings to indicate where liquids will enter the tanks and where they will leave the tanks. Also see response to comment E-2A(2).*

Proposed Changes: *Text and drawing modifications in Volumes I and III to reflect above and addition of Operations and Maintenance Plan.*

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

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

Response: *The stabilized waste will be either transferred to the roll-off area or directly to the landfill. The text references indicated in the comment will be clarified to indicate that either of these two scenarios could occur. The conditions that would require the stabilized waste to be temporarily stored at the roll-off unit prior to being disposed of in the landfill, would be associated with completion of testing to determine how and if the material can be disposed of the landfill. Reference will be added to the WAP. Also see response to comment D-2A(2).*

Proposed Changes: *Clarify text that either of the two scenarios described above could be used to describe the handling of waste after stabilization.*

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

Response: The application (Volume III, Engineering Report) will be modified to indicate what types of waste that will be excluded from the stabilization bins to avoid excessive corrosion.

Proposed Changes: See above.

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

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

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

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

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

Response: Based on discussions with TL, this comment can be responded to by including the manufacture information on the double wall tanks compatibility and installation details (tie-downs). These will be included in an appendix to the Engineering Report in Volume III and will be referenced on the drawings.

Proposed Changes: See above.

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

Response: The Engineering Report (Volume III, Section 2.2 General Facility Design Analyses) indicates that the site soils have an allowable bearing capacity of 2,000 psf. The concrete specifications (03300, Volume IV) require a minimum 28 day compressive strength of 4,000 psi. A calculation will be provided indicating that the tank bearing pressure will suitable for the concrete pad.

Proposed Changes: Add calculation indicating allowable bearing pressures for tanks and concrete pads.

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

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

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

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

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

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

Response: *The design of the stabilization bins is not a refined science. They are basically large mixing bowls. The bins must be able to withstand the impacts from mixing with the backhoe bucket and also be relatively compatible with the waste that will be placed in the bins. Given these two opposing design criteria, steel appears to be the most suitable material. Although it can react with some of the wastes that are proposed to be stabilized in the bins, it is relatively slow to react and is probably the best material to withstand the impacts from mixing without rupture. The design concepts provides for double steel containers with wire-ropes as energy absorbers. There will be a leak detection system in-between the two steel bins and also a sump inside the concrete vault to collect and remove any potential leakage. The bins can be removed and repaired or replaced if damaged or if leakage is observed. The design of the bins has been based on a rational assumption of the design loads that could be experienced during mixing and has selected a design thickness based on a reasonable level of risk for damage. It is fully realized that if a worst case loading condition arose and the bins was crack or otherwise damaged to the point of not providing containment then the bin would be taken out of service and repaired or replaced.*

We believe that this type of the design provides the best type of containment for the hazardous waste given the extreme impact loading conditions that could be experienced during stabilization.

Proposed Changes: *The text of the Engineering Report (Volume III) will be expanded to discuss the approach to selection of the tank material and specified thickness. In addition, the Operations and Maintenance Plan will be deployed to address general procedures for stabilization of materials.*

D-2d(1) Plans and Description of the Design, Construction, and Operation of the Secondary Containment System

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

Response: *The specifications indicate that the tanks will be constructed of the same materials and specification sheets for the tanks will be provided in the application.*

Proposed Changes: *The specification sheets for the poly-tanks will be provided in the application that will provide manufactures information on compatibility and structural details..*

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

Response: *A minimum 0.5 percent slope for the concrete pad to the sump will be added to the drawings. The dimension of the sump area will also be added. The concrete pad is not the secondary containment for the liquid in the tanks, the primary and secondary containment for the liquids is the tanks themselves. The concrete could be considered as the secondary containment for the ancillary facilities such as the piping and transfer connections.*

Proposed Changes: *The text of the application (Volumes I and III) will be modified to indicate that the concrete pad will be secondary containment for the ancillary facilities. The drawings will modified to show the slope of the concrete pad and the sump dimensions. In addition, a concrete pad will be added to the landfill tanks, liquid waste storage tanks and any other loading/unloading points for tanker trucks.*

Section 2.3.1 (Volume I) of the permit application states that "all ancillary equipment will be provided with secondary containment except above ground piping (exclusive of flanges, joints, valves, and other connections), welded flanges, welded joints, and welded connections that are visually inspected for leaks each operating day." Furthermore, it is stated in Section 2.3.12 (Volume I) of the permit application that "impervious concrete coatings will be applied to the liquid waste storage tank

containment area and the evaporation pond discharge station. Hose and pipe connections will be inside the concrete containment area boundaries." Revise the permit to identify and discuss the ancillary equipment that will require secondary containment and provide the details on the designs of these containment areas. Engineering drawings identifying the equipment and the appropriate containments must accompany the discussion.

Response: *The ancillary equipment will include the piping, monitoring and transfer systems associated with the liquid waste storage tanks. The drawings and text currently identify these components. These will all be located over concrete pads with sumps for collection of leaks and spills during loading/unloading operations.*

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

Response: *The primary and secondary containment for the waste in the stabilization bins will be the steel bins. The concrete vault that is use to house the steel mixing bins is not part of the containment systems. However, it will provide a monitoring and collection point if leakage were to occur from both the primary and secondary systems.*

Proposed Changes: *The text in Volumes I and III will be expanded to clarify the primary and secondary containment systems and the function of the concrete vault system.*

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

Response: *See comment to forth paragraph. Also see response to comment D. The details for tie-down of the steel tanks to the concrete vault will be provided in the construction drawings.*

Proposed Changes: *None.*

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

Response: *The details shown on the drawings, with the modifications indicated above, are considered sufficient for permitting. The Operations and Maintenance Plan will present and discuss the details for pumping liquids from the leak detection sump and the concrete vault.*

Proposed Changes: See changes proposed for previous comments. Operation and Maintenance plan.

D-4 Surface Impoundments

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

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

Response: See response to comment D-2.

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

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

Response: Diversion ditch are planned around the surface impoundments that would drain into the site wide surface water diversion channels as shown on Drawing 25. The location of the ditches around the surface water ponds will be shown on the drawings and will be presented and discussed in the engineering report and surface water analysis section of the calculations.

Proposed Changes: Surface water diversion channels will be shown on the drawings and the text will be updated to discuss the diversion channel design.

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

reference to Figure 5 is irrelevant and does not depict the engineering controls as they pertain to the Evaporation Pond.

Response: *Drawing 5 indicates the general site grading that would be required to promote surface water flow to the surface water retention pond. Diversion ditches will be required around each facility that will drain in to the site wide diversion ditches shown on Drawing 25.*

Proposed Changes: *See response to comments on the third and forth paragraphs.*

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

Response: Response: *Drawing 4 shows the surface diversion ditch locations. Drawing 5 shows the surface grades around the site. Drawings 28-32 show the detailed surface grading around the Evaporation Ponds.*

Proposed Changes: *The surface water diversion channels will be shown around each unit and the contributing drainage area.*

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

Response: *The specific reference is Volume IV, Specifications, Section 02110 Site Preparation and Earthworks.*

Proposed Changes: *This reference will be incorporated into Section 2.6.2.3.*

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

Response: *Only one ponds will be constructed (Pond 1) ; however, it will have two sides (side 1A and side 1B).*

Proposed Changes: *The text and drawings will be modified to clarify that only one pond will be constructed. The storage volumes will also be updated to reflect that only one pond will be constructed.*

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

Response: *The interior slopes of the pond around the perimeter are 3H:1V (see Drawing 28). The slopes of the interior berm are 2H:1V.*

Proposed Changes: *The volumetric calculations to determine the storage volume will be detailed in the revised application.*

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

Response: *The anchor trench calculations were based on a conservative slope length of 60 feet. Actual scaled length is approximately 45 to 50 feet.*

Proposed Changes: *The calculations will be modified to reflect that the slope length is conservative.*

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

Response: *See above responses.*

D-4e(2) Soil Liners: 270.17(b)(1), 264.221(a), and 264.221(c)(1)

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

Response: *: See response to comment D. Drawings 8 and 9 present contours for the subgrade elevations and top of protective soil cover layer for the Phase 1A portion of the landfill. Drawing 12 presents the liner cross-section on both the slopes and floor of the landfill. These drawings define the thickness and extent of the landfill liner system for Phase 1A.*

Proposed Changes: *None.*

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

Response: *The permeability laboratory data was inadvertently not included in the submittal. The recompacted permeability testing data will be presented in the revised application. These data will show that the material can be recompacted to meet a permeability specification of less than 1E-07 cm/sec. The laboratory testing data provided the basis for the establishing the low permeability soil liner placement window presented in the specifications.*

Proposed Changes: *The laboratory data will be included in the revised permit application.*

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

Response: *The specifications require that the test fill be constructed prior to construction of the landfill liner system. The CQA plan presents a detailed plan for constructing and monitoring a test fill.*

Proposed Changes: *The test fill plan will be modified to indicate that 12-inch diameter samples will be used for permeability testing on the test fill. The borrow sources that will be used include the soil obtained from the excavation. If additional material is required to construct the liner, then additional borrow sources may be required.*

D-4e(2)(a) Material Testing Data: 270.17(b)(1), and 264.221(c)

The previous NOD comment stated: "Some limited soil test data is included in Appendices E and F, but the application does not indicate whether these data are representative of the proposed soil liner materials. Many of the test data in Appendices E and F are not accompanied by sample depth information, which makes the usefulness of the data questionable. Provide data from index tests, laboratory and/or in situ hydraulic conductivity (permeability) tests, strength tests, consolidation tests, and shrink-swell testing of the soil liner material. If detailed sample locations and depths for all of the data in Appendix E and F can be provided, additional testing needs may be minimal. (However, the shallow Quaternary soils have not been adequately sampled or characterized - see landfill comments). Provide copies of the test procedures, or reference standard test methods used to produce the data. Include complete soil test results and sample identification information, including depths as well as horizontal reference points. Discuss the potential for dispersion and piping of the soil due to flow of wastes into or through the soil liner layer."
Response No. 45 indicates that a table previously submitted will be revised to indicate standard test methods used in the analyses for the soil liner material and the depth of sample location. The response also states that "dispersion and piping of the soil will be discussed in the engineering report for the landfill." However, none of this information was presented in the revised application. In addition, the response does not address the concern as to whether the data presented in Appendices E and F of the original application are representative of the proposed soil liner materials. Revise the application to provide the information requested in the previous comment.

Response: *The requested data on depth of soil samples and standard testing procedures used will be provided. Regarding the potential for dispersion and piping of the soil due to flow of wastes through the soil liner, the selected soils will be subjected to a leachate compatibility test. This test permeates a minimum of two pore volumes of leachate through the sample and monitors the changes in permeability with time and pore volume. This test is expected to provide an indication of the potential for dispersion or piping of the soil as a result of contact with the leachate.*

Proposed Changes: *Soil sample depth information to be provided and test procedures for soil classification tests.*

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

The previous NOD comment requested information as follows: "The application does not address soil liner compatibility with liquids which may be placed in the impoundment. Section 2.6.1.1 simply

restates the requirement in 264.221(a)(1). The application should provide the results of hydraulic conductivity tests of the soil liner material using wastes or surrogate solutions representative of the liquid that may be placed in the surface impoundment. Discuss the effects or predicted effects, if any, of the wastes on the soil hydraulic conductivity. Provide a copy of the test procedures, or reference appropriate standard methods, along with a description of how the liquid samples were prepared or obtained, a demonstration that the liquid sample is representative of wastes which may be placed in the impoundment, and the complete test results. Alternatively, provide research reporting compatibility testing of similar soils and similar liquids, or provide typical liquid waste analyses and site specific soil chemical and mineral characteristics, and use this information to predict the results (changes in hydraulic conductivity) of interaction of the soil with wastes from the impoundment."

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

Response: *Soil liner compatibility tests will be performed once the waste stream has been identified and a synthetic leachate can be generated. The test will consist of the standard permeability test on a recompacted sample of the proposed soil liner material (ASTM D5084) and the synthetic leachate. The test will be started with normal tap water until the permeability can be determined. Then the permeating fluid will be switched to the synthetic leachate and continued until a minimum of two pore volumes of leachate have passed through the sample. The measured permeability will be monitored continuously through out the test.*

Additional reference literature will be provided with the application that indicates that soil liner and leachate compatibility testing is normally not a problem unless the leachate contains high concentrations of organics. The WAP does not allow the site to accept high concentrations of organic, therefore, the soil and leachate compatibility is not expected to be a problem.

Proposed Changes: *Reference literature will be provided with the application.*

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

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

Response: *It is expected that the sump LCRS and LDRS systems will be equipped with cumulating flow meters to monitor all liquids removed from the sump from the start of operations and direct reading pressure transducers that can be converted to elevation of liquid. These will be described further in the Operations and Maintenance Plan for the site.*

Proposed Changes: Include description of the types of pumping systems and instrumentation that will be installed in the sumps of all facilities in the Operations and Maintenance Plan.

D-4g Liner System, Construction and Maintenance

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

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

Response: The requested information is presented in Volume IV, Specifications, Section 02718.

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

Response: The requested information is presented in Volume III, Section 9.1 and is shown on Drawing 44. A HDPE geomembrane liner extends under the entire truck wash facility and includes a geocomposite drainage layer which flows to a sump for liquid removal. The dimensions of the sump are shown on the drawings and are presented and discussed in the text of Volume III, page 9-3.

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

Response: It is recommended that a liquid level probe be used to measure the presence and/or depth of any liquids in the truck wash sump.

Proposed Changes: A note will be added to Drawing 44 which will clarify the location of the surface and subsurface sumps for the truck wash. In addition, the Operations and Maintenance Plan will be prepared that will detail equipment used to monitor liquid levels in the sump.

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

The application does not provide evidence demonstrating that the clay material available on-site will provide the low permeability required for a soil liner. In fact, the laboratory hydraulic conductivity test data for Upper Dockum material (Appendix E in the original application) which showed test

results consistently higher than the maximum acceptable value, and the original plans for use of a bentonite-soil mixture for the pond liner, have been removed from the revised application.

Response: *The results of the specific laboratory testing on the mudstone samples from the lower Dockum will be provided in the revised application. These data provided the basis for stating that the material can be used for the low permeability soil liner.*

Proposed Changes: *The results will be included with revised permit application.*

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

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

Response: *The test fill plan presented in the CQA Plan (Volume IV) will be modified to propose using large diameter (12-inch) samples cut from the test fill for permeability testing. This will be done rather than conducting a Sealed Double Ring Infiltrometer. (SDRI). Recent research has indicated that the large diameter permeability tests will represent actual field permeability values as determined from SDRI tests (Benson, et al).*

Proposed Changes: *The test fill plan will be modified to indicate use of large diameter samples for permeability testing.*

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

Response: *The current CQA plan (Volume IV) presents a definition of CQA and CQC that is consistent with the referenced EPA Guidance document. The CQA plan will further clarify the "Independent" status of the CQA organization.*

Proposed Changes: *Modify CQA plan as indicated above.*

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

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

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

Response: *The testing frequencies outlined in the referenced guidance document will be incorporated into the CQA plan. However, we understand that NMED would consider alternative testing frequencies after construction of the first cell and some field experience with the proposed soil liner materials has been obtained.*

Proposed Changes: *Modify CQA testing frequencies as requested. In addition, statement will be added to CQA plan that will require that the final CQA report present the results of any CQC tests conducted by the installation contractors.*

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

Response: *Volume I, Page 2-20 indicates that the facility will not accept waste until NMED has approved the CQA Certification Report.*
Proposed Change: *A similar statement will be added to the CQA Plan.*

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

The application Response Action Plan in Appendix G includes all of the requirements of 40 CFR 264.223 and 264.304 (for both the evaporation pond and the landfill) on the first page of Section 7.0.

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

Response: *The reference to surface impoundment on Page 7-1 will be removed. In addition, on page 7-1, under the section on the evaporation pond the response action will include "closure of the pond" per 264.223(b)4.*

Proposed Change: *See above.*

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

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

Response: *The pond levels will be inspected weekly as part of the facility Operations and Maintenance Plan and will also be observed during any filling operations. These visual observations will be made against a staff-gauge to confirm that the design capacity is not being exceeded.*

Proposed Change: *Operations and Maintenance Plan will provided details on visual observations to be made and that a staff-gauge will be installed to determine design operating level.*

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

Response: *The pond has been designed with 2-feet of free board. This is presented in Volume III, Page 4-2. There is no run-on to the pond from the surrounding area. The direct precipitation to the pond from the 100 year rainfall is 5.3 inches. Therefore, the 2-feet of free board should be sufficient to accommodate the direct rainfall from the 100 year-24 hour event.*

Proposed Changes: *None.*

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

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

Response: See response to Comment D.

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

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

Response: The operations layer will be placed over the entire side slopes and floor during the construction phase of the project. This is intended to provide protection for the liner materials over the long term. The D6 dozer is specified for placement of the operations layer in the specifications Section 02232. The allowable equipment loadings are for various thickness of operations layer material that are used for haulroad etc. The specifications Section 02232, 3.02, Paragraph F indicate that unless otherwise specified these allowable equipment ground pressures should be used. However, in Paragraph E the D6H-LGP or other equipment approved by the Owner shall be used for placement.

Proposed Change: ~~None.~~ The permit text will be modified to indicate that this soil cover will be placed during construction of the liner system.

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

Response: See above comment. The condition of complete saturation of the operations layer is possible during peak rain events. However, the specifications prohibit placement of operations layer material during rain or adverse weather conditions (Paragraph M). Furthermore, the geocomposite drainage layer is directly below the protective soil layer and should provide drainage for the protective soil layer material in the long run. The stability calculation presented in Appendix E-2 specifically indicate that the D6 dozer will not place protective soil during rainfall events. Since this construction will be completed during the construction phase of the project CQA staff will be onsite to confirm that proper placement equipment is used and that the material is not placed during rainfall events.

Proposed Change: None.

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

loading scenario may be necessary. The application must be revised to demonstrate that the landfill liner system will be constructed to prevent failure due to climatic conditions, the stress of installation, and the stress of daily operation.

Response: The stability calculations for the anchor trench and the protective soil layer stability, indicate that the critical interface strength for the liner system can be characterized by a residual friction angle (31 degrees) and adhesion (15 psf). This is greater than the slope angle of 18 degrees. Therefore, their will not be any residual stress developed in the liner system or the anchor trench as a result of static loading conditions.

Proposed Changes: None.

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

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

Response, (Part 1): The permit application will be revised to only request a permit for Phase IA. The extent of liner coverage on Phase IA is shown on the Drawing 9.

Proposed Changes: None.

Response, (Part 2): The Operations and Maintenance Plan will require that waste trucks are inspected for waste clods and other loose waste material hanging from wheels and/or truck frames that could fall off after exiting the landfill. If debris is noted, the loose material will be removed prior to exiting the landfill. Other non-loose material may have to be removed at the truck wash.
Proposed Changes: None.

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

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

Response: The protective soil layer will be placed over the entire floor and side slopes as part of the construction. This is shown on the Drawing 12.

Proposed Changes: None.

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

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

Response: *The stability calculations for the landfill will be updated to specifically address the berm on the west and south sides of the landfill.*

Proposed Changes: *Slope stability calculation to support the 3H:1V fill slopes around the perimeter of the landfill will be presented and included in the appendices to the Engineering report.*

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

Response: *The slope along the south side of the Phase IA excavation is consider a temporary slope that will be cut by the excavation contractor. It is shown as 2H:1V in the plans, however, the haulroad running across the slope will result in an over all slope angle of approximately 2.75H:1V. However, to address this question, cut slope stability calculation will be updated to reflect this slope.*

Proposed Changes: *Slope stability calculations for cut slopes will be updated to include the south slope of the Phase IA excavation.*

The bare 3:1 cut slopes above the access ramps on the east and west sides of the proposed Phase I fill will be exposed to precipitation infiltration and erosion from the time of excavation until the decision is made to complete the liner system on these slopes. The application provides no indication of how long this time period might be. The slope stability calculations in Appendix E-1 assume that "due to the temporary nature of the cut slope, a [factor of] safety less than [the typical minimum of] 1.5 was accepted." (Page 2) The parameters in the calculation are claimed to be "very conservative," but in

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

Response: *The ramp slope stability calculations were considered to be the most critical in terms of equipment loading. Therefore, they were analyzed with a scraper on the ramp. The overall slope stability (3H:1V slope) with equipment loading was not considered to be critical as the weight of the scraper, dozer or loaded truck is very small compared to the weight of the slope materials. However, in order to verify this assumption, calculations will be provided to show that the overall slope stability is not impacted by the presence of the ramp or any landfill related equipment.*

Proposed Changes: *Add calculation for side slope stability with ramp and equipment loading (static and dynamic).*

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

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

Response: *The results of the geotechnical investigation indicated that the site soils have an allowable bearing capacity of 4,000 pounds per square foot. This will provide adequate bearing for the structural fills around the perimeter of the landfill.*

Proposed Changes: *Calculation package will be included in revised permit application that will demonstrate adequate foundation bearing capacity for the perimeter structural fills based on the native soils.*

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

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

Response: *The application currently references EPA guidance documents that indicate that HDPE is generally resistant to most leachates for facilities that do not accept organics. However, specific HDPE manufactures ratings for compatibility with various chemical will be presented in an Appendix to the Engineering Report. In addition, Gandy-Marley has committed to perform site specific compatibility tests prior to the start of construction, once the waste stream to be accepted at the site is known.*

Proposed Changes: Add manufactures published information on compatibility with various chemicals to the application.

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

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

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

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

Response: The specification for the prepared subgrade will be modified to require that only CL and CH (USCS) materials be used. This is the same specification as the clay liner material. In addition, testing for the prepared subgrade will be specified to include tests for grain size and Atterberg limits at a frequency of one per 125,000 square feet.
Proposed Changes: See above.

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

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

Response: Gandy-Marley has committed to perform site specific compatibility tests prior to the start of construction, once the waste stream to be accepted at the site is known.

Proposed Changes: Manufactures published information on the compatibility of the GCL with typical leachate materials will be provided in an Appendix to the Engineering Report.

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

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

Response: The Permit application will be revised to only include permitting Phase IA of the landfill. Therefore, descriptions of future phases will not be required.

Proposed Changes: See above.

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

Response: The Operations and Maintenance Plan that will be included with the revised permit application will address procedures to maintain the head on the liner to less than 1-foot. This will be accomplished through pumping from the side slope riser and vertical riser pipes. The leachate collection tank at the crest of the landfill will be pumped as required to maintain the operating capacity for the sump pumps.

Proposed Changes: Include Operations and Maintenance Plan.

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

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

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

Response: *The specifications for the transmissivity testing on the geocomposite will be modified to require that the tests be conducted at a worst case normal pressure of 15,000 psf and that textured rather than smooth HDPE be used. The particular configuration for the test will simulate the worst case condition for the geocomposite in terms of backing materials that could allow penetration into the webs of the geonet and restrict flow.*

Proposed Changes: *Modify test conditions to included 60 mil textured HDPE and a maximum normal load of 15,000 psf.*

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

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

Response: *The text of the application will be modified to correct the discrepancies in the pump requirements.*

Proposed Changes: *Modify the text of the engineering report and the specifications to clarify the requirements for the pumps in the primary system (side slope and vertical riser) the secondary side slope riser and the vadose zone side slope riser.*

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

Response: *The design drawings indicate that the sumps are all depressed below the level of the floor of the landfill. EPA guidance documents specify that the leachate must be maintained below 1-foot of head over the floor liner. This does not include the sump. Therefore, the pump will be submerged for more than 1-foot to allow safe operations.*

Proposed Changes: *Operations and Maintenance Plan to be included in the revised application, will address the minimum depth in the sumps to allow safe and efficient operation of the side slope riser pipe pumps.*

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

Response: *The text of the Operations and Maintenance plan will describe how the piezometers will measure the head above the tip of the piezometer and this will be calibrated to the elevation of water. This will then be compared to the elevation of the floor of the landfill to determine if pumping is required. The flow meters will be accumulating flow meters that will record the total volume of liquids removed. The volume of liquids pumped will be recorded manually whenever the sump is pumped. This information will be used to determine if Action Leakage Rates are being exceeded. The specific wiring and readout details of the instrumentation will not be included in the permit application but will be provided prior to the start of construction.*

Proposed Changes: *The Operations and Maintenance Plan will present information on the operation of the piezometers and flow meters that will be installed in all of the sumps.*

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

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

Response: *As stated in previous comments only Phase IA will be permitted in revised permit application. The Operations and Maintenance Plan to be submitted with the revised permit application will present a description of the type of instrumentation and equipment that will be used to maintain the liquid levels below 1-foot above the top liner.*

Proposed Changes: *The revised permit application will only request permitting Phase IA of the landfill and will include a Operations and Maintenance Plan.*

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

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

Response: The Operations and Maintenance Plan will describe the general procedures and documentation associated with monitoring and pumping the sumps. The design for the Phase IA landfill envisioned that contaminated surface water runoff of the landfill face would drain to the south toe and then into the LCRS system, where it would be removed by either the side slope riser or vertical riser pump systems. EPA guidance documents discussing the procedures for pumping of the LCRS and maintaining the required 1-foot of head above the top liner, recognize that this may not be achievable immediately after rainstorms, particularly during the start of filling for each individual cell.

Proposed Changes: Operations and Maintenance Plan will be included in revised permit application.

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

Response: The revised permit application will only include Phase IA. However, the HELP analyses that were conducted for the entire landfill footprint for conditions both during operations and after closer indicated that the fluid levels would not exceed 1-foot of head on the liner.

Proposed Changes: Revised permit application will only include Phase IA.

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

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

Response: As previously indicated, compatibility testing of the proposed materials for the liner and leachate collection system will be tested prior to construction of the facility.

Proposed Changes: None.

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

The application provides a design specification for the geotextile to be used to filter soil particles out of the leachate drainage layer (Appendix E-21), but does not suggest any other measures to prevent or respond to clogging of the leachate collection and leak detection systems. One potential cause of clogging of the leachate collection geonet and/or sump is excessive runoff infiltration, which may result from the proposed ponding of runoff on the protective soil cover at the toe of the waste fill. The filtration geotextile should not be expected to completely exclude clay-sized particles, especially when large volumes of infiltrating runoff are expected to pass through the protective soil cover, over a period of several years. The proposed geocomposite testing (Appendix G-1, sheet 8 of 40), although

intended to simulate LDRS design conditions, should include testing of the actual LCRS conditions as well (including infiltration of large volumes of water through typical sand and other surficial soils from the site. Revise the application to evaluate the potential for clogging of the leachate collection system by infiltrating soil particles, and redesign the runoff collection pond if necessary to prevent clogging.

Response: *The geotextile design presented in Engineering Report evaluates the filter characteristics of the geotextile against the onsite soils that will be placed as the operations layer on the side slopes and floor of the landfill. The filter design evaluates the Apparent Opening Size (AOS) against the gradation of the soils to be protected. Geotextile filters will allow a certain amount of fine particles through the geotextile with the objective of establishing a filter gradation in the adjacent soil. If there is not a defined soil layer directly adjacent to the geotextile, then there is the potential for large volumes of fines (silt and clay size particles) to migrated through the geotextile. Therefore, the design has specified a protective soil layer on top of the geotextile on both the side slopes and the floor of the landfill.*

Proposed Changes: *None.*

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

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

Response: *The revised permit application will only request approval for Phase IA.*
Proposed Changes: *See above.*

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

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

Response: *As previously indicated soil liner and leachate compatibility tests (EPA 9090) will be conducted prior to construction. In addition, the test fill will be constructed, as per the procedures outlined in the CQA plan, prior to the start of construction (Volume IV, Specifications 02221.*

Proposed Changes: *The text of the application (Volume I) and the Engineering Report (Volume III) will be modified to more clearly represent that the EPA 9090 test and a test fill on the soil liner materials will be conducted prior to construction.*

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

Response: The revised permit application is only for Phase IA. Additional, phases will require a permit modification.

Proposed Changes: Revised permit modification will only request Phase IA.

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

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

Response: The revised permit application will be signed and stamped by Mr. Corser.

Proposed Changes: See above

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

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

Response: The revise permit application will only request permitting Phase IA.

Proposed Changes: See above.

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

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

Response: Since only Phase IA will be permitted with this application. Connections to future phases will not be shown. Also see responses to comments D and D-D6g(3).

Proposed Changes: None.

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

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

Response: The CQA plan will be signed and stamped by Mr. Corser.

Proposed Changes: None.

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

Response: The CQA plan currently indicates that these will be tested in accordance with manufacture requirements.

Proposed Changes: *The CQA plan will be modified to include a brief description of the operational features that will be included in the facilities and the general manufactures procedures for checking and/or calibration during installation.*

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

Response: *The CQA Plan provides definitions for CQA and CQC that are consistent with the most recent EPA guidance document. The definitions reflect the differences between earthworks and geosynthetic construction.*

Proposed Changes: *CQA Plan will further identify and clarify the independence of the CQA engineering from the design engineer.*

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

Response: *The permit application (Volume I, Section 2.5.2.3) currently indicates that NMED must review and approve the certification report prior to waste acceptance. However, the organization chart and text of the CQA plan will be modified to more clearly indicate the role of NMED on the implementation process for construction of the landfill and other facilities.*

Proposed Changes: See above.

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

Response: *The CQA plan will be modified to clearly indicate that design changes and modification will have to submitted, reviewed and approved by NMED in accordance with permit modification requirements of 40 CFR 270.41 and 42.*

Proposed Changes: See above.

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

Response: *The revised permit application will only include Phase IA construction. However, the CQA plan will be modified to clearly reflect that a certification report will be required for each phase of landfill construction.*

Proposed Changes: See above.

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

Response: *The operational features of the facilities will be installed in accordance with manufactures procedures. Therefore, they may have CQA plans that should be implemented as part of construction and should be consistent with but separate from the overall CQA plan that is being presented as part of this application.*

Proposed Changes: None.

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

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

Response: A Operations and Maintenance Plan will be prepared and submitted as part of the revised permit application.

Proposed Changes: See above.

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

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

Response: The specifications indicate repair procedures for the soil and geosynthetic materials that will be used for containment and leachate collection and removal. However, the Operations and Maintenance Plan will specifically reference the specification sections when referring to repair of facilities.

Proposed Changes: See above.

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

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

Response: The revised permit application will only request a permit for Phase IA. The Operations and Maintenance Plan will address specific pumping rates and methods for measuring volumes over a particular time period to compare to ALR values.

Proposed Changes: The Operations and Maintenance Plan will address specific procedures for tracking volumes of liquids pumped from the sump and comparison to ALR values.

The proposed ALR is nine times the EPA recommended minimum. The explanation given for the nine-fold increase is the high transmissivity of the geocomposite. However, the transmissivity cited in Section 3.2.9 of the Engineering Report is 2.2 x 10^{-4} m^2/sec, which is only 7.33 times greater than the minimum of 3 x 10^{-5} m^2/sec required in 40 CFR 264.301(c)(3)(ii). In addition, the value specified in Section 02710 of the construction specifications (page 02710-9) is 2.0 x 10^{-4} m^2/sec, only 6.7 times

greater than the minimum required value. Revise the application to include an Action Leakage Rate of no larger than 670 gpad, or provide additional information to justify a larger value.

Response: The calculation presented in the Appendix to the engineering report are consistent with those recommended by EPA. The calculation for the ALR are dependent on both the transmissivity of the geonet or geocomposite and the thickness. With both of these factors taken into account, the ALR values can be justified.

Proposed Changes: None.

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

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

Response: The Operations and Maintenance Plan will address specific pumping rates and methods for measuring volumes over a particular time period to compare to ALR values. The plan will indicated the area over which the ALR will be calculated based on the proposed filling area.

Proposed Changes: Submit Operations and Maintenance Plan with revised permit application.

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

The Response Action Plan for the landfill provides for monitoring the landfill sumps weekly and after significant precipitation. The term "significant" is not defined. The proposal to check sumps only weekly, after the ALR has been exceeded, does not meet the requirements in 20 NMAC 4.1.500 (incorporating 40 CFR 264.301(c)(3)(v) and (4)), i.e., to prevent liquids from backing up into the drainage layer and to minimize the head on the bottom liner. If the sump in the Phase II sector was to be checked and pumped by manual control only weekly (due to failure of the fluid level sensor in the sump, or any other reason) and the leak rate remained at or near the ALR, about 233,000 gallons would have accumulated and would be waiting to be removed from the sump, each week. This approach could result in accumulation of large amounts of leachate in the leak detection system drainage layer, and expose the bottom liners to high pressures and extreme variations in pressure. The RAP must be revised to provide methods (e.g., daily or more frequent inspections) and/or equipment (automated leachate detection, alarm and pump operating systems) as necessary to prevent backup of leachate into the LDRS drainage layer, and to minimize head on the bottom liner.
Response: In Volume 1, Section 5 indicates that the landfill will be inspected weekly and after storms. Due to the limited rainfall that is expected at the site, this criteria will require inspection after any rainfall. In addition, Section 5 indicates that the LCRS and LDRS will be inspected daily for the presence of liquids.
Required Changes: None.

D-6J Run-on and Run-off Control Systems: 270.21(b)(2), 264.301(g)

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

Response: *The revised permit will only request permitting Phase IA.*

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

Response: *Phase IA haulroads are shown on drawing 8.*

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

Response: *A freeboard depth of 0.3 feet is a common value used by other governing agencies (i.e. Office of Surface Mining). However, a re-evaluation will be made using Soil Conservation Service methods and may be better suited for this type of operation. This method uses 20 percent of the depth for subcritical flow and 25 percent for supercritical flow but not less than a 1.0 foot.*

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

Response: *Any localize spills will be cleaned up as required by the Contingency Plan presented in Volume I of the permit application. The truck staging area will drain to the surface water runoff basin, which is designed to contain the 25-year, 24-hour storm and control the 100-year, 24-hour storm event.*

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

Response: *The storm water control system consists of not only ditches but also the detention pond and associated spillway. Section 3.0 provides further explanation of the control system.*

Section 2.4, Hydrograph Response Shape, states that a medium hydrograph response was selected for disturbed as well as undisturbed areas. During construction of the landfill, none of the areas will be vegetated, and if vegetation does exist, it will not be very hardy. The worst case conditions will occur

during this poor-vegetation state, which would be representative of a fast or high response rate. Either provide the justification for using the medium response rate to predict the runoff response, or revise the response hydrograph used such that it is representative of a non-vegetated/unprotected area.

Response: *The medium hydrograph response was used because of the B type (sandy) soils on site. Fast hydrograph responses refer to hard packed soils or urban areas. The on-site sandy soils would not produce the fast run-off as associated with a fast response.*

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

Response: *This section will be revised as requested.*

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

Response: *Surface water will not be allowed to pond for substantial periods of time along side the road due to the positive grade of the road. The water surface mark is shown to indicate the roadside ditch capacity.*

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

Response: *Table A-1 will be revised as requested.*

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

Response: *The Channel Design Table and Drawing No. 25 will be revised.*

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

Response: *The Channel Design Table and Drawing No. 25 will be revised.*

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

Response: *The table does include a footnote indicating the 100-year, 24-hour flow value.*

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

Response: *Corrections to the Design Table will be made.*

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

Response: *The channel design discussion will be revised as requested.*

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

Response: *The reference will be provided as requested.*

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

Response: *The drawing will be revised as requested.*

There is no material definition for the perpendicular cross hatching underneath each of the cross-sections in Drawing No. 39. Define the material the perpendicular cross hatching represents.
Response: *The hatching is subgrade. We will modify hatching to be consistent with symbols on Drawing 2.*

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

Response: *The direction arrow will be changed.*

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

Response: *The clay liner material is used to backfill the anchor trench to prevent infiltration of surface waters. The material should be placed and compacted in accordance with the Clay Liner specifications in Volume IV.*

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

Response: *The slope is approximately 4H:1V. This will be noted on the drawings.*

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

Response: *This comment has been eliminated as agreed upon.*

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

Response: *This comment has been eliminated as agreed upon.*

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

Response: *The clean water basin will be pumped after rainfall events that result in the accumulation of water in the basin. This will provide capacity for the 25-year, 24-hour storm event.*

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

Response: *Drawing 13 is generally a enlarged (detailed) area of the collection basin and Drawing 10 represents the filling plan for Phase 1A. Thus the berm and associated culvert are not shown on both. The permit application will be revised to discuss the purpose of the berm and culvert.*

Proposed Changes: *See above comments.*

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

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

Response: Discussions are ongoing with NMED regarding the requirements for permitting the truck wash and associated tanks.

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

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

Response: The Operations and Maintenance Plan will address maintenance of the drainage ditches. This is expected to include regular monitoring after all rainfall events for the build up of sediment and erosion.

Required Changes: Operations and Maintenance Plan.

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

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

Response: The Operations and Maintenance Plan will indicate that landfill operators will inspect vehicles prior to leaving the landfill for signs of accumulated waste on the tires or truck body. If accumulated waste is observed the vehicle will be directed to the truck wash. The maximum wind speed for placement will be specified at 35 miles per hour (MPH) in the Operations and Maintenance Plan.

I. CLOSURE PLANS

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

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

revised to address each of the above factors in developing specific and detailed procedures for demonstrating clean closure and adequate decontamination around the landfill. The number, locations and analytical parameters for background samples must be provided, etc.

Response: Trey to respond.

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

Response: ~~Trey to respond.~~ The requirements for sampling and analysis of soils during closure are being reviewed and discussed with HRMD.

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

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

Response: ~~Trey to respond.~~ The closure plan will be revised to include this type of commitment.

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

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

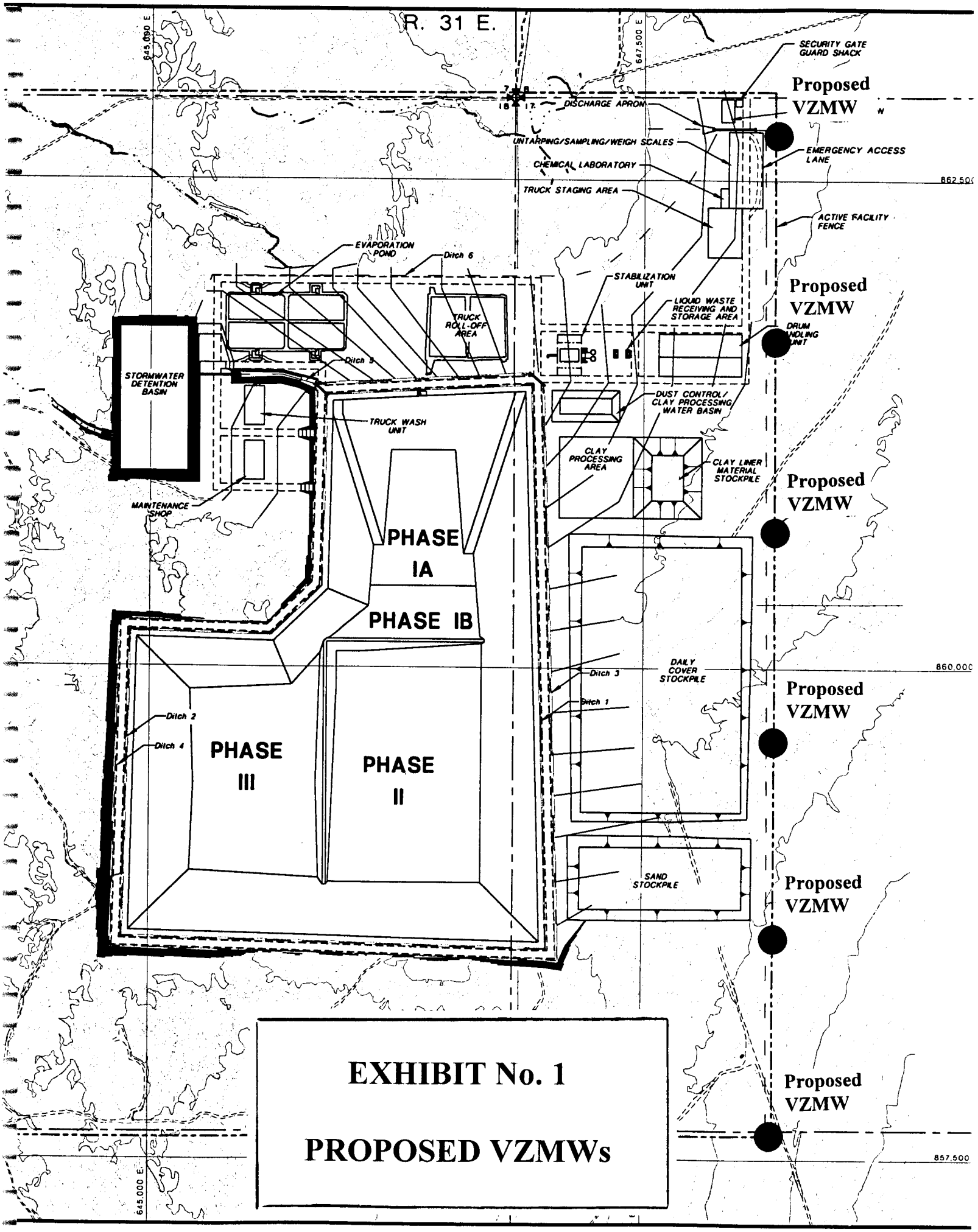
Response: Vegetative cover thickness should be 2.5 feet.

Proposed Changes: The closure plan will be revised to be consistent with the Engineering Report and drawings.

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

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

Response: Drawing 23 indicates a toe drain around the perimeter of the landfill cover to collect and discharge water that infiltrates through the vegetative cover.


R. 31 E.
645,000 E
647,500 E
SECURITY GATE GUARD SHACK
Proposed VZMW
DISCHARGE APRON
UNTARPING/SAMPLING/WEIGH SCALES
EMERGENCY ACCESS LANE
CHEMICAL LABORATORY
TRUCK STAGING AREA
862,500
ACTIVE FACILITY FENCE
EVAPORATION POND
Ditch 6
STABILIZATION UNIT
Proposed VZMW
LIQUID WASTE RECEIVING AND STORAGE AREA
TRUCK ROLL-OFF AREA
DRUM HANDLING UNIT
STORMWATER DETENTION BASIN
Ditch 5
DUST CONTROL/ CLAY PROCESSING WATER BASIN
TRUCK WASH UNIT
CLAY PROCESSING AREA
CLAY LINER MATERIAL STOCKPILE
Proposed VZMW
MAINTENANCE SHOP
PHASE IA
PHASE IB
860,000
DAILY COVER STOCKPILE
Ditch 3
Proposed VZMW
Ditch 1
Ditch 2
Ditch 4
PHASE III
PHASE II
SAND STOCKPILE
Proposed VZMW
Proposed VZMW
857,500
645,000 E
EXHIBIT No. 1
PROPOSED VZMWs

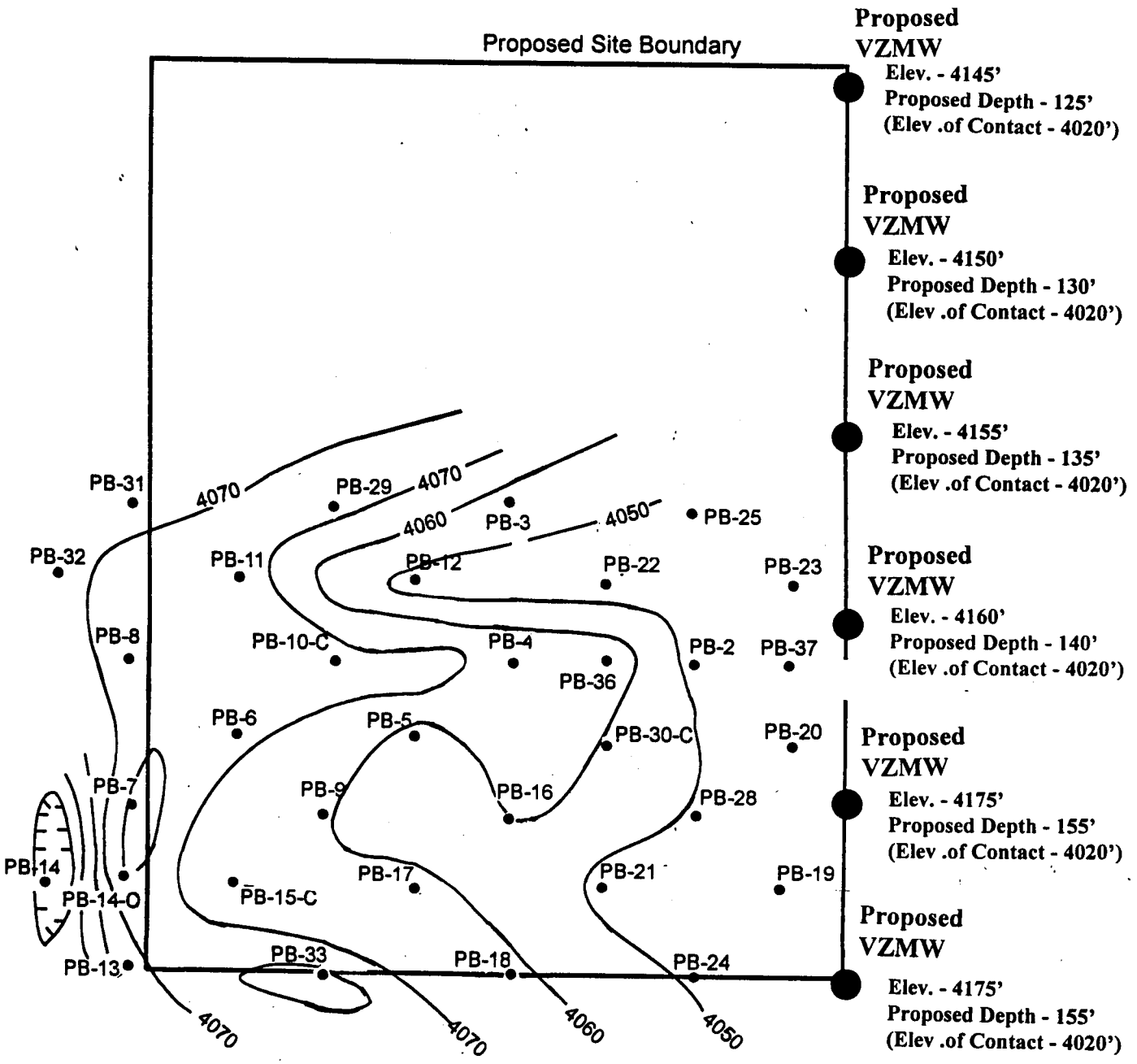


EXHIBIT No. 2

STRUCTURE CONTOUR OF UPPER/LOWER DOCKUM CONTACT